



Laboratory Glassware & Equipment Catalog





As our 75th Anniversary arrives, the Ace Glass Family, past and present, wish to thank our customers for sharing their laboratories with 75 years worth of Ace innovations and shared trust in our products.

From Ace-Threds to Photochemistry Reactors to Lab Scale Pilot Plants, our customers enthusiastically traded ideas with our engineers and technicians, developing an astounding array of apparatus used to enhance many of the worlds most important industries. Around the world and every day from 1936 til now, new discoveries in the many disciplines of chemistry were aided by Ace Glass craftsmen and the researchers that trust in the truism that, *“Quality Chemistry begins with Quality Glassware.”*

In the new century, many have predicted the extinction of glassware and “wet” chemistry from the laboratory in favor of plastics and instrumentation. To those who hold to this prediction, we say that when you come to realize your inevitable need for glassware, Ace Glass will be there to support all your efforts within current, escalating technologies such as bio-fuel development and nanotechnology and those future disciplines of which we haven’t yet dreamed.

Here’s to the next 75 years of challenges and discoveries shared by the Ace Glass Family and you, our customers.

Thank you!

A few Ace Glass firsts:











	First American-made Spherical Joints		First American-made sintered fritted ware
	First Ace Tubore Stirrers		First internally threaded glass joints — Ace Threds
	First Micro/Mini Labware and Kits		First lab scale Pilot Plants and Reactors
	First Heating Blocks		Photochemistry Glass and Equipment
	Sonochemistry Glass and Equipment		Pressure Vessels and Reactors

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Office/Shipping Location

Ace Glass Incorporated

P.O. Box 688
1430 North West Boulevard
Vineland, NJ 08362-0688

Phone 856-692-3333 • Fax 856-692-8919
sales@aceglass.com • export@aceglass.com

Toll-Free 1-800-223-4524
Toll-Free Fax 1-800-543-6752

www.aceglass.com

Specifications

The products in this catalog represent what we believe to be the most advanced design and construction. However, design improvements are constantly being made, and we reserve the right to modify specifications where we feel that a change is warranted.

Apparatus fabricated in accordance with ASTM, API, AOAC, ANSI, ISO, and other technical organization specifications such as USP, NIST, and NIOSH, are subject to modification by these organizations.

All precision-grade ware is warranted to be within the tolerance prescribed in ASTM Specifications. All laboratory-grade ware is twice precision-grade tolerances.

Special Apparatus

Orders or inquiries for special apparatus should be accompanied by prints or drawings, if possible. To prevent delay, and to enable us to more intelligently quote on your specials, all necessary dimensions and tolerances should be noted. **For technical information, design assistance and help please visit www.aceglass.com.**

The following information should also be furnished where applicable: joint sizes, Ace-Thred sizes, capacity, whether “to contain” or “to deliver,” porosity of filter, and any abnormal operating conditions, such as extremely high pressure or temperature, to which the apparatus may be subjected.

We reserve the right to overrun or under run by 10% on orders for special items and to ship and invoice for amounts within this variation.

NOTE: Special items are not returnable.

Our research and drafting departments are always available to assist you in designing special apparatus. Your special will be assigned a permanent drawing number for future reference, duplication or change. You will be sent a drawing of your special for your approval/sign-off before manufacturing begins.

Types of Glass

All ACE-manufactured glassware items listed in this catalog are, unless otherwise noted, fabricated from 33 expansion borosilicate glass, such as Pyrex® Brand Glass, a product of Corning Incorporated; KG-33 Glass, a product of Kimble Glass Company; Duran Glass, a product of Schott Glaswerke; Simax, a product of Kavalier Glaswork.

Breakage or Loss

In case of **Breakage**:

1. Notify ACE immediately.
2. Please retain all inner and outer cartons and packing material.
3. ACE will advise you whether the carrier will report to your location for inspection or if item(s) are to be returned for inspection.

In case of **Shortage**:

1. Notify ACE immediately.
2. A replacement will be issued upon confirming inventory discrepancy.

In case of **Loss**:

1. First, please verify with all your receiving departments that delivery was not made.
2. Notify ACE immediately.
3. ACE will contact the carrier for tracking information as applicable.
4. A replacement will be issued upon verification that the shipment was not delivered and upon confirmation that the carrier cannot locate shipment.

PLEASE NOTE:

All breakages and shortages must be reported within two weeks of receipt.

Returns and Repairs

Incoming material (returns or repairs) must be pre-approved by our Product Return Specialist. Please follow these steps to ensure our Receiving Department does not refuse your shipment.

- 1** Contact ACE for an **RA# (Return Authorization Number)**.
1-800-223-4524 (Vineland, NJ, USA)
E-mail: returns@aceglass.com

2. Once an RA# is given, properly pack the item(s) in an inner and outer box/carton and write the RA# on the outside of the box. All used items are to be thoroughly cleaned and defined in the assignment of an RA#.
3. A 20% restocking fee will be assessed for authorized returns unless arranged otherwise. ACE cannot accept responsibility for damage or destruction of glassware that occurs in your shipment to us. We strongly advise you to purchase additional insurance with your carrier.
4. For *Returns* that are the result of your receiving the item(s) broken, ACE cannot accept responsibility for **further** damage or destruction of glassware that occurs in the return shipment due to improper packing.
5. *Repairs* will be evaluated by our technicians. You will be advised if any pieces are beyond repair or cannot be salvaged economically. ACE cannot accept responsibility for further damage or destruction of any glassware that is damaged during return shipment.

PLEASE NOTE:

ACE cannot accept responsibility for material returned without proper authorization.

Specifications are subject to change without prior notice. Although they are represented to be accurate, it is best to verify product specifications with ACE prior to purchase in the event they have been changed since publication of this catalog.

Order by Code

Each item in this catalog has a two- or three-digit code in addition to the four- or five-digit number. This code appears above or immediately preceding the price of the item, and no other ordering information is needed since each individual size, capacity, etc. has its own code. **Example:** 5000 ₪ 10/30 top ₪ 14/35 bottom would be ordered as 5000-05.

The majority of items listed in this catalog are normally available from stock at our plant in Vineland, NJ.

In the event your entire order cannot be filled immediately, a partial shipment will be sent, with the back-ordered items following shortly. If you would like the entire order to be sent in one shipment, please indicate this on your purchase order.

Unless otherwise specified on the purchase order, we will ship material by what we consider the "best way."

Ways to Order

Ace Glass products are also available from our many lab distribution partners, particularly VWR International, LLC and Sigma-Aldrich.

PHONE	856-692-3333 800-223-4524
FAX	856-692-8919 800-543-6752
CREDIT CARD	VISA MasterCard American Express
MAIL	P.O. Box 688 Vineland, NJ 08362
WEB SITE	www.aceglass.com
E-MAIL	sales@aceglass.com
INTERNATIONAL	export@aceglass.com

Shipments are F.O.B. our factory in Vineland, NJ, USA.

ACE GLASS is a certified veteran-owned small business!

ACE Glassware Discounts

All ACE-manufactured glassware, identified with a spade (♠), listed in this catalog is subject to the following dollar value discounts. Items marked by a star (★) or that have no designation whatsoever are not subject to this discount.

- 10% on purchases of \$500.00 and over
- 12% on purchases of \$1,000.00 and over
- 15% on purchases of \$1,500.00 and over

Terms: Net 30 days (Domestic only)

Contact ACE for current price list/pricing CD or visit our website, www.aceglass.com.

ACE Laboratory Glassware is intended for laboratory use only.

Proper laboratory procedures and safety practices should always be followed.

INTERNATIONAL SALES

Ways to Order

- Mail:** Ace Glass Incorporated
International Sales Dept.
1430 N. West Blvd — P.O. Box 688
Vineland, NJ 08360-0688 USA
- Phone:** 856-692-3333
- Fax:** 856-692-8919
- E-mail:** export@aceglass.com

Methods of Payment

- Wire Transfer
- Irrevocable, payable on-sight, and confirmed letter of credit
- Payment in advance by check or money order, in US Funds only
- Credit Card: Amex, Visa, MasterCard, etc.

Trademarks

Adjusta-Chrom, FETFE, Flex-Grip, Instatherm, Mini-Lab, Micro/Mini-Lab, and Stir-Lube are Registered Trademarks of ACE GLASS INCORPORATED.

Buchi is a Registered Trademark of Buchi, Ltd.

Chemraz is a Registered Trademark of Greene Tweed & Co.

IKAMG, IKATRON, VIBRAX, ULTRA-TURRAX and IKA are Registered Trademarks of IKA Works, Inc.

Kel-F is a Registered Trademark of 3M Company.

Lab-Guard and Therm-O-Watch are Registered Trademarks of Glas-Col.

LabJaws, bioforce, Talboys, and Flexaframe are Registered Trademarks of Troemner Co.

Nylon, Delrin, Kalrez, Viton, Surlyn, Tefzel, Teflon, and Krytox are Registered Trademarks of E. I. Dupont & Co.

Poly-Jaque and Polystormor are Registered Trademarks of Bel-Art Products.

Poly-Seal is a Registered Trademark of Poly-Seal Corp.

Powerstat is a Registered Trademark of Superior Electric Co.

Precision Seal and Suba Seal are Trademarks of Sigma-Aldrich Biotechnology, LP.

Rodaviss is a Registered Trademark of S.A.V. France.

Swagelok is a Registered Trademark of Crawford Fittings.

V-Vial is a Registered Trademark of Wheaton Science Products Division.

Manufacturers whose quality products are listed in this catalog:

- Assem-Pak
- Arrow Engineering
- Bel Art Products
- BriskHeat
- Heidolph
- Cadence Science
- Caframo
- Cannon Instrument Co.
- Cowie Technology
- Duran Group
- E. I. Dupont & Co.
- Electrothermal
- Gallagher Controls
- Glas-Col Apparatus
- Greene, Tweed & Co., Inc.
- W. A. Hammond Drierite Co.
- Hanovia
- IKA Works
- I.W. Tremont
- J-Kem
- KNF Neuberger Inc.
- Julabo
- Lamson & Goodnow Mfg. Co.
- Lauda
- Master Appliance
- Optimize Technologies, Inc.
- Parr Instrument Co.
- PolyScience
- Pope Scientific
- Quartz Scientific, Inc.
- Schott Glaswerke
- Scientific Development Co.
- Sigma-Aldrich
- SGE
- Sonics & Materials, Inc.
- The Superior Electric Co.
- Troemner
- VWR International
- Welch/ILMVAC
- Worldwide Glass Resources

Reference Guide to Ace-Thred Sizes

Size	Accepts Tube O.D., mm	Use Bushing Number	Use With O-Ring No.	Optional Ferrule	Suggested Uses
Mini #7	6-7	5029-10	7855-704	11710-07	A, B, I
Midi #11	9-10.5	7506-02	7855-708	11710-11	D, E, F, G
Maxi #15	12.5-14	7506-06	7855-716	11710-15	C, H
	16-17	7506-08	7855-720	11710-18	H, L
Giant #25	24-25	7506-10	7855-734	11710-25	K
	34-35	7506-12	7855-740	—	K, L
Jumbo #50	47-48	7506-14	7855-744	11710-50	K, L
	80	7506-20	7855-782	—	—

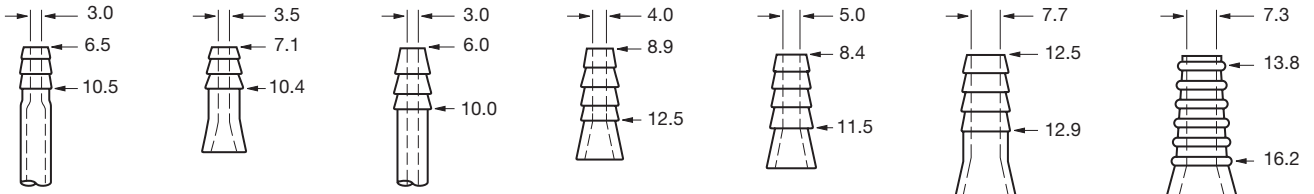
A—Thermometers, B—Bleed Tubes, C—Electrodes, D—Sensing Probes, E—Thermowells, F—Gas Dispersion Tubes, G—Vacuum Take-Offs, H—Inlet and Outlet Tubes, I—Miniature Electrodes, K—Manifolds, L—Immersion Wells

Fraction Conversion

Length, Fractional Inches	Millimeters
1/16	1.6
1/8	3.2
3/16	4.8
1/4	6.4
5/16	7.9
3/8	9.5
7/16	11.1
1/2	12.7
9/16	14.3
5/8	15.9
11/16	17.5
3/4	19.1
13/16	20.6
7/8	22.1
15/16	23.8
1	25.4

Hose Connection Size Guide

Dimensions in Millimeters



- A** Use with 7.9mm (5/16") I.D. Tubing
- B** Use with 7.9mm (5/16") or 9.5mm (3/8") I.D. Tubing
- C** Use with 7.9mm (5/16") or 9.5mm (3/8") I.D. Tubing
- D** Use with 9.5mm (3/8") I.D. Tubing
- E** Use with 9.5mm (3/8") or 11.1mm (7/16") I.D. Tubing
- F** Use with 11.1mm (7/16") or 12.7mm (1/2") I.D. Tubing
- G** Use with 15.9mm (5/8") I.D. Tubing

Specifications for Joints, Threads, and Stopcocks



Standard Taper

Symbol used to designate interchangeable joints, stoppers and stopcocks that comply with the requirements of Commercial Standard CS-21 published by N.I.S.T.



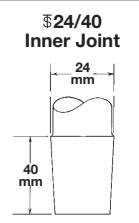
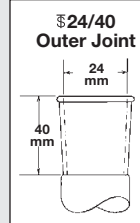
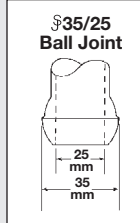
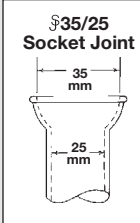
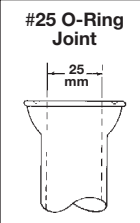
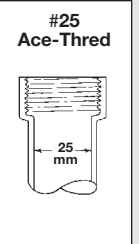
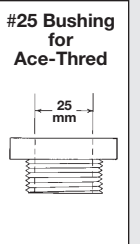
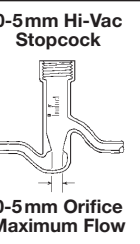
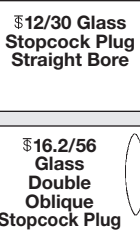
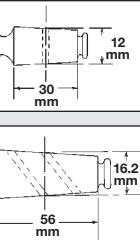

Spherical Joint

Symbol designates spherical joints that comply with CS-21.



Product Standard

Symbol designates stopcock plugs made of PTFE that meet requirements of N.I.S.T. Voluntary Product Standard PS 28-70.

 <p>24/40 Inner Joint</p>	 <p>24/40 Outer Joint</p>	 <p>35/25 Ball Joint</p>	 <p>35/25 Socket Joint</p>	 <p>#25 O-Ring Joint</p>
 <p>#25 Ace-Thred</p>	 <p>#25 Bushing for Ace-Thred</p>	 <p>0-5mm Hi-Vac Stopcock</p>	 <p>12/30 Glass Stopcock Plug Straight Bore</p>	 <p>16.2/56 Glass Double Oblique Stopcock Plug</p>
 <p>1:5 Taper Size 11/25 PTFE Stopcock Plug</p>				

Plastic Properties	Low Density Polyethylene (LDPE)	High Density Polyethylene (HDPE)	Polypropylene (PP)	PTFE FEP	Polycarbonate (PC)	Polymethylpentene (PMP)
Temperature Limit, °C	80	120	135	205	135	175
Specific Gravity	0.92	0.95	0.90	2.15	1.20	0.83
Tensile Strength, psi	2000	4000	5000	3000	8000	4000
Brittleness Temperature, °C	-100	-100	0	-270	-135	20
Water Absorption, %	<0.01	<0.01	<0.02	<0.01	0.35	<0.01
Flexibility	excellent	rigid	rigid	excellent	rigid	rigid
Transparency	translucent	translucent	translucent	translucent	clear	clear

Conversion Factors

Length

1 millimeter (mm).....	0.1 centimeter (cm)
1 centimeter	0.01 meter (M)
1 centimeter	0.394 inch
1 inch.....	2.540 centimeters
1 meter	3.2808 feet
1 foot	0.305 meter

Area

1 square centimeter (cm).....	0.1550 square inch
1 square inch.....	6.452 square centimeters
1 square meter (M)	10.764 square feet
1 square foot	0.09290 square meter

Mass

1 gram	0.03527 ounce (Avoirdupois)
1 ounce (Avoirdupois).....	28.3495 grams
1 kilogram.....	2.20462 pound (Avoirdupois)
1 pound (Avoirdupois)	0.45359 kilogram

Volume

1 cubic centimeter.....	0.001 liter (L)
1 cubic centimeter.....	0.0610 cubic inch
1 cubic inch.....	16.3872 cubic centimeter
1 cubic meter	35.314 cubic feet
1 cubic foot	0.02832 cubic meter

Capacity

1 milliliter (mL)	0.03382 ounce (U.S. Liquid)
1 ounce (U.S. Liquid).....	29.573 milliliters
1 liter (L).....	1.05671 quarts (U.S. Liquid)
1 quart (U.S. Liquid)	0.94633 liter
1 liter.....	0.26418 gallon (U.S. Liquid)
1 gallon (U.S. Liquid)	3.78533 liters
1 lambda.....	0.001 cc /1 microliter

Power

1 watt.....	0.73756 foot pound per second
1 foot pound per second	1.3582 watts
1 watt.....	0.056884 BTU per minute
1 BTU per minute	17.580 watts
1 watt.....	0.001341 horsepower (U.S.)
1 horsepower (U.S.).....	754.7 watts
1 watt.....	0.01433 kilogram-calorie per minute
1 kilogram-calorie per minute	69.767 watts

Temperature

$$^{\circ}\text{C} = (\text{F} - 32) \frac{5}{9}$$

$$^{\circ}\text{F} = 9/5 \text{ C} + 32$$

Borosilicate Glass Properties

Unless otherwise specified, ACE GLASS brand glassware is fabricated from Corning 7740, Kimble KG-33, Kavalier/Simax, or Schott-Duran® glass and conforms to federal specifications DD-G-541B and ASTM E-438. Also meets the U.S. Pharmacopoeia specs for Type I Borosilicate Glass. Glass properties are those represented by the aforementioned companies.

Composition (approximate percent)			
	Corning 7740	Duran	Kavalier/Simax
SiO ₂	80.6%	81%	80.4%
B ₂ O ₃	13.0%	13%	13.0%
Na ₂ O/K ₂ O	4.1%	4%	4.2%
Al ₂ O ₃	2.3%	2%	2.4%

Properties			
	Corning 7740	Schott-Duran	Kavalier/Simax
Coefficient of Expansion	32.5 x 10 ⁻⁷ cm/cm/°C	3.3 x 10 ⁻⁶ cm/cm/°K	3.3.1 x 10 ⁻⁶ cm/cm/°K
Strain Point	510°C	510°C	510°C
Annealing Point	560°C	560°C	560°C
Softening Point	821°C	815°C	820°C
Density	2.53 g/cm ³	2.23 g/cm ³	2.23 g/cm ³
Temperature Limits	230°C (Normal use) 400°C (Extreme, short-term use only)	230°C (Normal use) 400°C (Extreme, short-term use only)	240°C (Normal use) 400°C (Extreme, short-term use only)
Maximum Thermal Shock	160°C	160°C	160°C
Refractive Index	1.474 ¹	1.474 ¹	1.472 ¹

¹At Sodium D Line

Needle Sizes

Gauge	Wall Thickness			Gauge	Wall Thickness		
	O.D. in./mm	I.D. in./mm†	in./mm		O.D. in./mm	I.D. in./mm†	in./mm
33	.0082/.21	.0042/.11	.002 /.05	21	.0323/.82	.0202/.51	.006 /.15
32	.0093/.24	.0042/.11	.002 /.05	20	.0358/.91	.0237/.60	.006 /.15
31	.0103/.26	.0052/.13	.0025/.06	19	.0420/1.07	.0270/.69	.0075/.19
30	.0123/.31	.0062/.16	.003 /.08	18	.0500/1.27	.0330/.84	.0085/.22
29	.0133/.34	.0072/.18	.003 /.08	17	.0580/1.47	.0420/1.07	.008 /.20
28	.0143/.36	.0072/.18	.0035/.09	16	.0650/1.65	.0470/1.19	.009 /.23
27	.0163/.41	.0082/.21	.004 /.10	15	.0720/1.83	.0540/1.37	.009 /.23
26s	.0187/.47	.0050/.13	.007 /.18	14	.0830/2.11	.0630/1.60	.010 /.25
26	.0183/.46	.0102/.26	.004 /.10	13	.0950/2.41	.0710/1.80	.012 /.31
25s	.0203/.51	.0060/.15	.007 /.18	12	.1090/2.77	.0850/2.16	.012 /.31
25	.0203/.51	.0102/.26	.005 /.13	11	.1200/3.05	.0940/2.39	.013 /.33
24	.0223/.57	.0122/.31	.005 /.13	10	.1340/3.40	.1060/2.69	.014 /.36
23	.0253/.64	.0133/.34	.006 /.15				
22s	.0283/.72	.0060/.15	.011 /.28				
22	.0283/.72	.0162/.41	.006 /.15				

†mm are nominal

Pressure Equivalents

Micron or Millitorr	Torr or mm of Hg
1000	100
100	10 ⁻¹
10	10 ⁻²
1	10 ⁻³
0.05	5x10 ⁻⁴
0.1	10 ⁻⁴
0.01	10 ⁻⁵
0.001	10 ⁻⁶

Flask Stoppers

Stopper Number	Approximate Diameter at Small End, mm	Length of Ground Zone, mm	Diameter at Large End, mm
8	7.25	10 ±1.0	8.25
9	8	14 ±1.0	9.40
13	12	14 ±1.0	13.40
16	15	15 ±1.0	16.50
19	18	17 ±1.0	19.70
22	20	20.5 ±1.0	22.05
27	25	21.5 ±1.0	27.15
32	30	21.5 ±1.0	32.15
38	35	30 ±1.0	38.00

ACE Glass Fiber Filter Discs

ACE Designation	Porosity Maximum Pore Diameter Range (micron)	Corning Equivalent	Kimble Equivalent	Uses
A	145-174	EC (170-220)	EC (170-220)	Coarse Filtration
B	70-100	—	—	Coarse Filtration
C	25-50	C (40-60)	C (40-60)	Gas Dispersion
D	10-20	M (10-15)	M (10-15)	Extraction
E	4-8	F (4-5.5)	F (4-5.5)	Extraction

Pressure Conversions









Absolute									Gauge Pressure	
cm of Hg	Torr or mm of Hg	Micron	Atmo-sphere	lb/ in. ²	ton/ ft. ²	gram/ cm ²	ft. of H ₂ O	in. of Hg	lb. in.	in. of Hg
76	760	760000	1	14.7	1.06	1033	33.9	29.9	0.00	0.00
70	700	700000	0.921	13.53	0.975	952	31.2	27.6	1.16	2.36
60	600	600000	0.79	11.6	0.835	816	26.8	23.6	3.10	6.30
50	500	500000	0.659	9.67	0.696	680	22.3	19.7	5.03	10.2
40	400	400000	0.526	7.74	0.557	545	17.8	15.7	6.97	14.2
30	300	300000	0.395	5.8	0.417	408	13.4	11.8	8.90	18.1
20	200	200000	0.263	3.87	0.278	272	8.92	7.87	10.8	22.0
10	100	100000	0.132	1.94	0.139	136	4.46	3.94	12.8	26.0
5	50	50000	0.006	0.967	0.07	68	2.23	1.97	13.7	27.9
1	10	10000	0.013	0.194	0.014	13.6	0.446	0.394	14.5	29.5
0.1	1	1000	0.001	0.019	0.001	1.36	0.045	0.039	14.68	29.88
0	0	0	0	0	0	0	0	0	14.7	29.92

Selecting a Septa

Material(s)	Compatible	Incompatible	Resealability
Butyl Rubber	Acetone, alcohols, diethylamine, DMSO, MEK, sodium peroxide	Benzene, chloroform, DMF, HF, HCL, phenol, toluene, xylene	Very good
Butyl Rubber/PTFE	PTFE resistance until punctured, then septa or liner will have compatability of butyl rubber		Teflon does not reseal after being punctured
PTFE		Diethylamine, fluorine	Single injection use
Red Rubber	Acetone, alcohols, diethylamine, DMSO, sodium peroxide	Chloroform, DMF, HF, HCL, MEK, phenol, toluene, xylene	Excellent
Red Rubber/PTFE	PTFE resistance until punctured, then septa or liner will have compatability of red rubber		Teflon does not reseal after being punctured
Silicone	Alcohol, DMF, DMSO, hydrogen peroxide, sodium hydroxide	ACN, benzene, chloroform, hexane, HCL, MEK, THF, toluene	
Silicone/PTFE	PTFE chemical resistance until punctured, then septa or liner will have compatability of silicone		Teflon does not reseal after being punctured
Viton®	Alcohols, benzene, chlorinated solvents, HF, heptane, hexane	Acetone, ACN, DMF, dioxane, pyridine, ketones, MEK, THF	Good

NOTE: All septa liners are designed for a variety of applications. Individual performance requirements may vary; therefore, it is recommended that customers perform the proper tests to determine which septa or liner is most suitable for the exact application.

Tubing Sizer for Peristaltic Pumps

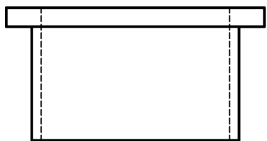
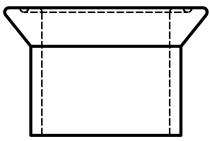
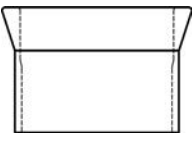
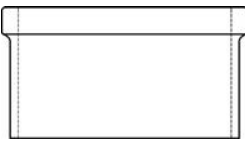
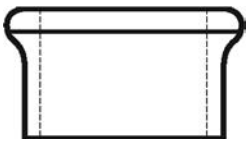
Tubing sizes																
Inner diameter (mm):	0.8	1.7	3.1	4.8	6.3	4.8	6.3	7.9								
Outer diameter (mm):	4.0	4.9	6.3	8.0	9.5	9.8	11.3	12.9								
Wall thickness (wt) (mm):	1.6	1.6	1.6	1.6	1.6	2.5	2.5	2.5								
Max. pressure (continuous/short time) (bar):	0.7/1.7	0.7/1.7	0.7/1.7	0.5/1.5	0.5/1.5	0.8/1.8	0.8/1.8	0.8/1.8								
Suction height (mH ₂ O):	8.8	8.8	8.8	8.8	6.7	8.8	8.8	8.8								
Flow rates in combination with pump head/pump drive																
SP quick	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
PD 5106/PD 5206 (ml/min):	1.6	40	6.8	169	25.7	643	56	1,400	88.7	2,217	56	1,400	88.7	2,217	132	3,300
PD 5006 (ml/min):	3.3	40	14.1	169	53.6	643	116.7	1,400	184.8	2,217	116.7	1,400	184.8	2,217	275	3,300
PD 5101/PD 5201 (ml/min):	0.3	8.0	1.4	34	5.2	129	11.2	280	17.7	443	11.2	280	17.7	443	26.4	660
PD 5001 (ml/min):	0.7	8.0	2.8	34	10.7	129	23.3	280	37.0	443	23.3	280	37.0	443	55	660
SP standard/SP vario	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.		
PD 5106/PD 5206 (ml/min):	2.4	60.2	10.4	260	41.2	1,029	86.3	2,157	146	3,644	86.3	2,157	146	3,644		
PD 5006 (ml/min):	5.0	60.2	21.7	260	85.8	1,029	179.8	2,157	304	3,644	179.8	2,157	304	3,644		
PD 5101/PD 5201 (ml/min):	0.5	12.0	2.1	52	8.2	206	17.3	431	29.2	729	17.3	431	29.2	729		
PD 5001 (ml/min):	1.0	12.0	4.3	52	17.2	206	36	431	60.7	729	36.0	431	60.7	729		

See page 455 of this catalog for a complete listing of Peristaltic Pumps

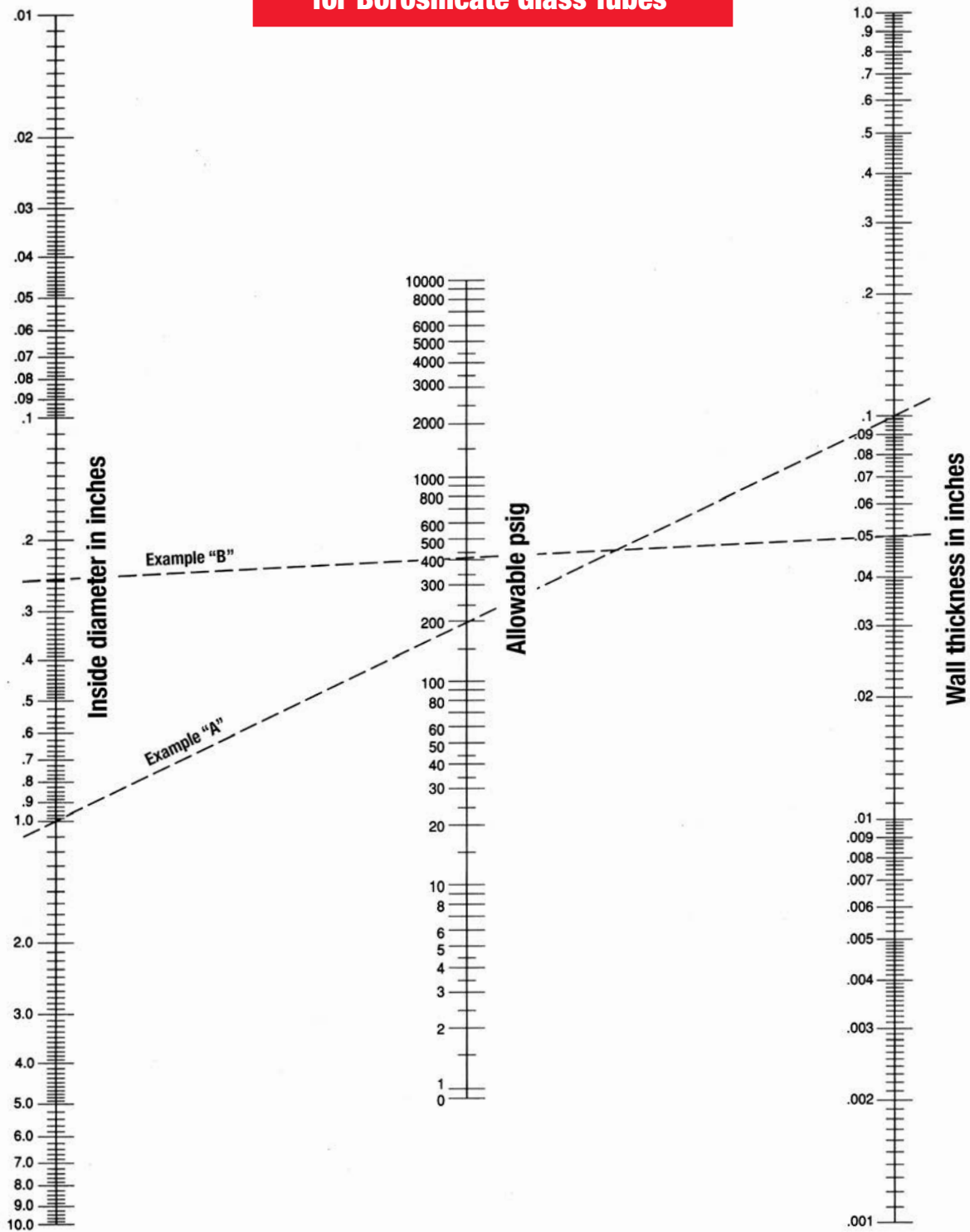
Reference Guide to ACE Boiling Flasks

Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches	Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches	Capacity, mL	Approx. O.D. mm	Approx. O.D. Inches
5	25	1.0	200	75	3.0	12000	285	11.22
10	31	1.24	250	82	3.25	22000	350	13.78
15	35	1.4	300	86	3.385	50000	457	18.0
20	38	1.5	500	100	4.0	72000	508	20.0
25	42	1.68	1000	125	5.0	100000	610	24.0
50	50	2.0	2000	160	6.3	200000	750	29.5
100	58	2.25	3000	180	7.0			
			5000	225	8.86			

Guide to Flange Styles

Flat Flange (with or without O-Ring groove)	Schott-Duran Flange (with or without O-Ring groove)	Conical Flange	KF Plane Flange	Beaded Process Pipe Flange
				
Uses Clamp: 6508, 6509, 6510 Flat clamp	Uses Clamp: 6517 Quick release clamp	Uses Clamp: 6496 Standard clamp	Uses Clamp: 6525 Coupling	Uses Clamp: 8856 Coupling

**Nomogram of Allowable Pressures
for Borosilicate Glass Tubes**



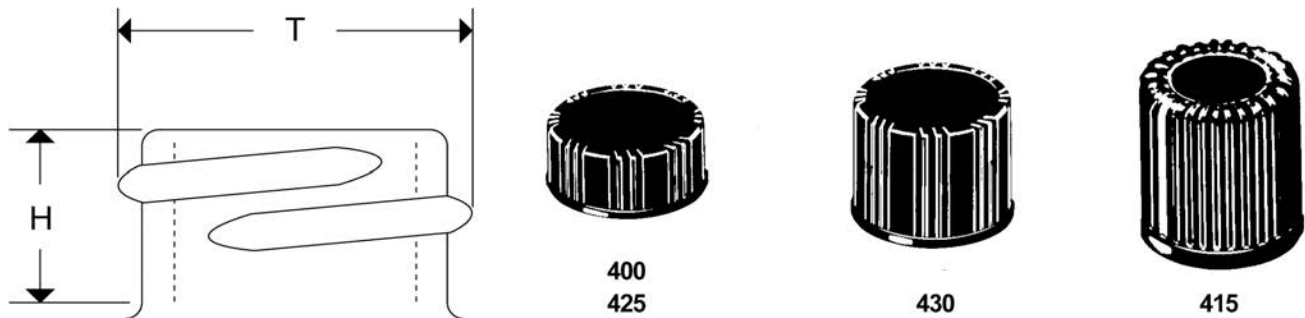
CAUTION: With any glassware used for pressure or vacuum applications, great care must be taken in handling. The strength of the glass can be degraded due to scratches, checks and abrasions. Always use protective shielding and eyewear when working with glass under pressure.

GPI Thread Finishes

GPI refers to the “Glass Packaging Institute” which is responsible for establishing and issuing uniform standards regarding the types of finishes produced by American Glass Manufacturers. GPI replaces the former GCMI or “Glass Container Manufacturers Institute.” When a cap is designated as 15-425, it means that the diameter across the threaded area is approximately 15 millimeters. (See “T” dimension on illustration below.) The numerical 425 designates a specific

style. The methods employed in manufacturing containers and culture tubes from tubing do not include a transfer ring as commonly observed on mold-blown vessels. As a result, the “H” dimension may vary slightly from GPI’s published values. Since the “H” dimension is not designated in the size code, the chart below will assist in differentiating styles of finishes having similar thread diameters. The dimensions listed are averages. The finishes below appear in this catalog.

GPI Thread Finish Comparison Chart



“T” Dimension	“H” Measurements in millimeters (mm)				
	400	410	415	425	430
8				6.52	
10				6.86	
13			11.22	7.50	
15			13.90	7.50	
18	9.05	13.03	15.42		15.34
20	9.50	13.82	18.59		15.34
22	9.50	14.60	21.01		15.34
24	10.25	16.15	24.05		16.43
28	10.25	17.73	27.23		18.39
33	9.85				19.69
38	9.85				24.03
38					22.00

Suggested Screw Cap Application Torque

(Reference U.S.P. XXI, page 1240)

Cap Size (Millimeters)	Torque (Inch-Pounds)	Cap Size (Millimeters)	Torque (Inch-Pounds)
8*	3-5	38	15-23
10*	4-6	43	17-26
13*	5-7	48	19-29
15	6-9	53	21-32
18	7-11	58	23-35
20	8-12	63	25-38
22	9-13	70	28-42
24	10-15	83	34-49
28	11-17	89	36-53
33	13-20	120	48-72

*Not included in USP table.

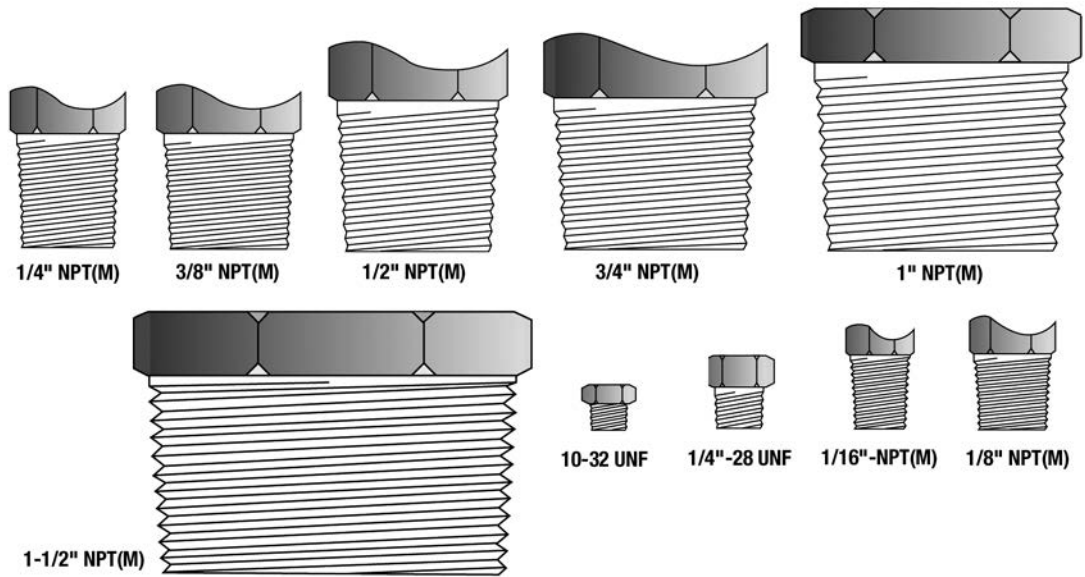
The figures at left are offered as guidelines for automatic capping machines. Obviously, variables such as cap and liner material and product characteristics play an important part in correct torque application.

The recommended procedure for checking capping machines torque application is as follows:

Apply caps to a representative number of product filled containers with the torque required. Then, the cap removal torque is established. Once the removal torque for a known application is established, the machine can be checked at intervals for proper application torque by measuring removal cap torque.

Standard Pipe Thread Fittings

The illustrations are actual size. If you have any questions as to the size of fitting you require, simply compare the threads per inch, the diameter and length of the threading, and the taper of the threading of your existing fittings to these drawings.



Sterilization Reference Guide

Method	Procedure
Autoclave:	Cycle is 121°C, 15 psig (1bar) 20 min
Dry Heat:	170°C for 60 min
Gas:	Ethylene Oxide for formaldehyde
Microwave:	Transmission of microwaves
Gamma Irradiation:	High energy ionizing gamma radiation from a Cobolt 60 source
Chemical Disinfectants:	Quaternary Ammonium Compounds, Iodophors, Formalin, Benzalkonium Chloride, Ethanol, etc.

Viscosity Conversion Factors

Viscosity is the resistance to flow due to the internal friction within a fluid. This is generally expressed as the force required to move one unit area one unit distance. Kinematic and absolute viscosity are related by the density of the fluid.

Kinematic Viscosity

Multiply to get	→	←	to get
			Divide
ft ² /sec	92903.04		centistokes
ft ² /sec	0.092903		sq. meters/sec
sq. meters/sec	10.7639		ft ² /sec
sq. meters/sec	1000000.0		centistokes
centistokes	0.000001		sq. meters/sec
centistokes	0.0000107639		ft ² /sec

Absolute to Kinematic Viscosity

Multiply to get	→	←	to get
			Divide
centipoises	1/density (g/cm ³)		centistokes
centipoises	0.00067197/density (lb/ft ³)		ft ² /sec
lbf-sec/ft ²	32.174/density (lb/ft ³)		ft ² /sec
kg-sec/m ²	9.80665/density (kg/m ³)		sq. meters/sec
Pascal-sec	1000/density (g/cm ³)		centistokes

Absolute or Dynamic Viscosity

Multiply to get	→	←	to get
			Divide
lbf-sec/ft ²	47880.26		centipoises
lbf-sec/ft ²	47.8803		Pascal-sec
centipoises	0.000102		kg-sec/sq. meter
centipoises	0.001		lbf-sec/ft ²
Pascal-sec	0.0208854		Pascal-sec
Pascal-sec	1000		centipoises

Kinematic to Absolute Viscosity

Multiply to get	→	←	to get
			Divide
centistokes	density (g/cm ³)		centipoises
sq. meters/sec	0.10197 x density (kg/m ³)		kg-sec/m ²
ft ² /sec	0.03108 x density (lb/ft ³)		lbf-sec/ft ²
ft ² /sec	1488.16 x density (lb/ft ³)		centipoises
centistokes	0.001 x density (g/cm ³)		Pascal-sec
sq. meters/sec	1000/density (g/cm ³)		Pascal-sec

Dilatant Liquids — viscosity increases as shear rate increases. Mixers can bog down and stall after initially mixing such liquids. Dilatant liquids include slurries, clay, and candy compounds.

Newtonian Liquids — viscosity remains constant regardless of shear rate or agitation. As mixer speed increases, flow increases proportionately. Newtonian liquids include water, mineral oils, and hydrocarbons.

Pseudoplastic Liquids — viscosity decreases as shear rate increases, but initial viscosity may be sufficiently great to prevent mixing. Typical pseudoplastic liquids are gels, latex paints, and lotions.

Thixotropic Liquids — as with pseudoplastic liquids, viscosity decreases as shear rate or agitation increases. When agitation is stopped or reduced, hysteresis occurs and viscosity increases. Often the viscosity will not return to its initial value. Thixotropic liquids include soaps, tars, shortening, glue, inks, and peanut butter.

*Sometimes absolute viscosity is given in terms of pounds mass. In this case—centipoises x 0.000672 = lbfm/ft sec.

Chemical Resistance for Plastic Resins @ 20°C

Classes of Substances

	Acids, dilute or weak	Acids, strong & conc.	Alcohols, aliphatic	Aldehydes	Bases	Esters	Hydrocarbons, aliphatic	Hydrocarbons, aromatic	Hydrocarbons, halogenated	Ke-tones	Oxidizing agents, strong
ACL	✗	✗	▲	■	▲	▲	●	●	▲	▲	✗
ECTFE/ETFE	●	▲	●	●	●	●	●	●	●	▲	■
FEP/TFE/PFA	●	●	●	●	●	●	●	●	●	●	●
FLPE	●	●	●	▲	■	●	●	●	▲	●	■
XLPE	●	●	●	▲	●	▲	▲	▲	■	▲	■
HDPE/XLPE	●	●	●	▲	●	▲	▲	▲	■	▲	■
DLPE	●	●	●	▲	●	▲	■	■	✗	▲	■
PC	●	✗	▲	■	✗	✗	■	✗	✗	✗	✗
PCT	●	■	●	■	▲	■	●	✗	✗	■	✗
PTE	●	✗	●	✗	✗	✗	●	✗	✗	✗	✗
PMMA	▲	✗	✗	▲	■	✗	▲	✗	✗	✗	✗
PMP	●	●	●	▲	●	▲	■	■	✗	■	■
PP/PPCO	●	●	●	▲	●	▲	▲	■	■	▲	■
PS	●	■	●	✗	●	✗	✗	✗	✗	✗	✗
PSF	●	▲	▲	■	●	✗	▲	✗	✗	✗	▲
PUR	▲	■	■	▲	✗	✗	●	✗	✗	✗	✗
PVC Bottles	●	●	●	✗	●	✗	●	✗	✗	✗	▲
Flexible PVC Tubing	●	■	▲	✗	▲	✗	■	✗	✗	✗	■
PVDF	●	●	●	●	●	▲	●	●	✗	✗	▲
TPE	●	■	●	✗	●	✗	✗	✗	✗	✗	✗

Resin Codes

ACL	Acetal (Polyoxymethylene)
ECTFE	Halar® ECTFE (Ethylene-Chlorotrifluoroethylene Copolymer)
ETFE	Tefzel® ETFE (Ethylene-Tetrafluoroethylene)
FEP	Teflon® FEP (Fluorinated Ethylene Propylene)
FLPE	Fluorinated High-Density Polyethylene
HDPE	High-Density Polyethylene
LDPE	Low-Density Polyethylene
PC	Polycarbonate
PCT	Poly (1,4 Cyclohexylene Dimethylene Terephthalate)
PET	Polyethylene Terephthalate
PFA	Teflon® PFA (Perfluoroalkoxy)
PMMA	Polymethyl Methacrylate (Acrylic)
PMP	Polymethylpentene ("TPX®")
PP	Polypropylene
PPCO	Polypropylene Copolymer
PS	Polystyrene
PSF	Polysulfone
PUR	Polyurethane
PVC	Polyvinyl Chloride
PVDF	Polyvinylidene Fluoride
TFE	Teflon® TFE (Tetrafluoroethylene)
TPE	Thermoplastic Elastomer
XLPE	Cross-Linked High-Density Polyethylene

Chemical Resistance Classifications

- 30 days of constant exposure causes no damage. Plastic may even tolerate for years.
- ▲ Little or no damage after 30 days of constant exposure to the reagent.
- Some effect after seven days of constant exposure to the reagent. Depending on the plastic, the effect may be crazing, cracking, loss of strength or discoloration. Solvents may cause softening, swelling and permeation losses with LDPE, HDPE, PP, PPCO and PMP. The solvent effect on these five resins are normally reversible; the part will usually return to its normal condition after evaporation.
- ✗ Not recommended for continuous use. Immediate damage may occur. Depending on the plastic, the effect will be a more severe crazing, cracking, loss of strength, discoloration, deformation, dissolution or permeating loss.

Care and Handling of Borosilicate Glass

Always inspect your glass before use, even when purchased new. Bumping of glass in transit or in washing is always possible, and this can cause small fractures or star cracks. You can usually see these when you hold the vessel up to normal sunlight. If you should have one, a polariscope is an even better way to view the glass for stress. If it's cracked or abraded — even if it's minor — the glass can fail under elevated pressure or temperature.

When washing, always take care not to bump glass together or against the wall of a sink. Also, always use a soft bristle brush or a brush with a plastic or soft wooden handle. This will help cut down on scratching. Never use HF or strong alkali soaps or acids.

When using glass labware, always make sure it's borosilicate glass or quartz — some bottles used in lab work or sampling are made of soda lime or soft glass, and these do not have the temperature, pressure or autoclaving capability of standard borosilicate or quartz labware.

Autoclaving of Glass: Always make sure of the materials you are working with. Most lab glass is 32-33 expansion borosilicate glass. Standard borosilicate glass is autoclaveable. One cautionary measure is to always let the autoclave and glass cool and vent slowly. Most failures are due to two things: glassware that has a

scratch or abrasion and can fail when autoclaved; or a very rapid cool down or return to atmospheric pressure.

Depyrogenation and ashing or extreme heat cleaning of lab glassware

Any abrasions, micro-cracks or star cracks will weaken the glass and degrade performance. And any of these issues will certainly cause the glass to fail when using high temperature ovens. Ashing glass in mechanical ovens or furnaces over 500° for long periods of time will cause the glass to weaken, and in some cases, even fail. It will certainly shorten the life span of your glassware.

Borosilicate glass temperatures:

- Standard use — up to 230-240°C.
- Extreme use — for short intervals — 400°C.

Cleaning Laboratory Glassware

Introduction

Laboratory procedures require exact methods and should include good glassware cleaning to insure excellent lab results. In all instances, labware should be physically clean, including both chemical-residue-free and grease-free, and in many cases, it should even be sterile. All Class A glassware used in precise measuring of liquids should have fully wettable surfaces. A good test is to use distilled water and see if the water wets all the inner surfaces equally. Grease or residues will not only contaminate the reaction and test results, but will also alter the measurement of the liquids.

Good cleaning practices should also be accompanied by good inspection of the glass surfaces for chips, cracks or abrasions which cause mechanical failure.

Cleaning

Always wash glass labware immediately after use. If a thorough cleaning is not immediately possible, always allow the glassware to soak. If not cleaned immediately some residues may be impossible to remove.

Most new glass is slightly alkaline and should be washed upon receipt and generally can be soaked in a 1% HCL or HNO₃ solution before wash and DI rinse.

Never soak for long periods in strong alkaline solutions as this will damage the glass.

Always follow up a soap or acid wash with a good DI water rinse.

Always use soft brushes with a wooden or soft plastic handle to avoid abrasion. Do not use wire brushes or brushes with a wire core as this can abrade the glass.

Glass Cleaners

Alconox is the best cleaner to use, as it is not abrasive. In fact, Alconox offers a full line of detergents for soaking, hand washing and automatic washers. A detergent, such as a non-abrasive dishwasher soap, will also work well. Always use soft brushes. Always rinse glass well and do a final DI rinse. If you need to do an acid wash, always rinse the soap off the glass completely or it may cause a reaction and leave a film on the glass. There are many lab detergents available commercially such as; Mallinckrodt's KleanAR and Chem-Solv. Texwipe and EM Science also make good cleaning detergents.

Chromic Acid or Chromerge

Chromic Acid/Chromerge are great cleaners, and will also remove organic residues. Use gloves and well ventilate the area when using chromic acid, as it is a carcinogen and very corrosive. Make sure metal clamps or flanges are removed. It is best to fill the vessel or soak the item in the solution for a short time in a plastic tub so that you can contain the wash material, then rinse immediately several times before proceeding to a detergent wash. Make sure the residual chromic acid is diluted after use and disposed of properly and according to your local and/or company regulations.

Occasionally, stronger acid washes are necessary for certain types of precipitates or residues. It is best to keep these very dilute, and they should be used in an area where there is good ventilation. Make sure you contain the residual acid and dissolved material for proper disposal. This method should only be used when absolutely necessary. Disposal of seriously stained glass maybe a less troublesome and less expensive course of action than using strong acid washes.

Cleaning Laboratory Glassware (continued):

One other caution: strong acid or Chromerge-type washes may damage the graduation markings.

Removal of Grease

Grease is best removed by boiling the glass in a weak solution of sodium carbonate. Acetone or any other organic solvent can be used also, followed by several water and DI water rinses.

Other Stains

For permanganate stains, use a mixture of equal 3% sulfuric acid and 3% hydrogen peroxide.

For iron stains, use a solution containing one part hydrochloric acid and one part water.

For bacteriological contamination, glassware should be soaked in a disinfectant solution, steam autoclaved, and then followed by a suitable washing and rinsing.

Caution: Make sure you refer to MSDS sheets for the cleaning solutions and the materials that were in the glassware to insure that there won't be any adverse reactions from the combination of the materials.

Ultrasonic Cleaners

Ultrasonics is a good method of cleaning glassware. Ultrasonic cleaners that are heated will be the best type and generally combined with a mild detergent they will clean most residues off of glassware. We typically clean all glass in our factory both during and after the fabrication process in heated ultrasonic cleaners.

Rinsing

Glassware should always have a water rinse after any cleaning procedure followed by a DI rinse. It is best to give smaller pieces such as test tubes a soaking rinse followed by a DI soaking rinse. Glass pipettes are best soaked in a suitable pipette washer and washed and given both a water rinse and DI soaking rinse.

Drying

Oven drying at 100°C is best for all glassware. If this is not convenient, rack drying will work.

Steam Autoclaving or Sterilizing

Proper protocol for steam autoclaving of borosilicate glassware is 15-20 minutes at 100-120°C. Always leave closures off or loose during autoclaving.

Inspection after Cleaning

Always inspect all glassware before steam autoclaving for cracks, chips or damage. If it is already damaged, the autoclave procedure will cause your glassware to break.

Remember: all labware is generally borosilicate glass, especially if it's made in the USA. The suggestions herein refer to borosilicate labware only. Bottles are generally NOT borosilicate glass and are made from soda lime or soft glass. Bottles do not have the temperature range or autoclave range of borosilicate glass. Please refer to the manufacturer's cleaning procedures for these containers. Do not mix bottles and labware in the same washers or heat dryers, and especially not during autoclaving procedures.

Cleaning Glass Fiber Frits

Flow Characteristics

Aqueous flow rate from 0.5 to 200mL/min./cm² at 100mm Hg. pressure drop are covered in the porosities A to E. A tabulation of these flow rates for various porosities is almost meaningless since operating conditions vary so widely. In addition, a number of interesting phenomena occur that may rapidly change the flow rate of a given filter by a factor of two or more, particularly in filters of smaller pore size. Hence, any discussion of flow rate becomes detailed and involved. Glass filters carry a negative charge.

Care and Cleaning

Only materials that attack glass will affect these filters, i.e. HF, Alkalies, H₃PO₄. HF attacks rapidly; the others, relatively slowly.

Inasmuch as surface scratches materially reduce the strength of glass, scratching the envelope in the vicinity of the disc should be guarded against, particularly on large filters, since this is the area of maximum stress under vacuum. Mechanical cleaning can be accomplished by reverse-flow washing. This is the most effective mechanical means. Do not exceed 1.06 Kg/cm² pressure.

For Chemical Cleaning, the following is recommended:

Material to be Removed:	Removal Agent:
Barium Sulfate	Concentrated H ₂ SO ₄ plus a small amount of KClO ₄ to 80-90°C and soak
Fat	CCl ₄
Mercury	Hot HNO ₃
Mercuric Sulfide	Hot Aqua Regia
Organic Residues	Warm concentrated H ₂ SO ₄ plus a small amount of KNO ₃ and soak
Silver Chloride	NH ₄ OH
Sugars & Glucose	Hot H ₂ SO ₄ plus HNO ₃
Free Carbon	Heat in a muffle furnace to 482°C in an oxidizing atmosphere. Cooling may be at the rate of -12°C/min. or greater, but thermal shock must not exceed 93°C.
Dia (micron) = $\frac{30\delta}{P}$	Surface tension in a dynes/cm at test temperature P = mm Hg. where first bubble appears.

The test liquid must wet the filter; that is, the contact angle must be negligible.

Lab Glassware Safety Tips

Unsticking glass to glass joints and stopcocks

If a freezer is available, place the part inside for a brief period of time. Then use gloves and gently twist apart. If a freezer is not convenient, use a hair dryer or a similar type heat gun to gently heat the area. Again, wear gloves and gently twist apart.

If you are fortunate enough to have a glassblower on site, let them dislodge the joint or stopcock.

Best recommendation for prevention: use stopcock grease or use PTFE sleeves for joints. You might also consider using PTFE stoppers or PTFE hollow stoppers instead of glass stoppers.

To unstick PTFE stopcocks

Simply put the part in a freezer overnight and gently twist apart.

Safety shields — use of glass under pressure

Always use shields or safety coated glassware when using high pressures. Most standard borosilicate glassware with standard wall weight has only a 15-20 PSI pressure rating at room temperature. Elevating the temperature will lower the pressure capability. It's best to check with our Ace Engineering Department if you plan to work with higher temperatures and pressures. Finally, make sure you always use safety glasses and shields when working at higher temperatures and pressures.

It may sound very simplistic, but always make sure you have the proper size vessels and flasks when working, especially when doing any exothermic reactions, to allow for changes in volume or for boil over.

Ace-Safe Connectors

The most common lab injuries are from broken or chipped glass. One innovation from ACE is our Ace-Safe connectors, which utilize Ace-Threds and plastic hose barbs. This not only reduces breakage and injury, but is also economical, as you only have to replace the plastic barb (if it does snap off) rather than replacing the entire vessel. See Ace-Safe connectors all throughout this catalog.

Glass wall weight and uniformity

Uniform, consistent glass wall weight is very important. A thin wall is not as bad as some manufacturers would like you to think. A uniform, thin wall is excellent for heating and has good thermal properties, while a thick wall is good for mechanical shock but not as good thermally as a thinner wall. But wall uniformity is very important throughout. The lip of a beaker, the neck of a flask, and the corners on a beaker should all be rounded and uniform. Otherwise, both thermal and mechanical breakage can occur. Our glass blanks and tubing are mainly from Schott glass, and are very uniform with consistent wall thicknesses.

Alconox Detergent Selection Guide for Laboratory Cleaning

Application Key Concern	Articles Cleaned/ Soil Removed	Cleaning Method	Recommended Alconox Cleaner
Laboratory Reproducible results, no interfering residues, extending equipment life, keep laboratory accreditation, laboratory safety	Glass, metal, plastic labware, ceramics, tissue culture, porcelain, clean rooms, animal cages, bioreactors tubing, benches, safety equipment	Manual, Ultrasonic, Soak	Alconox powder Liquinox liquid (P-free)
		Machine, power spray, labware washer, washer-sterilizer, cage-washer	Alcojet powder Detojet liquid Tergajet powder (P-free) Solujet liquid (P-free)
	Tubes and pipettes	Siphon rinser/washer	Alcotabs tablet
	Microbiology, water lab, environmental sampling, phosphate sensitive labware, EPA procedures	Field, manual, ultrasonic, soak	Liquinox liquid (P-free)
		Machine washer, labware washer	Tergajet powder (P-free) Solujet liquid (P-free) Citrajat acid rinse liquid (P-free)
	Radioactive equipment, stopcock grease	Manual, Ultrasonic, Soak	Alconox powder
		Machine washer, labware washer	Alcojet powder Detojet liquid
	Trace metals, oxides, salts, scale, starch, amines	Manual, Ultrasonic, Soak	Citranox liquid (P-free)
		Machine washer, labware washer	Citrajat liquid (P-free)
	Proteins, bio-wastes, tissue, blood, body fluids, fermentation residues	Manual, Ultrasonic, Soak	Tergazyme powder
Machine washer, labware washer		Alcojet powder Detojet liquid	
P-free = phosphate free			

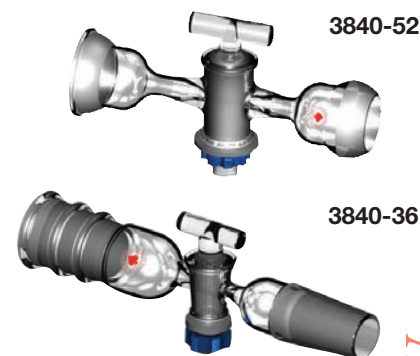
Courtesy: Alconox, Inc.

McLaughlin and Zisman, The Aqueous Cleaning Handbook, (AI Technical Communications, 2005) available from Alconox, Inc.

3840 ADAPTER *Straight Connecting with Glass Stopcock* ♦

With glass plug and ⌘ inner and outer or ⌘ ball and socket joints at top and bottom. Outer ⌘ joints are reinforced.

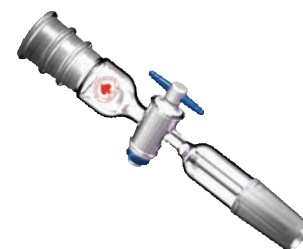
Plug Bore, mm	Bottom Inner ⌘ Joint	Top Outer ⌘ Joint	Qty.	Order Code	Each	Plug Bore, mm	Bottom Ball ⌘ Joint	Top Socket ⌘ Joint	Qty.	Order Code	Each
2	14/20	14/20	1	3840-04	159.95	4	28/15	28/15	1	3840-52	134.62
2	24/40	24/40	1	3840-08	162.61	4	35/25	35/25	1	3840-56	134.62
2	29/42	29/42	1	3840-12	162.61						
4	14/20	14/20	1	3840-32	213.28						
4	24/40	24/40	1	3840-36	218.59						
4	29/42	29/42	1	3840-39	219.95						



3842 ADAPTER *Straight Connecting with PTFE Stopcock, ⌘ Joints* ♦

With 1:5 PTFE plug and ⌘ inner and outer joints at top and bottom, with drip tip in lower position. Outer joint is reinforced.

Plug Bore, mm	Bottom Inner ⌘ Joint	Top Outer ⌘ Joint	Qty.	Order Code	Each
4	24/40	24/40	1	3842-11	126.81



3843 ADAPTER *Straight Connecting with PTFE Stopcock* ♦

With 1:5 PTFE plug and ⌘ inner and outer or ⌘ ball and socket joints at top and bottom. Outer ⌘ joints are reinforced.

Plug Bore, mm	Bottom Inner ⌘ Joint	Top Outer ⌘ Joint	Qty.	Order Code	Each	Plug Bore, mm	Bottom Ball ⌘ Joint	Top Socket ⌘ Joint	Qty.	Order Code	Each
4	14/20	14/20	1	3843-09	156.48	4	28/15	28/15	1	3843-55	128.84
4	24/40	24/40	1	3843-11	157.80	4	35/25	35/25	1	3843-58	132.80
4	29/42	29/42	1	3843-15	157.80						
6	14/20	14/20	1	3843-33	182.79						
6	24/40	24/40	1	3843-37	184.09						
6	29/42	29/42	1	3843-40	186.72						

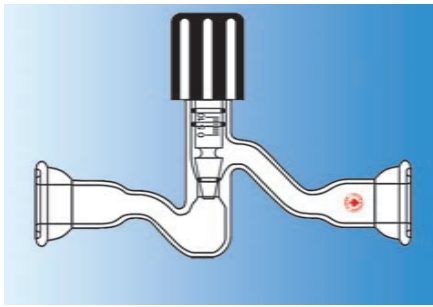


3844 ADAPTER *Straight Connecting with Easy Action Stopcock, ⌘ Joints* ♦

With Easy-Action threaded plug and ⌘ inner and reinforced ⌘ outer joints at top and bottom.

Plug Bore, mm	Bottom Inner ⌘ Joint	Top Outer ⌘ Joint	Qty.	Order Code	Each	Plug Bore, mm	Bottom Inner ⌘ Joint	Top Outer ⌘ Joint	Qty.	Order Code	Each
0-3	14/20	14/20	1	3844-05	131.24	0-10	24/40	24/40	1	3844-47	240.19
0-3	24/40	24/40	1	3844-07	163.39	0-10	29/42	29/42	1	3844-49	241.53
0-3	29/42	29/42	1	3844-09	163.70						
0-5	14/20	14/20	1	3844-31	214.69						
0-5	24/40	24/40	1	3844-34	220.05						
0-5	29/42	29/42	1	3844-36	221.42						

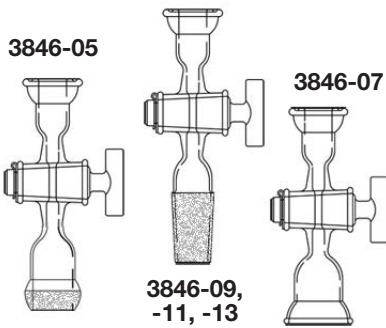




3845 ADAPTER *Straight Connecting with Easy Action Stopcock, O-Ring Joints* ♠

With #15 o-ring joint at top and bottom. Supplied with two o-rings.

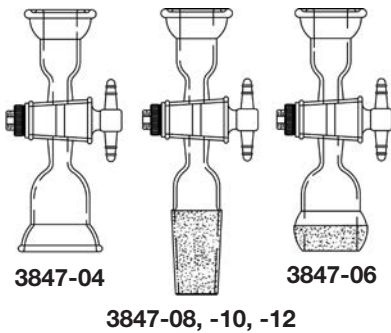
Plug Bore, mm	Bottom O-Ring Joint	Top O-Ring Joint	Qty.	Order Code	Each
0-5	#15	#15	1	3845-05	112.02
0-10	#15	#15	1	3845-10	246.74



3846 ADAPTER *Straight Connecting with #15 O-Ring, Glass Stopcock* ♠

With 4mm glass plug stopcock and #15 o-ring top joint and either ⌘ or ⌘ joints at bottom.

Plug Bore, mm	Bottom Joint	Top O-Ring Joint	Qty.	Order Code	Each
4	⌘ 35/25 Ball	#15	1	3846-05	122.02
4	⌘ 35/25 Socket	#15	1	3846-07	122.02
4	⌘ 24/40	#15	1	3846-09	146.91
4	⌘ 29/42	#15	1	3846-11	149.40
4	⌘ 14/20	#15	1	3846-13	143.19



3847 ADAPTER *Straight Connecting with #15 O-Ring, PTFE Stopcock* ♠

With 4mm PTFE plug stopcock and #15 o-ring top joint and either ⌘ or ⌘ joints at bottom.

Plug Bore, mm	Bottom Joint	Top O-Ring Joint	Qty.	Order Code	Each
4	⌘ 35/25 Socket	#15	1	3847-04	122.02
4	⌘ 35/25 Ball	#15	1	3847-06	122.02
4	⌘ 24/40	#15	1	3847-08	143.19
4	⌘ 29/42	#15	1	3847-10	149.40
4	⌘ 14/20	#15	1	3847-12	136.95



5000/9092 ADAPTER *Reducing* ♠

⌘ joint at top and bottom. Top joint is smaller than bottom joint. Full-length outer ⌘ joints are reinforced.

Top Outer	Bottom Inner	Qty.	Order Code	Each	Top Outer	Bottom Inner	Qty.	Order Code	Each	Top Outer	Bottom Inner	Qty.	Order Code	Each
10/30	14/20	1	9092-08	25.75	14/35	24/40	1	5000-25	35.07	24/40	55/50	1	5000-47	78.04
10/30	14/35	1	5000-05	32.22	14/35	29/42	1	5000-26	38.51	24/40	60/50	1	5000-49	86.53
10/30	19/38	1	5000-07	32.75	19/22	24/40	1	9092-25	32.46	24/40	71/60	1	5000-50	110.59
10/30	24/40	1	5000-09	33.22	19/38	24/40	1	5000-30	35.51	24/40	103/60	1	5000-51	255.44
10/30	29/42	1	5000-10	33.26	24/40	29/42	1	5000-38	38.04	29/42	34/45	1	5000-53	40.15
14/20	14/20	1	9092-12	25.99	24/40	24/40	1	5000-39	35.41	29/42	45/50	1	5000-56	60.60
14/20	19/22	1	9092-14	26.94	24/40	34/45	1	5000-41	42.78	29/42	55/50	1	5000-58	79.42
14/20	24/25	1	9092-16	28.95	24/40	40/50	1	5000-43	56.03	45/50	55/50	1	5000-66	109.20
14/20	24/40	1	9092-24	30.84	24/40	45/50	1	5000-45	59.32	45/50	71/60	1	5000-68	126.31
14/35	19/38	1	5000-23	33.71	24/40	50/50	1	5000-46	72.55	55/50	71/60	1	5000-72	137.47

5005/9092 ADAPTER *Enlarging* ♠

⌘ joint at top and bottom. Full length outer ⌘ joint is reinforced.

Top Outer	Bottom Inner	Qty.	Order Code	Each	Top Outer	Bottom Inner	Qty.	Order Code	Each	Top Outer	Bottom Inner	Qty.	Order Code	Each
14/20	10/30	1	9092-10	25.75	24/40	12/30	1	5005-10	32.58	34/45	24/40	1	5005-28	45.73
19/22	14/20	1	9092-20	30.30	24/40	14/20	1	9092-26	32.83	34/45	29/42	1	5005-30	48.25
19/38	14/20	1	9092-21	30.84	24/40	14/35	1	5005-12	33.57	45/50	24/40	1	5005-36	79.76
19/38	14/35	1	5005-06	33.65	24/40	19/22	1	9092-28	32.65	45/50	29/42	1	5005-38	75.24
24/25	14/20	1	9092-22	32.20	24/40	19/38	1	5005-14	35.75	55/50	24/40	1	5005-42	88.48
24/25	14/35	1	9092-27	32.20	29/42	14/35	1	5005-23	35.87	55/50	29/42	1	5005-44	
24/40	10/30	1	5005-08	32.58	29/42	24/40	1	5005-24	40.00					



5020 ADAPTER *Reducing and Enlarging* ♠

⌘ joint at top and ⌘ at bottom.

Top ⌘ Socket	Bottom ⌘ Inner	Qty.	Order Code	Each	Top ⌘ Socket	Bottom ⌘ Inner	Qty.	Order Code	Each
18/9	24/40	1	5020-10	39.54	35/20	24/40	1	5020-25	43.28
28/15	24/40	1	5020-20	40.21	35/25	24/40	1	5020-30	43.43
28/15	29/42	1	5020-22	42.74	35/25	29/42	1	5020-32	43.26

For spherical joint clamps, see 7666 or 7670.



5021/9061 ADAPTER *Reducing* ♠

Reducing adapter, bushing type, larger outside ⌘ joint, smaller inside ⌘ joint.

Top Inside	Bottom Outside	Qty.	Order Code	Each	Top Inside	Bottom Outside	Qty.	Order Code	Each	Top Inside	Bottom Outside	Qty.	Order Code	Each
10/18	14/20	1	9061-05	32.62	14/20	24/40	1	5021-14	37.26	24/40	29/42	1	5021-28	43.26
10/30	14/20	1	9061-10	32.62	14/20	29/42	1	5021-15	41.26	24/40	34/45	1	5021-30	56.00
10/30	14/35	1	5021-05	37.15	14/35	19/38	1	5021-18	36.56	29/42	34/45	1	5021-35	68.71
10/30	19/38	1	5021-07	39.59	14/35	24/40	1	5021-20	40.68	24/40	45/50	1	5021-36	90.89
10/30	24/40	1	5021-09	42.73	14/35	29/42	1	5021-22	44.36	29/42	45/50	1	5021-94	91.20
10/30	29/42	1	5021-12	46.47	19/38	24/40	1	5021-24	38.49	34/45	45/50	1	5021-39	91.52
14/20	19/22	1	9061-16	32.62	19/38	29/42	1	5021-26	44.31					



5024 ADAPTER *Thermometer, Offset* ♠

⌘ inner joint at bottom and ⌘ 10/30 outer joint at top which is offset and angled for use in multiple neck flasks.

⌘ Bottom Joint	Qty.	Order Code	Each
24/40	1	5024-10	42.51
29/42	1	5024-20	45.43





5025 ADAPTER *Spherical and Standard Taper* ♠

⌘ reinforced joint at top and ⌘ at bottom.

Top ⌘ Outer	Bottom ⌘ Ball	Qty.	Order Code	Each	Top ⌘ Outer	Bottom ⌘ Ball	Qty.	Order Code	Each
24/40	28/15	1	5025-17	37.95	24/40	65/40	1	5025-24	121.72
24/40	35/20	1	5025-19	41.72	29/42	35/25	1	5025-27	48.96
24/40	35/25	1	5025-21	42.51					



5026 ADAPTER *PTFE, Ace-Thred to ⌘ Joint* ★

This PTFE adapter is used to connect Ace-Thred to inner ⌘ joint. This item is supplied with one FETFE o-ring.

Ace-Thred Size	Top ⌘ Outer	Qty.	Order Code	Each	Ace-Thred Size	Top ⌘ Outer	Qty.	Order Code	Each
15	14/20	1	5026-15	57.47	25	14/20	1	5026-24	97.26
15	24/40	1	5026-20	66.28	25	24/40	1	5026-26	97.26



5027 ADAPTER *Tube, "Mini" #7 Ace-Thred* ♠

Straight tube with #7 Ace-Thred at one end for use with 5029 nylon bushing. O.D. of tube is 12.7mm, medium wall. Length is approximately 114mm. Complete includes glass member, 5029-10 nylon bushing and FETFE® o-ring. For extra o-rings order 7855-704.

Glass Only			Nylon Bushing Only			Complete		
Order Code	Qty.	Glass Member	Order Code	Qty.	Nylon Bushing	Order Code	Qty.	Complete
5027-05	1	13.22	5029-10	1	2.85	5027-20	1	15.73



5028 ADAPTER *"Mini" #7 Ace-Thred* ♠

With ground joint at bottom and threaded nylon bushing at top which tightens into #7 Ace-Thred to form an o-ring compression seal with thermometers, bleed tubes, etc. Nylon bushing comes complete with FETFE o-ring. ⌘ 10/10 size will accommodate thermometers up to 6.4mm diameter; all others will accommodate 7mm diameters. Suitable for vacuum work. Supplied complete with 5029-10 nylon bushing. For extra o-rings, order 7855-704.

Bottom Joint	Qty.	Order Code	Complete	Bottom Joint	Qty.	Order Code	Complete
⌘10/10	1	5028-24	28.31	⌘24/40	1	5028-30	28.41
⌘14/10	1	5028-25	27.37	⌘29/42	1	5028-32	33.56
⌘14/20	1	5028-26	28.35	⌘18/9	1	5028-38	34.39
⌘19/22	1	5028-28	28.17	⌘35/25	1	5028-42	36.99

5028 ADAPTER "Mini" #7 Ace-Thred, with PTFE Ferrule ♦

With inner joint at bottom and #7 Ace-Thred at top. Suitable for most vacuum work. Supplied complete with nylon bushing and PTFE ferrule in place of o-ring. For extra ferrules, order 11710-07.

Bottom Joint	Qty.	Order Code	Complete
14/20	1	5028-27	28.76
24/40	1	5028-31	28.86



Ace Threaded Adapters Give You A Versatile, Grease-Free, No-Clamp Connection!

Position Thermocouples, Thermometers, Gas Dispersion Tubes, Thermowells, or Electrodes, etc., easily with these Adjustable-Depth Connectors.

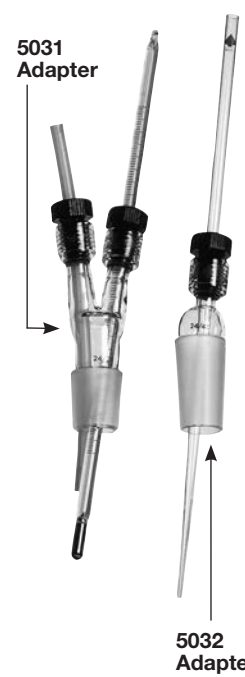


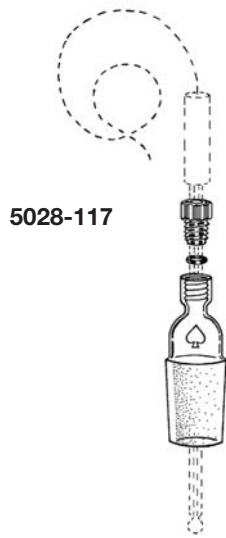
The Original Ace-Thred Connectors

Reference Guide to Ace-Threds

Size	Accepts Tube O.D., mm	Use Bushing Number	Use with FETFE O-Ring No.	Optional PTFE Ferrule	Suggested Uses
Mini #7	6.5-7	5029-10	7855-704	11710-07	A,B,I
Midi #11	9-10.5	7506-02	7855-708	11710-11	D,E,F,G
Maxi #15	12.5-14	7506-06	7855-716	11710-15	C,H
	16-17	7506-08	7855-720	11710-18	H,L
Giant #25	24-25	7506-10	7855-734	11710-25	K,R,U
	34-35	7506-12	7855-740	—	K,L,R,U
Jumbo #50	47-48	7506-14	7855-744	11710-50	J,K,L,R,U
	75	7506-20	7855-782	—	R, J

A—Thermometers, **B**—Bleed Tubes, **C**—Electrodes, **D**—Sensing Probes, **E**—Thermowells, **F**—Gas Dispersion Tubes, **G**—Vacuum Take-Offs, **H**—Inlet and Outlet Tubes, **I**—Miniature Electrodes, **J**—Columns, **K**—Manifolds, **L**—Immersion Wells, **R**—Reactors, **U**—Ultrasonics.





5028-117

5028 ADAPTER Electrode, "Mini" #7 Ace-Thred ♠

With inner joint at bottom and #7 Ace-Thred at top. For use with any probes up to 8mm diameter. Suitable for most vacuum work. Supplied complete with 5029-30 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704.

Bottom Joint	Qty.	Order Code	Complete
14/20	1	5028-117	33.33
24/40	1	5028-119	35.63

5029 BUSHING Nylon or PTFE ♠

Machine threaded nylon or PTFE bushing with hole in center or solid. For use with 5027, 5028, 5031, 5032, 5034, 5086, 5092, 5101, 5136, 5261, 5263 and other apparatus with #7 internal threads. Two FETFE o-rings supplied with bushing.

Note: Solid bushing is for drilling different size hole, only. NOT intended for use as a stopper. For stoppers, see 5803 or 5846. Nylon version has a maximum temperature of 100°C. PTFE version has a maximum temperature of 160°C.



	Nylon			PTFE		
	Order Code	Qty.	Each	Order Code	Qty.	Each
With 7.5 mm hole	5029-10	1	2.85	5029-35	1	14.49
With 8 mm hole	5029-30	1	8.90	5029-31	1	14.49
Solid	5029-20	1	8.52	5029-40	1	14.25
With 7.5 mm hole, for use with PTFE Ferrule	5029-12	1	2.99	5029-45	1	14.49
			Extra O-Rings	7855-704	12	14.09

If o-rings are a problem, see 11710, PTFE ferrules for use with Ace-Threds.

5030/7506 ADAPTER "Midi" #11 Ace-Thred ♠

With ground joint at bottom and #11 Ace-Thred at top. Will accept inner tubes with diameters of 9mm to 10.5mm such as thermowells, gas dispersion tubes, vacuum take-offs, etc. Suitable for most vacuum work. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-708. See 6470 for thermowell.



	Glass Only			Nylon Bushing Only			Complete		
Bottom Joint	Order Code	Qty.	Each	Order Code	Qty.	Each	Order Code	Qty.	Each
19/22	5030-04	1	28.73	7506-02	1	11.39	5030-20	1	40.12
24/40	5030-06	1	29.48	7506-02	1	11.39	5030-22	1	40.87
29/42	5030-08	1	34.56	7506-02	1	11.39	5030-24	1	45.95
45/50	5030-60	1	53.08	7506-02	1	11.39	5030-19	1	64.47
35/25	5030-16	1	41.16	7506-02	1	11.39	5030-28	1	52.55

5030/7506/8042 ADAPTER “Maxi” #15 Ace-Thred ♠

With ground joint at bottom and #15 Ace-Thred at top. Will accept tubes with diameters of 12.5 to 14mm such as electrodes, inlet and outlet tubes, etc. Suitable for most vacuum work. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-716.

Bottom Joint	Glass Only			Nylon Bushing Only			Complete		
	Order Code	Qty.	Each	Order Code	Qty.	Each	Order Code	Qty.	Each
§24/40	8042-15	1	32.13	7506-06	1	12.35	5030-40	1	44.48
§29/42	8042-17	1	34.35	7506-06	1	12.35	5030-42	1	46.70
§45/50	8042-21	1	52.04	7506-06	1	12.35	5030-45	1	64.39
§35/25	8042-35	1	36.96	7506-06	1	12.35	5030-44	1	49.31


5030/7506/8067 ADAPTER “Giant” #25 or #36 Ace-Thred ♠

With ground inner joint at bottom and either a #25 or #36 Ace-Thred that accepts outside diameters of 24-25mm and 34-35mm, respectively (Note: Joint size limits size O.D. of inserted tube). This item can be used with ultrasonics equipment. 5030-70 will accept 9852-41 slide adapter; 5030-76 will accept 9852-45 slide adapter and/or 9814 ultrasonic horn with extenders. (Note: When using horn with extenders, depth distances must be determined for proper operation.) Complete item supplied with nylon bushing and FETFE o-ring. For o-ring replacements, see “Reference Guide to Ace-Threds” on page 7.

Bottom Ace-Thred Joint Size	Glass Only			Nylon Bushing Only			Complete		
	Order Code	Qty.	Each	Order Code	Qty.	Each	Order Code	Qty.	Each
24/25 #25	5030-52	1	36.87	7506-10	1	21.17	5030-70	1	58.04
24/25 #36	5030-55	1	61.74	7506-12	1	50.46	5030-76	1	112.20
45/50 #36	5030-78	1	80.14	7506-12	1	50.46	5030-80	1	130.60
45/50 #25	8067-18	1	109.49	7506-10	1	21.17	5030-84	1	130.66
50/55 #25	8067-20	1	105.09	7506-10	1	21.17	5030-86	1	126.26
71/60 #25	8067-22	1	115.31	7506-10	1	21.17	5030-88	1	136.48
55/50 #36	8067-24	1	107.98	7506-12	1	50.46	5030-90	1	158.44


5031 ADAPTER “Twin” Ace-Thred ♠

With § inner joint at bottom and two off-set Ace-Thred ports at top. Two threaded openings enable you to insert two inner tubes, such as a thermometer and a bleed tube, through the same joint. The § 24/25 medium length joint is compatible with § 24/40 full length outer joints. Supplied complete with two nylon bushings and FETFE o-rings. For extra o-rings, order 7855-704 (for #7), 7855-708 (for #11) or 7855-716 (for #15).

Ace-Thred Size	§ Bottom Joint	Qty.	Order Code	Complete
#7	24/25	1	5031-10	81.37
#7	29/42	1	5031-12	85.67
#11	45/50	1	5031-24	102.49
#15	45/50	1	5031-33	109.25
#11 & #15	45/50	1	5031-86	122.97

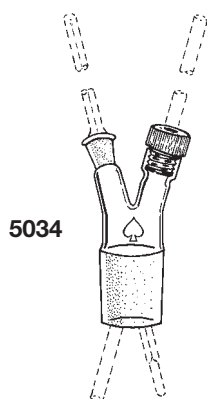




5032 ADAPTER *Offset, #7 Ace-Thred* ♠

Thermometer adapter with inner ⌘ joint at bottom and top threaded piece offset and angled approximately 10° for use in multiple neck flasks. Threaded nylon bushing tightens into glass piece to form an o-ring compression seal with thermometers, bleed tubes, etc. up to 7mm diameter. Thread at top not only allows for variable vertical positioning of thermometers, etc. but also, because of the 10° angle, by rotating joint you can position the thermometer in the bottom of the flask. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704. For extra bushings, order 5029-10.

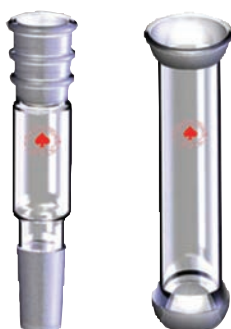
⌘ Bottom Joint	Qty.	Order Code	Complete
19/22	1	5032-18	41.16
24/40	1	5032-22	35.30
29/42	1	5032-25	38.17



5034 ADAPTER *Twin* ♠

With inner ⌘ joint at bottom, one #7 Ace-Thred and one ⌘10/18 outer joint, offset at the top. Threaded opening will accept 6.5 to 7mm diameter thermometers, bleed tubes, etc. The ⌘ 24/25 medium length joint is compatible with a full length ⌘ 24/40 joint. Supplied complete with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704.

⌘ Bottom Joint	Qty.	Order Code	Complete
24/25	1	5034-11	75.81



5035 ADAPTER *Straight Connecting* ♠

With ⌘ or ⌘ inner and outer joints at both top and bottom. Length stated is approximate overall length. Outer ⌘ joints are reinforced.

⌘ Joints	Length, mm	Qty.	Order Code	Each	⌘ Joints	Length, mm	Qty.	Order Code	Each
19/38	150	1	5035-05	33.34	28/15	142	1	5035-25	39.12
24/40	150	1	5035-10	34.79	35/20	142	1	5035-30	42.17
29/42	150	1	5035-15	37.72	35/25	142	1	5035-35	42.17



5036/9071 ADAPTER *Straight Connecting* ♠

With reinforced ⌘ outer joints at both ends.

⌘ Joints	Length Between Joints, mm	Qty.	Order Code	Each
14/35-14/35	30	1	9071-01	30.04
14/35-14/35	70	1	9071-03	30.04
14/35-14/35	120	1	9071-05	31.20
24/40-24/40	70	1	5036-04	32.93
24/40-24/40	120	1	5036-06	36.24
29/42-29/42	70	1	5036-07	38.31
29/42-29/42	120	1	5036-08	43.67
24/40-24/40	175	1	5036-10	47.06
29/42-29/42	175	1	5036-12	52.43

5037 ADAPTER *Adjustable, Electrode, Ace-Thred* ♠

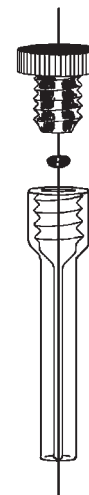
Threaded adapter for use with platinum or other wire electrodes or 12185 or 12186 temperature sensors that normally would be sealed in glass. Has threaded Ace bushing and silicone rubber septa for setting electrode in place. Allows for adjusting of sensor or easy removal. Adapter has 7mm O.D. glass capillary with 2mm I.D. with 120mm stem length for sealing to other glass apparatus. Actual I.D. size is determined by bore of hole in nylon bushing. Overall length is 145mm. Supplier complete with bushing and one 12901-42 silicone septa.

Bushing Bore, mm	Glass Only			Nylon Bushing Only			Complete		
	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
0.5	1	5037-03	25.99	1	5037-08	17.09	1	5037-10	44.60
1.0	1	5037-03	25.99	1	5037-12	15.80	1	5037-20	43.31
1.5	1	5037-03	25.99	1	5037-22	15.80	1	5037-30	43.31

For extra silicone rubber septa, order **12901-42**.

Optional Septa: Silicone rubber with PTFE face, order **8787-40**.

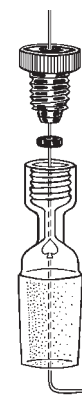
For microscale adapters with 14/10 joints, see 9557 or 9574.



5038 ADAPTER *Adjustable, Electrode, 24 Joint/Ace-Thred* ♠

Allows for use with 24 joints. Similar to 5037 Adapter except for 24, inner lower joint and Ace-Thred upper joint. Complete includes glass adapter, nylon bushing and 12901-42 silicone septa. Bore size below refers to I.D. in nylon bushing.

Bushing Bore, mm	24 Joint	Glass Only			Nylon Bushing Only			Complete		
		Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
0.5	14/20	1	5038-04	41.45	1	5037-08	17.09	1	5038-06	60.06
1.0	14/20	1	5038-04	41.45	1	5037-12	15.80	1	5038-16	58.77
1.5	14/20	1	5038-04	41.45	1	5037-22	15.80	1	5038-26	58.77
0.5	24/40	1	5038-05	43.07	1	5037-08	17.09	1	5038-07	61.68
1.0	24/40	1	5038-05	43.07	1	5037-12	15.80	1	5038-17	60.39
1.5	24/40	1	5038-05	43.07	1	5037-22	15.80	1	5038-27	60.39
1.5	29/42	1	5038-08	45.61	1	5037-22	15.80	1	5038-28	62.93



5039 ADAPTER *Straight Connecting* ♠

With 24 inner joints at both ends.

24 Joints	Length Between Joints, mm	Qty.	Order Code	Each
24/40-24/40	30	1	5039-03	40.97
24/40-24/40	70	1	5039-05	40.97
24/40-24/40	120	1	5039-07	41.60
29/42-29/42	30	1	5039-09	42.86
29/42-29/42	70	1	5039-11	43.50
29/42-29/42	120	1	5039-13	44.75



5040/9074 ADAPTER *75° Side Arm* ♠

With inner joints at bottom and side, reinforced outer joint at top.

Top Outer 24 Joint	Side Inner 24 Joint	Bottom Inner 24 Joint	Qty.	Order Code	Each
14/20	14/20	14/20	1	9074-02	50.11
19/22	19/22	19/22	1	9074-04	50.59
24/40	24/40	24/40	1	5040-10	58.29
29/42	29/42	29/42	1	5040-12	60.37
24/40	45/50	45/50	1	5040-96	174.54



5060 ADAPTER “U” ♠

 Connecting adapter, U-shaped, with reinforced F outer joints at both ends.

F Joint Combination	Qty.	Order Code	Each
24/40-24/40	1	5060-10	50.63


5065 ADAPTER “U” ♠

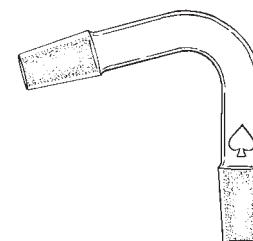
Connecting adapter, U-shaped, with spherical joints at both ends.

F Joint Combination	A, mm	Qty.	Order Code	Each
12/5 Ball-12/5 Socket	31	1	5065-20	44.71
12/5 Socket-12/5 Socket	31	1	5065-22	45.28
18/11 Socket-18/11 Socket	75	1	5065-29	48.99
28/15 Ball-28/15 Socket	75	1	5065-31	51.03
28/15 Socket-28/15 Socket	75	1	5065-32	52.85


5070/9052 ADAPTER 75° Angle ♠

 With F inner joint at both ends.

F Joints	Qty.	Order Code	Each
14/20-14/20	1	9052-08	32.16
14/35-24/40	1	9052-12	34.42
24/40-24/40	1	5070-10	38.00
29/42-29/42	1	5070-15	40.97


5072 ADAPTER 90° Angle ♠

Connecting adapter with spherical ball joint at one end, other end straight tube.

F Joint	Qty.	Order Code	Each
12/5	1	5072-20	23.38
18/9	1	5072-22	24.17
28/15	1	5072-24	24.17


5072 ADAPTER 90° Angle ♠

Connecting adapter with spherical socket joint at one end, other end straight tube.

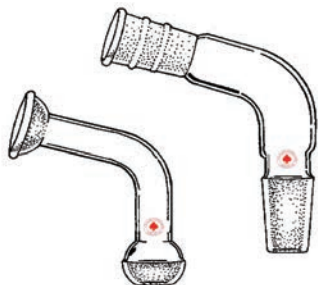
F Joint	Qty.	Order Code	Each
12/5	1	5072-28	23.82
18/9	1	5072-30	25.26
28/15	1	5072-34	26.88




5072 ADAPTER 90° Angle, Ball to Socket ♠

With spherical joints at both ends.

Joint Combination	Qty.	Order Code	Each
12/5 Ball-12/5 Socket	1	5072-37	44.04
12/5 Socket-12/5 Socket	1	5072-38	44.67
28/15 Ball-28/15 Socket	1	5072-43	51.58
28/15 Socket-28/15 Socket	1	5072-45	54.51


5075/9055 ADAPTER 105° Angle

With ⌘ or ⌘ inner-to-outer joints at top and bottom.

Joints	Qty	Order Code	Each	Joints	Qty.	Order Code	Each
⌘ 14/20	1	9055-04	♠ 37.00	⌘ 29/42	1	5075-15	♠ 45.09
⌘ 24/40	1	5075-10	♠ 40.37	⌘ 45/50	1	5075-45	★ 126.88
⌘ 35/25	1	5075-35	♠ 50.31				


9056 ADAPTER 160° Angle ♠

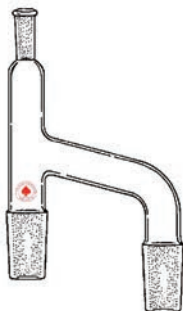
Designed to go from angled flask side joints to a vertical position. Inner-to-outer joints.

⌘ Joints	Qty	Order Code	Each
14/20	1	9056-08	34.44


5080/9083 ADAPTER Distillate Take-Off ♠

With reinforced ⌘ joint, 105° angle. Straight tube bottom.

⌘ Top Outer Joint	Qty.	Order Code	Each
14/20	1	9083-08	26.10
24/40	1	5080-10	31.47


5085 ADAPTER Distilling ♠

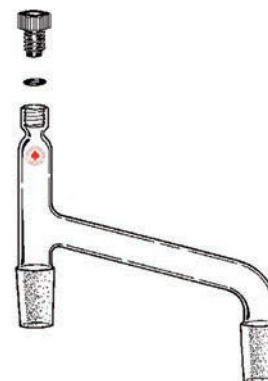
For connecting distilling column with vertical condensers. Top outer joint ⌘ 10/30 is for 76mm immersion thermometer. Side arm at 75°, vertical side arm 17.8cm from center tube.

⌘ Bottom Inner Joints	Qty.	Order Code	Each
24/40	1	5085-10	72.50

5086 ADAPTER *Distilling, Ace-Thred ♠*

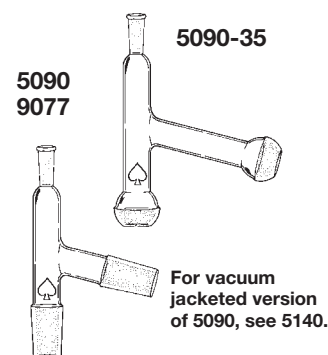
For connecting distilling column with vertical condenser. Top has #7 Ace-Thred for use with 5029 bushing and adjustable length thermometer. Side arm at 75°, vertical side arm 17.8cm from center tube. Supplied complete with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings order 7855-704.

Inner Joints	Qty.	Order Code	Complete
24/40	1	5086-54	82.62


5090/9077 ADAPTER *75° Angle ♠*

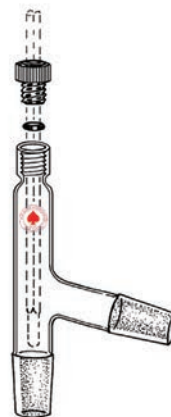
With ₤ or § joint at bottom and side. Top thermometer joint.

Top Outer Joint	Immersion Depth	Side Inner Joint	Bottom Inner Joint	Qty.	Order Code	Each
₤10/18	25mm	₤14/20	₤14/20	1	9077-02	48.68
₤10/30	25mm	₤14/20	₤14/20	1	9077-06	48.68
₤10/30	25mm	₤19/22	₤19/22	1	9077-16	50.07
₤10/30	76mm	₤24/40	₤24/40	1	5090-10	56.29
₤10/30	76mm	₤29/42	₤29/42	1	5090-15	61.12
₤10/30	76mm	§35/25	§35/25	1	5090-35	67.27


5092 ADAPTER *75° Angle, #7 Ace-Thred ♠*

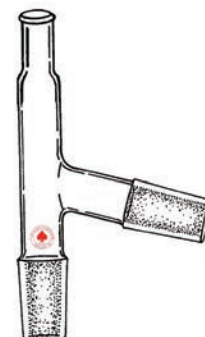
With ₤ 24/40 inner joint at bottom and side. Top joint has #7 Ace-Thred for use with 5029 nylon bushing and adjustable length thermometer. Supplied complete with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704.

Qty.	Order Code	Complete
1	5092-54	62.20


5095 ADAPTER *75° Angle, Outlet Tube ♠*

With ₤ 24/40 inner joint at bottom and side, 15.8 mm O.D. x 9.5 mm I.D. outlet tube at top.

Qty.	Order Code	Complete
1	5095-10	49.81




5100 ADAPTER *Thermometer Joint, Offset* ♠

With $\text{\textcircled{R}}$ 10/30 thermometer joint for 76mm immersion at top. $\text{\textcircled{R}}$ 24/40 inner bottom joint and $\text{\textcircled{R}}$ 24/40 outer side joint.

Qty.	Order Code	Each
1	5100-10	67.06


5101 ADAPTER *Offset, #7 Ace-Thred* ♠

Similar to 5100 adapter except with #7 Ace-Thred for use with 5029 nylon bushing and adjustable length thermometer. Supplied with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704.

$\text{\textcircled{R}}$ Joints	Qty.	Order Code	Each
24/40	1	5101-54	65.36


5102 ADAPTER *Offset, #7 and #15 Ace-Threds* ♠

With #15 Ace-Thred at bottom and two #7 Ace-Threds at top, one offset. Used with 8648 temperature measurement apparatus for 7482 hydrogenation/gas apparatus. Glass only, NOT supplied with 5029-200 nylon bushings or o-rings.

Bottom Thread	Top Threads	Qty.	Order Code	Each
#15	#7	1	5102-05	52.57


5110 ADAPTER *Septum Inlet, Single Port* ♠

Sampling adapter with $\text{\textcircled{R}}$ inner joint at bottom and septum port at top for handling air-sensitive materials. Supplied with septum. For extra 8mm sleeve septa, order 9096-32 or 9096-33.

$\text{\textcircled{R}}$ Bottom Joint	Qty.	Order Code	Each
14/20	1	5110-13	29.84
24/40	1	5110-11	29.84

5111/9094 ADAPTER *Septum Inlet, with Stopcock* ♦

Sampling adapter with F inner joint at bottom, 2 mm bore PTFE or glass stopcock and two septum ports at top. Used to handle air-sensitive materials. Supplied with two 8mm sleeve septa. For extra septa, order 9096-32 or 9096-33.

F Joint	Stopcock Type	Qty.	Order Code	Each
14/20	PTFE	1	9094-04	106.59
14/20	Glass	1	9094-14	83.17
24/40	PTFE	1	5111-09	103.45
24/40	Glass	1	5111-19	85.59


5112/9091 ADAPTER *Septum Inlet, Two Inlets* ♦

Sampling adapter with F inner joint at bottom and two septum at top for handling air-sensitive materials. Supplied with two 8mm sleeve septa. For extra septa, order 9096-32 or 9096-33.

F Joint	Qty.	Order Code	Each
14/20	1	9091-03	53.84
24/40	1	5112-14	60.31


5113 ADAPTER *Septum Inlet, Single Syringe Port* ♦

Sampling adapter with F inner joint at bottom and 8-425 GPI thread at top that accepts a 9590-44 cap with hole and a 8787-40 PTFE faced septum to allow insertion of a syringe needle. Supplied complete with cap and septum. For replacement caps, order 9590-44, for replacement septa, order 8787-40.

F Bottom Joint	Qty.	Order Code	Complete
14/20	1	5113-13	31.67
24/40	1	5113-23	33.74


5114 ADAPTER *with Stopcock and Syringe Port* ♦

With F inner joint at bottom and 8-425 GPI thread at top that accepts a 9590-44 cap with hole and a 8787-40 PTFE faced septum to allow insertion of a syringe needle. Stopcock is 2mm bore PTFE plug. Supplied complete with cap and septum. For replacement caps, order 9590-44, for replacement septa, order 8787-40.

F Bottom Joint	Qty.	Order Code	Complete
14/20	1	5114-14	65.64
19/22	1	5114-19	68.28
24/40	1	5114-24	68.06
29/42	1	5114-29	68.83


5117 ADAPTER *Connecting, O-Ring Joint to F Inner Joint with Frit* ♦

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. O-Ring joint on one end. Porosity B (70-100 micron) glass frit below o-ring joint and F inner joint at the opposite end. Supplied with one o-ring.

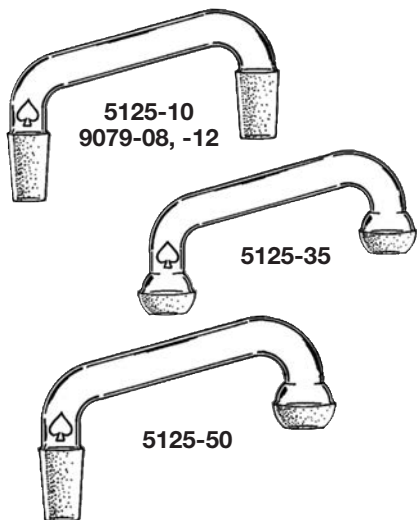
O-Ring Joint	F Joint	Qty.	Order Code	Each
#15	14/20	1	5117-18	55.98
#15	19/22	1	5117-21	56.27




5120 ADAPTER *Pour Out* ♠

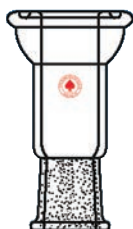
Convenient adapters for pouring from flasks or funnel without pouring over a ground joint.

Inner Joint	Style	Qty.	Order Code	Each
24/40	Straight	1	5120-14	27.36
24/40	Angled	1	5120-20	30.66


5125/9079 ADAPTER *Connecting* ♠

With ₤ or § joints.

Distance Between Joints, mm	Joints	Qty.	Order Code	Each
100	₤14/20	1	9079-08	49.42
150	₤14/20	1	9079-12	49.42
170	₤24/40	1	5125-10	58.96
170	§35/25	1	5125-35	74.41
170	₤24/40, §35/25	1	5125-50	59.25


5127 ADAPTER *Connecting, O-Ring Joint to ₤ Outer* ♠

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. #15 o-ring joint on one end, outer joint opposite. Supplied with one o-ring.

O-Ring Joint	₤ Joint	Qty.	Order Code	Each
#15	14/20	1	5127-04	36.07
#15	19/22	1	5127-06	36.42
#15	24/40	1	5127-20	37.78


5128 ADAPTER *Connecting, O-Ring Joint to ₤ Inner* ♠

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. #15 o-ring joint on one end, inner joint opposite. Supplied with one o-ring.

O-Ring Joint	₤ Joint	Qty.	Order Code	Each
#15	14/20	1	5128-07	35.99
#15	19/22	1	5128-11	36.20
#15	24/40	1	5128-26	37.57


5129 ADAPTER *Connecting, O-Ring Joint to Ace-Thred* ♠

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. #15 o-ring joint on one end, Ace-Thred opposite end. Supplied with one o-ring.

O-Ring Joint	Ace-Thred Size	Qty.	Order Code	Each
#15	#7	1	5129-07	55.09
#15	#11	1	5129-11	59.02
#15	#15	1	5129-15	59.02
#15	#25	1	5129-25	64.27

5131 ADAPTER *Connecting, O-Ring Joint to Straight Tube* ♠*

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. #15 o-ring joint on one end, straight tube opposite end. Supplied with one o-ring.

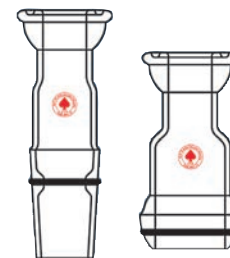
O-Ring Joint	Tube Size	Qty.	Order Code	Each
#15	3/8-inch	1	5131-30	23.74
#15	1/2-inch	1	5131-40	23.74

*Sized for use with Cajon® or Swagelok® compression fittings.


5132 ADAPTER *Connecting, O-Ring Joint to Inner or Ball O-Ring Joint ♠*

Used with 8737, 8738, 8739, 8740, 8743 and 8745 vacuum manifolds as port connections. #15 o-ring joint on one end, o-ring seal inner or ball opposite end. Supplied with o-rings.

O-Ring Joint	Joint	Qty.	Order Code	Each
#15	⌀ 14/20	1	5132-06	45.83
#15	⌀ 24/40	1	5132-09	46.55
#15	⌀ 28/15	1	5132-34	84.38
#15	⌀ 35/20	1	5132-37	84.38


5135 ADAPTER *Claisen ♠*

With ⌀ 10/30 outer joint at top side arm for 76mm immersion thermometer. Outer ⌀ joint at top, inner ⌀ joints side and bottom.

⌀ Joints	Qty.	Order Code	Each
14/20	1	5135-06	88.11
19/22	1	5135-08	91.61
24/40	1	5135-10	107.12
29/26	1	5135-12	112.59
29/42	1	5135-14	112.59


5136 ADAPTER *Claisen, #7 Ace-Thred ♠*

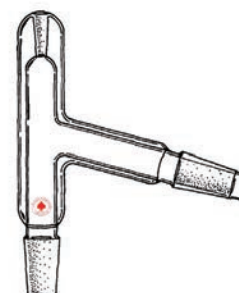
Top side arm has #7 Ace-Thred for use with 5029 nylon bushing for adjustable length thermometer. Supplied complete with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704. Side and bottom joints are inner ⌀, top joint is outer ⌀.

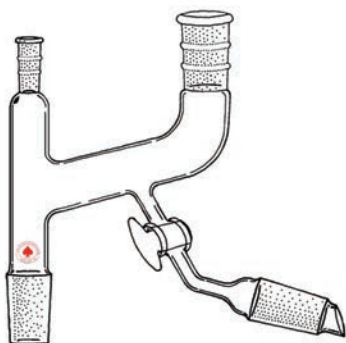
⌀ Joints	Qty.	Order Code	Each
24/40	1	5136-54	117.84


5140 ADAPTER *Vacuum Jacketed ♠*

Used as distilling head for connecting top of column with side condenser. Top joint ⌀ 10/30 inner for 76mm immersion thermometer. Side and bottom joints are ⌀ 24/40 inner.

Qty.	Order Code	Each
1	5140-10	327.86





5150/9068 ADAPTER *Claisen* ♦

With glass or 1:5 solid PTFE stopcock plug on lower side arm. Top joint on center tube is $\text{F}10/30$ for 76mm immersion thermometer. All other joints are $\text{F}14/20$ or $\text{F}24/40$. Take-off arm is at 75° angle to the vertical. Plug is 2mm bore.

Plug Style	Thermometer	All Other		Order	
Style	F Joint	F Joints	Qty.	Code	Each
Glass	10/30	14/20	1	9068-06	189.33
Glass	10/30	24/40	1	5150-10	202.72
PTFE	10/30	24/40	1	5150-29	222.26



5155 ADAPTER *105° Angle, Jacketed* ♦

Jacketed with water-cooled F joints. Extension arm below joint is 50mm. Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

F Joints	Qty.	Order Code	Each
24/40	1	5155-10	305.80



5170 ADAPTER *Drying Tube* ♦

Inner F Bottom Joint	Qty.	Order Code	Each
19/38	1	5170-05	46.50
24/40	1	5170-10	46.72
29/42	1	5170-15	49.54
Rubber Stopper and Adapter Tube, only	1	5170-40	11.12



5175 ADAPTER *Liquid Inlet* ♦

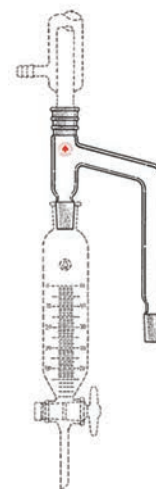
With F inner joint and two vacuum take-offs. Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

F Bottom Joint	Qty.	Order Code	Each
24/40	1	5175-10	47.32

5179/9101 ADAPTER *Moisture Trap* ♠

Unique adapter used in place of a Dean-Stark moisture test receiver. Simply add a condenser to top ⌘ outer joint, any graduated funnel from 125mL to 2000mL to bottom ⌘ inner joint, attach sample flask to ⌘ inner side arm joint and you have a moisture test receiver.

Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Inner Side Arm ⌘ Joint	Qty.	Order Code	Each
14/20	14/20	14/20	1	9101-20	83.88
24/40	24/40	24/40	1	5179-07	94.57


5190 ADAPTER *Gas Inlet* ♠

Side tube with hose connection for purging out as a gas inlet tube. Stem below joint is 175mm long. Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

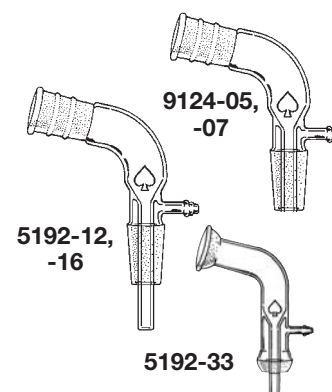
⌘ Joints	Qty.	Order Code	Each	⌘ Joints	Qty.	Order Code	Each
24/40	1	5190-10	56.88	35/25	1	5190-35	67.55
29/42	1	5190-15	64.09				


5192/9124 ADAPTER *Vacuum Take-off* ♠

Outer joint at angle of 105°. Hose connection on side faces opposite top joint. Stem on 9124-05, -07 is even with joint bottom; on 5192-12, -16 stem extends below joint by 30mm. See page 7 for more detailed hose connection information.

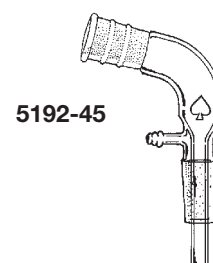
Joints	Hose Connection Size (Inches)	Qty.	Order Code	Each
⌘ 14/20	5/16 or 3/8 (B)	1	9124-05	53.95
⌘ 19/22	5/16 (A)	1	9124-07	55.82
⌘ 24/40	5/16 or 3/8 (C)	1	5192-12	60.78
⌘ 29/42	5/16 or 3/8 (C)	1	5192-16	62.14
⌘ 35/25	5/16 or 3/8 (C)	1	5192-33	79.44

⌘ 14/10 SIZE LISTED IN MICRO/MINI-LAB SECTION.


5192 ADAPTER *Vacuum Take-off, Short Stem* ♠

Outer joint at angle of 105°. Hose connection faces same direction as top joint. Stem below joint, 30mm. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

⌘ Joints	Qty.	Order Code	Each
24/40	1	5192-45	61.18





5193 ADAPTER *Vacuum Take-off, Short Stem* ♠

Stem length below joint is 30 mm. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

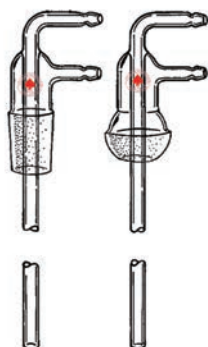
Inner ⌘ Bottom Joint	Qty.	Order Code	Each
24/40	1	5193-08	38.90
29/42	1	5193-14	40.17



5195/9124 ADAPTER *Vacuum Take-off, Long Stem* ♠

Outer joint at angle of 105°. Used with distillation set-ups. Hose connection opposite joint. See page 7 for more detailed hose connection information.

⌘ Joints	Stem Length Below Bottom Joint, mm	Hose Connection Size (Inches)	Qty.	Order Code	Each
14/20	90	5/16 or 3/8 (B)	1	9124-06	53.95
24/40	175	5/16 or 3/8 (C)	1	5195-10	57.74
29/42	175	5/16 or 3/8 (C)	1	5195-15	64.47



5196 ADAPTER *Vacuum Take-off, Long Stem* ♠

Stem length is below bottom joint. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

Joint	Stem Length, mm	Qty.	Order Code	Each
⌘ 24/40	250	1	5196-10	37.47
⌘ 24/40	125	1	5196-12	37.84
⌘ 29/42	250	1	5196-15	43.84
⌘ 35/25	250	1	5196-35	47.74



5200/5300/9080 ADAPTER *Glass Stopcock, Hose Connection* ♠

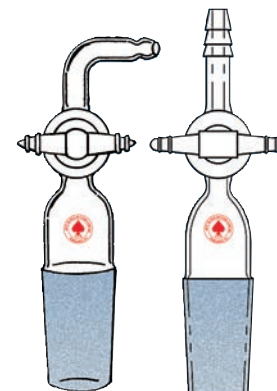
With either angled or straight hose connections and ⌘ or ⌘ joint. Plug bore for codes 5200-15 and 5200-35 is 3mm; all others are 2mm. For stopcock plugs, see 8223. See page 7 for more detailed hose connection information. 5200-110, 5200-115 and 5300-26 have straight tube connection.

Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
⌘ 14/20	5/16 (A)	1	9080-02	59.39
⌘ 19/22	5/16 (A)	1	9080-08	59.78
⌘ 14/10	5/16 (A)	1	9080-10	75.49
⌘ 19/38	5/16 or 3/8 (C)	1	5200-05	68.86
⌘ 24/40	5/16 or 3/8 (C)	1	5200-10	69.65
⌘ 29/42	5/16 or 3/8 (C)	1	5200-15	76.36
⌘ 24/40	5/16 or 3/8 (C)	1	5200-110	67.83
⌘ 29/42	5/16 or 3/8 (C)	1	5200-115	67.83
⌘ 35/25	5/16 or 3/8 (C)	1	5200-35	86.88
⌘ 35/25	5/16 or 3/8 (C)	1	5300-26	71.33

5202/9080 ADAPTER 1:5 PTFE Stopcock, Hose Connection ♦

With either angled or straight hose connection, ⌘ inner joint and 1:5 solid PTFE 2mm bore stopcock plug. For stopcock plug, see 8224-04. See page 7 for more detailed hose connection information. Codes 5202-110, 5202-112, 5202-114 and 9080-112 and 9080-118 have straight tube connection. All others have angled connection.

⌘ Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
14/20	5/16 (A)	1	9080-12	75.49
19/22	5/16 (A)	1	9080-18	77.18
14/20	5/16 (A)	1	9080-112	61.19
19/22	5/16 (A)	1	9080-118	61.19
24/40	5/16 or 3/8 (C)	1	5202-12	82.33
29/42	5/16 or 3/8 (C)	1	5202-92	82.33
24/40	5/16 or 3/8 (C)	1	5202-110	65.57
29/26	5/16 or 3/8 (C)	1	5202-112	65.57
29/42	5/16 or 3/8 (C)	1	5202-114	65.57



➤ ⌘14/10 SIZE LISTED IN MICRO/MINI-LAB SECTION.

5203/9081 ADAPTER 1:5 PTFE Metering Valve, Hose Connection ♦

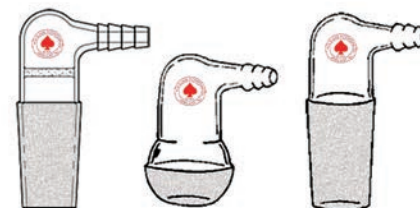
With angled hose connection, ⌘ inner joint and 1:5 solid PTFE 2mm bore stopcock plug with metering valve. For replacement plug, see 8232-14. See page 7 for more detailed hose connection information.

⌘ Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
14/20	5/16 (A)	1	9081-21	97.94
24/40	5/16 or 3/8 (C)	1	5203-20	102.71


5205/9088 ADAPTER Hose Connection ♦

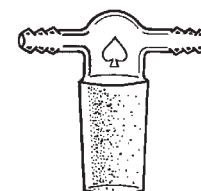
With ⌘ inner or ⌘ ball joint and 90° hose connection. See page 7 for more detailed hose connection information. 5205-110, 5205-112, and 5205-114 have an integral Porosity A (145-174 micron) fritted disc.

Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
⌘ 14/20	5/16 (A)	1	9088-07	22.05
⌘ 19/22	5/16 (A)	1	9088-09	22.82
⌘ 19/38	3/8 (D)	1	5205-05	23.78
⌘ 24/40	3/8 (D)	1	5205-10	23.39
⌘ 29/42	3/8 (D)	1	5205-15	23.87
⌘ 28/15	3/8 (D)	1	5205-25	25.22
⌘ 35/25	3/8 (D)	1	5205-35	30.21
⌘ 19/22	5/16 (A)	1	5205-110	34.56
⌘ 24/40	3/8 (D)	1	5205-112	35.24
⌘ 29/42	3/8 (D)	1	5205-114	35.57


5206 ADAPTER Twin Hose Connection ♦

With ⌘ inner joint and twin hose connections opposite each other. Normally used with 6620 reflux apparatus to allow inert gas flow over top of apparatus to maintain oxygen free system. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

⌘ Bottom Joint	Qty.	Order Code	Each
14/20	1	5206-04	28.09
24/40	1	5206-10	28.68
29/42	1	5206-12	29.01
45/50	1	5206-20	44.46




5210 ADAPTER with Glass Stopcock ♠

With ⌘ outer joint and hose connection. Plug bore is 2mm. For stopcock plug, see 8223-02. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

⌘ Top Joint	Qty.	Order Code	Each
24/40	1	5210-10	74.96


5210 ADAPTER with 1:5 PTFE Stopcock ♠

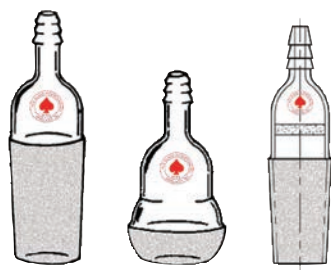
With ⌘ outer joint, hose connection and 1:5 solid PTFE stopcock plug. Plug bore is 2mm. For stopcock plug, see 8224-04. Size C hose connection, for use with 3/8-inch or 5/16 inch I.D. tubing. See page 7 for more detailed hose connection information.

⌘ Top Joint	Qty.	Order Code	Each
24/40	1	5210-40	82.49


5215 ADAPTER Hose Connection ♠

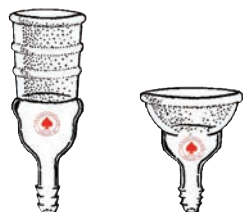
With ⌘ outer joint. Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

⌘ Joint	Qty.	Order Code	Each
24/40	1	5215-10	26.92


5216/9069 ADAPTER Hose Connection ♠

With ⌘ inner or ⌘ ball joint at bottom and straight hose connection at top. See page 7 for more detailed hose connection information. Codes 5216-110, 5216-116, 5216-118, 9069-115 and 9069-116 have integral Porosity A (145-174 micron) fritted disc.

Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
⌘ 14/10	5/16 (A)	1	9069-04	19.85
⌘ 14/20	5/16 (A)	1	9069-05	19.85
⌘ 19/22	5/16 (A)	1	9069-06	20.86
⌘ 14/20	5/16 (A)	1	9069-115	33.62
⌘ 19/22	5/16 (A)	1	9069-116	33.62
⌘ 24/40	5/16 or 3/8 (C)	1	5216-10	22.52
⌘ 29/42	5/16 or 3/8 (C)	1	5216-15	24.76
⌘ 18/9	5/16 or 3/8 (C)	1	5216-23	23.99
⌘ 35/25	5/16 or 3/8 (C)	1	5216-35	28.25
⌘ 24/40	5/16 or 3/8 (C)	1	5216-110	33.03
⌘ 29/26	5/16 or 3/8 (C)	1	5216-116	34.31
⌘ 29/42	5/16 or 3/8 (C)	1	5216-118	34.31


5217/9070 ADAPTER Hose Connection ♠

With ⌘ outer or ⌘ socket joint at one end and a hose connection at the other end. See page 7 for more detailed hose connection information.

Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
⌘ 14/20	5/16 (A)	1	9070-02	26.07
⌘ 24/40	5/16 or 3/8 (C)	1	5217-10	25.23
⌘ 18/9	5/16 or 3/8 (C)	1	5217-23	25.23
⌘ 28/15	5/16 or 3/8 (C)	1	5217-11	25.97
⌘ 35/25	5/16 or 3/8 (C)	1	5217-35	30.79
⌘ 35/20	7/16 or 1/2 (F)	1	5217-40	26.64

5218 ADAPTER *O-Ring Joint to Hose Connection* ♦

With o-ring joint at one end and hose connection at other end. Size F hose connection, for use with 7/16-inch or 1/2-inch I.D. tubing. See page 7 for more detailed hose connection information. FETFE o-ring included.

Joint Size	For Tube O.D. (Inches)	Qty.	Order Code	Each
15mm	7/16 or 1/2	1	5218-10	21.26



5219 ADAPTER *Socket Joint, Straight Tube* ♦

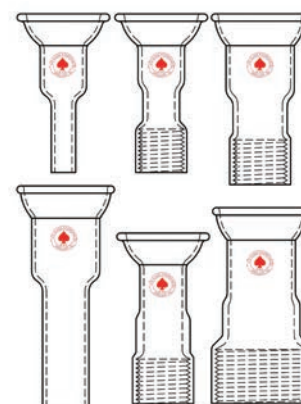
With ⚙ socket joint at one end and straight tube at the other end.

⚙ Joint	Tube O.D. (Inches)	Qty.	Order Code	Each
35/20	3/8	1	5219-23	29.33
35/20	1/2	1	5219-26	29.33



5221 ADAPTER *Outer Socket Joint* ♦

⚙ Size	Joint Connects to	Qty.	Order Code	Each
28/15	10mm tube	1	5221-05	28.36
28/15	#11 Ace-Thred	1	5221-09	34.74
28/15	#15 Ace-Thred	1	5221-11	40.42
35/25	3/4-inch tube	1	5221-20	29.78
35/25	#15 Ace-Thred	1	5221-24	37.92
35/25	#25 Ace-Thred	1	5221-28	40.42



5223 ADAPTER *Vial or Bottle, PTFE* ♦

Used to connect a vial or a bottle to the vapor tube of a rotary evaporator. Fabricated from PTFE, one side is a standard taper outer joint with rib for using clamp such as 7598, other end is a female vial or bottle GPI thread.

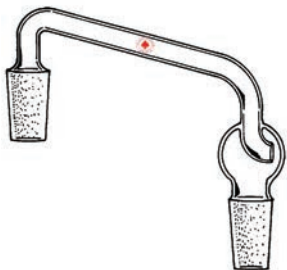
⚙ Joint	Joint Connects to	Qty.	Order Code	Each
24/40	13-425 Thread	1	5223-13	127.34
24/40	20-400 Thread	1	5223-20	130.62
24/40	38-400 Thread	1	5223-38	138.29
24/40	58-400 Thread	1	5223-58	144.17



5225/9086 ADAPTER *Distilling Trap* ♦

⚙ Joints	Qty.	Order Code	Each	⚙ Joints	Qty.	Order Code	Each
14/20	1	9086-02	100.86	29/42	1	5225-15	68.07
24/40	1	5225-10	63.36				





5226 ADAPTER *Kjeldahl Trap* ♠

Distance between center of joints is approximately 200mm.

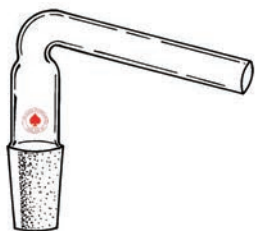
Inner ⚗ Joints	Qty.	Order Code	Each
24/40	1	5226-10	131.97



5230 ADAPTER *Distilling Trap* ♠

With outlet tube bent at 75° angle.

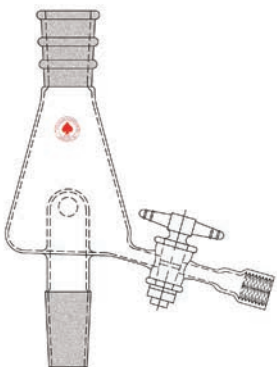
⚗ Joint	Qty.	Order Code	Each
24/40	1	5230-10	57.56



5235 ADAPTER *Distilling* ♠

With 8mm O.D. outlet tube bent at 75° angle.

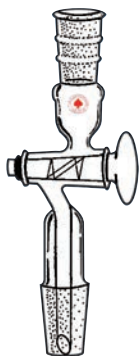
⚗ Joint	Qty.	Order Code	Each
24/40	1	5235-10	25.20



5245 ADAPTER *Sampling* ♠

With 1:5 solid PTFE stopcock plug connected to side of apron for removing distillate or sample. Plug bore is 2mm. Approximate flask capacity is 125mL. 5245-04 has #7 Ace-Thred after stopcock, 5245-29 has plain tubing. For replacement plug, see 8224-04.

⚗ Joints	Qty.	Order Code	Each
24/40	1	5245-04	203.48
24/40	1	5245-29	188.87



5250 ADAPTER *Adjustable Flow Stopcock* ♠

⚗ Joints	Qty.	Order Code	Each
24/40	1	5250-10	130.23

5257 ADAPTER “Splash Guard,” with Fritted Disc, Firestone* ♠

Rotary evaporator “splash guard” adapter with F medium length joints, top and bottom, that will accept full length F joints, plus a coarse Porosity A (147-174 micron) fritted disc that assures no carry-over in the event of splash-up. Overall length is kept to a minimum to effect best distillation.

Top Outer F Joint	Bottom Inner F Joint	Qty.	Order Code	Each
14/20	14/20	1	5257-43	78.62
24/25	24/25	1	5257-49	85.17
24/25	29/26	1	5257-53	88.62
24/25	45/35	1	5257-62	130.56

*Designed by Dr. Raymond Firestone


5258 ADAPTER “Splash Guard,” Firestone* ♠

Rotary evaporator “splash guard” adapter with F medium length joints, top and bottom, that will accept full length F joints. When inserted into flask, splash guard combines with flask neck to give best protection against splash-up. Overall height is kept to a minimum to effect best distillation.

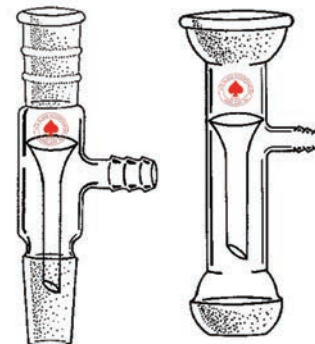
Top Outer F Joint	Bottom Inner F Joint	Qty.	Order Code	Each
14/20	14/20	1	5258-06	61.83
24/25	24/25	1	5258-12	63.24
24/25	29/26	1	5258-16	67.49
24/25	45/35	1	5258-62	108.86

*Designed by Dr. Raymond Firestone


5260/9123 ADAPTER Vacuum ♠

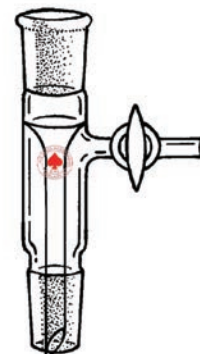
With side hose connection and drip tip. See page 7 for more detailed hose connection information.

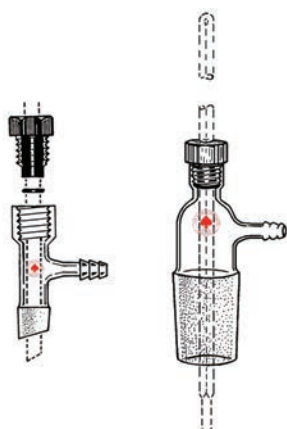
Joints	Hose Connection Size (Inches)	Qty.	Order Code	Each
F 14/20	5/16 or 3/8 (B)	1	9123-06	47.85
F 19/22	5/16 or 3/8 (B)	1	9123-08	49.51
F 24/25	3/8 (D)	1	5260-07	59.68
F 24/40	3/8 (D)	1	5260-10	59.68
F 29/42	3/8 (D)	1	5260-15	64.12
F 35/25	3/8 (D)	1	5260-35	67.67


9175 ADAPTER Vacuum, with Stopcock ♠

Vacuum adapter with 2mm bore glass stopcock on side arm. For replacement plug, see 8223-02.

F Joints	Qty.	Order Code	Each
14/20	1	9175-04	100.12




5261 ADAPTER with Hose Connection, "Mini" #7 Ace-Thred ♠

With F inner joint at bottom, #7 Ace-Thred at top and serrated hose connection. Will accommodate thermometers, bleed tubes, etc. up to 7mm diameter. Suitable for most vacuum work. Supplied complete with 5029-10 nylon bushing and FETFE o-ring. For extra o-rings, order 7855-704. See page 7 for more detailed hose connection information. 5261-06 is for Micro/Mini-Lab.

F Bottom Joint	Hose Connection		Qty.	Order Code	Complete
	Size (Inches)				
14/10	5/16 (A)		1	5261-06	37.72
14/20	5/16 (A)		1	5261-08	35.99
19/22	5/16 (A)		1	5261-12	39.49
24/40	3/8 (D)		1	5261-16	38.55
29/42	3/8 (D)		1	5261-20	39.63


5261 ADAPTER with Hose Connection, "Midi" #11 Ace-Thred ♠

With F inner joint at bottom, #11 Ace-Thred at top and a serrated hose connection. Will accept inner tubes with diameters of 9mm to 10.5mm such as thermowells, gas dispersion tubes, vacuum take-offs, etc. Suitable for most vacuum work. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-708. See page 7 for more detailed hose connection information.

F Bottom Joint	Hose Connection Size (Inches)	Glass Only		Nylon Bushing Only		Complete	
		Qty.	Order Code Each	Qty.	Order Code Each	Qty.	Order Code Each
19/22	5/16 (A)	1	5261-35 46.28	1	7506-02 11.39	1	5261-36 57.67
24/40	3/8 (D)	1	5261-37 47.35	1	7506-02 11.39	1	5261-38 58.74
29/42	3/8 (D)	1	5261-39 49.59	1	7506-02 11.39	1	5261-40 60.98


5261 ADAPTER with Hose Connection, "Maxi" #15 Ace-Thred ♠

With F inner joint at bottom, #15 Ace-Thred at top and a serrated hose connection. Will accept inner tubes with diameters of 12.5mm to 14mm such as electrodes, inlet and outlet tubes, etc. Suitable for most vacuum work. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-716. Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

F Bottom Joint	Qty.	Glass Only		Nylon Bushing Only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
24/40	1	5261-56	48.67	7506-06	12.35	5261-57	61.02
29/42	1	5261-58	52.06	7506-06	12.35	5261-59	64.41


5263 ADAPTER Multineck, "Mini" #7 Ace-Thred ♠

With F inner joint at bottom, two #7 Ace-Threds and one F outer joint at top. Ace-Threds would commonly be used for thermometers or gas inlet tubes thus leaving joint for condenser, addition funnel, still head, etc. F 24/25 medium length joint is compatible with F 24/40 full length joint. Supplied complete with two 5029-10 nylon bushings and FETFE o-rings. For extra o-rings, order 7855-704.

F Top Outer	F Bottom Inner	Qty.	Order Code	Each
24/40	24/25	1	5263-17	130.47

5265/9119 ADAPTER Gas Inlet ♠

With side hose connection. See page 7 for more detailed hose connection information.

Outer ₹ Top Joint	Inner ₹ Bottom Joint	Hose Connection Size (Inches)	Qty.	Order Code	Each
14/10	14/10	5/16 or 3/8 (B)	1	9119-22	42.51
14/20	19/38	5/16 (A)	1	9119-02	43.16
24/40	24/40	3/8 (D)	1	5265-10	43.57


5266 ADAPTER Thermometer ♠

 With vacuum take-off or gas addition side tube. Center tube top is 13mm O.D., side tube is 6mm O.D. and inner bottom joint is ₹ 24/40.

Qty.	Order Code	Each
1	5266-10	39.03


5267 ADAPTER Vacuum Filtration ♠

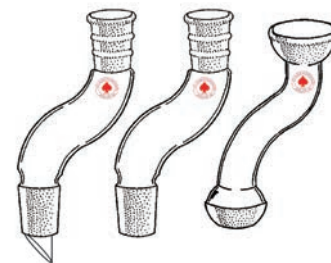
 Used for reduced pressure filtration with 7186 style, plain stem Buchner funnels. Top is tooled to accept a pluro stopper, bottom has a ₹ inner joint. Inserting the recommended size pluro stopper and the next smaller size allows use of smaller capacity funnels; i.e., in ₹ 24/25 size, insertion of 31mm x 16mm and 22mm x 11mm will allow use of 15 or 30mL capacity funnels. Hose connection for 3/8-inch I.D. tubing, size D. See page 7 for more detailed hose connection information.

₹ Bottom Joint	Uses Pluro Stopper, I.D.	For Funnel Capacity, mL	Qty.	Order Code	Complete
14/20	17mm x 7mm	2	1	5267-06	44.61
19/22	17mm x 7mm	2	1	5267-08	52.17
24/25	31mm x 16mm	140	1	5267-11	65.08
24/40	31mm x 16mm	140	1	5267-15	65.08
29/26	60mm x 36mm	4000	1	5267-18	66.23
29/42	60mm x 36mm	4000	1	5267-20	76.52


5268/9089 ADAPTER Offset

Both bottom inner joint and top outer joints are slightly offset and angled for reactor heads.

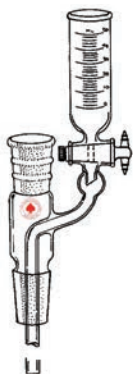
<i>Without Drip Tip</i>				<i>With Drip Tip</i>			
Joints	Qty.	Order Code	Each	Joints	Qty.	Order Code	Each
₹ 14/20	1	9089-08 ♠	37.05	₹ 14/20	1	9089-40 ♠	35.89
₹ 24/40	1	5268-10 ♠	37.62	₹ 24/40	1	5268-54 ♠	38.41
₹ 29/42	1	5268-15 ♠	41.92	₹ 29/42	1	5268-56 ♠	42.81
₹ 45/50	1	5268-21 ★	112.76	₹ 45/50	1	5268-58 ★	114.16
₹ 35/25	1	5268-35 ♠	49.57				


5269 ADAPTER Offset, with Ace-Thred ♠

Offset adapter with #15 Ace-Thred offset to a 14mm O.D. tube with o-ring groove. For use with ACE pressure reactors to locate condenser, etc., away from stirrer. NOT supplied with bushing or o-ring. Order 7506-06 for bushing and o-ring.

Qty.	Order Code	Each
1	5269-12	40.34

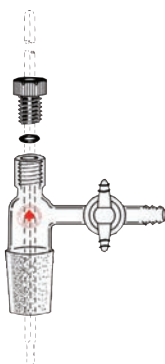




5270 ADAPTER *Additive* ♠

Graduated separatory funnel with 1:5 solid PTFE stopcock plug and dropping bulb. Capacity 50mL, in 1mL subdivisions. Plug bore is 2mm. For replacement, see 8224-04.

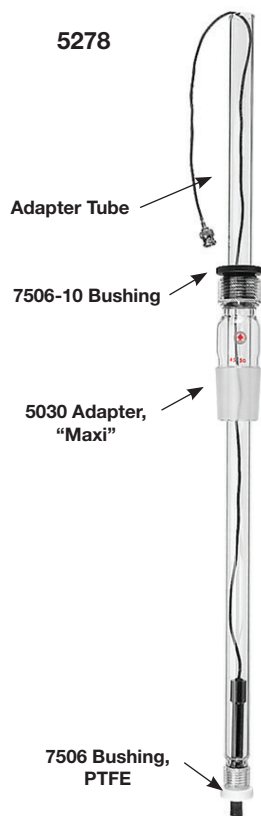
⊘ Joints	Qty.	Order Code	Each
24/40	1	5270-29	220.21



5272 ADAPTER *with Stopcock, "Mini" #7 Ace-Thred* ♠

With ⊘ 24/40 inner joint at bottom, #7 Ace-Thred at top, and a side 1:5 solid PTFE 2mm bore stopcock plug with hose connection. Thread is supplied with nylon bushing and FETFE o-ring that allows compression seal with thermometers, bleed tubes, etc. Will accommodate thermometers up to 7mm O.D. For extra o-rings, order 7855-704. Hose connection for 5/16-inch or 3/8-inch I.D. tubing, size C. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
1	5272-15	101.54



5278 ADAPTER *pH Probe, Pilot Plant*

Adapter tube, 25mm O.D., with a #15 Ace-Thred at one end, other end open. Insert 1/2-inch probe in open end down to and through the Ace-Thred, leaving enough exposed to secure with 7506 bushing and size -110 FETFE o-ring to make a compression seal. Adapter tube is held in flask ⊘ joint with 5030 "maxi" adapter with nylon bushing and size -212 FETFE o-ring, again with a compression seal, thus making the tube vertically adjustable. Complete item consists of glass adapter tube, 7506 PTFE bushing with size -110 FETFE or Chemraz o-ring and 5030 "maxi" adapter. Takes any standard size pH probe.

Complete:

Length, cm (In.)	Qty.	<i>With FETFE O-Ring</i>		<i>With Chemraz O-Ring</i>		
		Order Code	Complete	Qty.	Order Code	Complete
61 (24)	1	5278-40	♠ 149.09	1	5278-141	★ 197.42
91 (36)	1	5278-44	♠ 149.88	1	5278-145	★ 198.21
122 (48)	1	5278-48	♠ 150.67	1	5278-149	★ 199.00

Replacement Items:

<i>ADAPTER TUBE, Glass only</i>				<i>BUSHING, PTFE only, with O-Ring</i>					
Length, cm (In.)	Qty.	Order Code	Each	For Thread Size	O-Ring Type	Qty.	Order Code	Each	
61 (24)	1	5278-14	♠ 22.78	15	FETFE	1	7506-27	♠ 40.65	
91 (36)	1	5278-18	♠ 23.57	15	Chemraz	1	7506-127	★ 88.98	
122 (48)	1	5278-23	♠ 24.36						

ADAPTER, "Maxi," #25 Ace-Thred to ⊘45/50 Joint, only

⊘ Joint	Qty.	<i>Glass Only</i>		<i>Nylon Bushing Only</i>		
		Order Code	Each	Qty.	Order Code	Each
45/50	1	8065-16	♠ 64.49	1	7506-10	♠ 21.17

5274 ADAPTER with Stopcock, "Maxi" #15 Ace-Thred ♠

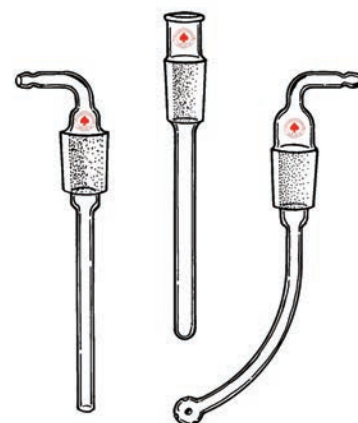
With F 45/50 inner joint at bottom, #15 Ace-Thred at top and a side 1:5 solid PTFE 4mm bore stopcock with hose connection off side. Top thread will accept inner tubes with diameters of 12.5 to 14mm such as electrodes, finger condensers, etc. Suitable for most vacuum work. Supplied complete with nylon bushing and FETFE o-ring. For extra o-rings, order 7855-716. Hose connection for 5/16-inch or 3/8-inch I.D. tubing, size C. See page 7 for more detailed hose connection information. For replacement stopcock plug, see 8224-12.



	Qty.	Order Code	Complete
Glass, only	1	5274-22	121.05
Complete	1	5274-43	133.40

5295 ADAPTER Distillation, Custom Length, F Joints ♠

A general listing of several adapters that can be ordered as below or can be modified to meet your application. All adapters are supplied with inner F 24/40 joints. **On codes -12, -14 and -22, please specify either the length needed below the joint, or the capacity, or the Ace code number of the vessel into which the adapter is being placed.** We will supply the bottom tube with the proper curvature, if required to fit the vessel. These can be supplied to fit flask capacities up to 72L. Hose connection on -12 and -14 is size D for 3/8-inch tubing.



	Qty.	Order Code	Each
Gas inlet tube, supplied with bottom tube cut to desired length below joint. Size D hose connection uses 3/8-inch I.D. tubing.	1	5295-12	35.79
Aeration tube supplied with curved bottom tube cut to desired length below joint. Size D hose connection uses 3/8-inch I.D. tubing.	1	5295-14	40.83
Thermometer well supplied with bottom tube cut to desired length below joint.	1	5295-22	34.15

5295/9058 ADAPTER Thermometer ♠

Adapter for use as a thermometer or thermoprobe holder or a plain vent. Tubes have three different, bottom, inner F joint sizes. Top tube I.D. is 10mm.



Inner F Bottom Joint	Length, mm	Qty.	Order Code	Each
14/20	55	1	9058-04	18.68
19/22	57	1	9058-06	18.91
24/40	80	1	5295-24	28.65

5299 ADAPTER Distillation ♠

Distillation adapter for use with bench or pilot plant reactors. Moisture is collected in center vessel and drained off through the bottom stopcock which is ground to accept a compression style fitting. Stopcock is PTFE plug. Available with either one or two top standard taper outer joints.



With one top/outer F joint

F Joint	Stopcock Size, mm	Compression Fitting Joint Size, In.	Qty.	Order Code	Complete
24/40	6	1/2	1	5299-01	204.01
29/42	6	1/2	1	5299-03	254.57
45/50	10	3/4	1	5299-07	335.46

With two top/outer F joints

24/40	6	1/2	1	5299-10	237.90
29/42	6	1/2	1	5299-12	268.25
45/50	10	3/4	1	5299-16	410.40



9099 ADAPTER *Thermocouple Well* ♠

With inner ⚗ joint for adapting thermocouples into jointed heads, etc. The well is fabricated from very thin wall borosilicate glass to allow for better temperature transfer. Well fabricated in two lengths for 25mm or 76mm immersion. Length is measured below the joint. 10/30 joint is for Micro/Mini-Lab scale.

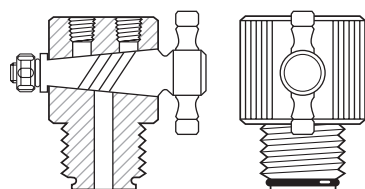
Inner ⚗ Joint	Qty.	25mm		76mm		
		Order Code	Each	Order Code	Each	
14/20	1	9099-06	35.35	1	9099-10	35.56
10/30	1	9099-08	35.35	1	9099-12	35.56



5300 ADAPTERS ⚗ Joints ♠

A general listing of several adapters that can be ordered as below or can be modified to meet your application. All adapters are supplied with inner ⚗ 35/25 joints. **On code -22 and -30, please specify either the length needed below the joint, or the capacity, or the Ace code number of the vessel into which the adapter is being placed.** We will supply the bottom tube with the proper curvature, if required to fit the vessel. These can be supplied to fit flask capacities of up to 72L. Hose connection is size C, for 3/8-inch I.D. tubing.

	Qty.	Order Code	Each
Gas inlet tube, bottom tube supplied cut to specified length	1	5300-22	41.68
Thermometer well, bottom tube supplied cut to specified length	1	5300-30	44.61



5808 ADAPTER *PTFE, Purge with Shutoff* ♠

PTFE purge/shutoff adapter allows purging of air-sensitive contents from within our 8648 pressure vessels. Ace-Thred adapter features two top taps, either 1/4-inch UNF or 1/8-inch NPT, controlled by a two-way stopcock. Rated at 60psi.

Ace-Thred Size	Tap Size	Qty.	Order Code	Each
#15	1/4-inch-28 UNF	1	5808-05	122.55
#15	1/8-inch NPT	1	5808-09	122.55
#25	1/4-inch-28 UNF	1	5808-16	186.83
#25	1/8-inch NPT	1	5808-18	186.83
#36	1/4-inch-28 UNF	1	5808-24	354.22
#36	1/8-inch NPT	1	5808-27	354.22



7645 ADAPTER *PTFE Pour Spout* ♠

PTFE threaded pour spout with FETFE o-ring. Prevents material contact with threads.

Ace-Thred Size	Qty.	Order Code	Each
#15	1	7645-04	58.91
#25	1	7645-07	103.86
#50	1	7645-15	145.71



7802 ADAPTER *Conversion* ♠

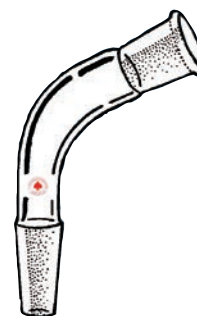
Used for converting a single neck round bottom flask to air-free operation. With outer joint at top and inner at bottom. Stopcock is 2mm bore.

Inner ⚗ Joint	Outer ⚗ Joint	Qty.	Order Code	Each
14/25	14/20	1	7802-09	90.49
24/40	24/40	1	7802-15	93.61

7803 ADAPTER 105° Angle ♠

With ⌘ joints, one 14/20 outer and one 14/35 inner, or one 24/25 outer and one 24/40 inner.

Inner ⌘ Joint	Outer ⌘ Joint	Qty.	Order Code	Each
14/35	14/20	1	7803-12	38.92
24/40	24/25	1	7803-25	40.22


7805 ADAPTER Straight ♠

With two ⌘ 14/20 outer joints, one 7mm drip tube.

Qty.	Order Code	Each
1	7805-12	54.66


7809 ADAPTER Gas ♠

With ⌘ inner joint and T-Bore, 2mm stopcock.

Inner ⌘ Joint	Qty.	Order Code	Each
14/20	1	7809-03	80.90
24/25	1	7809-07	84.99


7810 ADAPTER Gas ♠

With ⌘ outer joint and T-Bore, 2mm stopcock.

Outer ⌘ Joint	Qty.	Order Code	Each
14/35	1	7810-04	91.02
24/40	1	7810-08	94.67


8273 ADAPTER Cap ♠

15mm o-ring joint to blank cap.

Joint Size	Qty.	Order Code	Each
15mm	1	8273-05	17.01





8299 ADAPTER Thermometer, 10/20 ♠

Made of PTFE with nylon knurled nut to adapt standard chemical thermometers. For use in 10/18 or 10/30 joints. Simple to use: insert thermometer to desired depth, tighten nut. Maximum temperature of 160°C.

Order Code	Qty.	Each
8299-10	1	17.58

For a listing of thermometers, see page 159.



8300 ADAPTER Thermometer ♠

PTFE adapter with FETFE o-ring for use with plain stem thermometers, gas inlet tubes, etc. O-Ring compression seal allows adjustable depth positioning. The 10/18 size will accommodate tubes up to 6.5mm, all other sizes up to 7mm. Except for the 10/18 size all have external o-ring seal (Order Codes indicated in table). All include internal o-ring 7855-711.

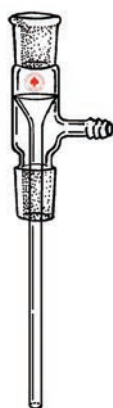
Bottom Joint	External FETFE O-Ring	Qty.	Order Code	Each	Bottom Joint	External FETFE O-Ring	Qty.	Order Code	Each
10/18	n/a	1	8300-05	26.67	24/25	7855-715	1	8300-16	33.60
14/20	7855-710	1	8300-07	21.71	29/26	7855-719	1	8300-21	44.31
19/22	7855-713	1	8300-09	28.90					



9059 ADAPTER Bleed ♠

With drawn capillary tip for the introduction of gases below the liquid surface. Can also be used with #7 Ace-Thred, i.e., 5028 (page 22). Outside diameter is 7mm. Length approx. 320mm (12-1/2 inches). Size D hose connections, for use with 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Straight Adapter	1	9059-08	5.87
Bent Adapter	1	9059-12	12.80



9121 ADAPTER Vacuum, Long Stem ♠

Useful as a vacuum adapter or addition tube. Stem length below joint is 130mm. Size A hose connection, for use with 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information. Outer 1/4 joint at top, inner 1/4 joint at bottom.

Bottom Joint	Qty.	Order Code	Each
14/20	1	9121-04	48.66
24/40	1	9121-06	58.62
29/42	1	9121-08	61.02

9328 ADAPTER *Bleed Capillary* ♠

Length measured from top of joint to tip. Size A hose connection, for use with 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information.

	For Flask Size, mL	Length, mm	Joint	Qty.	Order Code	Each
For use with 9465 type flasks. }	50	70	14/20	1	9328-18	36.53
	50	80	14/20	1	9328-22	36.53
For use with 9443 and 9448 style head and flask. }	50	184	14/20	1	9328-02	39.13
	100	207	14/20	1	9328-04	39.13



9554 ADAPTER *Thermometer Holder* ♠

Used in various Mini-Lab assemblies to hold standard thermometer.

Inner Bottom Joint	Qty.	Order Code	Each
14/20	1	9554-05	13.57
19/22	1	9554-09	13.67



12187 ADAPTERS *Stainless Steel, Circulator Hose* ★

304 Stainless steel adapters designed for use with ACE jacketed glass pilot plant reactors and circulator hoses for popular circulating chillers. One style connects o-ring ball joints on jacket inlet/outlet to hoses to/from circulator. The other style connects "M" style to NPT thread.

Connection Description	Qty.	Order Code	Each
Flask to Hose, 28/15 Socket to M16x1 Male	1	12187-05	91.49
Flask to Hose, 35/25 Socket to M16x1 Male	1	12187-07	96.88
Flask to Hose, 35/25 Socket to M24x1 Male	1	12187-10	96.88
Flask to Hose, 35/25 Socket to M30x1 Male	1	12187-12	96.88
Flask to Hose, 35/25 Socket to M38x1.5 Male	1	12187-14	96.88
Hose to Circulator, M16x1 Male to 3/4 inch NPT Male	1	12187-100	96.88
Hose to Circulator, M30x1.5 Male to 3/4 inch NPT Male	1	12187-101	96.88
Hose to Circulator, M24x1.5 Male to 3/4 inch NPT Male	1	12187-102	96.88



13290 ADAPTER *Conversion, Ace-Thred to Joint* ♠

Glass adapter with #15 or #25 Ace-Thred bottom to 24/40 or 29/42 outer joint top. For use with 13290 connecting adapter to connect vial or flasks to rotary evaporators.

Bottom Ace-Thred Size	Outer Top Joint	Qty.	Order Code	Each	Bottom Ace-Thred Size	Outer Top Joint	Qty.	Order Code	Each
15	24/40	1	13290-34	22.78	25	24/40	1	13290-37	79.26
15	29/42	1	13290-44	24.05	25	29/42	1	13290-47	80.98




13290 ADAPTER *Vial, PTFE, Rotary Evaporator* ★

Chemically inert PTFE adapter with #15 or #25 Ace-Thred and GPI vial thread inner to connect 13290 conversion adapter to matching vial for use in rotary evaporators. Suitable for vacuum work. Supplied with either FETFE or Chemraz o-ring. Fits into 13290 glass adapter. Note: FETFE not suitable for use with methylene chloride or acetone. Use Chemraz instead.

Inside GPI Thread	Outside Ace-Thred	Qty.	With FETFE O-Ring		With Chemraz O-Ring		
			Order Code	Each	Qty.	Order Code	Each
8-425	15	1	13290-11	20.23	1	13290-121	65.14
13-425	15	1	13290-13	20.23	1	13290-123	65.14
15-425	15	1	13290-15	20.23	1	13290-125	65.14
18-400	15	1	13290-18	20.23	1	13290-128	65.14
20-400	15	1	13290-20	20.23	1	13290-130	65.14
22-400	15	1	13290-22	20.23	1	13290-132	65.14
24-410	15	1	13290-24	20.80	1	13290-134	65.14
24-410	25	1	13290-26	58.18	1	13290-136	151.98


13430 ADAPTER *Bushing, Reducing, PTFE* ♠

Bushing type, fabricated from PTFE, with ⚙ joints.

Top Inside	Bottom Outside	Qty.	Order Code	Each	Top Inside	Bottom Outside	Qty.	Order Code	Each
10/30	14/35	1	13430-05	12.94	24/40	29/42	1	13430-25	27.80
10/30	19/38	1	13430-07	14.38	24/40	34/45	1	13430-28	28.76
14/35	19/38	1	13430-11	15.21	29/42	34/45	1	13430-32	29.10
14/35	24/40	1	13430-13	19.01	45/50	24/40	1	13430-40	133.50
19/38	24/40	1	13430-16	18.78	45/50	29/42	1	13430-42	134.88
19/38	29/42	1	13430-18	22.55	45/50	34/45	1	13430-44	103.76
19/38	34/45	1	13430-21	28.76					


13441 ADAPTER *Bellows, PTFE* ★

PTFE bellows used for correct alignment of ⚙ joints and relieves stress in reaction systems. Operates to 200°C.

Top ⚙ Outer	Bottom ⚙ Inner	Qty.	Order Code	Each
19/22	19/22	1	13441-19	75.63
19/38	19/38	1	13441-23	81.65
24/40	24/40	1	13441-28	91.36
29/42	29/42	1	13441-32	98.80
45/50	45/50	1	13441-36	140.72

5324 BEAKER MUG *Heavy-Wall, Graduated* ♠

400 mL heavy-wall, graduated beaker mug.

Qty.	Order Code	Each
1	5324-10	21.54


5332 BEAKER *Heavy-Wall, Pilot Plant Size* ★

Heavy wall beakers with spout.

Schott

Capacity, mL	O.D., mm	Height, mm	Qty.	Order Code	Each
5,000	182	256	1	5332-28	184.42
10,000	225	340	1	5332-33	371.89
15,000	260	390	1	5332-36	507.42
20,000	285	430	1	5332-39	585.48

*5,000mL size (only) is graduated.


5334 BEAKER *Quartz, Low Form* ★

With pouring spout.

Cap., mL	Approx. O.D. x Hgt., mm	Qty.	Order Code	Each	Cap., mL	Approx. O.D. x Hgt., mm	Qty.	Order Code	Each
50	45 x 50	1	5334-06	79.18	500	84 x 112	1	5334-20	208.26
100	51 x 62	1	5334-08	87.02	600	90 x 119	1	5334-22	292.91
250	67 x 86	1	5334-14	147.61	1000	107 x 140	1	5334-26	321.63
400	80 x 105	1	5334-18	203.27					


5340 BEAKER *Jacketed*

Jacketed beaker with one upper and one lower hose connection on opposite sides. Without pouring spout. See page 7 for more detailed hose connection information.

Cap., mL	Approx. Inside Hght., mm	Approx. Inside Dia., mm	Hose Connection Size (Inches)	Qty.	Order Code	Each
100	61	48	3/8 (D)	1	5340-03 ♠	109.43
250	89	65	3/8 (D)	1	5340-05 ♠	129.37
400	112	75	3/8 (D)	1	5340-10 ♠	165.56
600	152	81	3/8 (D)	1	5340-15 ♠	191.15
1000	175	91	3/8 (D)	1	5340-18 ♠	225.34
2000	190	119	7/16 or 1/2 (F)	1	5340-20 ♠	383.69
3000	225	133	7/16 or 1/2 (F)	1	5340-25 ♠	439.01
4000	232	150	7/16 or 1/2 (F)	1	5340-30 ★	798.49
5000	250	160	7/16 or 1/2 (F)	1	5340-35 ★	1018.03



For other beakers, contact Ace Glass for our reusable glass catalog.

5340 BEAKER Jacketed, with “Ace-Safe” Connectors

Same as 5340 beaker, except inlet/outlet have Ace-Thred in place of the serrated fittings for use with an “Ace-Safe” tubing connection barb. 100mL, 250mL and 400mL have #7 Ace-Thred for 1/4-inch tubing; all other capacities have #15 Ace-Thred for 3/8-inch or 1/2-inch tubing. For replacement connectors, see 5853. Supplied complete with hose connection with o-ring and nylon bushing.



Cap., mL	Approx. Inside Hgt., mm	Approx. Inside Dia., mm	For Tubing Size (In.)	Qty.	Order Code	Each
100	61	48	1/4	1	5340-103	♠ 110.83
250	89	65	1/4	1	5340-105	♠ 130.45
400	112	75	1/4	1	5340-110	♠ 166.85
600	152	81	3/8	1	5340-115	♠ 185.19
1000	175	91	3/8	1	5340-118	♠ 225.32
2000	190	119	3/8	1	5340-120	♠ 379.27
3000	225	133	1/2	1	5340-125	♠ 435.27
4000	232	150	1/2	1	5340-130	★ 786.58
5000	250	160	1/2	1	5340-135	★ 1002.10

5500 BEAKER PTFE ★

Molded, pure PTFE beaker with pour spout. Inert with smooth internal finish. Bottom machined for flatness to facilitate good heat transfer.



Capacity, mL	Height, mm	O.D., mm	Qty.	Order Code	Each
100	68	54	1	5500-05	24.16
250	97	66	1	5500-07	37.37
400	106	80	1	5500-09	54.43
600	125	90	1	5500-11	81.38
1000	155	100	1	5500-13	125.52

5500 BEAKER Thermotech™, PTFE ★

Pure inert PTFE beaker with pour spout. Bottom surface has molded stabilized PTFE-Carbon outer surface for better heat transfer and to handle higher temperatures up to 270°C.

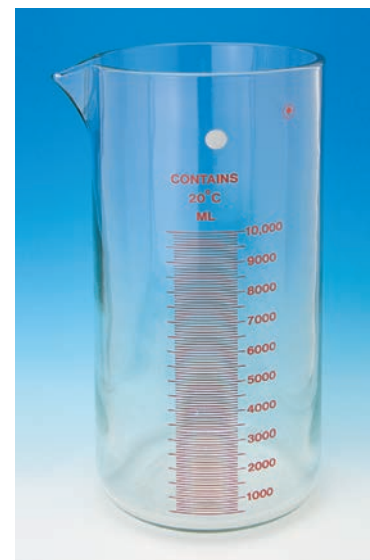


Capacity, mL	Height, mm	O.D., mm	Qty.	Order Code	Each
100	74	56	1	5500-22	60.02
250	94	75	1	5500-24	73.80
400	112	85	1	5500-26	114.68

6228/6231 BEAKER *Pilot Plant*

Large sizes for batch operations and mixing large volumes of measured liquids. Graduated.

Capacity, mL	Subdiv., mL	Approx. Height, mm	O.D., mm	Qty.	Order Code	Each
5,000	100	457	152	1	6228-05	♠ 346.05
10,000	100	457	223	1	6228-10	♠ 547.75
15,000	500	390	260	1	6231-21	★ 516.58
20,000	500	430	285	1	6231-27	★ 568.37


6233 BEAKER *Big Jars* ★

Cylindrical jars with side indents for easier handling. Made of heavy wall glass, the jars are graduated and have pour spout. **Caution: Do not apply open flame or heat.** Also available with poly safety coating.

Capacity, L	Subdiv., mL	Qty.	Order Code	Each
7.25	500	1	6233-07	501.48
9.25	500	1	6233-09	573.15
17	1,000	1	6233-17	653.92
26.5	2,000	1	6233-26	801.11
32	2,000	1	6233-32	1300.02


9605 INSTATHERM BEAKER *Griffin Low Form* ★

With lip and pouring spout. With silicone rubber treated glass cloth insulation for use up to 250°C. Use only 9698-20 cord for connection to ACE 12127 proportional temperature controller, or other power source. Includes controller cord.

Approx. (mm) I.D. x O.D. x Hgt.	Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Each
64 x 68 x 90	250	20/7	1	9605-40	305.93
72 x 77 x 110	400	40/6	1	9605-42	331.84
85 x 90 x 124	600	40/8	1	9605-44	362.85




12420 BEAKER *Griffin Low Form ♠*

Griffin-style **polypropylene** beakers for general laboratory use. Autoclavable. Combines “no-drip” pouring with unbreakability and maximum translucency. Approximate raised volume scales. Tapered walls for safe handling and convenient stacking. Lids not included.

Cap., mL	Package Quantity	Case Quantity	Order Code	Per Pkg.	Case Price
50	12	48	12420-06	35.45	141.78
100	12	48	12420-08	33.55	134.21
150	12	48	12420-10	51.29	205.16
250	6	36	12420-12	29.62	177.74
400	6	36	12420-14	30.17	181.02
600	4	24	12420-16	31.36	188.17
1000	3	12	12420-18	23.87	95.47
2000	1	6	12420-20	19.11	114.65
4000	1	6	12420-22	36.86	221.16


10300 BEAKER *Stainless Steel*

Seamless, polished, sanitary, 304 stainless steel, with handy pouring spout.

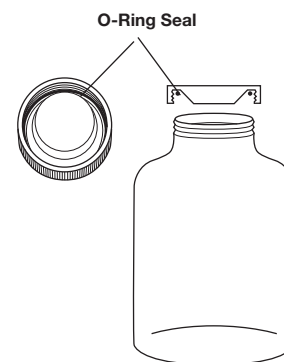
Capacity, mL	Approx. I.D.x Hght.,mm	Qty.	Order Code	Each
125	55 x 65	1	10300-04	99.81
250	64 x 84	1	10300-08	78.48
600	83 x 117	1	10300-10	90.42
1200	101 x 154	1	10300-13	112.48
2000	122 x 182	1	10300-16	165.66
4000	153 x 229	1	10300-20	220.97

**Contact ACE to get a copy of our complete
Reusable Glassware Catalog!**

4048 BOTTLE *Solution, Threaded Neck* ★

PYREX® brand, borosilicate glass bottle designed for storage of solutions. Bottles have GL120 external thread finish neck with large 106mm (4.2-inch) I.D. opening. The 9.5 liter and 13.25 liter sizes have a conventional bottle shape. The 19 liter and 45.5 liter sizes are similar in design to a carboy. A glass-filled PTFE cap with CAPFE (PTFE encapsulated silicone) o-ring is available. Cap sold separately.

Capacity, Liters	Capacity, Gallons	Approx. Dia., mm	Approx. Height, mm	Qty.	Order Code	Each Bottle Only
9.5	2.5	187	460	1	4048-09	285.52
13.25	3.5	238	380	1	4048-13	353.46
19.0	5	292	480	1	4048-19	388.68
45.5	12	406	520	1	4048-45	728.84
CAP, PTFE, Solid, GL 120, with CAPFE O-Ring				1	7622-155	189.49


BOTTLES
5345 BOTTLE *Single Neck* ♠

Made of heavy wall glass, with reinforced ⌘ outer joint. For stoppers, see 8250.

Capacity, mL	⌘ Joint	Qty.	Order Code	Each	Capacity, mL	⌘ Joint	Qty.	Order Code	Each
500	24/40	1	5345-12	57.28	2000	29/42	1	5345-20	109.92
1000	24/40	1	5345-16	55.31	4000	29/42	1	5345-24	173.32


5365 BOTTLE *Woulff* ♠

Three-neck, made of heavy wall glass with reinforced ⌘ outer joints.

Capacity, mL	⌘ Joints	Qty.	Order Code	Each
1000	24/40	1	5365-10	232.29

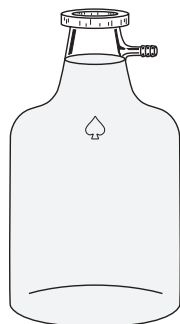
Contact ACE for smaller sizes.


5393 BOTTLE *Solution, Plastic Coated* ♠

Coated to neck with PVC safety coating to reduce potential breakage and exposure to laboratory personnel when handling hazardous material. Carboy style bottles with sloping shoulders. Necks are tooled for uniform fit with stoppers. Stopper not supplied.

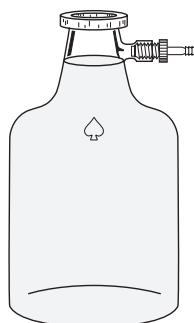
Cap., Liters	Approx. Cap., Gal.	Approx. Dia., mm	Approx. Height, mm	Rubber Stopper No.	Qty.	Order Code	Each
9.5	2.5	187	476	12	1	5393-06	342.21
13.25	3.5	238	438	12	1	5393-07	393.42
19.0	5	292	508	12	1	5393-09	464.53




5395 BOTTLE *Solution, Plastic Coated* ♠

Solution bottles with serrated vacuum take-off. Bottles are coated to neck with plastic safety coating. This translucent coating forms a protective film around the glass that will help contain both particles and dangerous chemicals should the glass break. Maximum temperature limit 80°C. Higher temperature coatings available on special order. All sizes have the sloping shoulders of the carboy style of bottle. Necks are tooled for uniform fit with stoppers. Use with 7/16-inch or 1/2-inch I.D. tubing, Size F hose connection. See page 7 for more detailed hose connection information. Stopper not supplied.

Cap., Liters	Approx. Cap., Gal.	Approx. Dia., mm	Approx. Height, mm	Rubber Stopper No.	Qty.	Order Code	Each
9.5	2.5	187	476	12	1	5395-02	423.58
13.25	3.5	238	438	12	1	5395-04	474.41
19.0	5	292	508	12	1	5395-06	531.88


5395 BOTTLE *Solution, Plastic Coated, with "Ace-Safe"* ♠

Same bottle as listed, with vacuum takeoff and plastic coated, except takeoff has a #15 Ace-Thred in place of the serrated fitting for use with an "Ace-Safe" tubing connection barb for 7/16-inch or 1/2-inch I.D. tubing. For replacement hose connections, see 5853. Supplied complete with Size F hose connection with o-ring and nylon bushing. See page 7 for more detailed hose connection information. Stopper not supplied.

Cap., Liters	Approx. Cap., Gal.	Approx. Dia., mm	Approx. Height, mm	Rubber Stopper No.	Qty.	Order Code	Each
9.5	2.5	187	476	12	1	5395-103	445.77
13.25	3.5	238	438	12	1	5395-105	496.76
19.0	5	292	508	12	1	5395-107	534.03


5399 BOTTLE *Aspirator* ♠

Schott

Borosilicate glass, heavy wall bottle with bottom tubulature. Use with 7/16-inch or 1/2-inch I.D. tubing, Size F hose connection. See page 7 for more detailed hose connection information.

Capacity, mL	Approx. Dia., mm	Approx. Height, mm	Rubber Stopper No.	Qty.	Order Code	Each
250	73	131	2	10	5399-01	573.30
500	89	162	4	10	5399-05	693.80
1,000	111	200	6	1	5399-09	92.70

6989 BOTTLE *Filtering, with Removable PP Hose Connection* ★ **Schott**

Heavy wall, bottle shaped, filtering flask with removable polypropylene hose connection. Offered clear or plastic coated. For replacement hose connection assembly, order 6989-40.

CLEAR GLASS

Capacity, mL	Body O.D., mm	Height, mm	Neck I.D., mm	Qty.	Order Code	Each
3,000	170	295	60	1	6989-15	149.59
5,000	185	360	70	1	6989-18	242.07
10,000	240	420	70	1	6989-21	357.08
15,000	255	500	70	1	6989-24	410.76
20,000	290	535	70	1	6989-27	515.79

PLASTIC COATED

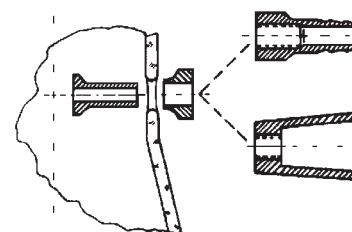
Capacity, mL	Body O.D., mm	Height, mm	Neck I.D., mm	Qty.	Order Code	Each
3,000	170	295	60	1	6989-115	183.78
5,000	185	360	70	1	6989-118	278.54
10,000	240	420	70	1	6989-121	419.51
15,000	255	500	70	1	6989-124	487.99
20,000	290	535	70	1	6989-127	576.99



6989-40 REPLACEMENT HOSE CONNECTION SET ★

Polypropylene hose connection, straight, and tubulature replacement set for 6989 bottles.

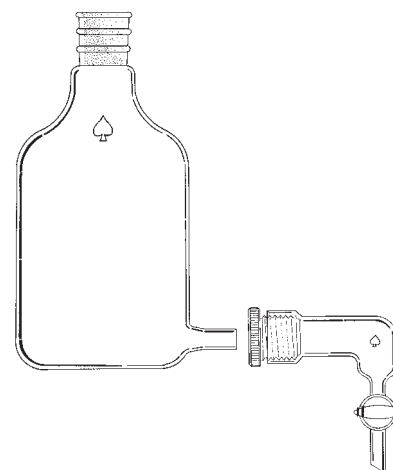
Package Qty.	Order Code	Per Package
10	6989-40	75.68



5400 BOTTLE *Dispensing, with Top ♂ Outer Joint* ♠

With 24mm O.D. drain extension near bottom for attaching stopcock shutoff valve. Shutoff is an 8mm bore PTFE plug stopcock with a #25 Ace-Thred at a right angle. Ace-Thred attaches to drain extension via a 7506-10 nylon bushing and FETFE o-ring. The 9.5 and 13.5 liter sizes are conventional bottle shape; 19 liter is similar in design to a carboy. Neck is ♂ 45/50 joint rather than a tooled neck for a rubber stopper. For full length stopper, order 8250-20. Order each part separately.

Approx. Capacity, Liters	Approx. Diameter, mm	Approx. Height, mm	Top Neck ♂ Joint	Qty.	Order Code	Flask only Each
9.5	187	476	45/50	1	5400-20	369.98
13.25	238	445	45/50	1	5400-27	412.51
19.0	292	508	45/50	1	5400-33	492.22
Shutoff Valve, only				1	5400-40	231.83
Bushing, Nylon, w/O-Ring				1	7506-10	21.17




12477 BOTTLE Aspirator with Spigot ♠

Constructed of polyethylene with polyethylene spigot and screw closure. Quick-action spigot, for easy, positive control, leakproof operation and long life. Suitable for collecting and dispensing distilled water, handling acids. Leakproof closures.

Cap., liters	Pkg. Quantity	Case Quantity	Order Code	Each	Case Price
4.0	1	6	12477-02	108.00	647.98
8	1	6	12477-04	152.80	916.81
20	1	4	12477-06	184.16	736.65
25	1	4	12477-08	207.74	830.97

5414 RESERVOIR Graduated Glass, Reagent ★

Heavy-wall borosilicate glass bottle with three PTFE valves with Tefzel keys. Pressure-tight PTFE coated Fluoron forms a seal within cap; hence, fluid contact is restricted to glass, PTFE and Tefzel. The three individually controlled valves permit the application of gas under pressure to the bottle for venting, flushing, or delivery of the bottle contents to one or two points. Bottles may be pressurized in isolation or in series with the other bottles. One of the valves may be used to allow corrosive fumes to be vented safely. Rated to 14 psi at ambient; **must be adequately shielded when under pressure**. Each bottle is provided with a three-valve, 1/4-28UNF cap ideal for use with our 5859 and 5855 tubing connectors.



Codes -07 thru -15 are clear glass reagent bottles (also available ambered).

Codes -137 thru -141 are U.V. resisting plastic coated solvent delivery bottles.

Reagent Reservoir, Clear, with Netting & Cap

Cap., mL	Qty.	Order Code	Each
250	1	5414-07	216.94
500	1	5414-10	216.94
1000	1	5414-15	216.94

Solvent Reservoir, Coated, with Cap

Cap., mL	Qty.	Order Code	Each
250	1	5414-137	230.63
500	1	5414-139	230.63
1000	1	5414-141	239.71

Accessory Items

	Qty.	Order Code	Each
Cap only, with valves	1	5414-502	199.88
Filter, Sparger, PTFE/Stainless Steel, 10 micron	1	5414-31	48.55
Filter, Bottle Bottom, PTFE, 10 micron	1	5414-32	41.70
Filter, Bottle Bottom, Polypropylene, 20 micron	1	5414-33	9.13
Filtered Check Valve, PTFE, 10 micron	1	5414-34	48.88

5415 BOTTLE Specific Gravity ♠

Conical shape flask for maximum stability. Supplied with non-mercury thermometers for accurate reading. Thermometer has a range of 14 to 38°C, 0.2°C subdivisions with $\frac{5}{16}$ 10/18 joint. Thermometer is 25mm immersion.

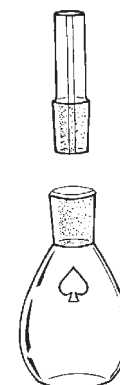


Cap., mL	Approx. Assembled Height, mm	Bottle only			Thermometer only			Complete		
		Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
10	168	1	5415-05	95.81	1	5415-06	93.63	1	5415-08	219.14
50	186	1	5415-12	112.93	1	5415-06	93.63	1	5415-16	236.29
		$\frac{5}{16}$ 12 Cap, only (Qty. 1)			Order Code 5415-07			27.55		

5420 BOTTLE *Specific Gravity* ♠

Guy-Lussac type unadjusted for calibration in the laboratory.

Cap., mL	Stopper	<i>Bottle only</i>			<i>Stopper only</i>			<i>Complete</i>		
		Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
2	7/12	1	5420-04	44.38	1	5420-05	31.30	1	5420-06	75.66
10	7/18	1	5420-16	43.50	1	5420-17	31.22	1	5420-18	74.70
25	10/18	1	5420-22	54.24	1	5420-23	31.69	1	5420-24	85.89


5425 BOTTLE *Specific Gravity, Calibrated* ♠

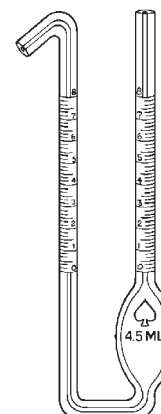
Similar to 5420 except calibrated (2mL — ±0.05mL; 5, 10, & 25mL — ±0.10mL) and engraved.

Capacity, mL	Qty.	Order Code	Each
2	1	5425-05	155.88
5	1	5425-10	157.65
10	1	5425-15	163.49
25	1	5425-20	175.32


5437 SPECIFIC GRAVITY PYCNOMETER TUBE ♠

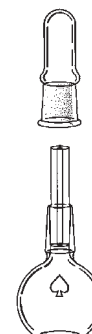
A method for measurement of light hydrocarbon liquids.

Bulb Cap., mL	Qty.	Order Code	Each
4.5	1	5437-12	225.13


5475 BOTTLE *Specific Gravity* ♠

Similar in design to No. 5420 except provided with cap to reduce evaporation losses when using volatile liquids. Stopper is 10/18 and cap 14/20 outer for both capacities.

Capacity, mL	Qty.	Order Code	Complete
10	1	5475-05	119.51
25	1	5475-10	128.10





5530 SERUM BOTTLE ♠

These borosilicate glass serum bottles meet the requirements of the Pharmacopeia of the United States (USP) for Type I glasses. Repeated sterilization does not affect Type I qualities. Offer maximum protection for delicate injectables and biological materials. With large mouth openings for ease in filling, emptying and cleaning.

Capacity, mL	Mouth I.D. x O.D., mm	Diameter x Height, mm	Case Quantity	Order Code	Case Price
5	13 x 20	23 x 47	288	5530-08	160.80
10	13 x 20	25 x 54	288	5530-10	225.09
20	13 x 20	32 x 58	288	5530-12	267.44
30	13 x 20	37 x 63	288	5530-14	338.56
50	13 x 20	43 x 73	288	5530-16	424.89
60	13 x 20	41 x 91	144	5530-18	237.09
100	13 x 20	52 x 95	144	5530-20	328.36
125	13 x 20	54 x 107	144	5530-22	459.58



5531 SEPTA Rubber Stopper Style ★

Rubber pharmaceutical style stopper septa for all serum vials and bottles with 13x20mm opening necks. These are referred to as 20mm stoppers. Made with tight tolerances to fit easily and securely. Rubber formulations include; gray butyl and natural red rubber. Silicone and other compounds are available.

For Mouth I.D. x O.D.	Case Qty.	Sleeve Style, Red Rubber Order Code	Case Price	Flange Style, Red Rubber Order Code	Case Price
13 x 20	1000	5531-06	348.33	5531-23	164.65
For Mouth I.D. x O.D.	Case Qty.	Slotted, Gray Butyl Order Code	Case Price	Flange Style, Gray Butyl Order Code	Case Price
13 x 20	1000	5531-33	201.56	5531-45	213.49
For Mouth I.D. x O.D.	Case Qty.	Flange Style, Gray Butyl, PTFE face Order Code	Case Price		
13 x 20	1000	5531-60	214.24		



12908 SEPTA Flat ★

19mm O.D. by 3mm thick, flat, white silicone septa bonded with white PTFE face. Resists coring when punctured via syringe needle.

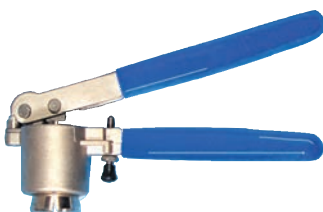
Qty. Pkg/72	Order Code	Per Package
	12908-60	76.60



5532 SEALS Aluminum ♠

Natural color Aluminum seals for use with any 20mm OD flat septa or 5531 flange style stoppers. Aluminum crimp-seals are for serum vials and bottles, headspace vials and any other crimp finish vials. For use with auto or hand crimping tools. Colored or color coded are available on special order as are other sizes.

Type: One-piece, center disc tears out			Type: One-piece, tears completely off			Type: Open top		
Case Qty.	Order Code	Case Price	Case Qty.	Order Code	Case Price	Case Qty.	Order Code	Case Price
1000	5532-07	80.42	1000	5532-27	72.62	1000	5532-37	69.54



5533 CRIMPER ★

For attaching aluminum seals. Crimper features a new ergonomic design cushioned handle that aids in reducing hand fatigue and provides a higher degree of comfort for the user. Each crimper is labeled for quick identification for seal size. Can be autoclaved.

For Seal Size, mm	Qty.	Order Code	Each
11	1	5533-03	290.06
20	1	5533-05	305.07

5534 PLIERS DECAPPER ★

For 20 mm seals only.

Qty.	Order Code	Each
1	5534-24	82.08



5535 DECAPPER ★

Decapper features a new ergonomic design cushioned handle that aids in reducing hand fatigue and provides a higher degree of comfort for the user. Labeled for quick identification for seal size. The new design removes seals quickly and efficiently. Can be autoclaved.

For Seal Size, mm	Qty.	Order Code	Each
11	1	5535-03	312.36
20	1	5535-07	312.20



5546 BOTTLE *Boston Round, Safety Coated, Clear* ★

Clear glass bottles, fabricated of soda lime, flint glass, PVC safety coated to reduce potential breakage and exposure to laboratory personnel in handling hazardous materials. Supplied without caps. For caps, see 12489. Not autoclavable.

Cap., Oz.	Dia. x Hgt*, mm	Screw Cap Size	Pkg. Qty.	Order Code	Pkg. Price
8	62 x 140	24-400	6	5546-08	26.02
16	76 x 170	28-400	6	5546-10	46.16
32	96 x 208	33-400	4	5546-12	36.40
80*	135 x 291	38-439C	2	5546-20	28.64

*80 oz. with jug handle



5547 BOTTLE *Boston Round, Safety Coated, Amber* ★

Amber glass bottles to protect light sensitive compounds, fabricated of soda lime, flint glass, PVC safety coated to reduce potential breakage and exposure to laboratory personnel in handling hazardous materials. Supplied without caps. For caps, see 12489. Not autoclavable.

Cap., Oz.	Dia. x Hgt*, mm	Screw Cap Size	Pkg. Qty.	Order Code	Pkg. Price
8	62 x 140	24-400	6	5547-09	29.39
16	76 x 170	28-400	6	5547-11	40.87
32	96 x 208	33-400	4	5547-13	36.05
1 Gal.	160 x 336	38-439C	2	5547-21	42.02



5549 BOTTLE *Wide Mouth, Safety Coated* ★

Clear glass bottles fabricated of soda lime, flint glass, PVC coated to reduce potential breakage and exposure to laboratory personnel in handling hazardous materials. Supplied without caps. For caps, see 12489. Not autoclavable.

Color	Cap., Oz.	Dia. x Hgt*, mm	Screw Cap Size	Pkg. Qty.	Order Code	Pkg. Price
Clear	8	75 x 90	70-400	6	5549-08	42.69
Clear	16	89 x 147	70-400	6	5549-16	44.73
Clear	32	97 x 180	70-400	4	5549-32	34.00

*Height without cap



12489 CAP *PTFE Lined* ★

Black phenolic plastic screw caps with PTFE liners for use with 5546, 5547 and 5549 bottles.

Cap Size	Package Quantity	Order Code	Package Price	Cap Size	Package Quantity	Order Code	Package Price
22-400	6	12489-04	7.51	33-400	4	12489-18	8.27
24-400	6	12489-08	13.62	38-430	4	12489-26	15.39
28-400	4	12489-16	10.33	70-400	4	12489-30	26.67



5537 BOTTLE *Borosilicate Glass, without Cap* ♠

Bottles of low-alkali content to prevent changes of pH and maintain the purity of contents. Large opening, special lip and sloping shoulders facilitate pouring and cleaning. Used for distilled water, analytical standards and reagents when fitted with a polyethylene-lined cap, or for the mixing and storage of culture media when fitted with a rubber-lined cap. Also available with PTFE liners that are inert to most chemicals. Rubber and PTFE-lined caps can be autoclaved. Graduated bottles show approximate volumes and have label space for pencil markings. For protection, these bottles are offered with safety coating. Autoclavable.

Note: ORDER CAPS SEPARATELY.


SAFETY COATED BOTTLE ONLY WITH GRADUATIONS

Cap., mL	Diameter x Height, mm	Screw Cap Size	Case Quantity	Order Code	Case Price
125	55 x 119	33-430	48	5537-03	165.07
250	67 x 148	33-430	48	5537-05	235.04
500	88 x 188	33-430	24	5537-09	179.67
1000	102 x 221	38-430	24	5537-11	114.16

BOTTLE ONLY WITH GRADUATIONS

Cap., mL	Diameter x Height, mm	Screw Cap Size	Case Quantity	Order Code	Case Price
125	55 x 119	33-430	48	5537-103	243.79
250	67 x 148	33-430	48	5537-105	328.03

BLACK PHENOLIC PLASTIC SCREW CAPS ONLY
with POLYETHYLENE LINER

Cap Size	Case Quantity	Order Code	Case Price	Cap Size	Case Quantity	Order Code	Case Price
33-430	200	12487-53	219.95	33-430	100	12487-64	334.72
38-430	200	12487-54	263.56	38-430	100	12487-65	347.25

with PTFE LINER
with RUBBER LINER

Cap Size	Case Quantity	Order Code	Case Price
33-430	200	12487-40	231.87
38-430	200	12487-41	273.81

5539 BOTTLE *Laboratory, GL Thread* ★

Duran

Chemically resistant and stable laboratory bottles, fabricated from borosilicate glass. Supplied graduated, with or without red PBT cap and removable pouring ring¹ that allows drip-free operation. Red cap has PTFE liner. For use up to 180°C. Not suitable for vacuum or pressure use. Can be hot air sterilized or autoclaved. For extra caps, see 7622 on page 67.



Cap., mL	Approx. Cap., Oz.	GL Thread Size	O.D., mm	Height, mm w/Cap	Case Qty.	With Red Cap		Without Cap	
						Order Code	Case Price	Order Code	Case Price
25 ¹	.34	25	36	74	10	5539-03	133.56	5539-49	103.27
25 ¹	.87	25	36	74	10	5539-05	92.87	5539-50	61.65
50	1.3	32	46	91	10	5539-08	131.37	5539-52	61.65
100	4	45	56	105	10	5539-10	160.04	5539-54	59.60
250	9	45	70	143	10	5539-15	173.37	5539-56	73.68
500	16	45	86	181	10	5539-18	197.72	5539-58	99.78
1000	33	45	101	230	10	5539-22	248.15	5539-60	153.94
2000	66	45	136	265	10	5539-25	480.18	5539-62	403.38
5000	169	45	182	335	1	5539-30	154.38	5539-64	179.62
10000	338	45	227	415	1	5539-35	290.60	5539-66	335.39
15000	507	45	268	450	1	5539-41	389.16	5539-68	464.34
20000	676	45	288	510	1	5539-44	536.12	5539-70	701.43

¹25 mL size NOT supplied with ring.

5539 BOTTLE *Laboratory, Safety Coated, GL Thread* ★

Duran

Chemically resistant and stable laboratory bottles, fabricated from borosilicate glass and plastic coated for protection against mechanical damage and to prevent leakage of contents should the glass break. Supplied graduated with or without red PBT cap and removable pouring ring that allows drip-free operation. Cap has PTFE liner. For use up to 135°C. Not suitable for vacuum or pressure use. Height measurement is with cap. Autoclavable. For extra caps, see 7622 on page 67.

Capacity, mL	GL Thread Size	O.D., mm	Height, mm w/Cap	Case Qty.	With Red Cap		Without Cap	
					Order Code	Case Price	Order Code	Case Price
100	45	56	105	10	5539-105	220.48	5539-150	187.15
250	45	70	143	10	5539-115	238.86	5539-152	235.84
500	45	86	181	10	5539-118	272.42	5539-154	287.11
1000	45	101	230	10	5539-122	351.46	5539-156	446.88
2000	45	136	265	10	5539-125	664.92	5539-158	741.22
5000	45	182	335	1	5539-130	203.54	5539-160	234.13


5539 BOTTLE *Laboratory, Ambered, GL Thread* ★

Duran

Chemically resistant and stable laboratory bottles, fabricated from borosilicate glass and ambered for protection of liquids sensitive to light. Supplied graduated with or without red PBT cap and removable pouring ring that allows drip-free operation. Cap has PTFE liner. For use up to 180°C. Not suitable for vacuum or pressure use. Height measurement is with cap. Autoclavable or good for hot air sterilization. For extra caps, see 7622 on page 67.

Capacity, mL	GL Thread Size	O.D., mm	Height, mm w/Cap	Case Qty.	With Red Cap		Without Cap	
					Order Code	Case Price	Order Code	Case Price
25*	25	36	74	10	5539-205	235.70	5539-250	257.68
50	32	46	91	10	5539-208	251.33	5539-252	257.68
100	45	56	105	10	5539-210	316.10	5539-254	263.79
250	45	70	143	10	5539-215	420.79	5539-256	389.31
500	45	86	181	10	5539-218	508.25	5539-258	493.34
1000	45	101	230	10	5539-222	621.55	5539-260	717.70
5000	45	182	335	1	5539-230	259.98	5539-262	285.10
10000	45	227	415	1	5539-235	478.56	5539-264	541.71
15000	45	268	450	1	5539-241	569.18	5539-266	648.13
20000	45	288	510	1	5539-244	1063.60	5539-268	1228.66

*25 mL size NOT supplied with ring.


5539 BOTTLE *Laboratory, Netted, GL Thread* ★

Duran

Chemically resistant and stable laboratory bottles, fabricated from borosilicate glass and netted for protection against mechanical damage. Supplied graduated with blue polypropylene cap and removable pouring ring that allows drip-free operation. For use to 140°C. Suitable for vacuum or pressure use (21 psig). Height measurement is with cap. For extra caps, see 7622 on page 67.

Capacity, mL	GL Thread Size	O.D., mm	Height, mm w/Cap	Case Qty.	Order Code	Case Price
250	45	70	143	1	5539-216	41.56
500	45	86	181	1	5539-219	44.24
1000	45	101	230	1	5539-224	45.59





- **Plastic Coating** is largely UV absorbent (to 380nm)
- Autoclavable in steam, max. 135°C.
- Not suitable for freezing, or for microwave operation.
- Do not use distilled water or vacuum for cooling.

5555 BOTTLE *Storage, Heavy Wall, Epoxy Coated* ♠

Heavy wall glass storage bottles with #15 Ace-Thred are intended only for storage of low-boiling liquids from -20°C to ambient. They are designed to resist internal pressures up to 100 psig in the stated temperature range. The low pressure rating is based primarily on the rating for PTFE/T.F.E. When purged with an inert gas before filling, peroxide formation is not progressive as in metal containers. Bottles are safety coated to the neck with a translucent, protective film to help prevent shattering and reduce spills.

Closures are inert PTFE plugs with FETFE o-rings that will not freeze. Two closure styles available: one with o-ring positioned at front of the thread (5846); the other with o-ring at top of thread (5845). (Note: Chemraz® o-rings are available for use with aggressive compounds that would attack FETFE.)

Complete with 5845 "Back Seal" Closure				Complete with 5846 "Front Seal" Closure			
Cap., mL	Qty.	Order Code	Complete	Cap., mL	Qty.	Order Code	Complete
50	1	5555-22	84.46	50	1	5555-23	84.74
125	1	5555-24	125.02	125	1	5555-25	125.30
*250	1	5555-32	137.89	*250	1	5555-33	138.17

COMPONENTS:

Qty.	Order Code	Each	Order Code	Each
Bottle, only, 50mL	1	5555-02	45.22	Replacement O-Rings for 5845
Bottle, only, 125mL	1	5555-03	85.78	FETFE O-Rings, Pk/6
Bottle, only, 250mL	1	5555-06	98.65	Chemraz O-Ring, Pk/1
PTFE Plug, only	1	5845-47	39.24	Replacement O-Rings for 5846
PTFE Plug, only	1	5846-48	51.36	FETFE O-Rings, Pk/12
				Chemraz O-Ring, Pk/1



5557 BOTTLE *Vacuum/Pressure Resistant, GL Thread* ★

Duran

Chemically resistant and stable laboratory bottles, approved for use under vacuum pressures up to 1.5 bar (21 psig) at ambient. Supplied bottle only, with blue graduations, without cap or pouring ring. For cap and ring, see 7622. Available clear, amber or plastic coated. Temperature range up to a maximum of 135°C for coated version, 500°C for clear and amber versions. See temperature ratings for caps. Order caps and pouring rings separately.

Capacity, mL	Type	GL Thread Size	O.D., mm	Height, mm	Case Qty.	Order Code	Bottle only Case Price
1000	Clear	45	101	230	10	5557-20	266.16
1000	Amber	45	101	230	10	5557-121	634.49
1000	Plastic Coated	45	101	230	10	5557-214	340.39



5559 BOTTLE *Wide Mouth, Clear, Amber, or Safety Coated* ★

Duran

Borosilicate glass wide-neck bottle with GLS 80 quick-release polypropylene blue closure for use up to 140°C. Graduated. See 7622 for GLS80 caps and pour rings.

Capacity, mL	Type	O.D., mm	Height, mm	Case Qty.	Order Code	Bottle only Case Price
500	Clear	101	148	10	5559-05	178.64
1,000	Clear	101	218	10	5559-07	210.67
5,000	Clear	182	311	1	5559-09	209.24
10,000	Clear	227	395	1	5559-20	382.38
20,000	Clear	288	483	1	5559-24	826.64
500	Amber	101	148	10	5559-205	892.63
1,000	Amber	101	218	10	5559-207	1094.41
5,000	Amber	182	311	1	5559-209	439.91
10,000	Amber	227	395	1	5559-220	641.76
20,000	Amber	288	483	1	5559-224	1315.39
500	Safety Coated	101	148	10	5559-300	459.27
1,000	Safety Coated	101	218	10	5559-302	574.05
5,000	Safety Coated	182	311	1	5559-304	396.50
10,000	Safety Coated	227	395	1	5559-306	464.55
20,000	Safety Coated	288	483	1	5559-308	1004.45

7622 CAPS/POURING RINGS for GL Threaded Bottles ★

Duran

Screw caps and pouring rings for use with Schott GL threads. Red caps have PTFE liner, all others are with lip seal. For 5539, 5557, 5559, and 5560 bottles.

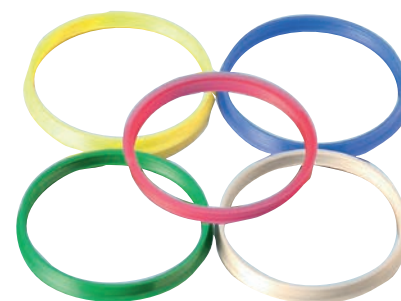
**Color-Coded
Caps and
Pouring Rings**

For Thread		CAPS							Case
Size	Material	Color	Temperature Range, °C	O.D., mm	Height, mm	Case Qty.	Order Code	Price	
25	Polypropylene	Blue	-40 to +140	33	19	10	7622-02	27.41	
25	Polybutylene Teraphthalate	Red	-45 to +180	33	19	10	7622-14	54.28	
25	Polybutylene Teraphthalate	Red	-45 to +180	33	19	1	7622-114	5.52	
32	Polypropylene	Blue	-40 to +140	40	24	10	7622-04	27.39	
32	Polybutylene Teraphthalate	Red	-45 to +180	40	24	10	7622-21	84.62	
32	Polybutylene Teraphthalate	Red	-45 to +180	40	24	1	7622-121	8.60	
45	Polypropylene	Blue	-40 to +140	54	26	10	7622-06	32.90	
45	Polypropylene	Yellow	-40 to +140	54	26	10	7622-32	32.90	
45	Polypropylene	Green	-40 to +140	54	26	10	7622-35	32.90	
45	Polypropylene	Grey	-40 to +140	54	26	10	7622-37	32.90	
45	Polybutylene Teraphthalate	Red	-45 to +180	54	26	10	7622-24	126.42	
45	Polybutylene Teraphthalate	Red	-45 to +180	54	26	1	7622-124	12.58	
80	Polypropylene	Blue	-40 to +140	86	40	10	7622-38	50.63	



7622 Caps

For Thread		POURING RINGS					Case
Size	Material	Color	Temperature Range, °C	Height, mm	Case Qty.	Order Code	Price
32	Polypropylene	Blue	-40 to +140	4	10	7622-52	11.62
45	Polypropylene	Blue	-40 to +140	4	10	7622-54	12.62
32	Polybutyleneteraphthalate	Red	-45 to +180	4	10	7622-56	30.70
45	Polybutyleneteraphthalate	Red	-45 to +180	4	10	7622-58	33.15
45	Polypropylene	Green	-40 to +140	4	10	7622-60	10.72
45	Polypropylene	Yellow	-40 to +140	4	10	7622-62	10.72
45	Polypropylene	Grey	-40 to +140	4	10	7622-64	10.72
80	Polypropylene	Blue	-40 to +140	7	10	7622-65	34.61



7622 Pouring Rings

7627 CAP & POUR RING Premium, for GL Threaded Bottles ★

Duran

This premium cap is designed for GL45 thread Duran bottles. It is made of colorless, TPCh260 resin so that there are no leachables. High chemical resistance and leak tight due to a PTFE coated silicone seal. Meets USP standards. Autoclavable. Retrace code.

Description	Temperature Range, °C	O.D., mm	Height, mm	Case Qty.	Order Code	Case Price
Cap	-196 to +260	51	26	5	7627-02	108.48
Pour Ring	-196 to +260	51	4	5	7627-03	26.44




7628 CAP & POUR RING for GL80 Threaded Bottles,
 Quick Release, PSU ★
Duran

Quick-release closure for new GL80 thread, wide-mouth bottles. Made of white polyarylsulphone 1 resin, which gives high thermal, mechanical and chemical compatibility. Inner-seal is coated both sides with PTFE. Pour ring also available in PSU.

Description	Maximum Temp., °C	O.D., mm	Height, mm	Case Qty.	Order Code	Case Price
Cap	+180	86	40	5	7628-03	260.93
Pour Ring	+180	86	6.85	5	7628-04	159.20


7629 CAP PTFE Membrane, for GL Threaded Bottles ★
Duran

Polypropylene, blue cap with center-hole and welded-in, PTFE, inner gas permeable membrane. Ideal for media sterilization and storage. For use on 5539, 5557, 5559 and 5560 bottles.

For Thread Size	Temperature Range, °C	O.D., mm	Height, mm	Case Qty.	Order Code	Case Price
25	-40 to +140	33	19	5	7629-25	79.24
32	-40 to +140	41	24	5	7629-32	79.82
45	-40 to +140	54	25	5	7629-45	46.19
80	-40 to +140	86	40	2	7629-80	27.44

7631 CAP GL80 Connection System ★

The heart of the GL80 connection system is a GL80 polypropylene cap with 4, GL18 threaded ports. Modular accessories include polypropylene tube connection caps, GL18 solid polybutylene terephthalate (PBT) caps, GL18 PBT pressure equalization caps and PTFE cap inserts to accommodate various sizes of tubing. A typical application is the safe transfer of liquid media within a closed and sterile system for which you'd need one two-pack code -01 GL80 cap, two -04 equalization caps, and some combination of solid caps and tubing connections with inserts.

Description	Package Qty.	Order Code	Package Price
4-Port (GL18) Polypropylene Cap	2	7631-01	252.98
GL18 Polypropylene Tube Connection	2	7631-02	24.46
Solid GL18 PBT Cap	2	7631-03	10.96
GL18 PBT Cap with Pressure Equalizing Valve	1	7631-04	48.31
3.2mm I.D. PTFE Cap Insert	1	7631-10	29.75
6.0mm I.D. PTFE Cap Insert	1	7631-11	29.75
8.0mm I.D. PTFE Cap Insert	1	7631-12	29.75
10.0mm I.D. PTFE Cap Insert	1	7631-13	29.75
12.0mm I.D. PTFE Cap Insert	1	7631-14	29.75

Duran

7632 CAP GL45 Connection System ★

The heart of the GL45 connection system is a GL45 polypropylene cap with GL18 threaded ports. Modular accessories include polypropylene tube connection caps, GL18 solid polybutylene terephthalate (PBT) caps, GL18 PBT pressure equalization caps and PTFE cap inserts to accommodate various sizes of tubing. A typical application is the safe transfer of liquid media within a closed and sterile system for which you'd need one two-pack GL45 cap, two -07 equalization caps, and some combination of solid caps and tubing connections with inserts.

Description	Package Qty.	Order Code	Package Price
2-Port (GL14) Polypropylene Cap	2	7632-01	105.56
3-Port (GL14) Polypropylene Cap	2	7632-02	113.25
GL14 Polypropylene Tube Connection	2	7632-05	15.30
Solid GL18 PBT Cap	2	7632-06	8.37
GL14 PBT Cap with Pressure Equalizing Valve	1	7632-07	46.70
Extra Pressure Membranes for 7632-07	2	7632-08	30.61
1.6mm I.D. PTFE Cap Insert	1	7632-10	25.39
3.0mm I.D. PTFE Cap Insert	1	7632-11	26.26
3.2mm I.D. PTFE Cap Insert	1	7632-12	25.39
6.6mm I.D. PTFE Cap Insert	1	7632-13	25.39

Duran



5560 BOTTLE *Laboratory, Square, GL Thread* ★

Duran

Chemically resistant square bottles, fabricated from borosilicate glass. Graduated with polypropylene blue cap and removable pouring ring that allows drip-free operation. For use up to 140°C. Not suitable for vacuum or pressure use. Can be hot air sterilized. Height measurement is with cap.

Capacity, mL	GL Thread Size	O.D., mm	Height, mm	Case Qty.	Order Code	Case Price
100	32	50	109	10	5560-10	172.72
250	45	64	143	10	5560-15	194.96
500	45	78	181	10	5560-20	242.69
1000	45	94	222	10	5560-25	344.13


12431 BOTTLE *HDPE Rectangular* ♠

Rectangular shape wide mouth bottles take less shelf space. Sturdy, heavy-wall construction for laboratory use and drug storage. Made of high-density polyethylene with leakproof screw closures. Well suited for shipping and storing both liquids and dry materials.

Cap., mL	Screw Cap Size	Package Quantity	Case Quantity	Order Code	Per Pkg.	Case Price
120	38	12	72	12431-05	29.79	160.84
500	43	12	48	12431-11	33.94	122.20
1000	53	6	24	12431-15	29.87	107.53


12461 BOTTLE *Wash, Economy* ♠

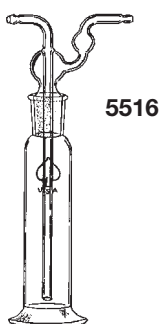
Wash bottle with a top-angled spout at a money-saving price. Bottle, tubing and tip are made of polyethylene with polyallomer cap and nozzle. Molded tip dispenses uniform stream, can be cut back to increase flow.

Cap., mL	Package Quantity	Case Quantity	Order Code	Per Pkg.	Case Price
125	12	48	12461-07	52.99	211.94
250	12	36	12461-09	53.77	161.30
500	6	24	12461-11	31.68	126.70
1000	3	12	12461-13	24.31	97.24


12464 SAFETY WASH BOTTLE *Safety Labeled* ♠

Guaranteed leakproof wide mouth wash bottles made of flexible, impact-resistant polyethylene with color-coded polyallomer closure and spout. Standard "diamond alert" symbols indicate what type hazard the contents may present. Available in 500 mL.

Chemical	Capacity, mL/oz	Package Quantity	Case Quantity	Order Code	Per Pkg. 6	Per Case 12
Acetone	500/16	6	12	12464-02	38.93	77.85
Ethanol	500/16	6	12	12464-06	38.93	77.85
Methanol	500/16	6	12	12464-10	38.93	77.85
Isopropanol	500/16	6	12	12464-14	38.93	77.85
Toluene	500/16	6	12	12464-16	38.93	77.85
Water	500/16	6	12	12464-18	38.93	77.85


5516 BOTTLE *Gas Washing* ♠

Dreschel, high form with 24/40 joint.

Capacity, mL	Bottle only			Stopper only			Complete		
	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
125	1	5516-05	51.00	1	5516-06	69.57	1	5516-08	120.57
500	1	5516-14	62.37	1	5516-15	69.68	1	5516-16	132.05

For a complete listing of gas washing bottles, see page 286.


5758 BURET *Both Ends Open* ♠

Graduated straight-through buret, open at top and bottom. Top is beaded, bottom is fire polished. Used in fabrication of apparatus requiring graduation.

Cap., mL	Scale Length, mm	Overall Length, mm	Subdivisions, mL	Qty.	Order Code	Each
25	322	425	1/10	1	5758-04	67.17
100	500-600	600-700	1/5	1	5758-08	108.83
250	310-350	410-450	1	1	5758-10	168.52


5760 BURET *Measuring* ♠

Laboratory grade, with blunt, 7.5-8mm O.D. tip.

Capacity, mL	Subdivisions, mL	Qty.	Order Code	Each
10	1/20	1	5760-10	58.95
50	1/10	1	5760-20	92.16


5771 BURET *Dispensing* ♠

Laboratory grade. Size E hose barb for connecting to 1/4-inch tubing at bottom.

Capacity, mL	Scale Length, mm	Approx. Overall Length, mm	Subdivisions, mL	Qty.	Order Code	Each
500	400	600	5	1	5771-35	183.37
1000	530	705	10	1	5771-40	232.98



For other burets, contact Ace Glass for our reusable glassware catalog. See page 136 for buret stand.

3865 CLONING CYLINDER ♠

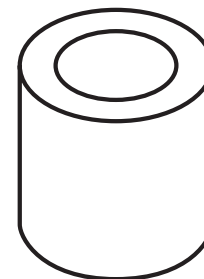
Clone a single cell or group of cells by surrounding them with this glass cylinder. Dip the end of the cylinder into a sterile silicone grease before pressing to the bottom of a culture flask to create an isolated well.

Approx. O.D. x Height, mm	Case Quantity	Order Code	Per Case
6 x 8	125	3865-06	66.49
8 x 8	125	3865-08	66.49
10 x 10	125	3865-10	76.71

3865 CLONING CYLINDER ♠

Cylinders for use in the Disinfectant Procedure as described in the 1992 J.A.O.A.C. *Hard Surface Carrier Test for Efficacy Testing of Disinfectants: Collaborative Study*. Tubes are glazed on both ends.

Approx. O.D. x Height, mm	Case Quantity	Order Code	Per Case
8 x 8	125	3865-52	75.01
10 x 10	125	3865-55	92.03


3868 FILLING BELL *Aseptic* ♠

For aseptic filling of vessels. Rubber tubing is attached to the top hose connection, the receiving vessel is placed inside the bell.

For Use With	Hose Connection	Hose O.D., mm	Approx. I.D. x Height, mm	Case Quantity	Order Code	Case/2
Tubes	D	11.0	22 x 75	2	3868-02	57.79
Tubes	D	11.0	41 x 95	2	3868-04	88.60
Bottles	D	11.0	49 x 95	2	3868-05	97.15
Bottles	D	11.0	70 x 130	2	3868-07	114.19
Bottles	F	12.7	104 x 140	2	3868-10	180.68


3874 FLASK *Culture, Fernbach, Triple Baffled, Beaded Neck* ♠

Wide mouth flask designed for culturing organisms requiring a large surface-area-to-volume ratio. Triple baffles on the bottom edges to achieve maximal oxygen transfer to culture medium. Beaded neck is 63 mm I.D. and accepts cotton plugs or rubber stoppers. Caution: Do not place on direct heat source. Stopper NOT included.

Capacity, mL	Approx. O.D. x Height, mm	Use Stopper Size	Case Quantity	Order Code	Case/3
1800	200 x 157	#10	3	3874-18	340.69
2800	205 x 225	#13	3	3874-30	429.73




3875 FLASK *Culture, Fernbach, Baffled, Plain Neck, without Closure* ♠

With a long-style 38 mm neck for plastic or Stainless Steel closures. Triple baffles are located at the center of the bottom to achieve maximal oxygen transfer to culture medium. Caution! Do not place on direct heat source.

Capacity, mL	Closure Size, mm	Approx. O.D. x Height, mm	Case Quantity	Order Code	Case/3
1800	38	200 x 157	3	3875-20	584.08
2800	38	205 x 250	3	3875-31	429.73


3877 FLASK *Culture, Fernbach, Baffled, Screw Cap* ♠

Wide mouth flask designed for culturing organisms requiring a large surface-area-to-volume ratio. Triple baffles on the bottom outside edges to achieve maximal oxygen transfer to culture medium. Supplied with GL45 polypropylene cap. Caution! Do not place on direct heat source.

Capacity, mL	Approx. O.D. x Height, mm	Qty.	Order Code	Each
1800	200 x 157	1	3877-30	146.00
2800	205 x 225	1	3877-45	157.38


3879 FLASK *Culture, Fernbach, 38mm Neck, without Closure* ♠

Designed for culturing organisms requiring a large surface-to-volume ratio. With long 38 mm neck that takes Stainless Steel or plastic closures. Without baffles.

Capacity, mL	Closure Size, mm	Approx. O.D. x Height, mm	Case Quantity	Order Code	Case
1800	38	200 x 157	3	3879-18	442.92
2800	38	205 x 250	3	3879-30	411.18
4000	38	205 x 400	1	3879-34	231.32


3883 FLASK *Shaker, with Three Side Baffles, without Closure* ♠

Long-style neck with three side baffles to enhance gas transfer when used with rotary or reciprocating shakers. Long neck reduces splashing and is designed for polypropylene closures.

	Approx. O.D. x Height, mm	Approx. Neck O.D., mm	Case Quantity	Order Code	Case
Flask, only, 50 mL	60 x 105	18	12	3883-03	333.20
Flask, only, 125 mL	67 x 140	25	12	3883-05	294.03
Flask, only, 250 mL	80 x 160	38	12	3883-07	302.82
Flask, only, 300 mL	88 x 170	38	12	3883-09	342.87
Flask, only, 500 mL	100 x 205	38	12	3883-11	367.60
Flask, only, 1000 mL	130 x 240	38	6	3883-13	259.71
Flask, only, 2000 mL	160 x 295	38	3	3883-15	235.20

3884 FLASK *Shaker, without Closure* ♠

With long-style neck for use with plastic closures. Ideal for growing, storing and mixing of aerobic and anaerobic cultures.

Capacity, mL	Approx. O.D. x Height, mm	Closure Size, mm	Case Quantity	Order Code	Case
25	40 x 90	18	24	3884-05	297.07
50	50 x 100	18	24	3884-10	316.63
125	70 x 140	25	12	3884-15	173.19
250	85 x 155	38	12	3884-19	205.82
300	90 x 165	38	12	3884-23	209.89
500	100 x 200	38	12	3884-26	223.55
1000	130 x 240	38	6	3884-30	168.23
2000	160 x 300	38	3	3884-34	174.93
4000	205 x 370	38	3	3884-37	371.11
6000	237 x 410	38	3	3884-40	1632.89



3887 FLASK *Shaker, with Three Deep Baffles, without Closure* ♠

Long-style neck with three extra deep baffles to enhance gas transfer when used with rotary or reciprocating shakers. Long neck reduces splashing and is designed for polypropylene closures.

	Approx. O.D. x Height, mm	Approx. Neck O.D., mm	Case Quantity	Order Code	Case
Flask, only, 50 mL	50 x 100	18	12	3887-05	277.07
Flask, only, 125 mL	67 x 140	25	12	3887-07	279.02
Flask, only, 250 mL	80 x 160	38	12	3887-09	281.13
Flask, only, 300 mL	88 x 170	38	12	3887-11	284.89
Flask, only, 500 mL	100 x 200	38	12	3887-13	296.92
Flask, only, 1000 mL	130 x 240	38	6	3887-17	225.66
Flask, only, 2000 mL	160 x 300	38	3	3887-19	184.58
Flask, only, 3000 mL	185 x 327	38	3	3887-22	372.59
Flask, only, 4000 mL	207 x 370	38	3	3887-24	504.73



3889 FLASK *Shaker, Baffled, with Beaded Neck* ♠

Used for converting homogenous tissue samples into cell suspensions by digestion of connective tissues. Stopper NOT included.

	Approx. O.D. x Height, mm	Approx. Neck O.D., mm	Use Stopper Size	Case Quantity	Order Code	Case
Flask, only, 125 mL	67 x 105	30	#5	12	3889-14	243.40
Flask, only, 250 mL	80 x 130	35	#6	12	3889-18	262.34
Flask, only, 500 mL	100 x 170	40	#6	12	3889-22	484.99
Flask, only, 1000 mL	130 x 215	50	#7	6	3889-24	267.23
Flask, only, 2000 mL	160 x 285	55	#8	3	3889-29	224.42




3890 FLASK *Shaker, Deep Baffles, with Beaded Neck* ♠

Used for converting homogenous tissue samples into cell suspensions by digestion of connective tissues. Stopper NOT included.

	Approx. O.D. x Height, mm	Approx. Neck O.D., mm	Use Stopper Size	Case Quantity	Order Code	Case
Flask, only, 250 mL	85 x 130	35	#6	12	3890-04	264.30
Flask, only, 300 mL	90 x 140	35	#6	12	3890-06	269.26
Flask, only, 500 mL	100 x 170	40	#6	12	3890-09	296.92
Flask, only, 1000 mL	130 x 215	50	#7	6	3890-13	224.16
Flask, only, 2000 mL	160 x 285	55	#8	3	3890-18	199.38


3891 FLASK *Shaker, with Three Side and Three Bottom Baffles, without Closure* ♠

Similar to 3887, except these long-style neck flasks have three extra-deep baffles on side and bottom to enhance gas transfer when used with rotary or reciprocating shakers. Long neck reduces splashing and is designed for polypropylene closures.

	Approx. O.D. x Height, mm	Approx. Neck O.D., mm	Case Quantity	Order Code	Case
Flask, only, 250 mL	80 x 160	38	12	3891-06	411.64
Flask, only, 500 mL	100 x 200	38	12	3891-11	509.47
Flask, only, 1000 mL	128 x 240	38	6	3891-14	362.59
Flask, only, 2000 mL	158 x 300	38	3	3891-20	272.78
Flask, only, 3000 mL	184 x 327	38	3	3891-25	422.85
Flask, only, 4000 mL	205 x 370	38	3	3891-29	558.63


3893 FLASK *Shaker, with Four Bottom Baffles, without Closure* ♠

With four bottom baffles. Long-style 38 mm neck. Used for converting homogenous tissue samples into cell suspensions by digestion of connective tissues. With constricted neck to reduce spillage and foaming.

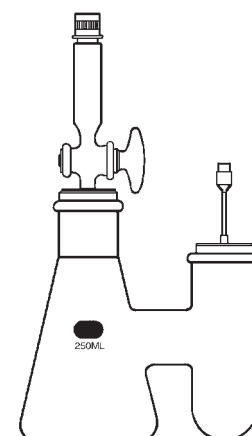
	Approx. O.D. x Height, mm	Case Quantity	Order Code	Case
Flask, only, 250 mL	81 x 160	12	3893-07	356.88
Flask, only, 500 mL	100 x 200	12	3893-12	392.15
Flask, only, 1000 mL	128 x 240	6	3893-16	290.08

Contact Ace Glass for custom sizes or designs of cell culture glassware.

3894 FLASK *Biometer, with Stopcock* ★

Use to measure production of carbon dioxide produced by microorganisms grown on a variety of culture media over long periods of time. Minimizes the need for commonly used gas trains. Also useful in Bioremediation studies. Supplied complete with #6 rubber stopper in the flask neck, #7 rubber stopper in the side tube, and 16-gauge needle. Delivery funnel has a 15-415 PTFE-lined screw cap and 1/2 12/30 stopcock plug with 2mm bore.

	Approx. Overall x Height, mm	Case Quantity	Order Code	Each
Complete, 250 mL	—	1	3894-40	153.36
Replacement cap, phenolic, with PTFE liner	—	288	4240-11	287.31



3906 FLASK *Media Storage and Dispensing, Bottom Hose* ♠

Used for sterile dispensing; use with an aseptic filling bell. Bottom 1/2-inch hose connection assures aseptic drainage. With beaded rim.

Capacity, mL	Stopper Size	Approx. O.D. x Height, mm	Case Quantity	Order Code	Case
250	#6	80 x 130	6	3906-03	281.56
500	#6	101 x 183	6	3906-05	258.79
1000	#9	128 x 225	6	3906-07	436.06
2000	#9	158 x 290	3	3906-09	304.56
4000	#10	205 x 355	3	3906-11	576.90
6000	#11	235 x 395	2	3906-13	472.71



3908 FLASK *Nephelo Culture, without Closure* ♠

Long-style neck accommodates a 25 mm Stainless Steel or plastic closure. Ideal for growing, and mixing of aerobic and anaerobic cultures. Side arm fits standard spectrophotometers.

Capacity, mL	Sidearm Size, mm	Case Quantity	Order Code	Case/4
125	14 x 130	4	3908-20	136.23
300	14 x 130	4	3908-24	142.59



3912 FLASK *Nephelo Culture, Triple Baffled, without Closure* ♠

Long-style neck accommodates a 25 mm Stainless Steel or plastic closure. Ideal for growing, storing and mixing of aerobic and anaerobic cultures. Has standard cuvette size side arm.

Capacity, mL	Sidearm Size, mm	Case Quantity	Order Code	Case/4
300	12 x 130	4	3912-03	169.86
300	14 x 130	4	3912-05	171.43
300	19 x 130	4	3912-07	192.26





3914 FLASK *Nephelo Culture, Triple Baffled, with Screw Cap* ♠

Threaded neck with cleanout port and depressed sidearm. Ideal for growing, storing and mixing of aerobic and anaerobic cultures. Supplied with GPI #38-415 and GPI #18-415 nontoxic, rubber-lined phenolic screw caps.

Capacity, mL	Sidearm Size, mm	Case Quantity	Order Code	Case/4
300	14 x 130	4	3914-07	307.64
500	14 x 130	4	3914-11	346.11
300	19 x 130	4	3914-19	314.11
500	19 x 130	4	3914-24	358.96

3918 CLOSURES *Stainless Steel* ♠

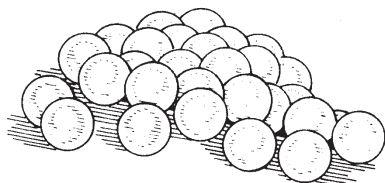
Closures for use with long-style necks on culture flasks. Autoclaveable.



For Neck Size, mm	<i>With Finger Indents</i>			<i>Without Finger Indents</i>		
	Case Qty.	Order Code	Case	Case Qty.	Order Code	Case
13	144	3918-50	266.17	144	3918-56	219.43
16	144	3918-51	297.66	144	3918-57	252.15
18	144	3918-52	316.35	144	3918-58	270.11
20	144	3918-53	335.05	144	3918-59	290.04
25	72	3918-54	221.40	72	3918-61	171.09
38	36	3918-55	419.06			

8035 BEADS *Solid Borosilicate Glass* ♠

PYREX® brand solid glass beads. Useful as packing for distillation columns, mixing beads and boiling stones. Packaged in 0.45 kg. (1 lb.) boxes, with a packing volume of approximately 360 cm³.



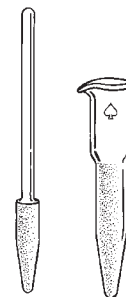
Approx. Diameter, mm	Avg. Count Per Pound	Pkg. Qty.	Case Qty.	Order Code	Per Case
3 ± ¼	13,600	1	4	8035-03	1116.55
4 ± ¼	5,700	1	4	8035-05	944.65
5 ± ¼	3,000	1	4	8035-07	730.41
6 ± ¼	1,700	1	4	8035-09	787.41

See page 569 for mechanical homogenizers & probes.

8325 TISSUE HOMOGENIZER *Tapered, Glass, Interchangeable* ♠

Highly efficient, all glass, tapered tissue grinder combining two grinding surfaces on a single pestle and tube. The conical area is for initial grinding and the cylindrical area for final homogenization. Interchangeably ground to 0.1–0.15mm clearance. With pouring lip. The 10mm rod on the three larger size pestles may be used with the 8124-10 “Flex-Grip” chuck. The 6mm rod on the small size is for use with the 8124-05 chuck. Capacities represent volumes with pestle inserted.

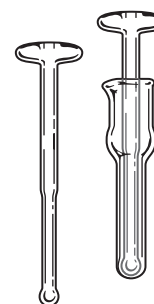
Cap., mL	Tube, only			Pestle, only			Complete		
	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
2	1	8325-04	60.32	1	8325-06	44.37	1	8325-08	104.69
15	1	8325-16	70.46	1	8325-18	60.57	1	8325-20	131.03
30	1	8325-22	72.90	1	8325-24	63.13	1	8325-26	136.03
50	1	8325-28	81.05	1	8325-30	65.51	1	8325-32	146.56



8343 TISSUE HOMOGENIZER *Dounce, Two Glass Pestles* ★

Supplied with two pestles, one “loose” and one “tight,” to ensure dissociation of cells into fine particles with minimal damage to cell nuclei. Use the large-clearance pestle for initial reduction of soft tissue. Complete the homogenization with the small-clearance pestle. Particularly useful in enzyme studies where heat build-up must be avoided.

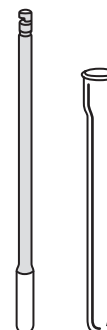
Approx. Capacity, mL	Body O.D. x Height, mm	Overall Length, mm	Qty.	Order Code	Pkg./2
1	11 x 48	125	2	8343-01	184.25
7	13 x 82	175	2	8343-07	202.88
15	22 x 94	210	2	8343-15	233.16
40	32 x 140	285	2	8343-40	290.22



8355 TISSUE HOMOGENIZER *Potter-Elvehjem, PTFE Pestle* ★

Homogenization occurs as the sample and buffer are forced through the cylindrical portion of the mortar as the pestle is rotated downward. Mortar is unground and the pestle contact surface is PTFE, threaded onto a stainless steel shaft.

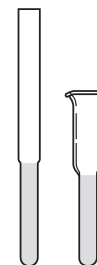
Approx. Capacity, mL	Body O.D. x Height, mm	Overall Length, mm	Qty.	Order Code	Each
2	11 x 45	203	2	8355-02	178.40
5	13 x 66	219	2	8355-05	165.45
10	16 x 74	219	2	8355-10	167.31
15	19 x 84	219	2	8355-15	190.80
30	24 x 118	266	2	8355-30	222.26
55	30 x 130	266	2	8355-55	264.15



8357 TISSUE HOMOGENIZER *Potter-Elvehjem, Micro* ★

Micro size for extremely precise work. This unit is designed for delicate hand operation. A reservoir and pouring lip are incorporated into the design.

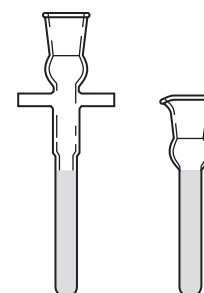
Approx. Capacity, mL	Body O.D. x Height, mm	Overall Lgth., mm	Qty.	Order Code	Pkg./2
0.1	4 x 65	110	2	8357-03	99.75



8358 TISSUE HOMOGENIZER *Tenbroeck, All-Glass* ★

All-glass Tenbroeck tissue grinders come with precision-made, interchangeable pestles and tubes. The hollow handle permits packing with ice. This unit also features an expanded reservoir and pouring lip. Designed for tissues such as liver, intestines and heart.

Approx. Capacity, mL	Body O.D. x Height, mm	Overall Lgth., mm	Qty.	Order Code	Each
1	11 x 48	140	2	8358-02	120.78
2	11 x 50	140	2	8358-05	152.03
7	16 x 82	190	2	8358-10	157.32
15	22 x 94	250	2	8358-15	170.57
40	32 x 140	320	2	8358-30	220.42

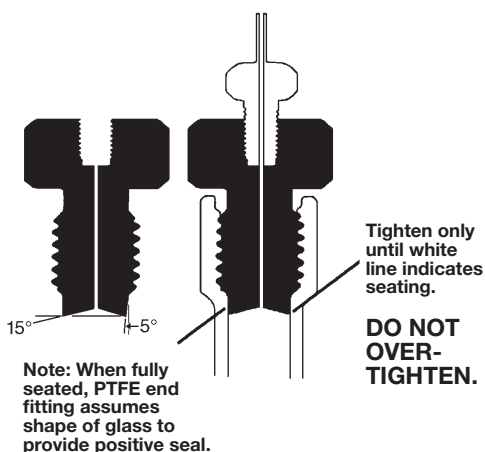


All homogenizers cited in *Biochemistry Laboratory*, 2nd Edition, by Rodney Boyer, “Tools for the Preparation of Crude Cell Extracts”

ACE offers a complete line of liquid chromatography columns, fittings and related components featuring Ace-Threds: the easy-to-assemble, internally threaded glass that uses Nylon® or PTFE fittings.

- Michel-Miller High Performance Low Pressure System operates up to 300 psi without o-rings.
- Adjusta-Chrom®, a recycling column, uses Ace-Threds for easy adjustment of bed volumes.
- Ion-Exchange columns for precious metals recovery.
- System II is supplied with Ace-Threds and uses o-rings to make a leak-tight seal.
- General columns, plain or with joints, with or without stopcocks, are also offered.

Three Different Leak-tight Seals



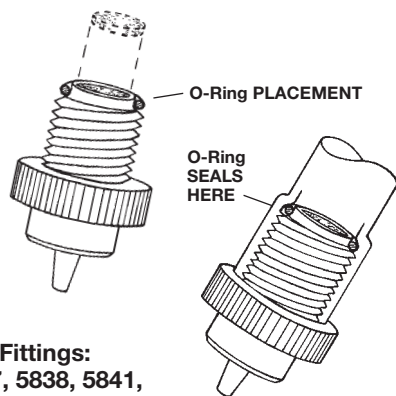
Michel-Miller Style (No o-rings)

PTFE fitting that seals without o-rings.

See Fittings:
5801, 5802, 5803, 5805, 5807

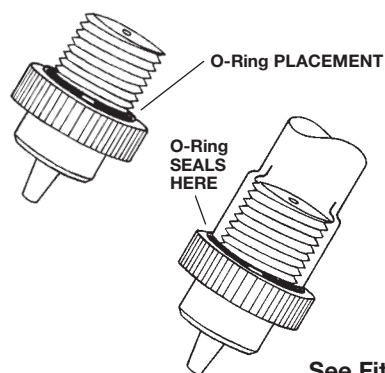
Ace-Thred Style (O-Ring Seals – at Front or Back)

FRONT SEAL



See Fittings:
5837, 5838, 5841,
5843, 5844, 5846

BACK SEAL



See Fittings:
5840, 5842, 5845

5539 SOLVENT RESERVOIR *Glass, GL-45 Thread with Netting* ★

Duran

Chemically resistant and stable laboratory bottles, fabricated from borosilicate glass and netted for protection against mechanical damage. Supplied graduated with blue polypropylene cap and removable pouring ring that allows drip-free operation. For use to 140°C. Suitable for vacuum or pressure use (21 psig). Height measurement is with cap. For extra caps, see 7622.

Capacity, mL	GL Thread Size	O.D., mm	Height, mm w/Cap	Case Qty.	Order Code	Case Price
250	45	70	143	1	5539-216	41.56
500	45	86	181	1	5539-219	44.24
1000	45	101	230	1	5539-224	45.59


8648 SOLVENT RESERVOIR *Glass, #25 Ace-Thred, w/o Netting*

Borosilicate glass bottle, only, with internal #25 Ace-Thred at top. Use 5810-25 or 5810-35 with 7506-10 bushing to make tubing connections to bottle. Order netting for these bottles separately. Pressure rating is at ambient.

<i>Bottle, only</i>				Bottle only
Capacity, mL	Maximum Pressure (psi)	Qty.	Order Code	Each
300	60	1	8648-140	★ 178.67
950	60	1	8648-155	★ 283.41
1850	60	1	8648-157	★ 444.98

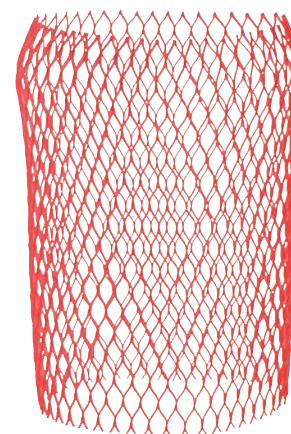


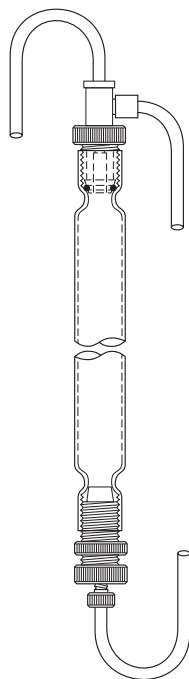
<i>Netting, only</i>				<i>Accessories</i>			
For Bottle	Qty.	Order Code	Each		Qty.	Order Code	Each
8648-140	1 ft.	11850-18	★ 7.45	Adapter, one Hole	1 ft.	5810-25	★ 67.16
8648-155	1 ft.	11850-21	★ 8.03	Adapter, two Hole	1 ft.	5810-35	★ 69.09
8648-157	1 ft.	11850-27	★ Call	Bushing, #25	1 ft.	7506-10	♠ 21.17

11850 PROTECTIVE NETTING ★

Protective pre-cut netting (only) for 5539 and 8648 reservoir bottles. Sold in one-foot lengths.

Capacity, mL	Color	Qty.	Order Code	Each
300	Yellow	1 ft.	11850-18	7.45
1000	Red	1 ft.	11850-21	8.03
2000	Green	1 ft.	11850-27	Call

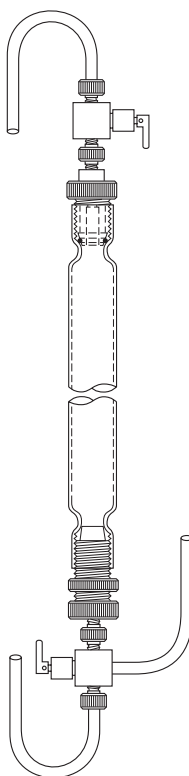




5796 INJECTION RESERVOIR COLUMN

Complete column includes column with #11 threads, two #11 to 1/4-inch-28 UNF end adapters, one easy adapt with syringe and tubing connection, and 1/16-inch x one-foot length of tubing with connectors.

Capacity, mL	Column Size	Maximum Pressure, psi	Qty.	<i>Column only</i> ♠		<i>Column Complete</i> ★	
				Order Code	Each	Order Code	Each
32	2.2cm x 13cm	200	1	5796-34	68.13	5796-60	Priced
75	2.5cm x 16cm	200	1	5796-38	80.40	5796-74	Upon
148	4.0cm x 17cm	150	1	5796-44	89.50	5796-80	Request



5796 INJECTION RESERVOIR COLUMN FOR SOLIDS

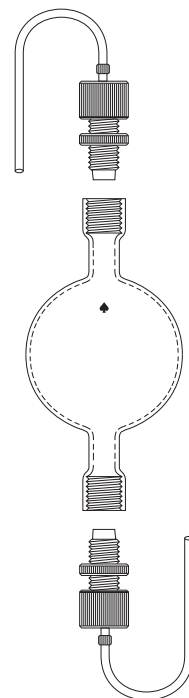
Complete column includes column with #11 or #25 top thread and #11 bottom thread, one easy adapt to 1/4-inch-28, one end fitting #11 to 1/4-inch-28 UNF with 10-20 micron disc, two valves (three-way and four-way) and 1/16-inch x one-foot length of tubing with connectors.

Cap., mL	Column Size	Maximum Pressure, psi	Thread Size	Qty.	<i>Column only</i> ♠		<i>Column Complete</i> ★	
					Order Code	Each	Order Code	Each
32	2.2cm x 13.0cm	200	#11-#11	1	5796-34	68.13	5796-68	Priced
75	2.5cm x 16.5cm	200	#25-#11	1	5796-50	82.69	5796-77	Upon
148	4.4cm x 16.5cm	150	#25-#11	1	5796-52	92.17	5796-84	Request

5824 INJECTION RESERVOIR BULB

Complete column includes two #11 to 1/4-inch-28 UNF end adapters and 1/16-inch x one foot length of tubing with connectors.

Capacity, mL	Maximum Pressure	Qty.	<i>Bulb only</i> ♠		<i>Complete</i> ★	
			Order Code	Each	Order Code	Each
250	50	1	5824-05	66.75	5824-45	Priced Upon Request



5932 SYRINGE *Luer-Lok, Gas Tight* ★

For sample introduction in 5790 solvent delivery systems. PTFE coated plunger with Luer-Lok.

Capacity, mL	Qty.	Order Code	Each
5	1	5932-08	63.24

See Needles on page 601 of this catalog.

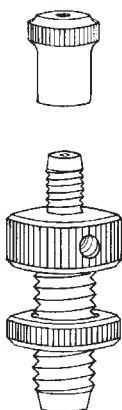


5801 ADAPTER *End Fitting, 1/4-inch-28 to Ace-Thred, Michel-Miller* ♠

Precision-made replacement PTFE end fitting for use at either end of the 5792 Michel-Miller columns. Designed to make a leak-tight seal without the use of o-rings. Simply tighten until white ring appears indicating a seal has been made, then secure locknut; no need to over tighten. Male thread is size designation and matches thread size of column. Female thread at top is 1/4-inch-28 UNF with Heli-Coil insert to accept flanged end tubing fittings. Bore is 1.5mm (.060-inches). Can be used with 5795 columns shown on page 86 and 5820 columns on page 86. Codes -46, -47 and -48 normally use paper filter discs, 5814, to retain packing material; codes -53, -55 and -57 are supplied with replaceable Porosity D (10-20 micron) glass filter discs in end. **For replacement glass discs: code -53, order 5848-05; code -55, order 5848-13; code -57, order 5848-42.**

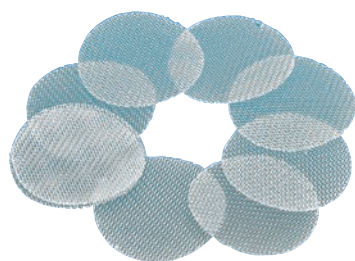
For Thread Size, mm	Qty.	<i>Without Disc</i>		<i>With Disc</i>	
		Order Code	Each	Order Code	Each
7	1	5801-46	58.03	5801-53	93.89
11	1	5801-47	60.33	5801-55	134.76
15	1	5801-48	67.41	5801-57	105.39




5807 ADAPTER *Injection Port, Michel-Miller* ♠

A simple, all-PTFE septum injector that allows for the most efficient use of 5795 Michel-Miller non-packed columns. Allows direct on-column injection to the center of the filter disc at top of column without stopping the solvent flow. Designed to make a leak-tight seal without the use of o-rings. Simply tighten until white ring appears indicating a seal has been made, then secure locknut; no need to over tighten. Top thread is 5/16-inch-24 UNF for use with injection port cap that holds the 12898 septum. Male thread is size designation and matches thread size of columns. Has Heli-Coil insert. Bore is 1.5mm (.060-inches). Can be used with 5795 columns shown on page 86 and 5820 columns on page 86.

For Thread Size, mm	Qty.	Order Code	Complete
7	1	5807-48	92.39
11	1	5807-49	93.24


5814 FILTER DISCS ★

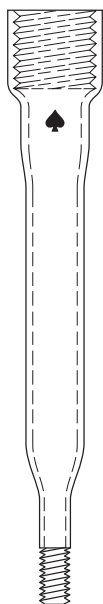
For use with 5801 end fittings to retain packing material. Fabricated from a specially pure, very uniform, highly absorbent paper. For polypropylene filter discs, see page 94.

For Thread Size, mm	Disc Dia. mm	Package Qty.	Order Code	Per Pkg.
7	7.5	100	5814-06	16.00
11	10.5	100	5814-11	23.25
7	7.5	12	5814-206	3.21
11	10.5	12	5814-211	4.90
15	14.6	12	5814-215	8.56


5826 ADAPTER *Column, Small Sample Injection* ♠

Miniature column, with #7-#7 or #11-#11 Ace-Threds.

Size	Approx. Cap., mL	Qty.	Order Code	Each
#7-#7	0.9	1	5826-07	38.32
#11-#11	2.0	1	5826-09	38.47
#11-#11	5.0	1	5826-11	38.92


5826 ADAPTER *Column, Small Sample Injection* ★

Sample injection glass column with #11 Ace-Thred at one end and 1/4-inch-28 UNF male thread at the other end.

To avoid breakage, ACE does not recommend threading 1/4-inch-28 directly into end fitting on column but rather making a connection using 12780-04.

Size	Approx. Cap., mL	Qty.	Order Code	Each
#11 – 1/4-inch-28 UNF	6	1	5826-60	78.84

Michel-Miller

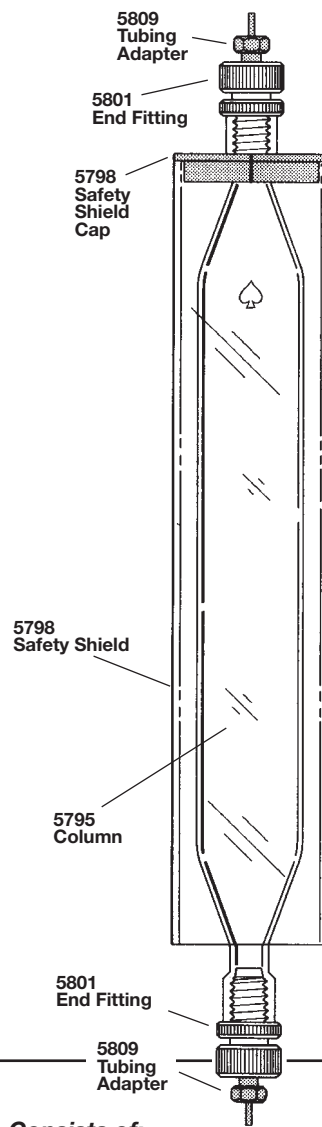
The Michel-Miller Chromatography System has been designed for high performance, low pressure liquid chromatography (HP/LPLC) in analytical or preparative applications.

This system provides the chromatographer with a complete concept of high performance liquid chromatography for use at low (0-100 psi) and moderate (100-300 psi) pressures.

Columns features:

- Simple to assemble
- Constructed of borosilicate glass and PTFE — no o-rings
- Safe operation to 300 psi, with safety shield
- Usable with various packing materials
- Chemically inert
- Zero dead volume
- Analytical or Preparative
- Leak free

*Designed and tested by Karl H. Michel and Robert F. Miller at The Lilly Research Laboratories, Indianapolis, IN



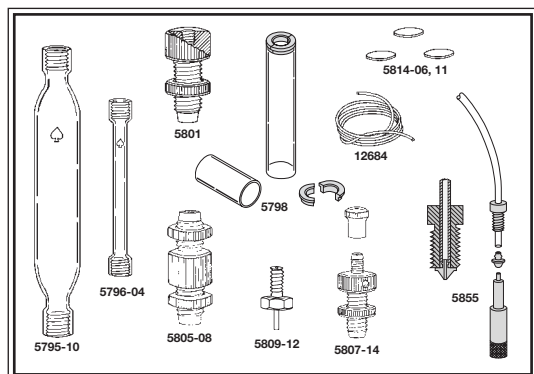
MICHEL-MILLER* HP/LPLC — NON-PACKED
 (High Performance Low Pressure Liquid Chromatography)

Michel-Miller Starter Kits (Non-Packed Columns)

Analytical — Consists of:

One each 5795-04, 5795-10, 5805-08, 5807-14, 5814-06, 5814-11, 5855-10, 5855-73, 5855-80, 12684-19, 12684-28; Two each 5798-30, 5798-31, 5801-07, 5801-14, and 5809-12.

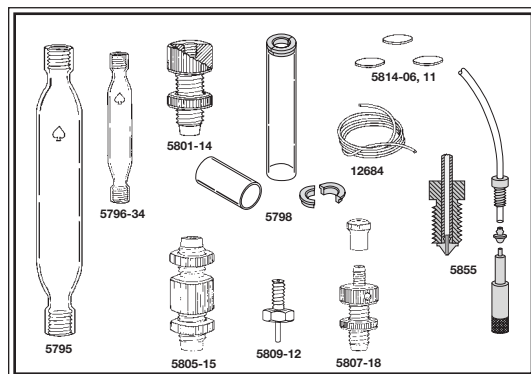
Qty.	Order Code	Per Kit ♠
1	5795-202	946.96



Preparative — Consists of:

One each 5795-10, 5795-16, 5795-24, 5796-34, 5814-11, 5855-10, 5855-73, 5855-80, 12684-19, 12684-28; Two each 5798-34, 5798-35, 5805-15, 5807-18; Four each 5801-14 and 5809-12.

Qty.	Order Code	Per Kit ♠
1	5795-208	1491.45



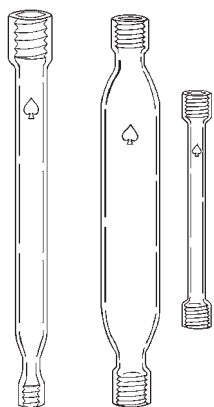
Note: Starter Kits include only the basic items for operation. Items such as a pressure gauge, pump, valves, etc, are not included.

Epoxy-coated Chromatography columns increase safety and durability

- Chemically resistant to dilute acids, most salts and solvents
- Maximum temperature limit 235°C
- Note maximum pressure ratings

Need a different size column?
We'll make it for you.
Visit www.aceglass.com
for more information.

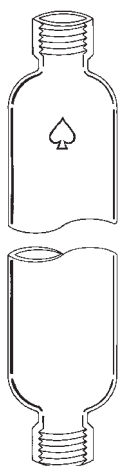
Easy assembly
with
Ace-Threds



5795 CHROMATOGRAPHY COLUMN *Michel-Miller, Epoxy Coated, Heavy Wall* ♠

Designed for high performance, low pressure liquid chromatography (HPLPLC) and **epoxy coated externally for added protection against scratching**. Column end geometry allows the sample to be introduced at the inlet as a narrow band and at the outlet will not increase band width nor distort peak shape. The conical design of the three larger columns reduces flow path length differences. This shape avoids dead volume that can form with square end fittings. For use with 5801, 5802, 5803, 5805, and 5807 PTFE fittings, without o-rings. The columns have Ace-Threds at both ends. **These columns are intended for operation at elevated pressures and should always be used with 5798 plastic safety shields.** Use filter paper disc, 5814, to retain packing. I.D. of column is measured at largest diameter; effective length is distance between threads.

Column I.D. mm	Effective Length, mm	Ace-Thred Size	MAX. PSI	Qty.	Order Code	Each
8	250	7-7	150	1	5795-04	39.75
21	300	11-11	150	1	5795-10	72.49
40	350	11-11	125	1	5795-16	112.36
51	450	11-11	100	1	5795-24	134.72
25	450	25-11	100	1	5795-40	81.76
25	600	25-11	100	1	5795-48	91.64
50	600	50-11	100	1	5795-54	152.14



5820 CHROMATOGRAPHY COLUMN *Michel-Miller, Epoxy Coated, Heavy Wall* ♠

Larger size columns designed for high performance, low pressure liquid chromatography (HPLPLC) when used with 5801 and 5805 PTFE fittings, without o-rings. **These columns are epoxy coated externally for added protection against scratching.** Columns have straight thru ends for use as packing columns or operating columns. Note thread size when ordering so proper size fitting can be ordered. **These columns are intended for operation at elevated pressures, and they should always be used with 5798 plastic safety shields. End fittings (5801) for #11, #15, #25 threads are listed on page 87; end fittings for #50 threads are listed on page 103.**

Column I.D. mm	Effective Length, mm	Ace-Thred Size	MAX. PSI	Qty.	Order Code	Each
11	300	11-11	150	1	5820-06	38.80
15	300	15-15	150	1	5820-18	41.81
15	450	15-15	100	1	5820-22	45.85
25	450	25-25	100	1	5820-36	57.80
25	600	25-25	100	1	5820-39	59.28
50	600	50-50	100	1	5820-57	124.39

CAUTION

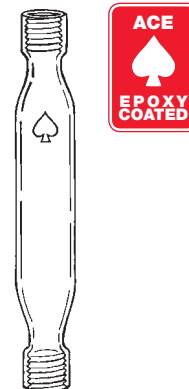
For Chromatography Use Only

Not intended for use with 40 micron or smaller packing which will cause operating pressures to exceed safe limits of glass.

ALWAYS USE A SAFETY SHIELD

5796 CHROMATOGRAPHY PRE-COLUMN *Michel-Miller, Epoxy Coated ♠*

For use with 5795 Michel-Miller columns as a pre-column to enable the chromatographer to add prepurified sample mixtures to main column. This technique allows silica gel or alumina packed main columns to be reused several times. Suitable also for use in final stages of slurry packing. **Pre-column is epoxy coated for added protection against scratching** and stacks on top of the main column using 5805 coupling. Effective length of column is 130mm, I.D. 22mm. Threads are #11 Ace-Thred.



Qty.	Order Code	Each
1	5796-34	68.13

5798 SAFETY SHIELD *Plastic, Michel-Miller ♠*

Acrylic safety shield and polyethylene cap for use with Michel-Miller columns to insure safe operation at pressures to 300 psi. Top thread of column is hung in polyethylene cap; cap is then held by the plastic shield. Clamp the shield, not the column. Size A for 5795 codes -03, -04, -10 and 5796-34; size AA for 5792-05, -35; size AAA for 5792-07, -69, 5795-10; sizes B, BB for 5792 codes -09, -11, -67, 5795 codes -10, -16, -24 and 5820-04; size BBB for 5792-08; sizes E, EE for 5820-16, -20; sizes F, FF for 5795-40, -48 and 5820-34, -37; size G for 5795-54 and 5820-55; size H for 5792-85; size I for 5792-89. Wall thickness of shield is 3mm.

Cap Code	For Ace-Thred Size	Cap Code	For Ace-Thred Size
-127	7	-137	11
-127	11	-138	25
-133	11	-144	50
-134	15	-146	11
		-180	11

Size	I.D. mm	Length mm	Qty.	<i>Cap only</i>		<i>Shield only</i>		<i>Complete</i>	
				Order Code	Each	Order Code	Each	Order Code	Each
AA	32	130	1	5798-127	22.21	5798-26	15.89	5798-230	38.10
A	32	250	1	5798-127	22.21	5798-31	16.33	5798-232	38.54
AAA	32	300	1	5798-127	22.21	5798-40	16.65	5798-234	38.86
BBB	57	170	1	5798-133	25.49	5798-33	20.84	5798-235	46.33
B	57	335	1	5798-133	25.49	5798-35	21.30	5798-236	46.79
BB	70	450	1	5798-137	31.30	5798-53	61.91	5798-240	93.21
E	57	335	1	5798-134	25.49	5798-35	21.30	5798-249	46.79
EE	57	450	1	5798-134	25.49	5798-50	26.95	5798-252	52.44
F	57	450	1	5798-138	25.49	5798-50	26.95	5798-256	52.44
FF	57	600	1	5798-138	25.49	5798-55	33.75	5798-258	59.24
G	76	600	1	5798-144	37.65	5798-62	68.47	5798-264	106.12
H	76	600	1	5798-146	37.65	5798-62	68.47	5798-266	106.12
I	95	750	1	5798-180	77.81	5798-72	134.23	5798-272	212.04

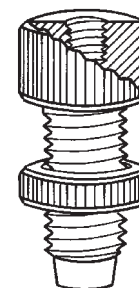


5798

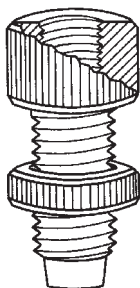
Important: The 5798 shields are made of plastic and are NOT resistant to most solvents.

5801 ADAPTER *End Fitting, 1/4-inch-28 UNF to Ace-Thred, Michel-Miller ♠*

Precision made PTFE end fitting for use at either end of the 5795 Michel-Miller, or 5820 columns. Designed to make a leak-tight seal without the use of o-rings. Simply tighten until white ring appears indicating a seal has been made, then secure locknut; no need to over-tighten. #7 and #11 normally use paper filter disc, 5814-06 or 5814-11 respectively, to retain packing material. Larger fittings use PTFE screens; see 5814, codes -13 or -16. Female thread at top is 1/4-inch-28 UNF to accept standard miniature plumbing systems. Bore is 1.5mm (.060 inches). Male thread is size designation and matches thread size of columns. Use 5838-54 and 7855-829 for #50 size end fitting.



For Thread Size, mm	Qty.	Order Code	Each	For Thread Size, mm	Qty.	Order Code	Each
7	1	5801-07	56.23	15	1	5801-18	70.12
11	1	5801-14	57.09	25	1	5801-22	84.15



Note: valve adapters, #5839, for use with 5802, can be found on page 102.

5802 ADAPTER *End Fitting, NPT to Ace-Thred, Michel-Miller ♠*

PTFE adapter, precision made, for use when making NPT thread connection to Ace-Threds. One end designed to make leak-tight seal with Ace-Thred without use of o-rings, other end accepts NPT male thread. Use 5844-78 or -85 and 7855-829 for #50 size.

***Note: 12770 nipple or 12770 tube fitting connector is necessary to make these connections.**

NPT Thread Size (Inches)	Qty.	#7 Thred		#11 Thred		#15 Thred		#25 Thred	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
1/16	1	5802-04	54.81	5802-12	59.18	—	—	—	—
1/8	1	5802-08	54.81	5802-14	59.12	5802-17	68.25	—	—
1/4	1	—	—	5802-15	59.12	5802-19	69.88	5802-37	84.02
3/8	1	—	—	—	—	5802-27	68.26	5802-40	83.23



5803 STOPPER *Michel-Miller ♠*

Precision made PTFE stoppers for use at either end of the 5795 Michel-Miller, 5820 columns or all 7644 Ace-Threds when a leak-tight seal without the use of o-rings is desired. Use 5846-52 and 7855-829 for #50 size.

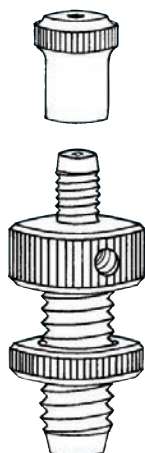
For Thread Size, mm	Qty.	Order Code	Each	For Thread Size, mm	Qty.	Order Code	Each
7	1	5803-05	53.54	15	1	5803-11	60.41
11	1	5803-08	56.30	25	1	5803-25	79.06



5805 COUPLING *Michel-Miller ♠*

Precision made PTFE coupling with 316 stainless steel liner for connecting Michel-Miller, or 5820 columns when packing. Designed to make a leak-tight seal without the use of o-rings. Simply tighten until white ring appears indicating a seal has been made, secure locknut; no need to tighten further. Male thread is size designation and matches thread size of columns.

For Thread Size, mm	Qty.	Order Code	Each	For Thread Size, mm	Qty.	Order Code	Each
7-7	1	5805-03	67.54	15-15	1	5805-20	80.82
7-11	1	5805-08	68.59	25-25	1	5805-28	142.04
11-11	1	5805-15	70.79	50-50	1	5805-32	333.44



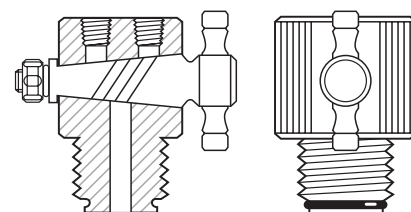
5807 ADAPTER *Injection Port, Michel-Miller ♠*

A simple, all PTFE, septum injector port that allows for the most efficient use of the 5796 Michel-Miller columns. Allows direct on-column injection to the center of the filter disc at top of column without stopping the solvent flow. Top thread is 5/16-inch-24 UNF for use with injection port cap that holds the 12898 septum. Side female thread is 1/4-inch-28 UNF to accommodate the 5809, 5854, 5855 and 12724 tubing connectors or other miniature plumbing systems. Bottom male thread is size designation and refers to thread on 5795 columns. Complete item supplied with one PTFE coated silicone rubber septum. For paper filter discs, see 5814. For extra septa, see 12898. Not suitable for larger columns; we recommend a loop and valve system. Call or e-mail for details.

Ace-Thred Size	Qty.	Order Code	Complete
7	1	5807-14	90.78
11	1	5807-18	91.64

5808 ADAPTER PTFE, Purge, with Shutoff ♠

PTFE adapter for use with 8648 pressure vessels to allow purging of air-sensitive contents. Male Ace-Thred at bottom, two 1/4-inch-28 UNF or two 1/8-inch NPT female taps at top with directional knob shutoff for both. Turn shutoff to open one side to evacuate, turn 180° to close vacuum side and purge contents of flask. Turn shutoff 90° to close both openings.

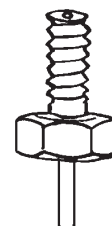


Ace-Thred	Tap Size	Qty.	Order Code	Each
15	1/4-inch-28 UNF	1	5808-05	122.55
15	1/8-inch NPT	1	5808-09	122.55
25	1/4-inch-28 UNF	1	5808-16	186.83
25	1/8-inch NPT	1	5808-18	186.83
36	1/4-inch-28 UNF	1	5808-24	354.22
36	1/8-inch NPT	1	5808-27	354.22

5809 ADAPTER Tubing ♠

Stainless steel tubing adapter for use with 5801 end fitting adapters to connect tubing to the 5795 Michel-Miller columns. Thread is 1/4-inch-28 UNF. Extension opposite thread is 1.5mm O.D. (.060 inches).

Qty.	Order Code	Each
1	5809-12	44.48



5813 FILTER COLUMN Michel-Miller ♠

For use with Michel-Miller Liquid Chromatography System as filter to assure only clean solvent enters column. Threads are #7 Ace-Thred for use with 5801-07 end fitting. Usually positioned, in line, between pump and column using 1/4-inch-28 UNF tubing connectors such as 5854, 5855 or 12724. Glass only is supplied. Fittings must be ordered separately. Filter material, such as glass wool, not supplied.

Column I.D., mm	Approx. Effective Length, mm	Qty.	Order Code	Each
8	85	1	5813-23	37.77
8	150	1	5813-26	37.77
15	150	1	5813-32	37.77

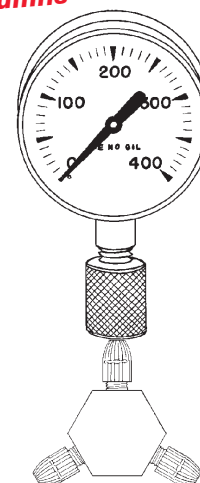


13385 GAUGE Pressure ★

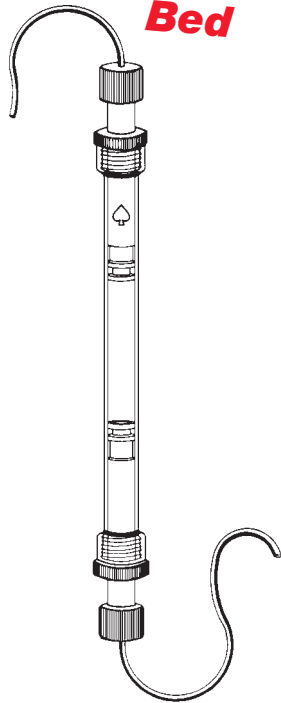
0-400 psi pressure gauge for monitoring pressure in laboratories; especially suited for use with the Michel-Miller HP/LPLC System or other LP chromatography systems. Available with brass or 316 stainless steel internals. Gauge measures 2-1/2 inches with 1/4-inch NPT bottom. Supplied complete with a nylon adapter that has 1/4-inch-28 UNF male thread and 12720 three-way tubing connector for direct in-line connection.

	Qty.	Order Code	Each
Gauge, only, Pressure, 0-400psi, brass internal materials, 1/4-inch male NPT bottom fitting, 2.5-in diameter	1	13385-12	58.50
Gauge, only, Pressure, 0-400psi, stainless steel internal materials, 1/4-inch male NPT bottom fitting, 2.5-in diameter	1	13385-14	275.03
Nylon adapter for all gauges with male 1/4-in NPT bottom thread	1	13385-20	30.64
Tubing Connector	1	12720-25	90.35
Gauge, Pressure, Complete , 0-400psi, brass internal materials, 1/4-inch male NPT bottom fitting, 2.5-inch diameter. Complete comes with 13385-20 nylon adapter and one 12720-25, 3-way, PTFE tubing connector	1	13385-35	179.49
Gauge, Pressure, Complete , 0-400psi, stainless steel internal materials, 1/4-inch male NPT bottom fitting, 2.5-inch diameter. Complete comes with 13385-20 nylon adapter and one 12720-25, 3-way, PTFE tubing connector.	1	13385-38	396.02

Recommended for use with MICHEL-MILLER Columns

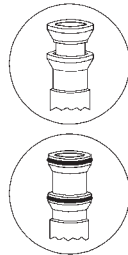


Adjustable Bed



5815 ADJUSTA-CHROM Recycling Column ♠

Adjustable bed chromatography column used for recycling, ascending or descending applications allowing for quick and easy adjustment of the PTFE plunger. The Porosity C (25-50 micron) glass disc gives rapid flow with a minimum of mixing. Pressure tight to 3.515 Kg/cm² (50 psi) at room temperature or slightly below. PTFE plunger available with PTFE or o-ring seals.



COLUMNS COMPLETE

PTFE Seals

Length, mm	Qty.	10 mm I.D.		25 mm I.D.	
		Order Code	Each	Order Code	Each
300	1	5815-03	488.09	5815-15	619.68
900	1	5815-07	614.84	5815-19	952.37

COLUMNS COMPLETE

O-Ring Seals

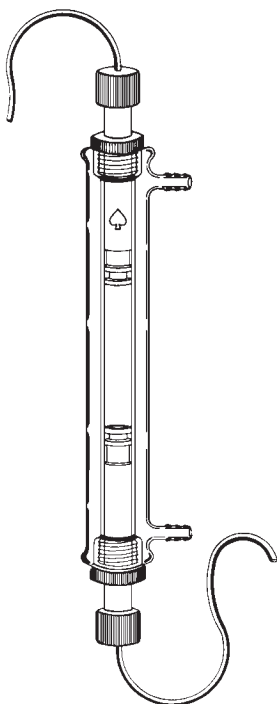
Length, mm	Qty.	10 mm I.D.		25 mm I.D.	
		Order Code	Each	Order Code	Each
300	1	5815-04	501.53	5815-16	627.20
900	1	5815-08	628.28	5815-20	959.89

ADJUSTA-CHROM®

5819 ADJUSTA-CHROM Recycling Column, Jacketed ♠

Jacketed, adjustable bed chromatography column used for recycling, ascending or descending applications. Completely jacketed for better temperature uniformity with a single bushing at each end allowing for quick and easy adjustment of the PTFE plunger.

The Porosity C (25-50 micron) glass disc gives rapid flow with a minimum of mixing. Pressure tight to 3.515 Kg/cm² (50 psi) at room temperature or slightly below. PTFE plunger available with PTFE or o-ring seals. Use with 3/8-inch I.D. Tubing, Size D hose connection. See page 7 for more detailed hose connection information.



COLUMNS COMPLETE

PTFE Seals

Length, mm	Qty.	10mm I.D.		25mm I.D.		50mm I.D.	
		Order Code	Each	Order Code	Each	Order Code	Each
300	1	5819-02	630.72	5819-12	750.44	—	—
600	1	—	—	5819-14	821.47	—	—
900	1	—	—	—	—	5819-26	1667.83

COLUMNS COMPLETE

O-Ring Seals

Length, mm	Qty.	10mm I.D.		25mm I.D.		50mm I.D.	
		Order Code	Each	Order Code	Each	Order Code	Each
300	1	5819-03	644.16	5819-13	757.96	—	—
600	1	—	—	5819-15	828.99	—	—
900	1	—	—	—	—	5819-28	1686.91

Note: plunger tips CANNOT be used with 5820 columns.

PARTS FOR ADJUSTA-CHROME COLUMNS ♠

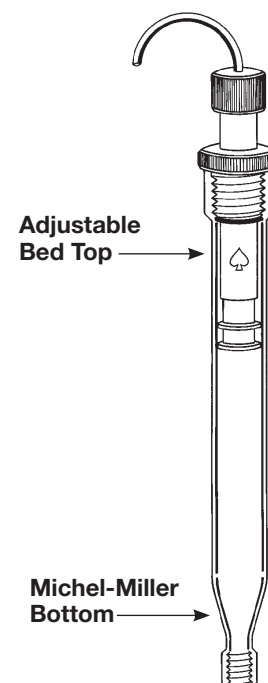
Replacement Parts for 5815 and 5819										
		For 10 mm I.D.			For 25 mm I.D.			For 50 mm I.D.		
		Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
Glass Columns, Jacketed	300 mm	1	5819-27	368.68	1	5819-34	396.54	—	—	—
	600 mm	—	—	—	1	5819-36	454.45	—	—	—
	900 mm	—	—	—	—	—	—	1	5819-44	994.73
Glass Columns without Jacket	300 mm	1	5815-26	226.05	1	5815-33	265.78	—	—	—
	900 mm	1	5815-30	244.62	1	5815-37	485.63	—	—	—
Plunger Tip with Filter Disc and Collar (PTFE Seals)		1	5819-152	58.76	1	5819-153	62.46	1	5819-158	105.17
Plunger Tip with Filter Disc and Collar (O-Ring Seals)		1	5819-163	65.48	1	5819-164	66.22	1	5819-169	114.71
Extender only 15 cm		1	5819-54	47.43	1	5819-56	49.86	—	—	—
Extender only 30 cm		1	5819-55	54.09	1	5819-57	56.42	—	—	—
Extender Cap, only		1	5819-67	6.17	1	5819-69	20.83	—	—	—
Extender with Cap, 15.2 cm (6 inches)		—	—	—	—	—	—	1	5819-70	52.51
Extender with Cap, 30.5 cm (12 inches)		—	—	—	—	—	—	1	5819-71	83.00
End bushing		1	7506-02	11.39	1	7506-10	21.17	1	7506-14	73.24
FETFE O-Rings, for Extender Bushing		12	7855-716	20.37	6	7855-734	20.74	3	7855-744	21.84
FETFE O-Rings, Plunger Tip		6	5819-181	19.32	6	5819-182	12.78	6	5819-183	17.15
PTFE Tubing 300 cm, 1-1/2 mm I.D.		1	12684-17	14.54	—	—	—	—	—	—
PTFE Tubing 300 cm, 2 mm I.D.		—	—	—	1	12684-27	45.26	1	12684-27	45.26
Glass Filter Disc, only		6	5819-80	54.85	6	5819-82	73.11	3	5819-84	86.98

5816 COLUMN *Michel-Miller, with Adjustable Bed* ♠

A combination of the high performance, low pressure Michel-Miller chromatography line and Adjusta-Chrom recycling column. Top has adjustable fitting that allows for a bed height anywhere within **1-6 inches below thread**; i.e., if packing tends to expand or contract due to changing conditions, top fitting can be moved by loosening bushing and sliding plunger tip up or down. Plunger tip is all PTFE with a Porosity C (25-50 micron) glass disc.

Bottom of column is standard #11 Ace-Thred Michel-Miller fitting for use with 5801-14 end fitting and can utilize #11 sized packing supports such as our 5814-11 paper filter disc (not included).

(Note: 10 mm I.D. column is the same diameter top to bottom.) 5801 fitting has a 1/4-inch-28 UNF tap for connecting small bore tubing, top fitting has connection for 2 mm I.D. PTFE tubing. Complete item supplied with adjustable top fitting and 5801-14 bottom end fitting.



COLUMNS COMPLETE

		10 mm I.D.		25 mm I.D.	
Length, mm	Qty.	Order Code	Each	Order Code	Each
300	1	5816-34	348.70	5816-35	451.50
600	1	5816-37	362.87	5816-38	461.86
900	1	5816-40	375.92	5816-41	476.03

GLASS COLUMNS ONLY

		10 mm I.D.		25 mm I.D.	
Length, mm	Qty.	Order Code	Each	Order Code	Each
300	1	5816-05	153.32	5816-06	194.83
600	1	5816-09	167.49	5816-10	205.19
900	1	5816-13	180.54	5816-14	219.36



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ROBO Apparatus — Reactor and Components for ASTM D7528-09 procedure for simulation and test of auto engine oils, **page 447.**

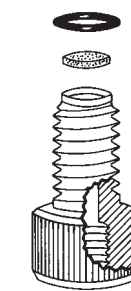
5838/5857 ADAPTER *End-Fitting, with NPT* ♠

For use as column end fitting that allows connection of appropriate size Ace-Thred to tubing connectors with NPT threads.

5838 adapters are fabricated of **PTFE** and supplied complete with one 100 micron polyethylene disc support, one 350 micron polypropylene screen support with PTFE retainer ring, and FETFE o-ring. The screen with retainer ring support has a large pore size and offers less resistance to flow. However, when smaller particle size packing is used, it will be necessary to replace the screen and retainer ring with the 100 micron support.

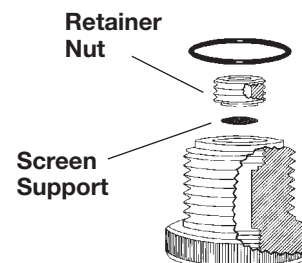
The 5857 fittings are machined of **polypropylene** for strength. A "coin" tightened locking retainer nut is used to hold 350 micron support screen firmly in place. Each adapter, #25 and #50, is supplied with retainer lock nut, 350 micron screen and FETFE o-ring.

For Thread Size, mm	NPT Size, Inches	Qty.	Order Code	Each
11	1/8	1	5838-72	52.60
15	1/8	1	5838-75	55.68
15	1/4	1	5838-76	55.68
25	1/4	1	5838-78	86.63
50	3/8	1	5838-80	210.81
80	3/8	1	5838-82	302.35
25	1/4	1	5857-05	140.51
25	3/8	1	5857-10	140.51
50	3/8	1	5857-15	277.45
50	1/2	1	5857-20	277.45



Replacement Parts For 5838

For Ace-Thred Size	100 Micron PE Disc		Retainer Ring		350 Micron PP Screen		O-Ring					
	Qty.	Order Code	Per Pkg.	Qty.	Order Code	Per Pkg.	Qty.	Order Code	Per Pkg.			
11	6	5848-07	14.86	6	5857-32	26.05	12	5814-42	10.01	12	7855-708	15.91
15	6	5848-10	14.86	6	5857-34	26.05	12	5814-44	11.96	12	7855-710	15.60
25	6	5848-14	17.06	1	5857-36	7.58	12	5814-346	19.62	12	7855-727	34.90
50	6	5848-17	36.00	1	5857-38	13.78	12	5814-348	37.01	6	7855-729	19.90
80	1	5848-19	9.29	1	5857-52	15.74	12	5814-350	48.44	3	7855-764	32.55



For 5857

For Ace-Thred Size	Retainer Nut		350 Micron PP Screen		O-Ring				
	Qty.	Order Code	Each	Qty.	Order Code	Per Pkg.	Qty.	Order Code	Per Pkg.
25	1	5857-80	24.85	12	5814-46	20.01	12	7855-727	34.90
50	1	5857-82	24.85	12	5814-48	37.73	6	7855-729	19.90

Additional micron size screen supports for 5857 are listed below.

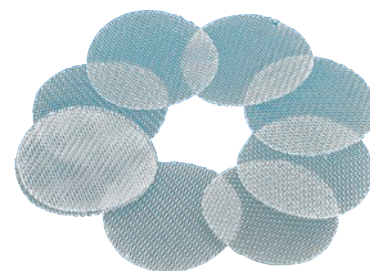
Turn to page 114 for 5857 with #80 Ace-Thred.

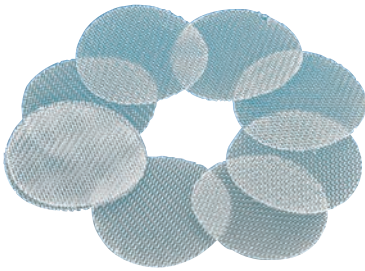
5814 SCREEN SUPPORT FILTER DISCS *Polypropylene* ♠

Screen support filter pre-cut discs used with 5857 end fitting adapters listed on page 100. For paper filter discs, see page 84.

For Ace-Thred Size	Qty.	350 Micron	295 Micron	210 Micron	105 Micron	Each Pkg/12
		Order Code	Order Code	Order Code	Order Code	
11	12	5814-42	5814-52	5814-62	5814-82	10.01
15	12	5814-44	5814-54	5814-64	5814-84	11.96
25	12	5814-46	5814-56	5814-66	5814-86	20.01
50	12	5814-48	5814-58	5814-68	5814-88	37.73

Note: Discs can also be supplied in polyethylene and fluorocarbon; however, since they are not stock items, a minimum quantity will be supplied. Phone for quotation.





5814 SCREEN SUPPORT FABRIC MATERIAL *Polypropylene* ★

Available by the yard in four different mesh sizes. Sock used with 5859 filter finger (above) is fabricated from this material.

Mesh Size, Microns	% Open Area	Mesh Count/in.	Thread Dia., Mic.	Qty.	Order Code	Per Yard
350	34	42	250	1 yd.	5814-104	47.22
295	25	43	300	1 yd.	5814-107	64.94
210	34	71	150	1 yd.	5814-111	52.91
105	25	121	106	1 yd.	5814-154	91.25

Note: Fabric can be supplied in polyethylene and fluorocarbon. Ask for details.

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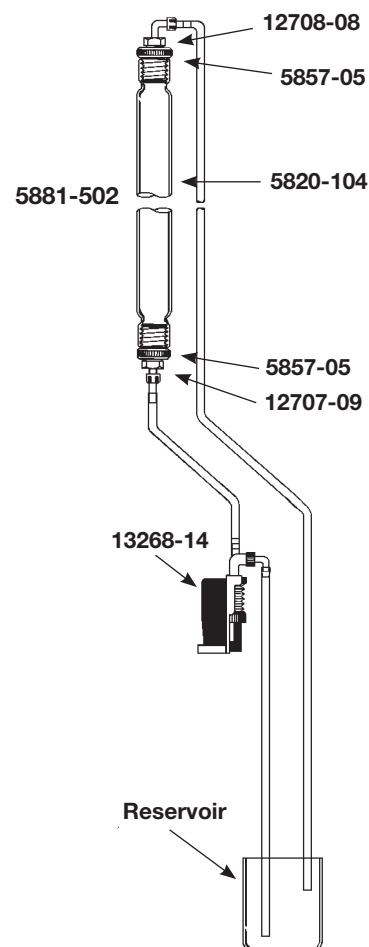
5881 ION-EXCHANGE ASSEMBLY *Laboratory Size, #25 Ace-Thred*

Unit is designed for metal recovery using Ion-Exchange resins such as Amborane.

Borosilicate glass column has #25 Ace-Thred at both ends. Polypropylene end fittings mate with Ace-Threds and form a leak-tight seal with FETFE o-rings. Each end fitting has a "coin" tightened retainer that holds packing support screen firmly in place; screen can be replaced in seconds. Fittings have 1/4-inch npt female thread for connecting 3/8-inch O.D. flexible vinyl tubing from pump and reservoir using a 1/4-inch to 3/8-inch tubing connector. Normal flow is in upward direction. Column is easily held by ring stand and clamp.

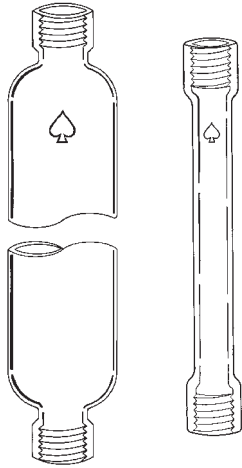
Complete unit consists of one each 5820-104, 13268-14, 12679-26, 12681-812, 5814-46, 5814-56, 7855-727, 5881-150, 11077-18 and two each 5857-05, 12707-09 and 12708-08.

Description	Qty.	Order Code	Each
Column, 37mm I.D. x 450mm long	1	5820-104	♠ 116.32
End Fitting, PP, #25 to 1/4-inch npt	2	5857-05	♠ 140.51
Pump, Bellows Type, maximum capacity, 409 mL/min. Self primes to four feet. Polypropylene bellows and swivel connections for 3/8-inch I.D. tubing. Operates on 110v, 50/60Hz.	1	13268-14	★ 657.82
Tubing, vinyl, 3/8-inch I.D. x 1/2-inch O.D.	50 ft.	12679-26	♠ 26.80
Tubing, PP, 3/8-inch O.D. x 75mm long	12	12681-812	♠ 29.20
Screen Support, PP, 350 micron	12	5814-46	♠ 20.01
Screen Support, PP, 295 micron	12	5814-56	♠ 20.01
O-Ring, FETFE, Size -121	12	7855-727	♠ 34.90
Connector Tube to M.P.T.	2	12707-09	♠ 2.30
Elbow Tube to M.P.T.	2	12708-08	♠ 3.24
Ring stand, rectangular steel base, finished in hard enamel, 127mm x 229mm. Rod is 9.5mm O.D. zinc-plated, 508mm high.	1	5881-150	★ 48.59
Clamp, three-prong, vinylized jaws	1	11077-18	★ 36.44
Complete	1	5881-502	★ 1213.52



5820 CHROMATOGRAPHY COLUMN ♠

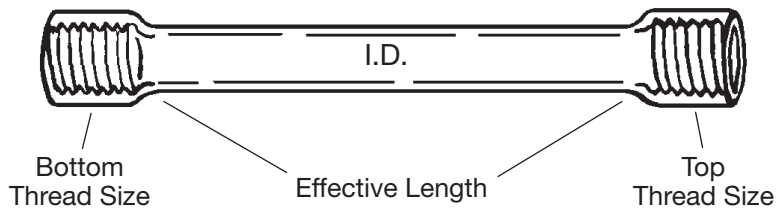
Rugged columns with internally threaded ends to which a wide choice of upper and lower end pieces can be fitted using 5837, 5838, 5840, 5841, 5842 and 5843 Fittings. Available in the diameters and lengths listed below. **Not for use with 5819 fittings.**



Column I.D., mm	Minimum Effective Lgth., mm (Inches)	Approx. Capacity, mL	Top & Bottom Ace-Thred Size	Qty.	Order Code	Each
11.11	300 (12)	29	11	1	5820-04	37.23
11.11	450 (18)	43	11	1	5820-08	39.71
11.11	600 (24)	57	11	1	5820-12	41.64
15.9	300 (12)	53	15	1	5820-16	41.64
15.9	450 (18)	79	15	1	5820-20	44.48
15.9	600 (24)	110	15	1	5820-24	46.54
25.0	300 (12)	150	25	1	5820-30	54.35
25.0	450 (18)	220	25	1	5820-34	55.43
25.0	600 (24)	290	25	1	5820-37	59.32
25.0	1200 (48)	590	25	1	5820-40	78.48
36.0	450 (18)	480	25	1	5820-104	116.32
50.0	300 (12)	590	50	1	5820-50	102.90
50.0	450 (18)	880	50	1	5820-53	116.33
50.0	600 (24)	1180	50	1	5820-55	125.34
50.0	900 (36)	1770	50	1	5820-59	156.90
50.0	1200 (48)	2350	50	1	5820-58	121.50

Need a different column?

Furnish the following information. We'll make it for you.



FURNISH THIS INFO:

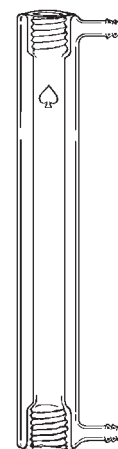
Column I.D. ¹	Effective Length	Bottom Thread Size ²	Top Thread Size ²

¹See Catalog No. 8802 for Tubing Sizes;
²See Catalog No. 7644 for Thread Sizes

5821 CHROMATOGRAPHY COLUMN *Jacketed* ♠

Columns are fully jacketed including internally threaded ends for circulation of heat exchange media. A wide choice of upper and lower end pieces can be fitted to columns using 5837, 5838, 5840, 5841, 5842 and 5843 fittings. Available in the diameters and lengths listed below. Turn to page 7 for hose connection sizing. **Not for use with 5819 fittings.**

Minimum Column I.D., mm	Approx. Effective Lgth., mm (Inches)	Capacity, mL	Hose Conn. Size	Ace-Thred Size	Qty.	Order Code	Each
11	300 (12)	29	D	11	1	5821-05	175.98
11	600 (24)	53	D	11	1	5821-09	191.10
15	300 (12)	53	D	15	1	5821-13	195.60
15	450 (18)	79	D	15	1	5821-15	199.19
15	600 (24)	110	D	15	1	5821-17	210.20
25	300 (12)	150	D	25	1	5821-24	228.03
25	450 (18)	220	D	25	1	5821-26	240.82
25	600 (24)	290	D	25	1	5821-28	250.95
25	1200 (48)	590	D	25	1	5821-112	308.54
50	300 (12)	590	D	50	1	5821-29	689.84
50	450 (18)	880	D	50	1	5821-30	710.22
50	600 (24)	1,180	D	50	1	5821-31	736.89
50	1200 (48)	2,350	F	50	1	5821-32	776.90



5822 ADDITION FUNNEL *Cylindrical* ♠

For charging columns. The capacity is approximately five times the largest column volume. Size listed is Ace-Thred designation which refers to I.D. of tubing above thread and corresponds to 5820 column diameter.

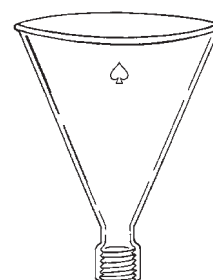
Size, mm	Capacity, mL	Qty.	Order Code	Each
11	300	1	5822-05	65.00
15	600	1	5822-10	67.33
25	1500	1	5822-15	102.58
50	3000	1	5822-20	205.13



5822 ADDITION FUNNEL *Conical* ♠

For same purpose as 5822 cylindrical funnel except with conical shape.

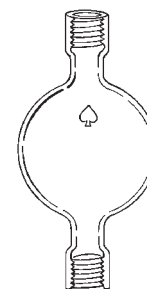
Size, mm	Capacity, mL	Top Dia., mm	Qty.	Order Code	Each
11	300	51	1	5822-40	65.69
15	600	70	1	5822-45	68.46
25	2000	95	1	5822-50	103.76
50	3000	150	1	5822-55	206.53

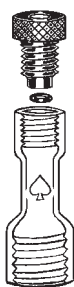


5824 PREPARATIVE FUNNEL ♠

Bulb type reservoir for preparative work. Both ends threaded. Top can be sealed with 5803, 5845 or 5846 solid plug. Size listed is Ace-Thred designation which refers to I.D. of tubing above thread and corresponds to 5820 column diameter.

Size, mm	Capacity, mL	Bulb O.D., mm	Qty.	Order Code	Each
11	250	82	1	5824-05	66.75
15	500	100	1	5824-10	80.42
25	2000	160	1	5824-15	116.39
50	3000	180	1	5824-20	233.60

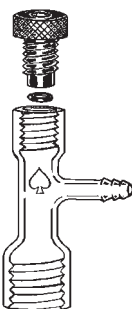




5826 ADAPTER Feed Tube ♠

Threaded both ends. #7 thread at top is supplied with 5029 nylon bushing and FETFE o-ring for use with 5831, 5832 adjustable feed tubes. Size listed is Ace-Thred designation which refers to I.D. of tubing above lower thread and corresponds to 5820 column diameter. For extra bushings, order 5029-10. For extra o-rings, order 7855-704.

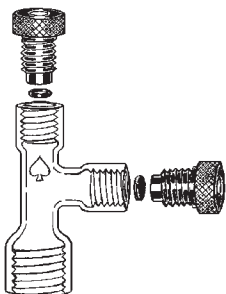
Size, mm	Qty.	Order Code	Complete
11	1	5826-20	40.26
15	1	5826-24	46.28
25	1	5826-28	60.26
50	1	5826-30	112.14



5827 ADAPTER Feed Tube ♠

Similar to 5826 except with hose connection side arm. See page 7 for more detailed hose connection information.

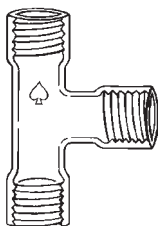
Size, mm	Hose Connection Size (Inches)	Qty.	Order Code	Complete
11	3/8 (D)	1	5827-20	50.52
15	3/8 (D)	1	5827-24	54.75
25	3/8 (D)	1	5827-28	70.29
50	5/16 or 3/8 (C)	1	5827-30	124.17



5828 ADAPTER Feed Tube, Septa ♠

Similar to 5826 except with additional #7 threaded side opening for introduction of samples by hypodermic syringe. Supplied complete with one silicone rubber septa and two nylon bushings with FETFE o-rings. For extra septa, order 12904-06.

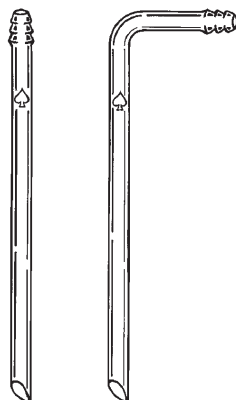
Size, mm	Qty.	Order Code	Complete
11	1	5828-20	81.34
15	1	5828-24	89.33
25	1	5828-28	99.19
50	1	5828-30	158.07



5829 ADAPTER Connecting ♠

All three ends are threaded the same size. For bushings, see 7506.

Size, mm	Qty.	Order Code	Complete
11	1	5829-04	67.88
15	1	5829-08	70.63
25	1	5829-12	92.06
50	1	5829-14	153.54



5831 FEED TUBE Hose Connection ♠

Permits packing of column without excessive drop impact. Also used for side arm introduction of effluent or may be used for pressurized operation. Used in conjunction with 5029 nylon bushing. Supplied straight or bent. Hose connection size C for use with 5/16-inch or 3/8-inch I.D. tubing. Glass tube is 7mm O.D.

Length, mm (In.)	Qty.	A (Straight)		B (Bent)		
		Order Code	Each	Qty.	Order Code	Each
76 (3)	1	5831-04	8.52	1	5831-12	11.30

5832 FEED TUBE *Luer-Lok Tip* ♠

Similar to 5831 except with Luer-Lok connection. Supplied straight only. Tube is 7mm O.D.

Length, mm (In.)	Qty.	Order Code	Each
76 (3)	1	5832-04	15.81
457 (18)	1	5832-08	16.64



5834 ADAPTER *Bottom Drip* ♠

Drip tip for chemical type chromatography. I.D. of drip approximately 4mm. Size listed is Ace-Thred designation which refers to I.D. of tubing below thread and corresponds to 5820 column diameter.

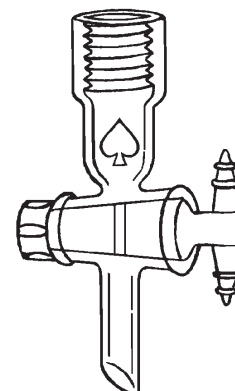
Size, mm	Qty.	Order Code	Each
11	1	5834-05	32.96
15	1	5834-10	33.99
25	1	5834-15	41.40
50	1	5834-20	70.84



5835 ADAPTER *Bottom Drip, with 1:5 PTFE Stopcock* ♠

Drip tip for chemical type chromatography with 1:5 taper PTFE stopcock at bottom for controlling flow. Size listed is Ace-Thred designation which refers to I.D. of tubing below thread and corresponds to 5820 column diameter.

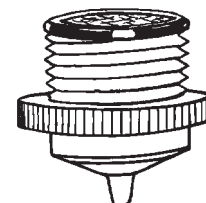
Size, mm	Bore, mm	Qty.	Order Code	Each
11	2	1	5835-07	112.31
15	2	1	5835-11	121.08
25	4	1	5835-17	133.12
50	4	1	5835-21	242.74



5837 ADAPTER *Bottom Drip, Luer-Lok* ♠

For use with all ACE threaded chromatography columns. Shallow taper at upper end minimizes mixing below the packing support. Bore is 1mm. Supplied with one FETFE o-ring and one replaceable polyethylene packing support.

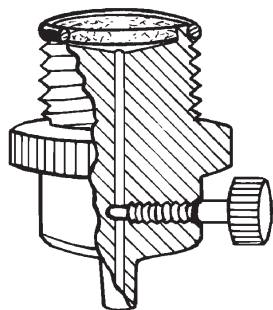
For Thread Size, mm	Qty.	<i>Nylon</i>		<i>PTFE</i>	
		Order Code	Each	Order Code	Each
11	1	5837-06	29.71	1	5837-46 52.41
15	1	5837-11	36.43	1	5837-51 60.67
25	1	5837-16	49.94	1	5837-56 76.95
50	1	5837-21	115.65	1	5837-61 193.10
80	1	5837-27*	168.11	1	5837-65 466.66
Each					
		Filter Disc Remover	1	5837-204	14.78



*Code -27 is fabricated from high density polyethylene. All others are nylon.

5837 ADAPTER *Bottom Drip, Luer-Lok, with Flow Regulator Valve* ♠

For use with all ACE threaded columns as bottom drip adapter with flow regulator valve. Bore is adjustable from 0 to 1 mm max. Shallow taper at upper end minimizes mixing below the packing support. Supplied with one FETFE o-ring and one polyethylene packing support.



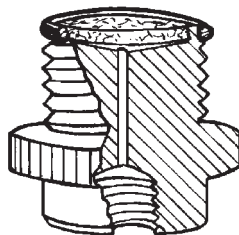
For Thread Size, mm	Nylon			PTFE		
	Qty.	Order Code	Each	Qty.	Order Code	Each
11	1	5837-08	77.56	1	5837-48	117.75
15	1	5837-13	84.95	1	5837-53	118.94
25	1	5837-19	95.60	1	5837-58	126.13
50	1	5837-23	158.20	1	5837-63	244.90

Replacement Parts

	For Thread Size, mm	Qty.	Order Code	Each
Valve Stem, only, with O-Ring, PTFE	11, 15, 25, 50	1	5837-80	18.15
Valve Stem O-Rings		12	5837-180	9.11
Filter Disc Remover		1	5837-204	14.78

5838 ADAPTER *Bottom Drip, Internally Threaded* ♠

For use with all ACE threaded chromatography columns. Shallow taper at upper end minimizes mixing below the packing support. Bore is 1mm. Supplied with 1/4-inch-28 UNF 2B internal thread that will accept 5854 or 5855 tubing connectors. Adapter can also be used at top of column as inlet adapter. Supplied with one FETFE o-ring and one polyethylene packing support.



For Thread Size, mm	Nylon			PTFE		
	Qty.	Order Code	Each	Qty.	Order Code	Each
11	1	5838-05	31.63	1	5838-43	52.21
15	1	5838-08	34.19	1	5838-47	58.38
25	1	5838-10	49.67	1	5838-51	75.97
50	1	5838-14	117.29	1	5838-54	200.08
				Qty.	Order Code	Each
Filter Disc Remover				1	5837-204	14.78

5837 and 5838 adapters all have 2mm depth in top opening.

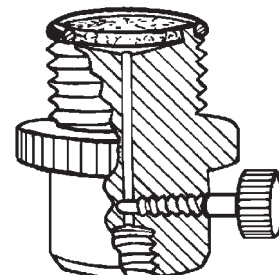
5838 ADAPTER *Bottom Drip, Internally Threaded, with Flow Regulator Valve* ♠

With flow regulator valve and a 1/4-inch-28 UNF 2B internal thread for connection with 5854 or 5855 tubing connectors. Supplied with one FETFE o-ring and one polyethylene packing support. Pouring support fits into the top of the adapter.

For Thread Size, mm	Nylon			PTFE		
	Qty.	Order Code	Each	Qty.	Order Code	Each
11	1	5838-07	78.45	1	5838-45	110.83
15	1	5838-09	83.01	1	5838-49	116.36
25	1	5838-13	90.45	1	5838-53	118.22
50	1	5838-16	161.88	1	5838-55	234.55

Replacement Parts

	For Thread Size, mm	Qty.	Order Code	Each
Valve Stem, only, with O-Ring, PTFE	11, 15, 25, 50	1	5837-80	18.15
Valve Stem O-Rings		12	5837-180	9.11
Filter Disc Remover		1	5837-204	14.78



5838 ADAPTER *End Fitting, with NPT* ♠

For use as column end fitting that allows connection of appropriate size Ace-Thred to tubing connectors with NPT threads. Fabricated of PTFE, this adapter is supplied with one 100 micron polyethylene packing support, one 350 micron polypropylene screen support with polyethylene retainer ring, and one FETFE o-ring. The screen with retainer ring support has a large pore size and offers less resistance to flow. When smaller particle size packing is used, it will be necessary to replace the screen and retainer ring with the 100 micron support.

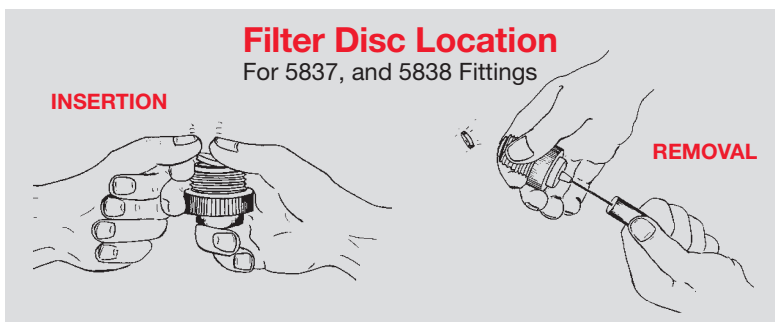
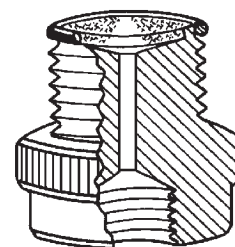
For Thread Size, mm	NPT Size, in.	Qty.	Order Code	Each	For Thread Size, mm	NPT Size, in.	Qty.	Order Code	Each
11	1/8	1	5838-72	52.60	25	1/4	1	5838-78	86.63
15	1/8	1	5838-75	55.68	50	3/8	1	5838-80	210.81
15	1/4	1	5838-76	55.68	80	3/8	1	5838-82	302.35

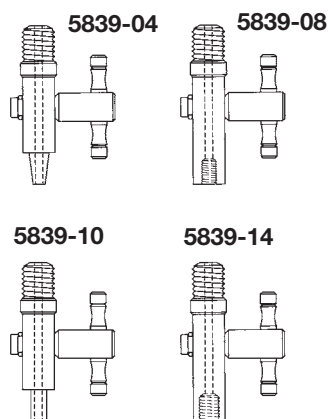
Replacement 350 micron polypropylene filter screen:

For 25 Thread (1.01 inches)	Pkg/12	5814-346	19.62
For 50 Thread (1.95 inches)	Pkg/12	5814-348	37.01

Replacement retainer rings:

PTFE for 50 Thread	1	5857-38	13.78
Nylon for 50 Thread	1	5857-50	14.39

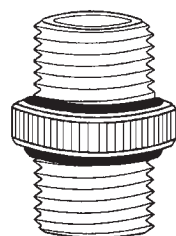




5839 ADAPTER Valve, PTFE ♠

Bottom adapter with shutoff for use with chromatography adapters, 5802, 5838-72, 5844, or any adapter with a 1/4-inch female NPT (FNPT) connection to allow flow regulation. Top connection is 1/4-inch male NPT (MNPT). Offered with four different takeoff ends: male Luer-Lok, 1/4-inch-28 UNF female, 1/8-inch FNPT, or 1/4-inch O.D. straight tube.

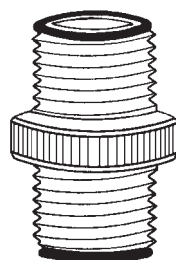
Style	Bore, mm	Qty.	Order Code	Each
1/4-inch MNPT—Male Luer-Lok	1.5	1	5839-04	51.36
1/4-inch MNPT—1/4-inch-28 UNF	3.0	1	5839-08	57.16
1/4-inch MNPT—1/4-inch Tube	3.0	1	5839-10	53.89
1/4-inch MNPT—1/8-inch FNPT	3.0	1	5839-14	57.16



5840 COUPLING Nylon or PTFE, Ace-Thred ♠

For coupling threaded columns together, or to end fittings with single o-ring seal for leak-tight engagement with hand pressure and no significant size reduction in I.D. Size listed refers to inside diameter of threads. Supplied with two FETFE o-rings. Use with 5820 and 5821 columns.

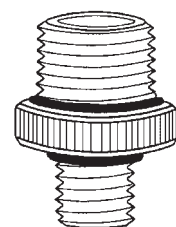
For Ace-Thred Size, mm		Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
11	1		5840-05	27.68	5840-45	51.53
15	1		5840-10	32.30	5840-47	56.73
25	1		5840-15	48.56	5840-49	73.64
50	1		5840-20	99.38	5840-51	218.47



5841 COUPLING Nylon or PTFE, Ace-Thred ♠

For coupling threaded columns together, or to end fittings with single o-ring seal for leak-tight engagement and with no significant size reduction in I.D. Size listed refers to inside diameter of threads and corresponds to 5820 and 5821 column diameter. Supplied with two FETFE o-rings.

For Ace-Thred Size, mm		Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
11	1		5841-06	28.27	5841-46	56.37
15	1		5841-12	34.12	5841-48	59.67
25	1		5841-16	51.42	5841-50	106.09
50	1		5841-22	116.72	5841-52	217.97



5842 COUPLING Reducing, Nylon or PTFE, Ace-Thred ♠

Same as 5840 except that one end is threaded for the next smallest diameter.

For Ace-Thred Size, mm		Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
15-11	1		5842-05	31.68	5842-46	57.82
25-15	1		5842-10	51.99	5842-48	71.59
50-25	1		5842-15	92.59	5842-50	209.04



5843 COUPLING Reducing, Nylon or PTFE, Ace-Thred ♠

Similar to 5841 except that one end is threaded for the next smallest diameter.

For Ace-Thred Size, mm		Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
15-11	1		5843-06	36.49	5843-47	59.22
25-15	1		5843-12	54.04	5843-49	77.99
50-25	1		5843-16	114.47	5843-51	212.21

5844 ADAPTER for Swagelok, Ace-Thred ♠

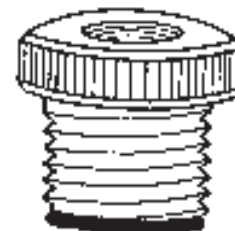
Adapter used with Ace-Thred for connecting tubing to threaded glass via a Swagelok connection. One end Ace-Thred, the other has an NPT female thread. Supplied with one FETFE o-ring. Adapters are available in either nylon or PTFE.

NYLON

NPT Thread Size (In.)	Qty.	Order Code	#7 Ace-Thred	Order Code	#11 Ace-Thred	Order Code	#15 Ace-Thred	Order Code	#25 Ace-Thred	Order Code	#50 Ace-Thred
1/8	1	5844-16	37.97	5844-18	43.86	5844-20	46.36	5844-22	59.52	5844-24	94.94
1/4	1	—	—	—	—	5844-34	46.36	5844-36	59.52	5844-38	94.94

PTFE

NPT Thread Size (In.)	Qty.	Order Code	#7 Ace-Thred	Order Code	#11 Ace-Thred	Order Code	#15 Ace-Thred	Order Code	#25 Ace-Thred	Order Code	#50 Ace-Thred
1/16	1	5844-42	41.18	5844-44	62.54	5844-46	69.71	5844-48	91.51	—	—
1/8	1	5844-58	41.18	5844-60	62.54	5844-62	69.71	5844-64	91.51	—	—
1/4	1	—	—	—	—	5844-74	69.71	5844-76	91.51	5844-78	177.14



5845 PLUG Nylon or PTFE, Ace-Thred ♠

A solid plug for sealing column ends. Permits preparation and storage of column. Supplied with one FETFE o-ring. For extra o-rings, see 7855. *Size 80, 5845-30, is fabricated from HDPE.

For Ace-Thred Size, mm	Qty.	Nylon		PTFE	
		Order Code	Each	Order Code	Each
11	1	5845-05	15.77	5845-45	33.22
15	1	5845-10	19.22	5845-47	39.24
25	1	5845-15	31.10	5845-49	59.74
50	1	5845-20	75.72	5845-51	147.81
80	1	5845-30*	92.76	5845-56	224.59



5846 PLUG Nylon or PTFE, Ace-Thred ♠

A solid plug for sealing column ends. Permits preparation and storage of columns. Supplied with one FETFE o-ring. *Size 80, 5846-27, is fabricated from HDPE.

For Ace-Thred Size, mm	Qty.	Nylon		PTFE	
		Order Code	Each	Order Code	Each
7	1	5846-04	9.48	5846-44	22.79
11	1	5846-06	16.91	5846-46	33.07
15	1	5846-12	22.19	5846-48	39.52
25	1	5846-16	37.19	5846-50	61.27
50	1	5846-22	87.05	5846-52	167.78
80	1	5846-27*	104.02	5846-60	239.54



5848 FILTER DISC *Packing Support* ♠

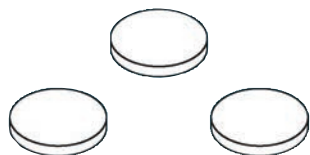
Filter disc for use with 5837 or 5838 column adapters. Available in polyethylene (100 micron pore size), and glass — Porosity A (145-174 microns), B (70-100 microns), C (25-50 microns) and D (10-20 microns). Sold in packages. **(Caution: These discs are intended to be removable. However, because of the tight fit, the glass disc may break when being removed.)**



For Adapter Size,mm	Pkg. Qty.	Polyethylene		Glass							
		Order Code	Per. Pkg.	Porosity A 145-174 microns		Porosity B 70-100 microns		Porosity C 25-50 microns		Porosity D 10-20 microns	
				Order Code	Per Pkg.	Order Code	Per Pkg.	Order Code	Per Pkg.	Order Code	Per Pkg.
11	6	5848-07	14.86	5848-43	60.23	5848-52	60.23	5848-21	60.23	5848-31	60.23
15	6	5848-10	14.86	5848-44	60.23	5848-54	60.23	5848-23	60.23	5848-33	60.23
25	6	5848-14	17.06	5848-47	68.04	5848-56	68.04	5848-25	68.04	5848-35	68.04
50	6	5848-17	36.00	5848-49	134.59	5848-58	134.59	5848-28	134.59	5848-38	134.59
80	1	5848-19	9.29	5848-100	Call	5848-120	133.31	5848-122	151.50	5848-124	166.65

5849 FLOAT *Polyethylene* ♠

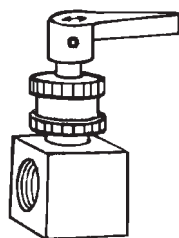
Used on top of column packing to prevent turbulence caused by drop-wise addition.



For Size, mm	Qty.	Order Code	Per Pkg.
11	Pkg/6	5849-05	12.25
15	Pkg/6	5849-10	12.67
25	Pkg/6	5849-15	13.77
50	Pkg/6	5849-20	21.36

5850 VALVE *Miniature, Inert* ★

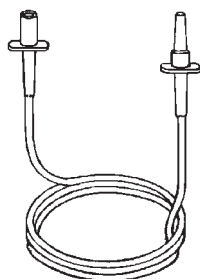
Miniature straight-through shut-off valve designed for small fluid volumes of ultrapure or corrosive fluids. Liquids touch only inert PTFE or inert CTFE. Housing has 1/4-inch-28 UNF female threaded ports with .059-inch I.D. holes that accept a variety of fittings.



Qty.	Order Code	Each
1	5850-10	140.04

5852 ADAPTER *Luer-Lok* ♠

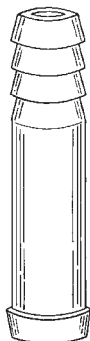
84 cm of thin wall biological grade vinyl tubing connects an outer Luer-Lok taper and an inner Luer-Lok taper. Tubing is approx. 2mm I.D. Connects to 5837 bottom drip adapter.



Qty.	Order Code	Per Pkg.
Pkg/6	5852-10	35.90

5853 CONNECTOR *Tubing, PTFE* ♠

Used to connect flexible tubing to #15 Ace-Thred for easy, safe connect/disconnect. 7506-06 nylon bushing slides over serrated end and secures connector in thread without o-ring. With tubing attached at serrated end, unthread bushing and connector is removed from thread. Vacuum tight. Serrations are 14mm O.D. for 1/2-inch tubing. Order 7506 bushing separately. Connector temperature range is -20°C to +200°C.



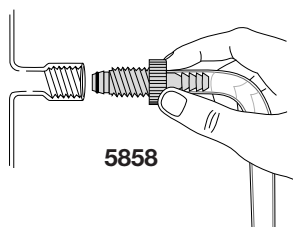
	Use Bushing No.	Qty.	Order Code	Each
Connector, PTFE, .375-inch I.D. only	7506-06	1	5853-07	22.42



5853 "ACE-SAFE" CONNECTIONS Tubing, Polypropylene ♠

Replacement tubing connector, used with nylon bushing to make easy and safe connect/disconnect of coolant or steam tubing to jacketed reaction flasks, condensers, or any vessel utilizing the Ace-Thred as the connection port. Connector is fitted with a silicone o-ring. Bushing compresses connector and o-ring for leak-tight seal. Once tubing is attached to serrated end of connector, bushing will not come off. Hose connections are supplied with silicone o-ring. For replacement o-rings, order 7855-207 for Code -03; 7855-206 for codes -09 and -10; 7855-210 for code -18 and -21; 7855-772 for code -31 and -33. **Maximum temperature is 110°C.**

		<i>For #7 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #11 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #15 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #11 Ace-Thred to 3/8-inch I.D. Tubing</i>	
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
Hose Connection, only, w/O-Ring	1	5853-03	11.38	5853-09	10.85	5853-18	11.76	5853-10	10.85
Nylon Bushing, only	1	5029-05	2.57	7506-01	10.83	7506-05	12.20	7506-01	10.83
Complete	1	5853-06	13.92	5853-12	22.66	5853-20	25.07	5853-15	22.66
		<i>For #15 Ace-Thred to 3/8-inch ID Tubing</i>		<i>For #15 Ace-Thred to 1/2-inch ID Tubing</i>		<i>For #25 Ace-Thred to 3/4-inch ID Tubing</i>		<i>For #25 Ace-Thred to 1-inch ID Tubing</i>	
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
Hose Connection, only, w/O-Ring	1	5853-19	11.76	5853-21	12.68	5853-31	27.71	5853-33	29.09
Nylon Bushing, only	1	7506-05	12.20	7506-05	12.20	7506-09	19.30	7506-09	19.30
Complete	1	5853-23	25.07	5853-26	25.98	5853-35	48.82	5853-37	50.17



5858 "ACE-SAFE" CONNECTIONS Tubing, PTFE ♠

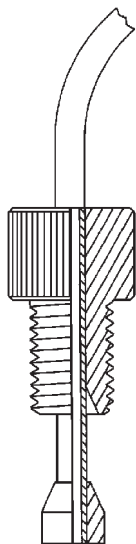
Same as 5853 above, but manufactured from PTFE instead of polypropylene. Connectors are supplied with FETFE o-ring. For replacement o-rings, order 7855-707 for Code -03; 7855-706 for codes -05 and -10; 7855-710 for code -07, -12, and -14. **Maximum temperature is 200°C.**

		<i>For #7 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #11 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #15 Ace-Thred to 1/4-inch I.D. Tubing</i>		<i>For #11 Ace-Thred to 3/8-inch I.D. Tubing</i>	
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
Hose Connection, only, w/O-Ring	1	5858-03	20.72	5858-05	28.63	5858-07	32.01	5858-10	28.63
PTFE Bushing, only, w/O-Ring	1	5029-35	14.49	7506-23	39.80	7506-27	40.65	7506-23	39.80
		<i>For #15 Ace-Thred to 3/8-inch ID Tubing</i>		<i>For #15 Ace-Thred to 1/2-inch ID Tubing</i>					
	Qty.	Order Code	Each	Order Code	Each				
Hose Connection, only, w/O-Ring	1	5858-12	32.01	5858-14	34.46				
PTFE Bushing, only, w/O-Ring	1	7506-27	40.65	7506-27	40.65				

5853/5858 Tubing Connector Reference Chart

(Flow Rate @10 lbs. H₂O)

Tubing Connector Catalog No.	Fits Ace-Thred Size	Connector I.D., in. (mm)	Nominal Flow Rate Gal./Min.	Use Bushing Number	Use O-Ring Number	For Tubing I.D., In. (mm)
5853-03 / 5858-03	7	.125 (3.18)	1.5	5029-05 / 5029-35	7855-207 / 7855-707	1/4 (6.35)
5853-09 / 5858-05	11	.125 (3.18)	1.5	7506-01 / 7506-23	7855-206 / 7855-706	1/4 (6.35)
5853-10 / 5858-10	11	.187 (4.74)	3.3	7506-01 / 7506-23	7855-206 / 7855-706	3/8 (9.5)
5853-18 / 5858-07	15	.125 (3.18)	1.5	7506-05 / 7506-27	7855-210 / 7855-710	1/4 (6.35)
5853-19 / 5858-12	15	.187 (4.74)	3.3	7506-05 / 7506-27	7855-210 / 7855-710	3/8 (9.5)
5853-21 / 5858-14	15	.375 (9.5)	13.3	7506-05 / 7506-27	7855-210 / 7855-710	1/2 (12.7)
5853-31	25	.500 (12.7)	23.6	7506-09	7855-772	3/4 (19)
5853-33	25	.750 (19)	53.3	7506-09	7855-772	1 (25.4)



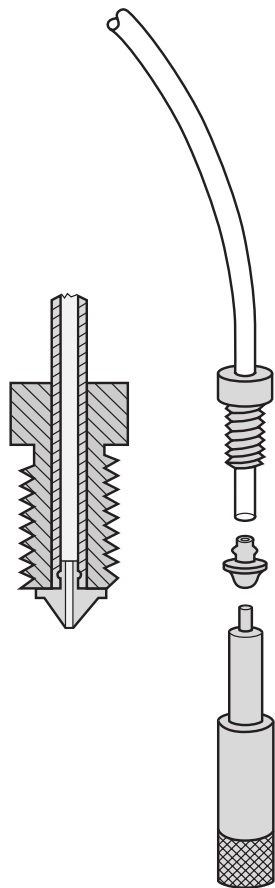
5854 CONNECTORS *Tubing* ★

Chemically inert connectors with male 1/4-inch-28 UNF thread for connecting 1/16-inch or 1/8-inch O.D. PTFE or Tefzel tubing to ACE 5801, 5807 or 5838 chromatography adapters. Easy-to-assemble, “no-flange, no-tool” system is rated at 1000 psi with PTFE tubing, higher with Tefzel.

Just slip nut and ferrule over tubing and finger tighten in any 1/4-inch-28 UNF threaded fitting. Offers zero-dead volume, leak-free seal. Ferrules are made of pure, virgin Tefzel (ETFE); no coloring agents are added. Male nuts are made of white acetal and nylon. Can be used with ACE 12684-05 or 12684-28 PTFE tubing. **For complete item, order nut and ferrule.**

For Tubing Size, O.D., mm (In.)	Qty.	<i>Nut, only</i>		<i>Ferrule, only</i>	
		Order Code	Each	Order Code	Each
1.5 (1/16)	1	5854-07	6.34	5854-24	6.50
3.3 (1/8)	1	5854-09	6.51	5854-26	6.51

OPTI-LOK LP is a trademark of Optimize Technologies Inc.



5855 CONNECTORS *Tubing* ★

Virgin TFE tubing connectors with 1/4-inch-28 UNF 2B male thread for connecting small I.D. tubing to 5838 adapters. Suitable for vacuum or pressure applications since tubing won't slip off or blow out. Easily assembled with simple tool, code -80. The Kel-F insert, code -71 or -73, mechanically wedges the tubing against the fitting. For tubing, see 12684, standard wall.

For Tubing O.D., mm	Qty.	<i>Nut, only</i>		<i>Insert, only</i>		<i>Insertion Tool, only</i>			
		Order Code	Pkg./12	Qty.	Order Code	Pkg./12	Qty.	Order Code	Each
1.5	12	5855-08	80.61	12	5855-71	82.04	1	5855-80	35.15
2	12	5855-10	80.61	12	5855-73	82.31	1	5855-80	35.15

5414 RESERVOIR *Graduated Glass, Reagent* ★

Heavy-wall borosilicate glass bottle with three PTFE valves with Tefzel keys. Pressure-tight PTFE coated Fluoron forms a seal within cap; hence, fluid contact is restricted to glass, PTFE and Tefzel. The three individually controlled valves permit the application of gas under pressure to the bottle for venting, flushing, or delivery of the bottle contents to one or two points. Bottles may be pressurized in isolation or in series with the other bottles. One of the valves may be used to allow corrosive fumes to be vented safely. Rated to 14 psi at ambient; **must be adequately shielded when under pressure**. Each bottle is provided with a three-valve, 1/4-28UNF cap ideal for use with our 5859 and 5855 tubing connectors.

Codes -07 thru -15 are clear glass reagent bottles (also available ambered).

Codes -137 thru -141 are U.V. resisting plastic coated solvent delivery bottles.



Reagent Reservoir, Clear, with Netting & Cap

Cap., mL	Qty.	Order Code	Each
250	1	5414-07	216.94
500	1	5414-10	216.94
1000	1	5414-15	216.94

Solvent Reservoir, Coated, with Cap

Cap., mL	Qty.	Order Code	Each
250	1	5414-137	230.63
500	1	5414-139	230.63
1000	1	5414-141	239.71

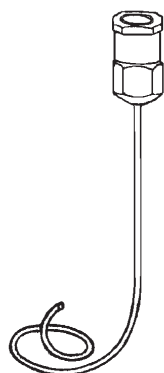
Accessory Items

	Qty.	Order Code	Each
Cap only, with valves	1	5414-502	199.88
Filter, Sparger, PTFE/Stainless Steel, 10 micron	1	5414-31	48.55
Filter, Bottle Bottom, PTFE, 10 micron	1	5414-32	41.70
Filter, Bottle Bottom, Polypropylene, 20 micron	1	5414-33	9.13
Filtered Check Valve, PTFE, 10 micron	1	5414-34	48.88

Color Coated Glassware



Ace Glass offers many of our existing glass vessels in various coated versions. Flasks, pressure bottles, beakers, bottles and many other items listed in this catalog can be amber or color coated on request. The coating is a proprietary process and gives excellent UV protection characteristics. Contact Ace for more details and pricing.



5856 ADAPTER Needle ★

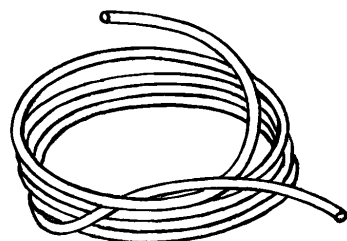
Designed to eliminate “dead space” between end of standard Luer-Lok taper and bottom of standard hub when using 5837 adapters. Available with Kel-F hub and PTFE tubing extension approximately one meter long; longer extensions are available via special order. Also available with Kel-F hub at both ends on special order.

PTFE needle will slip into 12684-06 PTFE tubing making a sleeve fit satisfactory for discharging into an open container. All 5837 adapters now have a 0.051 opening for 10mm distance from end of Luer-Lok tip. If you have previously purchased 5837, the Luer-Lok tip can be enlarged to 0.051 with a No. 55 drill to accommodate these new needle adapters.

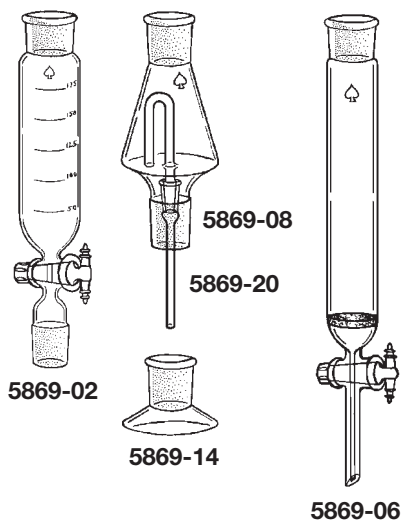
Kel-F Hub with PTFE tubing		
Qty.	Order Code	Each
1	5856-10	44.62

12684 TUBING TFE ★

Clear, standard and thin walled TFE tubing for use with 5854, 5855, Omnifit tubing connectors or for other chromatography needs. Supplied in three-meter (10 ft.) lengths.



Approx. I.D., mm	AWG Size	Wall Weight	Wall, mm	Qty.	Order Code	Per 3 meters
0.8 (1/32 inches)	20	Standard	.4	3 meters (10 ft.)	12684-23	12.83
1.0	18	Thin	.3	3 meters (10 ft.)	12684-06	14.48
1.0	18	Standard	.4	3 meters (10 ft.)	12684-08	16.25
1.5	15	Thin	.3	3 meters (10 ft.)	12684-17	14.54
1.5	15	Standard	.4	3 meters (10 ft.)	12684-19	14.51
2.0	12	Thin	.3	3 meters (10 ft.)	12684-27	45.26
2.0	12	Standard	.4	3 meters (10 ft.)	12684-28	16.09
4.8	5	Standard	.5	3 meters (10 ft.)	12684-11	28.89



5869 CHROMATOGRAPHY APPARATUS Neutral Oil ♠

Newly designed flask increases the efficiency and standardization of neutral oil determination by: permitting automatic transfer of weighed crude oil samples onto alumina columns; converting column operation to a semi-automatic level, thereby reducing the cost of operation. Meets A.O.C.S. Ca9f-57 specifications.

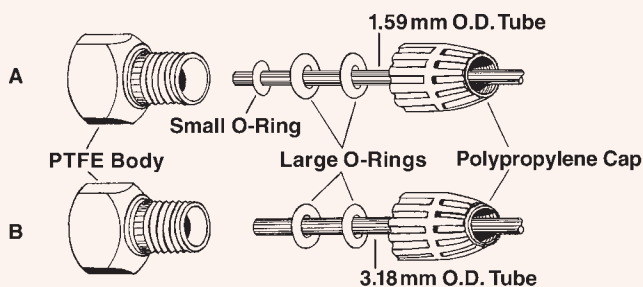
Complete apparatus consists of: reservoir — 175 mL capacity with 4 mm PTFE stopcock, F 19/22 male joint at bottom and #27 stopper joint at top; flask — 20 mL capacity with F 19/22 joints at top and bottom and F 7/15 joint on inner tube; base — with F 19/22 joint; extension tube — with F 7/15 joint; and column — with 19 mm I.D., 270mm long from top of F 19/22 joint to tip, with 2 mm PTFE stopcock and Porosity C (25-50 micron) fritted disc.

	Qty.	Order Code	Each
Reservoir	1	5869-02	123.49
Flask	1	5869-08	170.00
Base	1	5869-14	26.71
Extension Tube	1	5869-20	17.90
Column	1	5869-06	160.12
Complete	1	5869-40	498.22

Omnifit Variable-Bore Connectors and Valves

provide the utmost in flexibility and applicability. Leak-tight connection can be made to tubing of any diameter from 0.5 mm to 11 mm. Self-centering, zero dead volume connection can be made without flanging of tubing and without tools. Because flanging of the tubing is not required, Omnifit components can be used with rigid or flexible tubing of virtually any material. For example, connecting PTFE tubing to glassware is easy and quick with a variable-bore connector. The tube is simply inserted into the fitting and the cap tightened.

How to Use Omnifit Variable-Bore Fittings

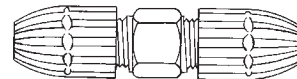


As supplied, Omnifit variable-bore fittings make the following types of connection:

- TYPE 1: **Instant**
- TYPE 2: **High Pressure**
- TYPE 3: **Chemically Inert**
- TYPE 4: **Fitting to Fitting**

12714 CONNECTOR Tubing, Variable Bore ★

Provides instant connection of rigid or flexible tubing within a range of 0.5 to 4mm O.D. Dead volume is zero. Connections are made in seconds without flanging of tubing and are leak-tight to at least 50 psi. Body is virgin PTFE. Caps are polypropylene with Fluoron elastomer o-ring seals. Caps have 1/4-inch-28 UNF thread for interfacing with 5854, 5855 and 12724 adapters or other miniature plumbing systems. Supplied with PTFE cones for making o-ring free connections.

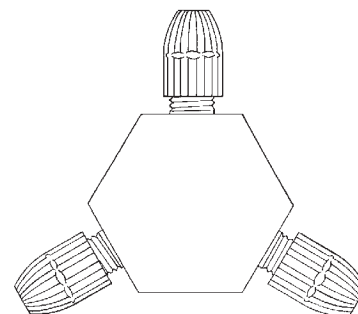


STARTER KIT

Qty.	Order Code	Per Kit
Pkg/3	12714-20	83.43

12720 CONNECTOR Tubing, Three-Way, Variable Bore ★

For instant connection of up to three rigid or flexible tubes within a range of 0.5 to 4mm O.D. Leak-tight to 50 psi without flanging; if tubing is flared, pressure rating is 800 psi. Suitable for in-line connection of 13385 pressure gauge when using the Michel-Miller Chromatography System. Body is virgin PTFE. Caps are polypropylene with Fluoron elastomer o-ring seals. PTFE cones for all-PTFE connection of tubing are supplied. Caps have 1/4-inch-28 UNF thread for interfacing with 5854, 5855 and 12724 adapters or with other miniature plumbing systems.



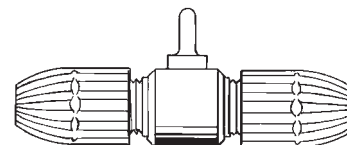
Qty.	Order Code	Each
1	12720-25	90.35

Omnifit valves listed below are supplied with Variable-Bore Omnifit fittings for instant connection to tubing or to other fittings. The valves are unique, having but one moving part for each channel, and dead volume within the valves is zero. Valve keys are non-pyrogenic and biologically inert Tefzel. All valve bodies are machined from a single piece of PTFE for strength and maximum chemical inertness. In normal laboratory use Omnifit valves are virtually indestructible.

OMNIFIT® TUBE FITTINGS & VALVES
From .5mm to 11mm O.D. / Up to 1000 psi

12728 VALVE *Tubing Connector, Two-Way* ★

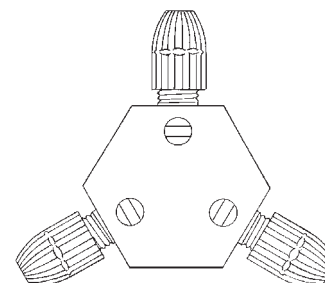
Similar to 12714-20 Connector except with single Tefzel control valve, rated 500 psi. Valve has one moving part for long life and trouble free operation. Unique design prevents valve from leaking to outside even at excessive pressures. Body is machined from a single-piece of PTFE. Caps are polypropylene with Fluoron elastomer seals for instant connection of rigid or flexible tubing within a range of 0.5 to 4mm O.D. With 1/4-inch-28 UNF thread at back of cap for direct tubing connection to other adapters. Autoclavable.



Qty.	Order Code	Each
Pkg/2	12728-32	123.61

12730 VALVE *Tubing Connector, Three-Way* ★

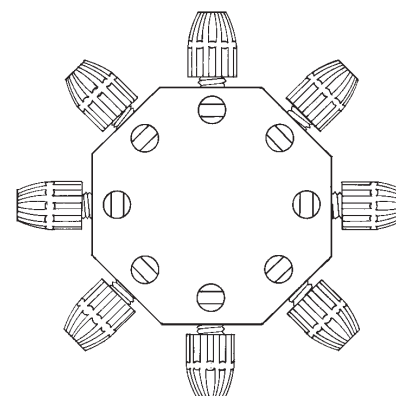
Three-way tubing connector Valve for applications where stream switching, reagent switching, sample removal or sample injection is desirable. Body is machined from a single-piece of PTFE. The Tefzel valves are rated to 500 psi and have one moving part per channel for long life and trouble free operation. The 1.5mm I.D. channels meet at valve center. Leak-tight to outside even at excessive pressures. Dead space within Valve is zero. Caps are polypropylene with Fluoron elastomer o-ring seals for instant connection of rigid or flexible tubing within a range of 0.5 to 4mm O.D. With 1/4-inch-28 UNF thread at back of caps for direct connection with other adapters. Autoclavable.



Qty.	Order Code	Each
1	12730-39	217.03

12732 VALVE *Tubing Connector, Eight-Way* ★

Eight-way tubing connector valve for applications where multiple channels are necessary for distributing reagents, solvents or buffers to chromatography columns, etc. Body is machined from a single-piece of PTFE. Valves are Tefzel and are rated at 500 psi. The 1.5mm I.D. channels meet at valve center and have one moving part for long life and trouble free operation. Leak-tight to outside even at excessive pressures. Dead space within valve is zero. Caps are polypropylene with Fluoron elastomer o-ring seals for instant connection of rigid or flexible tubing within a range of 0.5 to 4mm O.D. With 1/4-inch-28 UNF thread at back of cap for direct connection with other adapters. Autoclavable.

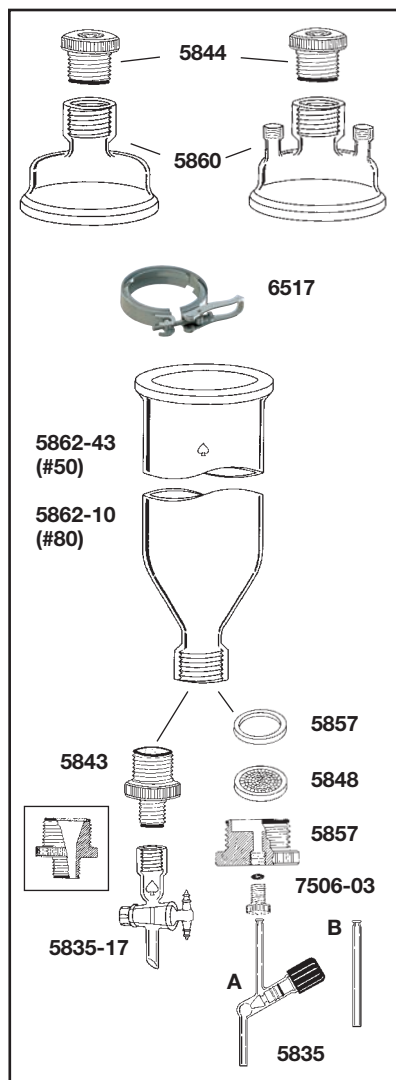


Qty.	Order Code	Each
1	12732-46	446.89

BIG COLUMNS

All types of special combinations made to order

- Heads can be supplied with additional threads or joints or combination of both
- Columns available in various lengths and diameters



5844 ADAPTER for Swagelok ♦

PTFE adapter for use at top of 5860 column head or at bottom of 5862 column to connect tubing via Swagelok type connector to #50 Ace-Thred, other end has 1/4-inch NPT female thread. Supplied with one FETFE o-ring. For extra o-rings, see 7855-729.

Qty.	Order Code	Each
1	5844-78	177.14

5860 COLUMN HEAD ♦

For use with 5862 chromatography column. With #50 Ace-Thred center neck and/or two #15 Ace-Thred side necks and 4-inch or 6-inch Duran flange at bottom, ground flat. Use with 6517 clamp.

Flange Size	Center Neck Size	Side Neck Size	Qty.	Order Code	Each
4 inches	50	None	1	5860-24	241.08
6 inches	50	None	1	5860-28	293.45
6 inches	50	15	1	5860-32	410.27

5862 COLUMN (#50) Chromatography ♦

Large size chromatography columns with o-ring grooved Duran flat flange at top for easy access to column. Flange is supplied with silicone o-ring to make seal when using 5860 head with 6517 clamp. Four-inch and 6-inch I.D. columns are tapered to #50 Ace-Thred at bottom that accepts 5844 adapter, or 5848 and 5835 adapters. For replacement o-rings, see below.

Flange Size/ Col. I.D., in.	Length mm (in.)	Qty.	Order Code	Each
4	300 (12)	1	5862-43	489.62
4	450 (18)	1	5862-45	512.33
4	600 (24)	1	5862-47	558.16
4	1200 (48)	1	5862-49	654.61
6	450 (18)	1	5862-58	827.94
6	600 (24)	1	5862-62	909.75
6	1200 (48)	1	5862-65	1028.52
6	1800 (72)	1	5862-68	1093.54

Replacement Silicone O-Rings

	Qty.	Order Code	Each	Pkg./5
For 4-inch Flange	1 or 5 (specify)	7855-254	23.20	104.42
For 6-inch Flange	1 or 5 (specify)	7855-260	44.00	198.00

Replacement CAPFE O-Rings

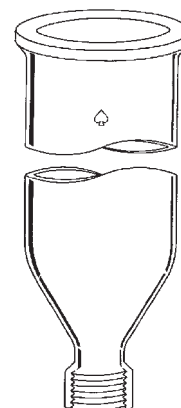
	Qty.	Order Code	Each
For 4-inch Flange	1	7855-880	29.49
For 6-inch Flange	1	7855-881	61.44

BIG COLUMNS

5862 COLUMN (#80) Chromatography ♦

Large size 100mm columns with o-ring grooved Duran flat flange at top for easy access to column. Flange is supplied with silicone o-ring to make seal when using 5860 head with 6517 clamp. Columns are tapered to #80 Ace-Thred at bottom that accepts 5857 adapter.

Length (In.)	Flange Size (In.)	Diameter (In.)	Qty.	Order Code	Each
18	6	6	1	5862-10	936.85
18	6	8	1	5862-18	1275.77
18	6	12	1	5862-26	1685.87
24	6	6	1	5862-12	994.03
24	6	8	1	5862-20	1350.55
24	6	12	1	5862-28	1880.55
48	6	6	1	5862-14	1123.84
48	6	8	1	5862-22	1564.50
48	6	12	1	5862-30	2095.16



6517 CLAMP ★

Stainless steel quick release clamp with three retaining clips for connecting 5860 head and 5862 column.

For Flange Size	Qty.	Order Code	Each
4 inches	1	6517-25	100.27
6 inches	1	6517-27	120.09



5848 SUPPORT PLATE Perforated ♦

73mm diameter glass plate with 1x3mm rectangular slits for supporting column packing. Used with 5857.

Qty.	Order Code	Each
1	5848-60	89.07



5843 COUPLING Reducing, with Support ♦

For connecting 5835 bottom drip stopcock adapter to bottom of 5862 chromatography column with leak-tight o-ring seals. One end is #50 Ace-Thred for connecting to column, the other #25 Ace-Thred is for connecting to 5835B adapter. #50 end of coupling is supplied with Porosity A (145-170 micron) glass packing support, press fitted, with taper below disc to 25 I.D. For replacement supports, see below. Supplied with two FETFE o-rings. For replacement o-rings, see 7855-729 (for #50); or 7855-727 (for #25).

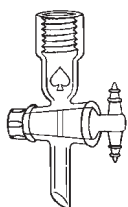
Qty.	Order Code	Each
1	5843-74	255.33



Replacement Glass Packing Supports

	Qty.	Order Code	Per Pkg/6
Porosity A (145-175 micron)	1	5848-49	134.59
Porosity B (70-100 micron)	1	5848-58	134.59

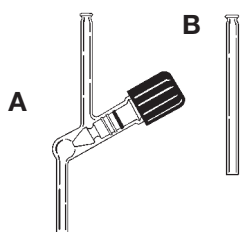
BIG COLUMNS



5835 ADAPTER *Bottom Drip, with 1:5 PTFE Stopcock* ♦

Drip tip for bottom of 5862 column using 5843 coupling. One end has #25 Ace-Thred, other with drip tip and 4mm bore PTFE stopcock for controlling flow.

Qty.	Order Code	Per Package
1	5835-17	133.12



5835 BOTTOM OUTLET VALVE *with or without Stopcock* ♦

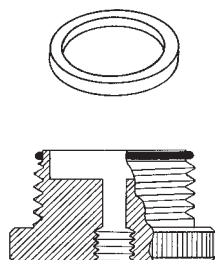
Type A — With 0-8mm threaded stopcock for controlling flow.

Type B — Straight stem without stopcock. Both stems to take 3/8-inch Swagelok fittings. Secured to 5857 Bottom adapter with 7506-03 bushing.

Type	Qty.	Order Code	Each
A	1	5835-32	130.06
B	1	5835-34	36.98

5857 BOTTOM ADAPTER *UHMWPE* or PTFE* ♦

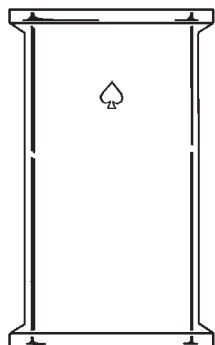
Fits #80 Ace-Thred. Recessed for 5848 perforated support plate and 5857-50 retaining ring. Your choice of bottom outlet, either threaded for #11 Ace-Thred bushing 7506-03 to secure 5835 outlet valve, or threaded to accept 3/8-inch NPT fitting. For replacement o-rings, order 7855-764.



	Qty.	<i>with #11 Ace-Thred</i>		<i>with 3/8-inch NPT</i>	
		Order Code	Each	Order Code	Each
UHMWPE*					
Adapter, #80 Thred	1	5857-30	127.66	1	5857-35 127.66
Support Plate	1	5848-60	89.07	1	5848-60 89.07
Retaining Ring	1	5857-50	14.39	1	5857-50 14.39
Bushing	1	7506-03	11.86	1	—
Connector, 3/8 inches	1	—	—	1	12770-27 32.54
COMPLETE	1	5857-44	242.98	1	5857-46 243.24

	Qty.	<i>with #11 Ace-Thred</i>		<i>with 3/8-inch NPT</i>	
		Order Code	Each	Order Code	Each
PTFE					
Adapter, #80 Thred	1	5857-60	275.33	1	5857-64 275.33
Support Plate	1	5848-60	89.07	1	5848-60 89.07
Retaining Ring	1	5857-52	15.74	1	5857-52 15.74
Bushing	1	7506-03	11.86	1	—
Connector, 3/8 inches	1	—	—	1	12770-27 32.54
COMPLETE	1	5857-67	392.00	1	5857-69 412.68

*UHMWPE — Ultra High Molecular Weight Polypropylene



5862 COLUMN EXTENDER *Chromatography* ♦

Extenders that can be added to 5862 columns to increase column height. Extenders have an o-ring grooved Duran flat flange on one end to attach 5860 column head and ground flat flange at other end to attach the 5862 column. Supplied with one silicone o-ring. Use 6517 clamp to secure sections.

Flange Size/ Column I.D., in	Length mm (in)	Qty.	Order Code	Each
4	300 (12)	1	5862-72	273.98
4	450 (18)	1	5862-73	273.98
4	600 (24)	1	5862-74	316.66
6	300	1	5862-77	570.92
6	450	1	5862-78	615.19
6	600	1	5862-79	658.16

5867 SUPPORT STAND for Large Chromatography Columns ★

Newly designed four-post stands for large scale chromatography columns feature all stainless steel construction. Each stand is designed to accept either 24-inch, 48-inch or 72-inch length columns. Each stand is designed to accommodate the height of the column and has a PTFE collar at the bottom that accepts and supports the tapered bottom of the column. Each stand has an adjustable stainless upper collar assembly that supports the top of the column. All stands have locking casters for mobility.

Fits Column (Height)	Dimensions, Inches (W x D x H)	Qty.	Order Code	Each
24 inches	15 x 15 x 40	1	5867-24	2460.71
48 inches	15 x 15 x 60	1	5867-48	2941.75
72 inches	15 x 15 x 85	1	5867-72	3189.66


5868 SUPPORT STAND for Bench-Scale Chromatography Columns ★

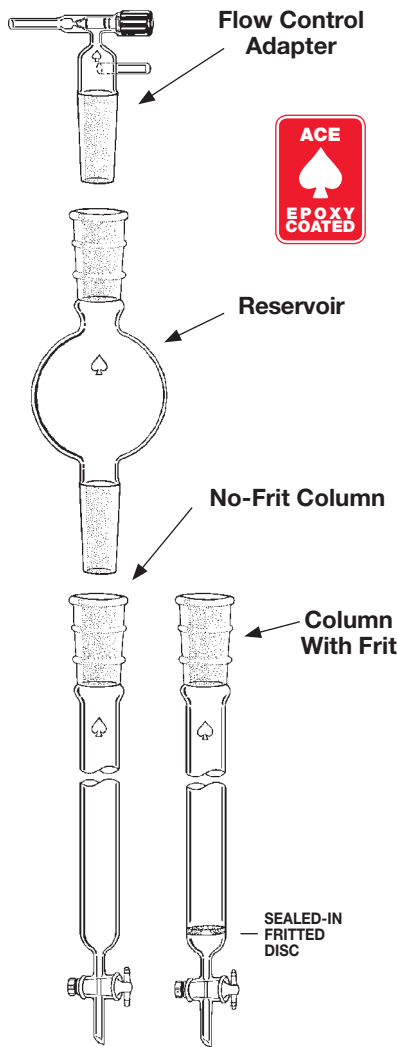
Newly designed single-post stand for 12-inch and 18-inch height chromatography columns. “H” shaped base and a single 122cm high x 1-inch diameter stainless steel bar give great stability for the large-scale columns. Stand comes complete with base, rod, base plate, clamp holder and chain clamp.

Overall Height	Qty.	Order Code	Each
125cm	1	5868-122	600.53



5871 COLUMN Flash Chromatography, Standard Taper Joint, Epoxy Coated

Simple absorption chromatography column for rapid preparative separations. Allows separations of samples from 0.01 to 10.0g³ in 10-15 minutes. **Column and reservoir only are epoxy coated for safety.** Reservoir connects between column and flow control adapter. Joins on column, reservoir and adapter are $\text{F}24/40$ or $\text{F}45/50$. Columns available with or without Porosity B (70–100 micron) sealed-in fritted disc. Stopcock on column is 2mm bore PTFE on 10mm I.D thru 50mm I.D.; 4mm bore on 64mm and 75mm I.D., on flow control adapter, 0-3mm PTFE (replacement plug is 8192-261). Joint clamps also available. **Order each item separately.**



COLUMN ONLY

Column I.D., mm (Inches)	Effective Length, mm (Inches)	Approx. Capacity, mL	Qty.	Joint Size	Without Disc		With Disc	
					Order Code	Each \spadesuit	Order Code	Each \spadesuit
10 (.39)	457 (18)	36	1	$\text{F}24/40$	5903-20	134.82	5904-22	147.40
13 (.50)	203 (8)	30	1	$\text{F}24/40$	5871-03	110.41	5871-51	132.09
13 (.50)	254 (10)	34	1	$\text{F}24/40$	5871-05	114.31	5871-53	134.03
13 (.50)	305 (12)	40	1	$\text{F}24/40$	5871-07	122.00	5871-55	140.81
13 (.50)	457 (18)	60	1	$\text{F}24/40$	5871-08	131.58	5871-56	149.15
19 (.75)	203 (8)	60	1	$\text{F}24/40$	5871-09	115.42	5871-58	133.30
19 (.75)	254 (10)	70	1	$\text{F}24/40$	5871-11	117.36	5871-59	139.13
19 (.75)	305 (12)	86	1	$\text{F}24/40$	5871-13	123.01	5871-61	142.32
19 (.75)	457 (18)	130	1	$\text{F}24/40$	5871-14	130.10	5871-62	150.03
19 (.75)	610 (24)	173	1	$\text{F}24/40$	5903-24	144.52	5904-26	161.07
25 (1.0)	203 (8)	100	1	$\text{F}24/40$	5871-15	139.16	5871-65	159.23
25 (1.0)	254 (10)	125	1	$\text{F}24/40$	5871-17	139.52	5871-67	160.63
25 (1.0)	305 (12)	150	1	$\text{F}24/40$	5871-18	144.96	5871-68	164.90
25 (1.0)	457 (18)	220	1	$\text{F}24/40$	5871-19	153.60	5871-69	173.82
25 (1.0)	510 (20)	250	1	$\text{F}24/40$	5903-26	164.99	5904-28	179.75
38 (1.5)	203 (8)	230	1	$\text{F}24/40$	5871-21	140.17	5871-73	159.91
38 (1.5)	254 (10)	290	1	$\text{F}24/40$	5871-22	143.43	5871-75	162.81
38 (1.5)	305 (12)	350	1	$\text{F}24/40$	5871-24	146.29	5871-76	168.38
38 (1.5)	457 (18)	520	1	$\text{F}24/40$	5871-25	161.18	5871-77	178.52
41 (1.6)	610 (24)	805	1	$\text{F}24/40$	5903-27	173.93	5904-37	190.53
50 (2.0)	203 (8)	400	1	$\text{F}24/40$	5871-29	167.85	5871-79	195.17
50 (2.0)	254 (10)	500	1	$\text{F}24/40$	5871-30	172.37	5871-81	201.71
50 (2.0)	305 (12)	600	1	$\text{F}24/40$	5871-32	177.05	5871-82	209.54
50 (2.0)	457 (18)	900	1	$\text{F}24/40$	5871-34	184.51	5871-84	219.93
50 (2.0)	610 (24)	1,200	1	$\text{F}24/40$	5903-28	201.60	5904-40	232.15
64 (2.5)	203 (8)	650	1	$\text{F}45/50$	5871-37	187.20	5871-85	217.42
64 (2.5)	254 (10)	820	1	$\text{F}45/50$	5871-39	192.37	5871-86	223.76
64 (2.5)	305 (12)	980	1	$\text{F}45/50$	5871-40	199.33	5871-88	233.93
64 (2.5)	457 (18)	1,470	1	$\text{F}45/50$	5871-41	217.39	5871-90	249.08
64 (2.5)	610 (24)	1,960	1	$\text{F}45/50$	5871-42	224.71	5871-91	269.43
75 (3.0)	203 (8)	900	1	$\text{F}45/50$	5871-43	227.11	5871-92	284.62
75 (3.0)	254 (10)	1,120	1	$\text{F}45/50$	5871-44	236.79	5871-94	290.79
75 (3.0)	305 (12)	1,350	1	$\text{F}45/50$	5871-46	246.95	5871-96	295.84
75 (3.0)	457 (18)	2,020	1	$\text{F}45/50$	5871-48	292.41	5871-97	322.70
75 (3.0)	610 (24)	2,690	1	$\text{F}45/50$	5871-49	309.97	5871-98	337.25

OTHER ITEMS

Reservoir	Upper Joint	Lower Joint	Qty.	Order Code	Each
Reservoir, 250mL, only	$\text{F}24/40$	$\text{F}24/40$	1	5871-112	\spadesuit 80.94
Reservoir, 500mL, only	$\text{F}24/40$	$\text{F}24/40$	1	5871-114	\spadesuit 88.23
Reservoir, 1000mL, only	$\text{F}24/40$	$\text{F}24/40$	1	5871-120	\spadesuit 95.06
Reservoir, 1000mL, only	$\text{F}24/40$	$\text{F}45/50$	1	5871-124	\spadesuit 99.71
Reservoir, 2000mL, only	$\text{F}24/40$	$\text{F}24/40$	1	5871-130	\spadesuit 142.34
Reservoir, 2000mL, only	$\text{F}24/40$	$\text{F}45/50$	1	5871-132	\spadesuit 155.10
Reservoir, 3000mL, only	$\text{F}24/40$	$\text{F}45/50$	1	5871-143	\spadesuit 194.99
Reservoir, 5000mL, only	$\text{F}24/40$	$\text{F}45/50$	1	5871-150	\spadesuit 224.06
Flow Control Adapter, only	$\text{F}24/40$		1	5871-165	\spadesuit 86.63
Flow Control Adapter, only	$\text{F}45/50$		1	5871-167	\spadesuit 108.73
Clamp, Plastic, Pkg/10	For $\text{F}24/40$		1	7598-24	\star 39.91
Clamp, Plastic, Pkg/10	For $\text{F}45/50$		1	7598-45	\star 52.00

Column lengths and diameters can be made to order.

5872 COLUMN *Flash Chromatography, Spherical Joint, Epoxy Coated*

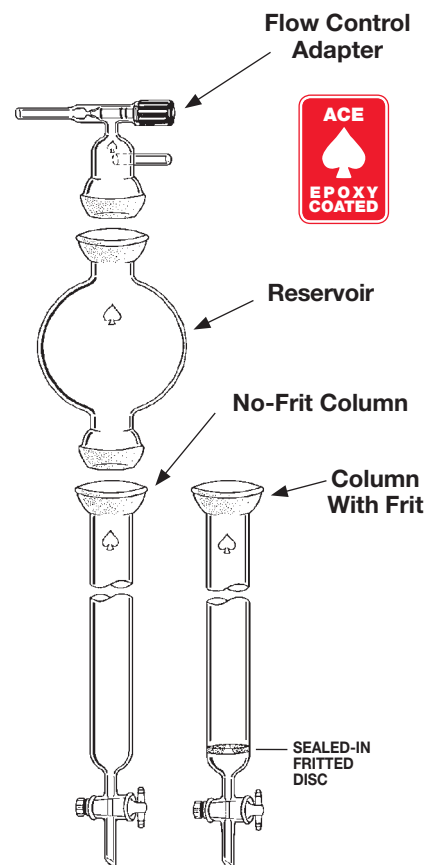
Simple absorption chromatography column for rapid preparative separations as described by W.C. Still, M. Kahn and A. Mitra of Columbia University Department of Chemistry. Allows separations of samples from 0.01 to 10.0g³ in 10-15 minutes. **Column and reservoir, only, are epoxy coated for safety.** Reservoir connects between column and flow control adapter. Joints on column, reservoir and adapter are $\text{\$ } 35/20$, $\text{\$ } 50/30$ or $\text{\$ } 75/50$. Columns available with or without Porosity B (70-100 micron) sealed-in, fritted disc. Stopcock on column is 2mm bore PTFE on 10mm I.D. thru 50mm I.D.; 4mm bore on 64mm and 75mm I.D. Flow control adapter, 0-3mm PTFE (replacement plug is 8192-261). Joint clamps also available. **Order each item separately.**

COLUMN ONLY

Column I.D., mm (Inches)	Effective Length, mm (Inches)	Approx. Capacity, mL	Joint Size	Qty.	Without Disc		With Disc	
					Order Code	Each \blacklozenge	Order Code	Each \blacklozenge
10 (.39)	457 (18)	40	$\text{\$ } 35/20$	1	5872-06	130.84	5872-50	143.46
13 (.50)	203 (8)	30	$\text{\$ } 35/20$	1	5872-02	115.03	5872-55	130.67
13 (.50)	254 (10)	34	$\text{\$ } 35/20$	1	5872-03	116.72	5872-57	137.24
13 (.50)	305 (12)	40	$\text{\$ } 35/20$	1	5872-04	126.59	5872-58	143.58
13 (.50)	457 (18)	60	$\text{\$ } 35/20$	1	5872-05	135.31	5872-60	162.77
19 (.75)	203 (8)	60	$\text{\$ } 35/20$	1	5872-07	115.03	5872-61	157.89
19 (.75)	254 (10)	70	$\text{\$ } 35/20$	1	5872-08	116.91	5872-62	164.01
19 (.75)	305 (12)	86	$\text{\$ } 35/20$	1	5872-09	120.49	5872-63	167.29
19 (.75)	457 (18)	130	$\text{\$ } 35/20$	1	5872-10	135.61	5872-54	174.86
25 (1.0)	203 (8)	100	$\text{\$ } 35/20$	1	5872-12	144.52	5872-64	166.12
25 (1.0)	254 (10)	125	$\text{\$ } 35/20$	1	5872-13	150.48	5872-65	168.89
25 (1.0)	305 (12)	150	$\text{\$ } 35/20$	1	5872-15	163.35	5872-66	180.45
25 (1.0)	457 (18)	220	$\text{\$ } 35/20$	1	5872-16	172.17	5872-67	188.78
38 (1.5)	203 (8)	230	$\text{\$ } 35/20$	1	5872-17	140.37	5872-68	163.44
38 (1.5)	254 (10)	290	$\text{\$ } 35/20$	1	5872-18	146.04	5872-69	171.82
38 (1.5)	305 (12)	350	$\text{\$ } 35/20$	1	5872-19	148.57	5872-70	181.13
38 (1.5)	457 (18)	520	$\text{\$ } 35/20$	1	5872-22	165.46	5872-71	189.19
41 (1.6)	457 (18)	600	$\text{\$ } 35/20$	1	5872-14	146.57	5872-56	198.82
50 (2.0)	203 (8)	400	$\text{\$ } 50/30$	1	5872-23	166.22	5872-72	190.41
50 (2.0)	254 (10)	500	$\text{\$ } 50/30$	1	5872-24	175.41	5872-73	194.91
50 (2.0)	305 (12)	600	$\text{\$ } 50/30$	1	5872-25	185.10	5872-74	213.83
50 (2.0)	457 (18)	900	$\text{\$ } 35/20$	1	5872-20	160.08	5872-59	181.91
50 (2.0)	610 (24)	1,200	$\text{\$ } 50/30$	1	5872-27	247.72	5872-75	274.30
64 (2.5)	203 (8)	650	$\text{\$ } 50/30$	1	5872-28	198.56	5872-76	248.13
64 (2.5)	254 (10)	820	$\text{\$ } 50/30$	1	5872-29	207.93	5872-80	254.73
64 (2.5)	305 (12)	980	$\text{\$ } 50/30$	1	5872-30	220.43	5872-81	267.61
64 (2.5)	457 (18)	1,470	$\text{\$ } 50/30$	1	5872-31	232.65	5872-82	292.30
64 (2.5)	610 (24)	1,960	$\text{\$ } 50/30$	1	5872-32	253.97	5872-86	320.00
75 (3.0)	203 (8)	900	$\text{\$ } 75/50$	1	5872-33	269.26	5872-87	300.89
75 (3.0)	254 (10)	1,120	$\text{\$ } 75/50$	1	5872-34	271.94	5872-88	308.19
75 (3.0)	305 (12)	1,350	$\text{\$ } 75/50$	1	5872-51	292.28	5872-90	329.41
75 (3.0)	457 (18)	2,020	$\text{\$ } 75/50$	1	5872-52	311.45	5872-97	348.52
75 (3.0)	610 (24)	2,690	$\text{\$ } 75/50$	1	5872-26	332.59	5872-98	369.54

OTHER ITEMS

Reservoir	Upper Joint	Lower Joint	Qty.	Order Code	Each
Reservoir, 250mL, only	$\text{\$ } 35/20$	$\text{\$ } 35/20$	1	5872-41	\blacklozenge 78.68
Reservoir, 500mL, only	$\text{\$ } 35/20$	$\text{\$ } 35/20$	1	5872-42	\blacklozenge 83.72
Reservoir, 1000mL, only	$\text{\$ } 35/20$	$\text{\$ } 35/20$	1	5872-43	\blacklozenge 92.07
Reservoir, 1000mL, only	$\text{\$ } 35/20$	$\text{\$ } 50/30$	1	5872-44	\blacklozenge 101.52
Reservoir, 2000mL, only	$\text{\$ } 35/20$	$\text{\$ } 35/20$	1	5872-45	\blacklozenge 144.92
Reservoir, 2000mL, only	$\text{\$ } 35/20$	$\text{\$ } 50/30$	1	5872-46	\blacklozenge 158.82
Reservoir, 2000mL, only	$\text{\$ } 35/20$	$\text{\$ } 75/50$	1	5872-47	\blacklozenge 175.14
Reservoir, 3000mL, only	$\text{\$ } 35/20$	$\text{\$ } 75/50$	1	5872-48	\blacklozenge 209.31
Reservoir, 5000mL, only	$\text{\$ } 35/20$	$\text{\$ } 75/50$	1	5872-49	\blacklozenge 235.89
Flow Control Adapter, only	$\text{\$ } 35/20$		1	5872-35	\blacklozenge 119.92
Flow Control Adapter, only		$\text{\$ } 50/30$	1	5872-36	\blacklozenge 134.37
Flow Control Adapter, only		$\text{\$ } 75/50$	1	5872-37	\blacklozenge 187.28
Clamp, Pinch Type	For $\text{\$ } 35/20$		1	7669-14	\star 18.51
Clamp, Pinch Type	For $\text{\$ } 50/30$		1	7669-18	\star 32.51
Clamp, Pinch Type	For $\text{\$ } 75/50$		1	7669-22	\star 72.92



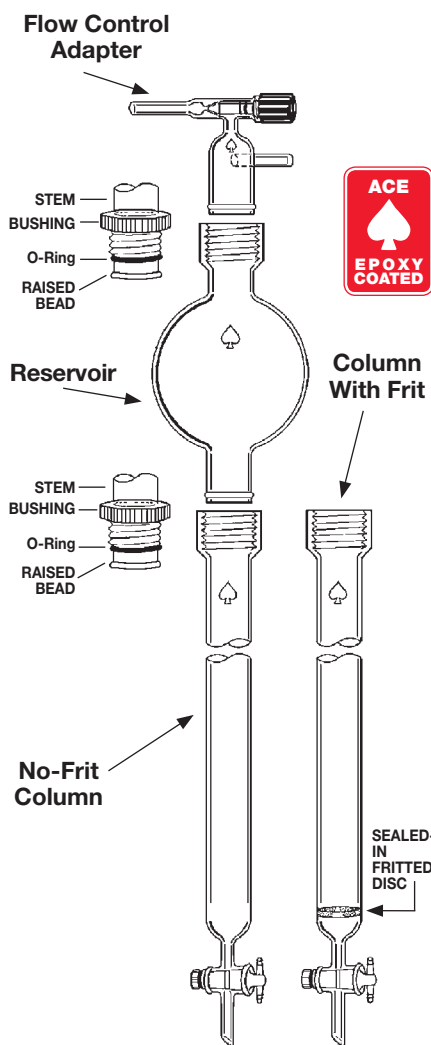
For one-piece columns, with reservoir, see 5906, 5907 & 5908, starting on page 126.

Column lengths and diameters can be made to order.

**Easy assembly
and more stability
with Ace-Thred
connections**

5873 COLUMN Flash Chromatography, Epoxy Coated, Modified ♠

Modified version of 5872 simple absorption column for rapid preparative separations. This version incorporates a #25 Ace-Thred connector in place of the § 35/20 joints, for grease-free connection. The internally threaded connector and 7506 Nylon bushing make a pressure-tight, o-ring compression seal with glass stem on reservoir and flow adapter. Glass bead helps o-ring form a more positive seal against bushing to help prevent backout. Bushing replaces joint clamp. **Column and reservoir, only, are Epoxy Coated for added protection against scratching.** Column available with or without Porosity B (70–100 micron) fritted disc sealed in. **Order each item separately.**



COLUMN ONLY

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Without Disc		With Disc	
				Order Code	Each	Order Code	Each
10	457	40	1	5873-05	126.22	5873-51	138.50
19	457	130	1	5873-09	129.99	5873-54	142.66
41	457	600	1	5873-13	141.55	5873-57	159.53
50	457	950	1	5873-19	154.74	5873-60	179.02

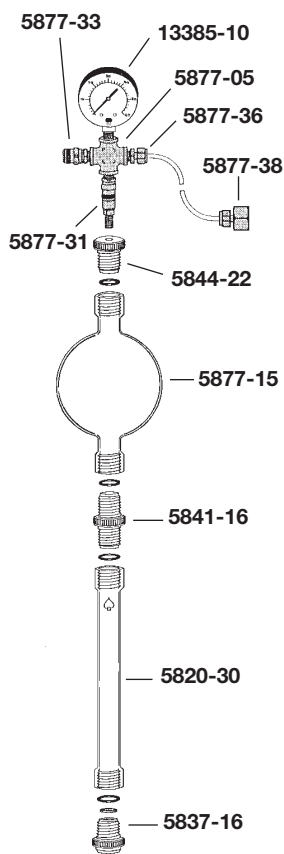
OTHER ITEMS

Reservoir	Qty.	Order Code	Each
Reservoir, 250mL, only	1	5873-44	77.48
Reservoir, 500mL, only	1	5873-45	86.00
Reservoir, 1000mL, only	1	5873-46	93.05
Flow Control Adapter, only	1	5873-32	113.03
Bushing, #25, Nylon, w/o-ring, only	1	7506-10	21.17

CAUTION
For Chromatography Use Only
 Not intended for use with 40 micron or smaller packing which will cause operating pressures to exceed safe limits of glass.
ALWAYS USE A SAFETY SHIELD

For a complete assembly of 5871, 5872 or 5873 systems, order flow control adapter, column with or without frit, reservoir and clamp or bushing.

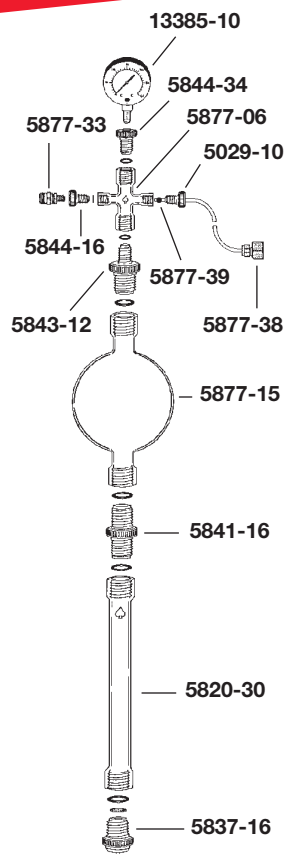
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 Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!
 Give us a call at 1-800-223-4524
 or visit www.aceglass.com

BRASS MANIFOLD

5877 RAPID PREPARATIVE CHROMATOGRAPHY SYSTEM

Rapid preparative chromatography system suitable for use with pressures up to 50psig. **(CAUTION: Care should be taken when using glass under pressure. Operation behind a shield is recommended.)** Available with 25mm or 50mm I.D. glass column, 300mm effective length, with corresponding Ace-Threds. Adapter at bottom of column is nylon or PTFE with a “pop-in” polyethylene packing support, 100 micron porosity maximum, and a Luer-Lok fitting takeoff. **Reservoir is 2000mL or 3000mL capacity, epoxy coated for safety, pressure tested,** with #25 Ace-Threds top and bottom. Connection to column is by nylon or PTFE coupling. Fitting at top of reservoir is nylon or PTFE with a 1/8-inch NPT female thread to accept a Swagelok quick connect-disconnect fitting that in turn connects to brass manifold; brass manifold attaches directly to reservoir using a nylon or PTFE reducer coupling.

Brass manifold has three 1/8-inch NPT female threads for connection to reservoir, a brass pressure relief valve, and Swagelok tubing connector for connecting to pressure line. Fourth thread is 1/8-inch NPT adapted to 1/4-inch NPT for connecting to a 0-60psig, 2-1/2-inch diameter pressure gauge.

Glass manifold has two #7 Ace-Threds; one for connecting pressure line directly using nylon bushing with PTFE ball for quick disconnect, the other has a nylon to PTFE fitting for connecting brass pressure relief valve. Lower thread is #15 for direct connection to reservoir using a reducer coupling, #15-25 Ace-Thred. Top #15 Ace-Thred on glass manifold accepts threaded nylon or PTFE fitting to connect pressure gauge.

GLASS MANIFOLD

Complete item includes:

A) Brass manifold, pressure gauge, brass connector 1/8-inch NPT to 1/8-inch O.D. tubing, brass connector 1/8-inch O.D. tubing to 1/4-inch NPT female, quick connect-disconnect fitting, pressure relief valve, nylon connector #25 to 1/8-inch NPT female, **epoxy coated reservoir**, nylon coupling with FETFE o-rings, column, end fitting with FETFE o-ring and ten feet of 1/8-inch O.D. PTFE tubing; **B)** Glass manifold, pressure gauge, nylon bushing #15 to 1/4-inch NPT female, nylon bushing #7 with PTFE ball, brass connector 1/8-inch O.D. tubing to 1/4-inch NPT female, pressure relief valve, two nylon couplings, with FETFE o-rings, **epoxy coated reservoir**, column, nylon end fitting and ten feet of 1/8-inch O.D. PTFE tubing.

Type Manifold	Reservoir Capacity, mL	Column Lgth. x Dia., mm	Qty.	Order Code	Complete
Glass	2000	300 x 25	1	5877-50	♠ 681.93
Glass	3000	300 x 50	1	5877-55	♠ 951.18
Brass	2000	300 x 25	1	5877-60	★ 634.03
Brass	3000	300 x 50	1	5877-65	★ 839.29

5877 REPLACEMENT PARTS

REPLACEMENT PARTS

Lgth. x Dia., mm	Qty.	Column Only Order Code	Each	Cap., mL	Ace-Thred Size	Qty.	Reservoir, only Order Code	Each
300 x 25	1	5820-30	♠ 54.35	2000	25	1	5877-15	♠ 155.41
300 x 50	1	5820-50	♠ 102.90	3000	25	1	5877-16	♠ 247.35

Brass Manifold Parts

	Qty.	Order Code	Each
Brass manifold, only	1	5877-05 ★	71.41
End fitting, nylon, #25	1	5837-16 ♠	49.94
End fitting, PTFE, #25	1	5837-56 ♠	76.95
End fitting, nylon, #50	1	5837-21 ♠	115.65
End fitting, PTFE, #50	1	5837-61 ♠	193.10
Coupling, nylon, #25-25	1	5841-16 ♠	51.42
Coupling, PTFE, #25-25	1	5841-50 ♠	106.09
Coupling, nylon, #25-50	1	5843-16 ♠	114.47
Coupling, PTFE, #25-50	1	5843-51 ♠	212.21
Nylon connector, #25 to 1/8-inch NPT female	1	5844-22 ♠	59.52
PTFE connector, #25 to 1/8-inch NPT female	1	5844-64 ♠	91.51
Quick connect-disconnect	1	5877-31 ★	86.43
Brass pressure relief valve 1/8-inch	1	5877-33 ★	33.87
Brass connector, 1/8-inch NPT male to 1/8-inch tube	1	5877-36 ★	10.37
Brass connector, 1/8-in. O.D. tube to 1/4-in. NPT female	1	5877-38 ★	14.30
Gauge, Pressure, 0-60psi, brass internal materials, 1/4-in male NPT bottom fitting, 2.5-in diameter	1	13385-10 ★	24.01
Tubing, PTFE, 1/8-inch O.D., 10 ft.	1	12687-04 ♠	23.00

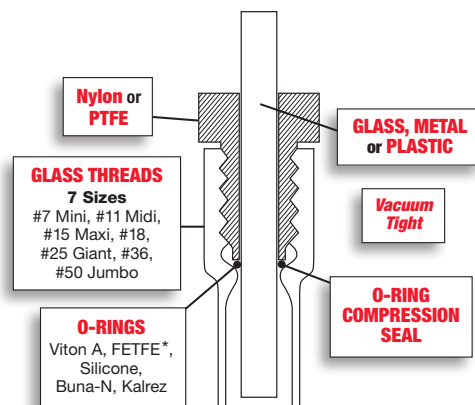
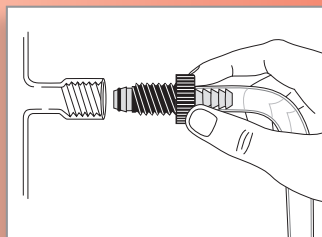
Glass Manifold Parts

	Qty.	Order Code	Each
Glass manifold, only	1	5877-06 ♠	107.50
End fitting, nylon, #25	1	5837-16 ♠	49.94
End fitting, PTFE, #25	1	5837-56 ♠	76.95
End fitting, nylon, #50	1	5837-21 ♠	115.65
End fitting, PTFE, #50	1	5837-61 ♠	193.10
Coupling, nylon, #25-25	1	5841-16 ♠	51.42
Coupling, PTFE, #25-25	1	5841-50 ♠	106.09
Coupling, nylon, #25-50	1	5843-16 ♠	114.47
Coupling, PTFE, #25-50	1	5843-51 ♠	212.21
Coupling, nylon, #25-15	1	5843-12 ♠	54.04
Coupling, PTFE #25-15	1	5843-49 ♠	77.99
Brass pressure relief valve, 1/8-inch	1	5877-33 ★	33.87
Bushing, nylon, #15 to 1/4-inch NPT female	1	5844-34 ♠	46.36
Bushing, PTFE, #15 to 1/4-inch NPT female	1	5844-74 ♠	69.71
Bushing, nylon, #7	1	5029-10 ♠	2.85
Gauge, Pressure, 0-60psi, brass internal materials, 1/4-in male NPT bottom fitting, 2.5-in diameter	1	13385-10 ★	24.01
Bushing, PTFE, #7	1	5029-35 ♠	14.49
PTFE ball	1	5877-39 ♠	26.91
Bushing, nylon #7 to 1/8-inch NPT female	1	5844-16 ♠	37.97
Bushing, PTFE #7 to 1/8-inch NPT female	1	5844-58 ♠	41.18
Tubing, PTFE 1/8-inch O.D., 10 ft.	1	12687-04 ♠	23.00

*Designed and used by M. Haslanger, E. Petrillo and P. Sprague at The Squibb Institute For Medical Research, Princeton, NJ

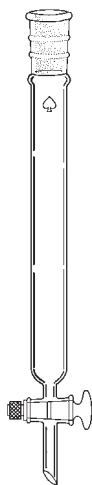
Ace-Threds

Grease Free • Clamp Free
More Convenient



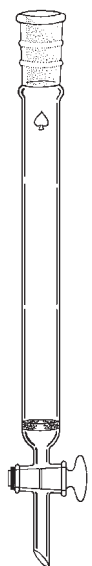
*Fluoroelastomer with special TFE additive (FETFE) offers superior compression set resistance with built-in lubricity.

FETFE is a registered trademark of Ace Glass Inc. Nylon and Kalrez are trademarks of the E.I. DuPont Company


5865 CHROMATOGRAPHY COLUMN ♠

With F 24/40 outer joint at top and a 2mm bore glass stopcock at the bottom.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
19	610	170	1	5865-10	102.08


5866 CHROMATOGRAPHY COLUMN *with Fritted Disc* ♠

Column has F 24/40 outer joint at top and 2mm bore glass stopcock at the bottom with Porosity B (70–100 micron) fritted disc sealed into the bottom of tube.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
10	460	40	1	5866-05	112.91
19	610	170	1	5866-10	119.50


5884 CHROMATOGRAPHY COLUMN *Plain* ♠

Plain, open top chromatography column, universally suitable for many separations.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
22	250	950	1	5884-05	21.37

5885 CHROMATOGRAPHY COLUMN with Fritted Disc ♠

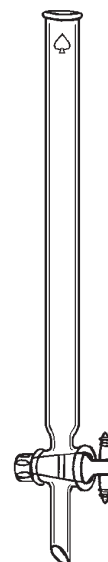
Plain, open top, chromatography column, with Porosity B (70–100 micron) fritted disc sealed in.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
10	300	24	1	5885-06	40.48
19	410	116	1	5885-12	46.03
25	510	250	1	5885-18	54.75
41	610	805	1	5885-24	66.52

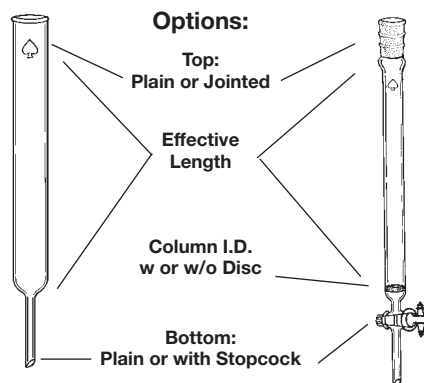

5888 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug ♠

Chromatography column with 2mm bore 1:5 taper solid PTFE stopcock plug at bottom.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
10.5	250	22	1	5888-10	76.20
14.5	250	41	1	5888-15	86.00
14.5	510	84	1	5888-20	98.23
19	250	71	1	5888-25	91.51
19	300	85	1	5888-30	93.75
19	510	145	1	5888-35	110.77
22	300	114	1	5888-37	101.31
22	410	156	1	5888-39	103.96
22	510	194	1	5888-41	105.01
25	300	147	1	5888-42	107.86
25	510	250	1	5888-45	114.33
41	510	673	1	5888-50	137.87
41	610	805	1	5888-55	161.68


Need a different column?

Furnish the following information. We'll make it for you.

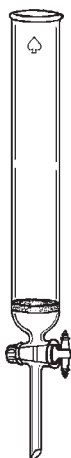

Furnish this Info:

Top	Effective Length	Column I.D.*	Support	Bottom
Plain or Jointed (Size)			Without or With Disc**	Plain or With Stopcock***

* See Catalog No. 8802 for tubing sizes.

** Supplied with Porosity B (70-100 micron) unless ordered otherwise.

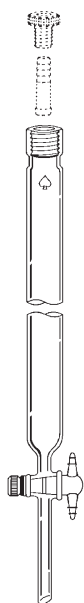
*** Supplied with 2mm bore 1:5 solid PTFE plug unless ordered otherwise.



5889 CHROMATOGRAPHY COLUMN with Fritted Disc ♠

Chromatography column with 2mm bore, 1:5 taper solid PTFE stopcock plug and Porosity B (70–100 micron) fritted disc sealed in.

Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Qty.	Order Code	Each
10	300	24	1	5889-05	96.11
19	410	116	1	5889-10	101.35
22	300	114	1	5889-15	105.83
22	410	156	1	5889-20	106.52
25	300	147	1	5889-25	117.05
25	510	250	1	5889-30	118.63
41	610	805	1	5889-35	171.78
50	610	1,197	1	5889-40	180.71



5902 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug, with #15 Ace-Thred ♠

Chromatography column with #15 Ace-Thred at top and 2mm bore 1:5 taper solid PTFE stopcock plug at bottom. Column supplied with 7506-06 nylon bushing and FETFE o-ring. Complete item consists of column with bushing and o-ring, and 5853-07 tubing connector for connecting 12.5 to 14mm O.D. tubing to column.

Note: When using 5853 connector, o-ring supplied with bushing is NOT necessary.

Column I.D., mm	Effective Length, mm	Approx. Cap., mL	Qty.	Column w/Bushing		Complete	
				Order Code	Each	Order Code	Each
10	460	36	1	5902-19	158.45	5902-39	180.87
19	610	173	1	5902-21	162.97	5902-41	185.39
25	510	250	1	5902-23	175.69	5902-45	198.11
50	610	1,197	1	5902-25	210.54	5902-49	232.96
Tubing Connector, only			1	5853-07	22.42		



5903 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug, with 24/40 Joint ♠

Chromatography column similar to 5902 except 24/40 joint replaces thread at top of column. Columns are epoxy coated. **These columns also appear in expanded listing under 5871.**

Column I.D., mm	Effective Length, mm	Approx. Cap., mL	Qty.	Order Code	Each
10	460	36	1	5903-20	134.82
19	610	173	1	5903-24	144.52
25	510	250	1	5903-26	164.99
41	610	805	1	5903-27	173.93
50	610	1,197	1	5903-28	201.60

5904 CHROMATOGRAPHY COLUMN with Fritted Disc ♠

Chromatography column with $\text{K} 24/40$ joint at top, 2mm bore 1:5 taper solid PTFE stopcock plug at bottom and Porosity B (70–100 micron) fritted disc sealed near bottom of tube. Columns are epoxy coated. **These columns also appear in expanded listing under 5871.**

Column I.D., mm	Effective Length, mm	Approx. Cap., mL	Qty.	Order Code	Each
10	460	36	1	5904-22	147.40
19	410	116	1	5904-24	149.44
19	610	173	1	5904-26	161.07
25	510	250	1	5904-28	179.75
41	610	805	1	5904-37	190.53
50	610	1,197	1	5904-40	232.15

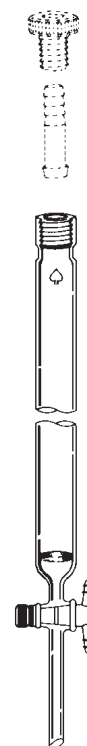


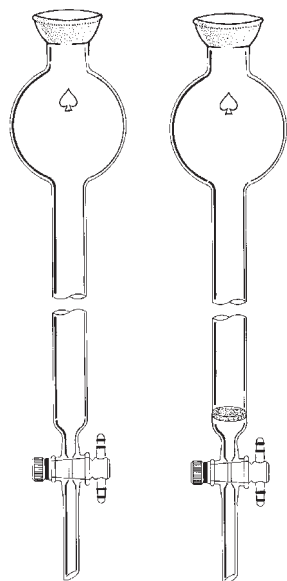
5905 CHROMATOGRAPHY COLUMN with Fritted Disc and #15 Ace-Thred ♠

Chromatography column with 2mm bore, 1:5 taper solid PTFE stopcock plug and Porosity B (70–100 micron) fritted disc sealed in at bottom and #15 Ace-Thred at top of column. Column supplied with 7506-06 nylon bushing and FETFE o-ring. Complete item consists of column with bushing and o-ring and 5853-07 tubing connector for connecting 12.5 to 14mm O.D. tubing to column.

Note: When using 5853 connector, o-ring supplied with bushing is NOT necessary.

Column I.D., mm	Effective Length, mm	Approx. Cap., mL	Qty.	Column w/Bushing		Complete	
				Order Code	Each	Order Code	Each
10	460	36	1	5905-15	178.25	5905-35	200.67
19	610	173	1	5905-19	183.21	5905-39	205.63
25	510	250	1	5905-23	194.83	5905-41	217.25
41	610	805	1	5905-25	206.11	5905-46	228.53
50	610	1,197	1	5905-29	233.50	5905-49	255.92
Tubing connector, only			1	5853-07			22.42

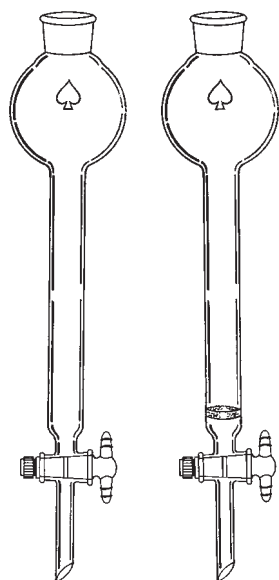




5906 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug,
Flow Control Connection

Chromatography column with integral reservoir for connecting 5872 flow control adapter. With 2mm bore, 1:5 taper solid PTFE stopcock plug at bottom. Available with or without Porosity B (70–100 micron) fritted disc sealed in. **Order column, flow control adapter and clamp separately.**

Column I.D., mm	Joint	Effective Length, mm	Approx. Capacity, mL	Reservoir Capacity, mL	Qty.	Without Disc		With Disc	
						Order Code	Each	Order Code	Each
10.5	35/20	250	22	200	1	5906-06	♠ 121.42	5906-33	♠ 133.82
14.5	35/20	250	41	250	1	5906-09	♠ 128.09	5906-36	♠ 143.94
19.0	35/20	300	85	250	1	5906-11	♠ 140.46	5906-39	♠ 161.92
25.0	35/20	300	147	250	1	5906-14	♠ 146.25	5906-43	♠ 168.07
38.0	50/30	300	340	250	1	5906-16	♠ 159.03	5906-45	♠ 184.46
50.0	50/30	300	589	500	1	5906-18	♠ 183.59	5906-47	♠ 214.09
Flow Control Adapter, only, §35/20					1	5872-35	♠ 119.92		
Flow Control Adapter, only, §50/30					1	5872-36	♠ 134.37		
Clamp, Pinch Type					1	7669-14	★ 18.51		



5907 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug ♠

Chromatography column with integral reservoir at top, and 2mm bore 1:5 taper PTFE stopcock plug at bottom. Opening at top for #3 stopper or §24/40 outer joint. Available with or without Porosity B (70–100 micron) fritted disc sealed in.

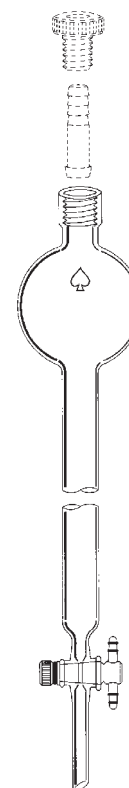
Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Reservoir Capacity, mL	Qty.	Without Disc		With Disc		
					Order Code	Each	Order Code	Each	
#3 Stopper Top									
10.5	250	22	200	1	5907-05	114.61	5907-32	124.32	
14.5	250	41	250	1	5907-10	120.98	5907-35	135.20	
19.0	300	85	250	1	5907-15	131.49	5907-37	155.55	
25.0	300	147	250	1	5907-20	136.15	5907-41	158.91	
38.0	300	340	250	1	5907-22	152.77	5907-43	177.40	
50.0	300	589	500	1	5907-24	177.66	5907-45	209.60	
§24/40 Outer Joint Top									
10.5	250	22	200	1	5907-105	116.38	5907-132	125.78	
14.5	250	41	250	1	5907-110	122.47	5907-135	136.59	
19.0	300	85	250	1	5907-115	132.97	5907-137	157.02	
25.0	300	147	250	1	5907-120	137.41	5907-141	160.36	
38.0	300	340	250	1	5907-122	153.92	5907-143	178.42	
50.0	300	589	500	1	5907-124	178.03	5907-145	210.99	

5908 CHROMATOGRAPHY COLUMN 1:5 PTFE Plug, #15 Ace-Thred ♠

Chromatography column with integral reservoir and #15 Ace-Thred at top, and 2mm bore 1:5 taper PTFE plug at bottom. Column supplied with 7506-06 nylon bushing and FETFE o-ring. Complete item consists of column with bushing and o-ring, and 5853-07 tubing connector for connecting 12.5 to 14mm O.D. tubing to column.

Note: When using 5853, o-ring supplied with bushing is NOT necessary.

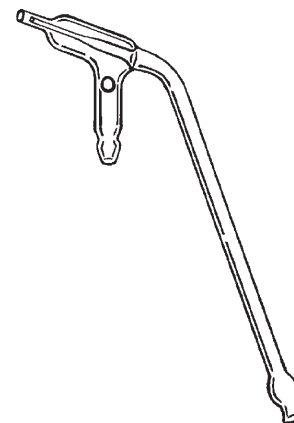
Column I.D., mm	Effective Length, mm	Approx. Capacity, mL	Reservoir Capacity, mL	Qty.	Column w/Bushing		Complete	
					Order Code	Each	Order Code	Each
10.5	250	22	200	1	5908-06	135.49	5908-36	157.91
14.5	250	41	250	1	5908-12	142.49	5908-42	164.91
19.0	300	85	250	1	5908-18	153.36	5908-44	175.78
25.0	300	147	250	1	5908-22	155.66	5908-46	178.08
				Qty.	Order Code	Each		
Tubing Connector, only				1	5853-07	22.42		



5917 CHROMATOGRAPHY SPRAYER ♠

Delivers a true aerosol with no droplets. Enables thorough brushing for uniform development. Spray action begins at .028m³ per minute air flow. Atomization rate approximately 10mL per minute. Easily controlled with thumb pressure on side vent hole. Suction stem is 125mm long. 8mm I.D. hose connects to bottom inlet for aspiration and 6mm I.D. hose connects to bottom arm for air inlet.

Qty.	Order Code	Each
1	5917-10	89.64



5918 CHROMATOGRAPHY INDICATOR SPRAYER ★

A convenient, powerful spray unit for spraying indicators. Complete unit consists of spray head with dip tube, can of propellant and plastic jar. Refill sprays up to one liter.

	Qty.	Order Code	Each
Complete	1	5918-10	33.44
Plastic Jar, only	1	5918-02	4.65
Can of propellant, only	1	5918-04	14.85

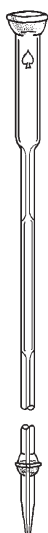




5920 ADSORPTION COLUMN ♠

Used in ASTM D1319-0, a “test for hydrocarbon types in liquid petroleum products.” Consists of a charger section with a capillary neck, a separator section, and an analyzer section. Upper joint $\text{§ } 28/12$.

Qty.	Order Code	Each
1	5920-05	156.90



5921 ADSORPTION COLUMN ♠

Used for same test as 5920. This unit is fabricated from ACE Trubore® tubing. Tip is attached to column by means of a $\text{§ } 12/2$ spherical joint. Upper joint $\text{§ } 28/12$.

Qty.	Order Code	Each
1	5921-05	331.37



5922 PIPETS *Micro Capillary, TLC Spotting* ♠

Uncalibrated, useful for spotting both aqueous and organic solutions. Sturdy construction helps hold breakage to a minimum. 5-inch length. Supplied 100 tubes per clear vial.

Qty.	Order Code	Per Vial
1 vial of 100	5922-10	11.02

5925 SYRINGE *Chromatography, LC Injection* ★

With epoxy cemented 304 stainless steel needle permanently attached. All sizes have 22 gauge needle. Needles are 50mm long with 20° bevel tip.

Capacity, microliter	Qty.	Order Code	Each
10	1	5925-03	38.46
25	1	5925-05	41.03
50	1	5925-07	45.50
100	1	5925-09	44.51
250	1	5925-11	59.23

5928 SYRINGE *Chromatography, LC Injection* ★

With epoxy cemented 304 stainless steel needle permanently attached. The 10 microliter size has 26 gauge needles, all others have 25 gauge needles. Needles are 50mm long with 20° bevel tip.

Capacity, microliter	Qty.	Order Code	Each
10	1	5928-02	25.23
25	1	5928-04	38.81
50	1	5928-06	47.57
100	1	5928-08	45.01
250	1	5928-10	56.15
500	1	5928-12	59.17


SYRINGES
5928 SYRINGE *Chromatography, LC Injection, with Guide* ★

Same as 5928 LC injection syringe, except fitted with adapter guide for repetitive deliveries.

Capacity, microliter	Qty.	Order Code	Each
10	1	5928-118	75.03


5928 SYRINGE *Chromatography, LC Injection, Economy Six-Pack* ★

Basic 10 microliter LC injection syringe with epoxy cemented 304 stainless steel needle permanently attached or removable needle, supplied in convenient package of six. In addition to an approximate 7–12% savings in cost, you get a convenient storage container. Needles are 26 gauge.

Needle Type	Qty.	Order Code	Per Pack
Fixed	6	5928-302	136.29
Removable	6	5928-330	300.19





5929 SYRINGE Chromatography ★

For delivering liquid samples to a gas chromatograph with the very highest reproducibility and accuracy. The needle holds the entire sample. A tungsten wire plunger is individually fitted to the 0.152mm bore of the stainless steel needle and bottoms at the tip of the needle to discharge the entire sample. A PTFE ferrule contained in the needle hub makes a final seal around the plunger at the base of the needle and is easily tightened to compensate for wear. Needle and plunger may be disassembled for cleaning or replacement.

Capacity, microliter	Needle Length	Needle Gauge	Qty.	Order Code	Each
1.0	7 cm	25	1	5929-02	78.32
1.0	7 cm	23	1	5929-05	86.19
5.0	7 cm	23	1	5929-12	95.37



5931 SYRINGE Chromatography, Gas Tight ★

Designed for highest performance in such applications as liquid or gas chromatography, handling of corrosive gases and liquids, radioactive materials and sterile solutions. PTFE coated plungers with precision PTFE tips for leak-tight seal. Accuracy and reproducibility of ± 1%. With fixed needle. **Several sizes of this model syringe are available with Luer-Lok tip and Luer-Lok – call or e-mail for information.**

Capacity, microliter	Qty.	Order Code	Each
10	1	5931-01	35.64
25	1	5931-03	50.23
50	1	5931-02	52.77
100	1	5931-04	56.15
250	1	5931-06	57.39



5933 SYRINGE Chromatography, Gas Tight ★

Gas tight syringes with removable needle type (RN) and a 3/4-inch length, bevel point style #2 needle; needle gauge is given.

Capacity, microliter	Needle Gauge	Qty.	Order Code	Each
10	26	1	5933-03	59.79
25	25	1	5933-05	59.17
50	25	1	5933-07	59.79
100	25	1	5933-09	66.95
250	25	1	5933-11	66.88
500	25	1	5933-13	66.88

5934 SYRINGE *Chromatography, Removable Needle* ★

Basic microliter syringe with removable needle for precise liquid delivery. The 10 microliter size has a 26 gauge needle, all others have 25 gauge needles, Needle length, 50mm.

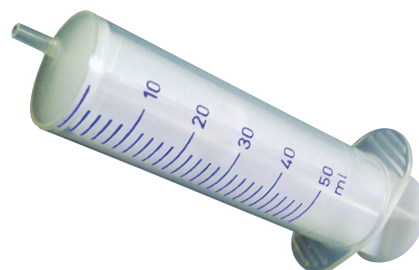
Capacity, microliter	Qty.	Order Code	Each
10	1	5934-12	50.43
25	1	5934-14	58.25
50	1	5934-18	56.78
100	1	5934-24	58.70
250	1	5934-28	84.70
500	1	5934-32	88.77



13675 SYRINGE *Chromatography, Sample Retrieval, All Plastic* ♠

1mL all-plastic syringe intended for use in Microscale sample retrieval applications. Features built-in dead space tip plug, safety stop, Luer-Lok tip for needle connection, blue colored smooth-drawing plunger. Supplied in case of 100 units. Needles NOT included. For needles, see 5936 or 13682.

Qty.	Order Code	Case/100
100	13675-09	8.78



13678 SYRINGE *Chromatography, Interchangeable, Glass Tip* ♠

Interchangeable borosilicate glass syringe with permanently fused graduations. Colored plunger end facilitates dosage measurement. Reinforced flanges are flat on two sides to avoid rolling. Supplied with glass tip.

Capacity, mL	Qty.	Order Code	Each	Capacity, mL	Qty.	Order Code	Each
2	1	13678-03	23.79	20	1	13678-21	32.02
5	1	13678-06	25.36	30	1	13678-31	55.27
10	1	13678-11	31.87	50	1	13678-51	86.75



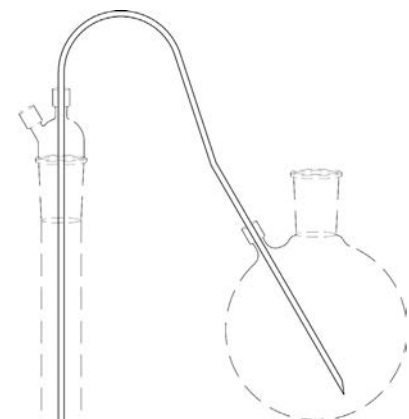
13680 SYRINGE *Chromatography* ♠

Interchangeable borosilicate glass syringe with permanently fused graduations. Colored plunger end facilitates dosage measurement. Reinforced flanges are flat on two sides to avoid rolling. Supplied with metal Luer-Lok tip.

Capacity, mL	Qty.	Order Code	Each	Capacity, mL	Qty.	Order Code	Each
2	1	13680-02	22.62	50	1	13680-28	112.67
5	1	13680-05	24.32	100	1	13680-30	374.26
10	1	13680-10	35.41	150	1	13680-34	605.43
20	1	13680-20	37.94	250	1	13680-36	770.62
30	1	13680-25	72.76				

Jumbo Size





• For sampling or aeration

5935 CANNULA Chromatography, Stainless Steel ★

Available with deflected point at one end and other end blunt or with deflected point on both ends for septum penetration with a minimum of coring. These long cannula can be bent to avoid tipping reagent bottles which would cause liquid to come in contact with rubber septa.

Gauge	Length, cm (in)	Qty.	Needle Ends Deflected-Blunt		Needle Ends Deflected-Deflected	
			Order Code	Per Pkg.	Order Code	Per Pkg.
22	46 (18)	5	5935-18	45.75	5935-19	57.00
22	76 (30)	5	5935-22	65.77	5935-23	76.69
22	122 (48)	3	5935-26	57.79	5935-27	65.01
18	46	5	5935-32	47.34	5935-33	56.68
18	76	5	5935-36	67.26	5935-37	81.38
18	122	3	5935-40	58.65	5935-41	65.49
15	46	5	5935-44	52.95	5935-45	63.78
15	76	5	5935-48	71.57	5935-49	85.27
15	122	3	5935-52	62.30	5935-53	69.77

Note: Deflected septum point is equivalent to B-D Huber or Hamilton Style 1 & 2.



5936 NEEDLES Chromatography, Syringe ★

Standard hypodermic type needles made from 304 full hard stainless steel tubing with chrome plated brass American standard Luer-Lok taper short hubs. Supplied 50mm (2 inches) long with point style #2 (20° bevel) for septum penetration.

Gauge	O.D., mm	I.D., mm	Qty.	Order Code	Per Pkg.
23	.63	.32	Pkg/5	5936-32	39.57
19	1.07	.65	Pkg/5	5936-39	52.60
18	1.27	.80	Pkg/5	5936-40	52.60
14	2.1	1.6	Pkg/5	5936-44	91.70



13682 NEEDLES Chromatography, Stainless Steel ★

Sterile, stainless steel syringe needles with inert plastic Luer-Lok hub and regular 12° medical point. Can be sterilized.

Gauge	O.D., in.	I.D., in.	Length (In.)	Qty.	Order Code	Per Pkg.
20	.035	.023	1-1/2	Pkg/25	13682-12	15.68
22	.028	.016	1-1/2	Pkg/25	13682-15	15.12

Note: 20 gauge needle fits ACE Cat. No. 12684-23, 0.8mm I.D. PTFE Tubing

13683 NEEDLES *Chromatography, 304 Stainless Steel, Standard* ★

Hypodermic stainless steel needles with 12° regular medical point tip and female Luer-Lok hub. Packed 12 needles on card — cellophane wrapped. Each card individually boxed.

Gauge	Length, mm (In.)	Qty.	Order Code	Per Dozen
20	51 (2)	12	13683-23	101.33
18	51 (2)	12	13683-29	101.00
15	89 (3-1/2)	12	13683-32	134.66


13684 NEEDLES *Chromatography, 304 Stainless Steel* ★

Special length stainless steel needles with deflected septum point* and standard female hub. Packed six per package, two packages per case.

Gauge	Length, mm (In.)	Quantity	Order Code	Per Package	Per Case
20	152 (6)	6 per package, 2 packages per case	13684-07	86.41	155.54
20	305 (12)	6 per package, 2 packages per case	13684-11	94.65	170.37
18	152 (6)	6 per package, 2 packages per case	13684-15	101.68	183.03
18	305 (12)	6 per package, 2 packages per case	13684-19	110.06	198.11
18	610 (24)	6 per package, 2 packages per case	13684-23	379.32	682.77
15	305 (12)	6 per package, 2 packages per case	13684-27	379.32	682.77
15	610 (24)	6 per package, 2 packages per case	13684-31	379.32	682.77

*Deflected septum point is equivalent to B-D Huber or Hamilton Style 1 & 2.





7666 CLAMPS *Spherical Joint, Union Type* ♠

Fabricated from aluminum. This type clamp affords a positive, uniform clamping pressure. The clamp threads together and covers the entire joint.

Size	For ♂ Joint	Qty.	Order Code	Each	Size	For ♂ Joint	Qty.	Order Code	Each
12	12/1 to 12/5	1	7666-05	40.72	28	28/11 to 28/15	1	7666-15	41.22
18	18/7 to 18/9	1	7666-10	42.99	35	35/20 to 35/25	1	7666-20	50.19
					65	65/40	1	7666-30	175.95

Spanner Wrench

For Codes	Qty.	Order Code	Each
-05 thru -20	1	7666-50	5.94
-30	1	7666-54	5.94



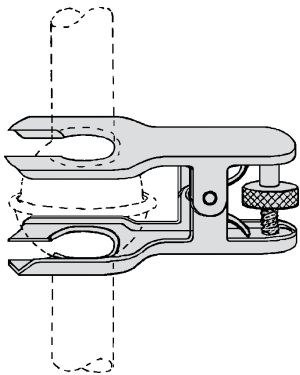
7668 CLAMPS *Spherical Joint, Plastic* ★

Constructed of Dupont Delrin, clip snaps on and off with ease. Non-corrosive, will not damage glass. Can be used to 140°C. Designed as ♂ joint clamp. Not for pressure work. Color coded.

For ♂ Joint	For O-Ring Joint I.D., mm	Color	Qty.	Order Code	Per Pkg.
12/5	—	Dk. Violet	10	7668-12	49.56
18/7, 18/9	7 & 9	Lt. Blue	10	7668-18	52.45
28/11, 28/15	15	Dk. Red	10	7668-28	46.86
35/20, 35/25	20 & 25	Lt. Orange	10	7668-35	53.96

7669 CLAMPS *Pinch Type, Stainless Steel* ★

All stainless steel pinch clamps for use with o-ring spherical joints and ball and socket joints. Sizes 12 and 18 are available either spring loaded or with a screw-locking device. All other sizes have the screw-locking feature. **Only screw-locking clamps should be used with o-ring spherical joints.**



Spring Loaded

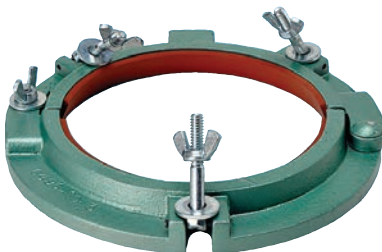
Size No.	♂ Joint Size	Qty.	Order Code	Each
12	12/5	1	7669-03	7.91
18	18/9	1	7669-05	8.77

With Screw-Locking Device

12	12/5	1	7669-08	14.30
18	18/9	1	7669-10	14.33
28	28/15	1	7669-12	16.57
35	35/25	1	7669-14	18.51
40	—	1	7669-16	41.45
50	50/30	1	7669-18	32.51
65	65/40	1	7669-20	36.80
75	75/50	1	7669-22	72.92
102	102/75	1	7669-26	254.02

6496 STANDARD CLAMP ★

Used with 15305 conical flanges.



	Qty.	Order Code	Each
Complete	1	6496-10	225.11
Extra Liners, only	Set of 4	6496-30	20.60

6517 CLAMP Quick Release, Stainless Steel ★

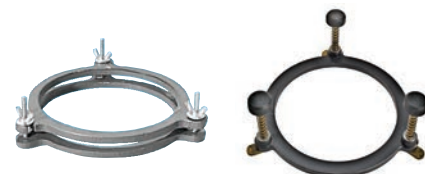
For use with 15310/15311 Duran flanges and all Duran conical style flanges.

For Flange Size, mm (In.)	Qty.	<i>Without Extension</i>		<i>With Extension</i>	
		Order Code	Each	Order Code	Each
60	1	6517-22	88.80	—	—
100 (4)	1	6517-25	100.27	6517-54	162.68
120 (4.8)	1	6517-24	116.87	—	—
150 (6)	1	6517-27	120.09	6517-56	177.33
200 (8)	1	6517-31	148.11	6517-60	204.88


6508/6510 CLAMP ★

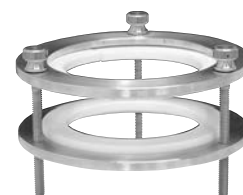
For use with 15316 and flat style flanges.

For I.D., mm	Qty.	Order Code	Each	For I.D., mm	Qty.	Order Code	Each
100	1	6508-06	232.12	100	1	6510-05	174.42
130	1	6508-11	251.35	130	1	6510-10	198.46


6509 CLAMP ★

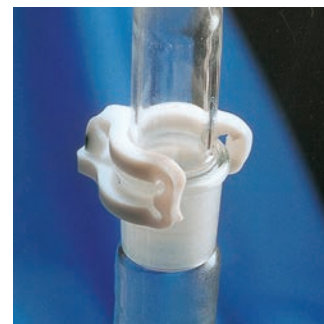
Positive, two-piece clamp with PTFE liner for securing the 76mm or 102mm size, 7519 filter support assembly. Bolt head is flanged to secure top half as bolt is threaded into bottom half.

Size	Qty.	Order Code	Each
76mm	1	6509-03	146.62
102mm	1	6509-05	138.95


7597 CLAMPS ₪ PTFE ★

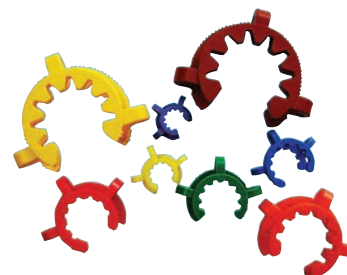
Constructed of PTFE, clip snaps on and off with ease. Non-corrosive, will not damage glass. Can be used to 200°C. Designed as ₪ joint clamp. Also can be used for clamping stopcock plugs and barrels or spherical joints. Not for pressure use. Color coded.

For ₪ Size	Color	Other Uses	Qty.	Order Code	Each
14/20	Yellow	2mm bore ₪18	1	7597-14	9.65
24/40	Green	₪28	1	7597-24	10.03
29/42	Red	8mm bore	1	7597-29	10.23
45/50	Brown	—	1	7597-45	11.26


7598 CLAMPS ₪ Plastic ★

Constructed of Dupont Delrin, clip snaps on and off with ease. Non-corrosive, will not damage glass. Can be used to 140°C. Designed as ₪ joint clamp. Also can be used for clamping stopcock plugs and barrels or spherical joints. Not for pressure use. Color coded.

For ₪ Size	Color	Other Uses	Pkg. Qty.	Order Code	Per Pkg.
10/18	Lt. Green	—	10	7598-10	35.01
12/30	Violet	—	10	7598-12	36.22
14/20	Yellow	2mm bore ₪18	10	7598-14	37.55
19/22	Blue	4 x 6 bore	10	7598-19	38.37
24/40	Green	₪28	10	7598-24	39.91
29/42	Red	8mm bore	10	7598-29	41.65
34/45	Orange	—	10	7598-34	44.89
40/35	Dk. Yellow	—	10	7598-40	48.51
45/50	Brown	—	10	7598-45	52.00





7599 CLAMPS mm Metal ★

Nickel plated steel clip snaps on and off standard taper joints with ease and offers increased resistance to heating and cracking. Can be used to 200°C. Will not scratch glass.

For mm Size	Color	Other Uses	Qty.	Order Code	Per Six
14/20	Yellow	2mm bore mm 18	6	7599-13	91.90
24/40	Green	mm 28	6	7599-25	100.91



7600 CLAMPS *Stainless Steel* ★

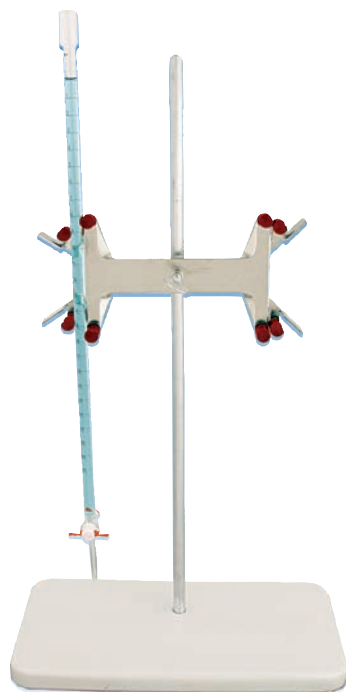
These clamps will securely hold mm 10/30 through mm 45/50 joints. No screw needed. Will secure mm thermometers, vacuum systems, distillation set-ups, chromatographic columns, evaporators, or any glass apparatus that has to be secured with springs or clamps. mm clamps are made to last, of corrosion-free stainless spring wire. Use proper clamp for designated joint size.

For mm Size	Qty.	Order Code	Per Package	For mm Size	Qty.	Order Code	Per Package
10/30	12	7600-05	190.96	24/40	12	7600-25	192.59
12/30	12	7600-10	153.25	29/42	8	7600-30	136.05
14/35	12	7600-15	163.33	34/45	6	7600-35	157.72
19/38	12	7600-20	201.91	45/50	6	7600-40	136.05

7601 CLAMPS mm Assorted ★

Same as 7600, but 24 assorted clamps to one package. Package contains the following mm clamp sizes: 10/30 (4), 12/30 (2), 14/35 (2), 19/38 (4), 24/40 (6), 29/42 (4), 34/45 (1) and 45/50 (1).

Quantity	Order Code	Complete 24 pcs.
1 set of 24 pieces	7601-10	375.14



11051 BURET SUPPORT ★

Provides large, stable work area. Buret support combines 612cm² glazed porcelain base for ample work space, double buret holder. Base is easy to clean, impervious to all ordinary reagents, withstands high heat (260°C). Weight is 2.3 Kg. for overall stability. Has four rubber feet to prevent sliding. 60cm high anodized aluminum support rod*.

Qty.	Order Code	Each
1	11051-15	220.78

13586 SUPPORT STAND ★

All-stainless-steel support stand. Heavy base, six pounds, can accommodate vessels up to 18 inches in diameter within its "C" shape. Support rod is 5/8 inches in diameter, approximately 28, 36, or 60 inches high, fastened to base with stainless steel lock nuts. Two additional threaded holes in base legs to accommodate extra support rods. Complete item consists of one base and one rod. Additional support rods may be purchased separately.

Rod Height, in	Qty.	Order Code	Each
28	1	13586-10	281.37
36	1	13586-13	321.43

Additional Support Rods:

28	1	13586-25	107.12
36	1	13586-27	136.33
60	1	13586-15	187.05



13550/11079 SUPPORT STAND/CHAIN CLAMP ★

Stand: Rugged, with "H" shaped base for use with filter reaction flasks. Stainless steel vertical rod available 25mm O.D. x 70cm (27 inches) long; 25mm O.D. x 92cm (36 inches); or 25mm O.D. x 122cm (48 inches).

Clamp Holder: For connecting up to 13mm O.D. mounting rod to 25mm O.D. support rod.

Chain Clamp: Code -24, for connecting up to 165mm O.D. vessels. Code -38, for connecting up to 280mm O.D. vessels.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Stand, only, 25mm O.D. x 70cm	1	13550-21	321.00	Clamp Holder, only	1	13550-25	146.00
Stand, only, 25mm O.D. x 92cm	1	13550-23	314.96	Chain Clamp	1	11079-24	52.48
Stand, only, 25mm O.D. x 122cm	1	13550-24	314.96	Chain Clamp	1	11079-38	77.18



11057 CLAMP *Stainless Steel, Three-Prong* ★

Multi-purpose, three-prong clamps manufactured from electropolished stainless steel for improved corrosion resistance and autoclave sterilization. Features include dual screw adjustments and vinyl sleeved prongs. See our 11074 product family for vinyl or fiberglass (high temperature) replacement sleeves. See our 11083 & 11086 product families for stainless clamp holders.

Size	Maximum Grip Size (cm)	Arm Length (in.)	Qty.	Order Code	Each
Small	4.8	4	1	11057-01	71.75
Medium	6.9	5	1	11057-03	82.52
Large	10.2	5	1	11057-05	92.15



All clamps use nickel-plated zinc except 11057

11058 CLAMP *Gooseneck Extension Clamp, Vinylized Jaws* ★

Clamping system features a 12-inch or 16-inch flex arm. Ideal for working within hoods. The system mounts to any lab frame or support stand with a 19mm or less diameter. An optional base plate or bench clamp provides increased versatility. Complete units (-10 and -12) include flex arm, two-prong head, three-prong head, spring head, and lab frame connector. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.



Description	Qty.	Order Code	Each
Complete clamping system with 12-inch arm	1	11058-10	192.90
Complete clamping system with 18-inch arm	1	11058-12	230.42

Parts & Accessories

2-Prong 6.6cm Grip Head	1	11058-02	27.88
3-Prong 5.8 cm Grip Head	1	11058-03	36.44
Spring Head (used for thermometer clamping)	1	11058-05	28.95
12-inch arm	1	11058-14	116.85
18-inch arm	1	11058-18	173.63
Flat base plate	1	11058-20	136.12
Lab frame connector	1	11058-22	46.13
Bench clamp	1	11058-24	83.53

11060 CLAMP *Utility, Vinylized Jaws* ★

Clamp can be extended in length 13mm and firmly locked in any position. Unique safety-lock wing-nut can be securely tightened and the jaws will not swivel under strain. Will hold objects up to 38mm in diameter and grip rods up to 19mm diameter. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.



Qty.	Order Code	Each
1	11060-13	32.18

11062 CLAMP *Utility, Vinylized Jaws* ★

Three-prong grip clamp. Jaws and holder are made of zinc alloy. Can be extended in length 16 mm, and firmly locked in any position by means of the wing-nut provided. Will hold objects up to 57mm in diameter and grip rods up to 19mm diameter. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.



Qty.	Order Code	Each
1	11062-14	43.97

11064 ULTRAJAWS *Three-Prong Extension Clamps* ★

These multi-purpose precision clamps are a new, innovative design, with closed-yoke construction that minimizes corrosion and contamination of internal components. This unique design enables very secure gripping and positioning. All clamps are three-prong with dual adjustment screws. Clamps are supplied with non-slip vinylized jaws and a set of extra fiberglass prong covers for temperatures above 100°C.



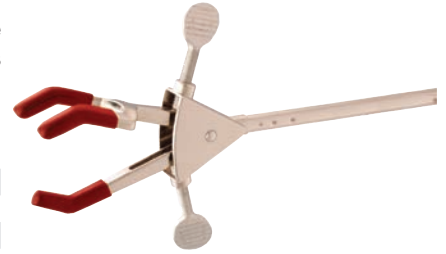
Size	Maximum Grip Size (cm)	Overall Length (cm)	Prong Height (cm)	Qty.	Order Code	Each
Small	2.8	15.6	1.4	1	11064-09	43.97
Medium	6.5	22.2	3.4	1	11064-11	45.00
Large	10.0	26.1	4.7	1	11064-13	49.30

All clamps use nickel-plated zinc except 11057

11065/11067/11069 CLAMP *Versatile, Vinylized Jaws* ★

Three-prong grip clamp. Because both jaws are adjustable, with double screws that operate independently, large or small objects can be held easily. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.

Clamp Size	Overall Length, cm	Will Hold Objects up to mm diameter	Qty.	Order Code	Each
Large	27	89	1	11065-16	42.85
Large	30	89	1	11065-17	52.48
Medium	22	57	1	11067-14	40.70
Small	17	25	1	11069-18	38.53


11068 CLAMP *Versatile, Vinylized Jaws* ★

Three prong extension clamp, like 11065 but with single adjustment screw for jaws. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.

Clamp Size	Overall Length, cm	Will Hold Objects up to mm diameter	Qty.	Order Code	Each
Small	14.8	28	1	11068-12	38.53
Medium	21.9	62	1	11068-13	40.70
Large	26.5	84	1	11068-14	42.85


11072 CLAMP *Extension, Vinylized Jaws* ★

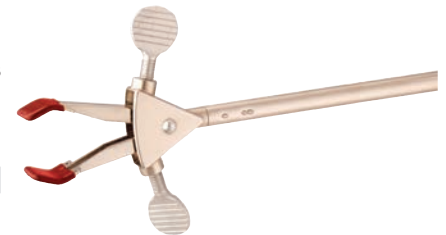
Single-adjust clamp. Designed so that the jaws open at a gradual angle to their extreme position without binding on the screws. Screw, wing-nut and pivot pin are nickel plated; spring is stainless steel, extension arm is a seamless tube, nickel-plated. Comes with an extra set of fiberglass prong covers for temperatures above 100°C.

Clamp Size	Overall Length, cm	Will Hold Objects up to mm diameter	Qty.	Order Code	Each
Large	23	64	1	11072-17	33.22

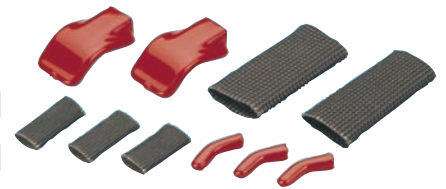

11073 CLAMP *Extension, Vinylized Jaws* ★

Similar to 11072, except this clamp has dual adjustment feature. So designed that the jaws open at a gradual angle to their extreme position without binding. Screws, wing-nuts and pivot pins are nickel-plated; springs are stainless steel, extension arm is a seamless tube, nickel-plated.

Max. Grip Size, mm (In.)	Qty.	Order Code	Each
38 (1-1/2)	1	11073-20	30.03
64 (2-1/2)	1	11073-27	33.22

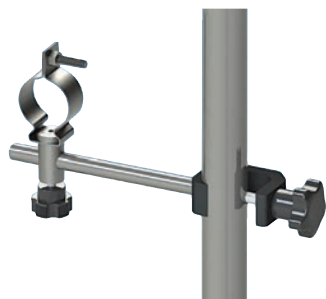

11074 REPLACEMENT SLEEVES *For Clamps* ★

Clamp Style	Qty.	Vinyl		Fiberglass	
		Order Code	Per Set	Order Code	Per Set
Medium Two-Prong	2	11074-03	7.48	11074-05	7.48
Large Two-Prong	2	11074-07	7.48	11074-09	7.48
Small Three-Prong	3	11074-21	7.48	11074-23	7.48
Medium Three-Prong	3	11074-25	7.48	11074-27	7.48
Large Three-Prong	3	11074-29	7.48	11074-31	7.48


D124780 ROBO CLAMP *For ASTM D7528-09 ROBO Apparatus* ★

Qty.	Order Code	Each
1	D124780	Call

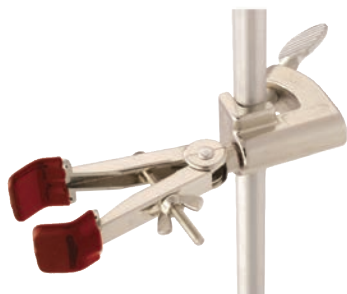




13010 CLAMP *Recirculator Hose Support, Stainless Steel* ★

All stainless steel, fully adjustable clamps for securing and supporting circulator hoses used with jacketed pilot plants. The universal clamps adjust to any pipe style pilot plant stand, and the clip will accommodate any standard circulator hose size.

Qty.	Order Code	Each
1	13010-01	116.21



11075 CLAMP *Two-Prong, Vinylized Jaws* ★

Medium size clamp designed with jaws for holding burets up to 38mm in diameter. The position of the jaws and holder is fixed. This insures that any object held in the jaws will remain permanently in a vertical position. Clamps to rods up to 19mm.

Qty.	Order Code	Each
1	11075-21	28.90



11076 CLAMP *Heavy Duty, Tapered* ★

New heavy duty "tapered" clamps designed especially for standard taper glass joints.

Size	Max. Joint Size (mm)	Overall Length (cm)	Qty.	Order Code	Each
Small	24/40	35.2	1	11076-10	122.18
Large	34/45	38.0	1	11076-15	122.18



11077 CLAMP *Three-Prong, Vinylized Jaws* ★

Three-prong grip clamp. Designed for holding dispensing burets, thermometers, reflux condensers and other laboratory glassware in a vertical position. Jaws will hold objects up to 57 mm in diameter.

Qty.	Order Code	Each
1	11077-18	36.44



11079 CLAMP *Chain* ★

Fast, sure way to secure large equipment to rods and lattices. Holds 76 to 165mm bottles, flasks, and large objects. Loop steel chain around object. Attach to hook on movable slide. Tighten slide with large nonslip knob. Holds equipment firmly in place at any angle. You can vary distance from support rod.

Length (In.)	For Vessel OD	Qty.	Order Code	Each
7.4	170mm	1	11079-24	52.48
8.11	280mm	1	11079-38	77.18
15.12	280mm	1	11079-40	81.48

11080 CLAMP HOLDER Regular ★

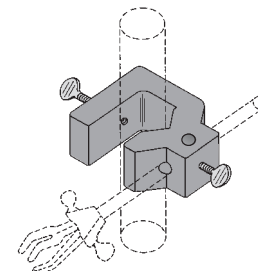
Normally used to hold the Nos. 11065 through 11072 clamps to rods and lab frame supports. Made of heavily nickel-plated zinc. Will grip rods up to and including 19mm diameter. Attaches clamp at right angle.

Qty.	Order Code	Each
1	11080-19	19.27


11081 CLAMP HOLDER Pilot Plant ★

Used with 11065 versatile jaw-type clamp to secure condenser, etc., on 6472 pilot plant reactor support frame. Holder clamps to 1-inch bar on frame of reactor; 11065 clamp is held in clamp holder with thumb screw. Fabricated of aluminum, powder coated black. For clamps, see 11065.

Qty.	Order Code	Each
1	11081-21	87.26


11082 CLAMP "Power Hold" ★

Fits support stand with 3/8-inch to 5/8-inch diameter shaft and stirrers with mounting rod from 3/8-inch to 5/8-inch diameter. Stop collar included.

	Qty.	Order Code	Each
Complete	1	11082-07	55.20


11083 CLAMP HOLDER Jumbo, Stainless Steel ★

Ninety degree frame clamp holder for use with all Labjaws extension clamps. 21mm (0.83in) grip. 316 stainless steel for use with 11057 series clamps.

Qty.	Order Code	Each
1	11083-51	49.30

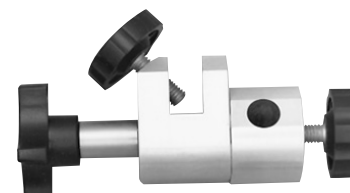

11084 CLAMP Universal Swivel, "Power Hold" ★

Universal swivel clamp allows positioning of stirrer at any compound angle for best stirring action.

- One knob — Lets you lower or raise stirrer
- One knob — Locks stirrer on support rod, tilts right/left
- One knob — Controls swivel setting, forward/backward

Fits support stand from 3/8-inch to 5/8-inch (9.5mm to 16mm) diameter. Will hold stirrer mounting rod from 3/8-inch to 5/8-inch diameter. Fabricated of precision machined aluminum.

Qty.	Order Code	Each
1	11084-11	147.87

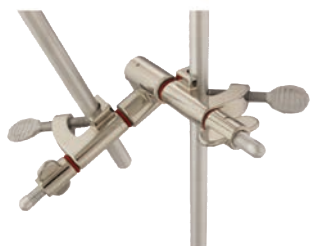




11086 CLAMP HOLDER *13mm Grip, Stainless Steel* ★

Lab frame hook connector allow one-handed assembly of two components with one adjustment screw.

Qty.	Order Code	Each
1	11086-01	27.88



11090 CLAMP HOLDER *All-Position* ★

All-position holder connects at any angle in any plane. Consists of two holders connected by double plate-joint which sets holders 90° from each other. Each holder can be rotated 360°. Grips rods up to 19mm diameter.

Qty.	Order Code	Each
1	11090-17	53.60



11095 CLAMP HOLDER *Jumbo* ★

This clamp holder is of value for holding large, heavy assemblies, since it can grip rods or pipe up to 22mm in diameter or as small as 5mm. It will grip a flat shelf or panel up to 19mm thick. Any of the extension clamps listed can be used with this holder.

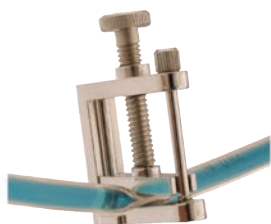
Qty.	Order Code	Each
1	11095-13	28.90



11136 PINCHCOCK ★

Used to close off tubing.

Clamp Type, with:	Qty.	Order Code	Each
Heavy Duty Spring	1	11136-14	22.55
Standard Spring	1	11136-16	22.55
Universal Flow Spring	1	11136-20	27.88



11140 HOSECOCK ★

This hosecock is used to control flow of liquids or gases through flexible tubing. The large compression screw permits more precise control than ordinary clamps. In the open position, it can be slipped over tubing which is part of an assembly. Accommodates tubing up to 9.5mm O.D.

	Qty.	Order Code	Each
Standard	1	11140-25	21.42
Heavy Duty	1	11140-27	54.63
Standard with 14.5cm Extension Rod	1	11140-30	45.00



11145 TUBING CLAMP ★

Eliminates older method of wiring rubber tubing to glass. Simple in design, low in cost and easy to use. Requires only one hand to apply; can be instantly applied or removed. Fits standard 10–12mm fittings.

Qty.	Order Code	Per Box
100	11145-20	43.63

11146 CLAMP *Tubeing, "Dura-Clamp®" ★*

Autoclavable, white plastic unitized construction tubing clamp, can also be used as a flow valve. Instant 15-position control clamp accepts flexible tubing from 3.2 to 11 mm O.D. (1/8-inch to 7/16-inch). Packed 12 per package.

Qty.	Order Code	Per Package
12	11146-08	11.33


11148 CLAMP *Hose ★*

Adjustable, with hex head finger nut.

For Hose Dia., mm	Qty.	Order Code	Each
10-14	1	11148-10	6.14
12-16	1	11148-12	6.95
17-22	1	11148-17	6.78


11176 OPEN RING SUPPORT *PVC Coated ★*

Self-clamping, PVC coated, open ring support.

Ring Size (in.)	Qty.	Order Code	Each
2	1	11176-12	78.62


11177 OPEN RING SUPPORT *PVC Coated ★*

Open ring supports with long extension arms for supporting glassware from the bottom, such as separatory funnels and powder funnels. PVC coated ring also protects glass from scratching. Long extension arms allow for easier connection to labframes or stands.

Size	Ring Size (in.)	Arm Length (in.)	Qty.	Order Code	Each
Small	3	10	1	11177-13	57.92
Medium	4	12	1	11177-17	65.40
Large	5	12	1	11177-19	86.82


12187 CLAMP *Stainless Steel, Circulator Hose ★*

304 Stainless steel clamp designed for use with ACE jacketed glass pilot plant reactors and circulator hoses for popular circulating chillers. Connects glass o-ring ball joints on jacket inlet/outlet to hoses to/from circulator. Powder coated aluminum with glass-filled PTFE backing.

For ⌀ Joint Size	Qty.	Order Code	Each
28/15	1	12187-28	129.17
35/25	1	12187-35	139.93





5941 CONDENSER *Allihn* ♦

Bulb type, approximately one bulb per every 50mm, with F 24/40 inner joint at bottom, open tube at the top. Use with 3/8-inch I.D. tubing, size D hose connections.

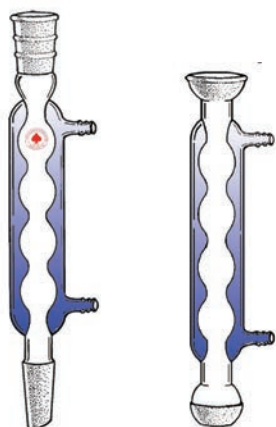
Jacket Length, mm	Qty.	Order Code	Each
200	1	5941-12	106.33
300	1	5941-14	113.99



5943 CONDENSER *Allihn, Fully Jacketed* ♦

Bulb type, approximately one bulb per every 50mm, jacketed with F 24/40 inner and outer joint enclosed at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Length, mm	Qty.	Order Code	Each
200	1	5943-12	172.74
400	1	5943-15	192.72



5945 CONDENSER *Allihn* ♦

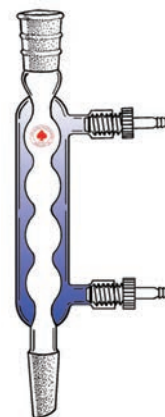
Bulb type, approximately one bulb per every 50mm, with F or S joint at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Lgth., mm	Qty.	Joint Size F 19/38		Joint Size F 24/40		Joint Size F 29/42		Joint Size S 35/25	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
200	1	—	—	5945-12	112.64	—	—	—	—
250	1	5945-05	114.59	5945-13	117.64	—	—	—	—
300	1	—	—	5945-14	126.45	5945-24	141.67	—	—
400	1	—	—	5945-15	138.35	5945-25	145.34	5945-65	160.93
500	1	—	—	5945-16	146.35	5945-26	155.18	—	—
600	1	—	—	5945-17	149.27	5945-27	178.69	—	—

5946 CONDENSER *Allihn, with Ace-Thred Connectors* ♦

Bulb type, approximately one bulb per 50mm, with 3/8 24/40 inner and outer joint at bottom and top, #7 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 1/4-inch I.D. tubing. For replacement connectors, see 5853.

Jacket Length, mm	3/8 Joints	Qty.	Order Code	Each
250	24/40	1	5946-116	147.83
300	24/40	1	5946-118	156.70
300	29/42	1	5946-122	156.70



5960 COLD FINGER *For Allihn Condensers* ♦

Cold Finger accessory for standard Allihn type condensers. This cold finger has a 3/8 24/40 inner joint that fits inside the condenser's upper outer joint and tube to provide added cooling ability and faster condensation. Fits into 5943, 5945, and 5946 condensers. Has two upper, glass, size D hose connections that take 3/8-inch tubing.

Length Below Joint, mm	3/8 Joint	Tubing Size (Inches)	Qty.	Order Code	Each
110	24/40	3/8 (D)	1	5960-08	96.89
215	24/40	3/8 (D)	1	5960-12	91.24



5964 CONDENSER *Dewar* ♦

For use with dry ice and other solid cooling agents. Upper tube is 12mm O.D. Inner joint is 3/8 24/40.

Jacket Length, mm	I.D., mm	Qty.	Order Code	Each
200	40	1	5964-12	179.31
250	50	1	5964-13	223.51
300	75	1	5964-14	257.36

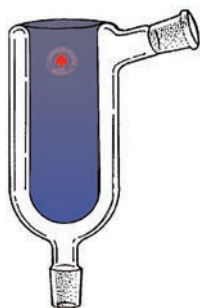


9253 CONDENSER *Dewar* ♦

For use with dry ice and other solid cooling agents. Can also be adapted for use as a small constant temperature bath by using a constant boiling liquid. In this manner, can also be used as an oil bath. The larger size will hold 100mL flask, small size will hold 10mL flask.

Inside Depth, mm	I.D., mm	3/8 Joints	Qty.	Order Code	Each
90	37	14/20	1	9253-08	138.08
90	70	14/20	1	9253-10	156.24

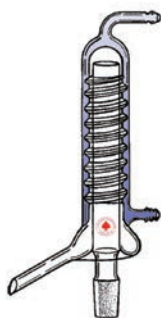




9254 CONDENSER *Dewar* ♠

Similar to 9253 except side joint is angled 105°.

Inside Depth, mm	I.D., mm	⌘ Joints	Qty.	Order Code	Each
90	37	14/20	1	9254-05	139.96
90	70	14/20	1	9254-07	160.77
120	32	14/20	1	9254-10	164.01



5969 CONDENSER *Friedrichs* ♠

Reflux controlled by regulating jacket temperature. Provides compact spiral path for condensation. Jacket length 200mm. Use with 3/8-inch I.D. tubing, size D hose connections.

⌘ Inner Joint	Qty.	Order Code	Each
24/40	1	5969-10	320.37



5970 CONDENSER *Friedrichs* ♠

With molded spiral condensing surface and ⌘ joint at bottom. Jacket length 250mm. Use with 3/8-inch I.D. tubing, size D hose connections.

⌘ Joint	Qty.	Order Code	Each
24/40	1	5970-10	186.63



5971 CONDENSER *Friedrichs* ♠

With molded spiral condensing surface and ⌘ joint at bottom and top. Jacket length 250mm. Use with 3/8-inch I.D. tubing, size D hose connections.

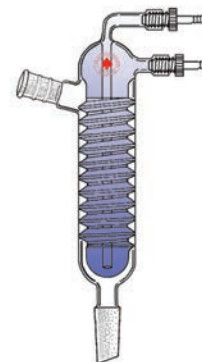
Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Qty.	Order Code	Each
24/40	24/40	1	5971-10	205.08
29/42	29/42	1	5971-15	210.42
24/40	34/45	1	5971-20	219.79
24/40	45/50	1	5971-23	227.86
24/40	55/50	1	5971-27	240.43

Custom condensers available upon special request

5971 CONDENSER *Friedrichs, with Ace-Thred Connectors* ♠

With molded spiral condensing surface and ⌘ joint at bottom and top. Jacket length 250mm. With #7 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 1/4-inch I.D. tubing. For replacement hose connections, see 5853-03. For high-temperature applications, use 5858 high-temperature hose connections.

Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Qty.	Order Code	Each
24/40	24/40	1	5971-111	231.11
29/42	29/42	1	5971-116	235.19
24/40	45/50	1	5971-124	252.54
24/40	55/50	1	5971-128	265.05



5972 CONDENSER *Friedrichs* ♠

With molded spiral condensing surface and ⌘ inner joint at bottom. Top tubulation tooled to take No. 3 stopper. Jacket length 250mm. Use with 3/8-inch I.D. tubing, size D hose connections. See page 7 for more detailed hose connection information.

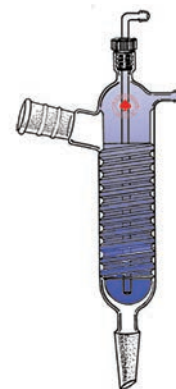
⌘ Joint	Qty.	Order Code	Each
24/40	1	5972-10	195.45



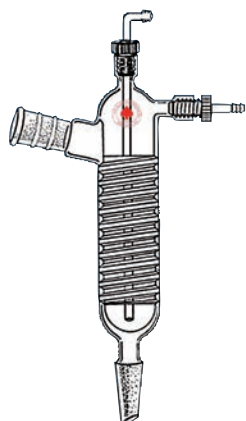
5974 CONDENSER *Friedrichs, Modified* ♠

Top of condenser modified with #7 Ace-Thred so inlet tube is removable. This offers easier cleaning and greater economy if inlet tube breaks. With molded spiral condensing surface and ⌘ 24/40 joint at bottom and top. Jacket length 250mm. Complete unit consists of body, inlet tube and 5029-10 bushing. Use with 3/8-inch I.D. tubing, size D hose connections.

<i>Complete</i>			<i>Replacement Inlet Tubes</i>		
Qty.	Order Code	Each	Qty.	Order Code	Per 6
1	5974-10	214.66	6	5974-02	64.20



Contact ACE for our full reusable glass catalog featuring other condenser styles.



5974 CONDENSER *Friedrichs, Modified, with Ace-Thred Connectors* ♠

Top of condenser modified with #7 Ace-Thred so inlet tube is removable. This offers easier cleaning and greater economy if inlet tube breaks. With molded spiral condensing surface and $\text{F} 24/40$ inner joint at bottom and top. Jacket length 250mm. Complete unit consists of body, inlet tube and 5029-10 bushing. With #7 Ace-Thred and "Ace-Safe" hose connection on inlet with barb for 1/4-inch I.D. tubing. For replacement hose connection, see 5853.

Complete			Replacement Inlet Tubes		
Qty.	Order Code	Each	Qty.	Order Code	Per 6
1	5974-109	227.65	6	5974-02	64.20



5977 CONDENSER *Graham* ♠

With $\text{F} 24/40$ inner and outer joint at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Length, mm	Qty.	Order Code	Each
200	1	5977-12	152.73
300	1	5977-14	160.68
400	1	5977-15	176.54
500	1	5977-16	200.69
600	1	5977-17	210.44
900	1	5977-19	262.07



5979 CONDENSER *Graham* ♠

With $\text{F} 24/40$ outer joint at top. Straight 12mm O.D. tube at bottom for insertion into a rubber stopper. For jacket connections, use with 3/8-inch I.D. tubing, size D hose connection.

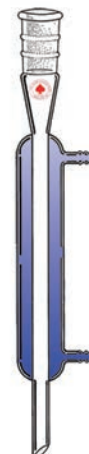
Jacket Length, mm	Qty.	Order Code	Each
200	1	5979-12	137.20
300	1	5979-14	154.31

Other joint sizes are available.

5994 CONDENSER *Liebig, "No Hold Up" ♠*

With outer ⌘ joint at top. Jacket length 300mm. Straight 14mm O.D. tube at bottom for insertion into a rubber stopper. For jacket connections, use with 3/8-inch I.D. tubing, size D hose connections.

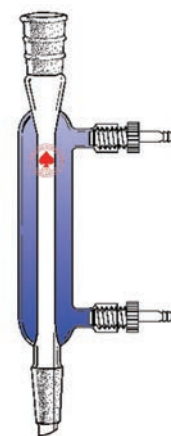
⌘ Joint	Qty.	Order Code	Each
24/40	1	5994-14	116.28



5997 CONDENSER *Liebig, with Ace-Thred Connectors ♠*

"No Hold Up" condenser with ⌘ 24/40 inner and outer joint at bottom and top, #7 Ace-Thred inlet/outlet for connecting "Ace-Safe" hose connections with barb for 1/4-inch I.D. tubing. For replacement hose connections, see 5853. Complete item includes two hose connectors with o-ring and two nylon bushings.

Jacket Length, mm	⌘ Joints	Qty.	Order Code	Each
200	24/40	1	5997-132	142.78
250	24/40	1	5997-133	150.03
300	24/40	1	5997-134	151.80



5998 CONDENSER *Liebig, "No Hold Up" ♠*

With ⌘ inner and outer joints at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Length, mm	Qty.	Joint Size ⌘19/38		Joint Size ⌘24/40		Joint Size ⌘29/42	
		Order Code	Each	Order Code	Each	Order Code	Each
200	1	5998-04	102.35	5998-12	109.48	5998-22	121.43
250	1	—	—	5998-13	116.83	5998-23	127.04
300	1	—	—	5998-14	124.60	5998-24	130.79
400	1	—	—	5998-15	126.13	5998-25	137.57
500	1	—	—	5998-16	131.84	—	—
600	1	—	—	5998-17	131.40	—	—

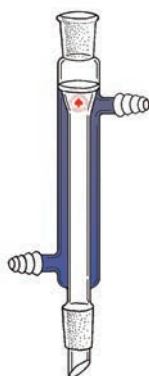




9258 CONDENSER *Liebig* ♠

With 110mm jacket length, also an additional vacuum takeoff between top outer joint and jacket. Use with 5/16-inch I.D. tubing, size A hose connections.

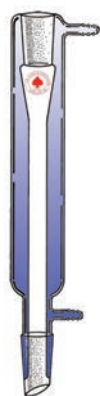
⌘ Joints	Qty.	Order Code	Each
14/20	1	9258-02	86.70



9261 CONDENSER *Liebig* ♠

With straight inner tube sealed through the jacket. This condenser is acceptable for use with Abderhalden or Mini-Lab moisture test apparatus.

Jacket Length, mm	Qty.	⌘14/20 Joints Tubing Size (In.)	Order Code	Each	⌘19/22 Joints Tubing Size (In.)	Order Code	Each
110	1	5/16 (A)	9261-02	81.82	5/16 or 3/8 (B)	9261-04	83.15
250	1	5/16 (A)	9261-12	83.15	5/16 or 3/8 (B)	9261-15	86.03



5999 CONDENSER *Liebig, "No Hold Up", Fully Jacketed* ♠

Fully jacketed with water cooled ⌘ 24/40 inner and outer joint at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Length, mm	Qty.	Order Code	Each
200	1	5999-12	168.79
300	1	5999-14	171.14



5953 CONDENSER *Reflux, Coiled* ♠

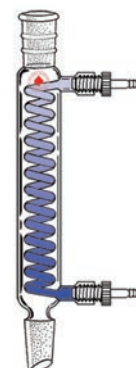
Coiled condensing tube, with ⌘ 24/40 inner and outer joint at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

Jacket Length, mm	Qty.	Order Code	Each
200	1	5953-12	179.38
250	1	5953-13	198.44
300	1	5953-14	207.29
400	1	5953-15	237.41

5953 CONDENSER *Reflux, Coiled, with Ace-Thred Connectors* ♦

Coiled condensing tube, with 3/4 24/40 inner and outer joint at bottom and top. With #7 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 1/4-inch I.D. tubing. For replacement hose connections, see 5853.

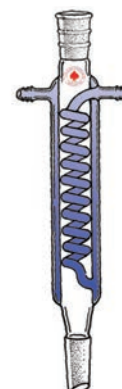
Jacket Length, mm	Qty.	Order Code	Each
200	1	5953-101	201.81
250	1	5953-103	227.15
300	1	5953-106	235.68
400	1	5953-108	254.06



5955 CONDENSER *Reflux, Coiled* ♦

Double jacketed with 3/4 inner and outer joint at bottom and top. Use with 3/8-inch I.D. tubing, size D hose connections.

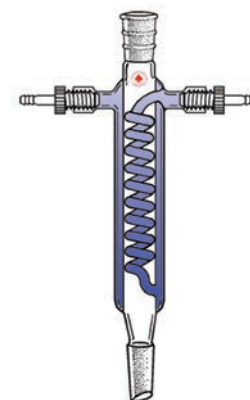
Jacket Length, mm	Qty.	Joints 3/4 24/40		Joints 3/4 29/42	
		Order Code	Each	Order Code	Each
250	1	5955-13	314.75	—	—
300	1	5955-14	325.58	5955-34	329.19
400	1	5955-15	340.17	—	—



5956 CONDENSER *Reflux, Coiled, with Ace-Thred Connectors* ♦

Double-jacketed, with 3/4 24/40 inner and outer joint at bottom and top. Extra cooling capacity for volatile materials. Compact design retards diffusion. With #7 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 1/4-inch I.D. tubing. For replacement hose connections, see 5853.

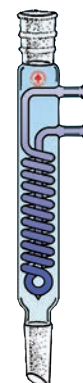
Jacket Length, mm	3/4 Joint	Qty.	Order Code	Each
250	24/40	1	5956-143	352.52
400	24/40	1	5956-145	383.63



6020/9270 CONDENSER *Reflux, Spiral* ♦

With spiral condensing tube having both inlet and outlet connections at top, on same side. With inner and outer joints at bottom and top. Length between joints is approximately 80-90 mm longer than coil length.

Coil Length, mm	3/4 Joints	Tubing Size (Inches)	Qty.	Order Code	Each
100	14/20	5/16 or 3/8 (B)	1	9270-04	156.87
200	24/40	3/8 (D)	1	6020-02	220.81
250	24/40	3/8 (D)	1	6020-04	237.02
300	24/40	3/8 (D)	1	6020-06	244.37
400	24/40	3/8 (D)	1	6020-08	269.41




6040 CONDENSER *Reflux, Spiral* ★

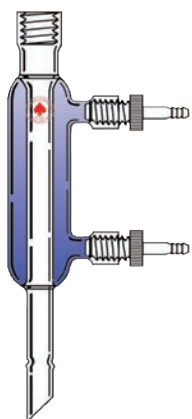
This compact spiral coil style condenser has a tightly wrapped coil for maximum cooling. Excellent for use with high vapor pressure solvents. Jacket length approximately 100mm, overall height approximately 210mm. 75 degree angle top F 14/20 outer joint, F 14/20 inner bottom joint. Size C hose connections. Other joint sizes available.

Angled Top Joint	Inner Bottom Joint	Qty.	Order Code	Each
F 14/20	F 14/20	1	6040-02	152.84
F 24/40	F 24/40	1	6040-04	189.20


6042 CONDENSER *Reflux, Bulb* ★

New style, compact, high-output reflux condenser, has an inner double wall, thimble-shape internal bulb. Overall height is approximately 210mm, but has the output equal to condensers with twice the length. Unit has F outer top joint and F drip-tip inner joint bottom. Top and bottom hose connections size D, for 3/8-inch tubing. Other joint sizes available.

Angled Top F Joint	Inner Drip-Tip F Bottom Joint	Qty.	Order Code	Each
24/40	24/40	1	6042-04	205.40
29/42	29/42	1	6042-06	216.06
45/50	45/50	1	6042-10	343.50


6024 CONDENSER *West, with Ace-Thred Connectors* ♠

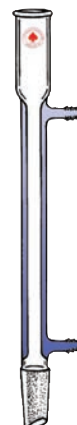
Used with pressure reactors, listed in our reactor catalog. Heavy wall condenser has a #15 Ace-Thred at top that can be stoppered using 5846 plug (not supplied). Bottom drip tip is long enough to be secured in the #15 Ace-Thred on 6433 reactor head, one-piece pressure reactor or any vessel with a #15 Ace-Thred. Drip tip has a groove that restricts blowout when secured with 7506-06 bushing and o-ring (not supplied). Inlet/outlet have #7 Ace-Threds for use with "Ace-Safe" 5853 easy connect/disconnect tubing connectors.

Jacket Length, mm	Qty.	Order Code	Each
200	1	6024-20	133.51

6025 CONDENSER *West* ♠

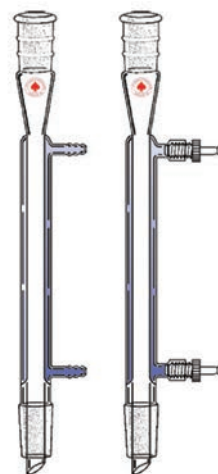
With ⌘ inner joint at bottom. Jacket length 300mm. Open top. Use with 3/8-inch I.D. tubing, size D hose connections.

⌘ Joint	Qty.	Order Code	Each
24/40	1	6025-14	84.47


6029 CONDENSER *West, "No Hold Up"* ♠

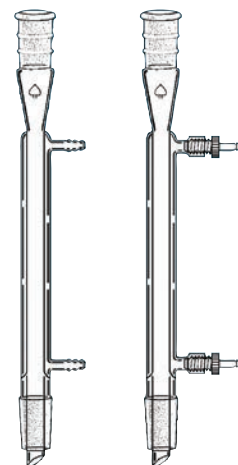
With ⌘ inner and outer joints at bottom and top.

Jacket Length, mm	⌘ Joints	Tubing Size (In.)	Qty.	Order Code	Each
250	24/40	3/8 (D)	1	6029-13	109.58
300	24/40	3/8 (D)	1	6029-14	113.38
400	24/40	3/8 (D)	1	6029-15	118.98
500	24/40	3/8 (D)	1	6029-16	124.87
600	24/40	3/8 (D)	1	6029-17	127.06
250	24/40	#7 Ace-Thred	1	6029-112	134.84
300	24/40	#7 Ace-Thred	1	6029-115	138.64
400	24/40	#7 Ace-Thred	1	6029-117	144.28
500	24/40	#7 Ace-Thred	1	6029-118	150.15
600	24/40	#7 Ace-Thred	1	6029-119	152.33


9297 CONDENSER *West, "No Hold Up"* ♠

With ⌘ inner and outer joints at bottom and top.

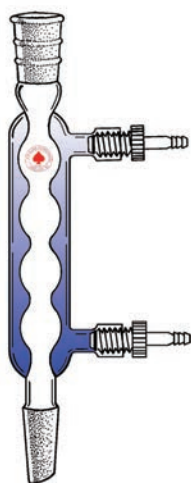
Jacket Length, mm	⌘ Joints	Tubing Size (In.)	Qty.	Order Code	Each
200	14/20	5/16 (A)	1	9297-05	82.97
200	19/22	5/16 or 3/8 (B)	1	9297-09	82.97
200	14/20	#7 Ace-Thred	1	9297-106	106.77
200	19/22	#7 Ace-Thred	1	9297-110	106.77




9299 CONDENSER *West, Jacketed* ★

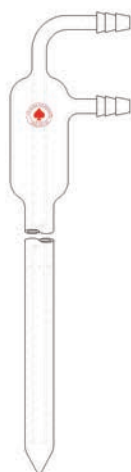
With top joint jacketed for water cooling. Jacket length measured from bottom of top joint. Use with 5/16-inch I.D. tubing, size A hose connections.

⌘ Joints	Jacket Length, mm	Qty.	Order Code	Each
14/20	120	1	9299-08	101.17


5945 CONDENSER *Allihn, with Ace-Thred Connectors, Pilot Plant* ★

Bulb type, approximately one bulb per 50mm, with ⌘ 45/50 inner and outer joint at bottom and top #11 Ace-Thred and "Ace-Safe" hose connections on inlet and outlet with barb for 3/8-inch I.D. tubing. For replacement connectors, see 5853. This condenser is used with 6472 pilot plant reactor.

Jacket Length, mm	Qty.	Order Code	Each
500	1	5945-76	394.07


5958 CONDENSER *Cold Finger, Pilot Plant Reactors* ★

Jacket length is measured from the lower shoulder of the bulb to the bottom of the finger. Diameter of tube is 14mm. Used in 6472 pilot plant reactors. Use with #15 Ace-Thred bushing and 8042 glass adapter to fit top ⌘ 45/50 joint in 5945-76 condenser. Use with 5/16-inch or 3/8-inch I.D. tubing, size C hose connections.

Jacket Length, mm	Qty.	Order Code	Each
625	1	5958-99	95.56

6810 CONDENSER *Pilot Plant, Soxhlet, Bulb Type, for Giant Extraction Apparatus* ♠

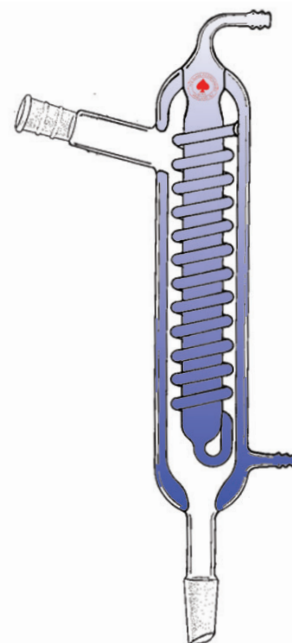
Bulb-type condenser for giant extraction apparatus. Use with 7/16-inch or 1/2-inch I.D. tubing, size F hose connections.

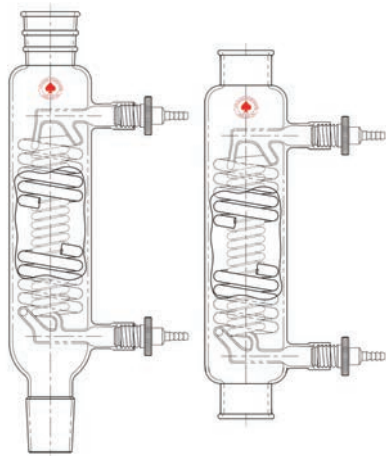
	Length, Inches	Bottom ⌘ Joint	Qty.	Order Code	Each
For Size F Extraction Apparatus	39	71/60	1	6810-04	304.77
For Size G Extraction Apparatus	46	103/60	1	6810-14	567.81
For Size G Extraction Apparatus	82	55/50	1	6810-24	722.41


6012 CONDENSER *Pilot Plant, Long Path* ★

Turbulent flow created makes this condenser very desirable for use under reduced pressure. Internal and external cooling surfaces result in high efficiency per unit length. ⌘ 24/40 inner and outer joints. Use with 7/16-inch or 1/2-inch I.D. tubing, size F hose connections.

Jacket Length, mm	Qty.	Order Code	Each
500	1	6012-16	854.00
600	1	6012-17	874.53

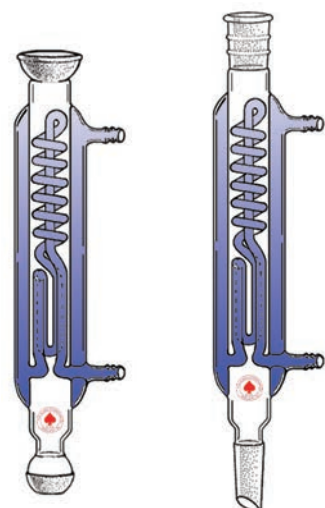




6015 CONDENSER *Pilot Plant, High Capacity, Double Coil* ★

High through-put double coil condensers are made for larger systems and reactors, especially pilot plants, to handle larger scale reactions. These are also similar to rotary evaporator type condensers where a lot of material is being condensed at a higher temperature and where large amounts of cooling water are needed to generate higher efficiency. The unit can be ordered with standard taper joints or beaded pipe end connections. The overall length is approximately 390mm and O.D. is approximately 85-90 mm. Both units have #15 Ace-Thred connections for Ace-Safe hose connections. Supplied with full Ace Safe connections.

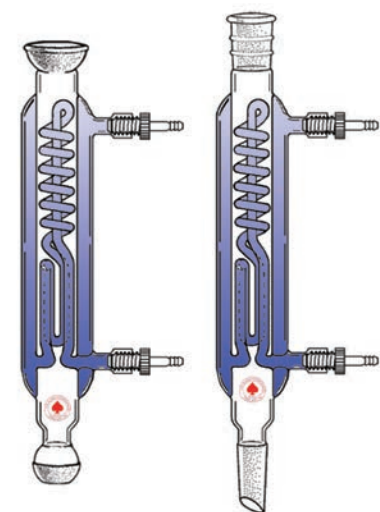
Jacket Length, mm	Condensing Area, cm ²	End Finish	Qty.	Order Code	Each
315	1480	10-inch bead pipe	1	6015-12	662.94
290	1400	⌘45/50	1	6015-17	729.25



6016 CONDENSER *Pilot Plant* ★

Highly efficient. May be used either for through condensation or refluxing. Internal baffling acts as impinging surface for entrained particles and discourages diffusion loss. Comes with either ⌘ or ⌘ top and bottom. Use with 7/16-inch or 1/2-inch I.D. tubing, size F hose connections.

Jacket Length, mm	Qty.	Joint Size ⌘45/50		Joint Size ⌘71/60		Joint Size ⌘35/25		Joint Size ⌘65/40	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
500	1	6016-36	923.04	—	—	6016-66	919.15	6016-75	972.51
750	1	6016-39	1059.31	6016-52	1176.47	—	—	6016-77	1048.01
1000	1	6016-41	1255.92	—	—	6016-69	1237.21	6016-79	1328.76



6016 CONDENSER *Pilot Plant, with Ace-Thred Connectors* ★

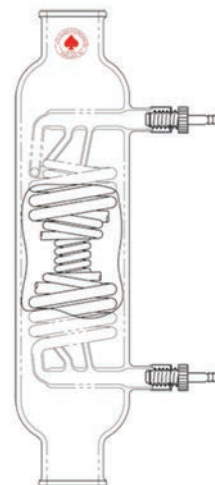
Highly efficient. May be used either for through condensation or refluxing. Internal baffling acts as impinging surface for entrained particles and discourages diffusion loss. With #11 Ace-Thred and "Ace-Safe" polypropylene hose connections on inlet and outlet with barb for 1/4-inch I.D. tubing. For replacement hose connections, see 5853.

Jacket Length, mm	Qty.	Joint Size ⌘45/50		Joint Size ⌘35/25		Joint Size ⌘65/40	
		Order Code	Each	Order Code	Each	Order Code	Each
500	1	6016-137	947.33	6016-167	930.09	6016-176	982.69
750	1	6016-139	1083.60	—	—	6016-178	1057.13
1000	1	6016-141	1280.21	6016-170	1243.55	6016-180	1333.79

6017 CONDENSER *Pilot Plant, High Capacity, Triple Coil ★*

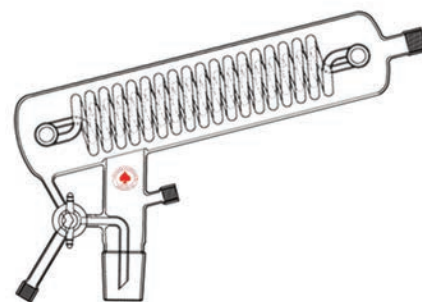
This new design gives even higher through-put than the double coil or any rotary evaporator condenser with three internal cooling coils. Designed also for pilot plants and larger reactors where a lot of cooling area is needed for condensing, or for higher temperature reactions where more through-put is needed. Comes with #15 Ace-Thred ports with Ace-Safe connections. Top and bottom connections are 2-inch beaded pipe. Overall length is approximately 460 mm and O.D. is approximately 110 mm.

Coil Length, mm	Condensing Area, cm ²	Qty.	<i>Glass only</i>		<i>Complete</i>	
			Order Code	Each	Order Code	Each
220	1600	1	6017-210	845.86	6017-212	896.00


6021 CONDENSER *Pilot Plant, Modified Keenan, Dual Coil, Horizontal*

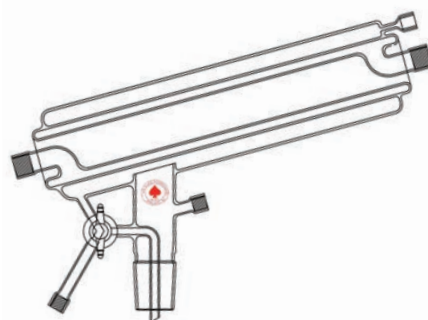
Highly efficient, double coil, condenser with 30 degree horizontal angle vs. typical vertical style. Great for under hoods or on pilot plant reactors where height maybe an issue and a high level of distillation is required. Condenser has a ₣ 45/50 bottom joint to fit on reactor heads, all other connections are either #7 or #15 Ace-Safe, (supplied). Comes with either a PTFE or glass stopcock. Overall length is approximately 470mm. Height from top of bottom joint to highest point at top is 90 mm.

₣ Joints	Stopcock Type	Qty.	Order Code	Each
45/50	PTFE	1	6021-20	Priced Upon Request
45/50	Glass	1	6021-30	Priced Upon Request


6022 CONDENSER, KEENAN *Pilot Plant, Single Tube, Horizontal*

Highly efficient, newly designed condenser. Features a horizontal angle for low clearance but extremely good capacity and throughput. Especially useful when assembling a large reactor in limited height clearance situations. Surface area is 710 cm². Cooling fluid volume: 600 mL. Condenser has a ₣ 45/50 bottom joint. All other connections are #7 or #15 Ace-Thred that accepts a 7mm O.D. tube or 5853 "Ace-Safe" connectors (supplied) to attach tubing. Overall length: 475mm.

₣ Joints	Stopcock Type	Qty.	Order Code	Each
45/50	Glass	1	6022-22	Priced Upon Request
45/50	PTFE	1	6022-30	Priced Upon Request



Custom condensers with various joint or length sizes are available upon special request.

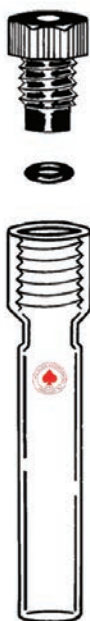
Reference Guide to Ace-Thred Sizes

Size		Accepts Tube O.D., mm	Use Bushing Number	Use With O-ring No.	Optional Ferrule	Suggested Uses
Mini	#7	6.5-7	5029-10	7855-704	11710-07	A, B, I
Midi	#11	9-10.5	7506-02	7855-708	11710-11	D, E, F, G
Maxi	#15	12.5-14	7506-06	7855-716	11710-15	C, H
	#18	16-17	7506-08	7855-720	11710-18	H, L
Giant	#25	24-25	7506-10	7855-734	11710-25	K, R, U
	#36	34-35	7506-12	7855-740	—	K, L, R, U
Jumbo	#50	47-48	7506-14	7855-744	11710-50	J, K, L, R, U
	#80	80	7506-20	7855-782	—	R, J

A—Thermometers, B—Bleed Tubes, C—Electrodes, D—Sensing Probes, E—Thermowells,
F—Gas Dispersion Tubes, G—Vacuum Take-Offs, H—Inlet and Outlet Tubes,
I—Miniature Electrodes, J—Columns, K—Manifolds, L—Immersion Wells,
R—Reactors, U—Ultrasonics

7644/5027 CONNECTORS *Threaded, Ace-Thred, Glass* ♠

Internally threaded glass connectors. For use in place of ground glass joints on flasks, columns, etc. Threads offer positive pressure O-ring seal when used with fittings like 5837, 5838, 5840-5846, and 7506. **Fittings and bushings for all sizes must be ordered separately.**



Thred Size mm	O.D. of Tube, mm	O.D. of Thread, mm	Qty.	Order Code	Each
7	12.5	18	1	5027-05	13.22
11	16	22	1	7644-10	16.98
15	23	26	1	7644-15	19.55
18	25	29	1	7644-18	21.61
25	32	41	1	7644-20	25.73
36	45	51	1	7644-22	46.31
50	57	71	1	7644-25	57.62
80	102	110	1	7644-36	102.90

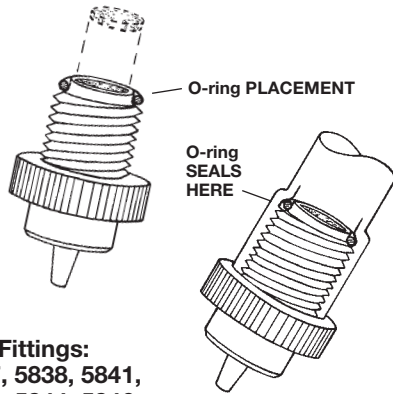
7644 CONNECTORS *Threaded, Ace-Thred, Stainless Steel* ★

Same internal thread as above, except fabricated from 18-8 type 303 free machining Stainless Steel. Use with couplings and plugs 5837, 5838, 5840-5846, and 7506 for positive pressure O-ring seal. **Fittings and bushings for all sizes must be ordered separately.**

Thred Size mm	O.D. of Tube, mm	O.D. of Thread, mm	Qty.	Order Code	Each
7	14	18	1	7644-70	66.63
11	17	22	1	7644-72	74.03
15	22	26	1	7644-76	84.05
25	34	41	1	7644-79	162.75
36	49	51	1	7644-81	223.09

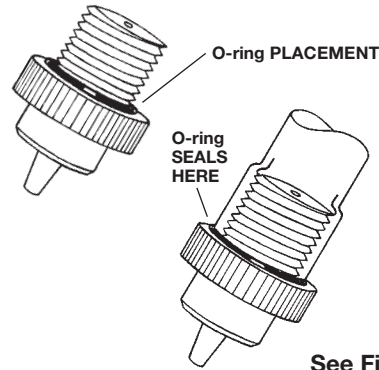
Ace-Thred Style (O-ring Seals – at Front or Back)

FRONT SEAL



See Fittings:
5837, 5838, 5841,
5843, 5844, 5846

BACK SEAL



See Fittings:
5840, 5842, 5845

5844 ADAPTER FOR SWAGELOK ♠

Bushing adapter used with Ace-Threds for connecting tubing to threaded glass via a Swagelok®-type connection. One end Ace-Thred, the other end has an NPT female thread. Supplied with one FETFE O-ring. For replacement O-rings, see 7855. Adapters available in either nylon or PTFE.
*Codes -40 & -41 are fabricated from High Density Polyethylene.



FRONT SEAL

5844

(Other NPT sizes are available.)

NYLON

NPT Code (In.)	Qty.	#7 Thread		#11 Thread		#15 Thread		#25 Thread		#36 Thread		#50 Thread		#80 Thread	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
1/8	1	5844-16	37.97	5844-18	43.86	5844-20	46.36	5844-22	59.52	5844-23	79.31	5844-24	94.94	—	—
1/4	1	—	—	—	—	5844-34	46.36	5844-36	59.52	5844-37	79.31	5844-38	94.94	5844-40*	146.99
3/8	1	—	—	—	—	—	—	—	—	—	—	5844-39	94.94	5844-41*	146.99

PTFE

NPT Code (In.)	Qty.	#7 Thread		#11 Thread		#15 Thread		#25 Thread		#36 Thread		#50 Thread		#80 Thread	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
1/16	1	5844-42	41.18	5844-44	62.54	5844-46	69.71	5844-48	91.51	5844-49	124.94	—	—	—	—
1/8	1	5844-58	41.18	5844-60	62.54	5844-62	69.71	5844-64	91.51	5844-65	124.94	—	—	—	—
1/4	1	5844-72	41.18	—	—	5844-74	69.71	5844-76	91.51	5844-77	124.94	5844-78	177.14	5844-80	247.96
3/8	1	—	—	5844-81	62.54	—	—	—	—	—	—	5844-85	177.14	5844-87	247.96
3/4	1	—	—	—	—	—	—	—	—	5844-95	124.94	5844-97	177.14	5844-98	247.96
1/2	1	—	—	—	—	5844-103	69.71	5844-104	86.94	5844-106	124.94	5844-107	177.14	5844-108	247.96

5845 PLUG Nylon* or PTFE ♠

A solid plug for use as a stopper with Ace-Threds. Supplied with one FETFE O-ring. For replacement O-rings, see 7855.



For Thread Size, mm	O-ring Size	Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
7	-014	1	5845-03	15.77	5845-43	33.22
11	-114	1	5845-05	15.77	5845-45	33.22
15	-210	1	5845-10	19.22	5845-47	39.24
18	-212	1	5845-12	26.18	5845-48	51.36
25	-220	1	5845-15	31.10	5845-49	59.74
36	-223	1	5845-17	56.36	5845-50	116.04
50	-229	1	5845-20	75.72	5845-51	147.81
80	-343	1	5845-30*	92.76	5845-56	224.59

*Code 5845-30 is fabricated from High Density Polyethylene.

5846 PLUG Nylon* or PTFE ♠

A solid plug for use as a stopper with Ace-Threds. Supplied with one FETFE O-ring. For replacement O-rings, see 7855.

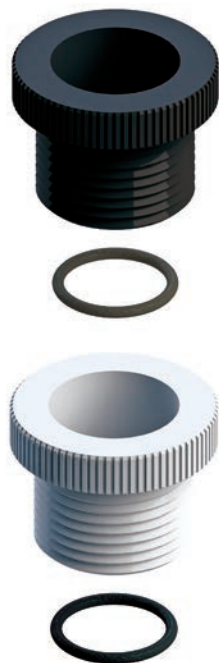


For Thread Size	O-ring Size	Qty.	Nylon		PTFE	
			Order Code	Each	Order Code	Each
7	-009	1	5846-04	9.48	5846-44	22.79
11	-012	1	5846-06	16.91	5846-46	33.07
15	-110	1	5846-12	22.19	5846-48	39.52
18	-113	1	5846-14	27.92	5846-49	51.07
25	-212	1	5846-16	37.19	5846-50	61.27
36	-125	1	5846-18	59.01	5846-51	131.79
50	-225	1	5846-22	87.05	5846-52	167.78
80	-235	1	5846-27*	104.02	5846-60	239.54

*Code 5846-27 is fabricated from High Density Polyethylene.

7506 BUSHING Nylon* or PTFE ♠

Bushing connector, front seal, for use with Ace-Threds, threaded glass or stainless steel connectors, for joining threaded end to a reduced end tube. Available in either nylon* or PTFE. One FETFE O-ring supplied with each bushing. For replacement O-rings, see 7855.



For Size	I.D. (B), mm	O-ring Size	Qty.	Nylon		PTFE	
				Order Code	Each	Order Code	Each
7	7.5	-008	1	5029-10	2.85	5029-35	14.49
11	10	-012	1	7506-02	11.39	7506-23	39.80
15	14	-110	1	7506-06	12.35	7506-27	40.65
18	17	-112	1	7506-08	20.61	7506-29	49.46
25	26	-212	1	7506-10	21.17	7506-31	56.15
36	36	-217	1	7506-12	50.46	7506-33	108.52
50	49	-225	1	7506-14	73.24	7506-35	122.29
80	80.7	-336	1	7506-20*	95.35	7506-39	192.62

*7506-20 fabricated from High Density Polyethylene.

11710 FERRULES PTFE ★

Single-piece PTFE Ferrule* used in place of O-rings with Ace-Threds to avoid possible contamination from O-ring compounds. Also enables the use of smaller outside diameter tubes with a given size Ace-Thred and still maintain tight conditions. For instance, the #7 Ace-Thred, 5027-20, with O-ring accepts a 7 mm O.D. tube. By inserting a 6.4 mm PTFE ferrule in place of the O-ring, the #7 Ace-Thred will now accept as small as a 6.4 mm O.D. tube. For operation up to 140°C.

Size	Use with Ace-Thred Size	For Tube O.D., mm (In.)	Qty.	Order Code	Per Package
3	7	3.2 (1/8)	12	11710-03	24.81
7	7	6.4 (1/4)	12	11710-07	30.19
11	11	9.5 (3/8)	12	11710-11	38.34
15	15	12.7 (1/2)	12	11710-15	37.09
18	18	15.9 (5/8)	6	11710-21	41.28
25	25	25.4 (1)	6	11710-25	37.79
50	50	50.8 (2)	6	11710-50	58.22

Solid PTFE ferrule, for drilling special size hole

Size	Use with Ace-Thred Size	Qty.	Order Code	Per Package
7S	7	12	11710-104	28.91
11S	11	12	11710-106	36.49
15S	15	12	11710-108	39.62
18S	18	6	11710-110	35.06
25S	25	6	11710-112	36.93
50S	50	6	11710-114	57.36

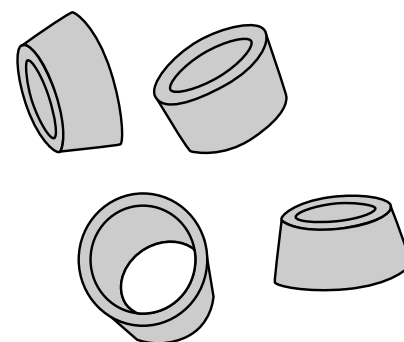
*Ferrules are not always suitable for vacuum applications.



11720 FERRULES Graphite, High Temperature ★

Single piece, high purity graphite ferrules — no back ferrule needed, no organic binders used. Ideal for glass-to-glass or glass-to-metal connections. All sizes are used with #7 Ace-Thred. Due to their high purity and unique properties, these ferrules make a monomolecular seal — one of the strongest seals known. Ferrules are not always suitable for vacuum applications.

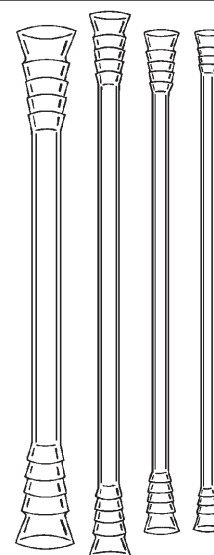
Size	For Tubing O.D., mm (In.)	Qty.	Order Code	Per Package
B	1.0 (.04)	10	11720-12	60.76
D	1.6 (1/16)	10	11720-16	57.71
E	3.2 (1/8)	10	11720-18	57.68
F	6.4 (1/4)	10	11720-20	57.73

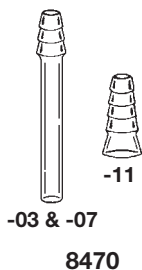


8469 HOSE CONNECTIONS Direct Seal ♠

Four-ring connector (code -03 has three rings) is tooled with flare and exposed for direct sealing to apparatus. Tooled on each end of tubing with approximately 5-6 inches between connectors. Packed per dozen connectors (i.e., six doubles).

Approx. Tube O.D., mm	Approx. Second Ring O.D., mm	Qty.	Order Code	Per Dozen
3	8	12	8469-03	53.86
4	10	12	8469-08	53.25
5	11	12	8469-12	53.25
7.5	13.5	12	8469-17	80.31

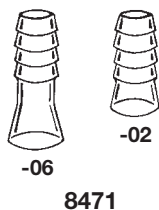




8470 HOSE CONNECTIONS *Regular* ♠

Ring-style hose connections for use with regular size condensers, etc. Codes -03 and -07 are on straight tubing; code -11 has a flare opposite rings.

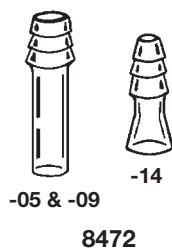
Approx. I.D., mm	Approx. Second Ring O.D., mm	Use Tubing I.D., mm (in.)	Length, mm	Qty.	Order Code	Per Dozen
3	9.5	7.9 (5/16)	25	12	8470-03	31.09
3	9.5	7.9 (5/16)	76	12	8470-07	31.09
4	8.9	9.5 (3/8)	28	12	8470-11	31.37



8471 HOSE CONNECTIONS *Large* ♠

Ring-style hose connections for use on large soxhlet condensers, etc. With flare opposite rings.

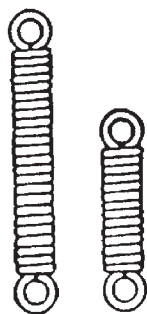
Approx. I.D., mm	Approx. Second Ring O.D., mm	Use Tubing I.D., mm (in.)	Length, mm	Qty.	Order Code	Per Dozen
5	11.1	9.5 (3/8)	29	12	8471-02	39.85
7.7	12.6	11.1 (7/16)	41	12	8471-06	66.10



8472 HOSE CONNECTIONS *Mini-Lab Size* ♠

Ring-style hose connections for use on small-scale apparatus such as Mini-Lab. Codes -05 and -09 are on straight tubing; code -14 has a flare opposite rings.

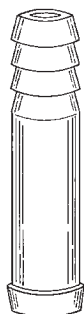
Approx. I.D., mm	Approx. Second Ring O.D., mm	Use Tubing I.D., mm (in.)	Length, mm	Qty.	Order Code	Per Dozen
3.5	7.9	9.5 (3/8)	77	12	8472-05	30.97
3	8	7.9 (5/16)	110	12	8472-09	30.97
3.5	7.9	9.5 (3/8)	27.6	12	8472-14	31.24



8030 SPRINGS *Stainless Steel* ★

For connecting interchangeable joints, washing bottles and other apparatus where glass hooks are provided. *Assortment pack contains 12 of each size.

Coil Length, mm (In.)	Qty.	Order Code	Per Shelf Pack
13 (1/2)	12	8030-02	25.11
10 (3/4)	12	8030-04	25.10
25 (1)	12	8030-08	33.62
32 (1-1/4)	12	8030-12	26.02
38 (1-1/2)	12	8030-16	37.49
41 (1-3/4)	12	8030-20	45.33
51 (2)	12	8030-24	45.29
Assortment Pack	84*	8030-30	237.96



5853 CONNECTOR *Tubing, PTFE* ♠

PTFE tubing connector, used to connect flexible tubing to #15 Ace-Thred for easy connect/disconnect. 7506-06 nylon bushing, slides over serrated end and secures connector in thread. (Note: O-ring supplied with bushing is not needed when using this connector.) With tubing attached at serrated end, unthread bushing and connector is removed from thread. Vacuum tight. Serrations are 14mm O.D. for 1/2-inch I.D. tubing. For bushing only, order 7506-06. Maximum temperature is 200°C.

	Qty.	Order Code	Each
Connector, PTFE, only	1	5853-07	22.42

5853 "ACE-SAFE" CONNECTOR Tubing, Polypropylene* ♠

Replacement tubing connector, used with nylon bushing to make easy and safe connect/disconnect of coolant or steam tubing to jacketed reaction flasks, condensers, or any vessel utilizing the Ace-Thred as the connection port. Connector is fitted with a silicone O-ring. Bushing compresses connector and O-ring for leak-tight seal. Once tubing is attached to serrated end of connector, bushing will not come off. Connectors are supplied with O-ring. For replacement O-rings, order 7855-207 for Code -03; 7855-206 for codes -09 and -10; 7855-210 for code -18 and -21; 7855-772 for code -31 and -33. Maximum temperature is 110°C.

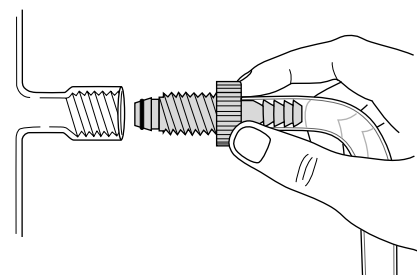


	For #7 Ace-Thred to 1/4-inch I.D. Tubing			For #11 Ace-Thred to 1/4-inch I.D. Tubing			For #15 Ace-Thred to 1/4-inch I.D. Tubing			For #11 Ace-Thred to 3/8-inch I.D. Tubing		
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	
Connector, only, w/O-ring	1	5853-03	11.38	5853-09	10.85	5853-18	11.76	5853-10	10.85			
Nylon Bushing, only	1	5029-05	2.57	7506-01	10.83	7506-05	12.20	7506-01	10.83			
Complete	1	5853-06	13.92	5853-12	22.66	5853-20	25.07	5853-15	22.66			
	For #15 Ace-Thred to 3/8-inch ID Tubing			For #15 Ace-Thred to 1/2-inch ID Tubing			For #25 Ace-Thred to 3/4-inch ID Tubing			For #25 Ace-Thred to 1-inch ID Tubing		
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	
Connector, only, w/O-ring	1	5853-19	11.76	5853-21	12.68	5853-31	27.71	5853-33	29.09			
Nylon Bushing, only	1	7506-05	12.20	7506-05	12.20	7506-09	19.30	7506-09	19.30			
Complete	1	5853-23	25.07	5853-26	25.98	5853-35	48.82	5853-37	50.17			

*Available in glass-filled PTFE, phone for details

5858 "ACE-SAFE" CONNECTOR Tubing, PTFE ♠

Same as 5853 above, but manufactured from PTFE instead of polypropylene. Connectors are supplied with FETFE O-ring. For replacement O-rings, order 7855-707 for Code -03; 7855-706 for codes -05 and -10; 7855-710 for code -07, -12, and -14. Maximum temperature is 200°C.



	For #7 Ace-Thred to 1/4-inch I.D. Tubing			For #11 Ace-Thred to 1/4-inch I.D. Tubing			For #15 Ace-Thred to 1/4-inch I.D. Tubing			For #11 Ace-Thred to 3/8-inch I.D. Tubing		
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	
Connector, only, w/O-ring	1	5858-03	20.72	5858-05	28.63	5858-07	32.01	5858-10	28.63			
PTFE Bushing, only, w/O-ring	1	5029-35	14.49	7506-23	39.80	7506-27	40.65	7506-23	39.80			
	For #15 Ace-Thred to 3/8-inch ID Tubing			For #15 Ace-Thred to 1/2-inch ID Tubing								
	Qty.	Order Code	Each	Order Code	Each							
Connector, only, w/O-ring	1	5858-12	32.01	5858-14	34.46							
PTFE Bushing, only, w/O-ring	1	7506-27	40.65	7506-27	40.65							

5853/5858 Tubing Connector Reference Chart

(Flow Rate @10 lbs. H₂O)

Tubing Connector Catalog No.	Fits Ace-Thred Size	Connector I.D., in. (mm)	Nominal Flow Rate Gal./Min.	Use Bushing Number	Use O-ring Number	For Tubing I.D., in. (mm)
5853-03 / 5858-03	7	.125 (3.18)	1.5	5029-05 / 5029-35	7855-207 / 7855-707	1/4 (6.35)
5853-09 / 5858-05	11	.125 (3.18)	1.5	7506-01 / 7506-23	7855-206 / 7855-706	1/4 (6.35)
5853-10 / 5858-10	11	.187 (4.74)	3.3	7506-01 / 7506-23	7855-206 / 7855-706	3/8 (9.5)
5853-18 / 5858-07	15	.125 (3.18)	1.5	7506-05 / 7506-27	7855-210 / 7855-710	1/4 (6.35)
5853-19 / 5858-12	15	.187 (4.74)	3.3	7506-05 / 7506-27	7855-210 / 7855-710	3/8 (9.5)
5853-21 / 5858-14	15	.375 (9.5)	13.3	7506-05 / 7506-27	7855-210 / 7855-710	1/2 (12.7)
5853-31	25	.500 (12.7)	23.6	7506-09	7855-772	3/4 (19)
5853-33	25	.750 (19)	53.3	7506-09	7855-772	1 (25.4)



12512 CONNECTOR *Quick Disconnect* ♠

Connects tubing from 3-12mm I.D. Quick disconnect of high-density polyethylene tubulations slide snugly together. An important safety factor on vacuum lines with filtering flasks.

Length, Joined, mm	Taper, mm	Quantity	Order Code	Per Pkg.	Case Price
670	4.8 to 6.4	12 per pkg., 72 per case	12512-02	49.95	299.72
670	6.4 to 9.5	12 per pkg., 72 per case	12512-04	28.17	169.04



8481 TUBE *Glass, Connecting* ♠

Straight reducing glass connector tube, with ends of different size.

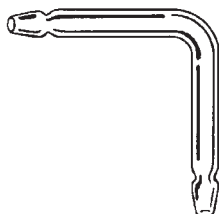
I.D., mm	Approx. O.D., mm	Length, mm	Qty.	Order Code	Per Pkg.
9.5 to 6.4	12 to 8	63	6	8481-03	31.44
12.7 to 6.4	15 to 8	70	6	8481-05	34.72
12.7 to 9.5	15 to 12	76	6	8481-07	45.01



12513 CONNECTORS *Tubing, T-Type* ♠

Autoclavable polyethylene connectors.

For Tubing I.D., mm	Quantity	Order Code	Per Pkg.	Case Price
4.8	12 per pkg., 72 per case	12513-05	25.50	153.02
6.4	12 per pkg., 72 per case	12513-07	24.88	149.28
9.5	12 per pkg., 72 per case	12513-11	27.05	162.28



8486 CONNECTOR *Glass Tube, 90°* ♠

With ends having constriction to hold rubber tubing securely.

For Tubing I.D., mm	Approx. O.D. Tube., mm	Length of Arms, mm	Qty.	Order Code	Per Pkg.
4.8	6	38	6	8486-03	41.04
6.4	8	38	6	8486-07	41.99
7.9	10	38	6	8486-12	43.43
9.5	12	38	6	8486-18	46.29



12514 CONNECTORS *Y-Type* ♠

Versatile connectors of polypropylene. Autoclavable.

For Tubing I.D., mm	Quantity	Order Code	Per Pkg.	Case Price
3.2	12 per pkg., 72 per case	12514-04	24.87	149.21
4.8	12 per pkg., 72 per case	12514-08	24.88	149.28
6.4	12 per pkg., 72 per case	12514-10	24.88	149.28
7.9	12 per pkg., 72 per case	12514-12	24.88	149.28
9.5	12 per pkg., 72 per case	12514-14	27.03	162.19
12.7	12 per pkg., 72 per case	12514-16	34.66	207.93



12611 CONNECTORS *with PTFE Plug Valve*

Polypropylene connectors, two-way or three-way, with PTFE valve and serrated tubulations. Takes 6.4mm to 9.5mm I.D. tubing.

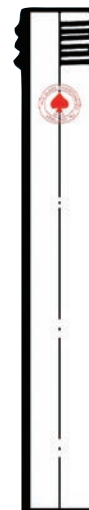
	Bore	Quantity	Order Code	Each	Case Price
Two-Way	2	Each or six per case	12611-04	41.15	246.89
Two-Way	4	Each or six per case	12611-08	38.06	228.35
Three-Way	2	Each or six per case	12611-21	45.53	273.17
Three-Way	4	Each or six per case	12611-23	45.53	273.17

7620 CONNECTORS *Screwthread, GL* ★

Externally threaded glass connectors. For use as replacement on apparatus using the GL thread, or when designing items where the external thread is preferred. Length is 100 mm.

GL Thread Dimensions, mm			
Thread Size	O.D.	Height	I.D.
14	13.75	12.0	8.45
18	17.5	15.5	11.0
25	24.5	18.5	18.0
32	31.5	16.0	23.0
45	44.5	26.0	34.5
120	119.5	21.0	106.0

Thread Size (GL No.)	Tubing O.D. x wall, mm	Qty.	Order Code	Each
14	12 x 1.5	1	7620-14	5.70
18	16 x 1.8	1	7620-18	6.83
25	22 x 1.8	1	7620-25	8.07
32	28 x 2.0	1	7620-32	15.31
45	40 x 2.3	1	7620-45	48.43
120	120 x 5.0	1	7620-60	52.68



7621 CAP *with Hole, GL Thread* ★

Open top red polybutylene terephthalate (PBT) cap for use with 7620 GL threads. When used with 7623 hose connection and 7624 sealing ring, will accommodate tubing of approximate diameter.

For Thread Size	Temperature Range, °C	Aperture Size, mm	O.D., mm	Height, mm	Qty.	Order Code	Each
25	-45 to +180	15	33	19	1	7621-15	2.97
32	-45 to +180	20	40	24	1	7621-22	3.54
45	-45 to +180	34	54	26	1	7621-25	6.21



7622 CAP *Solid, GL, with PTFE Liner* ★

Solid red PBT cap with PTFE liner* for use with 7620 GL threads. Temperature range -45 to +180°C.

For GL Thread Size	Qty.	Order Code	Each
14	1	7622-103	3.15
18	1	7622-107	3.69
25	1	7622-114	5.52
32	1	7622-121	8.60
45	1	7622-124	12.58
120	1	7622-155	189.49

*120 GL size has a CAPFE O-ring seal.





7623 HOSE CONNECTION for GL Thread, with Rubber Seal ★

Polypropylene hose connections with a silicone rubber seal for use with 7620 screwthread connector, sizes 14 and 18. Allows connection of tubing for cooling/heating, etc. to hose connection and securing to thread with 7621 holed cap. To remove, simply unscrew cap. Two styles: straight and bent, both are 8mm O.D. x 4mm I.D.

For GL Thread Size	Style	Qty.	Order Code	Each
14	Bent	1	7623-20	2.40
14	Straight	1	7623-22	2.55
18	Bent	1	7623-24	10.37
18	Straight	1	7623-26	11.25



7647 CAPS Solid, SVL ★

Replacement caps, solid with SVL thread, for Buchi® glassware.

SVL Thread Size	Order Code	Each
15	7647-15	13.90
22	7647-22	13.90
30	7647-30	13.91



7647 CAP Vent, SVL ★

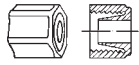
Replacement caps with open top and PTFE insert, retainer clip with SVL thread for Buchi® glassware.

SVL Thread Size	Similar to Buchi® Part No.	Order Code	Each
22	46574	7647-40	37.28

See the Chromatography section for listings of threaded PTFE, PFA connectors.

Glass-Filled Polypropylene Tube Connectors ★

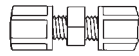
For use with Stainless Steel, Nylon Polyolefin, Aluminum and all other tubing.



12692

Nut

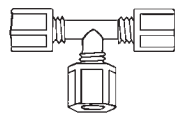
O.D. of Tube, mm (In.)	Qty.	Order Code	Each
6.4 (1/4)	1	12692-02	1.55
9.5 (3/8)	1	12692-06	2.34



12693

Union Tube to Tube

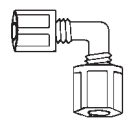
O.D. of Tube, mm	Qty.	Order Code	Each
6.4 x 3.2	1	12693-02	4.42
6.4 x 6.4	1	12693-03	5.57
9.5 x 6.4	1	12693-05	3.43
12.7 x 12.7	1	12693-09	4.84



12699

Tee Tube to Tube to Tube

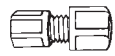
O.D. of Tube, mm (In.)	Qty.	Order Code	Each
6.4 (1/4)	1	12699-10	4.73
9.5 (3/8)	1	12699-14	6.38
12.7 (1/2)	1	12699-16	7.43



12705

Elbow Tube to Tube

O.D. of Tube, mm (In.)	Qty.	Order Code	Each
6.4 (1/4)	1	12705-11	3.73
9.5 (3/8)	1	12705-15	4.79
12.7 (1/2)	1	12705-17	5.79



12706

Female Coupling Tube to F.P.T.

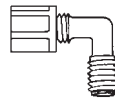
O.D. of Tube, mm (In.)	NPT Pipe Thread, mm	Qty.	Order Code	Each
6.4 (1/4)	3.2	1	12706-18	2.40
6.4 (1/4)	6.4	1	12706-20	2.36
9.5 (3/8)	6.4	1	12706-24	2.90
9.5 (3/8)	9.5	1	12706-26	2.98
12.7 (1/2)	9.5	1	12706-28	3.85



12707

Connector Tube to M.P.T.

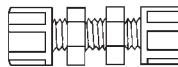
O.D. of Tube, mm (In.)	NPT Pipe Thread, mm	Qty.	Order Code	Each
6.4 (1/4)	6.4	1	12707-05	1.95
9.5 (3/8)	6.4	1	12707-09	2.30
9.5 (3/8)	9.5	1	12707-11	2.64
12.7 (1/2)	9.5	1	12707-13	3.20
12.7 (1/2)	12.7	1	12707-15	3.31
15.9 (5/8)	12.7	1	12707-19	3.58



12708

Elbow Tube to M.P.T.

O.D. of Tube, mm (In.)	NPT Pipe Thread, mm	Qty.	Order Code	Each
6.4 (1/4)	3.2	1	12708-02	2.74
6.4 (1/4)	6.4	1	12708-04	2.73
9.5 (3/8)	6.4	1	12708-08	3.24
9.5 (3/8)	9.5	1	12708-10	3.68
12.7 (1/2)	9.5	1	12708-12	4.68
12.7 (1/2)	12.7	1	12708-14	3.92



12712

Bulkhead Union Tube to Tube

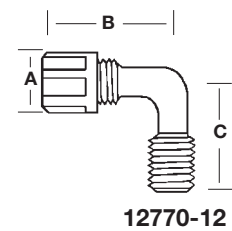
O.D. of Tube, mm (In.)	Qty.	Order Code	Each
6.4 (1/4)	1	12712-02	3.70
9.5 (3/8)	1	12712-06	4.63
12.7 (1/2)	1	12712-08	6.20



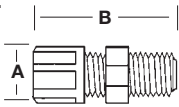
12713

Insert for Soft and Thin Wall Tubing

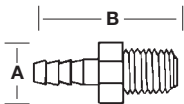
O.D. of Tube, mm (In.)	Qty.	Order Code	Each
6.4 (1/4)	1	12713-21	0.68
9.5 (3/8)	1	12713-25	0.63



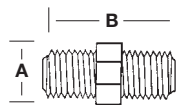
12770-12



12770-24



12770-36



12770-52

12770 TUBE FITTINGS, CONNECTORS PTFE ★

All PTFE fittings have male NPT thread at one end and tube compression, barb or NPT thread at other.

Style	Fits Tubes		NPT Size (In.)	Dimensions			Qty.	Order Code	Each
	O.D., mm (In.)	O.D., mm (In.)		A, mm	B, mm	C, mm			
Elbow	6.4 (1/4)	6.4 (1/4)	1/4	18	31	21.4	1	12770-12	27.81
Elbow	9.5 (3/8)	9.5 (3/8)	1/4	23.5	37.6	27.2	1	12770-14	33.56
Elbow	9.5 (3/8)	9.5 (3/8)	3/8	23.5	37.6	27.2	1	12770-16	33.56
Elbow	12.7 (1/2)	12.7 (1/2)	3/8	27	37.6	27.2	1	12770-18	45.03
Elbow	12.7 (1/2)	12.7 (1/2)	1/2	27	36.8	27.2	1	12770-32	60.54
Connector	6.4	6.4	1/4	18	43.2	—	1	12770-24	30.34
Connector	9.5	9.5	1/4	23.5	45.5	—	1	12770-26	31.98
Connector	6.4	6.4	3/8	18	43.2	—	1	12770-27	32.54
Connector	9.5	9.5	3/8	23.5	45.5	—	1	12770-28	50.66
Connector	12.7	12.7	3/8	27	44.7	—	1	12770-30	43.88
Connector	12.7	12.7	1/2	27	47.5	—	1	12770-31	60.64
Nipple	—	—	1/4	17.8	35.2	—	1	12770-52	18.62
Nipple	—	—	3/8	23.5	35.2	—	1	12770-54	19.98
Nipple	—	—	1/2	27	43.2	—	1	12770-59	30.37
Barb	—	—	1/4	16	39.6	—	1	12770-36	20.80
Barb	—	—	3/8	20.6	39.6	—	1	12770-38	24.94

12530 CYLINDER *Graduated, Polypropylene ★*

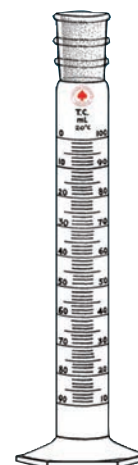
Polypropylene cylinders with octagonal base. Ideal for rugged industrial and school lab use. With single scale graduations for easier, quicker reading. No meniscus means easy to read liquid level. Large octagonal base provides good stability. 10mL size has conical top for easy filling. Autoclavable, however repeated autoclaving may affect accuracy. May also be sterilized by standard chemical methods.

Cap., mL	Subdiv., mL	Quantity	Order Code	Each	Case Price
10	0.1	Each or case of 24	12530-03	4.33	103.81
25	0.5	Each or case of 24	12530-05	5.26	126.12
50	1.0	Each or case of 12	12530-07	6.80	81.57
100	1.0	Each or case of 12	12530-09	8.39	100.72
250	2.0	Each or case of 12	12530-11	9.37	112.39
1000	10	Each or case of 6	12530-15	17.98	107.85
2000	10	Each or case of 4	12530-17	32.60	130.39


CYLINDERS
6195 CYLINDER *Graduated ♠*

With full length § 24/40 top joint, single scale metric graduations. Can be used for distillation receiver. For stoppers (not included), order 8250-12.

Capacity, mL	Subdiv., mL	Qty.	Order Code	Each	Capacity, mL	Subdiv., mL	Qty.	Order Code	Each
50	1	1	6195-13	78.84	250	2	1	6195-21	97.63
100	1	1	6195-16	78.84	500	5	1	6195-24	137.35
					1000	10	1	6195-27	175.23


6196 CYLINDER *Graduated ♠*

With § 35/25 top joint, single scale metric graduations. Can be used for distillation receiver.

Cap., mL	Subdiv., mL	Qty.	Order Code	Each
250	2	1	6196-21	102.13
500	5	1	6196-24	121.73
1000	10	1	6196-27	188.54



Contact Ace for a complete reusable glassware catalog featuring our full listing of cylinders.

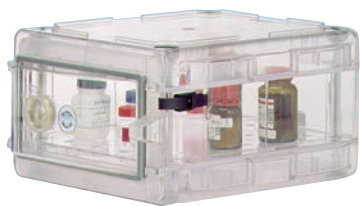


6248 DESICCATOR Plastic ★

Transparent polycarbonate top, white polypropylene bottom. Space-saving design gives an average of 13% greater interior volume. Extra heavy walls aid in avoiding danger of implosion. This shatterproof desiccator will hold a vacuum of 740mm of Hg (29 inches) for a period of 24 hours. Three-way polypropylene stopcock barrel with PTFE plug has a vacuum draw that accepts 1/4-inch I.D. tubing. Third port allows turbulence-free vacuum release. Neoprene O-ring seals lid to bottom and does not need grease. Supplied with perforated polypropylene plate, 3/8-inch (3.2mm) thick with 1/8-inch diameter perforations for air transfer. Packed 4 per case.

Size	Flange O.D., mm (in.)	Inside Dia., mm (in.)	Plate Size, mm	Overall Height, mm (in.)	Max. Dist. Above Plate, mm (in.)	Order		Order			
						Qty.	Code	Each	Qty.	Code	Each
A	171 (6-3/4)	149 (5-7/8)	140	206 (8-1/8)	121 (4-3/4)	1	6248-12	74.37	4	6248-31	297.48
B	230 (9-1/16)	197 (7-3/4)	190	260 (10-1/4)	157 (6-3/16)	1	6248-15	99.07	4	6248-35	396.33
C	273 (10-3/4)	240 (9-7/16)	230	311 (12-1/8)	197 (7-3/4)	1	6248-21	135.30	4	6248-39	541.17

6252 DESICCATOR CABINET Horizontal Profile, Clear ★



Stackable, clear plastic Secador™ desiccator cabinet, perfect for cramped locations. Can be safely stacked up to three high. Cabinet is completely transparent with built-in Hygrometer. Patented sealed construction — for air-tight, dust- and moisture-free storage. One latch: provision for lock or tamper evident seal. Use any desiccant. Internal volume: 0.75 cu. ft. Door opening is 12.3 H x 8.9 W Inches (31cm x 22.5cm). Overall dimensions: 8.4 H x 13.4 W x 16.3 D Inches (21.3 x 34.1 x 41cm). Shipping weight: 15.9 lb (7.2 Kg).

Qty.	Order Code	Each
1	6252-25	233.45

6253 DESICCATOR CABINET Horizontal Profile, Blue ★



Stackable, blue plastic Secador™ desiccator cabinet, perfect for cramped locations. Can be safely stacked up to three high. Cabinet is blue with clear door and built-in hygrometer. Patented sealed construction — for air-tight, dust- and moisture-free storage. One latch: provision for lock or tamper evident seal. Use any desiccant. Internal volume: 0.75 cu. ft. Door opening is 12.3 H x 8.9 W inches (31cm x 22.5cm). Overall dimensions: 8.4 H x 13.4 W x 16.3 D inches (21.3 x 34.1 x 41cm). Shipping weight: 15.9 lb (7.2 Kg).

Qty.	Order Code	Each
1	6253-35	233.45

6256 DESICCATOR CABINET Vertical Profile ★



Stackable, plastic desiccator cabinet, perfect for cramped locations. Can be safely stacked up to two high. Cabinet offered in clear or blue with clear door and built-in hygrometer. Non-electric unit has three shelves, four shelf positions. Patented sealed construction — for air-tight, dust- and moisture-free storage. Two latches: provision for lock or tamper evident seal. Use any desiccant. Internal volume: 1.9 cu. ft. Door opening is 16.4 H x 8.9 W inches (41.7cm x 22.5cm). Overall dimensions: 20.4 H x 13.4 W x 16.3 D inches (51.8 x 34.1 x 41.4cm). Shipping weight: 23.9 lb (10.9 Kg).

Type	Qty.	Order Code	Each
Clear	1	6256-43	826.12
Blue	1	6256-47	826.12

6257 AUTO-DESICCATOR CABINET *Vertical Profile, Electric* ★

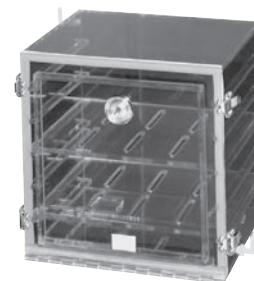
Stackable, plastic Secador™ desiccator cabinet, perfect for cramped locations. Can be safely stacked up to two high. Cabinet offered clear or blue with clear door. With patented dehumidifying module — automatic desiccant regeneration and built-in hygrometer. Unit has three shelves, four shelf positions. Patented sealed construction— for air-tight, dust- and moisture-free storage. Two latches: provision for lock or tamper evident seal. Internal volume: 1.9 cu. ft. Door opening is 16.4 H x 8.9 W inches (41.7cm x 22.5cm). Overall dimensions: 20.4 H x 13.4 W x 16.3 D inches (51.8 x 34.1 x 41.4cm). Shipping weight: 26.4 lb (12 Kg). Operates on 120v.

Type	Qty.	Order Code	Each
Clear	1	6257-50	1139.80
Blue	1	6257-64	1139.80


6259 DESICCATOR CABINET *Amber* ★

Stackable, acrylic desiccator cabinet, ambered to protect contents from harmful U.V. rays. Perfect for cramped locations. Cabinet is completely transparent. Unique “Gasket Guard” system prevents gaskets from taking a set and thus destroying their effectiveness. Shelves are perforated for optimum gas saturation. Single cubicle has two shelves with five possible positions. Supplied with built in hygrometer-(RH). Overall dimensions: 12 x 12 x 12 inches high (30.5 x 30.5 x 30.5cm).

Qty.	Order Code	Each
1	6259-30	485.09


9625 INSTATHERM DESICCATOR *Vacuum Oven*

250mm diameter with bottom Instatherm heated (low voltage: 40 volts, 10 amps maximum). Top is not heated, but has insulation cover. May be used as a vacuum oven continuously at temperatures up to 180°C. The top has an observation stripe for visibility and is supplied with vacuum take-off valve. Insulation is resilient silicone rubber impregnated glass cloth, and electrical connections are covered. Temperatures can be regulated by means of ACE or J-Kem temperature controllers. Also available with uncoated top. Supplied complete with detachable cord, for 250°C operation, 102mm immersion 10/30 ground joint thermometer, and thermometer adapter.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Desiccator	1	9625-04 ★	3085.13	Thermometer	1	8314-31 ♠	66.27
Bottom Cord	1	9698-16 ★	60.34	Complete	1	9625-10 ★	3214.14
Adapter	1	9061-10 ♠	32.62				

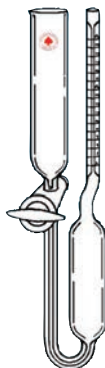


For a complete listing of desiccators, contact Ace for a copy of our reusable glassware catalog.


6282 DILATOMETER A.O.C.S. ♠

For determination of fat and oil constants. Described in A.O.C.S., Method Cd 10-57. Total volume of precision bore capillary is $1.400\text{mL} \pm 0.015\text{mL}$. The smallest graduation is 0.005mL . Complete with stopper and hooks. Both stopper and tube are numbered.

Qty.	Order Code	Each
1	6282-10	250.18


6284 DILATOMETER Volumetric ♠

For use in any reaction where there is a change in volume. Described in *Experiments in Physical Chemistry*, Shoemaker & Garland, 1962, by McGraw-Hill Book Company, Inc. Experiment 27. Capacity of bath is 75mL, bulb 50mL, with capillary tube graduated from 0.0cm at bottom to 15.0cm at top. I.D. of capillary is 0.6mm. Stopcock is 2mm bore.

Qty.	Order Code	Each
1	6284-10	403.93

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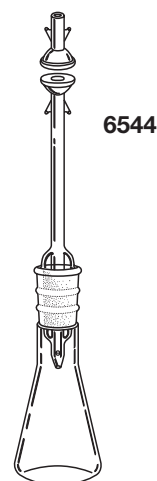
1-800-223-4524

6544 DISTILLATION APPARATUS *Arsenic Limit Test*

Used for limit test for arsenic as described in *European Pharmacopeia*, 1997, page 51. Complete consists of 125mL conical flask with $\text{\textcircled{24}}$ 24/40 joint, a capillary chimney with a pulled tip below $\text{\textcircled{24}}$ 24/40 joint at bottom, #5 flat-ground joint at top with hooks for 3/4-inch springs, and an adapter tube with #5 flat-ground joint with hooks.

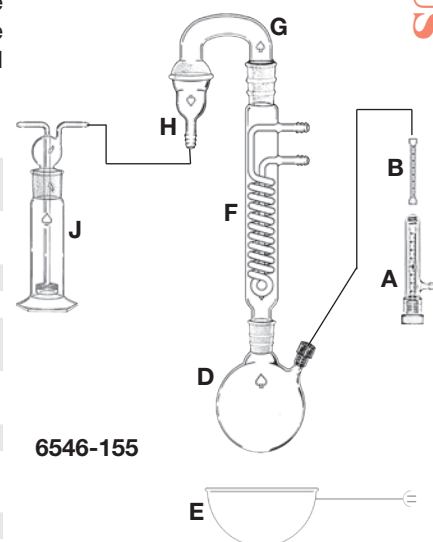
	Qty.	Order Code	Each
Conical Flask, 125mL, $\text{\textcircled{24}}$ 24/40	1	6965-22	◆ 27.96
Chimney, $\text{\textcircled{24}}$ 24/40 – #5 Joint	1	6544-14	★ 241.82
Adapter Tube, #5 joint	1	6544-19	★ 66.08
Springs, S-S, 3/4-inch, pkg./12	1	8030-04	★ 25.10
Complete	1	6544-46	★ 360.96

For springs, see 8030 on page 162.


DISTILLATION APPARATUS
6546 DISTILLATION APPARATUS *Alginates Assay* ★

Alginates assay apparatus similar to system described in *US Pharmacopeia*, 2006, chapter 311. The complete system contains all the parts necessary to carry out the assay with the exception of the vinyl tubing, glass wool and the 20-mesh Zinc bands. The components are listed and described below. Order the complete apparatus or the individual components.

	Qty.	Order Code	Each
A, B. Metering valve and flow meter tube set with size C hose connection for 5/16-inch tubing	1	7481-40	506.44
D. 250 mL round bottom reaction flask with $\text{\textcircled{24}}$ 24/40 outer top joint and #11 Ace-Safe side neck for 5/16-inch tubing connection	1	6936-56	79.12
5/16-inch hose barb connector for above flask	1	5853-10	10.85
E. Glas Col heating mantle for above flask	1	12035-13	180.09
F. 250 mm spiral coil reflux condenser with $\text{\textcircled{24}}$ 24/40 top and bottom joints	1	6020-04	237.02
G. U-shaped connecting tube with $\text{\textcircled{24}}$ 24/40 inner joint one end and $\text{\textcircled{35}}$ 35/25 outer outlet end	1	5125-50	59.25
H. Adapter 35/25 ball to 5/16-inch hose barb	1	5216-35	28.25
J. 250 mL gas washing bottle with coarse porosity fritted disc, 5/16-inch outlet to tubing	1	7163-16	247.63
Complete	1	6546-155	1278.97
Optional Equipment:	Qty.	Order Code	Per Box
5/16-inch vinyl tubing for the above set-up	50	12679-20	53.56

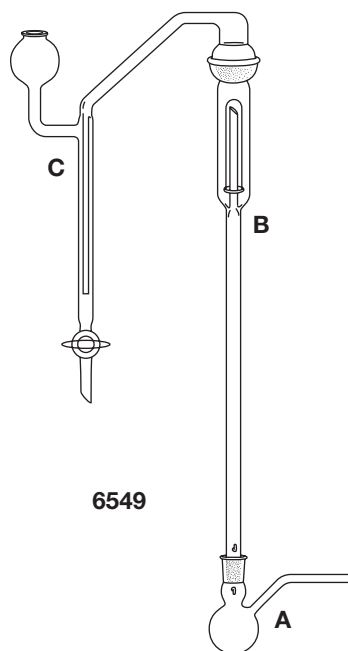


6547


6547 DISTILLATION APPARATUS *Congealing Temperature* ★

Similar to congealing temperature apparatus described in *U.S. Pharmacopeia*, 1995, page 1780, except this apparatus is supplied with Ace-Threds in place of rubber stoppers, where practical. #50 thread at center holds a test tube with a #25 bushing, open-top test tube utilizes a rubber stopper to secure a thermometer and wire stirrer, one side port has a #7 Ace-Thred for a thermometer, other side port is a 22mm I.D. opening for access to the 125mm O.D. x 150mm high cylinder. Applicable to substances that melt between -20° and 150°C.

	Qty.	Order Code	Each
Main Chamber, #50 to #25 Center Neck, #7 and 22mm Side Necks, 12.5cm O.D. x 15cm high	1	6547-10	569.97
Test Tube, 25mm x 200mm	1	6547-14	89.46
Bushing, Nylon, #7	1	5029-10	2.85
Bushing, Nylon, #25	1	7506-10	21.17
Connector, Nylon, #50-#25, w/stopper	1	6547-22	84.90
Wire Stirrer, 30cm long	1	6547-25	38.59
Complete	1	6547-45	806.94



6549

6549 DISTILLATION APPARATUS *Methoxy Determination* ★

Used for methoxy determination as described in *U.S. Pharmacopeia*, 1995, page 1742. Complete consists of 20mL boiling flask with $\text{F} 14/20$ joint and a capillary side arm, scrubber trap column with $\text{F} 14/20$ inner and $\text{S} 35/20$ socket, and an absorption tube with $\text{S} 35/20$ ball joint and a 2mm bore glass stopcock. Flask and column supplied with hooks for spring connection.

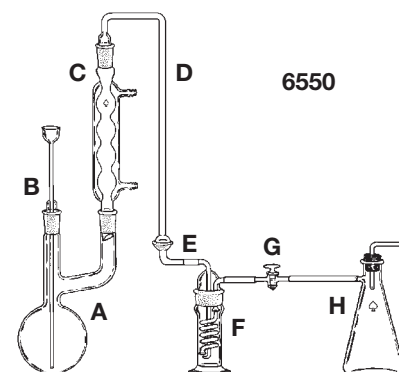
	Qty.	Order Code	Each
A Boiling Flask, 20mL, $\text{F} 14/20$	1	6549-04	99.00
B Scrubber Column-Trap, $\text{F} 14/20$ - $\text{S} 35/20$	1	6549-11	261.92
C Absorption Tube, $\text{S} 35/20$, 2mm Bore	1	6549-23	310.12
Springs, Stainless Steel, 1-1/4-inch	2	8030-12	26.02
Complete	1	6549-45	697.06

6550 DISTILLATION APPARATUS *Cyanide* ♠

Distillation apparatus for converting simple and most complex cyanides into HCN, and for isolating cyanide from most interferences before measuring by titration or colorimetric analysis in the examination of industrial wastes and other water. Method is described in *Standard Methods for the Examination of Water and Wastewater*, 20th Edition, 1998.

Apparatus consists of a 500mL Claisen flask with 24/40 joints, thistle tube, Allihn condenser, connecting tube 24/40 – 18/7 , elbow connector 18/7 , 270mL spiral gas washer, stopcock and suction flask.

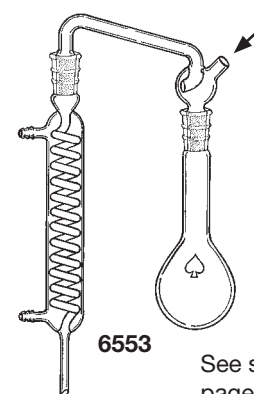
	Qty.	Order Code	Each
A Claisen Flask	1	6550-02	117.44
B Thistle Tube	1	6550-06	58.52
C Condenser	1	5945-12	112.64
D Connecting Tube	1	6550-14	60.79
E Elbow Connector	1	6550-18	24.53
F Gas Washer	1	7167-30	470.14
G Stopcock	1	8137-04	62.86
H Suction Flask	1	6550-27	33.57
Complete	1	6550-50	940.49



6553 DISTILLATION APPARATUS *Ammonia* ♠

Generally used for the determination of ammonia in water. Joints are 24/40 . Condenser uses 3/8-inch I.D. tubing, size D hose connections. See page 7 for more detailed hose connection information.

Flask Capacity, mL	300	500	800				
Condenser Lgth., mm	200	300	300				
	Qty.	Order Code	Each	Order Code	Each	Order Code	Each
Flask	1	6967-25	42.60	6967-26	45.77	6967-27	52.01
Condenser	1	5979-12	137.20	5979-14	154.31	5979-14	154.31
Connector Tube	1	6553-02	145.49	6553-02	145.49	6553-02	145.49
Complete	1	6553-05	325.29	6553-10	345.57	6553-15	351.81



9311 STILL HEAD *Short Path* ♠

Jacketed distillation head for distilling samples up to 3mL. Jacket allows positioning of a coolant such as dry ice/acetone at site of desired condensation, thus reducing loss of valuable sample. Distillate can be removed with a Pasteur pipet. With outer 14/20 joint at top and 14/20 inner at bottom. Measures approximately 8cm wide, 11cm high. Related items for a complete short path still include: condenser, jacketed, 14/20 joints (9261-02); thermometer adapter, #7 Thread— 14/20 (5028-25); and flask, pear shaped, 5mL, 14/20 (9477-02).

Qty.	Order Code	Each
1	9311-15	194.72





9313

9313 STILL *Short Path, Firestone*, with Jacket ♠*

Zero holdup, no-splash, short path still for small quantity distillations with the accuracy of larger stills. Improved design eliminates even the minimal holdup experienced with original short path stills by further reducing wetted surfaces and travel paths. Added feature is the splash guard at bottom of head/flask joint that gives best protection against splash up. With cooling jacket on head.

Sensitivity is improved by a low mass immersion stem and joint combined with an optimized bulb volume. Joints on head and cow receiver are $\text{F} 14/20$. Flask is 10mL, with $\text{F} 14/20$ center, $\text{F} 10/18$ side neck. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body, $\text{F}14/20$	1	9313-12	192.10
Cow Receiver, $\text{F}14/20$	1	9317-11	159.93
Distillation Flask, 10mL, $\text{F}14/20-10/18$	1	9481-04	46.20
Bleed Tube, $\text{F}10/18$	1	9317-17	14.88
Complete	1	9313-30	413.11

*Designed by Dr. Raymond Firestone



9315

9316-04

9477-02

9315 STILL *Short Path, Minimum Hold-Up, $\text{F}10/18$ Joint ♠*

Supplied as shown with one-piece, 9317-11 cow receiver with four 3mL arms. Order optional 9316-04 cow receiver that accommodates four 9477-02, 5mL mini-flasks. Standard taper joint sizes are $\text{F} 14/20$ with $\text{F} 18/10$ on the tube adapter and flask side neck. Gas inlet tube is positioned in distillation flask with a 5028-24 Ace-Thred adapter. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body, $\text{F}14/20$	1	9315-05	189.93
Cow Receiver, $\text{F}14/20$	1	9317-11	159.93
Distillation Flask, 10mL, $\text{F}10/18$	1	9481-30	46.41
Gas Inlet Tube	1	9315-08	9.21
Threaded Adapter, $\text{F}10/18$	1	5028-24	28.31
Complete	1	9315-10	433.79

OPTIONAL PARTS FOR 9315

Cow Receiver, $\text{F}14/20$	1	9316-04	117.27
Receiver Flask, 5mL (4), $\text{F}14/20$	1	9477-02	23.44

9316 DISTILLATION APPARATUS *Short Path*

A still designed for small quantities where holdup between flask and receiver must be minimized but where it is also desired to measure vapor temperature with an accuracy compared to large apparatus.

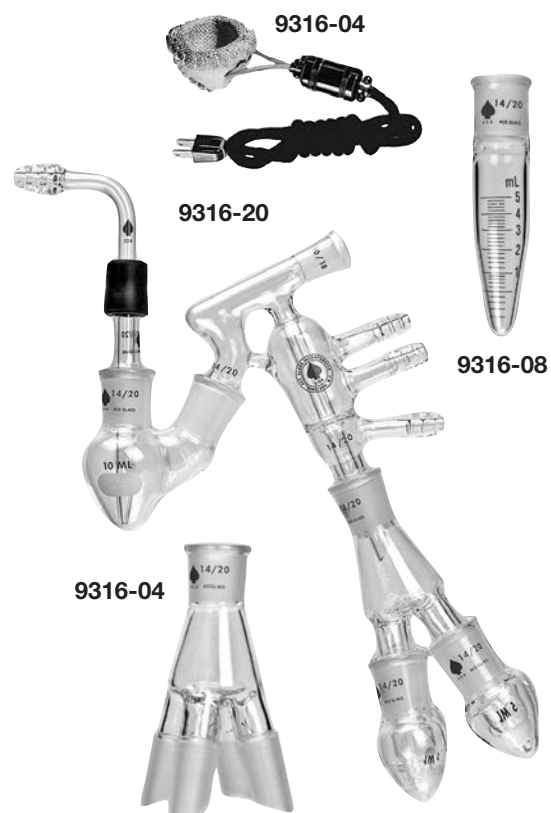
- Physical carry-over is practically eliminated by impingement.
- Condenser delivery tube is straight through.
- Condensate drops directly into one of the four receiver flasks attached to cow receiver and held in place with Delrin clips (supplied). Cow receiver is held in place in the same way. Optional graduated receiver may be substituted for pear shaped flasks.

Upper hose connections are for water lines, lower connection is for vacuum or vent. The center joint of the two-neck pear-shape flask is equipped with an adjustable gas inlet tube. All joints are $\text{\textcircled{14/20}}$. Size A hose connections for 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body, $\text{\textcircled{14/20}}$	1	9316-02	♠ 198.13
Cow Receiver, $\text{\textcircled{14/20}}$	1	9316-04	♠ 117.27
Gas Inlet Tube, $\text{\textcircled{14/20}}$	1	9316-06	♠ 30.00
Receiver Flask, 5mL (4), $\text{\textcircled{14/20}}$	1	9477-02	♠ 23.44
Distillation $\text{\textcircled{14/20}}$ Flask, 10mL, $\text{\textcircled{14/20}}$	1	9479-05	♠ 48.48
Complete	1	9316-20	♠ 525.19

OPTIONAL PARTS FOR 9316

Graduated receivers, capacity 5 mL, 0-1 mL x 0.1, 1-5 mL x 0.2	1	9316-08	♠ 38.18
Glas-Col Mantle, 10 mL	1	9516-04	★ 155.10



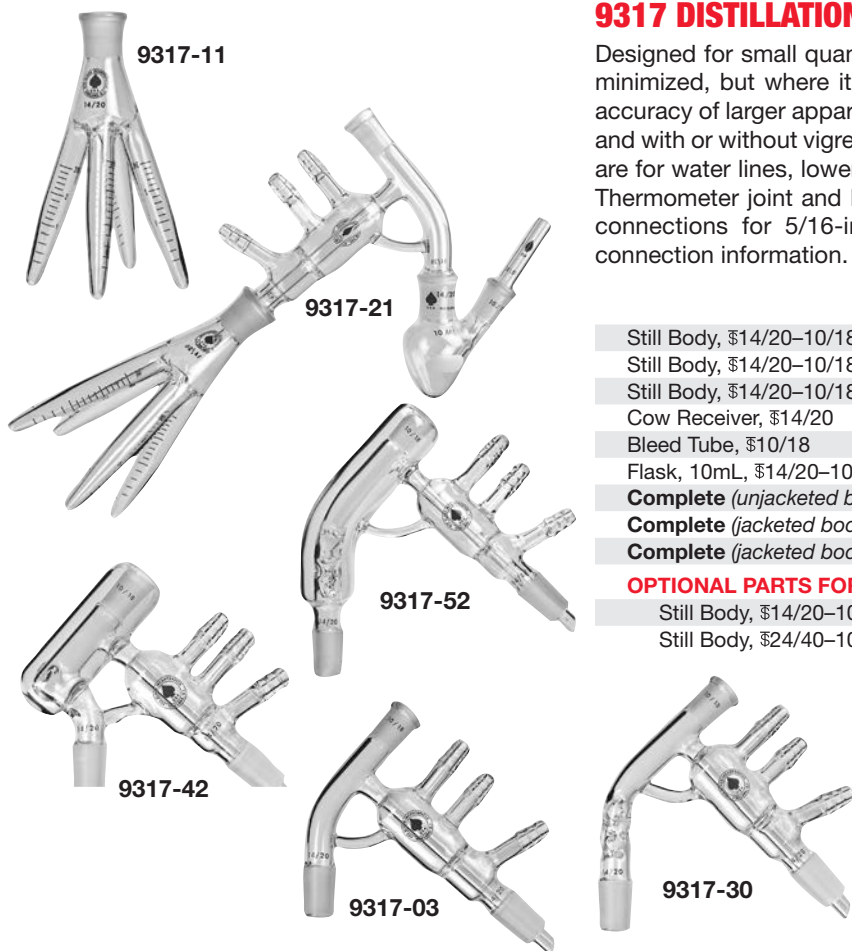
9317 DISTILLATION APPARATUS *Short Path* ♠

Designed for small quantities where holdup between flask and receiver must be minimized, but where it is also desired to measure vapor temperature with the accuracy of larger apparatus. Still body is available with or without vacuum jacket and with or without vigreux indents for greater efficiency. Upper hose connections are for water lines, lower connection for vacuum or vent. Main joints are F 14/20. Thermometer joint and bleed tube are F 10/18. One-piece receiver. Size A hose connections for 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body, F 14/20–10/18 (<i>unjacketed</i>)	1	9317-03	195.58
Still Body, F 14/20–10/18 (<i>jacketed</i>)	1	9317-42	407.96
Still Body, F 14/20–10/18 (<i>jacketed with indents</i>)	1	9317-52	427.22
Cow Receiver, F 14/20	1	9317-11	159.93
Bleed Tube, F 10/18	1	9317-17	14.88
Flask, 10mL, F 14/20–10/18	1	9481-04	46.20
Complete (<i>unjacketed body</i>)	1	9317-21	416.59
Complete (<i>jacketed body</i>)	1	9317-50	628.97
Complete (<i>jacketed body with indents</i>)	1	9317-60	648.23

OPTIONAL PARTS FOR 9317

Still Body, F 14/20–10/18 (<i>unjacketed with indents</i>)	1	9317-30	200.99
Still Body, F 24/40–10/18 (<i>unjacketed with indents</i>)	1	9317-35	226.91



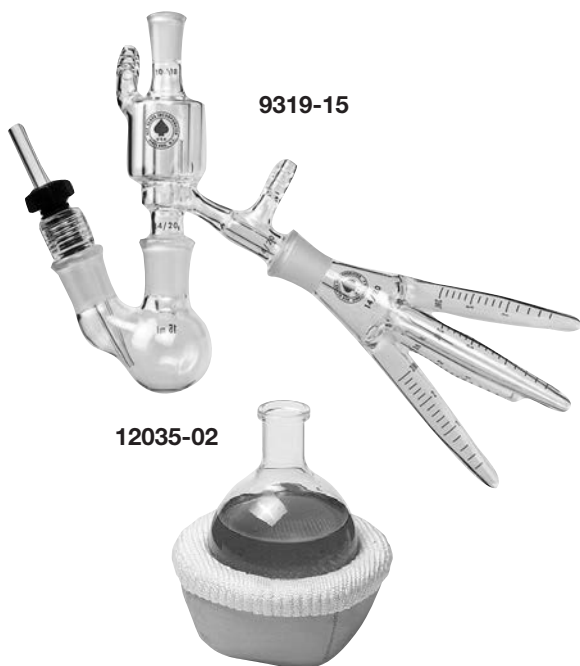
9319 STILL (60mm) *Short Path, Low Hold-Up* ♠

A short path still designed to be effective with high boiling materials at low pressures, where moderate foaming can be tolerated as well as slight bumping. A fine tip adjustable gas inlet tube can be used for stirring or as a foam breaker. One-piece cow receiver with 2.5mL measuring tube supplied with complete unit. The 9316 cow receiver with 9477-02, 5 mL flasks or 9316-08 graduated receiver can be substituted for the one-piece receiver. Main joints are F 14/20. Size A hose connections for 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body	1	9319-02 ♠	281.55
Cow Receiver, F 14/20, 3mL Tubes	1	9317-11 ♠	159.93
Distillation Flask, 10mL, F 14/20–10/18	1	9464-24 ♠	48.86
Gas Inlet Tube 2.5mL	1	9315-08 ♠	9.21
Threaded Adapter, F 10/18	1	5028-24 ♠	28.31
Complete	1	9319-15 ♠	527.86

OPTIONAL PARTS FOR 9319

Cow Receiver-jointed, F 14/20	1	9316-04 ♠	117.27
Receiver Flasks (5mL), F 14/20	1	9477-02 ♠	23.44
Graduated receivers, capacity 5 mL, 0-1 mL x 0.1, 1-5 mL x 0.2	1	9316-08 ♠	38.18
Mantle, Glas-Col (10mL)	1	12035-02 ★	142.48



6554 STILL *Short Path, with 24/40 Joints ♠*

Full size 24/40 jointed, low holdup, short path still, available in plain version or jacketed with indents. Extension tube from still body allows positioning of drop directly over receiver flask. Gas inlet tube is positioned in distillation flask with 5028 adapter and secured with a #7 Ace-Thred. Thermometer joint is 10/30, all other joints are 24/40. Complete item consists of 500mL distillation flask, still body, cow receiver, gas inlet tube, threaded adapter, (3) 250mL receiver flasks. Size D hose connections for 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Body (<i>unjacketed</i>)	1	6554-06	220.56
Still Body (<i>jacketed with indents</i>)	1	6554-08	429.67
Cow Receiver (3 necks)	1	6554-10	180.40
Gas Inlet Tube	1	6554-14	9.80
Threaded Adapter	1	5028-30	28.41
Dist. Flask, 2 Neck, 24/40, 500mL	1	6927-22	79.59
Receiver Flasks, Single Neck, 24/40, 250mL	3	6887-24	32.50
Complete (<i>unjacketed body</i>)	1	6554-48	616.26
Complete (<i>jacketed body with indents</i>)	1	6554-50	825.37


6555 DISTILLATION APPARATUS *Steam, Nielsen-Kryger, Improved Version*

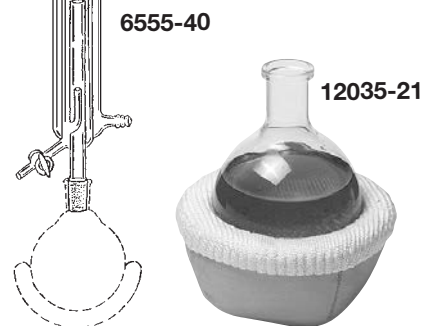
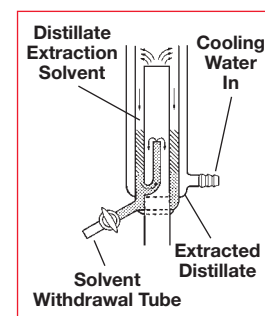
A steam distillation apparatus for the exhaustive distillation of pesticides and industrial chemicals from water, sediments and tissue, and the simultaneous extraction of the distillate by a small volume of organic solvent.

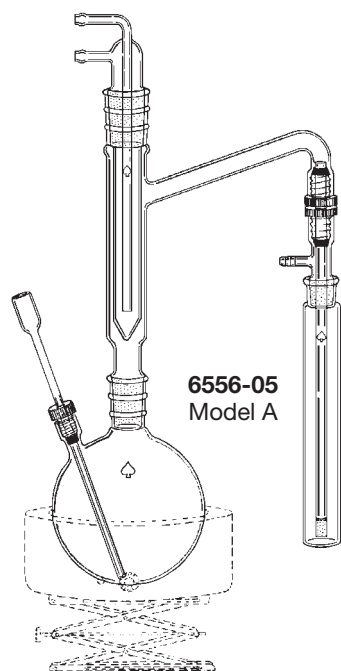
The original modified version was submitted for publication in the *Bulletin of Environmental Contamination and Toxicology*, G.D Veith and L.M. Kiwus, U.S.E.P.A., Environmental Research Laboratory, Duluth, MN.

The addition of a bulb condenser in place of the straight tube condenser results in more efficient condensing and reduces blowout. Also, the first bulb above the chimney is larger to avoid choking.

Dimensions of condenser are 60mm x 500mm with 24/40 joints and a solvent capacity of 15mL. Stopcock is 2mm bore 1:5 PTFE. Complete unit consists of condenser, 2 liter flask and heating mantle. Size D hose connections for 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Condenser, only	1	6555-40	★ 593.59
Flask, 2000mL, only	1	6887-28	♠ 49.57
Mantle, only	1	12035-21	★ 244.98
Complete	1	6555-45	★ 888.14

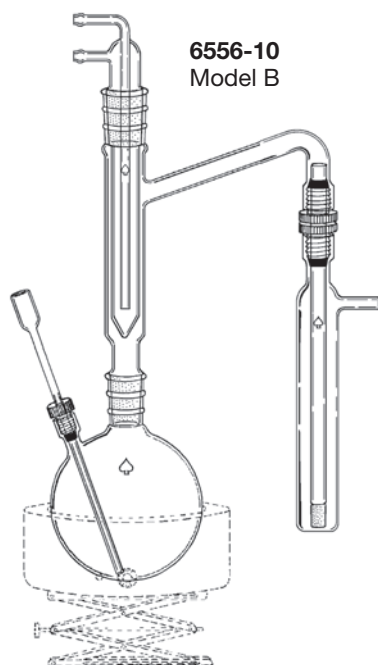



6556-05
 Model A

6556 DISTILLATION APPARATUS *Cyanide, Model A* ♠

Cyanide distillation apparatus used in testing for soluble and insoluble cyanides in water. Flask is 1000mL with $\text{J}24/40$ joint and #7 Ace-Thred that permits variable depth positioning of fill tube. Fill tube has been reduced in diameter to retard "boil back" or splattering that occurs with conventional tubes. Still head and cold finger have a $\text{J}29/42$ joint and a #11 Ace-Thred on the medium wall side arm. Two #11 bushings, back to back, hold the threaded adapter to still head by compressing PTFE ferrules against the glass dispersion tube. Because of this feature, the dispersion tube depth is adjustable inside the trap and the fritted end need not be in contact with caustic solutions when not necessary. This will extend the life of the frit and assure consistent dispersion for a longer time. Joint on trap is $\text{J}19/22$. PTFE ferrules are supplied in place of FETFE o-rings for threaded compression fittings.

	Qty.	Order Code	Each
Flask, 1000mL, $\text{J}24/40$, #7 Thred with Bushing	1	6936-44	90.26
Fill Tube	1	6556-07	18.57
Distilling Head only, $\text{J}24/40$, $\text{J}29/42$, #11 Thred	1	6556-12	152.65
Condenser, Finger, $\text{J}29/42$	1	6556-13	111.67
Bushing, #11	2	7506-02	11.39
Adapter, Threaded, #11, $\text{J}19/22$	1	5261-35	46.28
Dispersion Tube, Por. D (10-20 micron)	1	6556-23	52.44
Trap, $\text{J}19/22$	1	6556-26	43.46
Ferrules, one #7, two #11, Per Pkg.	3	6556-33	5.95
Complete	1	6556-05	544.06


6556-10
 Model B

6556 DISTILLATION APPARATUS *Cyanide, Model B* ♠

Similar to Model A, except threaded adapter used to connect still head and trap has been eliminated. Trap is supplied with #11 Ace-Thred for direct connection. As in Model A, dispersion tube depth is still adjustable. Side arm on trap is 8mm O.D. PTFE ferrules are supplied in place of FETFE o-rings for threaded compression fittings.

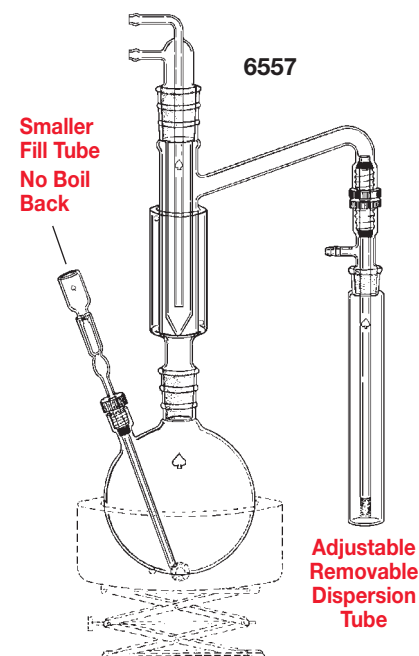
	Qty.	Order Code	Each
Flask, 1000mL, $\text{J}24/40$, #7 Thred, with Bushing	1	6936-44	90.26
Fill Tube	1	6556-07	18.57
Distilling Head only, $\text{J}24/40$, $\text{J}29/42$, #11 Thred	1	6556-12	152.65
Condenser, Finger, $\text{J}29/42$	1	6556-13	111.67
Bushing, #11	2	7506-02	11.39
Dispersion Tube, Por. D (10-20 micron)	1	6556-23	52.44
Trap, #11 Thred	1	6556-27	66.79
Ferrules, one #7, two #11, Per Pkg.	3	6556-33	5.95
Complete	1	6556-10	521.11

For mantles, see page 315. For lab jacks, see page 582.

6557 DISTILLATION APPARATUS *Cyanide ♠*

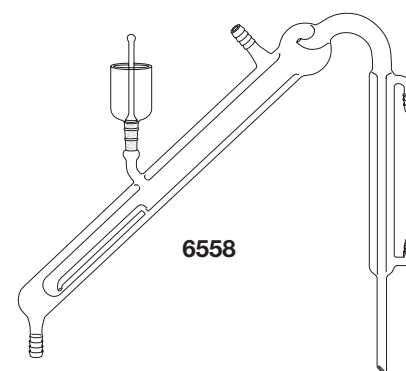
Cyanide distillation apparatus used in testing for soluble and insoluble cyanides in water. Flask is 1000mL with $\text{F} 24/40$ joint and #7 Ace-Thred that permits variable depth positioning of fill tube. Fill tube has been designed with a float valve for added protection against “boil back” or splattering that occurs with conventional tubes. Still head is jacketed and lengthened for more efficient condensing. Head and cold finger have a $\text{F} 29/42$ joint and a #11 Ace-Thred on side arm. Two #11 bushings, back to back, hold the threaded adapter to still head by compressing PTFE ferrules against the adjustable depth glass dispersion tube. Frit on dispersion tube is Porosity D, 10-20 micron. Joint on trap is $\text{F} 19/22$. Side arm on threaded adapter is 8mm.

	Qty.	Order Code	Each
Flask, 1 L, $\text{F} 24/40$, #7 Thred, with Bushing	1	6936-44	90.26
Fill Tube	1	6557-08	118.00
Distilling Head, only, $\text{F} 29/42$, #11 Ace-Thred	1	6557-14	256.99
Condenser, Finger, $\text{F} 29/42$, Size D H/C	1	6557-15	128.50
Bushing, #11	2	7506-02	11.39
Adapter, Threaded, #11, $\text{F} 19/22$	1	5261-35	46.28
Dispersion Tube, Por. D (10-20 micron)	1	6557-24	57.61
Trap, $\text{F} 19/22$	1	6556-26	43.46
Ferrules, PTFE, one #7, two #11, Per Pkg.	3	6556-33	5.95
Complete	1	6557-50	769.83


6558 DISTILLATION APPARATUS *Markham Still ★*

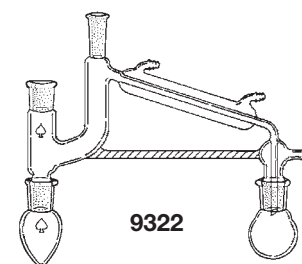
Used for volatile fatty acid test. Fabricated from standard wall tubing throughout. Hose connections on still are 3/8-inch I.D. tubing, size D; on condenser, 5/16-inch or 3/8-inch, size C. See page 7 for more detailed hose connection information.

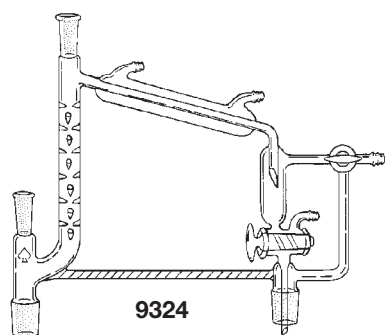
Qty.	Order Code	Complete
1	6558-40	794.37


9322 DISTILLATION APPARATUS ♠

With $\text{F} 10/30$ joint for a 25mm immersion thermometer. All other joints are $\text{F} 14/20$. Hose connections project to rear. Round-bottom and pear-shape flasks supplied with complete unit are 25mL capacity. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

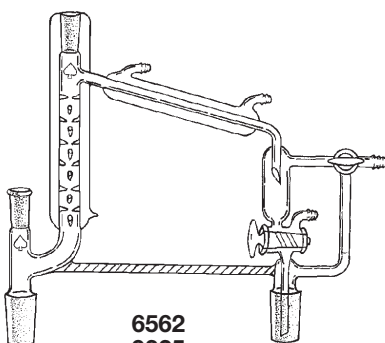
	Qty.	Order Code	Each
Head, Distilling	1	9322-05	303.46
Flask, Round Bottom	1	9458-06	22.96
Flask, Pear Shaped	1	9477-06	23.79
Complete	1	9322-10	350.21



**9324****9324 DISTILLATION APPARATUS** ♠

A compact fractionation unit for distilling small quantities in a vacuum, and for ordinary separation. The indents are positioned to cause the vapor to follow a spiral path, adding to the efficiency of the unit. By use of the three-way stopcock, a manifold arrangement is achieved, making it possible to remove receivers without disturbing the equilibrium of the system. 3/10 joint at top is for 25mm immersion thermometer. All other joints are 3/14 . Stopcocks are 2mm bore. For replacement stopcock plugs, order 8226-99 for double oblique; 8228-09 for T-bore. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

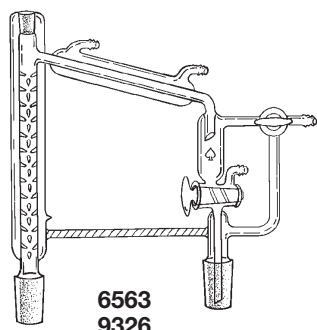
Qty.	Order Code	Each
1	9324-04	554.92

**6562
9325****6562/9325 DISTILLATION APPARATUS** ★

A compact fractionation unit for distilling small quantities in a vacuum, and for ordinary separation. Column, including top joint, is vacuum jacketed. The indents are positioned to cause the vapor to follow a spiral path, adding to the efficiency of the unit. Approximately three theoretical plates at 60mL/hr. Hold up to 1.2mL operating, 0.5mL static. Receiver capacity is 15mL.

By use of the three-way stopcocks, a manifold arrangement is achieved, making it possible to remove receivers without disturbing the equilibrium of the system. 3/10 thermometer joints are for 25mm immersion thermometers. See page 7 for more detailed hose connection information.

Joints	Approx. Column Length, mm	Tubing Size (Inches)	Qty.	Order Code	Each
3/14	114	5/16 (A)	1	9325-06	718.69
3/24	152	5/16 or 3/8 (C)	1	6562-05	876.83

**6563
9326****6563/9326 DISTILLATION APPARATUS** *High Boiling* ★

Useful for separating higher boiling liquids that require a short flask-to-column distance to prevent excessive condensation.

If flask bleed is desired a two-neck flask can be used. Thermometer joint is 3/10 for 9551, 25mm immersion. See page 7 for more detailed hose connection information.

Joints	Approx. Column Length, mm	Tubing Size (Inches)	Qty.	Order Code	Each
3/14	177	5/16 (A)	1	9326-10	780.56
3/24	202	5/16 or 3/8 (C)	1	6563-10	858.26

**6088****6088 SPLITTER** *Distillation, Reflux* ♠

Reflux distillation splitter adapters for all size reactors. Standard taper, inner joint bottom, standard taper, outer joint top. A slight angle to bottom inner standard taper joint allows for addition to reactor heads with angled side necks and keeps splitter straight for flow upward to the condenser. Three standard joint sizes are available. Side valve is 0-10 with a 1/2-inch precision ground bottom take-off that matches 1/2-inch compression fittings. Valve replacement FETFE o-rings are size -011 and -111.

Joints	Qty.	Order Code	Each
3/24	1	6088-08	335.87
3/29	1	6088-10	362.11
3/29	1	6088-12	362.11
3/45	1	6088-14	414.58

9333 CONCENTRIC TUBE COLUMN ★

A high efficiency, low holdup, low pressure drop fractionating column, vacuum jacketed with observation stripe. Same as column supplied with 9331, suitable for samples as small as 2mL. Center tube is removable for cleaning. Double expansion spiral eliminates choking. Joints are $\frac{14}{20}$. Approximately 40 theoretical plates at 80mL/hr. boil-up. Operating pressure drop less than 1mm Hg. Column holdup (approx.): Operating — with 9362 head, 0.6mL at 80mL/hr. Static — with 9362 head, 0.25mL Xylene. Static: Column alone, 0.1mL Xylene. Replacement inner tube, only, 9333-08.

9333


Qty.	Order Code	Complete
1	9333-10	2016.10

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6565

6565 DISTILLATION COLUMN *Perforated Plate*

Perforated plate column, without jacket. Holes are .032-inch diameter.

Plate						Plate					
No. of	Dia.,	§		Order	Each	No. of	Dia.,	§		Order	Each
Plates	mm	Joints	Qty.	Code		Plates	mm	Joints	Qty.	Code	
5	28	29/42	1	6565-02	826.25	5	50	55/50	1	6565-32	1497.80
10	28	29/42	1	6565-04	1364.91	10	50	55/50	1	6565-34	2493.90
15	28	29/42	1	6565-06	1895.30	15	50	55/50	1	6565-36	3360.95
20	28	29/42	1	6565-08	2439.27	20	50	55/50	1	6565-38	4292.05
30	28	29/42	1	6565-10	3903.43	30	50	55/50	1	6565-40	6539.86
5	33	34/45	1	6565-12	1002.70	5	75	71/60	1	6565-42	3160.04
10	33	34/45	1	6565-14	1960.65	10	75	71/60	1	6565-44	6195.25
15	33	34/45	1	6565-16	2784.98	15	75	71/60	1	6565-46	7767.08
20	33	34/45	1	6565-18	3858.82	20	75	71/60	1	6565-48	9746.52
30	33	34/45	1	6565-20	6007.08						
5	40	45/50	1	6565-22	1312.40	5	100	103/60	1	6565-52	5630.54
10	40	45/50	1	6565-24	2504.09	10	100	103/60	1	6565-54	8843.71
15	40	45/50	1	6565-26	3435.37	15	100	103/60	1	6565-56	12358.00
20	40	45/50	1	6565-28	4586.78	20	100	103/60	1	6565-58	14868.80
30	40	45/50	1	6565-30	6070.26						

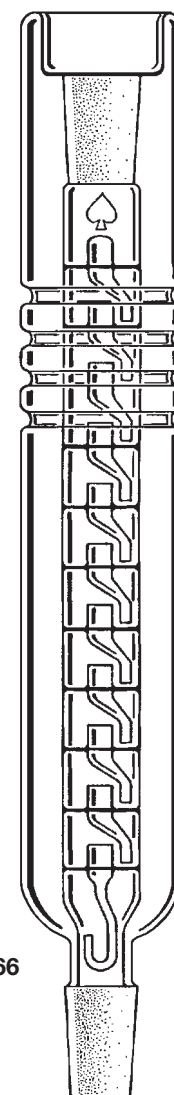
Column Lengths

Catalog No.	No. of Plates	Plate Diameter, mm	§ Joints	Effective Length, mm	Overall Length, mm
6565-02/6566-03	5	28	29/42	140	245
6565-04/6566-05	10	28	29/42	280	385
6565-06/6566-07	15	28	29/42	420	525
6565-08/6566-09	20	28	29/42	560	665
6565-10/6566-11	30	28	29/42	840	945
6565-12/6566-13	5	33	34/45	165	270
6565-14/6566-15	10	33	34/45	330	435
6565-16/6566-17	15	33	34/45	495	600
6565-18/6566-19	20	33	34/45	660	765
6565-20/6566-21	30	33	34/45	990	1095
6565-22/6566-23	5	40	45/50	160	325
6565-24/6566-25	10	40	45/50	360	525
6565-26/6566-27	15	40	45/50	560	725
6565-28/6566-29	20	40	45/50	760	925
6565-30/6566-31	30	40	45/50	1160	1325
6565-32/6566-33	5	50	55/50	200	400
6565-34/6566-35	10	50	55/50	450	650
6565-36/6566-37	15	50	55/50	700	900
6565-38/6566-39	20	50	55/50	950	1150
6565-40/6566-41	30	50	55/50	1450	1650
6565-42/6566-43	5	75	71/60	260	445
6565-44/6566-45	10	75	71/60	585	770
6565-46/6566-47	15	75	71/60	910	1095
6565-48/6566-49	20	75	71/60	1235	1420
6565-52/6566-53	5	100	103/60	300	530
6565-54/6566-55	10	100	103/60	675	905
6565-56/6566-57	15	100	103/60	1050	1280
6565-58/6566-59	20	100	103/60	1425	1655

6566 DISTILLATION COLUMN *Perforated Plate, Internal Bellows, Silvered*

Similar to 6565 except with vacuum-jacketed internal bellows and silvered.

Plate						Plate					
No. of Plates	Dia., mm	§ Joints	Qty.	Order Code	Each	No. of Plates	Dia., mm	§ Joints	Qty.	Order Code	Each
5	28	29/42	1	6566-03	1144.07	5	50	55/50	1	6566-33	2114.23
10	28	29/42	1	6566-05	1839.79	10	50	55/50	1	6566-35	4019.66
15	28	29/42	1	6566-07	2547.38	15	50	55/50	1	6566-37	4764.11
20	28	29/42	1	6566-09	3468.73	20	50	55/50	1	6566-39	5656.50
30	28	29/42	1	6566-11	4553.51	30	50	55/50	1	6566-41	7831.92
5	33	34/45	1	6566-13	1783.48	5	75	71/60	1	6566-43	3919.72
10	33	34/45	1	6566-15	2354.16	10	75	71/60	1	6566-45	6584.19
15	33	34/45	1	6566-17	3682.93	15	75	71/60	1	6566-47	9000.72
20	33	34/45	1	6566-19	4527.84	20	75	71/60	1	6566-49	13778.39
30	33	34/45	1	6566-21	6094.62						
5	40	45/50	1	6566-23	2189.43	5	100	103/60	1	6566-53	6498.08
10	40	45/50	1	6566-25	3374.81	10	100	103/60	1	6566-55	9423.57
15	40	45/50	1	6566-27	4346.23	15	100	103/60	1	6566-57	13778.39
20	40	45/50	1	6566-29	5599.83	20	100	103/60	1	6566-59	15701.42
30	40	45/50	1	6566-31	6280.09						



6566

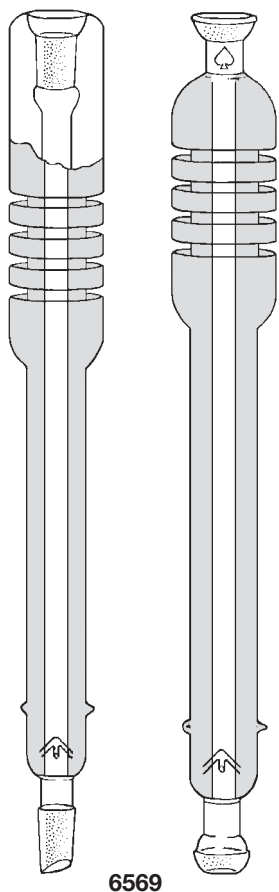
9335 DISTILLATION COLUMN ♠

Vacuum jacketed and silvered with observation stripe. Also available unsilvered. With an enlarged bulb knockdown section that removes high boiling ends without choking. Length of packing section is 100 or 200mm, I.D. approximately 10mm. With indents to hold packing.

§ Joint	Length, mm	Qty.	Order Code	Each
14/20	100	1	9335-02	451.79
14/20	200	1	9335-08	537.83



9335



6569 DISTILLATION COLUMN *Vacuum Jacketed*

With internal expansion bellows. Baked out and evacuated to 10⁻⁶ Torr. All ⌘ top joints are jacketed. Spherical joints are not jacketed in order to allow for clamping. All vacuum jacketed distilling columns are furnished with internal-type expansion bellows to compensate for the unequal expansion between the inside tube and the outer jacket and will withstand a temperature differential of 180°C. All columns, regardless of length, are supplied with the proper number of bellows to withstand the above temperature differential at all times. Standard silvered columns are supplied with an observation stripe running down the entire length of the jacket.

The packing support is a conical tripod in which the free area is at least 90% of the diametrical area. ***In addition to the columns listed, we also have facilities for fabricating a complete line of special vacuum jacketed units to your specifications.*** This includes additional bellows to enable you to maintain temperature differentials greater than 180°C. When ordering a special column, please specify the highest temperatures which may be reached in the column, so that we can supply the unit with sufficient bellows to take care of the expansion which may take place during distillation.

Length, mm	I.D.,mm	Joints	Qty.	Order Code	Each
610	127	⌘ 24/40	1	6569-40	Priced Upon Request
610	254	⌘ 29/42	1	6569-50	
610	381	⌘ 35/25	1	6569-60	
910	127	⌘ 24/40	1	6569-42	
910	254	⌘ 29/42	1	6569-52	
910	381	⌘ 35/25	1	6569-62	
1220	127	⌘ 24/40	1	6569-44	
1220	254	⌘ 29/42	1	6569-54	
1220	381	⌘ 35/25	1	6569-64	

6569



6572 DISTILLATION COLUMN *Hempel ♠*

With ⌘ joints and indentations to support packing. Length in millimeters refers to the length from the packing support to the bottom of the outer ground joint.

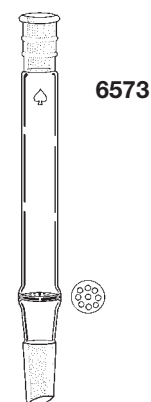
Length, mm (In.)	I.D., mm	⌘ Joints	Qty.	Order Code	Each	Length, mm (In.)	I.D., mm	⌘ Joints	Qty.	Order Code	Each
203 (8)	24	24/40	1	6572-02	63.15	457 (18)	24	24/40	1	6572-10	74.22
254 (10)	24	24/40	1	6572-04	66.14	508 (20)	24	24/40	1	6572-12	74.36
305 (12)	24	24/40	1	6572-06	61.49	610 (24)	25	29/42	1	6572-14	93.51
380 (15)	24	24/40	1	6572-08	72.71						

Columns can be custom designed and quoted to meet your specifications. Non-silvered columns are available on special order.

6573 DISTILLATION COLUMN *Hempel* ♠

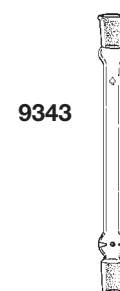
With $\text{\textcircled{F}}$ joints and perforated glass disc for packing support. Length in millimeters refers to the length from the packing support to the bottom of the outer ground joint.

Length, mm	I.D., mm	$\text{\textcircled{F}}$ Joints	Qty.	Order Code	Each
203	24	24/40	1	6573-04	148.58
254	24	24/40	1	6573-06	152.21
305	24	24/40	1	6573-08	163.65
380	24	24/40	1	6573-10	173.47


9343 DISTILLATION COLUMN *Plain* ♠

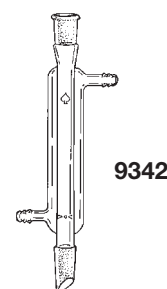
Plain type, 10mm I.D. with indents for supporting glass beads or other packing.

$\text{\textcircled{F}}$ Joints	Length, mm	Qty.	Order Code	Each
14/20	130	1	9343-06	50.04
14/20	250	1	9343-09	50.86


9342 DISTILLATION COLUMN *Jacketed* ♠

Jacket length 250mm, with indents for supporting glass beads or other packing. Use with 5/16-inch or 3/8-inch I.D. tubing, size B hose connection. See page 7 for more detailed hose connection information.

$\text{\textcircled{F}}$ Joints	Qty.	Order Code	Each
14/20	1	9342-01	104.33


6575 DISTILLATION COLUMN *Snyder* ♠

Floating ball type, with $\text{\textcircled{F}}$ joints. Each section is approximately 50mm long.

Column Length/ Chamber Length, mm	No. of Sections	I.D., mm	$\text{\textcircled{F}}$ Joints	Qty.	Order Code	Each
225 x 50	3	24	24/40	1	6575-02	106.37
375 x 50	6	24	24/40	1	6575-04	146.36
750 x 50	12	24	24/40	1	6575-06	211.61



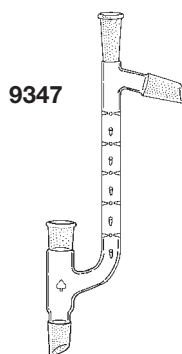


6578
9345

6578/9345 DISTILLATION COLUMN *Vigreux* ♠

Length in millimeters refers to the effective length of the column as measured from the lowest to the highest indent of the column.

Length, mm (In.)	I.D., mm	⌘ Joints	Qty.	Order Code	Each
100 (4)	16	14/20	1	9345-08	69.06
130 (5.2)	16	14/10	1	9345-09	69.92
100 (4)	19	19/22	1	9345-10	72.77
130 (5.2)	19	19/22	1	9345-11	74.68
170 (6.8)	19	19/22	1	9345-13	81.84
203 (8)	24	24/40	1	6578-04	78.79
254 (10)	24	24/40	1	6578-06	93.98
305 (12)	24	24/40	1	6578-08	97.72
381 (15)	24	24/40	1	6578-10	132.58
457 (18)	24	24/40	1	6578-12	141.81
508 (20)	24	24/40	1	6578-14	167.79
610 (24)	24	24/40	1	6578-16	197.00



9347

9347 DISTILLATION COLUMN *Vigreux* ♠

With male drip tip on joint of Claisen side arm and ⌘ 10/30 joint for 25mm immersion thermometer. Other joints are ⌘ 14/20.

⌘ Joints	Length of Indents, mm	Qty.	Order Code	Each
14/20	100	1	9347-02	128.90
14/20	200	1	9347-04	149.31

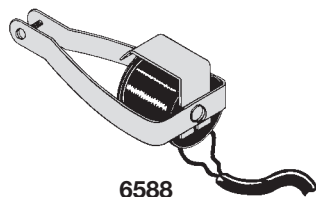


6584

6584 DISTILLATION COLUMN ♠

With honeycomb packing support sealed into column above the bottom joint. Packing cone has hole at bottom for complete drainage. Holes in cone are 3.2mm.

Length, mm (In.)	I.D., mm	⌘ Joints	Qty.	Order Code	Each
406 (16)	19	24/40	1	6584-06	222.19
610 (24)	19	24/40	1	6584-08	238.13



6588

6588 ELECTROMAGNETIC COIL ★

With high permeability core to operate takeoff device on standard automatic distilling heads. Fastened to head with special clamp. Furnished complete with clamp and wires to connect to automatic time switch. For operation at 120 volt, 50/60 Hz AC maximum or 24 volts DC maximum. For intermittent service only; 30 seconds maximum ON, 50% maximum duty cycle. Diameter of core 12.5mm; diameter of coil 38mm; height 32mm.

Qty.	Order Code	Each
1	6588-10	208.08

6590 ELECTROMAGNETIC COIL ★

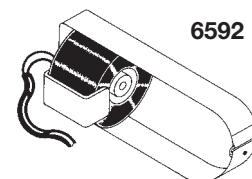
This coil is designed to operate automatic distilling heads which operate on the plunger principle whereby the glass rod is pulled up through the center of the magnet. Supplied complete with necessary wiring to connect into the system. For operation at 120 volts, 50/60 Hz AC maximum or 24 volts DC maximum For intermittent service only; 30 seconds maximum ON, 25% maximum duty cycle. Diameter of hole 12.7mm; Diameter of coil 38mm; height 32mm.


6590

Qty.	Order Code	Each
1	6590-10	144.66

6592 ELECTROMAGNETIC COIL ★

Similar to 6588, for use with large distilling heads. 76mm O.D. by 44mm high, diameter of metal slug 28.6mm. **For intermittent service only.**


6592

Qty.	Order Code	Each
1	6592-10	273.23

6593 ELECTROMAGNETIC COIL

This coil is a potted type "horseshoe" core design to operate large automatic distilling heads, up to 3-1/4-inch (83mm) O.D. with adjustable clamp. Operates at 120 volts, 50/60 Hz AC maximum delivering 24 watts pulling power. For 100% duty cycle operation. Supplied with 6-foot, 3-prong cord and a grounded aluminum cover. Weight: 1-3/4 lbs. Warranty: one-time 90-day unconditional.

Dimensions: 2-3/8 L x 2 W x 1-3/8 D (inches).


6593

Qty.	Order Code	Each
1	6593-40	405.26

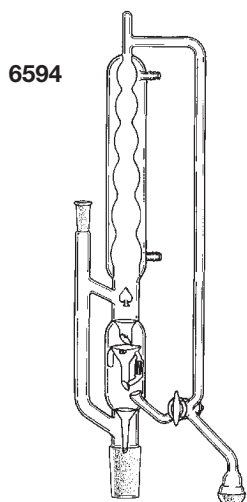
6671 TIMER/CONTROL *Repeat Cycle, Electronic* ★

Repeat cycle timer control, bench top or rack mountable (has clamp for up to 3/4-inch rod), for regulating reflux ratio on distillation heads. Maximum ON/OFF time setting is 0.1 to 6000 seconds. Solid state relay and micro-processor-based, timer control with LCD display. Red output indicator LED. Output: 120v, 10A max., 50/60 Hz or 220v, 10A max., 50/60 Hz. Features include: Front toggle main power switch, fast acting, solid state 10A fuse, Rear power outlet, run/standby-set switch on front, four-digit adjust buttons. Conditional 2-year warranty.

Six-foot grounded neoprene line cord with NEMA plug and operating instructions on case. Light grey case with black front panel measures 114.3mm (4-1/2 inches) wide x 158.7mm (6-1/4 inches) deep x 63.5mm (2-1/2 inches) high. Weight: 1 lbs. 10 oz.


6671

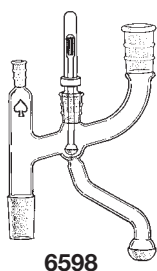
Time Max. Scale	Min.On or Off Setting	Voltage	Qty.	Order Code	Each
0.1-6000 sec.	0.1 sec.	120v	1	6671-14	1236.02



6594 DISTILLATION HEAD *Magnetic* ★

Magnetically operated swinging funnel type, with iron slug totally enclosed. This head maintains reflux ratio constant with changing throughput. The vapor bypass is designed to give accurate thermometer readings. Tapered bulb condenser increases capacity without choking. Side arm joint is $\text{S } 28/12$. Thermometer joint is $\text{S } 10/30$ for 76mm immersion. Stopcock bore is 4mm. Supplied with $\text{S } 29/42$ column joint. Uses ACE 6588 coil, not included. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information. Thermometer not supplied.

Bottom S Joint	Qty.	Order Code	Each
29/42	1	6594-10	1343.88

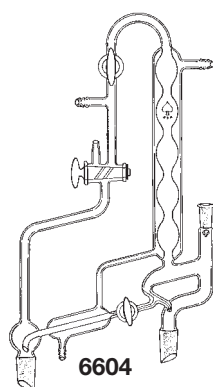


6598 DISTILLATION HEAD *Automatic Reflux Control* ♠

A small, low holdup automatic head which can be completely disassembled for easy cleaning or replacement of parts. Lower column joint and side arm for condenser are $\text{S } 24/40$. Joint on takeoff arm is $\text{S } 28/11$. The plunger guide is $\text{S } 19/38$ and the $\text{S } 10/30$ thermometer joint is for a 76 or 102mm immersion thermometer. Supplied with nylon coil stop for use with 6590 coil. Coil and thermometer not included.

Main S Joints	Qty.	Order Code	Complete
24/40	1	6598-10	530.39

	Qty.	Order Code	Each
Plunger, only	1	6598-04	86.99
Plunger Holder, only	1	6598-06	33.47
Nylon Stop, only	1	6598-08	16.40



6604 DISTILLATION HEAD *Variable Reflux Ratio* ★

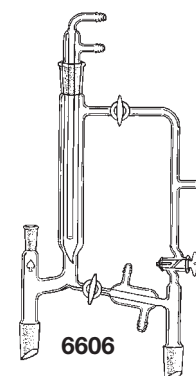
Constructed so that satisfactory operation can be maintained under any pressure condition. $\text{S } 10/30$ thermometer joint takes 76mm immersion thermometer listed under 8314. Side arm joint is $\text{S } 24/40$. Use with 5/16-inch or 3/8-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

Main S Joints	Qty.	Order Code	Each
24/40	1	6604-10	956.61

6606 DISTILLATION HEAD *Hennion Design* ♠

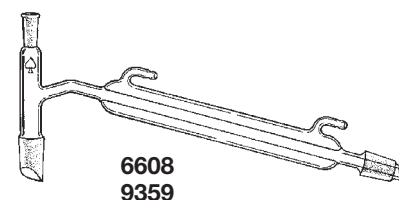
For variable reflux ratio, can be used for operation under vacuum and receiver can be removed without disturbing the system's vacuum. § 10/30 thermometer joint takes 76mm immersion thermometer listed under 8314. Side arm joint is § 24/40. Stopcock bores are 2mm. For cold finger only, see 5960. Use with 5/16-inch or 3/8-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

Main § Joints	Qty.	Order Code	Each
24/40	1	6606-10	739.21


6608/9359 DISTILLATION HEAD ♠

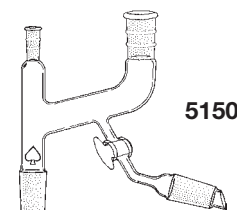
With condenser jacket on side arm. Thermometer joint is § 10/30 (see 8314 for thermometer listing). Side arm is at a 75° angle. See page 7 for more detailed hose connection information.

Condenser Jacket Length, mm	§ Joints	Thermometer Imm., mm	Tubing Size (Inches)	Qty.	Order Code	Each
100	14/20	50	5/16 (A)	1	9359-04	123.03
200	14/20	50	5/16 (A)	1	9359-06	129.53
250	24/40	76	3/8 or 5/16 (C)	1	6608-06	184.95
400	24/40	76	3/8 or 5/16 (C)	1	6608-20	205.95


5150 DISTILLATION HEAD ♠

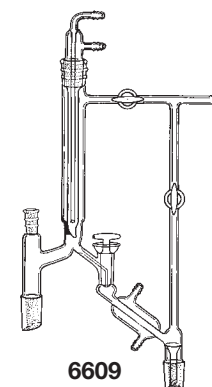
With glass or 1:5 solid PTFE stopcock plug on lower side arm. Top joint on center tube is § 10/30 for 76mm immersion thermometer. All other joints are § 24/40. Takeoff arm is at 75° angle to the vertical. Both plugs are 2mm bore.

Plug Style	§ Joints	Qty.	Order Code	Each
Glass	24/40	1	5150-10	202.72
PTFE	24/40	1	5150-29	222.26


6609 DISTILLATION HEAD *Vacuum Type* ★

With finger type condenser and Newman type stopcock for reflux control. Stopcock manifold and reflux stopcock can be used to isolate head from receiver so that receiver contents can be removed without disturbing the vacuum in the system. Both column joint and receiver joints are § 24/40. Thermometer joint is § 10/30 for 76mm immersion thermometer. Finger condenser is approximately 20.3cm long with § 24/40 joint. Newman type stopcock is 2mm bore; all others are 3mm. For cold finger only, see 5960. Use with 5/16-inch or 3/8-inch I.D. tubing, size C or size D hose connection. See page 7 for more detailed hose connection information. Thermometer not supplied.

§ Joints	Qty.	Order Code	Complete
24/40	1	6609-10	849.71



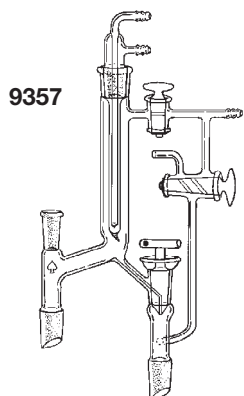


9250

9250 COLD FINGER For Standard Distilling Heads & Systems ♠

Cold Finger accessory for standard distilling heads and systems. This cold finger has an inner joint that fits inside the upper outer joint and tube to provide added cooling ability and faster condensation. Fits into 6606, 6609, and 6613 distillation heads. Has two upper, glass, size A hose connections that take 5/16-inch tubing. See page 7 for more detailed hose connection information.

Length Below Joint, mm	Joint	Tubing Size (Inches)	Qty.	Order Code	Each
80	14/10	5/16 (A)	1	9250-02	67.19
92	14/20	5/16 (A)	1	9250-04	69.19
92	19/22	5/16 (A)	1	9250-08	69.19

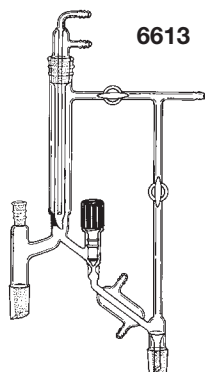


9357

9357 DISTILLATION HEAD ♠

Newman stopcock facilitates reflux ratio adjustment and reduces hold-up on walls; product drops directly into receiver. Stopcocks are arranged for convenient manipulation and are placed so that the head may be used in either right- or left-hand setup. The condenser drip is adjustable for directing reflux into takeoff. Condenser hose connections point to rear. Condenser length is 100mm. Thermometer joint F 10/30, all others are F 14/20. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information. Thermometer not supplied.

F		Head Only		Condenser Only		Complete	
Joints	Qty.	Order Code	Each	Order Code	Each	Order Code	Each
14/20	1	9357-01	460.63	9250-04	69.19	9357-02	529.20

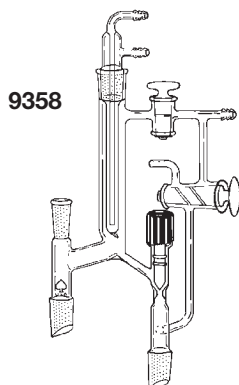


6613

6613 DISTILLATION HEAD Vacuum Type ★

With cold finger type condenser and 0-3mm PTFE stopcock for reflux control. Glass stopcocks on manifold and reflux arms can be used to isolate head from receiver so that receiver contents can be removed without disturbing the vacuum in the system. With condenser on takeoff arm and F 10/30 thermometer joint for 76mm immersion thermometer. Both column joint and receiver joint are F 24/40. Finger condenser is approximately 20.3cm long with a F 24/40 joint. Glass stopcocks are 3mm bore. For cold finger only, see 5960. Use with 5/16-inch or 3/8-inch I.D. tubing, size C or size D hose connection. See page 7 for more detailed hose connection information. Thermometer not supplied.

F Joints	Qty.	Order Code	Complete
24/40	1	6613-12	794.64



9358

9358 DISTILLATION HEAD ★

With cold finger type condenser and 0-3mm PTFE stopcock plug with PTFE ring seals for reflux control. The seals prevent o-ring exposure to corrosive liquids and are backed up by a FETFE o-ring. Thermometer joint is F 10/30, all others are F 14/20. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Head only	1	9358-02	448.40
Condenser only	1	9250-04	69.19
Complete	1	9358-03	517.59

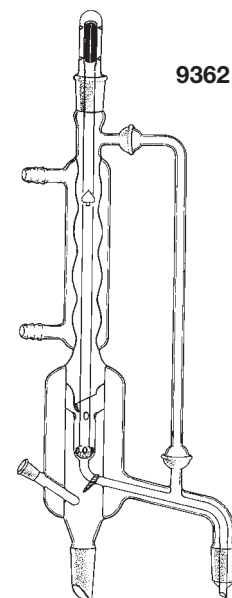
9362 DISTILLATION HEAD ★

Automatic reflux control via solenoid valve arrangement. Reflux control is effected by an adjustable time switch and solenoid takeoff valve. Reflux ratio is thus a time function and is independent of throughput except when a single drop is a significant part of the condensate. Even then, drops can be split by shortening takeoff time and adjusting plunger travel by means of the brass washers provided. Vapors pass for the most part around the outside of the plunger housing to reach the condenser. The condensate is directed to the interior of the housing and returns to the column via holes in the housing at the valve seat. A drip below the plunger seat directs the reflux to the center of the packing. The design is such that viscous liquids like glycerin cause no difficulty. Temperature measurement is by means of a thermocouple or thermometer; a 10/30 side port for 40mm immersion is located in the vapor stream. Vapor velocity prevents reflux from running down the well. Joints are 3/4 14/20. Thermometer not supplied.

Hold-up: Static — 0.2mL for liquids such as toluene or ethanol.
 Dynamic — 0.4mL toluene at 4.5mL/min.

Dimensions — Overall height approximately 350mm;
 Distance from column to takeoff arm approximately 75mm.

For magnetic coil, see 6590.



Qty.	Order Code	Each
1	9362-08	1783.07

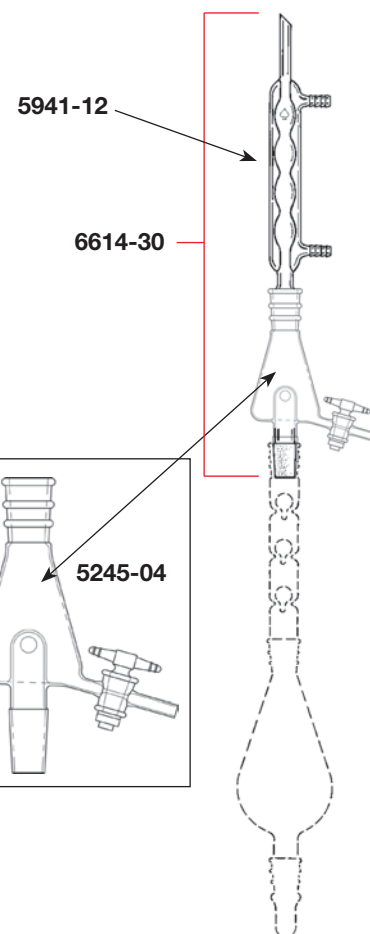
6614 STILL Solvent Recovery

When attached to the top of Snyder Column, unit is designed to recover solvent normally lost during Kuderna-Danish Evaporative Concentrations. PTFE stopcock (1:5, 2mm bore) provides option for total reflux or takeoff. #7 Ace-Thred on side arm accepts tubing 6-7mm O.D. 5029-10 nylon bushing and FETFE o-ring supplied with adapter.

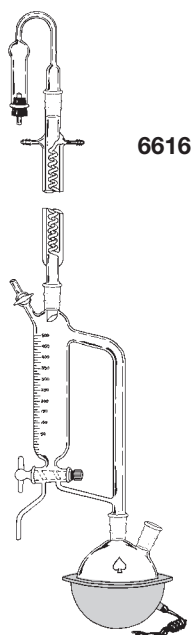
	Qty.	Order Code	Each
Adapter, Solvent Recovery, 3/4 24/40	1	5245-04	♣ 203.48
Condenser, Allihn, 200mm, 3/4 24/40	1	5941-12	♣ 106.33
Complete	1	6614-30	♣ 309.81

Optional Items:

	Qty.	Order Code	Pkg./3
PTFE Sleeve, 3/4 24/40	3	7643-08	★ 5.87
Snyder Column	1	6575-02	♣ 106.37
Flask, 500mL	1	6708-03	♣ 77.63
Flask, Graduated, 10mL Receiver	1	6708-37	♣ 49.25



**See page 235 for Kuderna-Danish
 Evaporative Apparatus**

**6616****6616 DISTILLATION HEAD** *Solvent Recovery*

Versatile unit for use as a solvent recovery still for azeotropic separations of solvents, either heavier or lighter than water.

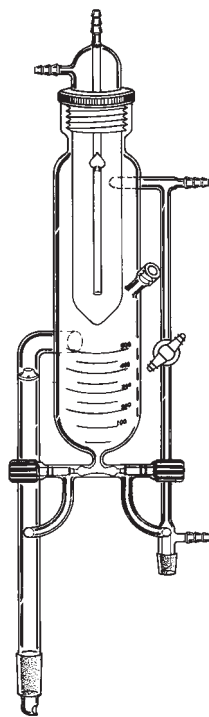
As a solvent recovery unit, the lower 4mm PTFE double oblique stopcock permits total return to flask, total takeoff, and total storage in the 500mL graduated receiver. Bottom exit extends away from the distilling flask for easier takeoff. The 2mm bore PTFE stopcock at top has tubing that will accept our 9096 septum to permit use of a syringe for extracting smaller samples as needed while avoiding air contact. Joints are $\text{F} 24/40$. For replacement stopcock plugs, see 8224-04 and 8226-10. Complete item consists of head, flask, mantle, condenser, drying tube and 12 Septa.

	Qty.	Order Code	Each
Distilling Head, only	1	6616-10	♠ 467.69
Flask, 2 Neck, $\text{F}24/40$, 2 liter	1	6927-44	♠ 113.98
Mantle	1	12043-21	★ 324.48
Condenser, Reflux, $\text{F}24/40$, 300mm	1	5955-14	♠ 325.58
Drying Tube, $\text{F}24/40$	1	5170-10	♠ 46.72
Septa	12	9096-32	★ 15.50/12
Complete	1	6616-40	♠ 1293.95

6617 SOLVENT STILL *Repurifier*

Solvent repurifier still that distills, refluxes, stores and delivers. When used with PTFE sleeves on joints, unit is totally grease free. #50 Ace-Thred holds cold finger condenser enabling easy removal for cleaning. Inlet on body, below thread, is for nitrogen flushing through entire apparatus with outlets on boiling flask as well as above receiver flask. Septum access located on side of still reservoir, supplied with septum. Two PTFE stopcocks, below reservoir, allow recycling solvent to boiling flask, take-off to receiver flask, or if both are closed, storage in graduated 500mL reservoir. Lower joint on distillation path is $\text{F} 24/40$ with a "splash guard" to aid in distillation. Joint on receiver is $\text{F} 14/20$. Distillation flask is a round bottom, two-neck boiling flask for use with Glas-Col mantles. Use with 5/16-inch or 3/8-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

Receiver flask is a recovery style with $\text{F} 14/20$ joint. Distillation flask and receiver flask are NOT supplied with still head. Complete item includes still head, finger condenser and bushing with o-ring.

**6617-35**

	Qty.	Order Code	Each
Complete	1	6617-35	★ 1372.50
Still Head, only	1	6617-06	★ 1197.51
Finger Condenser, only	1	6617-11	★ 101.75
Bushing, only, #50 nylon with o-ring	1	7506-14	♠ 73.24

Optional Parts:**Distillation Flask**

R.B. Two-neck, 500mL, $\text{F}24/40$	1	6927-22	♠ 79.59
R.B. Two-neck, 1000mL, $\text{F}24/40$	1	6927-32	♠ 97.64
R.B. Two-neck, 2000mL, $\text{F}24/40$	1	6927-44	♠ 113.98

Receiver Flask, Recovery Style

Single neck, 50mL, $\text{F}14/20$	1	9470-06	♠ 26.60
Single neck, 100mL, $\text{F}14/20$	1	9470-08	♠ 27.62
Single neck, 200mL, $\text{F}14/20$	1	9470-10	♠ 35.82
Joint Clamps, Delrin, $\text{F}14/20$	12	7598-14	★ 37.55/12
Joint Clamps, Delrin, $\text{F}24/40$	12	7598-24	★ 39.91/12
Septa	12	12901-48	★ 18.90/12

6620 REFLUX APPARATUS *Continuous, Fuchs*

Continuous reflux apparatus to keep solvents pure and free of oxygen. Compact, upright design allows multiple units to be assembled in small areas, i.e. 1000mL — 9-inch diameter x 39 inches high, 2000mL — 10-3/8-inch diameter x 41 inches high (shorter versions have been fabricated, inquire for details). Storage head has overflow high enough to allow storage of solvent for retrieval by syringe through upper part or through lower double oblique stopcock. Lower drain is centered for complete drainage of head. Distillation column is 250mm long, vacuum jacketed, unsilvered. Allihn condenser is 250mm. Adapter at top has two size D hose connections (use with 3/8-inch I.D. tubing) for maintaining inert atmosphere. See page 7 for more detailed hose connection information. Stopcocks are 2mm bore PTFE. Joint on lower drain arm is 3/4 14/20, all others 3/4 24/40. Complete unit consists of adapter, condenser, storage head, column, flask and mantle. Septum are optional. For replacement stopcock plugs, see 8224-04 and 8226-08.

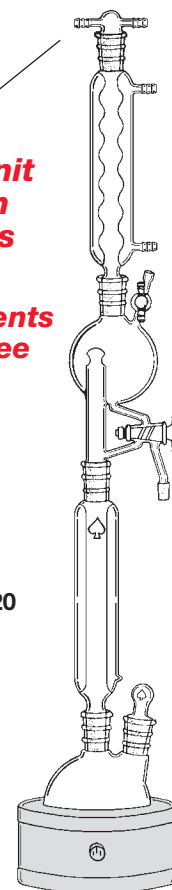
Allows multiple unit connection to inert gas source

Keeps solvents pure and free of oxygen

1000mL SIZE				2000mL SIZE			
	Qty.	Order Code	Each		Qty.	Order Code	Each
Adapter, 3/4 24/40	1	5206-10 ♠	28.68	Adapter, 3/4 24/40	1	5206-10 ♠	28.68
Column, Vac. Jacketed	1	7793-04 ♠	223.87	Column, Vac. Jacketed	1	7793-04 ♠	223.87
Condenser, Allihn	1	5945-13 ♠	117.64	Condenser, Allihn	1	5945-13 ♠	117.64
Head, Storage, 500mL	1	6620-12 ♠	437.34	Head Storage, 1000mL	1	6620-14 ♠	453.37
Flask, 1000mL	1	6927-32 ♠	97.64	Flask, 2000mL	1	6927-44 ♠	113.98
Stopper, 3/4 24/40	1	8250-12 ♠	20.36	Stopper, 3/4 24/40	1	8250-12 ♠	20.36
Mantle, 1 Liter	1	12053-19 ★	280.49	Mantle, 2 Liter	1	12053-21 ★	291.87
Complete	1	6620-40 ★	1113.47	Complete	1	6620-45 ★	1153.98

Optional	Qty.	Order Code	Per Pkg.
Septa	12	9096-32	★ 15.50

Designed by Dr. Philip Fuchs, Purdue University Chemistry Dept., West Lafayette, IN.



6620

8033 RINGS *Raschig ♠*

Borosilicate glass. Wall weight on 5mm size is approximately 0.8mm, other sizes have wall weight of approximately 1.0mm.

Size, mm	Approx. Qty per lb.	Qty.	Order Code	Per Lb.
5 x 5	580	1 lb.	8033-04	164.33
6 x 6	590	1 lb.	8033-06	164.33
7 x 7	600	1 lb.	8033-08	164.33
8 x 8	770	1 lb.	8033-10	164.33

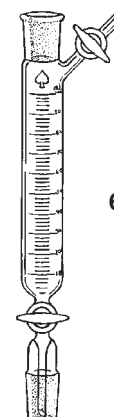


8033

6628 DISTILLATION RECEIVER *Vacuum Type ♠*

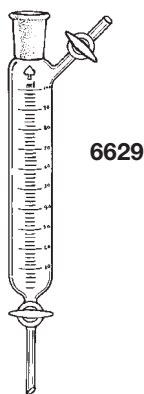
With 3/4 inner joint at bottom and outer joint at top. Graduated to 125mL in 1mL subdivisions. Double scale with glass stopcocks.

3/4 Joints	Qty.	Order Code	Each
24/40	1	6628-10	266.98



6628

Need Something Special? Choose ACE.
 Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!
Give us a call at 1-800-223-4524.

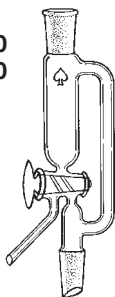


6629 DISTILLATION RECEIVER *Vacuum Type* ♠

With 24/40 joint at top. Capacity 125mL, in 1mL subdivisions. Double scale. With glass stopcock.

Joint	Qty.	Order Code	Each
24/40	1	6629-10	224.42

6635-10
6635-20



6635 DISTILLATION RECEIVER ♠

Specially designed receiver to draw samples during distillation or to return the condensed vapor to the flask. Capacity 125mL. With glass stopcock.

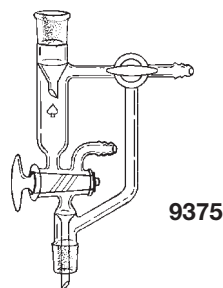
Joint	Qty.	Order Code	Each
24/40	1	6635-10	263.93

Other receivers are listed in the Moisture Test Section – see 7705 on page 377.

6635 DISTILLATION RECEIVER *1:5 PTFE Plug* ♠

Similar to 6635 above, except with solid 1:5 PTFE stopcock plug.

Joint	Qty.	Order Code	Each
24/40	1	6635-20	308.42



9375 DISTILLATION RECEIVER ♠

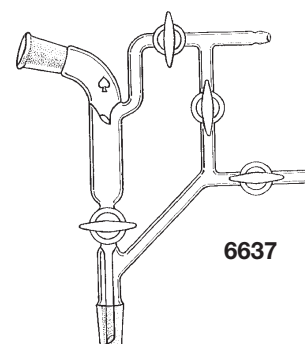
For operation other than at atmospheric pressure. Vacuum is applied to the side arm with the T-bore stopcock. The secondary receiver is vented by means of the lower stopcock. The capacity from the bottom of the drip to the stopcock is 2.5mL. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information. Both stopcocks are glass.

Joint	Qty.	Order Code	Each
14/20	1	9375-08	352.76

6637 DISTILLATION RECEIVER ★

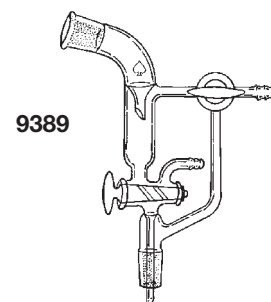
An excellent all-purpose receiver for general distillation work. Equipped with a complete stopcock manifold to allow contents of the receiver to be removed to a single receiving flask without disturbing the vacuum of the system. Stopcocks are 4mm bore. Tubing connections are 10mm O.D. olive type.

Cap., mL	⌀ Joints	Qty.	Order Code	Each
50	24/40	1	6637-04	501.39
100	24/40	1	6637-06	549.29
250	24/40	1	6637-08	664.91


6637
9389 DISTILLATION RECEIVER ♠

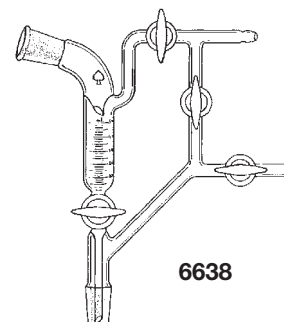
With upper joint at 105° angle. For operation other than at atmospheric pressure. Vacuum is applied to the side arm with the T-bore stopcock. The secondary receiver is vented by means of the lower stopcock. The capacity from the bottom of the drip to the stopcock is 2.5mL. Tubing connections are 8mm O.D. olive type.

⌀ Joints	Qty.	Order Code	Each
14/20	1	9389-02	356.76


9389
6638 DISTILLATION RECEIVER *Graduated* ★

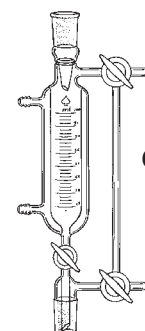
All-purpose receiver for general distillation work. Similar to 6637 except with graduated body. Stopcocks are 4mm bore. Tubing connections are 10mm O.D. olive type.

Cap., mL	Subdiv., mL	⌀ Joints	Qty.	Order Code	Each
50	1	24/40	1	6638-04	555.52
100	1	24/40	1	6638-06	591.10
250	5	24/40	1	6638-08	724.54


6638
6642 DISTILLATION RECEIVER *Jacketed* ★

Graduated jacketed receiver with vacuum manifold for removal of sample during operation without disturbing the system. Stopcocks on manifold are 4mm bore, receiver stopcock is 3mm. Use with 3/8-inch or 7/16-inch I.D. tubing, size E hose connection, on condenser; 10mm O.D. olive on manifold. See page 7 for more detailed hose connection information.

Cap., mL	Subdiv., mL	⌀ Joints	Qty.	Order Code	Each
250	5	24/40	1	6642-08	1115.17

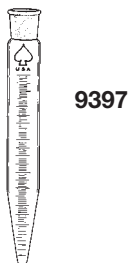

6642



9396 DISTILLATION RECEIVER ♠

Calibrated to contain. Supplied in 10mL capacity with 0.2mL subdivisions.

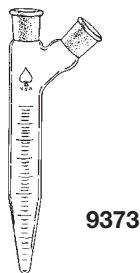
Top ₤ Joint	Qty.	Order Code	Each
14/20	1	9396-02	50.16



9397 DISTILLATION RECEIVER ♠

Centrifugal type, calibrated to contain. Graduated in 0.1mL subdivisions. Total capacity 15mL.

Top ₤ Joint	Qty.	Order Code	Each
14/20	1	9397-06	47.50



9373 DISTILLATION RECEIVER *with Side Arm* ♠

Graduated to 15mL in 1/10mL subdivisions with lower 0.5mL contained in a precision tip for better accuracy with extremely small samples.

Top ₤ Joints	Qty.	Order Code	Each
14/20	1	9373-06	78.76



D120677 DISTILLATION TUBE *12mL, Graduated, with Side Tab* ♠

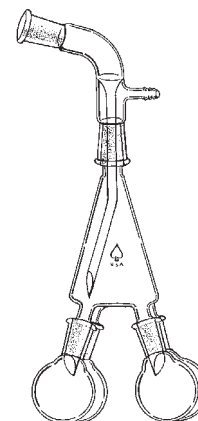
Graduated to 12mL, with side tab. Ace-Thred top joint. For use in ASTM D7528-09 procedure for simulation and test of auto engine oils

Qty.	Order Code	Each
1	D120677	Call

6647/9400 DISTILLATION RECEIVER

For use where separate fractions are desired without disturbing distillation pressure. Joints are $\text{\textcircled{14/20}}$ or $\text{\textcircled{24/40}}$. Receiver flasks on $\text{\textcircled{14/20}}$ size are 5mL; on $\text{\textcircled{24/40}}$ size 50mL. On $\text{\textcircled{14/20}}$ joints, use 3/8-inch or 5/16-inch I.D. tubing, size B; on $\text{\textcircled{24/40}}$ joints, use 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

Qty.	$\text{\textcircled{14/20}}$		$\text{\textcircled{24/40}}$	
	Order Code	Each	Order Code	Each
Vacuum Adapter	1	9400-03 ♠ 53.87	6647-04 ♠ 82.98	
Distributor	1	9400-04 ♠ 136.44	6647-06 ♠ 233.33	
Flasks, 5mL	4	9458-02 ♠ 22.96	6887-20 ♠ 28.48	
Joint Clips*	5	7598-14 ★ 37.55	7598-24 ★ 39.91	
Complete	1	9400-10 ♠ 300.95	6647-10 ♠ 450.18	



6647
9400-10
9400-25

9400 DISTILLATION RECEIVER PTFE-Clad

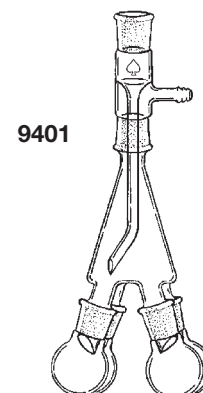
Similar to 9400-10 except all inner joints are PTFE-Clad, outer joints are polished. Use with 5/16-inch or 3/8-inch I.D. tubing, size B hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
Adapter	1	9400-20 ♠ 70.80
Distributor	1	9400-22 ♠ 348.83
Flask, 5mL	4	9458-02 ♠ 22.31
Joint Clips*	5	7598-14 ★ 37.55
Complete	1	9400-25 ♠ 530.27

9401 DISTILLATION RECEIVER

Similar to 9400-10 except with $\text{\textcircled{14/20}}$ vertical top joint. Use with 5/16-inch or 3/8-inch I.D. tubing, size B hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
Adapter	1	9401-05 ♠ 55.17
Distributor	1	9400-04 ♠ 136.44
Flask, 5mL	4	9458-02 ♠ 22.96
Joint Clips*	5	7598-14 ★ 37.55
Complete	1	9401-30 ♠ 302.25

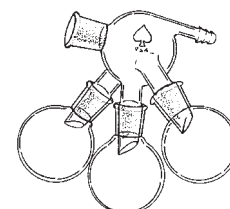


9401

9403 DISTILLATION RECEIVER

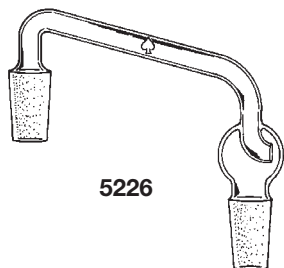
The three 25mL flasks are in the same plane, rotated about the condenser axis. Hose connection is parallel to and above condenser axis. Three clips are supplied for holding flasks to condenser. All joints are $\text{\textcircled{14/20}}$. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
Distributor	1	9403-08 ♠ 116.53
Flask, 25mL	3	9458-06 ♠ 22.96
Joint Clips*	4	7598-14 ★ 37.55
Complete	1	9403-10 ♠ 200.45



9403

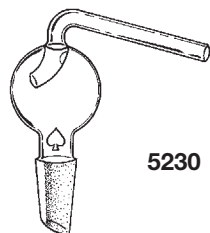
*The 7598 joint clips listed in the complete items above are supplied in quantities of five (9400-10, 6657-10, 9400-25, 9401-30) or four (9403-10). However, when you order replacement clips (part numbers 7598-14 or 7598-24), you will receive a package of 10 clips.



5226 ADAPTER *Kjeldahl Trap* ♠

Distance between center of joints is approximately 200mm.

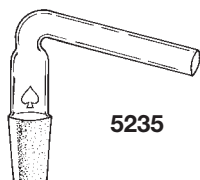
⌘ Joints	Qty.	Order Code	Each
24/40	1	5226-10	131.97



5230 ADAPTER *Distilling Trap* ♠

With outlet tube bent at 75° angle.

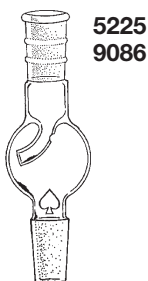
⌘ Joint	Qty.	Order Code	Each
24/40	1	5230-10	57.56



5235 ADAPTER *Distilling* ♠

With 8mm O.D. outlet tube bent at 75° angle.

⌘ Joint	Qty.	Order Code	Each
24/40	1	5235-10	25.20



5225/9086 ADAPTER *Distilling Trap* ♠

⌘ Joints	Qty.	Order Code	Each
14/20	1	9086-02	100.86
24/40	1	5225-10	63.36
29/42	1	5225-15	68.07



5299 ADAPTER *Distillation* ♠

Distillation adapter for use with bench or pilot plant reactors. Moisture is collected in center vessel and drained off through the bottom stopcock, which is ground to accept a compression style fitting. Stopcock is PTFE plug. Available with either one or two top standard taper outer joints.

With one top/outer standard taper joint

⌘ Joint	Stopcock Size, mm	Compression Fitting Joint Size, In.	Qty.	Order Code	Complete
24/40	6	1/2	1	5299-01	204.01
29/42	6	1/2	1	5299-03	254.57
45/50	10	3/4	1	5299-07	335.46

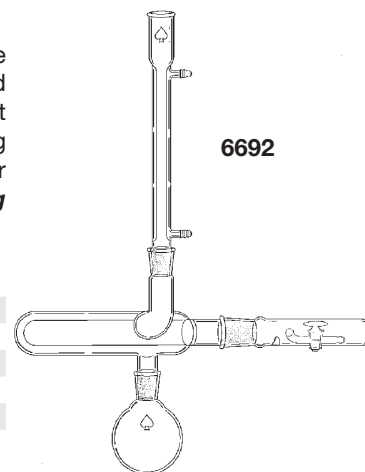
With two top/outer standard taper joints

24/40	6	1/2	1	5299-10	237.90
29/42	6	1/2	1	5299-12	268.25
45/50	10	3/4	1	5299-16	410.40

6692 DRYING APPARATUS *Modified Abderhalden* ♦

Vacuum. Desiccant tube has two-way action that permits the use of a smaller desiccant volume and better air contact with desiccant. During the final stage of drying, the T-bore stopcock is turned so that the evacuation path is directly over the desiccant, while in the early stages the desiccant is bypassed. The condenser is placed above the boiling flask, but off to the side of the heating tube. The upper 24/40 joint is offset so that the condensed liquid does not drop over the inner tube. Opening to the inside chamber is 40/35 . **Complete item consists of condenser, drying chamber, desiccant tube with stopcock and round bottom boiling flask.**

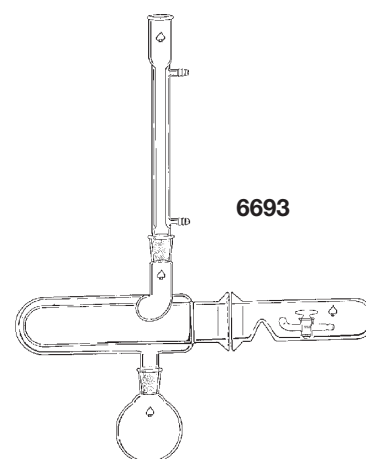
	Joint Size	Qty.	Order Code	Each
Drying Chamber	40/35	1	6692-02	213.97
Desiccant Tube	40/35	1	6692-04	140.70
Condenser	24/40	1	6025-14	84.47
Flask, 250mL	24/40	1	6887-25	34.08
Complete	—	1	6692-10	473.22



6693 DRYING APPARATUS *Modified Abderhalden* ♦

Modified design replaces the 24/40 joint connection normally found between the chambers, with a 60mm I.D. flat flange and a quick release stainless steel clamp. Flange on drying chamber has a groove for a silicone o-ring to make a leak-tight seal with flat flange on desiccant tube. Joints on condenser and flask are 24/40 . **Complete item consists of condenser, drying chamber, desiccant tube, flask, clamp and o-ring.**

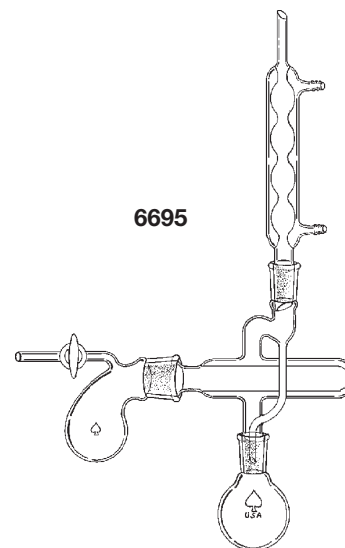
	Joint Size	Qty.	Order Code	Each
Drying Chamber	—	1	6693-04	248.58
Desiccant Tube	—	1	6693-07	138.50
Condenser	40/35	1	6025-14	84.47
Flask, 300mL	24/40	1	6887-25	34.08
O-Ring, Silicone	—	1	7855-251	14.79
Clamp, #60	—	1	6517-22	88.80
Complete	—	1	6693-40	609.22



6695 DRYING APPARATUS *Abderhalden* ♦

Vacuum, improved form. Material to be dried is placed in the inner tube, 15.2cm long by 25.4mm I.D. When the liquid in the distilling flask boils, the vapors pass through the drying chamber and heat the inner tube at a constant temperature. The vapors then ascend to the reflux condenser, condense and flow back through the return tube into the boiling flask. Boiling flask is 250mL capacity and has a 24/40 joint. Flask with interchangeable stopcock has a 40/35 joint. **Complete apparatus consists of condenser, drying chamber, desiccant flask and boiling flask.**

	Joint Size	Qty.	Order Code	Each
Drying Chamber	40/35	1	6695-02	231.62
Desiccant Flask	40/35	1	6695-04	126.33
Condenser	24/40	1	5941-14	113.99
Boiling Flask, 250mL	24/40	1	6887-24	32.50
Complete	—	1	6695-10	504.44



Also available with Instatherm® coating for accurate heating. See page 335.

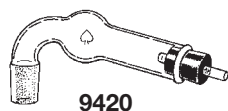
5170
9419**5170/9419 TUBES** Drying ♠

U-shaped drying tube with F inner joint on one end and a flared open end for a rubber stopper on the other. Length refers to approximate length of dessiccant area.

F Joint	Length, mm	Qty.	Order Code	Complete
14/20	180	1	9419-03	30.06
19/38	150	1	5170-05	46.50
24/40	150	1	5170-10	46.72
29/42	150	1	5170-15	49.54

Rubber Stopper and Adapter Tube, only

Qty.	Order Code	Each
1	5170-40	11.12



9420

9420 TUBES Drying ♠

Bent gooseneck-type drying tube. Dessiccant area is 140mm in length. Code -02 uses #00 rubber stopper, code -04 uses a #3 stopper.

F Joint	Qty.	Order Code	Each
14/20	1	9420-02	29.17
19/22	1	9420-04	31.35

9421-08



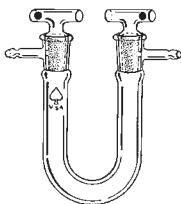
9421-10

9421 TUBES Drying ♠

Dessiccant section is approximately 100mm long.

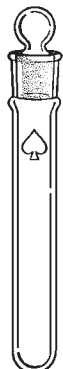
Top Joint	Bottom Joint	Qty.	Order Code	Each
F 14/20	F 14/20	1	9421-08	37.32
Beaded	F 19/22	1	9421-10	28.44

8531

**8531 TUBES** Drying, Schwartz ♠

Length is from top of joint to bottom of curve.

Length, mm	Tube O.D., mm	F Stopper	Qty.	Order Code	Each
100	17	14/35	1	8531-04	130.57
153	17	14/35	1	8531-06	130.78



8645

8645/8250 TUBES Test, Stoppered ♠

With interchangeable glass stopper; F 24/40 stopper is hollow; #16 and #19 stoppers are solid.

Tube Size, mm	Type Stopper	Qty.	Stopper only		Tube Only		Complete	
			Order Code	Each	Order Code	Each	Order Code	Each
16 x 150	#16	1	8645-04	10.75	8645-06	14.27	8645-08	25.01
22 x 150	#19	1	8645-16	12.26	8645-18	18.32	8645-20	30.59
25 x 200	F 24/40	1	8250-12	20.36	8645-36	27.03	8645-38	48.61

10165 GAS DRYING UNIT *Laboratory* ★

A sturdy, convenient and time-saving piece of laboratory equipment. Intermittent requirements for dry gases are readily available by simply making a rubber tube connection between the laboratory bench air line or gas cylinder and bottom inlet of the drying tower. The unit will dry approximately 2200 liters of air, saturated with moisture at 21°C and 740mm pressure, to a dew point of approximately minus 79°C. Gases when expanded from a compressed state are not saturated with water, and the drying unit will, therefore, dry several times the volume of gas noted for saturated conditions. For maximum efficiency, the gas flow should not exceed 200 liters per hour.

When exhausted, the Drierite may be regenerated by heating in very thin layers (one granule deep) in an open pan or tray, and with careful handling, the drying unit will last indefinitely. The tower is made of acrylic plastic with anodized aluminum cap. Unit measures 6.7cm diameter by 28.9cm high, packed with 8 mesh indicating Drierite.



10165

Qty.	Order Code	Each
1	10165-10	110.02

10175 DRIERITE *Indicating* ★

The granules of calcium sulfate are impregnated with C.P. cobalt chloride. On dehydration, the active desiccant assumes a distinct blue color. In use, the color changes to a rose-red as the margin between the exhausted and active desiccant progresses through a tube or tower.

10175

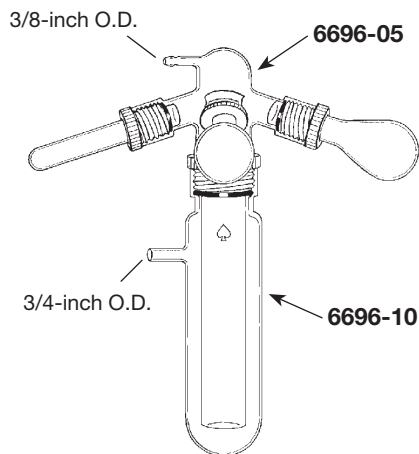


Qty	Order Code	1 lb.		5 lb.	
		Order Code	Each	Order Code	Each
6-mesh	1	10175-17	16.49	10175-27	77.92
8 mesh	1	10175-19	16.47	10175-29	81.72
10-20 mesh	1	10175-21	17.15	10175-31	84.83

Ace-Thred Design Freeze Drying Apparatus

- Vessels are less expensive: They can also be readily adapted to mechanical units. (*Virtis, Labconco, etc.*)
- Screw-cap vessels can be used for quick, easy storage.
- Less freeze-up of vapor path.
- No hooks, springs, or rubber bands are needed; no vessel “drop-off.”
- Disassembles easily for cleaning.
- Rugged, heavy-wall vessels are safer, less likely to implode.

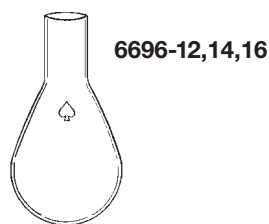




6696 FREEZE DRYING APPARATUS ♠

Economical “umbrella”-design freeze drying apparatus utilizing Ace-Threds for positive, grease-free connections that are easy to manipulate. Compression fitting of Nylon bushing on FETFE o-ring against the shoulder of the Ace-Thred holds the vessel in place with or without vacuum and thus prevents vessel “drop-off” at start-up or shut-down. Umbrella has three #25 threads at 90° angles of each other, leaving the rear of the umbrella without a port for easier mounting. Vacuum gauge connection is near top of the umbrella. Vertical tube extending down from the umbrella is secured in the collection trap by a #50 Ace-Thred. Cooling is done in Dewar in usual manner. Should main tube of umbrella or cooling trap clog, it may be disassembled, cleaned and reassembled in minutes without fear of vessel “drop-off.” Capacity of trap is approximately two liters. **A complete unit would consist of 6696-05 umbrella manifold, 6696-10 collection trap, three 7506-10 #25 bushings, one 7506-14 #50 bushing and three vessels of your choice. Order each item separately.**

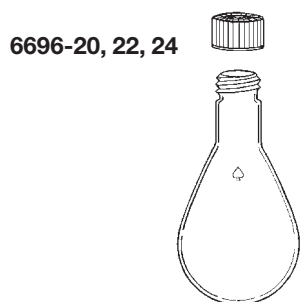
	Qty.	Order Code	Each
Umbrella Manifold, only	1	6696-05	402.99
Collection Trap, 3-1/2-inch O.D.	1	6696-10	226.91
Bushing, Nylon, #25 (3 needed)	1	7506-10	21.17
Bushing, Nylon, #50	1	7506-14	73.24



6696 VESSEL Freeze Dry, Heavy Wall, Sloped Shoulder ♠

These heavy wall vessels are rugged, less likely to implode. Vessels have 25mm O.D. neck to fit #25 Ace-Thred on 6696-05 umbrella. Sloped shoulders for easy removal of contents. For bushings see 7506-10. Working capacity of flasks is about one-half volume listed.

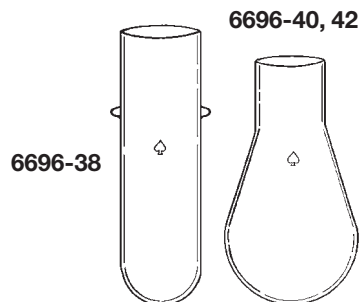
Capacity, mL	Qty.	Order Code	Each
100	1	6696-12	42.85
200	1	6696-14	50.60
300	1	6696-16	59.20



6696 VESSEL Freeze Dry and Storage, Sloped Shoulder, Screw Cap ♠

Vessel has GCMI-24-410 bottle thread and PTFE lined cap. Neck also fits inside a #25 Ace-Thred bushing. for use with 6696-05 umbrella manifold. After drying material, vessel can be capped and stored. For bushing, see 7506-10. Working capacity of flasks is about one-half volume listed.

Capacity, mL	Qty.	Order Code	Each
100	1	6696-20	51.00
200	1	6696-22	59.52
300	1	6696-24	61.11



6696 VESSEL Freeze Dry ♠

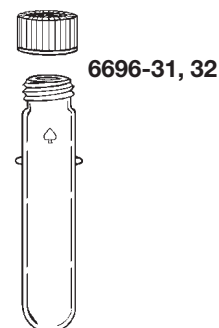
Vessels have 48 mm O.D. neck to fit #50 Ace-Thred bushing on 6696-50 connecting adapter for connection to the 6696-05 umbrella manifold. The 300 mL size has straight sides and stops on side to prevent “suck in” under vacuum; other sizes have sloped sides. Working capacity of flasks is about one-half volume listed.

Capacity, mL	Qty.	Order Code	Each
300	1	6696-38	36.35
600	1	6696-40	63.99
1000	1	6696-42	73.82

6696 TUBE *Freeze Dry and Storage, Screw Cap* ♠

Modified culture tubes with PTFE lined screw-cap and stops on side to prevent “suck in” under vacuum. Both sizes fit inside a #25 Ace-Thred bushing for use with 6696-05 umbrella manifold. Working capacity of tubes is about one-half of the capacity listed.

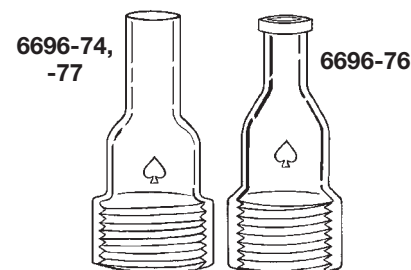
O.D., mm	Length, mm	Capacity, mL	G.P.I. Thread	Qty.	Order Code	Each
25	100	30	24-410	1	6696-31	19.21
25	150	50	24-410	1	6696-32	19.24



6696 ADAPTER *Connecting* ♠

Glass adapter used for connecting ACE freeze drying vessels to the rubber valves on the Virtis, Labconco, and most other commercially available freeze drying units. All use Ace bushing 7506-10, ordered separately.

Fits Valve Size, O.D., mm	Ace-Thred Size	Qty.	Glass Only Order Code	Each
10.0 (no flange)	25	1	6696-74	38.19
12.7 (w/19.1 mm flange)	25	1	6696-76	45.26
19.1 (no flange)	25	1	6696-77	42.01



6696 ADAPTER *Connecting* ♠

Used for connecting freeze drying vessels with 48mm O.D. necks to #25 Ace-Threds on umbrella manifold. O.D. of straight side is 25mm. Use 7506-14 bushing in the #50 thread.

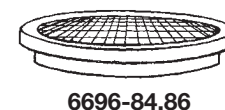
Qty.	Order Code	Each
1	6696-50	86.70



6696 ADAPTER *Screen* ♠

Used with ACE freeze drying vessel with either 25mm O.D. or 48mm O.D. necks for assuring that the contents of the vessel do not accidentally get sucked out during the freeze drying process. Adapter is PTFE with a stainless steel screen and press fits in the end of the vessel before attaching it to the Ace-Thred.

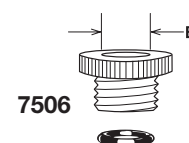
Size	Qty.	Order Code	Each
25 mm	1	6696-84	43.50
50 mm	1	6696-86	76.38

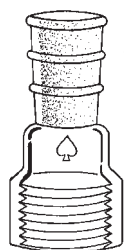


7506 BUSHING ♠

Bushing connector for joining a threaded end to a reduced end tube in the air sampling glassware. Available in either nylon or PTFE. One FETFE o-ring supplied with each bushing. For extra o-rings, see 7853.

For Size	B mm	O-Ring Size	Qty.	Nylon		PTFE	
				Order Code	Each	Order Code	Each
11	10	-012	1	7506-02	11.39	7506-23	39.80
25	26	-212	1	7506-10	21.17	7506-31	56.15
50	49	-225	1	7506-14	73.24	7506-35	122.29





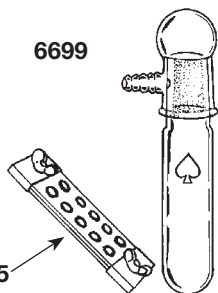
6696-70

6696 ADAPTER Rotary Evaporator to Freeze Dry Vessel ♠

By using this adapter, preliminary evaporation may be done on a rotary evaporator, then vessels can be transferred directly to freeze drying manifold. No need to transfer contents of flask. Joint is § 24/40 with 2mm hole mid length for relieving vacuum gently. Ace-Thred is #25. See 7506-10 for bushings.

§ Joint	Ace-Thred Size	Use Bushing	Qty.	Order Code	Each
24/40	25	7506-10	1	6696-70	77.79

6699



6699-15

6699 DRYING ASSEMBLY with Aluminum Holder ♠

Originally used for lyophilizing and storing frozen slices of tissue for quantitative histochemistry. Can also be used as a vacuum tube with aluminum holders by Nelson & Wakefield, *Journal of Neuropathology & Exper. Neurology*, Vol. XXVII, No. 2, April 1968. Joint is § 40/50. Aluminum holder measures 25mm x 90mm x 3mm, with two rows of eight, 8mm diameter holes. Furnished with two microscope slides. Use with 5/18-inch I.D. tubing, size G. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Cap	1	6699-02	74.83
Bottle	1	6699-04	52.77
Complete (without Holder)	1	6699-10	127.60
Aluminum Holder (only)	1	6699-15	136.62
Complete (with Holder)	1	6699-20	264.22

**Not for use
at elevated
temperatures**

7030



7030 FLASK Rotary Evaporator/Freeze Drying ♠

Dual purpose flask features the "TWISTLOR" ACE-Seal: simply push adapter head and flask together, turn 90°.

Flange on flask has two ground-flats opposite each other that allow nylon retainers on adapter head to pass over. O-Ring positioned in head and flask grooves makes a vacuum-tight seal when head is turned 90° in either direction.

To remove, turn 90° in either direction or until nylon retainers line up with flats on flange, and flask and adapter head come apart.

One adapter head fits all capacity flasks. Each adapter head is supplied with one FETFE o-ring. Complete item would consist of adapter head and flask. Order each separately.

FLASK, Only				ADAPTER HEAD, Only			
Cap., mL	Qty.	Order Code	Each	Joint	Qty.	Order Code	Each
125	1	7030-03	156.53	§ 24/40	1	7030-21	164.98
250	1	7030-04	156.53	§ 29/42	1	7030-23	169.21
500	1	7030-06	159.22	§ 40/35	1	7030-27	183.21
1000	1	7030-08	173.56				
2000	1	7030-10	214.10				
3000	1	7030-12	232.24	FETFE O-Rings	3	7855-775	29.73
5000	1	7030-14	265.96				

Not for use at elevated temperatures.

Note: You can correct tension between Head and Flask by adjusting screws on both clips.

7035 FLASK *Freeze Dry*

Complete “fast-freeze” flask with snap-on rubber cap and 1/2-inch or 3/4-inch O.D. plain or valve adapter, compatible with all major brand freeze drying manifold valves.

Borosilicate flasks are designed for ease of handling, faster loading. Uniform wall weight maximizes heat transfer while maintaining structural strength. Wide (53mm ID) mouth provides easy access to inner walls.

Snap-on black rubber cap is grease free; one size fits all capacity flasks. Plain straight adapter for connecting flask cap to lyophilizer manifold is removable and fabricated from PTFE. PTFE adapter also available with shut-off valve. Complete item consists of flask, cap and PTFE adapter.

Flask, mL	Hgt., mm	Neck ID, mm	Body OD, mm	Adapter Size (In.) / Style	Qty.	Order Code	★ Complete
300	156	53	60	1/2 / Plain	1	7035-03	113.65
300	156	53	60	3/4 / Plain	1	7035-05	117.75
300	156	53	60	1/2 / Valve	1	7035-34	159.76
300	156	53	60	3/4 / Valve	1	7035-36	155.15
600	282	53	60	1/2 / Plain	1	7035-09	121.37
600	282	53	60	3/4 / Plain	1	7035-11	125.47
600	282	53	60	1/2 / Valve	1	7035-40	167.48
600	144	53	100	1/2 / Plain	1	7035-15	152.39
600	144	53	100	3/4 / Plain	1	7035-17	156.49
600	282	53	60	3/4 / Valve	1	7035-42	162.87
600	144	53	100	1/2 / Valve	1	7035-46	198.50
600	144	53	100	3/4 / Valve	1	7035-48	193.89
900	199	53	100	1/2 / Plain	1	7035-21	160.12
900	199	53	100	3/4 / Plain	1	7035-23	164.22
900	199	53	100	1/2 / Valve	1	7035-52	206.23
900	199	53	100	3/4 / Valve	1	7035-54	201.62
1200	249	53	100	1/2 / Plain	1	7035-27	167.86
1200	249	53	100	3/4 / Plain	1	7035-29	171.96
1200	249	53	100	1/2 / Valve	1	7035-56	213.97
1200	249	53	100	3/4 / Valve	1	7035-58	209.36

Replacement Items

Flask, only	Hgt., mm	Neck ID, mm	Body OD, mm	Qty.	Order Code	★ Each
300 mL	156	53	60	1	7035-104	77.51
600 mL	282	53	60	1	7035-110	85.23
600 mL	144	53	100	1	7035-116	116.25
900 mL	199	53	100	1	7035-122	123.98
1200 mL	249	53	100	1	7035-128	131.72

Adapter, only	Type	Qty.	Order Code	★ Each
1/2-inch	Plain-PTFE	1	7035-150	8.13
3/4-inch	Plain-PTFE	1	7035-152	12.23
1/2-inch	Valve-PTFE	1	7035-160	54.24
3/4-inch	Valve-PTFE	1	7035-162	49.63
Cap, only		1	7035-170	28.01





7489-22

7489 C.A.R.B.* OCTOPUS GLASS AIR SAMPLING SYSTEM ♠

These new vertical systems fit more easily into air sampling stations, trailers and cabinets, and provide a more efficient methodology of sample collection. All the inner surfaces that are exposed to the air are either inert borosilicate glass or inert PTFE. Thanks to our convenient Ace-Threds[®], the systems can be safely and easily disassembled for cleaning or replacing parts.

Both canes offer a PTFE sampling port outside for spot sampling or EPA auditing. The heavy duty #7 Ace-Thred ports on the manifolds can be fitted to any type of tubing, and can be sealed with ferrules and bushings to facilitate connection to air sampling instrumentation and monitors. Choose between four- or eight-port manifolds with either a glass sampling cane with an inverted glass cone or a straight glass cane with a polyethylene inverse funnel on top.

Approximate I.D. of sampling tube is 25mm (1 inch). Approximate overall height of four-port system is 150cm (60 inches). Approximate overall height of eight-port system is 155cm (62 inches).

4-Port Octopus System		Qty.	Order Code	Each
Complete system with PE hood top		1	7489-20	800.71
Complete system with glass funnel top		1	7489-22	1008.42
Glass manifold only		1	7489-04	385.00
8-Port Octopus System			Order Code	Each
Complete with glass cane and PE hood top		1	7489-24	941.01
Complete with glass cane and glass funnel top		1	7489-26	1148.72
Glass manifold only		1	7489-08	513.34
Components for Both Systems			Order Code	Each
Sampling cane with glass hood and sample port	1	7493-22	439.69	
Sampling cane with PTFE hood and sample port	1	7494-35	231.98	
250mL glass collection bottle	1	7501-11	63.56	
#25 nylon bushing w/CAPFE o-ring	1	7506-11	25.09	
#7 nylon bushing	1	5029-12	2.99	
PTFE ferrule for #7 bushing	12	11710-07	30.19	
#7 PTFE plug with w/CAPFE o-ring	1	5846-45	24.85	
Sampling cane without sample port — glass hood	1	7493-12	407.27	
Sampling cane without sample port — PE hood	1	7494-25	199.41	

*California Air Resources Board



7489-04



7489-08



7494-35

***As described in SPA protocol TAD 40CFR58, Appendix E for precursor gas measurements in the NCare Multi-Pollutant Monitoring Network, Version 4.**

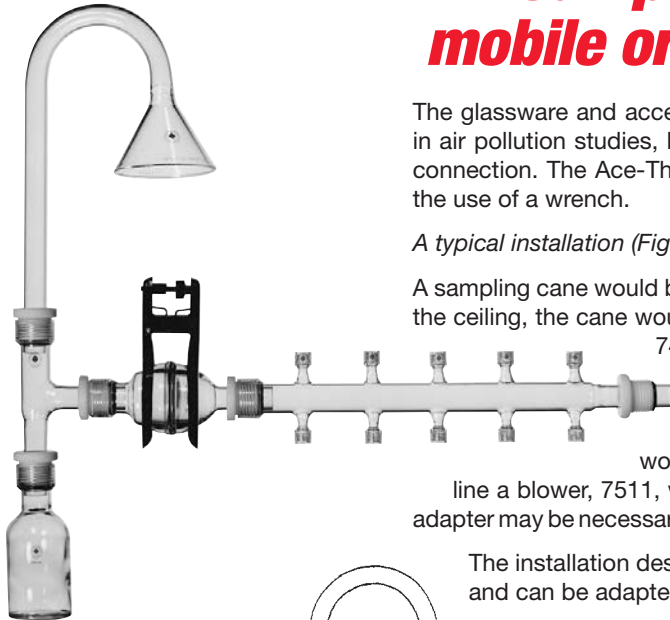
Air Sampling Glassware for mobile or stationary installation

The glassware and accessories listed here have been designed for the purpose of sampling air in air pollution studies, by use of either a bushing type (Figure 2), or a coupling type (Figure 3), connection. The Ace-Thred glass connectors are instantly and easily installed by hand, without the use of a wrench.

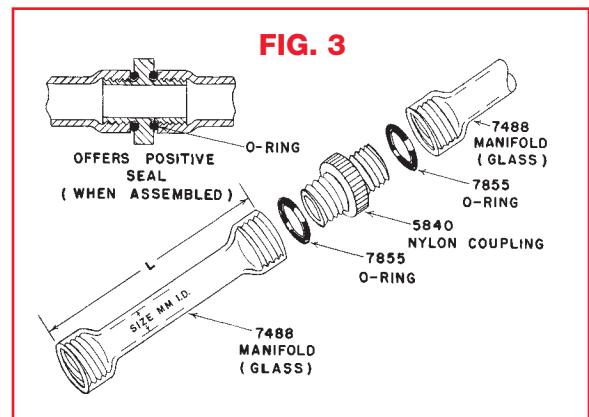
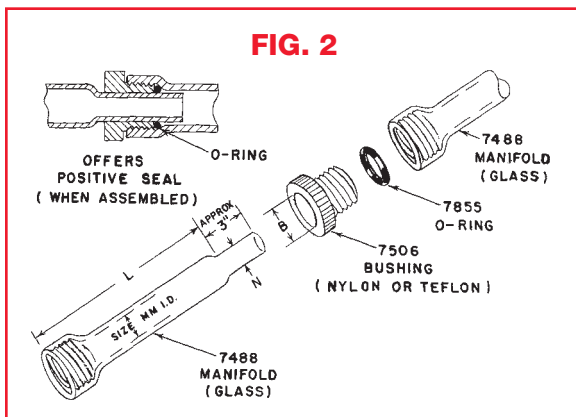
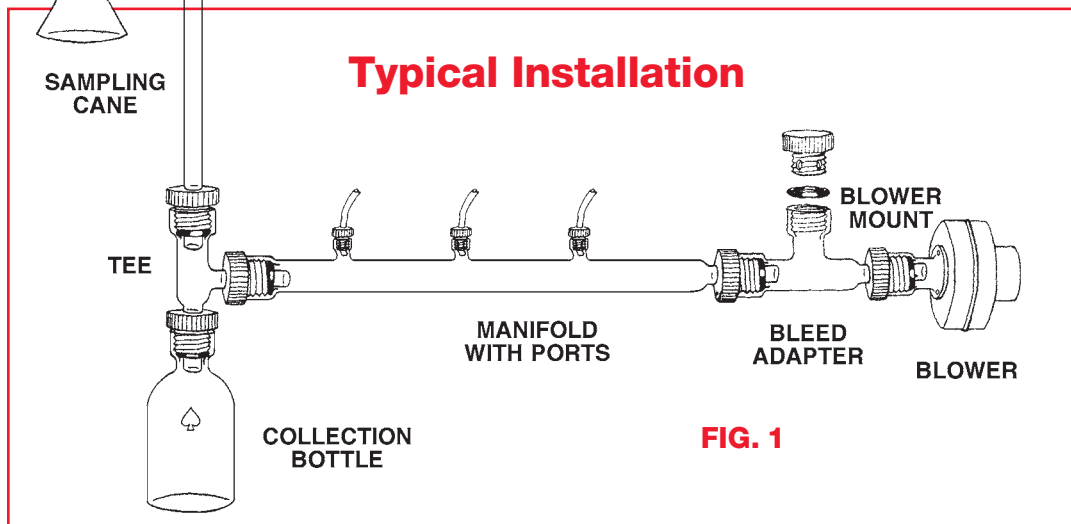
A typical installation (Figure 1) in a portable trailer van would be as follows:

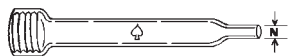
A sampling cane would be secured through the roof by means of the roof attachment 7508. Below the ceiling, the cane would then be connected by means of a bushing into either a sweep elbow, 7490, or a tee, 7495, which in both cases would turn the manifold line to the horizontal and, in the latter case, allow for the addition of a collection bottle, 7501. At this point additional lengths of manifold sections would be added with and without ports, depending on the need. The ports would be used to connect to the measuring instruments. At the end of the line a blower, 7511, with a blower mount, 7509, would be added. The addition of 7499 bleed adapter may be necessary to reduce air flow. Exhaust would be either to the outside or into the trailer.

The installation described above is a functional setup for a trailer. This glassware is versatile and can be adapted to fit almost any need — mobile trailer or plant type installation.



NOTE!!
Air Sampling Glassware with reduced ends, i.e. Fig. 2, is recommended versus thread to thread, Fig 3, to assure ports can be positioned in the desired direction.





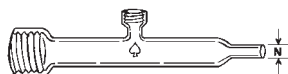
7488-04

7488 AIR SAMPLING MANIFOLD with Reduced End ♠

Straight sampling manifold, one end threaded, the other end reduced for use with 7506 bushing. **Code identifies I.D. only; length must be stated.**

I.D., mm	N mm	Qty.	Order Code	Per One Foot Length
25	24	1	7488-04	86.03
50	49	1	7488-05	221.17

Note: As listed, this item is NOT for extending 7493, or 7494 Canes. Extenders must be ordered as a special.



7488-14

7488 AIR SAMPLING MANIFOLD with Reduced End and Ports ♠

Straight sampling manifold, one end threaded, the other end reduced to use with 7506 bushing. With adjustable depth, threaded sampling ports for use with up to 7mm O.D. tube. **Code identifies I.D. only; length must be stated.** 5029 bushings for ports are included.

I.D., mm	N mm	Qty.	Order Code	Per One* Foot Length
25	24	1	7488-14	185.83
50	49	1	7488-15	401.28

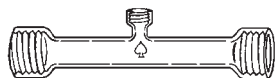


7488-24

7488 AIR SAMPLING MANIFOLD ♠

Straight sampling manifold with thread at both ends for use with either 7506 bushing or 5841 coupling. **Code identifies I.D. only; length must be stated.**

I.D., mm	Qty.	Order Code	Per One Foot Length
25	1	7488-24	57.72
50	1	7488-25	196.89



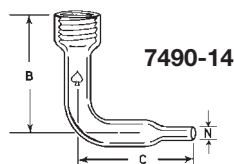
7488-34

REMEMBER: If connecting thread to thread, you cannot be sure ports will be positioned in the desired direction.

7488 AIR SAMPLING MANIFOLD with Ports ♠

Straight sampling manifold with threads at both ends for use with either 7506 bushing or 5841 coupling. With adjustable depth, threaded sampling ports for use with up to 7mm O.D. tube. **Code identifies I.D. only; length must be stated.** 5029 bushings for ports are included.

I.D., mm	Qty.	Order Code	Per One Foot Length
25	1	7488-34	139.33
50	1	7488-35	262.84



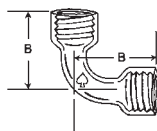
7490-14

7490 AIR SAMPLING SWEEP ELBOW with Reduced End ♠

Sweep elbow with one end threaded, the other end reduced for use with 7506 bushing.

I.D., mm	B mm	C mm	N mm	Qty.	Order Code	Each
25	76	102	24	1	7490-14	155.83

7490-37



7490 AIR SAMPLING SWEEP ELBOW ♠

Sweep elbow with both ends threaded for use with either 7506 bushing or 5841 coupling.

I.D., mm	B mm	Qty.	Order Code	Each
25	76	1	7490-37	159.61

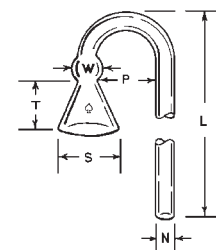
7493 AIR SAMPLING CANE with Funnel ♠

Air sampling cane with funnel at one end to avoid water droplets from collecting at edge and being sucked into manifold train. Bulge above the funnel is for glass wool or similar material to allow for filtering of particulates. This piece is normally installed outside the van, etc. and is connected at the roof with 7508 roof attachment. Inside the van it is then connected to the manifold train with 7506 bushing. See 7503 filter screen for funnel.

Important: If cane need be mounted higher above roof than "L" measurement will allow, order 7488-sp. (page 210) Identify I.D., "N" length and identify as extension cane.

For Size	L cm	N mm	P mm	S mm	T mm	W mm	Qty.	Order Code	Each
25	122	24	152	152	152	51	1	7493-12	407.27
25	122	24	152	152	152	51	1	7493-22	439.69
50	152	49	254	229	254	76	1	7493-16	581.08

**Due to the difficulty of shipping and the costs of additional packing materials necessary to prevent breakage, Size 50 carries a surcharge per cane. This charge is net, while the basic price of the item qualifies for ACE dollar value discount.*



7493

New — 7493-22 now with side sample port!

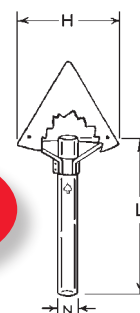
7494 AIR SAMPLING CANE Modified ♠

Economical sampling cane which eliminates the bend and funnel of the 7493. More stable in windy conditions. Consists of a length of glass pipe and a polyethylene hood with stainless steel brackets.

For Size	L cm	H cm	N mm	Qty.	Order Code	Complete
25mm	120	12.7	24	1	7494-25	199.41
25mm	120	12.7	24	1	7494-35	231.98
50mm	120	25.4	49	1	7494-27	370.15

Hood Only, with Brackets	Qty.	Order Code	Each
For 25mm	1	7494-89	156.80
For 50mm	1	7494-96	290.64

7494

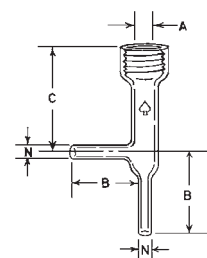


New — 7494-35 now with side sample port!

7495 AIR SAMPLING TEE with Reduced Ends ♠

Sampling tee with top threaded, side and bottom tubes reduced for use with 7506 bushing.

A mm	B mm	C mm	N mm	Qty.	Order Code	Each
25	76	76	24	1	7495-06	64.04
50	102	102	49	1	7495-08	223.60

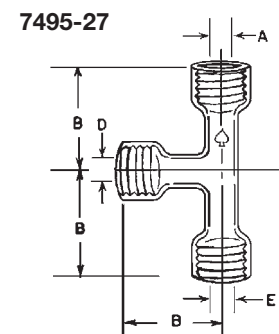


7495-06

7495 AIR SAMPLING TEE ♠

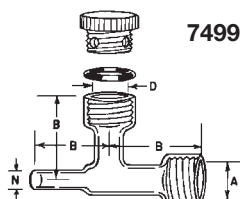
Sampling tee with threads on all three arms for use with either 7506 bushing or 5841 coupling.

A mm	B mm	D mm	E mm	Qty.	Order Code	Each
25	76	25	25	1	7495-27	157.45



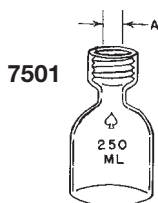
7495-27

7499 AIR SAMPLING BLEED ADAPTER ♠



Adjustable bleed adapter used for reducing air flow in the air sampling manifold to prevent a pressure drop across the sampling ports. Normally installed in front of the 7511 blower, in line with the manifold. Positioning of holes in threaded nylon plug controls the volume of air flow. Plug supplied with o-ring. For nylon plug only, order 7499-33.

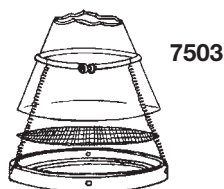
A mm	B mm	D mm	N mm	Qty.	<i>Glass Only</i>		<i>Complete</i>	
					Order Code	Each	Order Code	Each
25	76	25	24	1	7499-12	146.43	7499-21	228.12
50	102	25	49	1	7499-15	243.48	7499-23	325.17



7501 AIR SAMPLING COLLECTION BOTTLE ♠

Collection bottle, usually connected to the bottom arm of the 7495 (page 211) tee with reduced ends, to collect heavy particulates before they enter the manifold train.

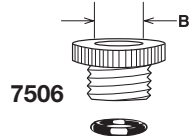
A mm	Cap., mL	Qty.	Order Code	Each
25	250	1	7501-11	63.56
50	250	1	7501-15	130.96



7503 FILTER SCREEN ♠

PTFE filter screen, 6.4 mm mesh, for use on the funnel end of a 7493 (page 211). Screen is held on the bottom of the funnel by a stainless steel yoke retainer and three springs. Available for the 25 size sampling cane.

For Funnel Size	Screen Size, mm	Qty.	<i>Screen Only</i>		<i>Retainer Only</i>		<i>Complete</i>	
			Order Code	Each	Order Code	Each	Order Code	Each
25	152	1	7503-05	31.38	7503-15	99.56	7503-25	130.94



7506 BUSHING *Nylon or PTFE* ♠

Bushing connector for joining a threaded end to a reduced end tube in the air sampling glassware. Available in either nylon or PTFE. One FETFE o-ring supplied with each bushing. For extra o-rings, see 7853.

For Size	B mm	O-Ring Size	Qty.	<i>Nylon</i>		<i>PTFE</i>	
				Order Code	Each	Order Code	Each
11	10	-012	1	7506-02	11.39	7506-23	39.80
25	26	-212	1	7506-10	21.17	7506-31	56.15
50	49	-225	1	7506-14	73.24	7506-35	122.29



5029/5846 BUSHING/PLUG *Nylon or PTFE* ♠

Machine threaded nylon or PTFE bushing with hole in center or solid. Used in threaded ports of air sampling manifolds and other apparatus with similar internal threads. One FETFE o-ring supplied with each bushing. For extra o-rings, see 7853-704.

	Qty.	<i>Nylon</i>		<i>PTFE</i>	
		Order Code	Each	Order Code	Each
With hole	1	5029-10	2.85	5029-35	14.49
Solid	1	5846-04	9.48	5846-44	22.79

5841 COUPLING *Nylon or PTFE* ♠

For coupling manifolds in leak-tight engagement with hand pressure and no significant size reduction in I.D. Size listed refers to inside diameter of threads and corresponds to 7488 manifold diameter. Supplied with two FETFE o-rings. For extra o-rings, see 7853.



For Thread Size, mm	Qty.	<i>Nylon</i>		<i>PTFE</i>	
		Order Code	Each	Order Code	Each
11	1	5841-06	28.27	5841-46	56.37
25	1	5841-16	51.42	5841-50	106.09
50	1	5841-22	116.72	5841-52	217.97

7855 REPLACEMENT O-RINGS *FETFE* ♠

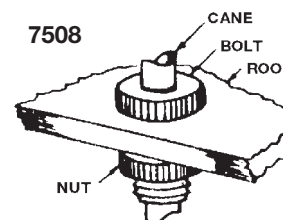
Replacement o-rings for the 7506 bushing.



For Bushing Size	O-Ring Size	Qty.	Order Code	Per Pkg.
11	-012	12	7855-708	15.91
25	-212	6	7855-734	20.74
50	-225	3	7855-744	21.84

7508 ROOF ATTACHMENT *Nylon* ♠

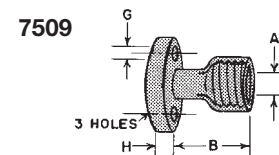
Roof attachment for securing sampling cane to roof of van. Fabricated from nylon with two o-rings that make a watertight seal. Threaded length is 20.3cm (8 inches).



Thread Size	Roof Hole Size, mm (In.)	Qty.	Order Code	Each
25	38 (1-1/2)	1	7508-06	235.63
50	64 (2-1/2)	1	7508-08	294.08

7509 BLOWER MOUNT ♠

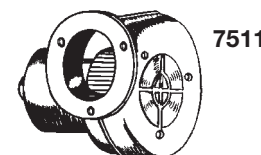
Aluminum blower mount for connecting 7511 blower to glass manifold. With threaded stock.



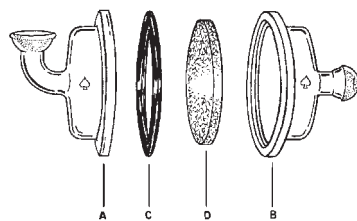
A, mm	B, mm	G, mm	H, mm	Qty.	Order Code	Each
25	60.5	5	3	1	7509-09	192.56
50	76	5	3	1	7509-13	262.70

7511 BLOWER ♠

Shaded pole blower used to pull air through the air sampling manifold. Blower has air delivery of 1.7m³/Min. (60 CFM) at 0.0 meters of water static pressure which assures a minimum pressure drop across each port in the manifold train. Free air rpm is 3030. Operates on 115 volts, 50/60 cycles. A 230 volt, 50 cycle version is available via special order.



Blower Capacity	Qty.	Order Code	Each
1.7m ³ /Min.	1	7511-10	130.90



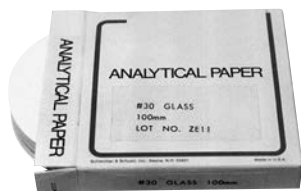
7519

7519 FILTER SUPPORT ASSEMBLY ♠

Filter support assembly for collecting dust particles in a stack sampling system. Available in either 51mm (2-inch), 76mm (3-inch) or 102mm (4-inch, illustrated) size.

Consists of: PART A, with $\$ 28/15$ outer joint bent perpendicular to flow path; PART B, with seat for fritted disc and $\$ 28/15$ inner joint; PART C, neoprene gasket used to seal filter paper and prevent leakage around filter; PART D, Porosity B fritted disc. Use 7669-22 to clamp 51mm size, 6509-03 for 76mm size, and 6509-05 for the 102mm size.

Qty.	51mm		76mm		102mm		
	Order Code	Each	Order Code	Each	Order Code	Each	
Part A	1	7519-04	124.00	7519-05	151.19	7519-06	301.52
Part C	1	7519-08	7.74	7519-09	8.89	7519-10	11.82
Part D	1	7519-11	39.61	7519-12	58.08	7519-13	79.44
Part B $\$ 28/15$	1	7519-22	112.68	7519-25	128.20	7519-30	220.39



11969

11969 FILTER PAPER *Glass Fiber*

A very efficient glass fiber paper that retains the finest particles and microorganisms, as much as 99.99% of 0.3 micron smoke.

Recommended for use with 7519 filter assembly. 100 circles per box.

Diameter, cm	For Use With	Qty.	Order Code	Per Box
7.0	7519-11	100	11969-62	30.83
11.0	7519-12	100	11969-66	43.06
12.5	7519-13	100	11969-70	75.80

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14205 SHAKE FLASK ASSEMBLY *CO², Gledhill*, Modified ♠*

Used for determining CO² evolution to assess biodegradability by soil and sewerage microorganisms. Shake flask, **(A)**, containing culture medium, fits standard laboratory shakers. #7 Ace-Thred side port with nylon bushing and FETFE o-ring holds a glass septum adapter, **(C)**. Insertion of this septum allows easier sampling or aeration while system is closed. Adapter can easily be removed for septa change. Inner well, **(B)**, contains culture material (Barium Hydroxide, etc.) and has a capacity of 10mL plus head space. Side hole in well permits good interface of vapors. Well is held securely in Ace-Thred with nylon bushing and FETFE o-ring that permits variable depth positioning. Well top is flared to accept septa, **(J)**, and can be removed or pierced to permit venting for aerating of culture media. One well fits all size vessels. Complete item consists of flask, well, septa adapter, septa for adapter and well, and bushings with FETFE o-rings.

Complete:

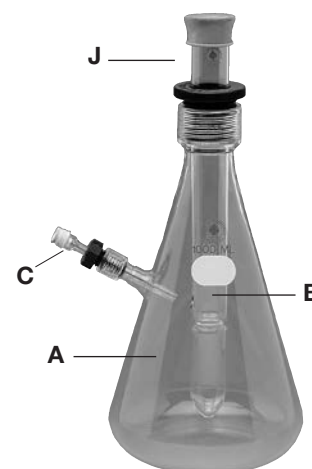
Flask Cap., mL	Qty.	Order Code	Complete
250	1	14205-37	148.04
500	1	14205-40	159.53
1000	1	14205-44	165.23
2000	1	14205-50	172.12

Replacement Parts:

	Qty.	Order Code	Each
Flask, #15, 250mL, only	1	14205-05	79.74
Flask, #25, 500mL, only	1	14205-07	80.86
Flask, #25, 1000mL, only	1	14205-09	86.56
Flask, #25, 2000mL, only	1	14205-13	93.45
Well, only, for #15	1	14205-23	43.10
Well, only, for #25	1	14205-25	44.05
Septum Adapter, only	1	14205-28	7.57
Bushing, Nylon #7	1	5029-10	2.85
Bushing, Nylon #15	1	7506-06	12.35
Bushing, Nylon #25	1	7506-10	21.17
O-Rings, FETFE for #7	12	7855-704	14.09
O-Rings, FETFE for #15	12	7855-716	20.37
O-Rings, FETFE for #25	6	7855-734	20.74
Septum for Side port	12	9096-32	15.50
Septum for Well, for #15	12	9096-48	13.71
Septum for Well, for #25	12	9096-56	20.86

*Dr. William E. Gledhill, Monsanto Company, as described in "Journal of Applied Microbiology," December 1975, pp 922-929.

Note: Other size flasks available, contact ACE for details.


14205
8781 VIALS *EPA, Screw Cap, 40mL ★*

Vials, fabricated from low extractable borosilicate glass, for use in water sampling according to EPA 40CFR136 *Guidelines for Establishing Test Procedures for the Analysis of Pollutants*. Vials are offered clear or amber, NOT PRE-CLEANED. Supplied assembled with open-top screw caps and specially designed septum of 10 mils of PTFE facing on 90 mils of silicone. Packed 36 pieces per tray, 72 pieces per case. 40mL capacity, only. Vials measure 27.75mm O.D. x 98mm high with cap on. Cap size is 24-400.

Vial Type	Qty.	Order Code	Case Price
Clear	72	8781-20	183.02
Amber	72	8781-25	197.75
Replacement Caps, only	200	8781-40	69.47
Replacement Septa, only	100	8781-45	200.67

NOT PRE-CLEANED

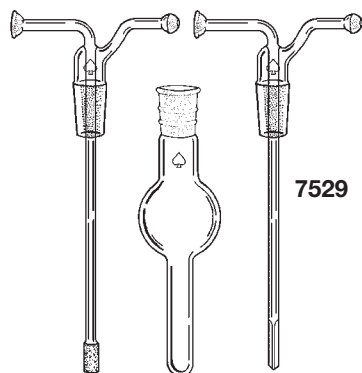
8781


See page 655 for a complete listing of vials.

Some of the apparatus in this section has been referred to in one or more of the publications listed here. Please check references for further information on the apparatus in which you are interested. You are invited to call on ACE for your custom requirements — we specialize in fabrication to your specifications.

REFERENCES:

1. *Selection Methods for the Measurement of Air Pollutants*. Public Health Service Publication No. 999-AP-11 (May 1965).
2. *Sampling Microbiological Aerosols*. Public Health Service Monograph No. 60.
3. *The Chemical Analysis of Air Pollutants* by Morris B. Jacobs, Ph.D. (Interscience Publishers).



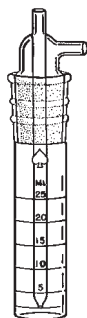
7529

7529 BUBBLER *Smog* ♠

Bubbler with either fritted tip or plain orifice tube. Bottle has $\text{F } 24/40$ joint and 10cm tube below bulge. Tube has $\text{F } 12/5$ outer joint on inlet arm and $\text{F } 12/5$ inner on outlet arm. Fritted tip is Porosity C (25-50 micron). Orifice tip is 1mm capillary with end tapered. Approximate capacity, with tube inserted, 200mL.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle	1	7529-07	40.99	Bottle	1	7529-07	40.99
Tube-Fritted	1	7529-10	105.48	Tube-Orifice	1	7529-14	107.07
Complete	1	7529-12	146.47	Complete	1	7529-16	148.06

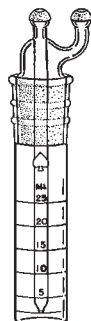
7531-10,-12



7531 MIDGET IMPINGER ♠

Used for sampling small air volumes at a low jet velocity. Bottle has encircling graduations from 0 to 25mL, or 0 to 30mL in 5mL divisions. Nozzle is calibrated to deliver 0.09 to 0.11 CFM at 30.5cm (12-inch) H₂O vacuum. Used in determination of oxidants: Alkaline Potassium Method. Joint is $\text{F } 24/40$. Inlet/outlet are 7mm O.D.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle (0-25mL)	1	7531-02	26.20	Bottle (0-30mL)	1	7531-04	24.95
Tube	1	7531-06	41.75	Tube	1	7531-06	41.75
Complete	1	7531-10	67.95	Complete	1	7531-12	66.70



7531-25

7531 MIDGET IMPINGER *Modified* ♠

Used for sampling air volumes at a low jet velocity. Bottle joint is $\text{F } 24/40$. Tube is modified with $\text{F } 12/5$ joints, both vertical (use 7669-08 clamp, page 134). Nozzle is calibrated to deliver 0.09 to 0.11 CFM at 30.5cm H₂O vacuum. Bottle is graduated 0 to 25mL in 5mL divisions.

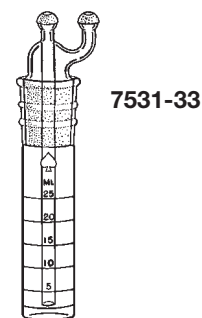
			<i>Tube Only</i>		<i>Complete</i>	
Inlet F Joint	Outlet F Joint	Qty.	Order Code	Each	Order Code	Each
12/5 Ball	12/5 Ball	1	7531-24	59.13	7531-25	85.33
12/5 Socket	12/5 Ball	1	7531-28	73.50	7531-29	99.70
		Qty.	Order Code	Each		
		1	7531-02	26.20		

7531 MIDGET IMPINGER *Modified* ♠

Tube is modified with S 12/5 joints, both vertical (use 7669-08 clamp, page 134). With plain nozzle. Bottle joint is S 24/40, with graduations from 0 to 25mL in 5mL divisions.

			<i>Tube Only</i>		<i>Complete</i>	
Inlet S Joint	Outlet S Joint	Qty.	Order Code	Each	Order Code	Each
12/5 Ball	12/5 Ball	1	7531-32	62.16	7531-33	88.36
12/5 Socket	12/5 Ball	1	7531-36	62.16	7531-37	88.36

	Qty.	Order Code	Each
Bottle Only	1	7531-02	26.20



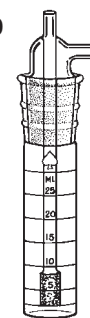
7531-33

7532 MIDGET BUBBLER ♠

Identical to 7531-10 with the exception that the nozzle is replaced by a sintered glass filter, porosity A (145-175 microns). Used in determination of Acrolein: 4-Hexylresorcinol Method #1. Bottle has encircling graduations from 0 to 25mL or 0 to 30mL in 5mL divisions. Inlet/outlet are 7mm O.D.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle (0-25mL)	1	7531-02	26.20	Bottle (0-30mL)	1	7531-04	24.95
Tube	1	7532-06	50.30	Tube	1	7532-06	50.30
Complete	1	7532-10	76.50	Complete	1	7532-20	75.25

7532-10, -20



7533 MIDGET IMPINGER *with Ace-Threds on Inlet/Outlet* ♠

Used for sampling air volumes at low jet velocity. Bottle joint is S 24/40. Tube uses #7 "Ace-Safe" removable hose connections for easy connect/disconnect. Nozzle is calibrated to deliver 0.09 to 0.11 CFM at 30.5cm (12 inches) H₂O vacuum. Bottle has encircling graduations from 0 to 25mL or 0 to 30mL in 5mL divisions. Complete item supplied with connectors and bushings.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle (0-25mL)	1	7531-02	26.20	Bottle (0-30mL)	1	7531-04	24.95
Tube	1	7533-08	90.80	Tube	1	7533-08	90.80
Complete	1	7533-15	117.00	Complete	1	7533-23	115.75



7533-15, -23

7533 MIDGET BUBBLER *with Ace-Threds on Inlet/Outlet* ♠

Used for sampling air volumes at low jet velocity. Bottle joint is S 24/40. Stopper uses #7 "Ace-Safe" removable hose connections for easy connect/disconnect. Nozzle has sintered glass filter, Porosity A (145-175 microns) or Porosity B (70-100 micron). Bottle has encircling graduations from 0 to 25mL or 0 to 30mL in 5mL divisions. Complete item supplied with connectors and bushings.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle (0-25mL)	1	7531-02	26.20	Bottle (0-30mL)	1	7531-04	24.95
Tube, Por. A	1	7533-11	94.25	Tube, Por. A	1	7533-11	94.25
Complete, Por. A	1	7533-18	120.45	Complete, Por. A	1	7533-27	119.20
Tube, Por. B	1	7533-13	94.25	Tube, Por. B	1	7533-13	94.25
Complete, Por. B	1	7533-19	120.45	Complete, Por. B	1	7533-28	119.20



7533-19, -28



7198

7198 TUBE *Gas Dispersion* ♠

Supplied with 6, 7 or 8mm O.D. stem tubing, 150mm overall length. Maximum O.D. of bottom and filter disc is 20mm. Filter disc is 10mm diameter, Porosity B (70-100 micron).

Stem O.D.	Qty.	Order Code	Each
6	1	7198-06	50.49
7	1	7198-07	50.49
8	1	7198-08	50.49



7536-10

7536 IMPINGER *Greenburg-Smith* ♠

A high velocity impinger for the determination of dust concentration in air or other gases. A glass plate is located at a distance of 5mm below the orifice tip so that incoming particles are impinged onto the plate and are momentarily arrested, after which they are washed into the liquid. Total volume is approximately 500mL. Bottle joint is ₣ 45/50. Inlet/outlet are both 12.5mm O.D.

	Qty.	Order Code	Each
Bottle	1	7536-04	89.63
Tube	1	7536-06	132.74
Complete	1	7536-10	222.37



7536-26

7536 IMPINGER *Greenburg-Smith, Modified* ♠

Same as 7536-10, except tube is modified with spherical joints, both vertical, for connecting in series. Use 7669-10 clamp for ₣ 18/9; 7669-12 for ₣ 28/15. For connecting adapters, see 5065 page 220 and 5072 (page 220). Bottle joint is ₣ 45/50.

Inlet		Outlet		<i>Tube Only</i>		<i>Complete</i>	
₣ Top Joint	Qty.	₣ Top Joint	Qty.	Order Code	Each	Order Code	Each
18/9 Ball	1	18/9 Ball	1	7536-25	153.55	7536-26	243.18
28/15 Socket	1	28/15 Ball	1	7536-31	168.55	7536-32	258.18
		Qty.	Order Code	Each			
Bottle Only		1	7536-04	89.63			

*₣28/15 is interchangeable with ₣28/12 and ₣28/11.



7536-13

7536 IMPINGER *Greenburg-Smith, Modified* ♠

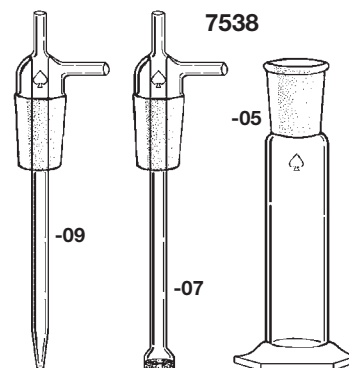
A high velocity impinger for the determination of dust concentration in air or other gases. Tube is modified with spherical joints, both vertical. Stem without impinging plate, cut flat. Bottle is ungraduated, joint is ₣ 45/50.

Inlet		Outlet		<i>Tube Only</i>		<i>Complete</i>	
₣ Top Joint	Qty.	₣ Top Joint	Qty.	Order Code	Each	Order Code	Each
18/9 Ball	1	18/9 Ball	1	7536-12	161.35	7536-13	250.98
28/15 Socket	1	28/15 Ball	1	7536-15	150.63	7536-16	240.26
		Qty.	Order Code	Each			
Bottle Only		1	7536-04	89.63			

7538 IMPINGER *Sherer* ♠

Consists of bottle with hex base and F 45/50 top joint, and either an SO₂ bubbler tube with 25 mm diameter Porosity C (25-50 micron) fritted disc, or an impinger stopper. Capacity, 275mL. Inlet/outlet tubes are 8mm.

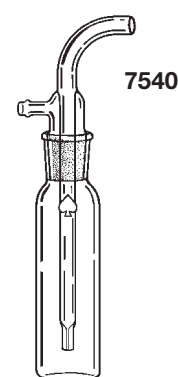
	Qty.	Order Code	Each		Qty.	Order Code	Each
Bottle	1	7538-05	85.61	Bottle	1	7538-05	85.61
Bubbler Tube	1	7538-07	144.67	Impinger Stopper	1	7538-09	135.85
Complete	1	7538-27	230.28	Complete	1	7538-29	221.46



7540 IMPINGER *Air Sampling* ♠

A high velocity impinger (Ref. AGI-30) which passes 12.0 to 13.0L/min (+/-4%, corrected to engineering standard gas conditions) when the pressure drop across the orifice is 41cm Hg. or greater. Tip of capillary stem is 30mm from the flask bottom which provides an increase in the collection of viable vegetative cells. Joint is F 24/25. Capacity approximately 125mL. Center tube is 11mm O.D.; side is 8mm O.D. with bulge.

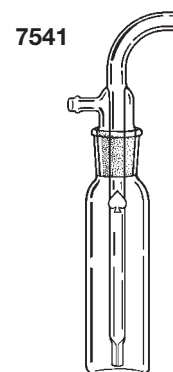
	Qty.	Order Code	Each
Bottle	1	7540-04	26.14
Tube	1	7540-06	68.63
Complete	1	7540-10	94.77



7541 IMPINGER *Air Sampling* ♠

A high velocity impinger which passes 6L/min. (corrected to engineering standard gas conditions) when the pressure drop across the orifice is 41cm Hg. or greater. Tip of capillary stem is 4mm from the flask bottom. Joint is F 24/25. Capacity approximately 125mL. Center tube is 11mm O.D.; side is 8mm O.D. with bulge.

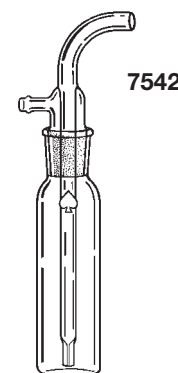
	Qty.	Order Code	Each
Bottle	1	7540-04	26.14
Tube	1	7541-06	70.10
Complete	1	7541-10	96.24

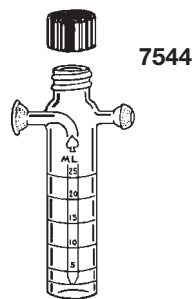


7542 IMPINGER *Air Sampling* ♠

A high velocity impinger (Ref. AGI-4) which passes 12.5L/min (+/-4%, corrected to engineering standard gas conditions) when the pressure drop across the orifice is 41cm Hg. or greater. Tip of capillary tube is 4mm from the flask bottom. Joint is F 24/25. Capacity approximately 125mL. Center tube is 11mm O.D.; side is 8mm O.D. with bulge.

	Qty.	Order Code	Each
Bottle	1	7540-04	26.14
Tube	1	7542-06	71.79
Complete	1	7542-10	97.93




7544 MIDGET IMPINGER Modified ♠

Unique impinger designed to be more economical when connecting in series — eliminates need for connecting tubes. The $\frac{1}{2}$ 12/5 joints are perpendicular and come directly off bottle 180° apart. Screw cap on bottle has PTFE liner. Each bottle has one ball and one socket joint. Capacity 25mL. Bottle is dimensionally the same as 7531. Use 7669-08 (page 134) clamps.

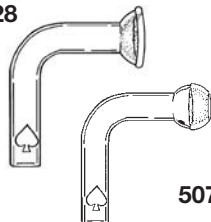
Joint Style	Qty.	Order Code	Each
180°	1	7544-35	107.65


5065 ADAPTER "U" ♠

Connecting adapter, U-shaped, with spherical joints at both ends.

$\frac{1}{2}$ Joint Combinations	A, mm	Qty.	Order Code	Each
12/5 Socket – 12/5 Socket	31	1	5065-22	45.28
18/11 Socket – 18/11 Socket	75	1	5065-29	48.99
28/15 Socket – 28/15 Socket	75	1	5065-32	52.85

5072-28



5072-20

5072 ADAPTER 90° Angle ♠
A

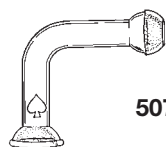
Adapter with spherical ball joint at one end, other end plain.

$\frac{1}{2}$ Joint	Qty.	Order Code	Each
12/5	1	5072-20	23.38
18/9	1	5072-22	24.17
28/15	1	5072-24	24.17

B

Adapter with spherical socket at one end, other end plain.

$\frac{1}{2}$ Joint	Qty.	Order Code	Each
12/5	1	5072-28	23.82
18/9	1	5072-30	25.26
28/15	1	5072-34	26.88



5072-37

5072 ADAPTER 90° Angle ♠

With spherical joint at both ends.

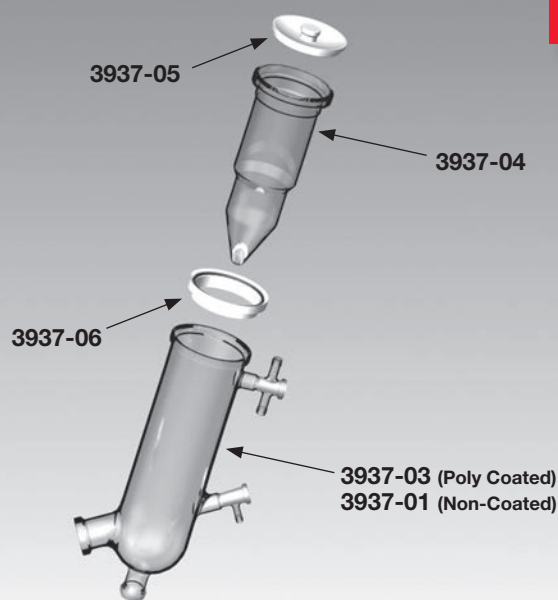
$\frac{1}{2}$ Joint Combinations	Qty.	Order Code	Each	$\frac{1}{2}$ Joint Combinations	Qty.	Order Code	Each
12/5 Ball – 12/5 Socket	1	5072-37	44.04	28/15 Ball – 28/15 Socket	1	5072-43	51.58
12/5 Socket – 12/5 Socket	1	5072-38	44.67	28/15 Socket – 28/15 Socket	1	5072-45	54.51

ACE Glass Fiber Filter Discs

ACE Designation	Porosity Maximum Pore Diameter Range (micron)	Corning, Kimble & ChemGlass Equivalent	Uses
A	145-174	EC (170-220)	Coarse Filtration
B	70-100	—	Coarse Filtration
C	25-50	C (40-60)	Gas Dispersion
D	10-20	M (10-15)	Extraction
E	4-8	F (4-5.5)	Extraction

Replacement Glassware for Rotary Evaporators

3937 Condenser "C" Assembly for Rotary Evaporators ★



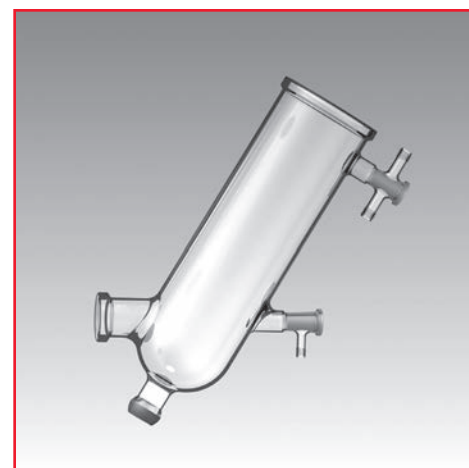
3937-10 (Poly Coated) 3937-100 (Non-Coated)



Fits Buchi Models 200/205 and Series 114-144

Glassware can be ordered either poly coated or standard non-coated. The "C" Assembly contains the main glass outer trap body with a 35/20 inner ball joint bottom connection that attaches to the receiver flasks (which are sold separately). Features standard top and side flange that connects directly to the Buchi rotary evaporator. Assembly "C" also includes the glass cold trap inner body, Buchi Part #00672, PTFE sealing ring with Viton o-rings, PTFE lid or cap, PTFE hose barbs and GL threaded caps.

EVAPORATORS



**3937-03 (Poly Coated)
3937-01 (Non-Coated)**



3937-04

"C" Assembly Poly Coated ★

Description	Buchi Part #	Qty.	Order Code	Each
Complete "C" Assembly	40646	1	3937-10	1132.95
Complete "C" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40642	1	3937-12	1239.97

Poly Coated Components

Outer trap body only	40643	1	3937-03	680.27
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"C" Assembly Non-Coated ★

Complete "C" Assembly	40645	1	3937-100	1120.60
Complete "C" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40640	1	3937-112	1186.88

Individual Components — Non-Coated

Outer trap body only	40641	1	3937-01	643.17
Cold trap inner body	00672	1	3937-04	197.89
PTFE Lid	27479	1	3937-05	162.74
PTFE seal ring with Viton o-ring	27462	1	3937-06	140.62
Stopcock (Bottom)	40627	1	13295-08	78.27
Stopcock (Top)	40628	1	13295-10	99.49
29/32 joint adapter (without clip)	40615	1	3954-04	107.92
Stainless steel clamp	03275	1	7669-14	18.51
Glass steam tube (part of Buchi #40016)	40610	1	3958-02	74.07

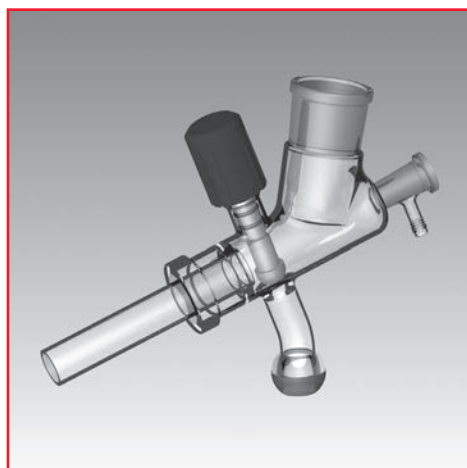
See page 225 for individual flask listings.

Replacement Glassware for Rotary Evaporators

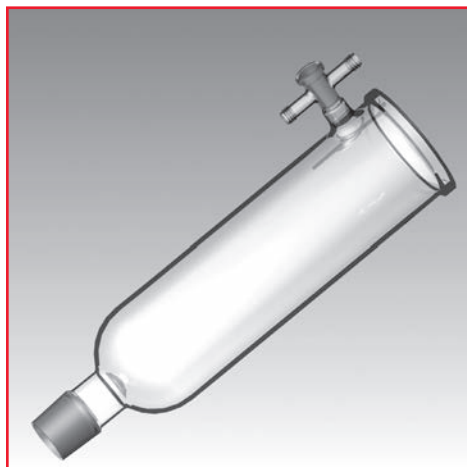
3938 Condenser "CR" Assembly for Rotary Evaporators ★

Fits Buchi Models 200/205 and Series 114-144

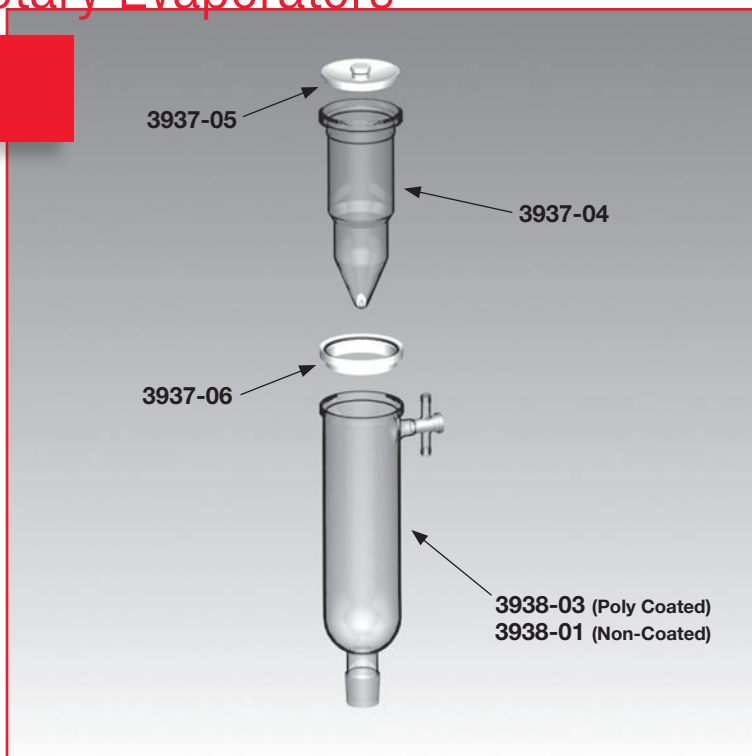
Assembly is very similar to "C" Assembly except that the bottom joint is $\text{F} 45/50$ inner to fit into separate distribution head. Complete "CR" Assembly includes main glass cold trap outer body, glass cold trap inner body, PTFE cap, PTFE seal ring with Viton o-rings, GL thread caps and hose barbs.



3955-03 (Poly Coated)
3955-08 (Non-Coated)



3938-03 (Poly Coated)
3938-01 (Non-Coated)



3938-10 (Poly Coated) 3938-100 (Non-Coated)

"CR" Assembly Poly Coated ★

Description	Buchi Part #	Qty.	Order Code	Each
Complete "CR" Assembly	33478	1	3938-10	1247.99
Poly Coated Components				
Cold trap condenser body only	25614	1	3938-03	735.94
Lower distribution head with shut-off valve	40658	1	3955-03	559.77

"CR" Assembly Non-Coated ★

Complete "CR" Assembly	11511	1	3938-100	1151.52
Individual Components – Non-Coated				
Cold trap condenser body only	11228	1	3938-01	680.27
Lower distribution head with shut-off valve	40657	1	3955-08	546.90
Cold trap inner body	00672	1	3937-04	197.89
PTFE Lid	27479	1	3937-05	162.74
PTFE seal ring with Viton o-ring	27462	1	3937-06	140.62
Stopcock (Bottom)	40627	1	13295-08	78.27
Stopcock (Top)	40628	1	13295-10	99.49
29/32 joint adapter (without clip)	40615	1	3954-04	107.92
Stainless steel clamp	03275	1	7669-14	18.51
Glass steam tube (part of Buchi #40016)	40610	1	3958-02	74.07

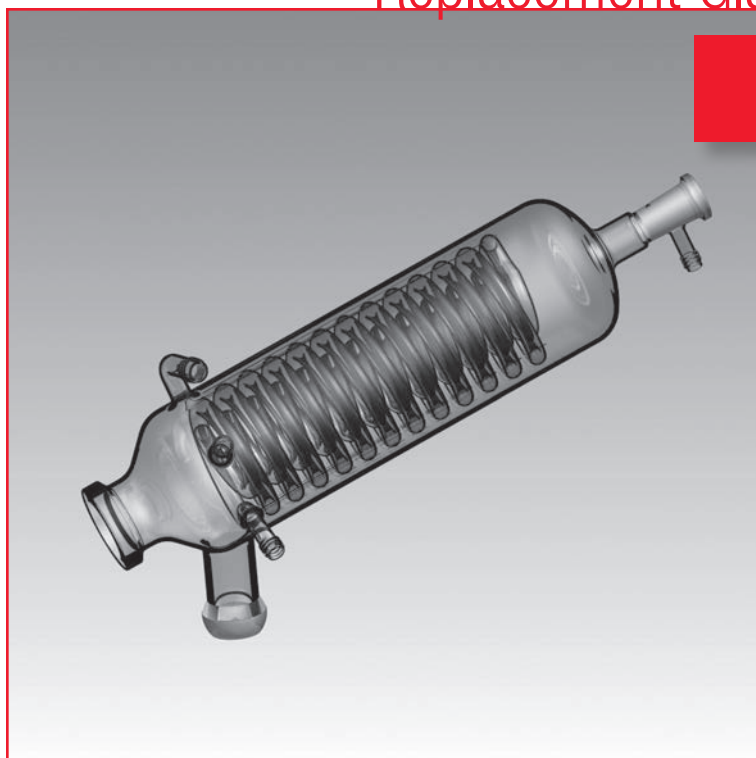
See page 225 for individual flask listings.

Replacement Glassware for Rotary Evaporators

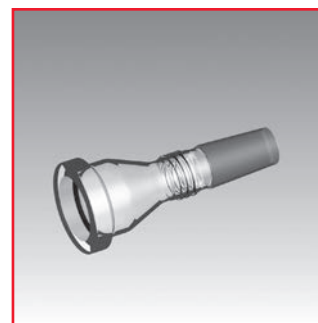
3950 Condenser "A" Assembly for Rotary Evaporators ★

Fits Buchi Models 200/205 and Series 114-144

Complete "A" Assembly includes main glass condenser body with inner coil for angled installation, o-ring, GL thread caps and hose barbs. Bottom joint is ⌀ 35/20.



3950-01 (Poly Coated) 3950-03 (Non-Coated)



3954



3958-02

"A" Assembly Poly Coated ★

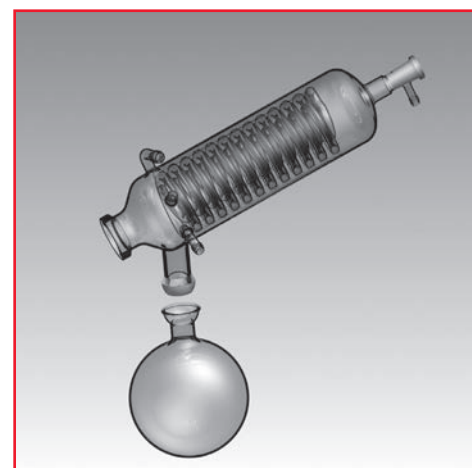
Description	Buchi Part #	Qty.	Order Code	Each
Complete "A" Condenser	40633/32304	1	3950-01	681.22
Complete "A" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40632	1	3950-10	788.24

"A" Assembly Non-Coated ★

Complete "A" Condenser	40631	1	3950-03	648.79
Complete "A" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40630	1	3950-07	715.07

Individual Components — Non-Coated

29/32 joint adapter (without clip)	40615	1	3954-04	107.92
Stopcock	40627	1	13295-08	78.27
Stainless steel clamp	03275	1	7669-14	18.51
Glass steam tube (part of Buchi #40016)	40610	1	3958-02	74.07



3950-10 (Poly Coated)
 3950-07 (Non-Coated)

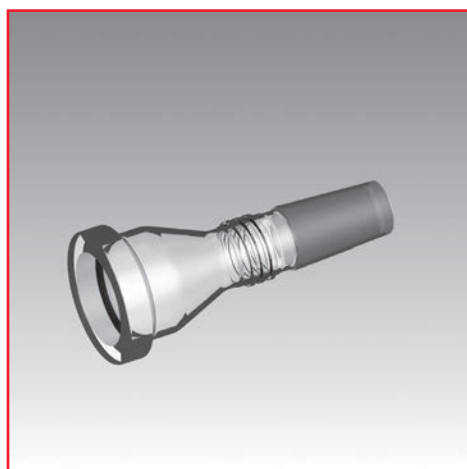
See page 225 for individual flask listings.

Replacement Glassware for Rotary Evaporators

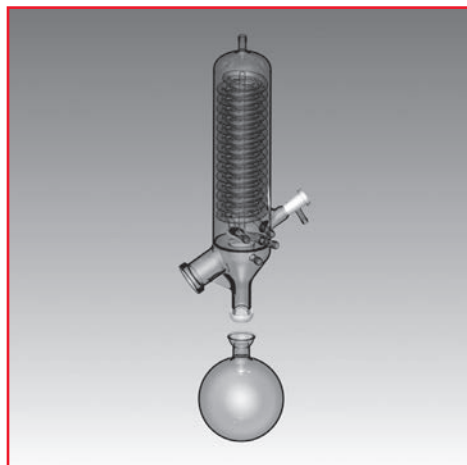
3951 Condenser "V" Assembly for Rotary Evaporators ★

Fits Buchi Models 200/205 and Series 114-144

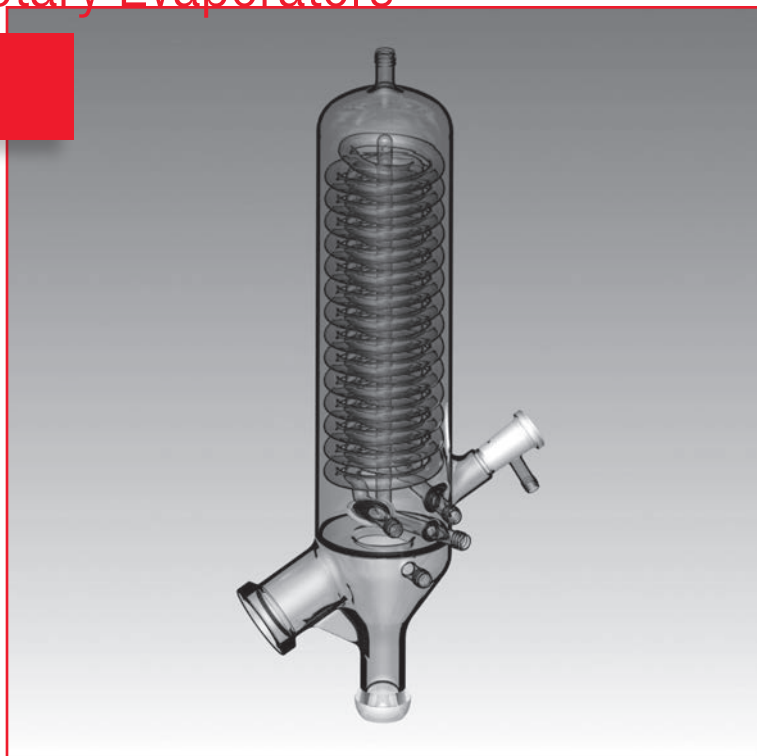
Complete "V" Assembly includes main glass vertical condenser body with inner coil, o-ring, GL thread caps and hose barbs. Bottom joint is $\text{S } 35/20$.



3954



3951-10 (Poly Coated)
3951-05 (Non-Coated)



3951-01 (Poly Coated) 3951-03 (Non-Coated)

Value

"V" Assembly Poly Coated ★

Description	Buchi Part #	Qty.	Order Code	Each
Complete "V" Condenser	40603/32304	1	3951-01	681.23
Complete "V" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40602	1	3951-10	788.25

"V" Assembly Non-Coated ★

Complete "V" Condenser	40601	1	3951-03	653.70
Complete "V" Assembly. Also includes 1 x 1000mL receiving flask, stainless steel clamp	40600	1	3951-05	719.98

Individual Components – Non-Coated

29/32 joint adapter (without clip)	40615	1	3954-04	107.92
Stopcock	40627	1	13295-08	78.27
Stainless steel clamp	03275	1	7669-14	18.51
Glass steam tube (part of Buchi #40016)	40610	1	3958-02	74.07

See page 225 for individual flask listings.

Replacement Glassware for Buchi Rotary Evaporators

13285 VAPOR DUCT TUBES *Without Combi Clip* ★

Joint	Fits Buchi Models	Length, mm	For Assy.	Buchi Part #	Qty.	Order Code	Each
29/32	210-215	160	A	46964	1	13285-04*	84.81
24/40	210-215	160	A	48068	1	13285-06*	84.81
29/32	210-215	54	V	46962	1	13285-08*	84.81
24/40	210-215	54	V	48067	1	13285-10*	84.81
29/32	R114-R144	165	A	32001	1	13285-20**	84.81
24/40	R114-R144	165	A	32336	1	13285-22**	84.81
29/42	R114-R144	165	A	32338	1	13285-24**	84.81
29/32	R114-R144	55	V	32002	1	13285-26**	84.81
24/40	R114-R144	55	V	32335	1	13285-28**	84.81
29/42	R114-R144	55	V	32337	1	13285-30**	84.81



*Same as Buchi part numbers 48160, 48161, 48165 and 48164, except the above are without clip.

**Same as Buchi part numbers 32340, 32342, 32344, 32339, 32341, 32343, except the above are without clip.

3954 JOINT — FLASK ADAPTERS *Without Combi Clip* ★

Joint	Fits Buchi Models	Buchi Part #	Qty.	Order Code	Each
29/32	200-205	40615	1	3954-04	107.92
24/40	200-205	40616	1	3954-06	106.86
29/42	200-205	40617	1	3954-08	106.86
24/40	114-144	23747	1	3954-11	135.67

Stopcocks

	Buchi Part #	Qty.	Order Code	Each
Stopcock (Bottom)	40627	1	13295-08	78.27
Stopcock (Top)	40628	1	13295-10	99.49

3954


3996/6902 FLASK *Receiving, Single Neck, Round Bottom, Heavy Wall* ♠

Poly Coated

Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
35/20	50mL		1	3996-02	58.13
35/20	100mL		1	3996-04	48.83
35/20	250mL		1	3996-06	50.79
35/20	500mL		1	3996-08	72.41
35/20	1000mL	40775/20728	1	3996-20	88.51
35/20	2000mL	40776/25265	1	3996-22	101.57
35/20	3000mL	40777/25266	1	3996-24	120.92

Non-Coated

35/20	1000mL	00425	1	6902-227	47.77
35/20	2000mL	00426	1	6902-228	78.97
35/20	3000mL	00427	1	6902-229	97.30
35/25	50mL		1	6902-234	41.25
35/25	100mL		1	6902-235	34.67
35/25	250mL		1	6902-238	35.14
35/25	500mL		1	6902-240	39.30


New Sizes!

3990/6892 FLASK Recovery, Pear Shaped with Joint, Heavy Wall ♠

Poly Coated

Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
29/42	50mL		1	3990-10	44.74
24/40	50mL		1	3990-12	38.26
29/32	50mL		1	3990-14	38.26
29/42	100mL		1	3990-20	44.74
24/40	100mL		1	3990-22	38.90
29/32	100mL		1	3990-24	44.74
29/42	250mL		1	3990-30	53.35
24/40	250mL		1	3990-32	53.35
29/32	250mL		1	3990-34	53.35
29/32	500mL	25322	1	3990-104	64.99
29/32	1000mL	20729	1	3990-106	74.07
29/32	2000mL	25323	1	3990-108	89.17
29/42	500mL	—	1	3990-120	64.99
29/42	1000mL	25517	1	3990-122	82.64
29/42	2000mL	—	1	3990-124	139.09
24/40	500mL	25261	1	3990-132	64.61
24/40	1000mL	20730	1	3990-134	105.05
24/40	2000mL	25262	1	3990-136	139.09
29/42	3000mL		1	3990-140	161.72
24/40	3000mL		1	3990-142	161.72
29/32	3000mL		1	3990-144	161.72

Non-Coated

29/32	50mL		1	6892-203	33.77
24/40	50mL		1	6892-204	29.05
29/42	50mL		1	6892-205	33.77
24/25	50mL		1	6892-214	28.35
24/40	100mL		1	6892-206	29.46
29/42	100mL		1	6892-207	33.77
24/25	100mL		1	6892-216	29.05
24/40	200mL		1	6892-208	40.11
29/42	200mL		1	6892-209	45.03
24/25	200mL		1	6892-218	40.11
29/42	250mL		1	6892-211	40.11
29/32	500mL	00434	1	6892-213	46.68
29/32	100mL		1	6892-217	33.77
29/32	1000mL	00435	1	6892-231	58.79
29/32	2000mL	00436	1	6892-243	103.40
29/42	500mL	08739	1	6892-293	59.85
24/25	500mL		1	6892-222	58.13
29/42	1000mL	08762	1	6892-232	73.31
24/40	250mL		1	6892-237	46.45
29/32	250mL		1	6892-239	46.45
29/42	2000mL	08769	1	6892-242	103.40
29/42	3000mL		1	6892-245	141.64
29/32	3000mL		1	6892-247	141.64
24/40	3000mL		1	6892-249	133.57
24/40	500mL	08758	1	6892-212	58.13
24/40	1000mL	00440	1	6892-230	73.31
24/40	2000mL	08765	1	6892-240	103.40


3990/6892
New Sizes!

3994 FLASK *Recovery, Pear Shaped with Side Indents, Neck Joint, Heavy Wall ♠*
Poly Coated

Neck Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
29/32	500mL	—	1	3994-110	132.78
29/32	1000mL	—	1	3994-112	149.05
29/32	2000mL	—	1	3994-114	162.60
24/40	500mL	—	1	3994-120	132.78
24/40	1000mL	—	1	3994-124	149.05
24/40	2000mL	—	1	3994-126	162.60

Non-Coated

29/32	500mL	00452	1	3994-10	101.64
29/32	1000mL	00453	1	3994-12	115.20
29/32	2000mL	00454	1	3994-14	132.78
24/40	500mL	11579	1	3994-20	105.69
24/40	1000mL	00420	1	3994-22	119.25
24/40	2000mL	11580	1	3994-23	136.86


Indented
13295 STOPCOCK *with Inlet Feed Tube*

Used in **Heidolph 4000 Series Rotary Evaporator** condensers and other popular brand Rotary Evaporator condensers as inlet feed tube to allow continuous feed of volumes exceeding capacity of evaporating flask. Size is 19/38 with 6mm O.D. feed tube.

Qty.	Order Code	Each
1	13295-20	44.87


13295
3953 PURGE ADAPTER *Rotary Evaporator ♠*

Glass purge adapter for use with rotary evaporators. Top has a 35/25 socket joint for joining to the condenser or trap and the bottom has a 35/25 ball joint for joining to the receiver flask. Middle tube has either a 4mm PTFE stopcock or a 2mm valve to allow for purging of the vapor from the receiver flask or for adding purge gas into the flask. Overall length is 75 mm.

Description	Qty.	Order Code	Each
with 4mm PTFE stopcock	1	3953-03	68.02
with 2mm valve	1	3953-05	79.88

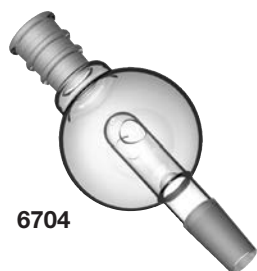

3953-05
3953-03


6703 TRAP *Rotary Evaporator, Boulanger, Self Washing* ♠

Self-washing rotary evaporator trap. Unique design incorporates an inverted, straight, heavy-walled expansion chamber that allows for flow-back of bumped materials. Condensation of evaporated solvent on walls of trap continuously rinses trap during operation. Vacuum stem has two opposing holes, flush with bottom of stem, to allow solvent vapor to rapidly flow out, while allowing condensed solvent to return to flask. This feature means the evaporator shaft is also continuously rinsed and the material returned to the flask. To prevent pooling of the condensate in the shaft trap, the end of the trap has a center hole for complete drainage. When solids are bumped onto the sides of the trap toward the end of solvent evaporation, introduction of a small amount of solvent at top of trap with a swirling motion effectively rinses the material back into the flask.

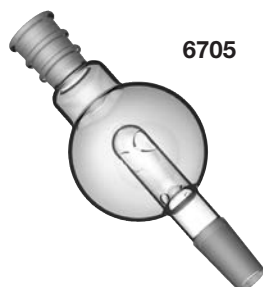
Capacity, mL	Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Qty.	Order Code	Each
100	24/40	14/20	1	6703-05	129.64
100	24/40	24/40	1	6703-10	129.21
250	24/40	14/20	1	6703-15	140.37
250	24/40	24/40	1	6703-20	138.24
250	29/42	29/42	1	6703-25	140.84

Designed by William A. Boulanger.


6704 TRAP *Rotary Evaporator, Anti-Splash* ♠

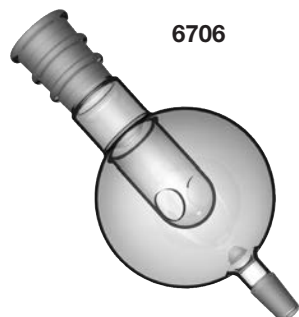
Greatly reduces carry-over from foaming or bumping.

Capacity, mL	Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Approx. Overall Height, mm	Qty.	Order Code	Each
100	24/40	14/20	145	1	6704-04	109.07
100	24/40	24/40	175	1	6704-08	109.89
100	29/42	14/20	145	1	6704-12	125.47
250	14/20	14/20	200	1	6704-14	101.63
250	24/40	24/40	200	1	6704-16	113.84
250	29/42	29/42	200	1	6704-20	134.29
500	24/40	24/40	215	1	6704-24	114.34


6705 TRAP *Rotary Evaporator, Anti-Splash, Improved* ♠

Greatly reduces carry-over from foaming or bumping. Two drain holes, close to base of the inner tube, allow solvent to drain back into evaporator flask.

Capacity, mL	Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Approx. Overall Height, mm	Qty.	Order Code	Each
100	24/40	14/20	145	1	6705-06	111.16
100	24/40	24/40	175	1	6705-10	111.94
250	14/20	14/20	200	1	6705-12	104.73
250	24/40	24/40	200	1	6705-14	114.76
250	29/42	29/42	200	1	6705-22	135.62
500	24/40	24/40	215	1	6705-26	116.35


6706 TRAP *Rotary Evaporator, Anti-Climb* ♠

Upper tubulation prevents migration of film and foam directly into the condenser.

Capacity, mL	Top Outer ⌘ Joint	Bottom Inner ⌘ Joint	Approx. Overall Height, mm	Qty.	Order Code	Each
100	24/40	14/20	160	1	6706-05	119.19
100	24/40	24/40	190	1	6706-09	122.60
250	24/40	14/20	180	1	6706-13	122.03
250	24/40	24/40	215	1	6706-17	127.87
250	29/42	29/42	215	1	6706-21	135.09

6710 TRAP *Elliptical* ♠

Space saving, elliptical shaped bump trap. For use in rotary evaporators between the steam tube and the evaporator flask. Prevents fluid from being drawn into the condenser. Shape allows for the same effect as standard traps but with less space between the flask and evaporator tube. This allows for use of larger flasks in the rotary evaporator bath.

Top Outer $\text{\textcircled{S}}$ Joint	Bottom Inner $\text{\textcircled{S}}$ Joint	Qty.	Order Code	Each
24/40	24/40	1	6710-01	106.65
29/42	29/42	1	6710-05	116.13
29/32	29/32	1	6710-07	116.13



6893 RECEIVING BOTTLE/FLASK ♠

Graduated, round bottom receiving flasks for use as replacement receivers on all glassware sets supplied with Heidolph LR4000 Series rotary evaporators or with other evaporators. 250mL size graduated in 10mL increments; 1000mL and 2000mL in 100mL increments. Joint is $\text{\textcircled{S}}$ 35/20.

Cap., mL	$\text{\textcircled{S}}$ Joint	O.D., mm	Lgth. below joint, mm	Qty.	Order Code	Each
250	35/20	75	120	1	6893-05	135.09
500	35/20	85	170	1	6893-15	157.61
1000	35/20	100	220	1	6893-21	191.64
2000	35/20	125	275	1	6893-27	232.93



8387 RECEIVING TUBE/CYLINDER ♠

Graduated, tapered bottom receiving tube for use as replacement receivers on all glassware sets supplied with Heidolph LR4000 Series rotary evaporators or with other evaporators. 100mL size graduated in 0.5mL increments from 0-10mL; 5mL increments from 10-100mL. Joint is $\text{\textcircled{S}}$ 35/20.

Cap., mL	$\text{\textcircled{S}}$ Joint	O.D., mm	Lgth. below joint, mm	Qty.	Order Code	Each
100	35/20	38	225	1	8387-04	121.90



13290 ADAPTER *Conversion* ♠

Glass adapter with $\text{\textcircled{S}}$ 24/40 or $\text{\textcircled{S}}$ 29/42 joint to #15 or #25. #15 is used with 13290-11 through -22 or 13290-121 through -134; #25 is used with 13290-26 or 13290-136 connecting adapter to connect vials or flasks to rotary evaporator. Suitable for vacuum work. Order each item separately.

$\text{\textcircled{S}}$ Joint	Ace-Thred	Qty.	Order Code	Each
24/40	#15	1	13290-34	22.78
24/40	#25	1	13290-37	79.26
29/42	#15	1	13290-44	24.05
29/42	#25	1	13290-47	80.98



Rotary evaporators begin on page 480.

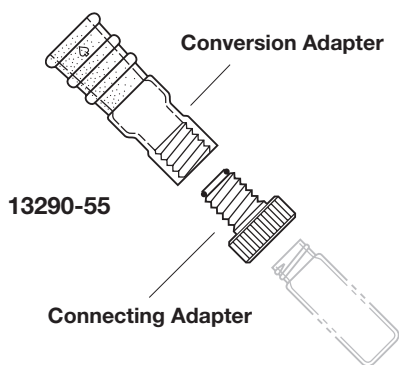


13290 ADAPTER *Connecting, PTFE* ★

PTFE Adapter with #15 or #25 Ace-Thred and GPI thread to connect 13290-34, -37, -44 or -47 conversion adapter to mating vial for use in rotary evaporator. Suitable for vacuum work. Order separately.

Note: FETFE not suitable for use with methylene chloride or acetone, use Chemraz.

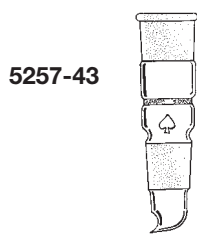
GPI Thread	Ace-Thred	Qty.	With FETFE O-Ring		With Chemraz O-Ring	
			Order Code	Each	Order Code	Each
8-425	#15	1	13290-11	20.23	13290-121	65.14
13-425	#15	1	13290-13	20.23	13290-123	65.14
15-425	#15	1	13290-15	20.23	13290-125	65.14
18-400	#15	1	13290-18	20.23	13290-128	65.14
20-400	#15	1	13290-20	20.23	13290-130	65.14
22-400	#15	1	13290-22	20.23	13290-132	65.14
24-410	#15	1	13290-24	20.80	13290-134	65.14
24-410	#25	1	13290-26	58.18	13290-136	151.98



13290 MULTIPACK CONNECTING ADAPTER KIT ★

Convenience kit with several PTFE Ace-Thred to GPI thread adapters to fit various vial sizes. 13290-55 version includes the -11 through -24 PTFE adapters listed above. 13290-59 version includes the -121 through -134 PTFE adapters listed above. The kit also includes one 13290-34 #15 glass conversion adapter.

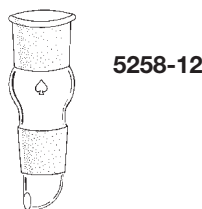
Qty.	Order Code	Per Kit
1	13290-55	164.96
1	13290-59	478.76



5257 ADAPTER *"Splash Guard," with Fritted Disc, Firestone** ♠

§ medium length joints, top and bottom, that will accept full length § joints, plus a coarse porosity A (145-174 micron) fritted disc that assures no carry-over in the event of pot splash-up. Overall length is kept to a minimum to effect best distillation.

Top Outer § Joint	Bottom Inner § Joint	Qty.	Order Code	Each
14/20	14/20	1	5257-43	78.62
24/25	24/25	1	5257-49	85.17
24/25	29/26	1	5257-53	88.62
24/25	45/35	1	5257-62	130.56



5258 ADAPTER *"Splash Guard," Firestone** ♠

§ medium length joints, top and bottom, that will accept full length § joints. When inserted into flask, splash guard combines with flask neck to give best protection against pot splash up. Overall height is kept to a minimum to effect best distillation.

Top Outer § Joint	Bottom Inner § Joint	Qty.	Order Code	Each
14/20	14/20	1	5258-06	61.83
24/25	24/25	1	5258-12	63.24

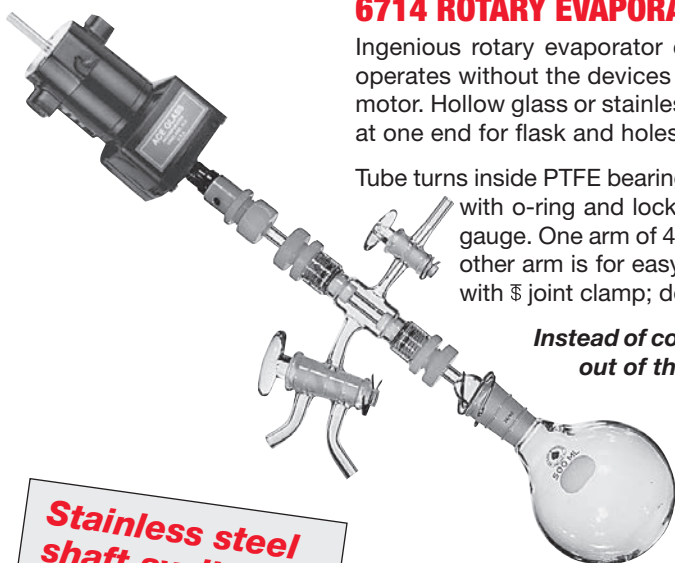
*Designed by Dr. Raymond Firestone

6714 ROTARY EVAPORATOR *Firestone**

Ingenious rotary evaporator constructed of glass or stainless steel, PTFE and glass-filled PTFE that operates without the devices normally associated with this type of equipment. Use with any lab stirring motor. Hollow glass or stainless steel (for larger capacity flasks) 10mm O.D. tube, with § 14/20 or § 24/40 at one end for flask and holes drilled near center for vacuum, attaches to laboratory stirring motor.

Tube turns inside PTFE bearing held in #15 Ace-Threds by glass-filled PTFE bushing, compression saddle with o-ring and lock nut. 2mm straight bore stopcock attaches to drying tube and/or McLeod gauge. One arm of 4mm bore double oblique stopcock attaches to dry ice trap and vacuum line; other arm is for easy vacuum release and can be connected to a trap. Complete item supplied with § joint clamp; does NOT include stirring motor, chuck, flask or splash guard.

Instead of connecting motor directly, use ACE 8081 flexible shaft, to get heavy motor out of the way (optional).



Stainless steel shaft available for heavier flasks

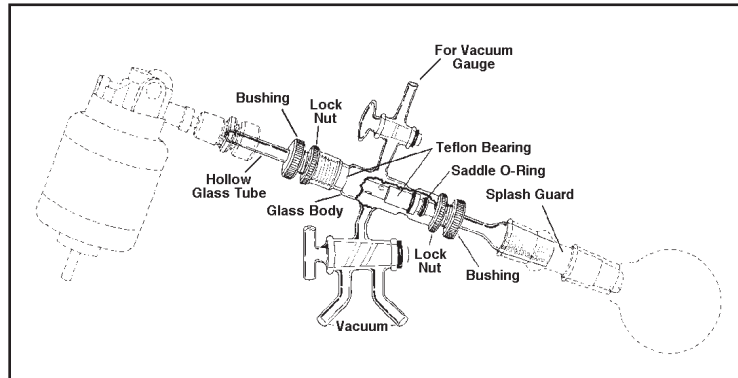
Can be all glass and PTFE

For Flask § Joint	Qty.	Glass Shaft		Stainless Steel Shaft	
		Order Code	Complete	Order Code	Complete
14/20	1	6714-36	♠ 463.66	6714-55	★ 919.59
24/40	1	6714-40	♠ 464.76	6714-58	★ 934.45

Replacement Parts

	Qty.	Order Code	Each
Glass Body, only	1	6714-04	♠ 236.19
Glass/PTFE Bushing, with o-ring, only	2	8066-12	♠ 31.34
Glass/PTFE Lock Nut, only	2	8066-13	♠ 10.23
Compression Saddle with o-ring, only	2	8066-15	♠ 11.37
PTFE Bearing, only	2	6714-06	♠ 32.42
Hollow Glass Tube, § 14/20	1	6714-07	♠ 61.68
Hollow Glass Tube, § 24/40	1	6714-08	♠ 62.78
Hollow S-S Tube, § 14/20	1	6714-22	★ 519.98
Hollow S-S Tube, § 24/40	1	6714-24	★ 605.88
Splash Guard, § 14/20	1	5258-06	♠ 61.83
Splash Guard, § 24/25	1	5258-12	♠ 63.24
Flexible Shaft, 91.4cm, Complete	1	8081-30	★ 192.51

(Additional size and information listed under 8081)



*Designed by Dr. Raymond Firestone

See our new Industrial Scale Rotary Evaporator Glassware – Ask for a copy of our new Bench & Kilo Class Reactors catalog!

Replacement Flasks for Buchi Large-Scale Evaporators

Easy replacement – select the size and capacity you need

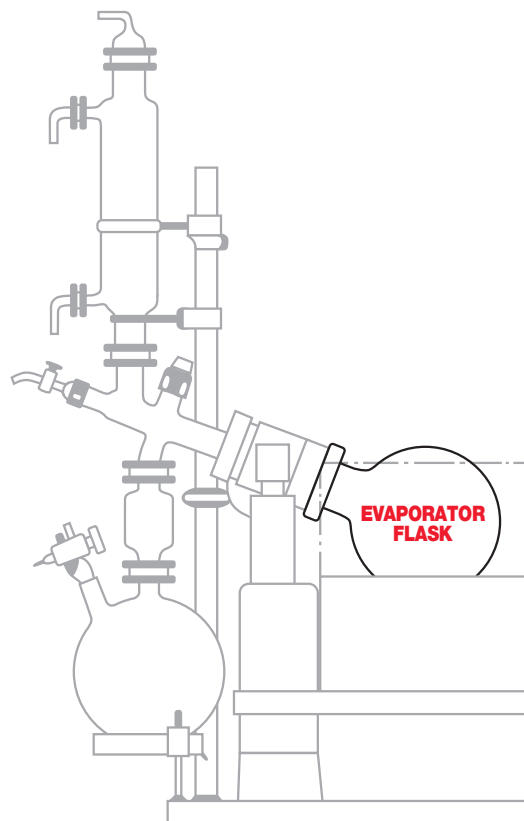
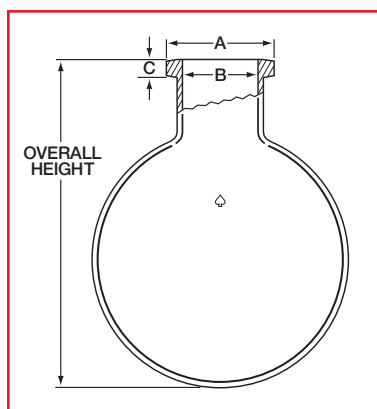
6702 LARGE EVAPORATOR FLASKS

These large flasks are from blanks selected for balance and quality. Necks are carefully welded to prevent “rotational whip.”

Flasks can be plastic coated upon request.*

Easy Order Instructions

1. Determine flange size (A) O.D., (B) I.D., (C) thickness (see diagram).
2. Match flask capacity with overall height and flange size.



1. Select flange size.

Flange Size Designation	A O.D., mm (Inches)	B I.D., mm (Inches)	C Thickness (mm)
S (Small)	90 (3.5)	67 (2.7)	18
M (Medium)	100 (3.9)	72 (2.8)	19
L (Large)	110 (4.3)	83 (3.3)	23
XL (Extra Large)	149.5 (5.9)	118.8 (4.7)	21

2. Select flask capacity and match with flange size.

Capacity, Liters	Overall Height, mm	Flange Size	Qty.	Order Code	Each
5	300	S	1	6702-05	207.12
5	325	M	1	6702-07	218.35
5	380	M	1	6702-10	218.35
5	295	L	1	6702-15	267.92
5	380	L	1	6702-17	276.88
5	351	XL	1	6702-19	287.58
10	350	S	1	6702-20	325.29
10	335	M	1	6702-25	344.16
10	413	M	1	6702-27	350.28
10	410	L	1	6702-30	389.46
10	380	XL	1	6702-33	431.18
20	375	M	1	6702-35	521.35
20	435	M	1	6702-37	510.16
20	435	L	1	6702-40	531.95
20	413	XL	1	6702-44	581.32
Plastic Coated → 5	380	M	1	6702-110*	Call

* Plastic coated flasks are transparent, and will withstand temperatures up to 100°C.

The coating is resistant to the occasional laboratory solvent or acid “splash,” but should not be soaked in them.

Avoid prolonged contact.

Special sizes can be made to order.
Call ACE GLASS for more information.

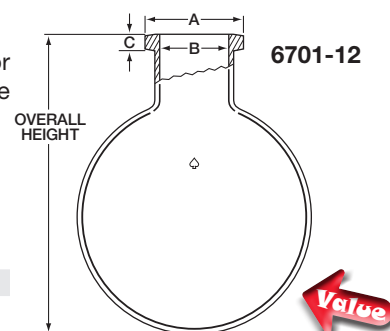
Replacement Items for Use with Heidolph Rotary Evaporators

(Turn to page 480 for Rotary Evaporators)

6701 LARGE EVAPORATOR FLASKS

Used with Heidolph 20L rotary evaporators. These large flasks are from blanks selected for balance and quality. Necks are carefully welded to prevent "rotational whip." Flasks can be plastic coated upon request.

Cap., Liters	Overall Height, mm	Flange			Qty.	Order Code	Each
		A O.D., mm	B I.D., mm	C mm			
10	345	143	118	18	1	6701-12	405.57
20	383	143	118	18	1	6701-22	520.75



6701 LARGE RECEIVER FLASKS

Used with Heidolph 20L rotary evaporators. This receiver flask is fabricated from blanks selected for balance and quality. Center neck is a polished § 40/25 joint, side neck is a GL-18 thread, supplied with solid cap. At bottom is a 0-10mm "Easy-Action" stopcock with a GL-18 side arm, supplied with a 3/8-inch hose connection tube. Flasks can be plastic coated upon request.

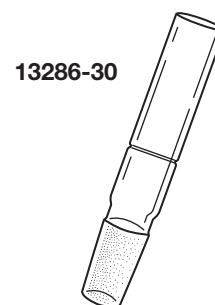
Cap., Liters	Overall Hght., mm	Center Neck	Side Neck	Bottom Outlet	Qty.	Order Code	Each
10	355	§ 40/25	GL18	0-10mm/GL-18	1	6701-44	883.26



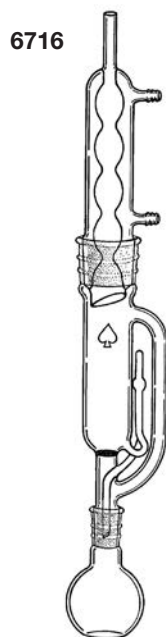
13286 VAPOR TUBE for Heidolph 4000 Series

Used as replacements with Heidolph 4000 Series rotary evaporators. Tube is secured in rotary drive with low-stress plastic clip that seats into groove behind § joint. Available plain or with Firestone "splash guard" to protect against splash-up. 13286-30 is supplied with Heidolph evaporator.

Type	§ Joint	Qty.	Order Code	Each
Plain	24/25	1	13286-28	79.06
Plain	24/40	1	13286-30	79.06
Plain	29/42	1	13286-32	81.48
Plain	45/50	1	13286-34	94.32
w/Splash Guard	24/40	1	13286-37	102.64
w/Splash Guard	29/42	1	13286-39	105.08



Contact ACE at 800-223-4524 to get a copy of our Reactors catalog



6716

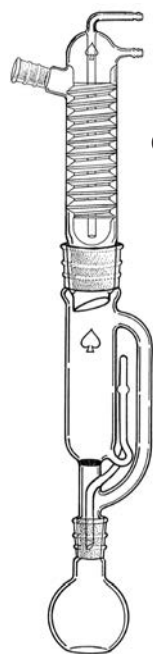
Specifications for ACE Extractor Bodies

Size	A	C	D	E
Use Thimble Size, mm	27 x 80	30 x 80	33 x 94	40 x 123
Extractor Cap., mL	50	85	145	200
Extractor I.D., mm	30	38	45	50
Length of Siphon, mm	70	75	88	113
Extractor Top ⌘ Joint	34/45	45/50	50/50	55/50
Extractor Bottom ⌘ Joint	24/40	24/40	24/40	24/40

6716 EXTRACTION APPARATUS *Soxhlet Improved Design* ♠

The improved design of ACE extractor condensers permits greater condensing capacity. Cycling rates may be doubled over conventional style extractors. All items feature ⌘ 24/40 extractor bottom joint.

Size	Flask Cap, mL	Extractor Top		Condenser		Extractor		Flask		Complete	
		⌘ Joint	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
A	125	34/45	1	6740-02	118.39	6730-02	153.26	6895-22	33.27	6716-12	304.92
C	250	45/50	1	6740-06	137.27	6730-06	177.39	6895-24	33.27	6716-16	347.93
D	300	50/50	1	6740-08	179.27	6730-08	201.69	6895-25	33.27	6716-18	414.23
E	300	55/50	1	6740-10	164.72	6730-10	197.22	6895-25	33.27	6716-20	395.21



6718

6718 EXTRACTION APPARATUS *Soxhlet, with Friedrichs Condenser* ♠

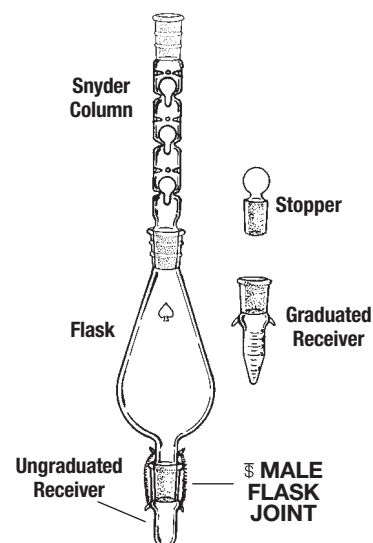
Improved design of ACE extractor with Friedrichs condenser in place of Allihn condenser. All items feature ⌘ 24/40 extractor bottom joint.

Size	Flask Cap, mL	Extractor Top		Condenser		Extractor		Flask		Complete	
		⌘ Joint	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
A	125	34/45	1	5971-20	219.79	6730-02	153.26	6895-22	33.27	6718-15	406.32
C	250	45/50	1	5971-23	227.86	6730-06	177.39	6895-24	33.27	6718-23	438.52
E	300	55/50	1	5971-27	240.43	6730-10	197.22	6895-25	33.27	6718-29	470.92

6708 KUDERNA-DANISH EVAPORATIVE CONCENTRATOR ♠

For concentration of materials in volatile solvents. Combines rapidity, simplicity and quantitative efficiency including minimization of entrainment escape and transfer losses. With a $\text{F} 19/22$ inner joint on bottom of flask, $\text{F} 24/40$ on top. Supplied with springs. For replacement springs, see 8030-04. **Please specify type of column, flask and receiver or order by code.**

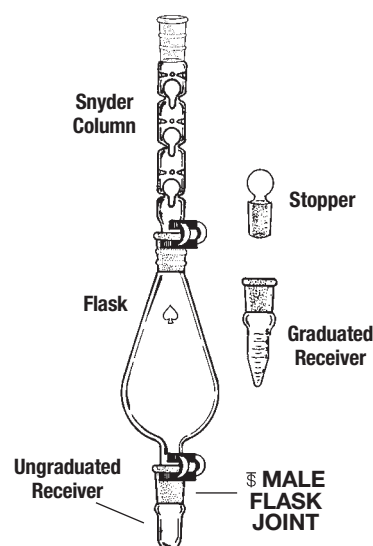
Flask				Ungraduated Receiver			
Cap., mL	Qty.	Order Code	Each	Cap., mL	Qty.	Order Code	Each
250	1	6708-11	71.74	10	1	6708-13	28.78
500	1	6708-03	77.63	15	1	6708-15	28.78
				20	1	6708-17	29.33
Graduations x Subdivisions, mL				Qty.	Order Code	Each	
Snyder Column, $\text{F}24/40$				1	6575-02	106.37	
Graduated Receiver 5 mL, $\text{F}19/22$				1	6708-35	55.00	
Graduated Receiver 10 mL, $\text{F}19/22$				1	6708-37	49.25	
Protective Stopper, $\text{F}19/22$				1	8255-12	20.33	



6708 KUDERNA-DANISH EVAPORATIVE CONCENTRATOR ♠

Same apparatus for concentration of materials in volatile solvents as described above except each flask is supplied with (1) $\text{F} 24/40$ and (1) $\text{F} 19/22$ Delrin clamp in place of hooks and springs. See 7598 for additional clamps.

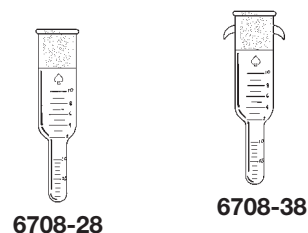
Flask				Ungraduated Receiver			
Cap., mL	Qty.	Order Code	Each	Cap., mL	Qty.	Order Code	Each
250	1	6708-08	62.02	15	1	6708-20	24.53
500	1	6708-09	67.86				
1000	1	6708-10	80.86				
Graduations x Subdivisions, mL				Qty.	Order Code	Each	
Snyder Column, $\text{F}24/40$				1	6575-02	106.37	
Graduated Receiver 5 mL, $\text{F}19/22$				1	6708-26	46.05	
Graduated Receiver 10 mL, $\text{F}19/22$				1	6708-27	47.89	
Protective Stopper, $\text{F}19/22$				1	8255-12	20.33	

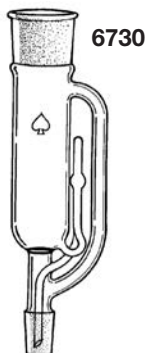


6708 RECEIVER Graduated ♠

Graduated receiver for use with Kuderna-Danish or similar evaporative concentrators. Capacity 10mL, graduated 0-1 in 0.1mL subdivisions and 1-10 in 1.0mL subdivisions. Joint is $\text{F} 19/22$. Available with or without glass hooks.

	Graduations x Subdivisions, mL	Qty.	Order Code	Each
Receiver with hooks	0-1 x 0.1 1-10 x 1.0	1	6708-38	60.74
Receiver without hooks	0-1 x 0.1 1-10 x 1.0	1	6708-28	58.52

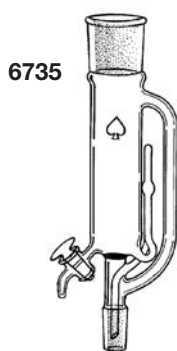




6730 EXTRACTOR *Soxhlet* ♦

Extractor body only. All items feature K 24/40 extractor bottom joint.

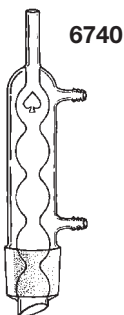
Size	Extractor Top		Qty.	Order Code	Each
	K Joint				
A	34/45		1	6730-02	153.26
C	45/50		1	6730-06	177.39
D	50/50		1	6730-08	201.69
E	55/50		1	6730-10	197.22



6735 EXTRACTOR *Soxhlet* ♦

Extractor body only, with stopcock for withdrawing samples from extraction chamber. Can be used interchangeably with the standard Soxhlet extraction apparatus. All items feature K 24/40 extractor bottom joint.

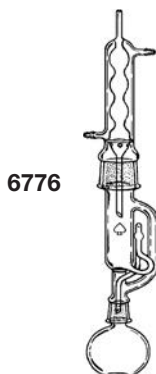
Size	Extractor Top		Qty.	Order Code	Each
	K Joint				
C	45/50		1	6735-06	254.10
E	55/50		1	6735-10	284.64



6740 EXTRACTION CONDENSER *Allihn, Improved Design* ♦

Bulb type for use with regular extraction apparatus. Improved design permits greater condensing capacity. Jacket lengths approximately 250mm with one bulb per 50mm. See page 7 for more detailed hose connection information.

Size	Extractor K Joint	Tubing Size (Inches)	Qty.	Order Code	Each
C	45/50	3/8 or 7/16 (E)	1	6740-06	137.27
D	50/50	3/8 or 7/16 (E)	1	6740-08	179.27
E	55/50	3/8 or 7/16 (E)	1	6740-10	164.72



6776 MICRO *Soxhlet, Improved Design* ♦

Designed for small chemical applications. Improved design permits greater condensing capacity. Condenser approximately 139mm jacket length. Joint between condenser and extractor is K 24/25. Flask joint is K 14/20. Designed to accommodate paper thimble, size 10 x 50mm. Flask is 30mL capacity. Use with 5/16-inch or 3/8-inch I.D. tubing, size B hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Condenser	1	6776-02	74.76
Extractor	1	6776-04	172.33
Flask	1	6776-06	36.65
Complete	1	6776-10	283.74

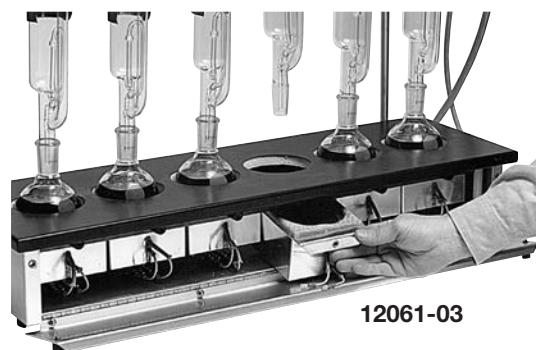
12061 COMBINATION HEATING MANTLE

Lower profile, safer, multi-place Combo Mantle that allows user to easily replace an element in a matter of minutes, should that element fail. By unscrewing two captive screws and lowering front panel of cabinet, the disposable element containers can be replaced by detaching the two lead wires and sliding the containers out. A new unit can be installed by reversing the procedure. These elements act as spill containment chambers so a spill does not damage other parts of mantle.

Offered in a six-place unit for 100 to 300mL flasks, and a three-place unit for 500 to 1000mL flasks. The clear anodized aluminum cabinet has a black PTFE coated stainless steel top and comes complete with a glassware superstructure consisting of two upright rods, two horizontal rods, and four double-sided, open faced clamps. Six-place mantle comes with six spring-type glassware clamps; three-place model comes with three.

Choice of two three-place controllers: a percentage-timer version that pulses full-line voltage to each position according to dial setting; or proportional-voltage version that supplies a constant, steady-state voltage to each position. Controllers are supplied with 6-foot (1.8m) multiconductor interconnect cord to mantle and one 4-foot (1.2m) long, three-wire power cord with grounding plug. **Note:** Six-place mantle uses two three-place controllers.

To order: select mantle based on flask size and power needed, then select type and number of controller necessary.



COMBO MANTLE, Only

SIX-POSITION

For Flask Size, mL	For Flask Bottom	Wattage	Cabinet Dimensions, L x D x H, in.	Qty.	Order Code	Each
100/125	Flat	85w-120v	29¼ x 10½ x 5¼	1	12061-03	1829.28
100/125	Round	85w-120v	29¼ x 10½ x 5¼	1	12061-05	1829.28
100/125	Flat	140w-120v	29¼ x 10½ x 5¼	1	12061-07	1835.46
100/125	Round	140w-120v	29¼ x 10½ x 5¼	1	12061-09	1835.46
250/300	Flat	125w-120v	29¼ x 10½ x 5¼	1	12061-11	1843.70
250/300	Round	125w-120v	29¼ x 10½ x 5¼	1	12061-13	1843.70
250/300	Flat	125w-240v	29¼ x 10½ x 5¼	1	12061-19	1843.70
250/300	Round	125w-240v	29¼ x 10½ x 5¼	1	12061-21	1843.70
250/300	Flat	210w-240v	29¼ x 10½ x 5¼	1	12061-29	1863.27
250/300	Round	210w-240v	29¼ x 10½ x 5¼	1	12061-31	1863.27

COMBO MANTLE, Only

THREE-POSITION

For Flask Size, mL	For Flask Bottom	Wattage*	Cabinet Dimensions, L x D x H, in.	Qty.	Order Code	Each
500	Flat	180w-120v	24½ x 12½ x 6¼	1	12061-102	1545.44
500	Round	180w-120v	24½ x 12½ x 6¼	1	12061-108	1545.44
50	Round	200w-120v	24½ x 12½ x 6¼	1	12061-113	1568.32
800	Round	225w-120v	24½ x 12½ x 6¼	1	12061-115	1568.32
1000	Round	290w-120v	24½ x 12½ x 6¼	1	12061-117	1606.80
500	Flat	180w-240v	24½ x 12½ x 6¼	1	12061-123	1545.44
500	Round	180w-240v	24½ x 12½ x 6¼	1	12061-128	1545.44
650	Round	200w-240v	24½ x 12½ x 6¼	1	12061-134	1568.32
800	Round	225w-240v	24½ x 12½ x 6¼	1	12061-137	1568.32
1000	Round	290w-240v	24½ x 12½ x 6¼	1	12061-140	1606.80

*Larger wattages available

COMBO POWER CONTROL, only

Control Type	For Use With	Amps x Volts	Qty.	Order Code	Each
Percentage Timer	3-Place 120v	12 x 120	1	12061-61	393.12
Percentage Timer	3-Place 240v	12 x 240	1	12061-63	434.72
Percentage Timer	6-Place 120v	15 x 120	1	12061-65	695.76
Percentage Timer	6-Place 240v	15 x 240	1	12061-67	710.32
Proportional Voltage	3-Place 120v	12 x 120	1	12061-71	578.24
Proportional Voltage	3-Place 240v	12 x 240	1	12061-73	620.88
Proportional Voltage	6-Place 120v	15 x 120	1	12061-75	1006.72
Proportional Voltage	6-Place 240v	15 x 240	1	12061-77	1047.28



12061-61

6810 GIANT EXTRACTION APPARATUS *Soxhlet* ♠

Complete with bulb type condenser and one flask. Cycling rates may be doubled over conventional style extractors. All joints are interchangeable. Size H (illustrated) is supplied with an adapter for connecting the extractor and condenser. This is necessary because of the extremely large top joint on the extractor. Approximate overall height: **Size F** – 39 inches; **Size G** – 46 inches; **Size H** – 82 inches. For extraction thimbles, see 6812, page 239. Use with 7/16-inch or 1/2-inch I.D. tubing, size F hose connection. See page 7 for more detailed hose connection information.

Dimensions of 6810 Extraction Apparatus

Size (Inches)	Extractor Cap., mL	Extractor I.D., mm	Extractor Top Joint	Extractor Bottom Joint	Condenser Joint	Condenser Length, mm	Flask Cap., mL
F (39)	500	68	71/60	34/45	71/60	340	1000
G (46)	1500	95	103/60	45/50	103/60	460	3000
H (82)	5000	140	145/60	55/50	55/50	730	12000

Size (Inches)	Qty.	Order Code	Complete
F (39)	1	6810-10	749.48
G (46)	1	6810-20	1551.87
H (82, includes adapter)	1	6810-30	2728.89

Size (Inches)	Qty.	<i>Extractor Only</i>		<i>Condenser Only</i>		<i>Flask Only</i>	
		Order Code	Each	Order Code	Each	Order Code	Each
F (39)	1	6810-02	392.49	6810-04	304.77	6885-53	52.22
G (46)	1	6810-12	884.49	6810-14	567.81	6885-64	99.57
H (82)	1	6810-22	1434.11	6810-24	722.41	6885-82	225.61
Adapter for Size H, 55/50- 145/60 only						6810-40	346.76

Accessories

	1000mL Order Code	3000mL Order Code	12000mL Order Code
Fabric Mantles	12031-19	12031-23	—
Aluminum Housed Mantles	12043-19	12043-23	12043-27
Tripod Supports Stands	—	12097-04	12097-08
Mantle Extension Supports	12094-06	12094-08	—
Controllers	12319-03	12319-03	12319-03
Water-Flo Power Cut-off	12160-15	12160-15	12160-15

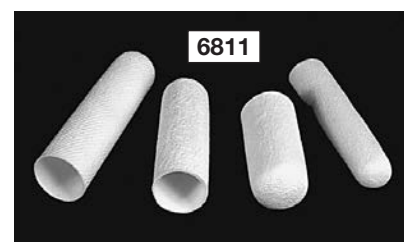


6810

6811 EXTRACTION THIMBLES ★

Cellulose fiber. Good retention. Seamless, high quality extraction thimbles, single thickness. Readily permeable to the flow of ether and other organic solvents.

Size, I.D. x H	Qty.	Order Code	Per Box	Size, I.D. x H	Qty.	Order Code	Per Box
9 x 50	25	6811-02	122.95	30 x 80	25	6811-20	122.95
27 x 80	25	6811-08	122.95	33 x 94	25	6811-22	131.45
27 x 60	25	6811-14	123.12	40 x 123	25	6811-24	154.95



6812 EXTRACTION THIMBLES Giant Size ★

For the giant 6810 extraction apparatus. Cellulose fiber thimbles possess ample rigidity, good retention, and are readily permeable to the flow of ether and other organic solvents.

I.D. x H	Qty.	Order Code	Each
60 x 180	1	6812-02	46.13
68 x 250	1	6812-04	58.46



6813 EXTRACTION THIMBLES Glass ♠

With an ACE fritted disc sealed in. Can be used in any standard Soxhlet extraction apparatus. The sizes below correspond to the size specifications of extraction bodies and will fit those units. Available in Porosities A, B, C, D and E (for micron sizes, turn to page 283). All porosities of a given size are priced the same. Height listed is above disc.

Size, mm	O.D., mm	Height, mm	Cap., mL	Qty.	Porosity					Each
					Order Code	Order Code	Order Code	Order Code	Order Code	
A	28	85	40	1	6813-02	6813-04	6813-06	6813-08	6813-10	50.86
C	35	85	70	1	6813-12	6813-14	6813-16	6813-18	6813-20	51.20
E	45	125	160	1	6813-22	6813-24	6813-26	6813-28	6813-30	51.97

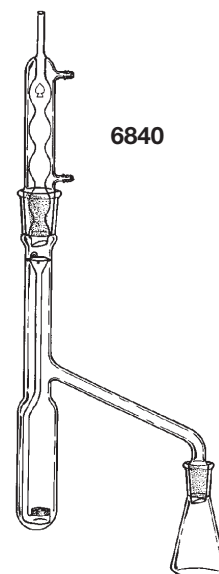


6813

6840 EXTRACTION APPARATUS ♠

Designed for the extracting of liquids with ether. The dispersion of the ether is accomplished by the use of an ACE fritted disc, Porosity B (70-100 micron), which is attached to the base of the funnel tube. With $\text{S } 24/40$ and $\text{S } 40/50$ joints. Available in the following sizes. Use with 7/16-inch or 3/8-inch I.D. tubing, size E hose connection. See page 7 for more detailed hose connection information.

Capacity, Extraction Chamber, mL	Flask Capacity, mL	Qty.	Flask		Condenser		Distributor		Ext. Chamber		Complete	
			Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
100	125	1	6965-22	27.96	6740-04	148.52	6840-02	83.77	6840-15	177.41	6840-30	437.66
250	250	1	6965-24	28.59	6740-04	148.52	6840-04	83.77	6840-17	192.11	6840-35	452.99
500	500	1	6965-26	30.18	6740-04	148.52	6840-06	83.77	6840-19	229.85	6840-40	492.32
1000	1000	1	6965-27	34.49	6740-04	148.52	6840-08	99.27	6840-21	263.86	6840-45	546.14
2000	2000	1	6965-28	46.57	6740-04	148.52	6840-10	99.27	6840-23	266.83	6840-50	561.19

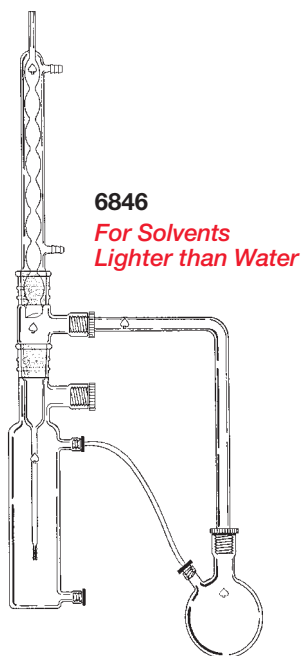


6840

6846 EXTRACTION APPARATUS

Liquid-Liquid, Heavier- or Lighter-than-Water

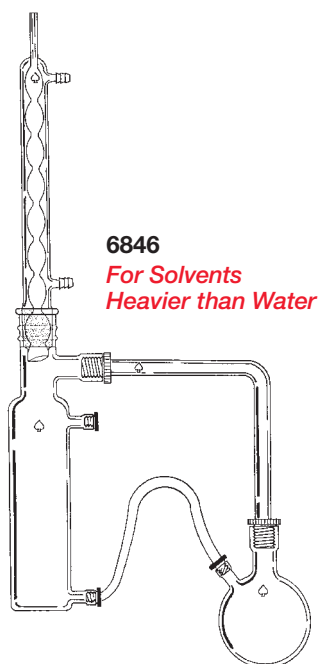
A liquid-liquid extractor for use with lighter- or heavier-than-water extracting solvents. Overflow and boil-up tube uses Ace-Thred connections, thus allowing easy removal for cleaning to reduce cross-contamination among samples. Joints are $\$$ 45/50.



FOR SOLVENTS LIGHTER THAN WATER: The glass dispersion tube adapter is inserted into the extractor body and the #25 Ace-Thred on the body and #7 Ace-Thred near the bottom are plugged. Solvent flask is heated and vapors rise to condenser through glass elbow tube connected by two #25 threads. Condensed solvent fills adapter tube stem and is dispersed upward thru sample from capillary on bottom of stem, thereby increasing solvent surface-area-to-volume ratio. Solvent overflows thru PTFE tubing connected to #7 Ace-Thred on body top to flask. (For JUST lighter-than-water applications, order 6846-08, 6846-11, 6846-15, 6846-24, 6846-30, 6740-26, 5846-04, 5846-16 and two 7506-10.)

FOR SOLVENTS HEAVIER THAN WATER: The dispersion tube adapter is removed and the #7 thread near extractor body is plugged. Solvent is heated in flask, vapors rise thru glass elbow tube connected to #25 Ace-Thred on flask and extractor body and liquefy in condenser. Solvent droplets pass down through sample and return to flask via PTFE tube connected to #7 Ace-Threds near body bottom and flask. (For JUST heavier-than-water applications, order 6846-08, 6846-14, 6846-25, 6846-30, 6740-26, 5846-04 and two 7506-10.)

Complete item consists of extractor body (approx. 1300 mL capacity), dispersion tube adapter, lighter-than-water and heavier-than-water elbow tubes, PTFE solvent return tube for heavier- and lighter-than-water, flask, condenser, (2) #25 nylon bushings with FETFE o-rings, and one #7 nylon bushing with FETFE o-ring.



	Qty.	Order Code	Each
Extractor Body, only, $\$$ 45/50, (1) #25 and (2) #7 Ace-Threds	1	6846-08 ★	327.30
Dispersion Tube Adapter, $\$$ 45/50, #25 Ace-Thred	1	6846-11 ★	334.11
Elbow Tube, Heavier-than-Water, 1-inch O.D.	1	6846-14 ★	56.02
Elbow Tube, Lighter-than-Water, 1-inch O.D.	1	6846-15 ★	57.35
Solvent Return Tube, Lighter-than-Water, PTFE, 12-inch x 1/4-inch O.D.	1	6846-24 ★	4.47
Solvent Return Tube, Heavier-than-Water, PTFE, 12-inch x 1/4-inch O.D.	1	6846-25 ★	5.08
Flask, 1 liter, RB, #7 and #25 Ace-Threds	1	6846-30 ★	118.11
Condenser, Allihn, only, $\$$ 45/50, 390mm length (Size E hose connections)	1	6740-26 ♠	220.68
Bushing, Nylon, #25 with FETFE o-ring (2)	1	7506-10 ♠	21.17
Plug, Nylon, #7 with FETFE o-ring	1	5846-04 ♠	9.48
Plug, Nylon, #25 with FETFE o-ring	1	5846-16 ♠	37.19
Complete	1	6846-50 ★	1212.13

6848 EXTRACTION APPARATUS *Liquid-Liquid*

Designed for U.S.E.P.A. "Priority Pollutant" analysis using Method 625 (base neutrals/acid extractables). Accommodates one liter sample and approximately 200mL of a heavier-than-water extracting solvent, such as methylene chloride. Features an extractor body designed to accept a common condenser with a 45/50 joint, a 24/40 opening with a PTFE stopper near top of body for addition of reagents and a 1:5 PTFE 2mm bore stopcock for draining. Flattened body bottom allows use of optional magnetic stirring bar to enhance extraction of compounds from sample. One 24/40 plastic clamp supplied with extractor body.

Reference: Federal Register Vol. 49, No. 209, October 26, 1984.

	Qty.	Order Code	Each
Extractor Body 45/50, 24/40, only	1	6848-05	♠ 284.38
Condenser, Allihn, 45/50, only (size E hosec connections)	1	6740-06	♠ 137.27
Flask, 1-liter, 24/40, only	1	6887-27	♠ 39.25
PTFE Stopper, 24/25, only	1	12631-15	★ 21.63
Complete	1	6848-20	♠ 482.53

Optional items:

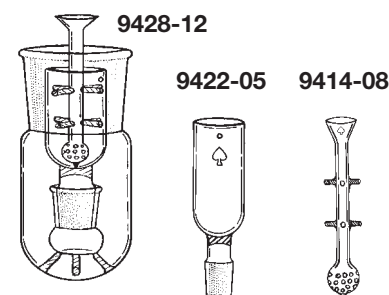
Heating Mantle, 115v-380w	1	12053-19	★ 280.49
Magnetic Stirring Bar, octagonal 25.4mm long x 7.9mm	1	13654-10	★ 5.18
PTFE Sleeve, 24/40, pkg/3	1	7643-08	★ 5.87
PTFE Sleeve, 45/50, pkg/3	1	7643-16	★ 11.99

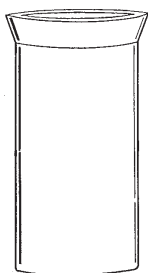


9428 LIQUID-LIQUID EXTRACTOR ♠

For extraction with liquids of lighter density than liquid extracted such as water with ether; 9422 and 9414 are used with extraction flask 9451.

	Qty.	Order Code	Each
Flask	1	9451-06	286.58
Chamber	1	9422-05	40.85
Tube	1	9414-08	119.98
Complete	1	9428-12	447.41



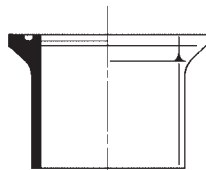


15305

15305 FLANGE *Conical* ★

Borosilicate glass, conical-type flange used to fabricate reaction flasks. Supplied on medium-wall tubing. Use 6496 standard clamp.

Flange I.D., mm	Stem O.D., mm	Stem Lgth., mm	Qty.	Order Code	Each
105	114	152	1	15305-20	122.69



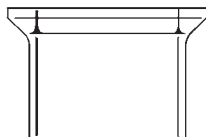
15310

15310/15311 FLANGE *Schott-Style* ▲

Borosilicate glass, Schott-style flange used to fabricate reaction flasks. Offered with or without groove. Use 6517 quick release clamp. O-Rings for grooved flanges can be found on page 391 and page 393. See 7855-878, 7855-880, 7855-881 (silicone) or 7855-251, 7855-254, 7855-260 (CAPFE).

WITH O-Ring GROOVE

Flange I.D., mm	Flange O.D., mm	Overall Hght.,mm	Stem O.D., mm	Qty.	Order Code	Each
60	100	50	68	1	15310-15	55.27
100	138	60	106	1	15310-20	96.57
120	158	60	130	1	15310-22	118.18
150	184	75	155	1	15310-25	167.72
200	241	75	215	1	15310-30	221.69



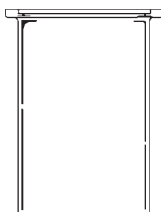
15311

WITHOUT O-Ring GROOVE

Flange I.D., mm	Flange O.D., mm	Overall Hght.,mm	Stem O.D., mm	Qty.	Order Code	Each
60	100	50	68	1	15311-16	55.93
100	138	60	106	1	15311-21	82.36
120	158	60	130	1	15311-23	122.89
150	184	75	155	1	15311-26	176.95
200	241	75	215	1	15311-31	230.65

15316 FLANGE *Reaction Flask, Flat* ★

Borosilicate glass, flat-style flange used to fabricate reaction flasks like 6511. Offered with or without groove. Use 6508 or 6510 clamp. O-Ring for codes -04 and -08 can be found on page 391 and page 393. See 7855-287, 7855-289 (silicone) or 7855-887, 7855-889 (CAPFE).



15316

WITH O-Ring GROOVE

Flange I.D., mm	Flange O.D., mm	Overall Hght.,mm	Stem O.D., mm	Qty.	Order Code	Each
100	137	150	114	1	15316-04	111.91
130	168	150	140	1	15316-08	230.18

WITHOUT O-Ring GROOVE

Flange I.D., mm	Flange O.D., mm	Overall Hght.,mm	Stem O.D., mm	Qty.	Order Code	Each
100	137	150	114	1	15316-25	111.91
130	168	150	140	1	15316-30	230.18



6508



6510

6508/6510 CLAMP ★

For use with 15316 and flat style flanges.

For I.D., mm	Qty.	Order Code	Each	For I.D., mm	Qty.	Order Code	Each
105	1	6508-06	232.12	105	1	6510-05	174.42
130	1	6508-11	251.35	130	1	6510-10	198.46

Clamps for the above flanges can be found in the Clamps section, starting on page 134.

- For adapters, see pages 19-52
- For overhead stirrer motors, see pages 534-543
- For magnetic stirrers, hotplates, etc., see pages 546-550
- For stir bars, see pages 551-554
- For bearings & shafts, see pages 492-527
- For heating mantles, see pages 315-320
- For repair, amber or color coatings or custom work, call Ace at 800-223-4524 or visit the Tech Support section of our website.

Flasks


FLASKS

ACE 33 Expansion borosilicate glass flasks are available in either standard or heavy wall glass. All standard taper necks 24/40 or larger have reinforced bead to provide longer service life. Ace starts with high-quality Schott/Duran blanks to manufacture these precise “tools of science and discovery”.

If you need rapid, even heating, use the standard wall. If mechanical strength and even heating are more important than speed, use the high-value heavy wall flasks.

All flasks in this section, except where otherwise noted, are made from Type I, 33 Expansion borosilicate glass.



Reference Guide to ACE Flasks

Capacity, mL	Approx. O.D., mm	Approx. O.D., Inches	Capacity, mL	Approx. O.D., mm	Approx. O.D., Inches
50	50	2.0	2000	160	6.3
100	58	2.25	3000	180	7.0
200	75	3.0	5000	225	8.86
250	82	3.25	12000	285	11.22
300	86	3.385	22000	350	13.78
500	100	4.0	50000	457	18.0
1000	125	5.0	72000	508	20.0

For heated flasks, see Instatherm® beginning on page 331.

6870 FLASK BLANKS *Glassblowers, Heavy Wall* ★

Round bottom flask with one unfinished neck. With heavy wall approximately 30% heavier than standard wall. Used by glassblowers in fabricating single- or multi-necked flasks.


 HEAVY
DUTY


Cap., mL	Neck O.D., mm	Qty.	Order Code	Each	Cap., mL	Neck O.D., mm	Qty.	Order Code	Each
100	26	1	6870-206	8.54	2000	46	1	6870-218	74.92
250	34	1	6870-210	11.64	3000	47	1	6870-220	81.85
500	34	1	6870-214	17.38	5000	57	1	6870-222	116.19
1000	42	1	6870-216	24.55					

6870 FLASK BLANKS *Glassblowers, Standard Wall* ★

Round bottom flask with one unfinished neck. Used by glassblowers in fabricating single- or multi-necked flasks. Neck O.D. is approximate.

Cap., mL	Neck O.D., mm	Qty.	Order Code	Per Case	Cap., mL	Neck O.D., mm	Qty.	Order Code	Per Case
50	26	10	6870-04	72.89	3000	47	6	6870-20	318.79
100	26	10	6870-06	74.76	5000	57	6	6870-22	462.73
250	34	10	6870-10	89.00	6000	51	1	6870-21	116.84
300	25	10	6870-12	190.45	12000	60	1	6870-24	191.51
500	34	10	6870-14	119.91	22000	76	1	6870-26	191.51
1000	42	10	6870-16	173.64	50000*	115	1	6870-29	Price Upon Request
2000	46	6	6870-18	198.28	72000	115	1	6870-30	Request

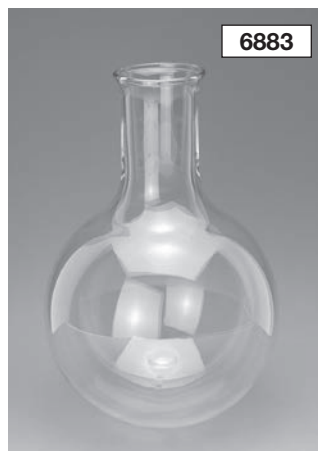
6871


6871 FLASK BLANKS *Recovery, Glassblowers* ★

Recovery/Kjeldahl shaped blank with one unfinished neck.

Cap., mL	Qty.	Order Code	Each
100	1	6871-07	15.36
250	1	6871-13	24.54
500	1	6871-15	29.93
1000	1	6871-19	45.54
2000	1	6871-23	66.14

6883


6883 FLASK *Boiling, Quartz* ★

Capacity, mL	Neck O.D., mm	Qty.	Order Code	Each	Capacity, mL	Neck O.D., mm	Qty.	Order Code	Each
50	22	1	6883-06	148.03	750	34	1	6883-18	319.10
100	22	1	6883-08	150.10	1000	34	1	6883-20	396.89
250	28	1	6883-14	165.00	2000	40	1	6883-24	523.69
500	34	1	6883-16	273.34					

For Heating Mantles, see Catalog Nos. 12031-12053.

All flasks in this section are made from 33 Expansion Borosilicate Glass unless noted otherwise.

6887/9458 FLASK *Single Neck, Heavy Wall* ♠

Round bottom with short neck and F outer joint. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Full-length F joints are reinforced for better strength.

Capacity, mL	F Joint	Qty.	Order Code	Each	Capacity, mL	F Joint	Qty.	Order Code	Each
5	14/20	1	9458-202	23.33	250	29/42	1	6887-238	34.76
10	14/20	1	9458-204	23.33	250	45/50	1	6887-203	56.52
10	19/22	1	9458-215	23.75	300	24/40	1	6887-225	34.75
15	14/20	1	9458-205	23.33	300	29/42	1	6887-239	35.84
25	14/20	1	9458-206	23.33	500	14/20	1	9458-214	27.04
25	19/22	1	9458-217	23.75	500	19/22	1	9458-225	30.44
50	14/20	1	9458-208	23.33	500	24/40	1	6887-226	36.04
50	19/22	1	9458-219	23.75	500	29/42	1	6887-240	38.33
50	24/40	1	6887-220	23.09	500	45/50	1	6887-207	60.13
50	29/42	1	6887-231	29.94	1000	24/40	1	6887-227	40.02
100	14/20	1	9458-210	23.33	1000	29/42	1	6887-241	41.16
100	19/22	1	9458-221	23.75	1000	34/45	1	6887-253	49.74
100	24/40	1	6887-221	23.09	1000	45/50	1	6887-262	62.99
100	29/42	1	6887-235	30.15	2000	24/40	1	6887-228	73.35
125	24/40	1	6887-232	29.72	2000	29/42	1	6887-242	75.73
125	29/42	1	6887-236	31.85	2000	45/50	1	6887-263	92.72
150	24/40	1	6887-233	34.26	3000	24/40	1	6887-229	92.14
150	29/42	1	6887-234	36.43	3000	29/42	1	6887-243	100.62
200	24/40	1	6887-223	30.81	3000	34/45	1	6887-245	104.97
200	29/42	1	6887-237	34.15	3000	45/50	1	6887-264	125.53
250	14/20	1	9458-212	25.75	5000	24/40	1	6887-230	124.92
250	19/22	1	9458-223	26.38	5000	29/42	1	6887-244	129.29
250	24/40	1	6887-224	31.58	5000	45/50	1	6887-265	145.74



6895 FLASK *Single Neck, Flat Bottom* ♠

With short neck and reinforced F 24/40 outer joint.

Capacity, mL	Qty.	Order Code	Each
50	1	6895-20	33.27
100	1	6895-21	33.27
125	1	6895-22	33.27
250	1	6895-24	33.27
300	1	6895-25	33.27
500	1	6895-26	37.06
1000	1	6895-27	48.74
2000	1	6895-28	61.04



6893 RECEIVING BOTTLE/FLASK ♠

Graduated, round bottom receiving flasks for use as replacement receivers on all glassware sets supplied with Heidolph LR4000 Series rotary evaporators or with other evaporators. 250mL size graduated in 10mL increments; 1000mL and 2000mL in 100mL increments. Joint is F 35/20.

Cap., mL	F Joint	O.D., mm	Lgth. below joint, mm	Qty.	Order Code	Each
250	35/20	75	120	1	6893-05	135.09
500	35/20	85	170	1	6893-15	157.61
1000	35/20	100	220	1	6893-21	191.64
2000	35/20	125	275	1	6893-27	232.93



6887/9456/9458 FLASK *Single Neck, Standard Wall* ♠

 Round bottom with short neck and F outer joint. Full length F joints are reinforced for better strength.


Capacity, mL	F Joint	Qty.	Order Code	Each	Capacity, mL	F Joint	Qty.	Order Code	Each
5	14/20	1	9458-02	22.96	500	14/20	1	9458-14	26.38
10	14/20	1	9458-04	22.96	500	19/22	1	9458-25	30.44
10	19/22	1	9458-15	23.75	500	24/40	1	6887-26	35.35
15	14/20	1	9458-05	22.96	500	29/42	1	6887-40	37.63
25	14/20	1	9458-06	22.96	500	45/50	1	9456-06	68.20
25	19/22	1	9458-17	23.75	1000	24/40	1	6887-27	39.25
35	14/20	1	9458-07	23.33	1000	29/42	1	6887-41	40.38
50	14/20	1	9458-08	23.33	1000	34/45	1	6887-53	48.80
50	19/22	1	9458-19	23.75	2000	24/40	1	6887-28	49.57
50	24/40	1	6887-20	28.48	2000	29/42	1	6887-42	50.99
50	29/42	1	6887-31	29.37	2000	45/50	1	6887-63	81.57
60	14/20	1	9458-09	23.33	3000	24/40	1	6887-29	69.45
100	14/20	1	9458-10	23.33	3000	29/42	1	6887-43	73.39
100	19/22	1	9458-21	23.75	3000	45/50	1	6887-64	99.80
100	24/40	1	6887-21	28.48	5000	24/40	1	6887-30	81.88
100	29/42	1	6887-35	29.56	5000	29/42	1	6887-44	81.93
125	29/42	1	6887-36	31.25	5000	45/50	1	6887-65	118.85
200	24/40	1	6887-23	31.19	6000	24/40	1	6887-66	132.58
200	29/42	1	6887-37	33.49	6000	29/42	1	6887-68	133.72
250	14/20	1	9458-12	25.14	6000	45/50	1	6887-70	170.03
250	19/22	1	9458-23	26.38	6000	55/50	1	6887-72	172.91
250	24/40	1	6887-24	32.50	12000	45/50	1	6887-67	260.16
250	29/42	1	6887-38	34.09	12000	55/50	1	6887-82	273.96
250	45/50	1	9456-03	62.47	22000	45/50	1	6887-69	437.01
300	24/40	1	6887-25	34.08					

9477 FLASK *Single Neck, Pear-Shaped, Ground Joint, Heavy Wall* ♠

 Distilling, pear-shaped with ground F outer joint.


Capacity, mL	F Joint	Qty.	Order Code	Each	Capacity, mL	F Joint	Qty.	Order Code	Each
5	14/20	1	9477-02	23.44	25	19/22	1	9477-27	24.18
10	14/20	1	9477-04	23.44	50	19/22	1	9477-29	24.18
15	14/20	1	9477-05	23.44	100	19/22	1	9477-31	24.92
25	14/20	1	9477-06	23.79	250	19/22	1	9477-33	31.17
50	14/20	1	9477-08	23.79	50	24/40	1	9477-34	29.83
100	14/20	1	9477-10	24.79	100	24/40	1	9477-36	31.55
250	14/20	1	9477-12	30.03	250	24/40	1	9477-38	31.55
5	19/22	1	9477-23	24.18	500	24/40	1	9477-40	38.78
10	19/22	1	9477-25	24.18	300	24/40	1	9477-44	34.20

9477 FLASK *Single Neck, Pear-Shaped, Polished Joint, Heavy Wall* ♠

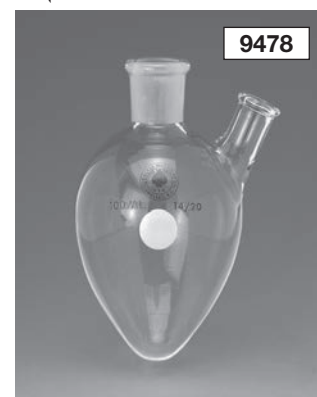
 Distilling, pear-shaped with polished F 14/20 outer joint.

Capacity, mL	Qty.	Order Code	Each
5	1	9477-45	30.57
10	1	9477-47	30.57
25	1	9477-49	30.57

9478 FLASK *Two Necks, Pear-Shaped, Heavy Wall* ♠

Pear-shaped, with side arm for use with rubber stopper. Center joint is 14/20 outer.

Capacity, mL	Qty.	Order Code	Each
5	1	9478-02	34.10
10	1	9478-04	34.10
100	1	9478-10	34.10



9479/9481 FLASK *Two Necks, Pear-Shaped, Heavy Wall* ♠

Pear-shaped with 10 outer joints.

Cap., mL	Center Neck	Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck	Side Necks	Qty.	Order Code	Each
5	14/20	14/20	1	9479-03	48.48	10	14/20	10/18	1	9481-04	46.20
10	14/20	14/20	1	9479-05	48.48	25	14/20	10/18	1	9481-06	46.20
25	14/20	14/20	1	9479-07	48.48	50	14/20	10/18	1	9481-08	46.20
50	14/20	14/20	1	9479-09	48.48						
100	14/20	14/20	1	9479-11	48.48						



6892/9470 FLASK *Recovery, Rotary Evaporator, Pear-Shaped, Heavy Wall* ♠

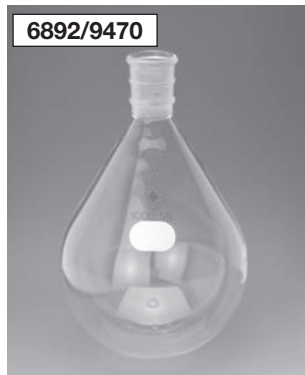
A multipurpose, pear-shaped flask with modified side for ease in inserting spatula or brush for removing solids or cleaning sides. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With reinforced full-length 10 outer joint. Fits all rotary evaporators.

Capacity, mL	Joint	Qty.	Order Code	Each	Capacity, mL	Joint	Qty.	Order Code	Each
10	14/20	1	9470-202	23.06	200	24/40	1	6892-208	40.11
25	14/20	1	9470-204	23.06	200	29/42	1	6892-209	45.03
25	19/22	1	9470-221	23.06	250	29/42	1	6892-211	40.11
50	14/20	1	9470-206	23.06	250	24/40	1	6892-237	46.45
50	19/22	1	9470-223	23.78	250	29/32	1	6892-239	46.45
50	24/25	1	6892-214	28.35	500	24/25	1	6892-222	58.13
50	29/32	1	6892-203	33.77	500	24/40	1	6892-212	58.13
50	24/40	1	6892-204	29.05	500	29/32	1	6892-213	46.68
50	29/42	1	6892-205	33.77	500	29/42	1	6892-293	59.85
100	24/40	1	6892-206	29.46	1000	24/40	1	6892-230	73.31
100	29/42	1	6892-207	33.77	1000	29/32	1	6892-231	58.79
100	14/20	1	9470-208	24.13	1000	29/42	1	6892-232	73.31
100	19/22	1	9470-225	24.48	2000	24/40	1	6892-240	103.40
100	24/25	1	6892-216	29.05	2000	29/42	1	6892-242	103.40
100	29/32	1	6892-217	33.77	2000	29/32	1	6892-243	103.40
125	19/22	1	9470-226	30.06	3000	29/42	1	6892-245	141.64
200	14/20	1	9470-210	31.47	3000	24/40	1	6892-247	141.64
200	19/22	1	9470-227	39.85	3000	29/32	1	6892-249	133.57
200	24/25	1	6892-218	40.11					



6892/9470 FLASK Recovery, Rotary Evaporator, Pear-Shaped, Standard Wall ♠

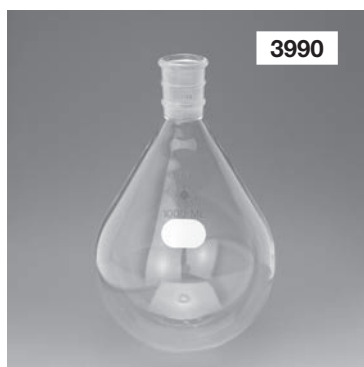
A multipurpose, pear-shaped flask with modified side for ease in inserting spatula or brush for removing solids or cleaning sides. With reinforced full-length F outer joint. Fits all rotary evaporators.



Capacity, mL	F Joint	Qty.	Order Code	Each	Capacity, mL	F Joint	Qty.	Order Code	Each
10	14/20	1	9470-02	26.44	200	24/25	1	6892-18	35.58
25	14/20	1	9470-04	26.60	200	24/40	1	6892-08	36.94
25	19/22	1	9470-21	28.98	200	29/42	1	6892-09	37.92
50	14/20	1	9470-06	26.60	250	29/42	1	6892-11	40.46
50	19/22	1	9470-23	29.07	250	45/35	1	6892-51	74.62
50	24/25	1	6892-14	31.03	500	24/25	1	6892-22	43.02
50	24/40	1	6892-04	31.67	500	24/40	1	6892-12	44.81
50	29/42	1	6892-05	33.77	500	29/26	1	6892-13	46.52
100	14/20	1	9470-08	27.62	500	29/42	1	6892-15	46.52
100	19/22	1	9470-25	29.96	500	45/35	1	6892-53	81.96
100	24/25	1	6892-16	31.03	1000	24/40	1	6892-30	57.27
100	24/40	1	6892-06	31.67	1000	29/42	1	6892-32	58.75
100	29/42	1	6892-07	33.77	1000	45/35	1	6892-55	96.41
125	19/22	1	9470-26	32.58	2000	24/40	1	6892-40	69.68
125	45/35	1	6892-49	70.27	2000	29/42	1	6892-42	71.03
200	14/20	1	9470-10	35.82	2000	45/35	1	6892-57	111.55
200	19/22	1	9470-27	36.64					

3990 FLASK Recovery, Pear Shaped, with Full-Length Reinforced F Joints, Poly Coated, Heavy Wall ♠

For rotary evaporators, evaporations, and drying.



New Sizes!

F Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
29/42	50	—	1	3990-10	44.74
24/40	50	—	1	3990-12	38.26
29/32	50	—	1	3990-14	38.26
29/42	100	—	1	3990-20	44.74
24/40	100	—	1	3990-22	38.90
29/32	100	—	1	3990-24	44.74
29/42	250	—	1	3990-30	53.35
24/40	250	—	1	3990-32	53.35
29/32	250	—	1	3990-34	53.35
29/32	500	25322	1	3990-104	64.99
29/32	1000	20729	1	3990-106	74.07
29/32	2000	25323	1	3990-108	89.17
29/42	500	—	1	3990-120	64.99
29/42	1000	25517	1	3990-122	82.64
29/42	2000	—	1	3990-124	139.09
24/40	500	25261	1	3990-132	64.61
24/40	1000	20730	1	3990-134	105.05
24/40	2000	25262	1	3990-136	139.09
29/42	3000	—	1	3990-140	161.72
24/40	3000	—	1	3990-142	161.72
29/32	3000	—	1	3990-144	161.72

3994 FLASK *Recovery, Pear Shaped with Side Indents, Full-Length Reinforced*
 ‡ Joint, Heavy Wall ♠

For rotary evaporators, evaporations, and drying.

Poly Coated

‡ Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
29/32	500mL	—	1	3994-110	132.78
29/32	1000mL	—	1	3994-112	149.05
29/32	2000mL	—	1	3994-114	162.60
24/40	500mL	—	1	3994-120	132.78
24/40	1000mL	—	1	3994-124	149.05
24/40	2000mL	—	1	3994-126	162.60

Non-Coated

‡ Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
29/32	500mL	00452	1	3994-10	101.64
29/32	1000mL	00453	1	3994-12	115.20
29/32	2000mL	00454	1	3994-14	132.78
24/40	500mL	11579	1	3994-20	105.69
24/40	1000mL	00420	1	3994-22	119.25
24/40	2000mL	11580	1	3994-23	136.86



3996 FLASK *Single Neck, Round Bottom, Receiving,*
 Poly Coated, Heavy Wall ♠

Fits all rotary evaporators.

‡ Joint	Size, mL	Buchi Part #	Qty.	Order Code	Each
35/20	50	—	1	3996-02	58.13
35/20	100	—	1	3996-04	48.83
35/20	250	—	1	3996-06	50.79
35/20	500	—	1	3996-08	72.41
35/20	1000	40775/20728	1	3996-20	88.51
35/20	2000	40776/25265	1	3996-22	101.57
35/20	3000	40777/25266	1	3996-24	120.92

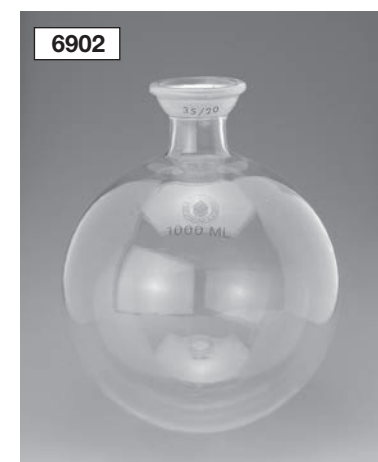


6902 FLASK *Single Neck, Round Bottom, Receiving, Heavy Wall ♠*

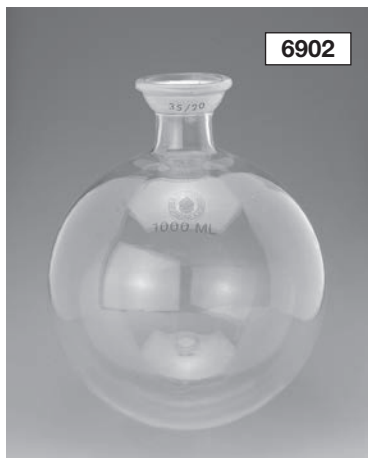
With short neck and ‡ outer joint. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Fits all rotary evaporators.



Cap., mL	‡ 35/20 Joint			‡ 35/25 Joint		
	Qty.	Order Code	Each	Qty.	Order Code	Each
50	—	—	—	1	6902-234	41.25
100	—	—	—	1	6902-235	34.67
250	—	—	—	1	6902-238	35.14
500	1	6902-226	41.85	1	6902-240	39.30
1000	1	6902-227	47.77	1	6902-241	48.22
2000	1	6902-228	78.97	1	6902-242	79.73
3000	1	6902-229	97.30	1	6902-243	98.25
5000	—	—	—	1	6902-244	112.73



6902 FLASK *Receiving, Single Neck, Spherical, Standard Wall* ♠

 With short neck and S outer joint.


Cap., mL	Qty.	S 35/20 Joint		S 35/25 Joint		
		Order Code	Each	Qty.	Order Code	Each
50	—	—	—	1	6902-34	40.46
250	—	—	—	1	6902-38	41.36
300	1	6902-25	42.16	—	—	—
500	1	6902-26	42.47	1	6902-40	43.52
1000	1	6902-27	46.85	1	6902-41	45.97
2000	1	6902-28	57.28	1	6902-42	57.82
3000	1	6902-29	77.73	1	6902-43	75.54
5000	—	—	—	1	6902-44	87.65


New Sizes!
6905 FLASK *Single Neck* ♠

 With long neck and reinforced S 24/40 outer joint.


Capacity, mL	Overall Neck Length, mm	Qty.	Order Code	Each
250	95	1	6905-24	33.79
500	105	1	6905-26	35.95
1000	120	1	6905-27	39.41

6915 FLASK *Single Neck, Flat Bottom* ♠

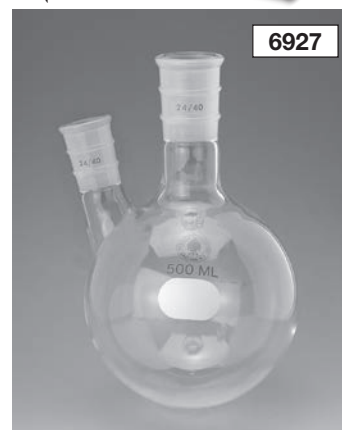
 With long neck and reinforced S 24/40 outer joint.


Capacity, mL	Overall Neck Length, mm	Qty.	Order Code	Each
500	105	1	6915-25	39.46
1000	120	1	6915-26	43.09

6927/9463/9464 FLASK *Two Necks, Angled, Heavy Wall* ♠

Round bottom with reinforced full-length $\text{\textcircled{F}}$ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With side neck angled.

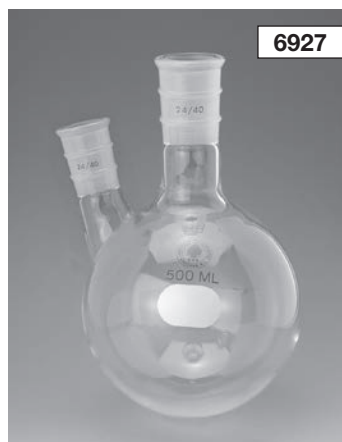
Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each	Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each
25	14/20	14/20	1	9464-206	51.43	250	24/40	24/40	1	6927-208	76.83
25	19/22	14/20	1	9463-206	54.25	250	29/42	24/40	1	6927-226	77.79
50	14/20	14/20	1	9464-208	51.43	500	24/40	10/30	1	6927-220	76.81
50	19/22	14/20	1	9463-208	54.25	500	24/40	24/40	1	6927-222	79.59
100	14/20	14/20	1	9464-210	51.43	500	29/42	24/40	1	6927-229	80.56
100	19/22	14/20	1	9463-210	54.25	1000	24/40	24/40	1	6927-232	97.70
100	24/40	14/20	1	9463-211	54.06	1000	29/42	24/40	1	6927-239	98.83
250	14/20	14/20	1	9464-295	55.93	2000	24/40	24/40	1	6927-244	133.03
250	19/22	14/20	1	9463-212	57.85	3000	29/42	29/42	1	6927-258	180.06
250	24/40	10/30	1	6927-204	76.83	5000	24/40	24/40	1	6927-262	177.41



6927/9463/9464 FLASK *Two Necks, Angled, Standard Wall* ♠

Round bottom with reinforced $\text{\textcircled{F}}$ outer joints. With side neck angled.

Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each	Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each
10	14/20	14/20	1	9464-04	50.35	500	24/40	24/40	1	6927-22	79.59
25	14/20	14/20	1	9464-06	50.35	1000	24/40	24/40	1	6927-32	97.64
25	19/22	14/20	1	9463-06	52.67	2000	24/40	24/40	1	6927-44	113.98
50	14/20	14/20	1	9464-08	51.43	3000	29/42	29/42	1	6927-58	157.62
50	19/22	14/20	1	9463-08	53.73	3000	45/50	24/40	1	6927-160	163.16
100	14/20	14/20	1	9464-10	54.21	5000	24/40	24/40	1	6927-62	156.20
100	19/22	14/20	1	9463-10	54.16	5000	45/50	24/40	1	6927-168	176.01
100	24/40	14/20	1	9463-11	54.06	6000	24/40	24/40	1	6927-64	207.62
250	19/22	14/20	1	9463-12	54.22	6000	29/42	29/42	1	6927-66	209.02
250	24/40	10/30	1	6927-04	76.52	6000	45/50	24/40	1	6927-68	227.13
250	24/40	24/40	1	6927-08	76.52	6000	45/50	29/42	1	6927-70	228.53
500	24/40	10/30	1	6927-20	76.81						



6928 FLASK *Two Necks, Vertical, Heavy Wall* ♠

Round bottom with reinforced $\text{\textcircled{F}}$ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With side neck vertical.

Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each	Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each
100	24/40	24/40	1	6928-207	58.82	1000	24/40	24/40	1	6928-232	97.70
250	24/40	24/40	1	6928-208	76.83	2000	24/40	24/40	1	6928-244	137.90
250	29/42	24/40	1	6928-211	77.79	2000	29/42	24/40	1	6928-246	140.83
500	24/40	24/40	1	6928-222	79.59						



6928 FLASK *Two Necks, Vertical, Standard Wall* ♠

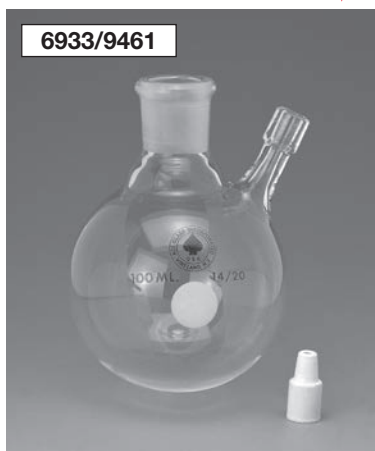
Round bottom with reinforced $\text{\textcircled{F}}$ outer joints. With side neck vertical.

Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each	Cap., mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Neck	Qty.	Order Code	Each
100	24/40	24/40	1	6928-07	58.82	1000	24/40	24/40	1	6928-32	97.70
250	24/40	24/40	1	6928-08	76.83	1000	29/42	29/42	1	6928-38	104.89
500	24/40	24/40	1	6928-22	79.59						


6930 FLASK *Two Necks, Vertical, Standard Wall* ♠

Round bottom with S outer socket joints. 500mL and 1000mL sizes have angled necks, but are available with straight necks as special orders.

Cap., mL	Center Neck S	Side Neck S	Qty.	Order Code	Each
500	35/25	35/25	1	6930-26	103.22
1000	35/25	35/25	1	6930-38	118.14
2000	35/25	35/25	1	6930-48	139.18
5000	35/25	35/25	1	6930-66	183.71


6933/9461 FLASK *with Septum Port, Heavy Wall* ♠

Used when handling air-sensitive materials. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With S outer joint and septum joint for use with 9096-32 septum. Supplied with septum. 24/40 joints are reinforced.

Cap., mL	S Joint	Qty.	Order Code	Each
50	14/20	1	9461-210	34.13
100	14/20	1	9461-212	35.14
250	14/20	1	9461-214	36.63
250	24/40	1	6933-224	47.53
500	24/40	1	6933-226	53.47
1000	24/40	1	6933-227	61.31

6933/9461 FLASK *with Septum Port, Standard Wall* ♠

Used when handling air-sensitive materials. With S outer joint and septum joint for use with 9096-32 septum. Supplied with septum. 24/40 jointed are reinforced.

Cap., mL	S Joint	Qty.	Order Code	Each
50	14/20	1	9461-10	34.13
100	14/20	1	9461-12	35.14
250	14/20	1	9461-14	36.63
250	24/40	1	6933-24	47.53
500	24/40	1	6933-26	53.47
1000	24/40	1	6933-27	61.31

Contact ACE to receive a copy of our latest reusable glassware catalog.

6934 FLASK with Stopcock and Septum Inlet, Heavy Wall ♠

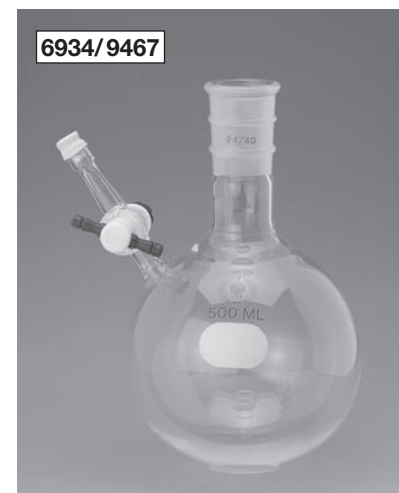
Used when handling air-sensitive materials. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With reinforced 24/40 outer joint, 2mm bore 1:5 PTFE stopcock and septum port for use with 9096-32 septum. Supplied with septum.

Cap., mL	Qty.	Order Code	Each
250	1	6934-225	141.65
500	1	6934-227	147.12
1000	1	6934-229	154.76

6934/9467 FLASK with Stopcock and Septum Inlet, Standard Wall ♠

Used when handling air-sensitive materials. With 24/40 outer joint, 2mm bore 1:5 PTFE stopcock and septum port for use with 9096-32 septum. Supplied with septum. 24/40 joints are reinforced.

Cap., mL	Joint	Qty.	Order Code	Each
50	14/20	1	9467-11	115.74
100	14/20	1	9467-13	116.42
250	14/20	1	9467-15	118.13
250	24/40	1	6934-25	120.23
500	24/40	1	6934-27	124.38
1000	24/40	1	6934-29	127.62



ACE Quality Laboratory & Scientific Product Lines Include...

Hydrogenation/Gas Apparatus — Featuring heavy-walled pressure-tested glass reaction vessels and connectors with Ace-Threds — eliminates rubber stoppers, **page 328**.

Pilot Plant/Reaction Equipment — Standard and custom-designed portable reactors from 10 to 200 Liters. **Contact Ace to get a copy of our reactor catalog.**

Pressure Reactor Systems — 500 to 5,000 mL capacity. Pressure limits to 45 psig/100°C. **Contact ACE to get a copy of our reactor catalog.**

Instatherm® Oil Baths — Rapid, even heat, very efficient, no super-heating., **page 331**.

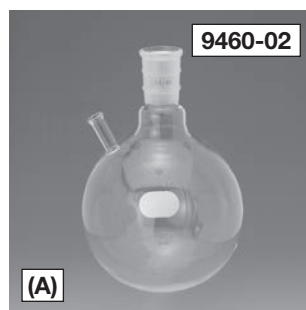
Temperature Controllers — Dependable, accurate ACE & J-Kem temperature controllers for oil baths, mantles, immersion heaters, etc., **page 595**.

Ultrasonics — Complete line of glassware and equipment used to promote and enhance chemical reactions through the use of ultrasonic energy, **page 617**.

Micro/Mini-Lab® — The original microscale-sized glassware designed exclusively for ACE by Drs. Dana W. Mayo, Ronald M. Pike and Samuel S. Butcher of Bowdoin College, **page 355**.

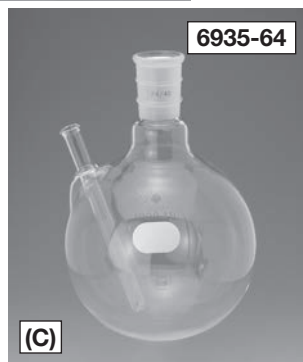
Multi-Step Filter Reactors — 150 to 6,000 mL capacity. single or multi-step filter reactors. **Contact ACE to get a copy of our reactor catalog.**

ROBO Apparatus — Reactor and Components for ASTM D7528-09 procedure for simulation and test of auto engine oils, **page 447**.



9460-02

(A)



6935-64

(C)

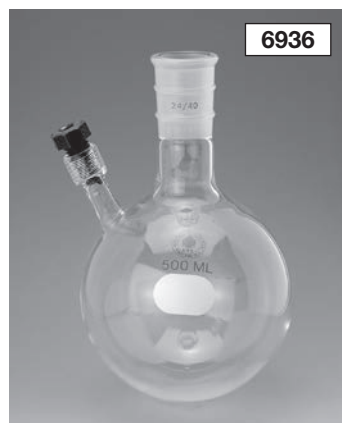
6935/9460 FLASK with Side Well ♠

With full-length reinforced F outer joint and side tube. Available in type A with side port, or C with a side deep well, as illustrated.

Capacity, mL	F Joint	Qty.	Style A			Style C			
			Approx. Well I.D., mm	Order Code	Each	Approx. Well I.D., mm	Order Code	Each	
5	14/20	1	9.5	9460-02	34.13	—	—	—	—
10	14/20	1	9.5	9460-04	34.13	—	—	—	—
25	14/20	1	9.5	9460-06	34.13	—	—	—	—
50	14/20	1	9.5	9460-08	34.13	—	—	—	—
50	24/40	1	9.5	6935-03	42.43	—	—	—	—
100	14/20	1	9.5	9460-10	35.14	—	—	—	—
100	19/38	1	9.5	6935-04	44.22	—	—	—	—
100	24/40	1	9.5	6935-05	42.43	1	9.0	6935-64	48.90
200	24/40	—	—	—	—	1	9.0	6935-66	49.28
250	14/20	1	—	9460-12	36.94	—	—	—	—
250	24/40	1	9.5	6935-09	47.77	1	9.0	6935-68	49.95
300	24/40	—	—	—	—	1	9.0	6935-70	60.11
500	24/40	1	9.5	6935-13	53.66	1	9.0	6935-72	64.54
1000	24/40	—	—	—	—	1	9.0	6935-74	76.63
2000	24/40	1	9.5	6935-17	79.32	—	—	—	—
3000	29/42	—	—	—	—	1	9.0	6935-78	129.05

6936/9462 FLASK Threaded Side Arm, #7 Ace-Thred, Heavy Wall ♠

With full-length reinforced F outer joint and side arm which is internally threaded for use with 5029 nylon bushing. Will accommodate thermometers or bleed tubes up to 7mm outside diameter. Supplied complete with 5029 bushing and FETFE o-ring. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks.

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6936

Cap., mL	Center Neck F	Qty.	Order Code	Each	Cap., mL	Center Neck F	Qty.	Order Code	Each
25	14/20	1	9462-207	54.06	250	29/42	1	6936-237	79.21
50	14/20	1	9462-209	54.06	500	24/40	1	6936-240	77.12
100	14/20	1	9462-211	54.55	500	29/42	1	6936-242	83.75
100	24/40	1	6936-230	70.56	1000	24/40	1	6936-244	84.90
250	24/40	1	6936-235	73.15	1000	29/42	1	6936-246	90.26

6936/9462 FLASK Threaded Side Arm, Standard Wall ♠

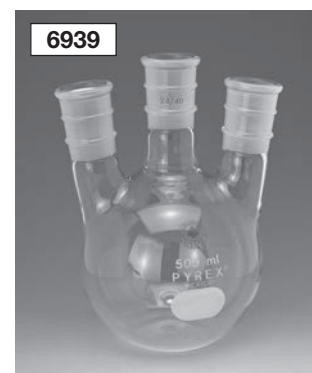
With full-length reinforced F outer joint and side arm which is internally threaded for use with 5029 nylon bushing. Will accommodate thermometers or bleed tubes up to 7mm outside diameter. Supplied complete with 5029 bushing and FETFE o-ring.

Cap., mL	Center Neck F	Qty.	Order Code	Each	Cap., mL	Center Neck F	Qty.	Order Code	Each
25	14/20	1	9462-07	54.06	250	14/20	1	9462-13	56.75
50	14/20	1	9462-09	54.06	250	24/40	1	6936-35	79.11
100	14/20	1	9462-11	54.55	500	24/40	1	6936-40	83.58
100	24/40	1	6936-30	76.67	1000	24/40	1	6936-44	90.26

6939 FLASK *Flat Bottom, Three Necks, § Outer Joints* ♠

Flat bottom flask can sit directly on top of heater or stirrer, no other support needed. 250 and 500mL sizes have angled side necks; 1000mL has straight side necks. All joints reinforced.

Capacity, mL	Center Neck §	§ Side Necks	Qty.	Order Code	Each
250	24/40	24/40	1	6939-10	118.66
500	24/40	24/40	1	6939-15	122.93
1000	24/40	24/40	1	6939-20	136.02


6940 FLASK *Thermowell* ♠

Round-bottom borosilicate flask with § top and angled side thermometer well.

Capacity, mL	§ Joint	Qty.	Order Code	Each
500	35/25	1	6940-49	79.50
1000	35/25	1	6940-51	92.60



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 Value


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6944 FLASK *Three Necks, Vertical, Heavy Wall* ♠

With full-length reinforced F outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. The flareout directly below the center joint facilitates cleaning the flask, and enables stirring blades, etc., to be easily removed. With **vertical** side necks.

Cap., mL	Center Neck F	F Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck F	F Side Necks	Qty.	Order Code	Each
100	24/40	24/40	1	6944-203	104.71	2000	29/42	24/40	1	6944-242	183.96
200	24/40	24/40	1	6944-205	104.71	2000	29/42	29/42	1	6944-244	185.85
250	24/40	24/40	1	6944-204	104.71	2000	34/45	24/40	1	6944-246	187.89
250	29/42	24/40	1	6944-206	104.71	2000	34/45	29/42	1	6944-247	165.47
250	29/42	29/42	1	6944-207	104.71	2000	45/50	24/40	1	6944-249	181.38
300	24/40	24/40	1	6944-210	104.71	2000	45/50	29/42	1	6944-245	210.89
500	24/40	24/40	1	6944-216	107.38	3000	24/40	24/40	1	6944-248	200.10
500	29/42	24/40	1	6944-218	107.38	3000	29/42	24/40	1	6944-250	201.86
500	29/42	29/42	1	6944-220	107.38	3000	29/42	29/42	1	6944-254	203.77
500	34/45	24/40	1	6944-222	112.75	3000	34/45	24/40	1	6944-256	205.49
500	34/45	29/42	1	6944-223	113.57	3000	34/45	29/42	1	6944-257	207.27
500	45/50	24/40	1	6944-225	123.50	3000	45/50	24/40	1	6944-258	210.90
500	45/50	29/42	1	6944-229	123.50	3000	45/50	29/42	1	6944-259	213.02
1000	24/40	24/40	1	6944-224	123.50	5000	24/40	24/40	1	6944-260	219.36
1000	29/42	24/40	1	6944-226	132.13	5000	29/42	24/40	1	6944-262	219.36
1000	29/42	29/42	1	6944-228	132.94	5000	29/42	29/42	1	6944-264	224.06
1000	34/45	24/40	1	6944-230	134.67	5000	34/45	24/40	1	6944-266	230.27
1000	34/45	29/42	1	6944-231	135.99	5000	45/50	24/40	1	6944-267	235.02
1000	45/50	24/40	1	6944-238	136.60	5000	45/50	29/42	1	6944-268	238.24
2000	24/40	24/40	1	6944-240	179.11						

Color Coated Glassware

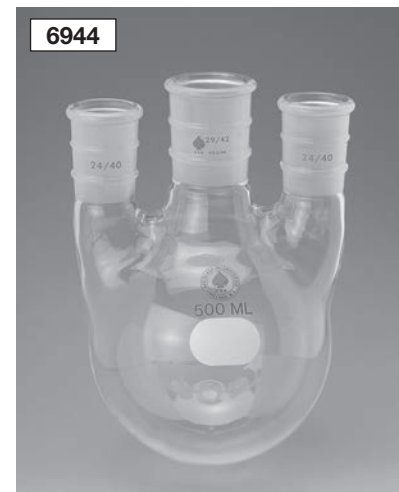


Ace Glass offers many of our existing glass vessels in an amber coated version. Flasks, pressure bottles, beakers, bottles and many other items listed in this catalog can be amber or color coated on request. The coating is a proprietary process and gives excellent UV protection characteristics. Contact Ace for more details and pricing.

6944 FLASK *Three Necks, Vertical, Standard Wall* ♠

With reinforced ⌘ outer joints. The flareout directly below the center joint facilitates cleaning the flask, and enables stirring blades, etc., to be easily removed. With **vertical** side necks.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
100	24/40	24/40	1	6944-03	104.71	5000	45/50	24/40	1	6944-67	235.02
200	24/40	24/40	1	6944-05	104.71	5000	45/50	29/42	1	6944-68	238.24
250	24/40	24/40	1	6944-04	104.71	5000	60/40	24/40	1	6944-167	294.44
250	29/42	24/40	1	6944-06	106.57	6000	24/40	24/40	1	6944-107	257.79
300	24/40	24/40	1	6944-10	104.71	6000	29/42	24/40	1	6944-109	259.15
500	24/40	24/40	1	6944-16	107.38	6000	29/42	29/42	1	6944-111	265.92
500	29/42	24/40	1	6944-18	107.38	6000	34/45	24/40	1	6944-113	278.14
500	29/42	29/42	1	6944-20	110.07	6000	34/45	29/42	1	6944-115	282.21
500	34/45	24/40	1	6944-22	112.75	6000	45/50	24/40	1	6944-117	291.71
500	45/50	24/40	1	6944-25	124.98	6000	45/50	29/42	1	6944-119	294.44
1000	24/40	24/40	1	6944-24	124.98	6000	45/50	45/50	1	6944-120	332.42
1000	29/42	24/40	1	6944-26	132.09	6000	60/40	24/40	1	6944-127	336.47
1000	29/42	29/42	1	6944-28	132.09	12000	29/42	24/40	1	6944-69	367.71
1000	34/45	24/40	1	6944-30	132.94	12000	29/42	29/42	1	6944-70	371.64
1000	34/45	29/42	1	6944-31	137.41	12000	34/45	29/42	1	6944-71	375.08
1000	45/50	24/40	1	6944-38	136.60	12000	34/45	24/40	1	6944-72	373.39
2000	24/40	24/40	1	6944-40	155.74	12000	45/50	45/50	1	6944-73	411.28
2000	29/42	24/40	1	6944-42	156.31	12000	55/50	24/40	1	6944-74	415.92
2000	29/42	29/42	1	6944-44	159.46	12000	45/50	24/40	1	6944-75	395.89
2000	34/45	24/40	1	6944-46	163.36	12000	45/50	29/42	1	6944-76	399.34
2000	34/45	29/42	1	6944-47	165.56	12000	55/50	29/42	1	6944-78	418.57
2000	45/50	24/40	1	6944-148	190.57	12000	55/50	45/50	1	6944-79	425.57
2000	45/50	29/42	1	6944-49	175.45	12000	60/40	24/40	1	6944-177	434.18
3000	24/40	24/40	1	6944-48	181.77	12000	71/60	45/50	1	6944-178	462.41
3000	29/42	24/40	1	6944-50	183.21	22000	45/50	24/40	1	6944-80	792.98
3000	29/42	29/42	1	6944-54	188.39	22000	29/42	29/42	1	6944-81	786.67
3000	34/45	24/40	1	6944-56	192.73	22000	45/50	29/42	1	6944-82	817.02
3000	34/45	29/42	1	6944-57	194.97	22000	45/50	45/50	1	6944-83	831.91
3000	45/50	24/40	1	6944-58	206.40	22000	55/50	24/40	1	6944-84	838.65
3000	45/50	29/42	1	6944-59	208.21	22000	55/50	29/42	1	6944-86	843.78
3000	60/40	24/40	1	6944-157	239.57	22000	55/50	45/50	1	6944-88	857.32
5000	24/40	24/40	1	6944-60	210.29	22000	71/60	55/50	1	6944-91	890.86
5000	29/42	24/40	1	6944-62	212.13	22000	71/60	45/50	1	6944-188	874.31
5000	29/42	29/42	1	6944-64	217.82	50000	45/50	45/50	1	6944-294	2673.19
5000	34/45	24/40	1	6944-66	230.27	72000	71/60	45/50	1	6944-297	2902.17



All ACE full-length outer joints are tooled with reinforcement rings for added strength and stability.


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6945

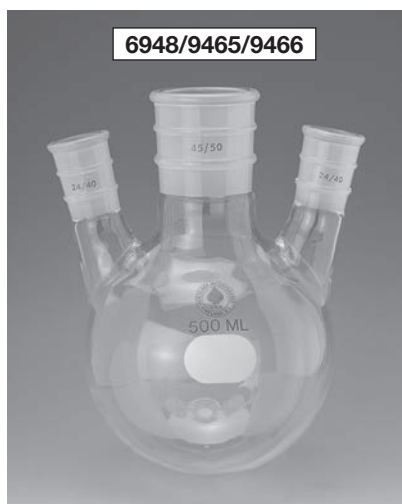
6945 FLASK *Three Necks, Jacketed, Heavy Wall* ★

Round bottom flask with three in-line reinforced ⌘ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Inlet/outlet connections are 28/15 o-ring ball joints, sealed tangentially.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
500	24/40	24/40	1	6945-217	545.91	5000	29/42	29/42	1	6945-266	874.57
500	29/42	24/40	1	6945-219	555.30	5000	34/45	24/40	1	6945-268	905.35
1000	24/40	24/40	1	6945-223	630.39	5000	45/50	24/40	1	6945-270	927.21
1000	29/42	24/40	1	6945-225	639.81	6000	24/40	24/40	1	6945-274	960.67
2000	29/42	24/40	1	6945-245	680.55	6000	29/42	24/40	1	6945-276	974.10
3000	29/42	24/40	1	6945-255	763.50	6000	29/42	29/42	1	6945-278	980.81
3000	29/42	29/42	1	6945-257	771.25	6000	45/50	24/40	1	6945-280	1027.86
3000	34/45	24/40	1	6945-259	801.71	6000	45/50	29/42	1	6945-282	1034.57
3000	45/50	24/40	1	6945-261	831.03	6000	45/50	45/50	1	6945-284	1069.50
5000	29/42	24/40	1	6945-264	865.14						

6948/9465/9466 FLASK *Three Necks, Angled, Heavy Wall* ♠

With full-length reinforced ⌘ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With side necks angled.


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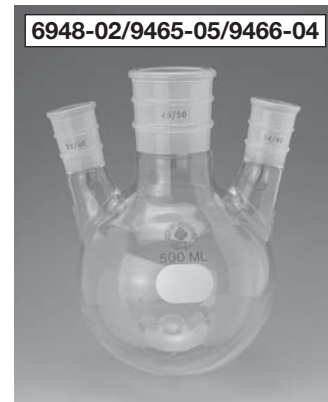
6948/9465/9466

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
15	14/20	14/10	1	9465-204	60.11	1000	24/40	24/40	1	6948-226	123.77
25	14/20	14/20	1	9465-207	61.82	1000	29/42	24/40	1	6948-227	130.86
25	19/22	14/20	1	9466-206	66.86	1000	34/45	24/40	1	6948-234	133.36
50	14/20	14/20	1	9465-209	65.45	2000	24/40	24/40	1	6948-232	185.08
50	19/22	14/20	1	9466-208	69.76	2000	29/42	24/40	1	6948-235	187.23
100	14/20	14/20	1	9465-211	65.61	2000	29/42	29/42	1	6948-236	189.52
100	19/22	14/20	1	9466-210	69.75	2000	34/45	24/40	1	6948-237	194.13
100	24/40	24/40	1	6948-203	103.70	3000	24/40	24/40	1	6948-238	198.15
200	24/40	24/40	1	6948-205	103.70	3000	29/42	24/40	1	6948-239	199.90
250	14/20	14/20	1	9465-213	72.83	3000	29/42	29/42	1	6948-241	201.80
250	19/22	14/20	1	9466-212	71.84	3000	34/45	24/40	1	6948-240	203.51
250	24/40	24/40	1	6948-207	103.70	3000	34/45	29/42	1	6948-242	205.26
250	29/42	24/40	1	6948-208	104.61	5000	24/40	24/40	1	6948-258	217.23
250	19/22	19/22	1	9466-220	73.90	5000	29/42	24/40	1	6948-260	220.83
300	24/40	24/40	1	6948-212	106.62	5000	29/42	29/42	1	6948-261	223.32
500	19/22	14/20	1	9466-214	66.80	5000	34/45	24/40	1	6948-262	224.82
500	24/40	24/40	1	6948-216	106.62	5000	34/45	29/42	1	6948-263	229.72
500	29/42	24/40	1	6948-222	109.00	5000	45/50	24/40	1	6948-267	231.79
500	29/42	29/42	1	6948-220	109.00						
500	34/45	24/40	1	6948-224	111.66						
500	19/22	19/22	1	9466-224	82.21						

6948/9465/9466 FLASK Three Necks, Angled, Standard Wall ♠

With full-length reinforced ⌘ outer joints. With side necks angled.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
15	14/20	14/20	1	9465-05	61.82	3000	24/40	24/40	1	6948-38	183.66
15	19/22	14/20	1	9466-04	66.86	3000	34/45	24/40	1	6948-40	193.73
25	14/20	14/20	1	9465-07	61.82	5000	24/40	24/40	1	6948-58	222.36
25	19/22	14/20	1	9466-06	66.86	5000	45/50	24/40	1	6948-67	234.88
25	14/10	14/10	1	9465-34	68.09	6000	24/40	24/40	1	6948-104	257.97
50	14/10	14/10	1	9465-36	68.41	6000	29/42	24/40	1	6948-106	262.00
50	14/20	14/20	1	9465-09	65.45	6000	29/42	29/42	1	6948-108	268.71
50	19/22	14/20	1	9466-08	69.76	6000	34/45	24/40	1	6948-110	280.83
50	19/22	19/22	1	9465-23	73.14	6000	34/45	29/42	1	6948-112	284.83
100	14/20	14/20	1	9465-11	65.61	6000	45/50	24/40	1	6948-114	295.59
100	19/22	14/20	1	9466-10	69.75	6000	45/50	29/42	1	6948-116	302.32
100	19/22	19/22	1	9465-25	72.58	12000	29/42	24/40	1	6948-69	369.64
100	24/40	19/38	1	6948-02	102.78	12000	29/42	29/42	1	6948-70	374.05
100	24/40	24/40	1	6948-03	104.71	12000	34/45	24/40	1	6948-71	373.08
200	24/40	24/40	1	6948-05	104.71	12000	34/45	29/42	1	6948-72	376.33
250	14/20	14/20	1	9465-13	72.83	12000	45/50	24/40	1	6948-75	381.67
250	19/22	14/20	1	9466-12	71.84	12000	45/50	29/42	1	6948-76	384.32
250	19/22	19/22	1	9465-27	74.69	12000	45/50	45/50	1	6948-78	394.76
250	24/40	19/38	1	6948-10	104.71	12000	55/50	24/40	1	6948-79	394.76
250	24/40	24/40	1	6948-07	104.71	12000	55/50	29/42	1	6948-81	399.61
300	24/40	24/40	1	6948-12	104.71	12000	55/50	45/50	1	6948-82	405.58
500	19/22	14/20	1	9466-14	72.77	12000	71/60	45/50	1	6948-83	360.06
500	19/22	19/22	1	9465-29	73.94	22000	29/42	29/42	1	6948-85	657.80
500	24/40	24/40	1	6948-16	107.38	22000	45/50	24/40	1	6948-80	766.99
500	29/42	24/40	1	6948-22	110.07	22000	45/50	29/42	1	6948-86	663.84
500	29/42	29/42	1	6948-20	110.07	22000	45/50	45/50	1	6948-87	676.52
500	34/45	24/40	1	6948-24	113.71	22000	55/50	24/40	1	6948-88	682.22
500	45/50	24/40	1	6948-25	114.80	22000	55/50	29/42	1	6948-89	695.72
1000	24/40	24/40	1	6948-26	124.98	22000	55/50	45/50	1	6948-90	703.34
1000	34/45	24/40	1	6948-34	156.81	22000	71/60	45/50	1	6948-91	711.20
2000	24/40	24/40	1	6948-32	155.53	22000	71/60	55/50	1	6948-92	772.58



6950 FLASK Three Necks, Spherical, Heavy Wall ♠

With ⌘ outer joints vertical. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
250	35/25	35/25	1	6950-208	120.73	2000	35/25	35/25	1	6950-238	208.24
500	35/25	35/25	1	6950-222	139.37	3000	35/25	35/25	1	6950-244	253.60
1000	35/25	35/25	1	6950-230	167.55	5000	35/25	35/25	1	6950-250	280.65



6950 FLASK Three Necks, Spherical, Vertical, Standard Wall ♠

With ⌘ outer joints vertical.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
250	35/25	35/25	1	6950-08 ♠	120.73	3000	35/25	35/25	1	6950-44 ♠	233.58
500	35/25	35/25	1	6950-22 ♠	139.37	5000	35/25	35/25	1	6950-50 ♠	248.62
1000	35/25	35/25	1	6950-30 ♠	167.55	6000	35/25	35/25	1	6950-54 ♠	310.10
2000	35/25	35/25	1	6950-38 ♠	184.78	12000	65/40	35/25	1	6950-60 ★	413.88


HEAVY DUTY
6952 FLASK *Four Necks, Heavy Wall* ♠

Round bottom with full-length reinforced ⌘ outer joints. The fourth neck is at 90° from the three in-line necks. **250mL and 500mL sizes have angled side necks, unless ordered special.** Illustration represents capacities of 1000mL and larger. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks.



6952

Angled	Cap.,	Center	⌘ Side	Qty.	Order	Each	Cap.,	Center	⌘ Side	Qty.	Order	Each
	mL	Neck ⌘	Neck		Code		mL	Neck ⌘	Neck		Code	
	250	24/40	24/40	1	6952-201	150.24	2000	45/50	29/42	1	6952-227	247.41
	500	24/40	24/40	1	6952-202	155.62	3000	24/40	24/40	1	6952-232	269.92
	500	29/42	24/40	1	6952-203	157.40	3000	29/42	24/40	1	6952-236	273.52
	500	29/42	29/42	1	6952-206	159.20	3000	29/42	29/42	1	6952-237	275.31
	500	34/45	24/40	1	6952-204	162.76	3000	34/45	24/40	1	6952-240	277.24
	1000	24/40	24/40	1	6952-208	191.66	3000	45/50	24/40	1	6952-244	280.83
	1000	29/42	24/40	1	6952-212	193.62	5000	24/40	24/40	1	6952-248	297.02
	1000	29/42	29/42	1	6952-213	195.40	5000	29/42	24/40	1	6952-252	298.83
	1000	34/45	24/40	1	6952-216	197.07	5000	29/42	29/42	1	6952-253	300.63
	1000	34/45	29/42	1	6952-218	200.27	5000	34/45	24/40	1	6952-256	302.39
	1000	45/50	24/40	1	6952-217	205.95	5000	34/45	29/42	1	6952-257	304.74
	1000	45/50	29/42	1	6952-219	209.31	5000	45/50	24/40	1	6952-260	316.83
	2000	24/40	24/40	1	6952-220	217.84	5000	45/50	29/42	1	6952-263	322.20
	2000	29/42	24/40	1	6952-224	221.39	5000	45/50	45/50	1	6952-264	349.60
	2000	34/45	24/40	1	6952-228	224.97	5000	55/50	24/40	1	6952-266	373.33
	2000	34/45	29/42	1	6952-225	227.50	5000	55/50	29/42	1	6952-267	375.85
	2000	45/50	24/40	1	6952-229	244.77						

6952/9468/9469 FLASK *Four Necks, Standard Wall* ♠

Round bottom with full-length reinforced ⌘ outer joints. The fourth neck is at 90° from the three in-line necks. Illustration represents all capacities except 50-500mL. The 50, 100, 250 and 500mL sizes have angled side necks. These sizes are also available with straight necks via special order.



6952

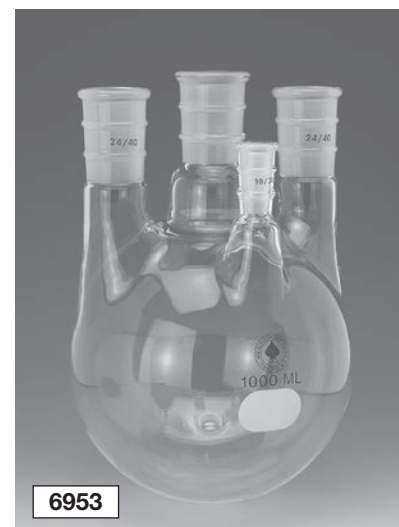
Angled	Cap.,	Center	⌘ Side	Qty.	Order	Each	Cap.,	Center	⌘ Side	Qty.	Order	Each
	mL	Neck ⌘	Neck		Code		mL	Neck ⌘	Neck		Code	
	50	14/20	14/20	1	9468-11	93.06	5000	45/50	24/40	1	6952-60	316.83
	50	19/22	14/20	1	9469-12	93.68	5000	45/50	29/42	1	6952-63	322.20
	100	14/20	14/20	1	9468-13	93.06	6000	24/40	24/40	1	6952-101	351.88
	100	19/22	14/20	1	9469-14	93.68	6000	29/42	24/40	1	6952-103	356.00
	250	14/20	14/20	1	9468-15	95.80	6000	29/42	29/42	1	6952-105	361.53
	250	19/22	14/20	1	9469-16	97.56	6000	34/45	24/40	1	6952-107	367.06
	250	24/40	24/40	1	6952-01	149.51	6000	34/45	29/42	1	6952-109	368.43
	500	24/40	24/40	1	6952-02	154.86	6000	45/50	24/40	1	6952-111	372.57
	500	29/42	29/42	1	6952-03	156.07	6000	45/50	29/42	1	6952-113	376.72
	500	34/45	24/40	1	6952-04	161.96	6000	45/50	45/50	1	6952-115	397.41
	1000	24/40	24/40	1	6952-08	189.41	6000	55/50	24/40	1	6952-117	386.36
	1000	29/42	24/40	1	6952-12	192.67	6000	55/50	29/42	1	6952-119	391.89
	1000	29/42	29/42	1	6952-13	194.47	12000	34/45	24/40	1	6952-68	445.58
	1000	34/45	24/40	1	6952-16	198.03	12000	45/50	24/40	1	6952-72	463.42
	1000	34/45	29/42	1	6952-18	200.27	12000	45/50	29/42	1	6952-75	474.03
	1000	45/50	24/40	1	6952-17	206.96	12000	45/50	45/50	1	6952-73	486.96
	1000	45/50	29/42	1	6952-19	209.31	12000	55/50	24/40	1	6952-76	484.65
	2000	24/40	24/40	1	6952-20	217.84	12000	55/50	29/42	1	6952-77	499.10
	2000	29/42	24/40	1	6952-24	221.39	22000	45/50	24/40	1	6952-80	832.23
	2000	34/45	24/40	1	6952-28	224.97	22000	45/50	29/42	1	6952-81	854.50
	2000	34/45	29/42	1	6952-25	227.50	22000	45/50	45/50	1	6952-78	867.44
	2000	45/50	24/40	1	6952-29	244.77	22000	55/50	24/40	1	6952-82	854.58
	2000	45/50	29/42	1	6952-27	247.41	22000	55/50	29/42	1	6952-83	864.31
	3000	24/40	24/40	1	6952-32	269.92	22000	55/50	45/50	1	6952-84	882.38
	3000	29/42	24/40	1	6952-36	273.53	22000	71/60	24/40	1	6952-88	904.53
	3000	29/42	29/42	1	6952-37	275.31	22000	71/60	29/42	1	6952-89	912.69
	3000	34/45	24/40	1	6952-40	277.24	50000	45/50	45/50	1	6952-79	2713.61
	3000	45/50	24/40	1	6952-44	282.39	50000	71/60	45/50	1	6952-95	2747.60
	5000	24/40	24/40	1	6952-48	297.02	72000	45/50	45/50	1	6952-96	2974.20
	5000	29/42	24/40	1	6952-52	298.83	72000	71/60	45/50	1	6952-97	3053.52
	5000	34/45	24/40	1	6952-56	302.39						

6953 FLASK *Four Necks, Heavy Wall* ♠

With four reinforced $\text{\textcircled{F}}$ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. The $\text{\textcircled{F}}$ 10/30 joint is at 90° from the three in-line joints. Illustration represents all capacities except 500mL. The 500mL size has angled side necks (500mL size is available with straight necks via special order).

Capacity, mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Necks	90° Neck	Qty.	Order Code	Each
500	24/40	24/40	10/30	1	6953-204	163.76
500	29/42	24/40	10/30	1	6953-205	165.22
1000	24/40	24/40	10/30	1	6953-208	173.09
1000	29/42	24/40	10/30	1	6953-212	174.47
1000	34/45	24/40	10/30	1	6953-216	175.68
2000	24/40	24/40	10/30	1	6953-220	220.61
2000	29/42	24/40	10/30	1	6953-224	222.34
2000	34/45	24/40	10/30	1	6953-228	223.07
3000	24/40	24/40	10/30	1	6953-232	261.47
5000	45/50	24/40	10/30	1	6953-260	311.76

HEAVY DUTY



6953

6953 FLASK *Four Necks, Standard Wall*

With four reinforced $\text{\textcircled{F}}$ outer joints. The $\text{\textcircled{F}}$ 10/30 joint is at 90° from the three in-line joints. Illustration represents all capacities except 500mL. The 500mL size has angled side necks (500mL size is available with straight necks via special order).

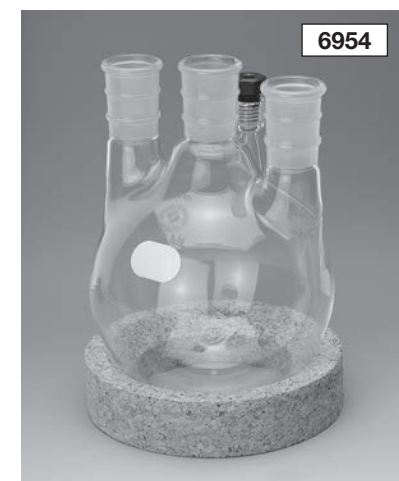
Capacity, mL	Center Neck $\text{\textcircled{F}}$	$\text{\textcircled{F}}$ Side Necks	90° Neck	Qty.	Order Code	Each
500	24/40	24/40	10/30	1	6953-04	♠ 170.29
1000	24/40	24/40	10/30	1	6953-08	♠ 179.95
1000	29/42	24/40	10/30	1	6953-12	♠ 181.42
1000	34/45	24/40	10/30	1	6953-16	♠ 182.69
2000	24/40	24/40	10/30	1	6953-20	♠ 199.20
2000	29/42	24/40	10/30	1	6953-24	♠ 223.12
2000	34/45	24/40	10/30	1	6953-28	♠ 228.20
3000	24/40	24/40	10/30	1	6953-32	♠ 269.29
3000	34/45	24/40	10/30	1	6953-40	♠ 276.48
5000	45/50	24/40	10/30	1	6953-60	♠ 308.84
6000	45/50	24/40	10/30	1	6953-64	♠ 324.21
6000	45/50	29/42	10/30	1	6953-66	♠ 328.25
12000	45/50	24/40	10/30	1	6953-72	★ 452.18

6954 FLASK *Four Necks, One #7 Ace-Thred, Heavy Wall* ♠

With three reinforced $\text{\textcircled{F}}$ outer joints and thermometer neck internally threaded to accept 5029 nylon bushing. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Supplied complete with bushing and FETFE o-ring. For extra bushing, see 5029-10. For extra o-rings, see 7855-704. Illustration represents all capacities except 250 and 500mL. 250 and 500mL have angled side necks (these sizes are available with straight necks via special order).

Cap., mL	$\text{\textcircled{F}}$ Joints Center-Side Necks	Qty.	Order Code	Each	Cap., mL	$\text{\textcircled{F}}$ Joints Center-Side Necks	Qty.	Order Code	Each
250	24/40-24/40	1	6954-272	156.26	2000	29/42-24/40	1	6954-283	221.08
500	24/40-24/40	1	6954-275	157.94	3000	24/40-24/40	1	6954-285	256.65
500	29/42-24/40	1	6954-276	160.38	3000	29/42-24/40	1	6954-286	265.46
1000	24/40-24/40	1	6954-277	177.03	3000	34/45-24/40	1	6954-287	275.56
1000	29/42-24/40	1	6954-278	183.13	3000	45/50-24/40	1	6954-288	278.07
2000	24/40-24/40	1	6954-282	217.76	5000	24/40-24/40	1	6954-289	293.52

HEAVY DUTY



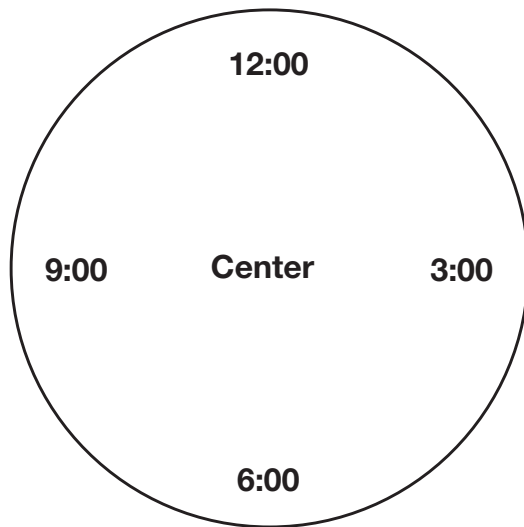
6954



Fax to Ace Glass: 1-800-543-6752

Custom Flasks

A	Style (bottom)	<input type="checkbox"/> Round <input type="checkbox"/> Flat	
B	Capacity	mL	
C	Number of Necks		
D	Neck(s) Configuration		
	Location	Distance From Center Neck	Joint Type/Size*
	Center	mm	
	3:00	mm	
	6:00	mm	
	9:00	mm	
	12:00	mm	
	Other (indicate locaton on diagram)	mm	
E	Bottom Outlet	<input type="checkbox"/> Yes <input type="checkbox"/> No	
F	Bottom Outlet Type		
G	Joint Style	<input type="checkbox"/> Angled <input type="checkbox"/> Straight	



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Your contact information:

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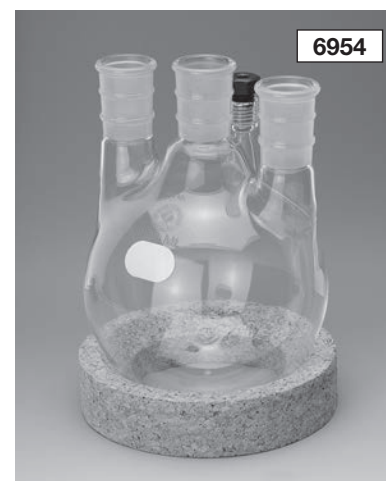
You can also order custom flasks on our website at www.aceglass.com

6954 FLASK *Four Necks, One #7 Ace-Thred, Standard Wall* ♠

With three reinforced ⌘ outer joints and thermometer neck internally threaded to accept 5029 nylon bushing. Supplied complete with bushing and FETFE o-ring. For extra bushing, see 5029-10. For extra o-rings, see 7855-704. 250 and 500mL have angled side necks (these sizes are available with straight necks via special order).

Angled

Cap., mL	⌘ Joints Center-Side Necks	Qty.	Order Code	Each	Cap., mL	⌘ Joints Center-Side Necks	Qty.	Order Code	Each
250	24/40-24/40	1	6954-72	156.26	2000	24/40-24/40	1	6954-82	199.35
500	24/40-24/40	1	6954-75	159.18	3000	24/40-24/40	1	6954-85	219.22
1000	24/40-24/40	1	6954-77	180.87	5000	24/40-24/40	1	6954-89	250.49


6955 FLASK *Five Necks, One #7 Ace-Thred, Heavy Wall* ♠

Round bottom flask with three in-line and one front reinforced ⌘ outer joint; the other front neck is a #7 Ace-Thred for use with thermometers, bleed tubes, etc. up to 7mm O.D. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Supplied complete with 5029 nylon bushing and FETFE o-ring. For extra bushings, see 5029-10. For extra o-rings, see 7855-704.

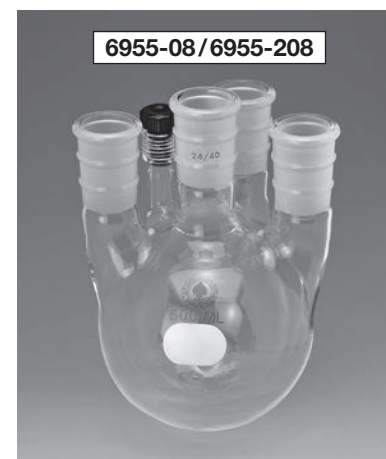
HEAVY DUTY

Capacity, mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
500	24/40	24/40	1	6955-208	185.42
1000	24/40	24/40	1	6955-212	222.84
2000	24/40	24/40	1	6955-215	271.34

6955 FLASK *Five Necks, One #7 Ace-Thred, Standard Wall* ♠

Round bottom flask with three in-line and one front reinforced ⌘ outer joint; the other front neck is a #7 Ace-Thred for use with thermometers, bleed tubes, etc. up to 7mm O.D. Supplied complete with 5029 nylon bushing and FETFE o-ring. For extra bushings, see 5029-10. For extra o-rings, see 7855-704.

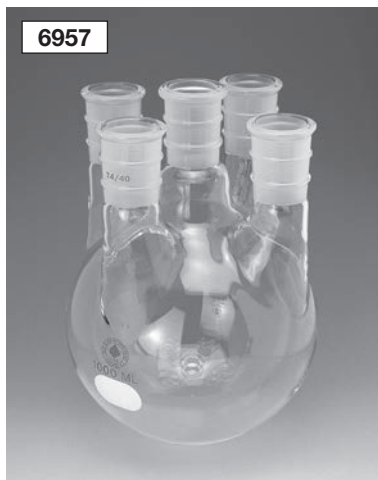
Capacity, mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
500	24/40	24/40	1	6955-08	183.90
1000	24/40	24/40	1	6955-12	219.97
2000	24/40	24/40	1	6955-15	266.81



Contact Ace for a copy of our complete reusable glassware catalog.


HEAVY DUTY
6957 FLASK *Five Necks, Heavy Wall* ♠

With reinforced ⌘ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. All five necks are in vertical position. Side necks are 90° apart.



Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
1000	24/40	24/40	1	6957-208	243.24	3000	45/50	24/40	1	6957-238	341.36
2000	24/40	24/40	1	6957-220	278.73	5000	24/40	24/40	1	6957-248	354.99
2000	29/42	24/40	1	6957-222	291.82	5000	29/42	24/40	1	6957-252	365.67
3000	24/40	24/40	1	6957-232	327.48	5000	45/50	24/40	1	6957-260	377.95
3000	29/42	24/40	1	6957-236	329.26						

6957 FLASK *Five Necks, Standard Wall* ♠

With reinforced ⌘ outer joints. All five necks are in vertical position. Side necks are 90° apart.

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
1000	24/40	24/40	1	6957-08	250.74	5000	45/50	24/40	1	6957-60	389.96
2000	24/40	24/40	1	6957-20	278.73	6000	24/40	24/40	1	6957-70	414.77
3000	24/40	24/40	1	6957-32	299.43	6000	29/42	24/40	1	6957-72	417.49
3000	29/42	24/40	1	6957-36	328.85	6000	29/42	29/42	1	6957-74	428.37
3000	45/50	24/40	1	6957-38	354.23	6000	45/50	24/40	1	6957-76	455.56
5000	24/40	24/40	1	6957-48	359.48	6000	45/50	29/42	1	6957-78	461.00
5000	29/42	24/40	1	6957-52	365.67	6000	45/50	45/50	1	6957-80	489.55


HEAVY DUTY
6958 FLASK *Three Necks, Indented Morton Type, Heavy Wall*

Three-neck, indented flask with reinforced ⌘ outer joints. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. Not recommended for vacuum distillation use. Photo shows angled neck flasks. The 500mL and 1L sizes have angled side necks (available with straight necks via special order).


Angled

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
500	45/50	24/40	1	6958-204 ♠	195.59	3000	45/50	29/42	1	6958-216 ♠	301.87
500	45/50	29/42	1	6958-205 ♠	174.71	5000	45/50	29/42	1	6958-220 ♠	332.97
1000	45/50	24/40	1	6958-206 ♠	223.28	12000	45/50	29/42	1	6958-228 ★	532.92
2000	45/50	29/42	1	6958-212 ♠	256.43						

6958 FLASK *Three Necks, Indented Morton Type, Standard Wall*

Three-neck, indented flask with reinforced ⌘ outer joints. Not recommended for vacuum distillation use. Photo shows angled neck flasks. The 500mL and 1L sizes have angled side necks (available with straight necks via special order).

Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each	Cap., mL	Center Neck ⌘	⌘ Side Necks	Qty.	Order Code	Each
500	45/50	24/40	1	6958-04 ♠	171.02	5000	45/50	29/42	1	6958-20 ♠	314.09
1000	45/50	24/40	1	6958-06 ♠	196.79	6000	45/50	24/40	1	6958-22 ♠	373.07
1000	45/50	29/42	1	6958-08 ♠	200.03	6000	45/50	29/42	1	6958-24 ♠	377.28
2000	45/50	29/42	1	6958-12 ♠	246.60	6000	45/50	45/50	1	6958-26 ♠	408.03
3000	45/50	29/42	1	6958-16 ♠	297.56	12000	45/50	29/42	1	6958-28 ★	503.06

Indented
Angled

9475 FLASK *Indented Morton Type, Standard Wall* ♦

Three necks (two angled). With indents to provide for more complete agitation. The nominal capacities referred to are the standard flask capacity without indents. The actual capacity is with indents. With F 14/20 outer joints.

Nominal Capacity, mL	Actual Capacity, mL	Qty.	Order Code	Each
50	40	1	9475-08	107.16
100	80	1	9475-10	112.66
250	200	1	9475-12	121.74
300	240	1	9475-14	144.83


6959 FLASK *European Style, Three Necks, Jacketed* ★

Fully jacketed European style, tapered walls with shallow bottom for more efficient magnetic or mechanical half-moon shaped paddle stirring. Easy to clean. Supplied with F center neck, two F angled side necks. 24/40 necks are reinforced.

Capacity, mL	F Center Neck	F Side Necks	Size I.D. Tube for H/C, mm (Inches)	Qty.	Order Code	Each
125	14/20	14/20	9.5 (3/8)	1	6959-03	341.86
125	24/40	14/20	9.5 (3/8)	1	6959-05	341.86
250	14/20	14/20	11.1 (7-3/16)	1	6959-11	383.71
250	24/40	24/40	11.1 (7-3/16)	1	6959-13	383.71
500	14/20	14/20	12.7 (1/2)	1	6959-22	460.47
500	24/40	24/40	12.7 (1/2)	1	6959-24	460.47
500	29/42	24/40	12.7 (1/2)	1	6959-26	460.47
1000	24/40	24/40	12.7 (1/2)	1	6959-30	486.97
1000	29/42	24/40	12.7 (1/2)	1	6959-33	486.97
2000	24/40	24/40	12.7 (1/2)	1	6959-36	693.48
2000	29/42	24/40	12.7 (1/2)	1	6959-38	693.48


6959 FLASK *European Style, Five Necks, Jacketed* ★

Fully jacketed European style, tapered walls with shallow bottom for more efficient magnetic or mechanical half-moon shaped paddle stirring. Easy to clean. Supplied with F center neck, two reinforced F angled side necks, and two #7 Ace-Threds for thermometers, etc., up to 7 mm O.D. Supplied with nylon bushings and FETFE o-rings. 24/40 necks are reinforced.

Capacity, mL	F Center Neck	F Side Necks	Size I.D. Tube for H/C, mm (Inches)	Qty.	Order Code	Each
125	14/20	F 14/20-#7	9.5 (3/8)	1	6959-44	415.80
250	24/40	F 24/40-#7	11.1 (7-3/16)	1	6959-48	530.22
250	29/42	F 24/40-#7	11.1 (7-3/16)	1	6959-51	530.22
500	24/40	F 24/40-#7	12.7 (1/2)	1	6959-55	593.03


6960 FLASK *Tapered Wall, Five Necks, Jacketed* ★

Fully jacketed with flask walls tapered toward the bottom. Supplied with F center neck, two F angled side necks, and two #7 Ace-Threds for thermometers, etc., up to 7 mm O.D. Supplied with nylon bushings and FETFE o-rings. 24/40 necks are reinforced.

Capacity, mL	F Center Neck	F Side Necks	Size I.D. Tube for H/C, mm (Inches)	Qty.	Order Code	Each
50	14/20	F 14/20-#7	9.5 (3/8)	1	6960-02	486.97
125	14/20	F 14/20-#7	9.5 (3/8)	1	6960-09	486.97
250	24/40	F 24/40-#7	11.1 (7-3/16)	1	6960-18	551.15
250	29/42	F 24/40-#7	11.1 (7-3/16)	1	6960-20	551.15
500	24/40	F 24/40-#7	12.7 (1/2)	1	6960-35	662.79
500	29/42	F 24/40-#7	12.7 (1/2)	1	6960-37	662.79



6961-09

**6961 FLASK** *European Style, Three Necks* ♠

European style, tapered walls with shallow bottom for more efficient magnetic or mechanical half-moon shaped paddle stirring. Easy to clean. Supplied with f center neck, two f angled side necks. 24/40 joints are reinforced.

Cap., mL	f Center Neck	f Side Necks	Qty.	Order Code	Each
125	24/40	14/20	1	6961-04	122.37
250	24/40	24/40	1	6961-09	146.35
500	24/40	24/40	1	6961-16	178.25



6961-39

6961 FLASK *European Style, Four Necks with Single #7 Ace-Thred* ♠

European style with additional #7 Ace-Thred port for thermometers, etc. up to 7mm O.D. Supplied with nylon bushing and FETFE o-ring. Supplied with reinforced f center neck, two reinforced f angled side necks.

Cap., mL	f Center Neck	f Side Necks	Qty.	Order Code	Each
125	24/40	14/20	1	6961-34	145.89
250	24/40	24/40	1	6961-39	160.55
250	29/42	24/40	1	6961-40	162.91
500	24/40	24/40	1	6961-45	198.29

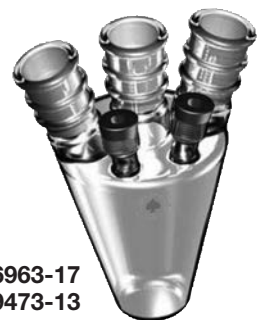


6961-69

6961 FLASK *European Style, Five Necks, with Two #7 Ace-Threds* ♠

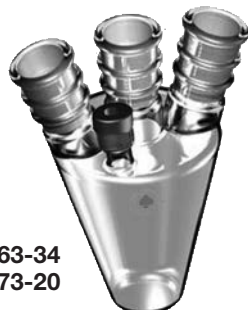
European style with two #7 Ace-Thred ports. Supplied complete with nylon bushings and FETFE o-rings. Supplied with reinforced f center neck, two reinforced f angled side necks.

Cap., mL	f Center Neck	f Side Necks	Qty.	Order Code	Each
125	24/40	14/20	1	6961-64	183.01
250	24/40	24/40	1	6961-69	200.41
250	29/42	24/40	1	6961-70	232.88
500	24/40	24/40	1	6961-75	240.74

6963-17
9473-13**6963/9473 FLASK** *Tapered Wall, Five Necks, with Two #7 Ace-Threds* ♠

With flask walls tapered inward toward the bottom. Supplied with f center neck and two f angled side necks. The two other necks are #7 Ace-Thred ports for thermometers, miniature electrodes, etc. up to 7mm O.D. Supplied with nylon bushings and FETFE o-rings. 24/40 and 29/42 joints are reinforced.

Cap., mL	f Center Neck	f Side Necks	Qty.	Order Code	Each
50	14/20	14/20	1	9473-13	167.63
125	14/20	14/20	1	9473-15	183.16
250	24/40	24/40	1	6963-17	212.38
500	24/40	24/40	1	6963-19	225.20
3000	60/40	29/42	1	6963-60	393.09

6963-34
9473-20**6963/9473 FLASK** *Tapered Wall, Four Necks, with Single #7 Ace-Thred* ♠

With flask walls tapered inward toward the bottom. Supplied with f center neck and two reinforced f angled side necks. With single #7 Ace-Thred for thermometers, miniature electrodes, etc. up to 7mm O.D. Supplied with nylon bushings and FETFE o-rings. 24/40 joints are reinforced.

Capacity, mL	f Joints	Qty.	Order Code	Each
50	14/20	1	9473-20	146.03
125	14/20	1	9473-24	161.49
250	24/40	1	6963-34	194.39
500	24/40	1	6963-36	197.88

6963/9473 FLASK *Tapered Wall, ₴ Three Necks* ♠

With flask walls tapered inward toward the bottom. This type design allows continuous operation with smaller volumes. Supplied with reinforced ₴ center neck and two ₴ angled side necks. 24/40 necks are reinforced.

Capacity, mL	₴ Joints	Qty.	Order Code	Each
50	14/20	1	9473-30	114.40
125	14/20	1	9473-32	136.68
250	24/40	1	6963-43	168.91
500	24/40	1	6963-45	174.82



6963-43
9473-30

6965/9471 FLASK *Erlenmeyer, ₴ Joint, Standard Wall* ♠

Full-length necks are reinforced.

Cap., mL	₴ Joint	Qty.	Order Code	Each	Cap., mL	₴ Joint	Qty.	Order Code	Each
5	14/20	1	9471-02	20.96	500	24/40	1	6965-26	30.18
10	14/20	1	9471-04	20.96	500	29/42	1	6965-40	31.61
15	14/20	1	9471-06	20.96	500	45/50	1	6965-61	35.34
25	14/20	1	9471-08	22.87	1000	24/40	1	6965-27	34.49
50	14/20	1	9471-10	22.87	1000	29/42	1	6965-41	36.41
50	24/40	1	6965-20	27.46	1000	45/50	1	6965-62	63.62
100	14/20	1	9471-12	23.58	2000	24/40	1	6965-28	46.57
125	24/40	1	6965-22	27.96	2000	29/42	1	6965-42	49.29
250	24/40	1	6965-24	28.59	2000	45/50	1	6965-63	66.74
250	29/42	1	6965-38	29.71	4000	45/50	1	6965-64	105.31
300	24/40	1	6965-25	28.59					



6965/9471

6971 FLASK *Erlenmeyer, ₴ Joint, Heavy Wall* ♠

With reinforced ₴ outer joint. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks.

Capacity, mL	₴ Joint	Qty.	Order Code	Each
250	24/40	1	6971-24	56.09
500	24/40	1	6971-26	59.02
1000	24/40	1	6971-27	73.89
2000	29/42	1	6971-42	103.13
4000	29/42	1	6971-44	129.34



6971



6999 FLASK *Erlenmeyer, Stopper Top* ♠

Erlenmeyer style flask with ₴ top joint and hollow ₴ ground glass stopper.

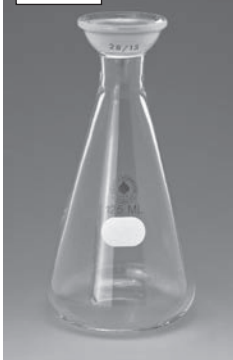
Capacity, mL	Stopper Size	Qty.	Order Code	Each
25	16	1	6999-06	24.57
50	19	1	6999-10	25.04
125	22	1	6999-14	30.48
250	27	1	6999-18	35.78
500	32	1	6999-22	44.39
1000	32	1	6999-26	54.00



6999

NEW

6975

**6975 FLASK** Erlenmeyer ♠Standard Erlenmeyer style borosilicate flask with F joint.

Capacity, mL	Qty.	F 28/15 Joint		F 35/25 Joint	
		Order Code	Each	Order Code	Each
125	1	6975-10	35.94	—	—
250	—	—	—	1	6975-37 42.41
300	—	—	—	1	6975-39 42.68
500	—	—	—	1	6975-40 43.30

6991

**6991 FLASK** Erlenmeyer, Semi-Micro ♠

Wide mouth with beaded lip to resist chipping.

Capacity, mL	I.D. of Neck, mm	Qty.	Order Code	Each
10	13	1	6991-03	6.34
25	20	1	6991-05	15.97
50	24	1	6991-10	18.73

6967

**6967 FLASK** Kjeldahl ♠Standard Kjeldahl style round bottom flask with long neck and reinforced F top joint.

Capacity, mL	Qty.	F 24/40		F 29/42	
		Order Code	Each	Order Code	Each
100	1	6967-21	42.28	1	—
300	1	6967-25	42.60	1	—
500	1	6967-26	45.77	1	6967-40 48.59
800	1	6967-27	52.01	1	6967-41 52.12

6978

HEAVY DUTY

**6978 FLASK** Filtering, Heavy Wall ♠With reinforced F 24/40 outer joint and stopcock on hose connection outlet. Glass stopcock, olive hose connection.

Capacity, mL	Qty.	Order Code	Each
250	1	6978-05	160.01
500	1	6978-10	162.65
1000	1	6978-15	190.18

Contact Ace for a copy of our complete reusable glassware catalog.

6979 FLASK *Filtering, Heavy Wall* ♠

Heavy wall Erlenmeyer style flask with 1/4-inch side hose barb and reinforced 24/40 top joint. Use with 3/8-inch I.D. tubing, size D. See page 7 for more detailed hose connection information.

Capacity, mL	Qty.	Order Code	Each
250	1	6979-05	83.62
500	1	6979-10	95.41
1000	1	6979-15	122.87
2000	1	6979-20	165.48

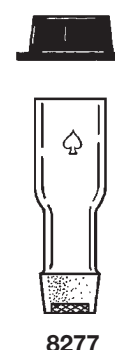


8277 STOPPER* *Firestone Hy-n-Dry* ♠

“Hy-n-Dry” stopper makes any vessel a desiccator, inexpensively. Allows sample storage for long periods, free from atmospheric moisture, even during overnight temperature changes or when refrigerating. Bottom of stopper has a Porosity B (70-100 microns) sintered glass disc sealed in. Fill stopper with drying agent, 10175-21, -31 (10-20 mesh), cover with plastic cap, insert into any jointed vessel, i.e., boiling flask, volumetric flask, cylinder, etc., and you have an inexpensive desiccator. A pinhole in plastic cap allows assembled unit to “breathe” with temperature fluctuations through, not around, the desiccant. A warming trend or trace solvent evaporation does not produce pressure buildup that often causes stopper to pop out. Filled with Drierite, a 24/40 “Hy-n-Dry” stopper will absorb up to one gram of water. Supplied with plastic cap. NOT supplied with drying agent, see 10175.

Inner Joint	Height above Joint, mm	Top O.D. mm	Approx. Vol. mL	Qty.	Order Code	Each
14/10	35	17	6	1	8277-12	38.21
14/20	35	17	6	1	8277-14	38.21
24/40	40	28	22	1	8277-19	45.67
29/42	45	32	30	1	8277-23	59.14

*Designed by Dr. Raymond Firestone



6983 FLASK *Filtering, Heavy Wall, with “Ace-Safe” Thread Hose Connection* ♠

With tooled neck for uniform stopper fit. Side hose connection is #11 Ace-Thred that accepts a PTFE tubing connector with silicone o-ring and nylon bushing to make an easier, safer, more convenient vacuum hose connection. Simply slide bushing over connector, attach hose to serrated end, insert into Ace-Thred and tighten until o-ring compresses, making a leak-tight seal. Two connectors are available: one, 5853-09, for 1/4-inch I.D. tubing with a bore of .125 inches (3.18mm); and one, 5853-10, for 3/8-inch I.D. tubing with a bore of 0.187 inches (4.75mm). Complete item consists of flask, tubing connector (-09 or -10) and 7506-01 bushing.

Note: One connector for all capacity flasks.

Approx. Capacity, mL	Rubber Stopper Number	Qty.	<i>Flask, only</i>		<i>Complete</i> For 1/4-inch Tubing		<i>Complete</i> For 3/8-inch Tubing	
			Order Code	Each	Order Code	Each	Order Code	Each
250	6	1	6983-08	49.20	6983-47	70.88	6983-28	70.88
500	6	1	6983-12	62.42	6983-49	84.10	6983-32	84.10
1000	8	1	6983-15	77.77	6983-51	99.45	6983-36	99.45
2000	9	1	6983-20	106.50	6983-63	128.18	6983-40	128.18

Replacement Parts:

	Qty.		Each
Tubing connector for 1/4-inch I.D. tubing, with o-ring	1	5853-09	10.85
Tubing connector for 3/8-inch I.D. tubing, with o-ring	1	5853-10	10.85
Nylon Bushing, only	1	7506-01	10.83
Silicone o-rings	12	7855-206	15.60



6989 FLASK *Filtering, with Removable Hose Connection* ★

Schott

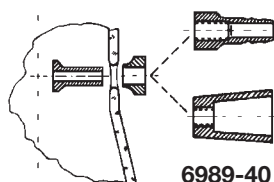
Heavy wall, bottle shaped, filtering flask with removable Polypropylene hose connection. Offered clear or plastic coated. For replacement hose connection assembly, order 6989-40, below.


CLEAR GLASS

Cap., mL	Body O.D., mm	Height, mm	Neck I.D., mm	Qty.	Order Code	Each
3,000	170	295	60	1	6989-15	149.59
5,000	185	360	70	1	6989-18	242.07
10,000	240	420	70	1	6989-21	357.08
15,000	255	500	75	1	6989-24	410.76
20,000	290	535	75	1	6989-27	515.79

PLASTIC COATED

Cap., mL	Body O.D., mm	Height, mm	Neck I.D., mm	Qty.	Order Code	Each
3,000	170	295	60	1	6989-115	183.78
5,000	185	360	70	1	6989-118	278.54
10,000	240	420	70	1	6989-121	419.51
15,000	255	500	75	1	6989-124	487.99
20,000	290	535	75	1	6989-127	576.99


6989-40 REPLACEMENT HOSE CONNECTION SET ★

Polypropylene hose connection, straight, and tubulature replacement set.

Qty.	Order Code	Per Package
10	6989-40	75.68


7011 FLASK *Separatory Funnel Type, Three Necks, 1:5 PTFE Plug, Heavy Wall* ♠

With three reinforced necks and PTFE plug (6 mm bore on 5000mL, 4mm bore on all other sizes) stopcock bottom outlet. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. For stopcock plugs, see 8224.



Cap., mL	§ Joints		Qty.	Order Code	Each	Cap., mL	§ Joints		Qty.	Order Code	Each
	Center-Side	Necks					Center-Side	Necks			
500	24/40-24/40	24/40	1	7011-244	240.62	2000	45/50-24/40	24/40	1	7011-254	336.75
500	29/42-24/40	24/40	1	7011-245	245.28	3000	24/40-24/40	24/40	1	7011-255	355.10
500	34/45-24/40	24/40	1	7011-246	265.90	3000	29/42-24/40	24/40	1	7011-256	364.97
1000	24/40-24/40	24/40	1	7011-248	276.04	3000	34/45-24/40	24/40	1	7011-257	368.21
1000	29/42-24/40	24/40	1	7011-247	271.65	3000	45/50-24/40	24/40	1	7011-258	371.90
1000	34/45-24/40	24/40	1	7011-249	297.74	5000	24/40-24/40	24/40	1	7011-259	382.50
2000	24/40-24/40	24/40	1	7011-251	323.63	5000	29/42-24/40	24/40	1	7011-261	387.28
2000	29/42-24/40	24/40	1	7011-253	329.98	5000	34/45-24/40	24/40	1	7011-262	390.44
2000	34/45-24/40	24/40	1	7011-252	332.36	5000	45/50-24/40	24/40	1	7011-260	396.18

8415 PRESSURE FLASK *Round Bottom* ♠

Heavy-wall flasks with a rounded bottom to facilitate use in heating mantles, and for other round bottom flask applications. Several sizes are available, with either a #15 or #25 Ace-Thred top fitting for easy sample access and re-sealing. These flasks have a PTFE front-seal plug for better sealability with FETFE o-rings. Flasks are rated @ 60 psi maxium up to 120°C. Safety coated versions of these vessels are available upon special request.

Size, mL	Dia., mm	Ace-Thred Size	Qty.	Order Code	Each
50	50	15	1	8415-05	102.81
100	62	15	1	8415-07	105.30
250	82	15	1	8415-11	118.47
500	100	15	1	8415-15	129.13
100	62	25	1	8415-17	105.86
250	82	25	1	8415-21	120.23
500	100	25	1	8415-25	131.71

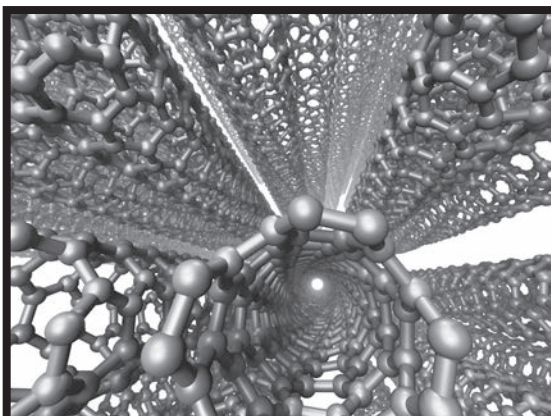

8417 PRESSURE FLASK *Round Bottom, with Side Thermowell* ♠

Heavy-wall flasks with a rounded bottom to facilitate use in heating mantles, and for other round bottom flask applications. Several sizes are available, with either a #15 or #25 Ace-Thred top fitting for easy sample access and re-sealing. These flasks have a PTFE front-seal plug for better sealability with FETFE o-rings. Side thermowell to accommodate either temperature sensors or thermometers. Flasks are rated @ 60 psi maxium up to 120°C. Safety coated versions of these vessels are available upon special request.

Size, mL	Dia., mm	Ace-Thred Size	Qty.	Order Code	Each
50	50	15	1	8417-03	126.80
100	62	15	1	8417-05	132.96
250	82	15	1	8417-07	148.81
500	100	15	1	8417-09	162.74
100	62	25	1	8417-13	141.05
250	82	25	1	8417-15	161.10
500	100	25	1	8417-17	176.09



Ace does not recommend using stir bars in pressure vessels.



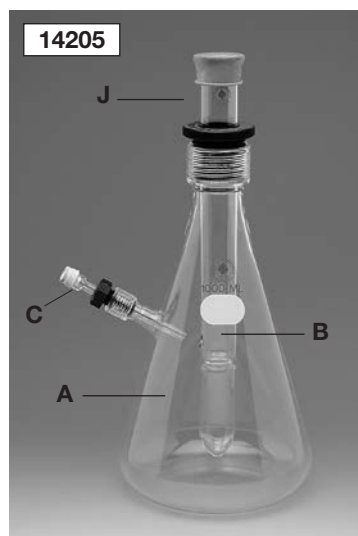
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14205 SHAKE FLASK ASSEMBLY CO₂, Gledhill*, Modified ♠

Used for determining CO₂ evolution to assess biodegradability by soil and sewerage microorganisms. Shake flask, (A), containing culture medium, fits standard laboratory shakers. #7 Ace-Thred side port with nylon bushing and FETFE o-ring holds a glass septum adapter, (C). Insertion of this septum allows easier sampling or aeration while system is closed. Adapter can easily be removed for septum change. Inner well, (B), contains culture material (Barium Hydroxide, etc.) and has a capacity of 10mL plus head space. Side hole in well permits good interface of vapors. Well is held securely in #25 Ace-Thred with nylon bushing and FETFE o-ring that permits variable depth positioning. Well top is flared to accept septum, (J), and can be removed or pierced to permit venting for aerating of culture media. One well fits all size vessels. Complete item consists of flask, well, septum adapter, septa for adapter and well, #7 and #25 bushings with FETFE o-rings.



Flask Cap., mL	Qty.	Order Code	Complete
500	1	14205-40	159.53
1000	1	14205-44	165.23
2000	1	14205-50	172.12

Replacement Parts:

	Qty.	Order Code	Each		Qty.	Order Code	Each
Flask, #25, 500mL, only	1	14205-07	80.86	Bushing, Nylon, #25	1	7506-10	21.17
Flask, #25, 1000mL, only	1	14205-09	86.56	O-Rings, FETFE for #7	12	7855-704	14.09
Flask, #25, 2000mL, only	1	14205-13	93.45	O-Rings, FETFE for #25	6	7855-734	20.74
Well, only	1	14205-25	44.05	Septum, Side Port	12	9096-32	15.50
Septum Adapter only	1	14205-28	7.57	Septum, Well	12	9096-56	20.86
Bushing, Nylon, #7	1	5029-10	2.85				

*Dr. William E. Gledhill, Monsanto Company, as described in "Journal of Applied Microbiology", December 1975, pp 922-929.

13100 ACE PLASTIC COATING ♠

Easy to apply plastic coating forms a protective film around a glass vessel. If the glass should fracture during use, the film will help contain both the broken glass and the product inside the vessel until the materials can be safely disposed of. The film does not increase the mechanical strength of the vessel; instead, it merely holds the broken vessel together for disposal. The film can withstand temperatures up to 110°C for an extended period without degrading. The film is resistant to most chemicals for a period long enough for recovery or proper disposal. The film will work even in vacuum applications and can contain fractured manifolds or vessels. The ACE plastic coating can also be used to apply a protective coating on spatulas, ring stands, clamps and other tools. Available in two different size containers.

13100



500mL			1.9 Liters		
Qty.	Order Code	Each	Qty.	Order Code	Each
1	13100-10	47.79	1	13100-15	161.84

7075 FLASK Dewar ★

Borosilicate glass cylindrical form, silvered and evacuated. Furnished with an aluminum base and plastic mesh.

Capacity, mL	Inside Diameter, mm	Inside Height, mm	Qty.	Order Code	Each
350	68	113	1	7075-05	119.45
665	68	195	1	7075-10	121.87
1000	68	302	1	7075-15	128.75
1900	119	195	1	7075-20	296.69
4300	152	276	1	7075-25	392.01



7076 FLASK Dewar, Plastic Coated

Borosilicate glass cylindrical form, silvered and evacuated. Furnished with an aluminum base. Exterior, including base, is coated with a tough, resilient, baked-on plastic which does not rupture if flask breaks.

Capacity, mL	Inside Diameter, mm	Inside Height, mm	Qty.	Order Code	Each
350	68	113	1	7076-03	♠ 211.24
665	68	195	1	7076-06	♠ 246.69
1000	68	302	1	7076-09	♠ 257.01
1900	119	195	1	7076-12	♠ 443.62
4300	152	276	1	7076-15	★ 639.98



7078 FLASK Dewar, Low Form ★

Cylindrical low form silvered and evacuated. Ideal for sub-ambient work. Low form design allows use of multineck flask with magnetic stirring.

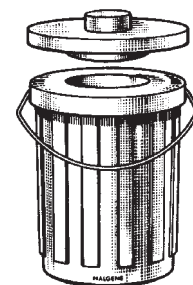
Capacity, mL	Inside Diameter, mm	Inside Height, mm	Qty.	Order Code	Each
150	80	35	1	7078-04	251.04
350	80	75	1	7078-06	251.04
500	105	80	1	7078-08	317.02
850	130	75	1	7078-10	357.77
1500	143	109	1	7078-12	542.96
2500	170	135	1	7078-14	1029.97



12540 FLASK Dewar, Plastic ★

Molded of high-density polyethylene expanded polystyrene cover; polyethylene coated handle. The first all-plastic Dewar flask suitable for cryogenic work. Unbreakable. The double walls are molded from chemically-resistant linear polyethylene, which will withstand temperatures from -196°C to +100°C. The annulus is filled with insulating urethane foam. Ribs molded in for safe handling. Vented, insulating cover. Convenient bail-type handle on all but 10 liter size.

Cap., Liters	I.D. at Mouth, mm	Inside Depth, mm	Overall Height, mm	Quantity	Order Code	Each	Case Price
1	95	194	229	Each or case of 4	12540-05	256.62	923.84
2	121	225	260	Each or case of 2	12540-07	269.09	484.37
4	146	287	324	Each or case of 2	12540-09	292.75	526.95
10	197	394	457	1	12540-11	—	490.12



12540



7124

7124 FLASK Volumetric, Class A ♠

Specially designed, standardized volumetric flasks, with stoppers. All capacities have ♠ 12/18 outer joint with approximately 10mm opening. Cylindrical body affords better mixing and drainage, and ease of withdrawal using pipets. Wide base offers greater stability. Upper surface of base is ground to allow pencil markings. Class "A" tolerances. For replacement stoppers, see 8255.

Capacity, mL	Qty.	Order Code	Each
15	1	7124-15	99.19
20	1	7124-20	106.78

7127 FLASK Volumetric, Pilot Plant

Large capacity volumetric flask with ♠ outer joint, without graduation mark. Supplied without stopper.



7127

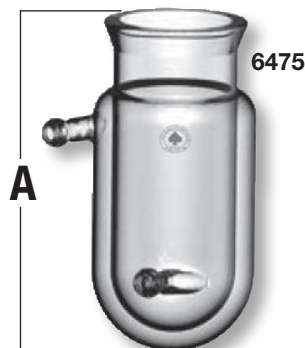
Capacity, mL	♠ Joint	Qty.	<i>Flask only</i>		<i>Stopper only</i>	
			Order Code	Each	Order Code	Each
5000	34/28	1	7127-25	★ 208.62	8255-18	♠ 30.95
10000	40/35	1	7127-30	★ 299.17	8255-20	♠ 47.15

For a complete listing of volumetric flasks and reusable glass, contact ACE for our latest catalog

6475 FLASK *Reaction, Jacketed, Conical 4-Inch Flange* ♦

Jacketed cylindrical flask with conical neck opening of four inches (100mm). Inlet and outlet connections are size 28/15 o-ring ball joints, both sealed tangentially, one at top and one at bottom of jacketed section. See 6495 for gaskets, 6496 for clamp.

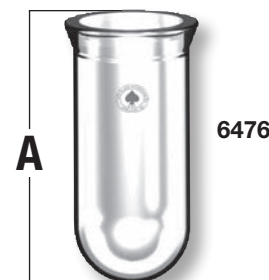
Capacity, mL	O.D., mm	I.D., mm	Height, mm (A)	Top PTFE Gasket	Qty.	Order Code	Each
1000	150	104	235	6495-10	1	6475-10	490.71
1500	150	104	245	6495-10	1	6475-15	513.51
2000	150	104	335	6495-10	1	6475-20	560.60
3000	150	104	415	6495-10	1	6475-25	666.88



6476 FLASK *Reaction, Conical 4-Inch Flange* ♦

Rugged cylindrical flask with conical neck opening of four inches (100mm). Uses 6496 clamp for securing flask head to flask. See 6495 for gaskets.

Capacity, mL	O.D., mm	I.D., mm	Height, mm (A)	Top PTFE Gasket	Qty.	Order Code	Each
500	114	104	120	6495-10	1	6476-05	132.08
1000	114	104	180	6495-10	1	6476-10	141.02
1500	114	104	220	6495-10	1	6476-15	158.94
2000	114	104	260	6495-10	1	6476-20	160.02
3000	114	104	340	6495-10	1	6476-25	163.98



6477 FLASK *Reaction, with Indents, Conical 4-Inch Flange* ♦

Same as 6476, except with side indents for improved stirring characteristics. Not suitable for vacuum operation. Uses 6496 clamp for securing conical flask head to flask. See 6495 for gaskets.

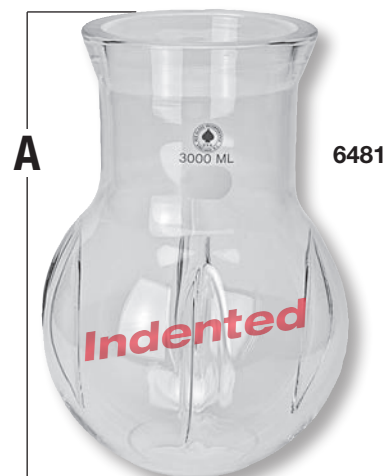
Capacity, mL	O.D., mm	I.D., mm	Height, mm (A)	Top PTFE Gasket	Qty.	Order Code	Each
500	114	104	120	6495-10	1	6477-05	161.05
1000	114	104	180	6495-10	1	6477-10	178.26
1500	114	104	220	6495-10	1	6477-15	187.18
2000	114	104	260	6495-10	1	6477-20	202.70
3000	114	104	340	6495-10	1	6477-25	228.81

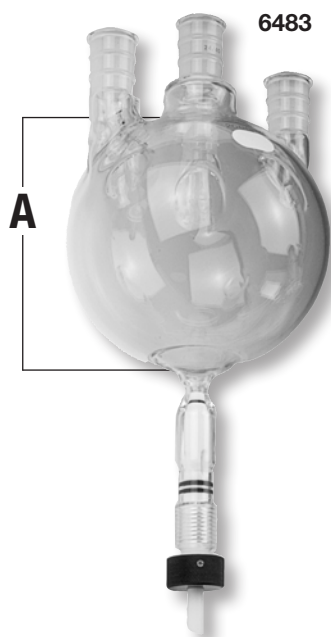


6481 FLASK *Reaction, with Indents, Conical 4-Inch Flange* ♦

Rugged spherical flask with conical neck opening of four inches (100mm). With side indents for improved stirring characteristics. Standard size flasks use regular Glas-Col heating mantles of equivalent capacity. Length of straight section, including flange, approximately 9.5cm (3-3/4 inches). Not suitable for vacuum operation. Uses 6496 clamp for securing conical flask head to flask. See 6495 for gaskets.

Capacity, Liters	Nominal O.D., mm	Nominal I.D., mm	Height, mm (A)	Neck Height, mm	Qty.	Order Code	Each
3	180	166	270	100	1	6481-05	256.23
5	226	212	320	100	1	6481-10	301.29
12	285	270	380	100	1	6481-15	504.22



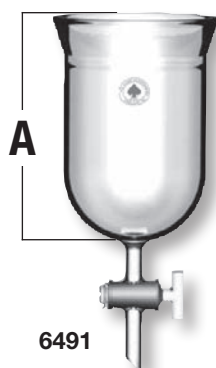


6483

6483 FLASK *Three Necks, Heavy Wall, with ZDS™ Valve* ♦

Heavy wall, round-bottom flask with three 24/40 vertical necks and ZDS™ valve attached. Other 24/40 neck joint sizes are available as special orders. Bottom outlet is Zero Dead Space (ZDS) valve.

Capacity, Liters	Nominal O.D., mm	Nominal I.D., mm	Height, mm (A)	Neck Height, mm	Center Neck 24/40	24/40 Side Necks	Bottom Outlet, mm	Qty.	Order Code	Each
1	125	115	180	100	24/40	24/40	0-10	1	6483-110	317.17
2	160	150	250	100	24/40	24/40	0-10	1	6483-112	376.81
3	180	166	270	100	24/40	24/40	0-10	1	6483-120	436.01

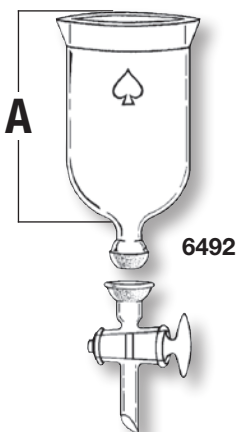


6491

6491 REACTION FLASK *Conical 4-Inch Flange* ♦

With 4mm bore stopcock for rapid removal of contents without disturbing the general arrangement of the apparatus. Conical neck opening is 100mm (4-inches). Use 6496 clamp for securing head to flask. See 6495 for gaskets.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Top PTFE Gasket	Qty.	Order Code	Each
1	114	104	180	6495-10	1	6491-10	266.46
2	114	104	260	6495-10	1	6491-20	279.54



6492

6492 REACTION FLASK *Conical 4-Inch Flange* ♦

With 4mm bore stopcock. Stopcock is separated from lower section by 28/15 joint. Otherwise, identical to 6491. For bottom joint clamp, order 7669-12. Use 6496 Clamp for securing head to flask. See 6495 for gaskets.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Qty.	<i>Flask, only</i>		<i>Stopcock, only</i>		<i>Complete</i>	
					Order Code	Each	Order Code	Each	Order Code	Each
1	114	104	220	1	6492-02	178.99	6492-10	120.68	6492-15	299.67
2	114	104	300	1	6492-06	199.73	6492-10	120.68	6492-25	320.41

For a complete listing of larger size reaction flasks, contact ACE for our reactors catalog.

6511 FLASK *Reaction, Flat Flange* ♦

Cylindrical, heavy-wall reaction flask, round bottom, with flat, ground flange. Without constriction at top to facilitate introduction/removal of material and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Flange O.D., mm	Top FETFE Gasket	Qty.	Order Code	Each
1	110	100	165	137	6495-21	1	6511-06	160.74
2	140	130	185	168	6495-23	1	6511-08	194.34
3	140	130	260	168	6495-23	1	6511-10	213.27
4	140	130	335	168	6495-23	1	6511-12	240.45



6511 FLASK *Reaction, Flat Flange, with O-Ring Groove* ♦

Cylindrical, heavy-wall reaction flask, round bottom. Top has flat flange with an o-ring groove for use with CAPFE® (PTFE encapsulated silicone rubber) o-ring instead of gasket. Without constriction at top to facilitate introduction/removal of material and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. Flask is supplied with one CAPFE o-ring. For clamp, see 6508 or 6510.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Flange O.D., mm	Top CAPFE O-Ring	Qty.	Order Code	Each
1	110	100	165	137	7855-887	1	6511-42	189.14
2	140	130	185	168	7855-889	1	6511-45	230.89
3	140	130	260	168	7855-889	1	6511-47	243.22
4	140	130	335	168	7855-889	1	6511-49	276.90



6511 FLASK *Reaction, Flat Flange* ♦

Cylindrical heavy wall reaction flask, with flat bottom rounded into side wall, and flat, ground flange top. Without constriction at top to facilitate introduction/removal of material and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. For clamp, see 6508 or 6510.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Flange O.D., mm	Top PTFE Gasket	Qty.	Order Code	Each
1	110	100	165	137	6495-21	1	6511-24	163.05
2	140	130	185	168	6495-23	1	6511-27	193.77
3	140	130	260	168	6495-23	1	6511-29	214.83
4	140	130	335	168	6495-23	1	6511-31	240.45



6511 FLASK *Reaction, Flat Flange, with O-Ring Groove* ♦

Cylindrical heavy-wall reaction flask, with flat bottom rounded inside wall, and flat flange. Flange has an o-ring groove for use with CAPFE® (PTFE encapsulated silicone rubber) o-ring instead of gasket. Without constriction at top to facilitate introduction/removal of material and allow for ease of cleaning. For reaction heads, see 6512, 6513 and 6515. Flask is supplied with one CAPFE o-ring. For clamp, see 6508 or 6510.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Flange O.D., mm	Top CAPFE O-Ring	Qty.	Order Code	Each
1	110	100	165	137	7855-887	1	6511-53	192.98
2	140	130	185	168	7855-889	1	6511-56	230.37
3	140	130	260	168	7855-889	1	6511-58	252.36
4	140	130	335	168	7855-889	1	6511-60	281.05



**6495 GASKET PTFE** ♠

PTFE gaskets, white in color, for mating ground flange surfaces on reactor flasks and matching heads. Work on all conical style and flat flange style flask and heads. PTFE makes a leak-free seal with slight clamp pressure. They also provide the added chemical resistance and purity of PTFE.

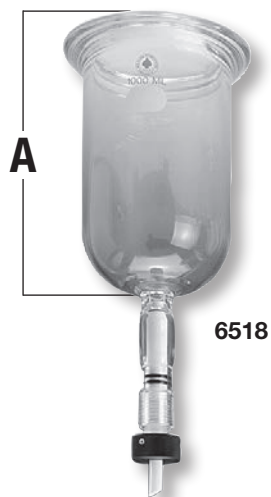
Thickness, inches/mm	O.D., Inches (mm)	Fits Flask Size, mL	Grooved	Order Code	Each
0.03/0.8	5.250 (133.4)	500-3000mL	No	6495-10	11.61
0.03/0.8	5.375 (136.7)	500-1000mL	Yes	6495-21	62.08
0.03/0.8	6.625 (168.4)	2000-4000mL	Yes	6495-23	66.05

**6495 GASKET FETFE** ♠

ACE FETFE gaskets, black in color, for mating ground flange surfaces on reactor flasks and matching heads. Work on all conical style and flat flange style flask and heads. FETFE makes a leak-free seal with clamp pressure. FETFE is an exclusive ACE product made from TFE impregnated fluoroelastomers with good chemical and temperature resistance.

Thickness, inches/mm	O.D., Inches (mm)	Fits Flask Size, mL	Grooved	Order Code	Each
0.02/0.5	5.375 (136.7)	500-1000mL	Yes	6495-43	20.11
0.02/0.5	6.625 (168.4)	2000-1000mL	Yes	6495-47	20.73





6518 FLASK *Reaction, Cylindrical, with ZDS™ Valve* ♦

Cylindrical, heavy wall flask with round bottom. Flask has Schott-Duran style top flange supplied with o-ring groove for use with heads 6433, 6527, 6528 or 6529. Comes with one CAPFE o-ring (silicone optional). Bottom outlet is ZDS™ (Zero Dead Space) PTFE valve with Chemraz o-rings. Uses 6517 quick release clamp.

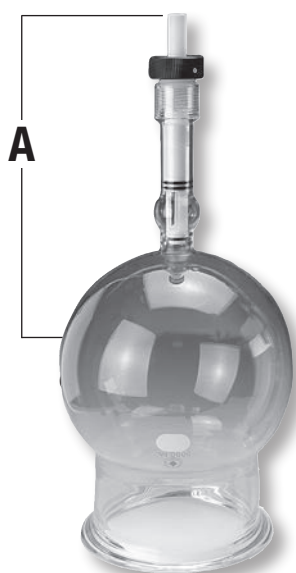
Capacity, mL	O.D., mm	I.D., mm	Height, mm (A)	Flange Size, mm (in.)	Bottom Outlet, mm	Top O-Ring	Qty.	Order Code	Each
1000	110	100	180	100 (4)	0-10	7855-880	1	6518-10	538.44
2000	110	100	265	100 (4)	0-10	7855-880	1	6518-12	622.60
2000	155	145	200	150 (6)	0-20	7855-881	1	6518-14	627.86
3000	110	100	400	100 (4)	0-10	7855-880	1	6518-16	644.69
3000	150	140	250	150 (6)	0-20	7855-881	1	6518-18	651.37
4000	155	145	300	150 (6)	0-20	7855-881	1	6518-20	758.94



6526 FLASK *Reaction, Cylindrical, Indented Style* ♦

Rugged cylindrical reaction flask with Schott-Duran style flat flange with o-ring groove, for use with 6517 quick release clamp but with indents for greater agitation. Each flask is supplied with one CAPFE o-ring (PTFE encapsulated silicone o-ring). Plain silicone o-rings are also available. For reaction heads, see 6528. For cooling/heating coils, see 12067. NOT suitable for vacuum or pressure operation. Uses 6517-25 quick release clamp.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Flange Size, mm (in.)	Top O-Ring	Qty.	Order Code	Each
1	110	100	180	100 (4)	7855-880	1	6526-10	200.17
2	110	100	265	100 (4)	7855-880	1	6526-12	223.10



6540 FLASK *Reaction, Spherical, with ZDS™ Valve* ♦

Heavy wall spherical reaction flask with Schott-Duran style flat grooved flange opening. Flask uses 6517 quick release clamp. Takes all Schott-Duran style heads. Flask comes with one CAPFE o-ring. Bottom outlet is Zero Dead Space (ZDS) valve.

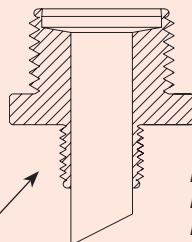
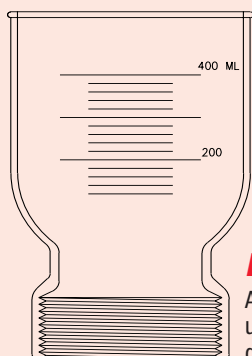
Capacity, Liters	Nominal O.D., mm	Nominal I.D., mm	Height, mm (A)	Neck Height, mm	Flange I.D., mm (In.)	Bottom Outlet, mm	Top CAPFE O-Ring	Qty.	Order Code	Each
2	160	150	250	100	100 (4)	0-10	7855-880	1	6540-104	548.09
3	180	166	270	100	100 (4)	0-20	7855-880	1	6540-106	604.15
5	226	212	320	100	100 (4)	0-20	7855-880	1	6540-108	616.61
5	226	212	320	100	150 (6)	0-20	7855-881	1	6540-110	819.38
12	285	270	380	100	150 (6)	0-20	7855-881	1	6540-115	1107.41
22	350	336	450	100	150 (6)	0-20	7855-881	1	6540-120	1538.40

For a complete listing of heads for reaction flasks, contact ACE for a copy of our reactors catalog.

A New Concept in Lab Filtration Apparatus!

No clamp, no leakage!

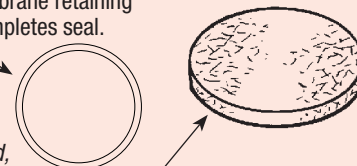
Using Ace-Thred design, filter funnel and filter flask thread together without the silicone stopper and troublesome clamping device.



Better membrane utilization!

Accommodates the 47mm and 25mm membranes and uses 45mm of the 47mm grid vs. only 35-40mm in older designs.

Nylon membrane retaining ring completes seal.



Nylon adapters standard, but you can special order PTFE or other polymers.

Removable frits!

Unit disassembles completely for easy cleaning. Uses removable frits of different porosities, from extra coarse to extra fine, instead of expensive, sealed-in frits.

3700/3703/6979 FILTRATION APPARATUS 25mm ♠

Ace Glass introduces a new concept for lab filtration apparatus. Using our famous Ace-Thred design, we are able to thread the filter funnel and filter flask together without the silicone stopper and troublesome clamping device. This design also eliminates leakage problems.

The filter unit has four basic parts; the funnel, flask, nylon adapter piece and a removable glass fritted disk. The unit can be completely disassembled for easy cleaning. Instead of a sealed-in glass fritted support, the disks can be easily removed and cleaned, and offer the availability of different frit sizes, from extra coarse to extra fine. The adapters are also available in PTFE or other polymers on special order. The assembly is autoclavable.

Complete Filtration Apparatus 3700-10 includes one each: 500mL filter flask w/Ace-Thred top, & #7 Ace-Thred & Ace-Safe connector, nylon adapter w/#25 Ace-Threds, 25mm Porosity B (70-100 micron) fritted disc, nylon ring, 100mL graduated funnel with Ace-Thred bottom.

Description	Qty.	Order Code	Each
500mL filter flask with #25 Ace-Thred top and #7 Ace-Safe connector	1	3700-08	122.56
500mL filter flask with 24/40 outer joint top and glass hose barb side port	1	6979-10	95.41
Nylon adapter with #25 Ace-Thred both ends	1	3700-06	134.20
Nylon adapter with #25 Ace-Thred one end and 24/40 inner joint bottom	1	3700-04	123.25
100mL funnel with #25 Ace-Thred bottom, graduated	1	3700-02	52.05
Porosity B fritted disk (70-100 micron) 25mm	1	3703-25	12.78
Porosity A fritted disk (145-174 micron) 25mm	1	3703-23	16.33
Porosity C fritted disk (25-50 micron) 25mm	1	3703-29	12.78
Nylon ring 25mm	1	3700-01	11.29
Complete	1	3700-10	332.88



3700-10

3702/3703/6979 FILTRATION APPARATUS 47mm ♠

A 47mm version of 3700 filtration apparatus, listed above. **Complete filtration apparatus 3702-10 includes one each:** 1000mL filter flask w/Ace-Thred top, & #7 Ace-Thred & Ace-Safe side port connector, nylon adapter w/#25 Ace-Thred bottom, & #50 Ace-Thred top, nylon ring, 25mm Porosity B (70-100 micron) fritted disc, 500mL graduated funnel w/#50 Ace-Thred bottom. The assembly is autoclavable.

Description	Qty.	Order Code	Each
1000mL filter flask with #25 Ace-Thred top and #7 Ace-Safe connector	1	3702-08	153.45
1000mL filter flask with 24/40 outer joint top and glass hose barb side port	1	6979-15	122.87
Nylon adapter with #25 Ace-Thred bottom and #50 Ace-Thred top	1	3702-06	157.61
Nylon adapter with #50 Ace-Thred top and 24/40 inner joint bottom	1	3702-05	146.47
500mL funnel with #50 Ace-Thred bottom, graduated	1	3702-04	68.37
Porosity B fritted disk (70-100 micron) 47mm	1	3703-47	32.16
Porosity A fritted disk (145-174 micron) 47mm	1	3703-45	32.16
Porosity C fritted disk (25-50 micron) 47mm	1	3703-49	32.16
Nylon ring 47mm	1	3702-02	12.64
Complete	1	3702-10	424.23



3702-10



3704 INSTATHERM FILTRATION APPARATUS *Funnel, 47mm* ★

This apparatus differs from the standard 47mm filter apparatus as it uses Ace Glass' proprietary Instatherm technology to evenly heat the top 400mL funnel, thus keeping the viscous materials in a flowing liquid state. The middle adapter is PTFE with a PTFE snap-ring. The interchangeable fritted disk is the coarse, 25-to-50 micron size. The entire assembly can be easily taken apart for cleaning and the fritted filter disc can easily and in-expensively be cleaned or replaced. This system is excellent for filtering oils or thick slurries and using either 47mm membranes or filter paper disks. Perfect for sample prep for various ASTM petroleum and polymer testing procedures and for new biofuel testing protocols.

Description	Qty.	Order Code	Each
Complete Apparatus	1	3704-10	768.24
<i>Complete Consists of (may be ordered separately):</i>			
1L Filter flask w/ Ace Thred	1	3702-08	153.45
PTFE Adapter w #25 btm and #50 top Ace Threads	1	3704-05	338.10
PTFE retaining ring	1	3704-06	16.30
47mm OD "C" fritted disc	1	3703-49	32.16
500mL Instatherm coated filter funnel w/temp controller connecting cord	1	3704-01	228.23



14125 VACUUM PUMP *Mini, ILMVAC* ★

These compact new models are designed with a small, twin-head, diaphragm pump, enclosed in robust housing and a wide voltage range power adapter. They are extremely quiet with low vibration for lab bench use. The small footprint also takes up very little bench space. The Model MP is standard duty for most applications in water and wastewater sampling and testing and for biological testing and sampling. The match very well to the ACE filtration apparatus units 3700 and 3702. The MPR series is chemical resistant for solvent or vapor applications such as low-pressure chromatography or for small rotary evaporators. Both pumps utilize PTFE diaphragms and PEEK valves for wear resistance and minimal maintenance. Selectable voltage from 90-240 volt. 60mBar maximum vacuum, 10L/min. flow rate

General Features:

- Low priced vacuum pumps for filtration, drying and degassing
- Standard and chemically resistant models
- Extremely quiet – low noise and low vibration twin head design
- Plug and play wide range power adapter

Head Material	ILMVAC Model	Qty.	Order Code	
Aluminum	MP060E	1	14125-01	1783.61
PPS	MPR060E	1	14125-03	2125.92



3708 FILTRATION APPARATUS 2 Liter Flask, 75mm ♦

New size and design, 75mm OD filtration apparatus. Can be used with membranes or filter paper with 75mm OD. Design gives 99% utilization of the surface area for membranes or filter paper. Can be used with just Size C “Coarse” fritted glass disc for solvent recycling. Glass components are all borosilicate and the center adapter is all inert PTFE. The entire assembly threads apart easily for cleaning and filter paper insertion. Available with either a 2L Erlenmeyer flask or a 5L Duran GLS80 bottle. Both are autoclaveable. Erlenmeyer flask version. Easily threads together and apart for ease of use and easy cleaning. The contents can be easily captured or poured out of the flask. The frit is easily interchanged. Apparatus has #15 Ace-Safe connection with 1/2-inch hose connection for vacuum hook-up.

Description	Qty.	Order Code	Each
Complete Apparatus. Includes: 2000mL funnel with graduations, PTFE flask adapter, 75mm PTFE ring, Porosity C (20-50 micron) fritted disc, 2L Erlenmeyer flask.	1	3708-02	1005.94
<i>Complete Consists of (may be ordered separately):</i>			
1000mL Funnel with graduations	1	3708-10	187.85
PTFE Flask Adapter #80 to #50 Ace-Thred	1	3708-14	433.30
2L Erlenmeyer Flask	1	3708-20	312.63
Porosity C fritted disk (25-50 micron), 75mm	1	3703-75	50.32
PTFE Ring, 75mm	1	3708-16	21.84



3709 FILTRATION APPARATUS 2 Liter Bottle, 75mm ♦

New size and design, 75mm OD filtration apparatus. Can be used with membranes or filter paper with 75mm OD. Design gives 99% utilization of the surface area for membranes or filter paper. Can be used with just Size C “Coarse” fritted glass disc for solvent recycling. Glass components are all borosilicate and the center adapter is all inert PTFE. The entire assembly threads apart easily for cleaning and filter paper insertion. Available with either a 2L Erlenmeyer flask or a 5L Duran GLS80 bottle. Both are autoclaveable. Bottle version has a 5L, Duran, GLS80 wide mouth, bottle as the base, 1L graduated funnel, and all-PTFE bottle adapter. The GLS80 polypropylene cap is included to seal off the bottle after filtering. Bottle has #15 Ace-Thred vacuum port with 1/2-inch hose connection, and 75mm “coarse” glass fritted disc.

Description	Qty.	Order Code	Each
Complete Apparatus. Includes: 1000mL funnel with graduations, PTFE bottle adapter, 75mm PTFE ring, Porosity C (20-50 micron) fritted disc, 5L Duran bottle.	1	3709-05	1036.66
<i>Complete Consists of (may be ordered separately):</i>			
1000mL Funnel with graduations	1	3708-10	187.85
PTFE Bottle Adapter #80 Ace-Thred to GLS80	1	3709-16	455.24
5L Duran bottle with #15 Ace-Safe connection	1	3709-18	321.41
Porosity C fritted disk (25-50 micron), 75mm	1	3703-75	50.32
PTFE Ring, 75mm	1	3708-16	21.84







The Only Glass Fiber Disc

General Information

The proprietary glass fiber structure of Ace frits results in a more abrasion-resistant surface. The particles are fused together in stronger, wider matrix, and do not detach from the filter body as easily as the spheroid granules used in other frits. Being made entirely of glass, resistance to thermal shock and chemical attack is superior. We offer what we believe to be the highest quality filter available, with a hardness which is unsurpassed, featuring less “flaking” of material.

Data on Pore Diameter and Uses

Pore size is determined by the pressure required to force the first bubble of air through the filter when it is just immersed in a liquid of known surface tension. From this pressure, the maximum pore diameter in microns is calculated. This method, which is in common use among filter manufacturers, gives calculated values in reasonable agreement with optical measurements. It is generally agreed that a glass filter will retain all particles larger than the maximum determined pore diameter.

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning, Kimble & ChemGlass Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	Filtration and extraction

Flow Characteristics

Aqueous flow rate from 0.5 to 200mL/min./cm² at 100mm Hg. pressure drop are covered in the porosities A to E. A tabulation of these flow rates for various porosities is almost meaningless since operating conditions vary so widely. In addition, a number of interesting phenomena occur that may rapidly and reversibly change the flow rate of a given filter by a factor of two or more, particularly in filters of smaller pore size. Hence, any discussion of flow rate becomes detailed and involved. Glass filters carry a negative charge.

Care and Cleaning

Only materials that attack glass will affect these filters, i.e. HF, Alkalies, H₃PO₄. HF attacks rapidly; the others, relatively slowly.

Since surface scratches can materially reduce the strength of glass, scratching the envelope in the vicinity of the disc should be guarded against, particularly on large filters, since this is the area of maximum stress under vacuum. Mechanical cleaning can be accomplished by reverse-flow washing. This is the most effective mechanical means. Do not exceed 1.06 Kg/cm² pressure.

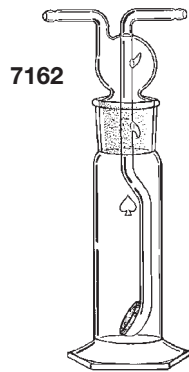
For Chemical Cleaning, the following are recommended:

Material to be Removed:	Removal Agent:
Barium Sulfate	Concentrated H ₂ SO ₄ plus a small amount of KClO ₄ to 80-90°C and soak
Fat	CCl ₄
Mercury	Hot HNO ₃
Mercuric Sulfide	Hot Aqua Regia
Organic Residues	Warm concentrated H ₂ SO ₄ plus a small amount of KNO ₃ and soak
Silver Chloride	NH ₄ OH
Sugars & Glucose	Hot H ₂ SO ₄ plus HNO ₃
Free Carbon	Heat in a muffle furnace to 482°C in an oxidizing atmosphere. Cooling may be at the rate of -12°C/min. or greater, but thermal shock must not exceed 93°C.
Dia (micron) = $\frac{30\delta}{P}$	Surface tension in a dynes/cm at test temperature P = mm Hg. where first bubble appears.

The test liquid must wet the filter; that is, the contact angle must be negligible.

7162 BOTTLE Gas Washing ♠

Large disc size provides greater capacity. 125mL size has a 25mm fritted disc. The 250mL and 500mL sizes are fitted with a 30mm disc. Joints are ₹ 40/35. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

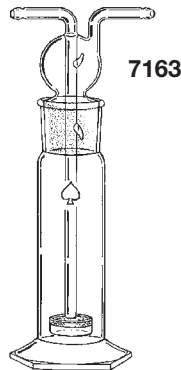


Capacity, mL		Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Complete
125	1		7162-02	7162-04	7162-06	226.05
250	1		7162-12	7162-14	7162-16	243.22
500	1		7162-22	7162-24	7162-26	266.39

Capacity, mL		Qty.	Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code	Each
125	1		7162-50	86.55	7162-60	7162-62	7162-64	135.16
250	1		7162-52	97.17	7162-70	7162-72	7162-74	141.71
500	1		7162-54	120.34	7162-80	7162-82	7162-84	141.71

7163 BOTTLE Gas Washing ♠

With 25mm fritted disc diameter. ₹ 40/35 joints for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

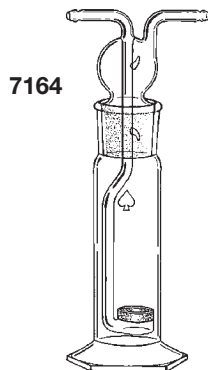


Capacity, mL		Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Complete
125	1		7163-02	7163-04	7163-06	233.22
250	1		7163-12	7163-14	7163-16	247.63
500	1		7163-22	7163-24	7163-26	270.80

Capacity, mL		Qty.	Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code	Each
125	1		7162-50	86.55	7163-60	7163-62	7163-64	142.33
250	1		7162-52	97.17	7163-70	7163-72	7163-74	146.12
500	1		7162-54	120.34	7163-80	7163-82	7163-84	146.12

7164 BOTTLE Gas Washing ♠

With 25mm fritted disc diameter. ₹ 40/35 joints for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

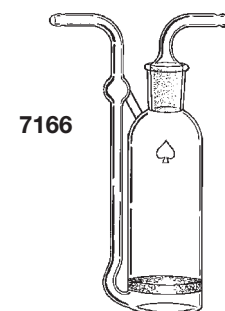


Capacity, mL		Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Complete
125	1		7164-02	7164-04	7164-06	212.42
250	1		7164-12	7164-14	7164-16	225.95
500	1		7164-22	7164-24	7164-26	249.12

Cap., mL		Qty.	Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code	Each
125	1		7162-50	86.55	7164-60	7164-62	7164-64	121.53
250	1		7162-52	97.17	7164-70	7164-72	7164-74	124.44
500	1		7162-54	120.34	7164-80	7164-82	7164-84	124.44

7166 BOTTLE *Gas Washing* ♠

With fritted disc. Joint is $\frac{3}{8}$ 29/42 for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

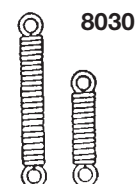

7166

Complete			Por. A	Por. B	Por. C	
Capacity, mL	Disc Dia., mm	Qty.	Order Code	Order Code	Order Code	Complete
250	50	1	7166-12	7166-14	7166-16	269.80
500	75	1	7166-22	7166-24	7166-26	364.56

		Stopper Only		Bottle Only			
Capacity, mL	Qty.	Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code	Bottle Only
250	1	7166-40	30.54	7166-60	7166-62	7166-64	231.05
500	1	7166-40	30.54	7166-70	7166-72	7166-74	323.17

8030 SPRINGS *Stainless Steel* ★

For connecting interchangeable joints, Warburg flasks, washing bottles and other apparatus where glass hooks are provided. Supplied 12 per shelf-pack, or in assortment pack* containing 12 of each size (144 total).


8030

Coil Length, cm (In.)	Qty.	Order Code	Per Shelf Pack
1.3 (1/2)	12	8030-02	25.11
1.0 (3/4)	12	8030-04	25.10
2.5 (1)	12	8030-08	33.62
3.2 (1-1/4)	12	8030-12	26.02
3.8 (1-1/2)	12	8030-16	37.49
4.1 (1-3/4)	12	8030-20	45.33
5.1 (2)	12	8030-24	45.29
Assortment Pack	144*	8030-30	237.96

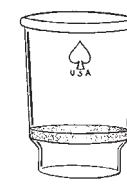
7167 BOTTLE *Gas Washing* ♠

Gas washing bottle, 270 mL with inner coil. Used with 6550 cyanide distillation apparatus.

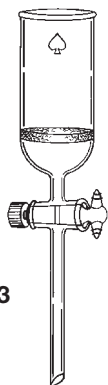
Description	Qty.	Order Code	Each
270 mL bottle only	1	7167-07	120.39
Inner coil for 7167-07 bottle	1	7167-12	349.75
Complete — 270 mL bottle with coil	1	7167-30	470.14


7167
7170 CRUCIBLE *Gooch High Form* ♠

With fritted disc. Disc diameter 30mm, height above disc is 45mm. All porosities of a given size are priced the same.


7170

Capacity, mL	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
30	1	7170-02	7170-04	7170-06	7170-08	7170-10	34.93



7183

7183 FUNNEL *Separatory, Cylindrical, 1:5 PTFE Plug* ♠

With straight, open top and a 2mm bore 1:5 taper PTFE stopcock plug.

Capacity, mL	Disc Dia., mm	Qty.	Por A Order Code	Each
125	40	1	7183-50	150.75
250	65	1	7183-60	185.09

7176 SINTERED GLASS FILTER DISC ♠

The only glass *fiber filter disc* — lasts longer, more abrasion resistant, superior in performance than granular type discs. Available in a complete range of porosities and diameters for use in the manufacture of special apparatus. Porosities A, B, C and D are priced the same.



7176



Disc Diameter, mm	Approx. Thickness, mm	Qty.	Por. A (145-174 micron) Order Code	Por. B (70-100 micron) Order Code	Por. C (25-50 micron) Order Code	Por. D (10-20 micron) Order Code	Each	Por. E (4-8 micron) Order Code	Each
8	3.0	1	7176-17	7176-18	7176-19	7176-20	10.37	7176-21	11.40
10	3.5	1	7176-01	7176-02	7176-03	7176-04	9.76	7176-05	11.25
12	3.5	1	7176-32	7176-33	7176-34	7176-35	11.51	7176-36	13.47
14	3.5	1	7176-52	7176-53	7176-54	7176-55	13.98	7176-56	15.08
15	3.5	1	7176-06	7176-07	7176-08	7176-09	11.85	7176-10	13.79
18½	3.5	1	7176-100	7176-101	7176-102	7176-103	13.27	7176-105	14.83
20	3.5	1	7176-12	7176-13	7176-14	7176-15	13.11	7176-16	14.17
21	3.5	1	7176-112	7176-113	7176-114	7176-115	13.27	7176-116	14.18
23½	3.5	1	7176-122	7176-123	7176-124	7176-125	13.52	7176-126	14.19
25	3.5	1	7176-22	7176-23	7176-24	7176-25	13.26	7176-26	14.58
30	4.0	1	7176-27	7176-28	7176-29	7176-30	16.70	7176-31	17.93
40	4.5	1	7176-37	7176-38	7176-39	7176-40	25.41	7176-41	28.69
47½	4.5	1	7176-132	7176-133	7176-134	7176-135	33.73	7176-136	37.43
50	4.5	1	7176-42	7176-43	7176-44	7176-45	33.52	7176-46	40.94
61½	6.0	1	7176-142	7176-143	7176-144	7176-145	37.28	7176-146	41.68
65	6.0	1	7176-47	7176-48	7176-49	7176-50	41.01	7176-51	45.15
82½	8.0	1	7176-152	7176-153	7176-154	7176-155	54.14	7176-156	63.59
90	8.0	1	7176-57	7176-58	7176-59	7176-60	70.89	7176-61	84.92
93	8.0	1	7176-162	7176-163	7176-164	7176-165	66.30	7176-166	79.62
120	10.0	1	7176-67	7176-68	7176-69	7176-70	125.61	7176-71	146.89
150	12.0	1	7176-77	7176-78	7176-79	7176-80	226.89	7176-81	269.56



9438

9438 FUNNEL *Filter, 14/20 Joints* ♠

Diameter of sintered glass filter disc is 18mm. Measures 40mm from disc to bottom of joint. All porosities of a given size are priced the same. Volume approximately 10mL. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

14/20 Joints	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
14/20	1	9438-02	9438-04	9438-06	9438-08	9438-10	87.04

Custom Fritted Ware

Featuring the only *Glass Fiber* filters

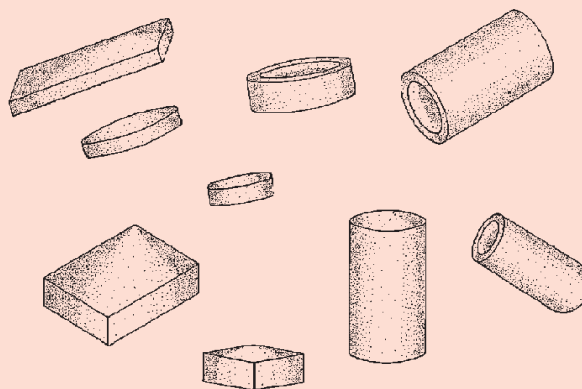
You design it,
we'll make it!

Special Shapes

- Square — up to 11 x 11 inches
- Rectangular
- Discs — up to 8 inches
- Cylindrical

Special Sizes

- Up to 1-inch thick



9439 FUNNEL Filter, Buchner, $\$$ Joint ♠

Buchner type. Diameter of sintered glass filter disc is 40mm. All porosities of a given size are priced the same. See page 7 for more detailed hose connection information.

Vol., mL	$\$$ Joint	Tubing Size (Inches)	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D. Order Code	Por. E Order Code	Each
60	14/20	5/16 or 3/8 (C)	1	9439-02	9439-04	9439-06	9439-08	9439-10	84.74
15	14/10	5/16 or 3/8 (C)	1	9439-11	9439-13	9439-15	9439-17	9439-19	69.08
60	19/22	5/16 (A)	1	9439-22	9439-24	9439-26	9439-28	9439-30	84.74
15	14/20	5/16 or 3/8 (C)	1	—	—	9439-40	9439-42	9439-44	78.49
30	14/20	5/16 or 3/8 (C)	1	—	—	9439-50	9439-52	9439-54	82.43



9439

New Sizes!

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning Equivalent	Kimble Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	F (4-5.5)	Filtration and extraction



7184

7184 FUNNEL Filter, $\text{₹}24/40$ ♠

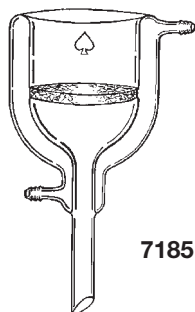
Buchner type with $\text{₹}24/40$ inner joint. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

Cap., mL	Disc. Dia. mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Each	Por. E Order Code	Each
15	20	1	7184-42	7184-44	7184-46	7184-48	89.18	7184-50	90.93
30	30	1	7184-52	7184-54	7184-56	7184-58	94.86	7184-60	96.72
60	40	1	7184-02	7184-04	7184-06	7184-08	98.13	7184-10	100.04
140	65	1	7184-12	7184-14	7184-16	7184-18	142.34	7184-20	158.18
350	80	1	7184-24	7184-26	7184-28	7184-30	190.18	7184-32	203.50

7184 FUNNEL Filter, $\text{₹}29/42$ ♠

Buchner type with $\text{₹}29/42$ inner joint. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

Cap., mL	Disc. Dia. mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Each	Por. E Order Code	Each
140	65	1	7184-13	7184-15	7184-17	7184-19	150.76	7184-21	152.72
350	80	1	7184-25	7184-27	7184-29	7184-31	197.20	7184-33	217.84

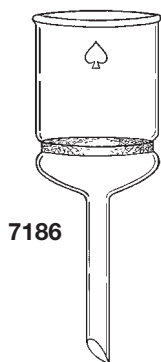


7185

7185 FUNNEL Filter, Buchner ★

With jacket for cooling or heating. All porosities of a given size are priced the same. Use with 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

Cap., mL	Disc Dia. mm	Qty.	Por. C Order Code	Por. D Order Code	Each
30	30	1	7185-06	7185-08	272.66
140	65	1	7185-16	7185-18	337.85
600	90	1	7185-26	7185-28	426.79



7186

7186 FUNNEL Filter, Buchner ♠

With ACE fritted disc. Porosities A, B, C and D are priced the same.

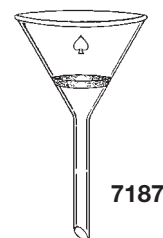
Cap., mL	Disc Dia., mm	Height Above Disc., mm	Stem Dia., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Each	Por. E Order Code	Each
2	10	30	6	1	7186-02	7186-04	7186-06	7186-08	34.52	7186-10	34.52
15	20	45	10	1	7186-12	7186-14	7186-16	7186-18	40.25	7186-20	41.46
30	30	45	10	1	7186-22	7186-24	7186-26	7186-28	45.50	7186-30	45.97
60	40	50	12	1	7186-32	7186-34	7186-36	7186-38	50.79	7186-40	51.47
140	65	65	15	1	7186-42	7186-44	7186-46	7186-48	87.80	7186-50	93.15
350	80	75	22	1	7186-52	7186-54	7186-56	7186-58	125.23	7186-60	131.16
600	90	90	22	1	7186-62	7186-64	7186-66	7186-68	150.91	7186-70	154.93
1500	120	150	22	1	7186-72	7186-74	7186-76	7186-78	322.95	7186-80	343.36
2500	135	200	25	1	7186-82	7186-84	7186-86	7186-88	427.84	7186-90	478.17
4000*	143	200	32	1	7186-110	7186-112	7186-114	7186-116	520.98		
6000*	150	240	32	1	7186-130	7186-132	7186-134	7186-136	782.90		

Not as illustrated. Body diameter larger than disc diameter.

7187 FUNNEL *Filter, Hirsch* ♠

Useful where it is necessary to wash the precipitation and redissolve with chemicals which would attack filter paper. Angle of funnel 60°.

Cap., mL	Disc Dia., mm	Height Above Disc, mm	Dia. at Top, mm	Qty.	Por. C Order Code	Por. D Order Code	Each
25	20	30	55	1	7187-06	7187-08	49.40
170	30	70	100	1	7187-16	7187-18	67.63


7187
12014 PLURO STOPPER ★

Neoprene stopper for use with filter flasks to support funnels securely. Individual sizes listed.

O.D. Top x Bottom, mm	I.D. Top x Bottom, mm	Height, mm	Qty.	Order Code	Per Package
21 x 11	17 x 7	21	12	12014-40	54.09
27 x 16	22 x 11	21	12	12014-44	56.05
37 x 22	31 x 16	25	12	12014-46	60.83
46 x 29	39 x 22	29	12	12014-48	64.36
58 x 38	50 x 30	35	12	12014-50	70.79
69 x 45	60 x 36	40	12	12014-52	75.28
86 x 57	75 x 46	45	12	12014-54	81.69


12014
12014 PLURO STOPPER SET ★

A versatile silicone stopper that equals 17 standard stoppers. All the rings are cut from the same stopper, each ring nesting perfectly into the next. Whether making up a small or large stopper, a vacuum-tight fit is assured. Sold as a set.

O.D. Range, mm	Qty.	Order Code	Per Package
18-70	1 Set	12014-14	139.27
18-114	1 Set	12014-16	241.75


12014
New from Ace Glass

Pressure Vessels



- Round-bottom, heavy wall design to facilitate use in heating mantles
- Several sizes available with either #15 or #25 Ace-Thred top fitting
- PTFE front seal plug for better sealability with FETFE o-rings
- Available with side thermowell to accommodate either temperature sensors or thermometers



Toll-free: **800-223-4524** Toll-free fax: **800-543-6752**
 856-692-3333 • Fax: 856-692-8919
www.aceglass.com sales@aceglass.com

Safety coated versions of these vessels are available upon special request.

7190 FUNNEL *Pressure Filter/Drying, Rusek**

Used for drying air-sensitive compounds with inert gas or a simple pressure filter funnel. Unique feature is the use of o-ring joints to connect cap with body creating a larger opening for easier access to contents.

Funnel will withstand pressures of 20 psi as supplied, but NO warranty, expressed or implied, is made on pressure resistance due to the fact that surface conditions have a primary effect on glass strength.

Cap adapter has serrated size C hose connection (see page 7 for more detailed hose connection information) for pressure source. O-Ring joint on cap matches joint on funnel body and is secured with 7670 pinch clamp. Offered with porosity A (145-174 micron), Porosity B (70-100 micron) or porosity C (25-50 micron) disc. Other porosities available. Complete item consists of cap and funnel body with FETFE o-ring. **Order clamp separately.**



7190

Complete

Approx. Capacity, mL	Dia., of Disc, mm	Hght., above Disc to Joint, mm	Stem O.D., mm	O-Ring Joint Size, mm	Porosity	Qty.	Order Code	Complete
15	20	45	10	20	A	1	7190-39	♠ 100.79
15	20	45	10	20	B	1	7190-40	♠ 100.79
15	20	45	10	20	C	1	7190-41	♠ 100.79
60	40	50	12	40	A	1	7190-44	♠ 160.41
60	40	50	12	40	B	1	7190-46	♠ 160.41
60	40	50	12	40	C	1	7190-45	♠ 160.41
140	65	65	15	40	A	1	7190-47	♠ 245.11
140	65	65	15	40	B	1	7190-48	♠ 245.11
140	65	65	15	40	C	1	7190-49	♠ 245.11
350	80	75	22	40	A	1	7190-51	♠ 261.44
350	80	75	22	40	B	1	7190-50	♠ 261.44
350	80	75	22	40	C	1	7190-53	♠ 261.44
600	90	90	22	40	A	1	7190-54	♠ 358.71
600	90	90	22	40	B	1	7190-52	♠ 358.71
600	90	90	22	40	C	1	7190-55	♠ 358.71

Replacement o-rings:

For Code -40, order 7855-738.
For Codes -46 thru -52, order 7855-746.

Cap Only

Disc Dia. mm	Qty.	Order Code	Each
20	1	7190-25	♠ 42.20
40	1	7190-27	♠ 56.10
65	1	7190-27	♠ 56.10
80	1	7190-27	♠ 56.10
90	1	7190-27	♠ 56.10

Clamp Only

Disc Dia. mm	Qty.	Order Code	Each
20	1	7669-14	★ 18.51
40	1	7669-20	★ 36.80
65	1	7669-20	★ 36.80
80	1	7669-20	★ 36.80
90	1	7669-20	★ 36.80

Body Only

Disc Dia., mm	Porosity	Qty.	Order Code	Each
20	A	1	7190-05	♠ 58.59
20	B	1	7190-06	♠ 58.59
20	C	1	7190-07	♠ 58.59
40	A	1	7190-09	♠ 104.31
40	B	1	7190-11	♠ 104.31
40	C	1	7190-10	♠ 104.31
65	A	1	7190-13	♠ 189.01
65	B	1	7190-12	♠ 189.01
65	C	1	7190-15	♠ 189.01
80	A	1	7190-16	♠ 205.34
80	B	1	7190-14	♠ 205.34
80	C	1	7190-18	♠ 205.34
90	A	1	7190-19	♠ 302.61
90	B	1	7190-17	♠ 302.61
90	C	1	7190-20	♠ 302.61

*Designed and evaluated by Frank Rusek, Pfizer Inc., Groton, CT.

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning, Kimble & ChemGlass Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	Filtration and extraction

5267 ADAPTER *Vacuum Filtration* ♠

Used for reduced pressure filtration with 7186 style, plain stem Buchner funnels. Top is tooled to accept a pluro stopper, bottom has a ⚗ joint. Serrated hose connection has a second ring of 13.5mm O.D. Inserting the recommended size pluro stopper and the next smaller size allows use of smaller capacity funnels; i.e., in ⚗ 24/25 size, insertion of 31mm x 16mm and 22mm x 11mm will allow use of 15 or 30mL capacity funnels. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

⚗ Inner Joint	Uses Pluro Stopper, I.D.	Fits Funnel Cap., mL	Qty.	Order Code	Complete
14/20	17mm x 7mm	2	1	5267-06	44.61
19/22	17mm x 7mm	2	1	5267-08	52.17
24/25	31mm x 16mm	140	1	5267-11	65.08
24/40	31mm x 16mm	140	1	5267-15	65.08
29/26	60mm x 36mm	4000	1	5267-18	66.23
29/42	60mm x 36mm	4000	1	5267-20	76.52


7194 TUBE *Allihn* ♠

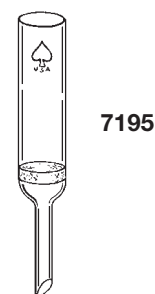
Diameter of disc is 30mm, height above disc is 100mm, diameter of bottom tube is 8mm.

Porosity	Qty.	Order Code	Each
A	1	7194-02	44.26
B	1	7194-04	44.26
C	1	7194-06	44.26
D	1	7194-08	44.26


7195 TUBE *Allihn, Rupp* ♠

Diameter of disc is 20mm. Height above disc is 100mm. Funnel capacity is 30mL.

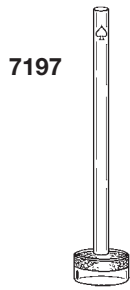
Porosity	Qty.	Order Code	Each
A	1	7195-02	46.47
B	1	7195-04	46.47
C	1	7195-06	46.47
D	1	7195-08	46.47
E	1	7195-10	46.47


7196 TUBE *Gas Dispersion* ♠

Outside diameter of tube is 8mm, total length of tube is 150mm. All porosities of a given size are priced the same. Bottom support is the same O.D. as the disc.

Disc Dia., mm	Qty.	Por. A	Por. B	Por. C	Por. D	Por. E	Each
		Order Code	Order Code	Order Code	Order Code	Order Code	
20	1	7196-02	7196-04	7196-06	7196-08	7196-10	53.92
25	1	7196-12	7196-14	7196-16	7196-18	7196-20	56.60

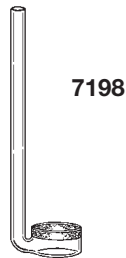




7197 TUBE Gas Dispersion ♦

Outside diameter of top tube is 8mm, total length of top tube is 150mm. All porosities of a given size are priced the same. Thickness of bottom is 14mm. Bottom O.D. matches disc diameter. Overall length is 164mm.

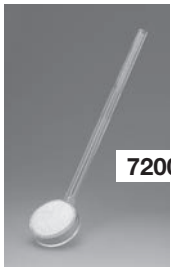
Disc Dia., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Each
25	1	7197-02	7197-04	7197-06	7197-08	60.71
30	1	7197-12	7197-14	7197-16	7197-18	63.80



7198 TUBE Gas Dispersion ♦

Supplied with 6, 7, or 8mm O.D. stem top tubing, 150mm in overall length. Maximum O.D. of stem and filter disc is 20mm; Bottom thickness is 10mm. Filter disc is 10mm diameter, porosity B (70-100 micron).

Stem O.D., mm	Qty.	Order Code	Each
6	1	7198-06	50.49
7	1	7198-07	50.49
8	1	7198-08	50.49



7200

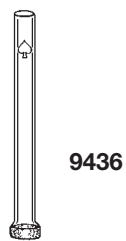
7200 TUBE Gas Dispersion ♦

Fritted disc is angled approximately 15° from stem, which permits the small gas bubbles to rise from the disc surface without excessive formation of large bubbles. These tubes give a performance compared to a horizontal disc, but the method of construction allows its use in test tubes or flasks where a large opening is not available. Outside diameter of tube 8mm. Overall length is approximately 195mm. Bottom O.D. matches disc O.D.

Disc Dia., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
10	1	7200-24	—	7200-26	7200-28	7200-30	32.54
25	1	7200-02	7200-04	7200-06	—	—	54.79
30	1	7200-12	7200-14	7200-16	7200-18	7200-20	56.93
40	1	7200-40	—	7200-42	7200-44	7200-46	75.62



New Sizes!

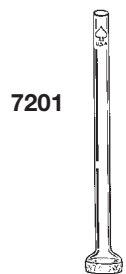


9436

9436 TUBE Gas Dispersion ♦

Disc diameter is 10mm, overall length is 150mm. Disc is approximately 2mm thick. Outside diameter of tube is 7mm.

Porosity	Qty.	Order Code	Each
A	1	9436-02	23.89
B	1	9436-04	23.89
C	1	9436-06	23.89
D	1	9436-08	23.89
E	1	9436-10	23.89



7201

7201 TUBE Gas Dispersion ♦

Outside diameter of tube is 8mm, total length of tube is 150mm. Bottom frit is approximately 2mm thick.

Disc Dia., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Each
25	1	7201-02	7201-04	7201-06	41.54
30	1	7201-12	7201-14	7201-16	44.06

9435 TUBE Gas Dispersion ♦

For fine dispersion. Porous tip is approximately 5mm or 7mm O.D. x 10mm length. 7mm O.D. tube fits a #7 Ace-Thred.

Stem O.D. x Lgth., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
5 x 135	1	9435-06	9435-07	9435-08	9435-09	9435-10	19.88
7 x 135	1	9435-21	9435-22	9435-23	9435-24	9435-25	19.88
5 x 210	1	9435-36	9435-37	9435-38	9435-39	9435-40	19.95
7 x 210	1	9435-51	9435-52	9435-53	9435-54	9435-55	21.27


7202 TUBE Gas Dispersion ♦

With porous fritted glass tip. Available in 150mm, 300mm, 400mm, and 500mm lengths. O.D. of all sizes is 10mm. Fits a #11 Ace-Thred.

Length, mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
150	1	7202-02	7202-04	7202-06	7202-08	7202-10	31.51
300	1	7202-12	7202-14	7202-16	7202-18	7202-20	32.65
400	1	7202-32	7202-34	7202-36	7202-38	7202-40	32.90
500	1	7202-42	7202-44	7202-46	7202-48	7202-50	33.00

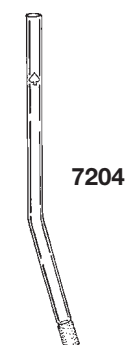


New Sizes!

7204 TUBE Gas Dispersion, 15° Angle ♦

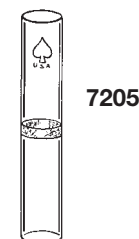
Gas dispersion tube with porous fritted tip for use with #7 Ace-Threds. Tube is 6.5mm O.D. and bent 15° to allow positioning inside flask to avoid stirring paddles and yet reach close to bottom of flask. Frit length is 10mm. **Specify porosity and length or code when ordering.**

Overall Length, mm	Fits Flask Size, mL	Qty.	Por. A Order Code	Por. B Order Code	Each
250	500-2000	1	7204-03	7204-04	32.10
330	3000-5000	1	7204-07	7204-08	32.10


7205 TUBE Straight, with Porus Disc ♦

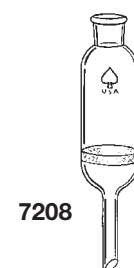
For construction of special apparatus. Disc is centered in tube. All porosities of a given size are priced the same.

Disc Dia., mm	Total Lgth., mm	Tube O.D., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
10	200	13	1	7205-02	7205-04	7205-06	7205-08	7205-10	31.45
20	200	25	1	7205-12	7205-14	7205-16	7205-18	7205-20	35.41
30	200	35	1	7205-22	7205-24	7205-26	7205-28	7205-30	39.11
40	200	45	1	7205-32	7205-34	7205-36	7205-38	7205-40	47.23
50	250	54	1	7205-42	7205-44	7205-46	7205-48	—	71.60
65	250	70	1	7205-52	7205-54	7205-56	7205-58	—	106.79
90	250	100	1	7205-72	7205-74	7205-76	7205-78	—	131.41


7208 TUBE Pressure Filtering ♦

Used in filtering glucose, agar and serums. All porosities of a given size are priced the same. Top accepts #3 or #4 rubber stopper.

Cap., mL	Disc Dia., mm	Height Above Disc, mm	Qty.	Por. A Order Code	Por. D Order Code	Each
50	30	100	1	7208-02	7208-08	67.15
175	50	128-138	1	7208-12	—	102.20





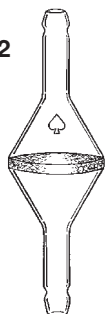
7209

7209 TUBE ♠

With fritted disc sealed on bottom. Overall length 125mm. All porosities of a given size are priced the same.

O.D., mm	Qty.	Por. B Order Code	Por. C Order Code	Por. D Order Code	Por. E Order Code	Each
12	1	7209-04	7209-06	7209-08	7209-10	33.10
20	1	7209-14	7209-16	—	—	40.39

7212

**7212 TUBE** *Reduced Ends* ♠

These filters are supplied in a range of sizes from the 20mm disc size to the 50mm disc size. The smaller sizes are used to remove end products of a reaction during recirculation of liquid reactants. The larger units are suitable for filtering operations in the preparation of organic chemicals and biologic solutions. Unit is supplied with hose connection ends. All porosities of a given size are priced the same.

Disc Dia., mm	Hose Conn. O.D., mm	Qty.	Por. A Order Code	Por. B Order Code	Por. D Order Code	Each
20	8	1	—	7212-04	7212-08	50.57
30	10	1	—	7212-14	7212-18	59.67
50	16	1	7212-22	—	7212-28	91.05



7213

**7213 TUBE** *Reduced Ends, Ace-Thred* ♠

Same as 7212 tube with integral fritted disc, except with Ace-Safe connectors. All have 50mm diameter disc. Supplied with two #15 nylon bushings (7506-05) and 5853-18 polypropylene hose barbs for 1/4-inch I.D. tubing

Qty.	Por. A Order Code	Por. B Order Code	Por. D Order Code	Each
1	7213-06	—	—	55.69
1	—	7213-08	—	63.56
1	—	—	7213-10	90.86

7216

**7216 TUBE** *Sulphur Absorption* ♠

For sulphur absorption chamber. Diameter of disc is 30mm, height above disc 200mm, capacity 130mL. Will accept a No. 7 rubber stopper.

Porosity	Qty.	Order Code	Each
A	1	7216-02	56.71
C	1	7216-06	56.71
D	1	7216-08	56.71

6300 FLASK *Reaction, with O-Ring Groove, Heavy Wall* ♠

Cylindrical, heavy wall reaction kettles or flasks, with integral fritted disc and bottom tube outlet. Top of flask has flat flange with a groove for use with o-ring. For reaction heads, see 6528, 6529 and 6530 series. Can be used with two-piece or 6517 quick release clamps.

Frit Porosity	Flask Size, mL	Flange (Inches)	Height, mm	Bottom Tube O.D. (In.)	Frit Diameter, mm	Qty.	Order Code	Each
A	1000	4	300	5/8	100	1	6300-06	431.20
B	1000	4	300	5/8	100	1	6300-08	431.20
C	1000	4	300	5/8	100	1	6300-10	431.20
A	4000	6	460	1-1/4	145	1	6300-18	523.61
B	4000	6	460	1-1/4	145	1	6300-20	523.61
C	4000	6	460	1-1/4	145	1	6300-22	523.61
A	6000	8	430	1-1/4	178	1	6300-30	831.61
B	6000	8	430	1-1/4	178	1	6300-32	831.61
C	6000	8	430	1-1/4	178	1	6300-34	831.61


6300

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning, Kimble & ChemGlass Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	Filtration and extraction

See the Adapter section for adapters with integral frits and the Chromatography section for columns with integral frits.



7224

7224 SHAKE FUNNEL *Safe Grip* ★

Separatory, globe-type funnel with neck and section between globe and stopcock shaped to provide a secure grip for shaking contents or transporting. Also makes clamping easier. For replacement stopcock plugs, see 8223. For stoppers, see 8250.

Capacity, mL	⌘ Stopper	Plug Bore, mm	Qty.	Order Code	Each
3000	45/50	6	1	7224-22	354.56
5000	45/50	8	1	7224-28	456.62
12000	55/50	10	1	7224-33	631.46



7226

7226 FUNNEL *Separatory, Squibb, Pear-Shaped* ♠

With PTFE stopper and glass stopcock. For replacement stoppers, see 12632. For stopcock plugs, see 8223.

Cap., mL	⌘ Stopper	Plug Bore, mm	Qty.	Order Code	Each	Cap., mL	⌘ Stopper	Plug Bore, mm	Qty.	Order Code	Each
30	13	2	1	7226-04	78.96	1000	27	4	1	7226-14	175.66
60	13	2	1	7226-06	78.96	2000	38	6	1	7226-16	244.72
125	16	2	1	7226-08	88.85	3000	38	6	1	7226-18	329.11
250	22	3	1	7226-10	101.49	4000	38	10	1	7226-20	413.49
500	27	4	1	7226-12	117.98	6000	38	10	1	7226-22	487.26



7221

7221 FUNNEL *Separatory, Globe* ♠

Globe style, 125mL capacity separatory funnel featuring a 175mm stem below the PTFE stopcock, and supplied with a top stopper.

Qty.	Order Code	Each
1	7221-09	95.58

For a complete funnel product listing, contact ACE for a copy of our reusable glassware catalog

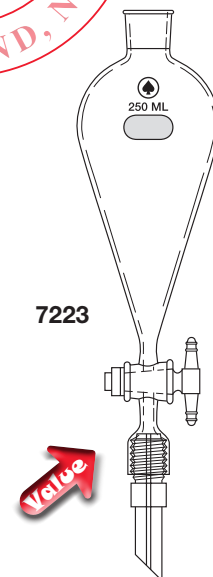
7223 FUNNEL *Separatory, Squibb, with Detachable Drip Tip* ♦

Multipurpose, separatory funnel with either #11 or #15 Ace-Thred at bottom that accepts a detachable PTFE drip tip. Avoids breaking delivery tip, easier to clean, and allows leak tight closed system tubing connections using 5801, 5802, 5854 and/or 12770 connectors. Stopcock is 1:5 PTFE. For stoppers, see 12632.



#11 Ace-Thred										
Capacity, mL	Stopper Size	Plug Bore, mm	Qty.	Funnel Body, Only		Drip Tip, Only		Complete		
				Order Code	Each	Order Code	Each	Order Code	Each	
125	16	2	1	7223-07	107.70	7223-40	18.89	7223-50	126.59	
250	22	2	1	7223-12	114.32	7223-40	18.89	7223-53	133.21	
500	27	4	1	7223-17	143.15	7223-40	18.89	7223-57	162.04	
1000	27	4	1	7223-20	169.03	7223-40	18.89	7223-59	187.92	

#15 Ace-Thred										
Capacity, mL	Stopper Size	Plug Bore, mm	Qty.	Funnel Body, Only		Drip Tip, Only		Complete		
				Order Code	Each	Order Code	Each	Order Code	Each	
2000	38	6	1	7223-30	224.99	7223-42	22.52	7223-62	247.51	
4000	38	6	1	7223-34	272.41	7223-42	22.52	7223-66	294.93	
5000	38	6	1	7223-37	346.59	7223-42	22.52	7223-69	369.11	

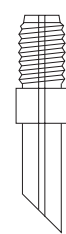


A "safer" separatory funnel design from Ace!

PTFE Drip Tip

7223-40 For #11 Ace-Thred, 6.35 mm Bore, 3.2 inches long

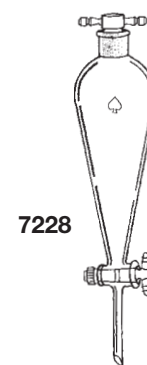
7223-42 For #15 Ace-Thred, 8.3 mm Bore, 3.5 inches long

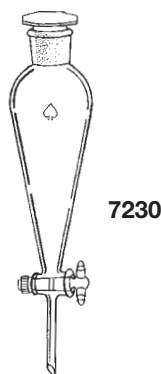


7228 FUNNEL *Separatory, Squibb, Pear-Shaped, 1:5 PTFE Plug* ♦

With ⌘ PTFE stopper. For replacement stoppers, see 12632. For stopcock plugs, see 8224.

Capacity, mL	⌘ Stopper	Plug Bore, mm	Qty.	Order Code	Each
30	13	2	1	7228-60	77.95
60	13	2	1	7228-62	87.25
125	16	2	1	7228-64	95.99
250	22	4	1	7228-66	113.42
500	27	4	1	7228-68	132.86
1000	27	4	1	7228-70	159.58
2000	38	6	1	7228-72	218.55
4000	38	6	1	7228-76	239.99
4000	38	8	1	7228-77	345.84
6000	38	8	1	7228-79	396.91

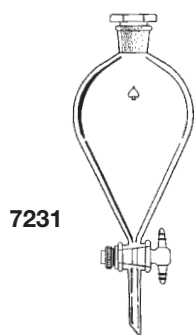




7230 FUNNEL *Separatory, Squibb, with 1:5 PTFE Plug and 45/50 Polyethylene Stopper* ♠

Wide-mouth separatory funnel for easy access to ingredients. For replacement 45/50 stoppers, see 12633 or 12635. For stopcock plugs, see 8224.

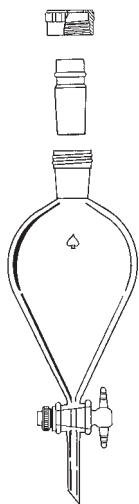
Capacity, mL	45/50 Stopper	Plug Bore, mm	Qty.	Order Code	Each
2000	45/50	6	1	7230-22	257.24
4000	45/50	6	1	7230-26	332.61
4000	45/50	8	1	7230-30	364.36
6000	45/50	8	1	7230-34	396.40



7231 FUNNEL *Separatory, Squibb, with 1:5 PTFE Plug and Stopper Joint* ♠

European style. Supplied with 24/25 polyethylene stopper in all capacities except 2000mL size which is supplied with large 45/50 polyethylene stopper. For replacement stoppers, see 12633 or 12635. For stopcock plugs, see 8224.

Capacity, mL	24/25 Stopper	Plug Bore, mm	Qty.	Order Code	Each
60	24/25	2	1	7231-06	102.47
125	24/25	2	1	7231-09	109.53
250	24/25	4	1	7231-12	134.86
500	24/25	4	1	7231-15	151.98
1000	24/25	4	1	7231-18	202.06
2000	45/50	6	1	7231-21	251.54



7231 FUNNEL *Separatory, Squibb, with 1:5 PTFE Plug, Locktight Stopper*

European style funnel with new leak-tight, locking stopper that will not fall out during shaking or transportation. Outer ground joint at top is a Rodaviss (externally threaded) joint. Stopper can be secured in top joint via cap and o-ring for a positive, leak-tight seal. Complete item supplied with plug, stopper, cap and o-ring.

Capacity, ml	24/40 Stopper	Plug Bore, mm	Qty.	<i>Funnel Body, Only</i>		<i>Complete</i>	
				Order Code	Each	Order Code	Each
60	24/40	2	1	7231-34	♠ 121.13	7231-55	♠ 171.73
125	24/40	2	1	7231-36	♠ 135.96	7231-57	♠ 186.56
250	24/40	4	1	7231-38	♠ 157.06	7231-59	♠ 207.66
500	24/40	4	1	7231-40	♠ 183.48	7231-61	♠ 234.08
1000	24/40	4	1	7231-42	♠ 236.84	7231-63	♠ 287.44
2000	45/50	6	1	7231-44	♠ 310.73	7231-65	♠ 420.74

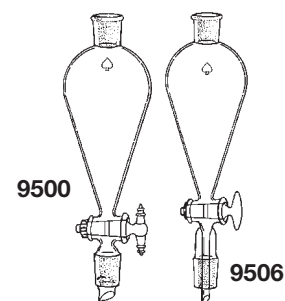
Replacement Items

For 45/50 Joint	Qty.	<i>Stopper, only</i>		<i>Cap, only</i>		<i>Viton O-Ring, only</i>	
		Order Code	Each	Order Code	Each	Order Code	Per Pkg.
24/40	1	8267-19	♠ 44.28	7616-21	★ 3.38	7617-17	♠ 17.64/6
45/50	1	8267-29	♠ 92.21	7616-27	★ 11.72	7617-23	♠ 18.23/3

9500/9506 FUNNEL *Separatory, Glass or PTFE Plug* ♠

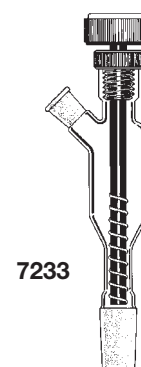
Pear shaped, with ⌘ joint and drip tip.

Capacity, mL	Plug Bore, mm	⌘ Joints	Qty.	1:5 PTFE Plug		Glass Plug	
				Order Code	Each	Order Code	Each
30	2	14/20	1	—	—	9506-02	119.44
60	2	14/20	1	9500-06	127.54	9506-04	120.14
125	2	14/20	1	9500-08	129.87	9506-06	122.38


7233 FUNNEL *Powder Dispensing, Vertical* ♠

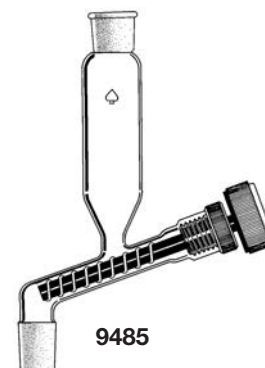
A vertical, compact, screw feed funnel for the addition of powders and solids (up to 25 mesh) into reactions without seizing or binding. Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate. Completely inert materials allow flushing with solvents without fear of contamination. #15 Ace-Thred at top offers easy disassembly for cleaning. Large 1-1/4-inch knob makes turning smooth and easy. Top side port is ⌘ 14/20 outer joint, bottom inner joint is ⌘ 24/40. Overall height, 9-1/2 inches.

Capacity, mL	Qty.	Order Code	Each
50	1	7233-20	258.16
100	1	7233-30	290.26


9485 FUNNEL *Powder Dispensing* ♠

A vertical, compact, screw feed funnel for the addition of powders and solids (up to 25 mesh) into reactions without seizing or binding. Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate. Completely inert materials allow flushing with solvents without fear of contamination. #7 Ace-Thred offers easy disassembly for cleaning. Top outer and bottom inner joints are ⌘ 14/20. Approximate capacity, 15mL.

Capacity, mL	Qty.	Order Code	Each
15	1	9485-15	246.75

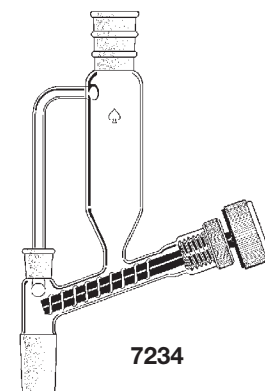

7234 FUNNEL *Powder Dispensing* ♠

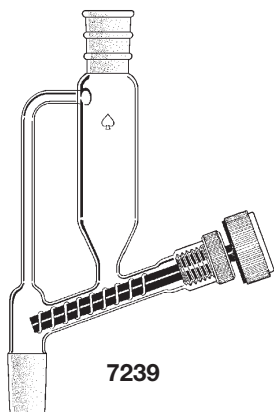
Side operated screw feed funnel for the addition of powders and solids (up to 25 mesh) to reactions without problems of seizing or binding.

Features a flexible PTFE screw thread wrapped on a precision PTFE-ceramic shaft and contained within a precision bore housing. This offers a unique flexibility in that the thread can move aside temporarily; as one spacing increases, the adjacent spacing decreases, thereby maintaining an average feed rate.

Completely inert materials allow flushing with solvents without fear of contamination. #15 Ace-Thred offers easy disassembly for cleaning. Large 1-1/4-inch knob makes turning smooth and easy. Top outer and bottom inner joints are ⌘ 24/40. ⌘ 14/20 outer joint atop inner joint is for easier flushing.

Capacity, mL	Qty.	Order Code	Each
100	1	7234-25	341.46
250	1	7234-35	368.90



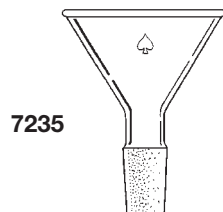


7239

7239 FUNNEL Powder Dispensing ♠

Side operated screw feed funnel similar to 7234 except 14/20 outer joint atop bottom inner joint has been eliminated. Bottom 1/8 joint and top 1/8 outer joints are 24/40. Same features as 7233.

Capacity, mL	Qty.	Order Code	Each
100	1	7239-30	275.37
250	1	7239-40	340.67



7235

7235 FUNNEL Powder, Heavy Wall, 58° ♠

1/8 jointed powder funnels are fabricated with heavy walls for greater durability when pouring powders or liquids into ground joint containers.

Approx. Top Dia., mm	1/8 Bottom Joint	Qty.	Order Code	Each
75	24/40	1	7235-05	42.22
100	24/40	1	7235-07	45.87

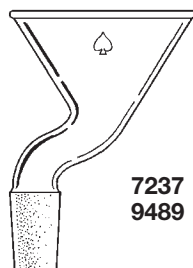
7236/9488



7236/9488 FUNNEL Powder ♠

Useful in pouring powders or liquids into ground joint containers. Available with 1/8 or 1/4 inner joint.

Approximate Top Diameter, mm	1/8 Bottom Joint	Qty.	Order Code	Each	Approximate Top Diameter, mm	1/4 Bottom Joint	Qty.	Order Code	Each
65	14/20	1	9488-10	33.08	100	35/25	1	7236-20	52.86
65	19/38	1	7236-06	44.08					
75	24/40	1	7236-08	46.46					
100	24/40	1	7236-10	49.08					
125	24/40	1	7236-11	49.84					
100	29/42	1	7236-12	52.61					
125	34/45	1	7236-14	61.74					
150	29/42	1	7236-18	60.12					



7237
9489

7237/9489 FUNNEL Powder, Offset ♠

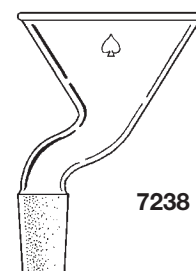
Used for pouring liquids or powders into multi-neck flasks. Available with 1/8 inner joint.

Approx. Top Dia., mm	1/8 Bottom Joint	Qty.	Order Code	Each
65	14/20	1	9489-20	52.50
75	24/40	1	7237-09	67.57
100	24/40	1	7237-11	76.89
125	24/40	1	7237-15	77.98
100	29/42	1	7237-19	79.98

7238 FUNNEL Powder, Offset, Heavy Wall, 58° ♠

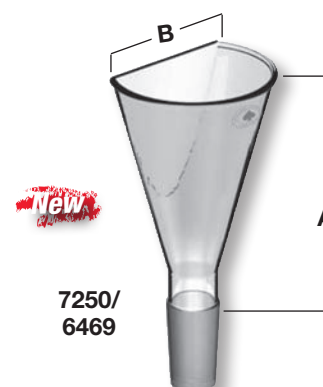
With heavy walls for greater durability when pouring powders or liquids into multi-neck flasks.

Approx. Top Dia., mm	Bottom Joint	Qty.	Order Code	Each
75	24/40	1	7238-06	73.45
100	24/40	1	7238-08	76.89


7250/6469 FUNNEL Powder, Flat Side ♠

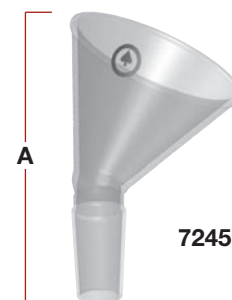
Powder funnel with bottom joint and flattened side for easy use with multi-neck flasks.

Bottom Joint	Top Opening (B), mm	Height (A), mm	Qty.	Order Code	Each
14/20	75	70	1	7250-01	41.50
24/40	75	90	1	7250-05	54.35
24/40	100	145	1	7250-09	62.98
29/42	145	145	1	7250-10	67.98
29/32	145	145	1	7250-12	67.98
45/50	150	250	1	6469-52	235.45
71/60	255	255	1	7250-15	290.48


7245 FUNNEL Powder, Angled, Heavy Wall ♠

Borosilicate funnel angled to permit use in multi-neck flasks. On angled neck flasks such as 6948, this funnel will bring the mouth of the funnel back to vertical.

Top Diameter, mm	Dimension A, mm	Bottom Joint	Qty.	Order Code	Each
75	120	24/40	1	7245-07	61.24
100	150	24/40	1	7245-15	72.01
100	195	29/42	1	7245-21	83.61
200	200	45/50	1	7245-25	101.13


12548 FUNNEL Analytical, Polypropylene ★

Made of polypropylene, the funnel takes standard size filter papers. Body of funnel is exact 60° angle, and internal ribs are 58° angle for rapid filtration. Outside ribbing prevents air lock. May be autoclaved.

Top I.D., mm	Stem Length, mm	Stem O.D., mm	Paper Dia., mm	Cap., mL	Package Qty.	Case Qty.	Order Code	Per Pkg.	Case Price
55	60	8	90	36	12	36	12548-07	49.23	147.70
65	65	8.5	110	60	12	36	12548-09	49.23	147.70
75	75	9	125	95	6	36	12548-11	24.99	149.91
100	100	11.5	185	225	4	24	12548-15	31.78	190.67



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12549

12549 FUNNEL Powder, Polypropylene ★

Autoclavable, powder funnels molded of polypropylene. Parallel stem minimizes bridging of powder; external ribbing prevents air lock.

Top I.D., mm	Stem O.D., mm	Stem Lgth., mm	Package Qty.	Case Qty.	Order Code	Per Pkg.	Case Price
65	15	25	12	36	12549-04	40.96	122.87
80	24	25	12	36	12549-06	54.69	164.08
100	26	25	6	24	12549-08	29.83	119.30
150	30	25	4	24	12549-10	26.73	160.38



12552

12552 FUNNEL Powder, Polypropylene ★

With ⚙ joints.

	Qty.	Order Code	Each
10.2cm, (4-inch) funnel with ⚙24/40	1	12552-06	38.78
15.2cm, (6-inch) funnel with ⚙24/40	1	12552-08	44.03



12557

12557 FUNNEL Buchner, Polypropylene ★

Lightweight polypropylene funnels. Bottom and top separate for easy cleaning.

Filter paper size, mm	Package Qty.	Case Qty.	Order Code	Per Pkg.	Case Price
42.5	6	12	12557-05	54.35	108.69
55	1	12	12557-07	13.13	157.58
70	1	6	12557-09	16.84	101.05
90	1	6	12557-11	21.90	131.37
110	1	6	12557-13	64.12	384.70

12560 FUNNEL *Buchner, Table Top, Polyethylene* ★

POROUS FILTER PLATE type or PERFORATED PLATE type, fixed or removable, polyethylene Buchner funnel. Features one-piece, welded construction with welded-in plate and multiple-ring support grid below plate. A non-porous ring around plate seals filter paper. Vacuum connection accepts 1/2-inch I.D. tubing. Temperature limit of 125°F (52°C).

FILTER PLATE is available in medium (M) or coarse (C) porosity, 1/4-inch (6.4mm) thick.

PERFORATED PLATE is 3/16 inches (4.8mm) thick with 3/16-inch perforations on 7/16-inch (11mm) centers. Good for coarse filtration or use with cloth or paper filter.

I.D., Inches	Overall Height (Inches)	Rim to Plate (Inches)	Qty.	<i>Porous Plate</i>			<i>Perforated Plate</i>		
				Plate Type/ Porosity ()	Order Code	Each	Order Code	Each	
10-1/4 (26cm)	7	5	1	Fixed/(M)	12560-02	362.89	12560-14	365.90	
10-1/4 (26cm)	7	5	1	Fixed/(C)	12560-04	357.95			
10-1/4 (26cm)	7	5	1	Removable/(M)	12560-30	362.89	12560-50	377.61	
10-1/4 (26cm)	7	5	1	Removable/(C)	12560-32	362.89			
18 (45.7cm)	11-1/2	9	1	Fixed/(M)	12560-05	888.35	12560-16	773.83	
18 (45.7cm)	11-1/2	9	1	Fixed/(C)	12560-06	888.35			
18 (45.7cm)	11-1/2	9	1	Removable/(M)	12560-35	888.60	12560-57	767.48	
18 (45.7cm)	11-1/2	9	1	Removable/(C)	12560-37	888.35			
24 (61cm)	13	10-1/2	1	Fixed/(M)	12560-07	1846.30	12560-18	1227.54	
24 (61cm)	13	10-1/2	1	Fixed/(C)	12560-08	1846.30			
24 (61cm)	13	10-1/2	1	Removable/(M)	12560-38	1846.30	12560-59	1217.47	
24 (61cm)	13	10-1/2	1	Removable/(C)	12560-39	1846.30			
36 (91.4cm)	14-3/4	12	1	Fixed/(M)	12560-09	2902.08	12560-20	2170.27	
36 (91.4cm)	14-3/4	12	1	Fixed/(C)	12560-10	2902.08			
36 (91.4cm)	14-3/4	12	1	Removable/(M)	12560-41	2902.08	12560-63	2170.27	
36 (91.4cm)	14-3/4	12	1	Removable/(C)	12560-53	2902.08			



I.D., In.	=	Gallons
10.25	=	1.8
18	=	10
24	=	20
36	=	53

FILTER PAPER is to fit 12560 Funnels. Rough crepe surface, .25 mm thick, flow rate 235 mL/min., retention of 24 microns and wet strength of 25 cm of water. Packed 100 per box.

For Funnel Size (In.)	Qty.	Order Code	Per Box
10-1/4	100	12560-70	93.73
18	100	12560-72	174.96
24	100	12560-74	222.68
36	100	12560-76	887.57

12563 FUNNEL *Buchner, All Stainless Steel*

316 stainless steel Buchner funnel for organic or inorganic chemical synthesis. This funnel incorporates a removable perforated plate that allows thorough manual cleaning and autoclaving. Since the plate is removable, yield is increased because internal supports that would trap product are eliminated. Will not chip, crack or break. Offered in 9.5- and 20-inch sizes that accept commercially available filter sizes with 240 grit, 30 Ra (electropolished) for critical applications, i.e., pharmaceuticals. Outlet port is 1/2-inch O.D. for both sizes.

Inside Diameter (Inches)	Hgt. Above Disc (Inches)	Overall Height (Inches)	Grit Finish	Qty.	Order Code	Each
9.5	5	7	240	1	12563-09	6647.70
20	10	12	240	1	12563-27	8397.65



12563

7257
9498



7257/9498 FUNNEL Addition, 1:5 PTFE Plug ♠

Ungraduated, with ⚙ joint top and bottom. For stopcock plugs, see 8224. For stoppers, order 8250-12 or 8255-10.

Capacity, mL	⚙ Joint	⚙ Stopper	Plug Bore, mm	Qty.	Order Code	Each
10	14/20	14/20	2	1	9498-03	129.45
25	14/20	14/20	2	1	9498-05	129.45
50	14/20	14/20	2	1	9498-11	130.31
125	24/40	24/40	2	1	7257-50	150.81
250	24/40	24/40	2	1	7257-52	172.48
500	24/40	24/40	4	1	7257-54	204.52

7267/7268/7318/9499 FUNNEL Addition, Graduated ♠

Cylindrical with ⚙ joint top and bottom, drip stem, and double scale graduations, calibrated up from stopcock. Drip stem does not extend beyond joint, thereby eliminating possible source of breakage. Stopcock available with 1:5 PTFE plug, PTFE metering plug or glass plug. For replacement stopcock plugs, see 8224, 8232 or 8223. For stoppers, order 8250-12 or 8255-10. **Stoppers NOT supplied.**



7268-60
9499-02
1:5 PTFE



7318-08
9499-04
Metering

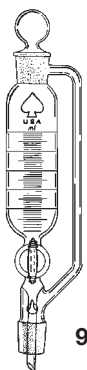


7267-08
Glass

Cap., mL	Plug Bore, mm	⚙ Joints Bottom/Top	Qty.	1:5 PTFE Plug		Metering Valve		Glass Plug	
				Order Code	Each	Order Code	Each	Order Code	Each
10	2	14/20/14/20	1	9499-02	157.29	9499-04	181.87	—	—
25	2	14/20/14/20	1	9499-05	156.35	9499-06	182.19	—	—
50	2	14/20/14/20	1	9499-08	156.94	9499-12	182.83	—	—
125	2	24/40/24/40	1	7268-60	190.31	7318-08	246.34	7267-08	176.73
250	2	24/40/24/40	1	7268-62	203.76	7318-12	264.40	7267-12	187.34
500	4	24/40/24/40	1	7268-64	243.79	7318-16	301.44	7267-16	225.62
500	4	29/42/24/40	1	—	—	—	—	7267-18	234.60
1000	4	24/40/24/40	1	7268-66	323.67	7318-20	340.56	7267-20	293.02
2000	4	29/42/24/40	1	7268-70	365.14	—	—	—	—

9486 FUNNEL Addition ♠

With an equalizing arm and a special stopper so that material may be isolated from the atmosphere. Turning the stopper completely closes the vessel to the equalizing arm so that the funnel may be disconnected without exposing contents to moist air, etc. Glass stopcock is 2mm bore. For replacement stoppers, order 9486-89. For replacement stopcock plugs, see 8223.



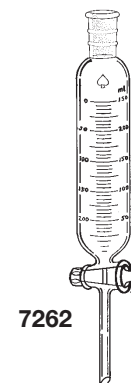
9486

Cap., mL	Subdiv., mL	⚙ Joints	Qty.	Order Code	Each
25	0.5	14/20	1	9486-03	187.61
50	1.0	14/20	1	9486-05	187.61

7262 FUNNEL Addition, Cylindrical, Graduated, 1:5 PTFE Plug ♠

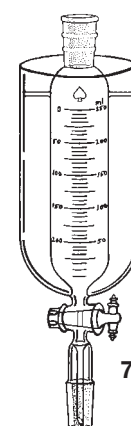
With 24/40 stopper joint at top and 1:5 PTFE stopcock plug at bottom. For replacement stopcock plugs, see 8224. For stoppers, order 8250-12. **Stopper NOT supplied.**

Capacity, mL	Subdivision, mL	Plug Bore, mm	Qty.	Order Code	Each
125	1	2	1	7262-50	126.51
250	5	3	1	7262-52	170.31
500	5	4	1	7262-54	202.23
1000	10	4	1	7262-56	280.19
2000	20	4	1	7262-58	349.36


7262
7270 FUNNEL Addition, with Jacket ★

Double scale graduated funnel with jacket for cooling with dry ice. Calibrated up from stopcock. With 1:5 PTFE stopcock plug; for extra plugs, see 8224. For stoppers, order 8250-12.

Capacity, mL	Joint	Stopper	Plug Bore, mm	Qty.	Order Code	Each
250	24/40	24/40	2	1	7270-37	448.61
500	24/40	24/40	4	1	7270-41	498.60


7270
7272 FUNNEL Addition, Pilot Size, Ace-Thred

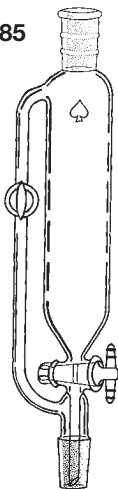
Large separatory funnel for use where large volumes are needed. Cylindrical shape necks down to a #25 Ace-Thred and connects to an 8mm bore PTFE stopcock via a PTFE coupling using FETFE o-rings. The system is completely grease-free. Complete unit consists of the funnel body, coupling with two o-rings, and stopcock.

Capacity, Liters	I.D., mm	O.D., mm	Overall* Hght., mm	Straight Section Height, mm	Qty.	Body Only		Complete	
						Order Code	Each	Order Code	Each
9.4	201	217	440	325	1	7272-04 ★	302.86	7272-34 ★	629.97
19.0	280	290	400	230	1	7272-10 ★	479.00	7272-40 ★	806.11
35.0	390	410	450	350	1	7272-14 ★	814.69	7272-44 ★	1141.80
						Qty.	Order Code	Each	
						1	5835-55 ♠	221.02	
						1	5841-50 ♠	106.09	

*Overall height does NOT include stopcock adapter.


7272

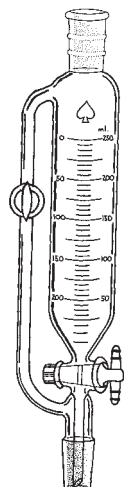
7285



7285 FUNNEL *Pressure Equalizing, 1:5 PTFE Plug* ♠

Cylindrical, with 24/40 joint top and bottom. Supplied with 1:5 PTFE stopcock plugs which require no lubrication. Stopcock on equalizing arm permits filling funnel without having to open the system to atmosphere. Drip tip does not extend beyond joint, thereby eliminating a possible source of breakage. For replacement stopcock plugs, see 8224. For stoppers, order 8250-12. **Stopper NOT supplied.**

Capacity, mL	24/40 Joints	Plug Bore, mm	Qty.	Order Code	Each
125	24/40	2	1	7285-35	242.32
250	24/40	2	1	7285-37	256.12
500	24/40	4	1	7285-39	276.72

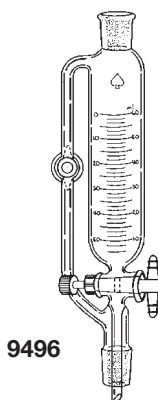


7286
9495-22

7286/9495 FUNNEL *Graduated, Pressure Equalizing, 1:5 PTFE Plug* ♠

Cylindrical with 24/40 joint at top and bottom and drip stem. Stopcock on equalizing arm permits filling funnel without having to open the system to atmosphere. For replacement stopcock plugs, see 8224. For stoppers, order 8250-12 or 8255-10. **Stopper NOT supplied.**

Capacity, mL	24/40 Joints	Plug Bore, mm	Qty.	Order Code	Each
60	14/20	2	1	9495-22	268.57
125	24/40	2	1	7286-08	267.68
250	24/40	2	1	7286-10	298.10
500	24/40	4	1	7286-12	321.78
1000	24/40	4	1	7286-14	380.31



9496

9496 FUNNEL *Pressure Equalizing, Graduated, with 1:5 PTFE Metering Valve* ♠

Similar to 9495, except lower stopcock is solid 1:5 PTFE metering valve, side arm plug is regular 1:5 solid PTFE. For replacement plugs, see 8232 or 8224. For stoppers, see 9543.

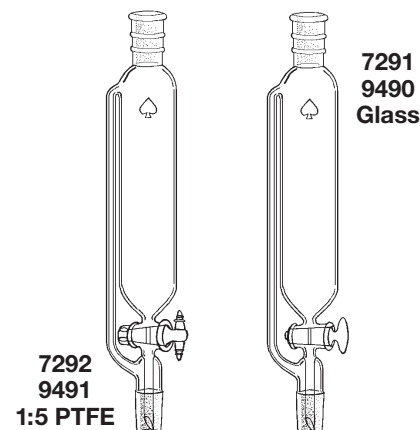
Capacity, mL	14/20 Joints	Plug Bore, mm	Qty.	Order Code	Each
60	14/20	2	1	9496-15	294.84

Need a heated addition funnel? See our Instatherm listing on page <?> of this catalog.

7291/7292/9490/9491 FUNNEL *Pressure Equalizing* ♦

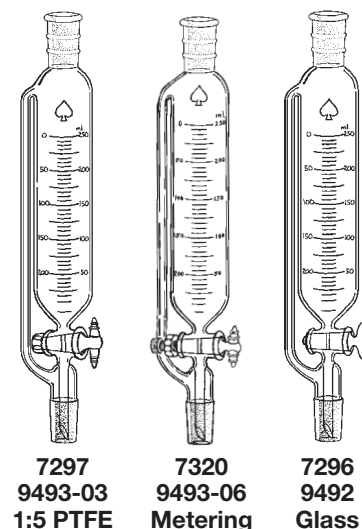
Cylindrical with K joint top and bottom and drip stem. Drip stem does not extend beyond joint, thereby eliminating possible source of breakage. Stopcock available with glass plug or 1:5 PTFE plug. For replacement plugs, see 8224 or 8223. For stoppers, order 8250-12 or 8255-10. **Stoppers NOT supplied.**

Capacity, mL	Plug Bore, mm	K Joints	Qty.	1:5 PTFE Plug		Glass Plug	
				Order Code	Each	Order Code	Each
10	2	14/20	1	9491-03	149.83	9490-02	135.82
25	2	14/20	1	9491-05	149.83	9490-04	135.82
30	2	14/20	1	9491-06	163.34	—	—
50	2	14/20	1	9491-07	149.83	9490-06	138.08
60	2	14/20	1	9491-15	164.33	9490-10	138.08
125	2	24/40	1	7292-30	189.76	7291-08	177.35
250	2	24/40	1	7292-32	215.11	7291-10	181.32
500	4	24/40	1	7292-34	226.90	7291-12	216.58
1000	4	24/40	1	7292-36	264.34	7291-14	242.94


7296/7297/7320/9492/9493 FUNNEL
Pressure Equalizing, Graduated ♦

Cylindrical with K joint top and bottom, drip stem, pressure equalizing arm and double scale graduations, calibrated from stopcock. Drip stem does not extend beyond joint, thereby eliminating possible source of breakage. Stopcock available with glass plug, 1:5 PTFE plug or PTFE metering plug. For replacement stopcock plugs, see 8224, 8232 or 8223. For stoppers, order 8250-12 or 8255-10. **Stoppers NOT supplied.**

Capacity, mL	Plug Bore, mm	K Joints	Qty.	1:5 PTFE		Metering Valve		Glass Plug	
				Order Code	Each	Order Code	Each	Order Code	Each
10	2	14/20	1	9493-03	195.04	9493-06	222.43	9492-02	177.68
25	2	14/20	1	9493-05	195.04	9493-08	222.43	9492-04	177.68
50	2	14/20	1	9493-07	199.25	9493-10	226.16	9492-06	180.50
60	2	14/20	1	9493-15	205.67	9493-14	226.16	9492-10	180.50
125	2	24/40	1	7297-31	226.38	7320-08	236.33	7296-50	208.13
250	2	24/40	1	7297-33	259.24	—	—	7296-52	236.65
250	4	24/40	1	—	—	7320-10	266.88	—	—
500	4	24/40	1	7297-35	283.87	7320-12	290.66	7296-54	266.94
1000	4	24/40	1	7297-37	342.30	7320-14	335.35	7296-56	316.91
2000	4	29/42	1	7297-39	384.18	7320-17	376.14	7296-58	343.79

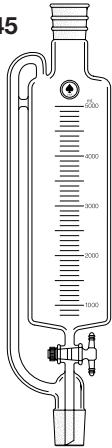

7278 FUNNEL *Addition, Separatory, Jacketed* ♦

Graduated addition funnels like 7268 series, except with outside jacket for cooling or heating. Jacket extends from just below shoulder of vessel down to the bottom tube just above the bottom stopcock. Stopcock is 2 or 4mm bore PTFE. Bottom drip tube extends to the bottom edge of the lower, inner standard taper, joint. Top outer stopcock size matches the bottom joint size. Side hose connections are size D for 3/8-inch (9.5mm) ID tubing.

Capacity, mL	K Joints	Qty.	Order Code	Each
500	24/40	1	7278-07	395.41
500	29/42	1	7278-11	395.41
1000	24/40	1	7278-15	475.81
1000	29/42	1	7278-17	475.81
1000	29/32	1	7278-19	475.81
2000	29/42	1	7278-23	517.08
2000	29/32	1	7278-25	517.08



7297-45



7297 FUNNEL *Pressure Equalizing, Graduated, Pilot Plant* ★

Cylindrical, pilot plant size, 5 liter capacity funnel. With F 45/50 joint top and bottom, drip stem, pressure equalizing arm and single scale graduations in 100mL subdivisions. Drip stem does not extend beyond male joint, thereby eliminating possible source of breakage. Stopcock is 8mm bore PTFE plug. Body height is approximately 350mm, O.D. is 152mm.

Capacity, mL	Qty.	Order Code	Each
5000	1	7297-45	864.37



7298
9493-40

7298/9493 FUNNEL *Pressure Equalizing, Graduated, with PTFE Needle Valve Stopcock* ♠

Threaded stopcock with PTFE plug permits smooth needle valve adjustment down to 0.1mL/min. flow rate. Double PTFE ring seals prevent exposure of backup o-ring to corrosive liquids. Angled position makes manipulation of stopcock easier than conventional style. F 24/40 joints top and bottom, double scale graduations.

Capacity, mL	F Joints	Stopcock Orifice, mm	Qty.	Order Code	Each
60	14/20	0-3	1	9493-40	220.95
125	24/40	0-3	1	7298-05	238.63
250	24/40	0-3	1	7298-10	256.58
500	24/40	0-3	1	7298-15	287.01
500	24/40	0-5	1	7298-20	356.74
1000	24/40	0-5	1	7298-24	335.55
2000	24/40	0-5	1	7298-28	544.75

Replacement Stopcock Plugs:

For Size	Qty.	Order Code	Each
0-3 mm	1	8192-261	38.97
0-5 mm	1	8192-263	53.67

7281



7281 FUNNEL *Addition, Pressure Equalizing, Jacketed* ★

Jacketed version of 7297 series addition funnels. Jacket runs from shoulder at top of vessel to just above the PTFE stopcock with size D hose connections for 3/8-in ID tubing. Equalizing side arm runs from top of vessel to just below the stopcock. Graduations are both ascending and descending volume. Top and bottom standard taper joints are the same size. Bottom drip tip extends to the edge of the bottom inner joint. Top outer joint is reinforced. PTFE stopcock plug is 4MM bore.

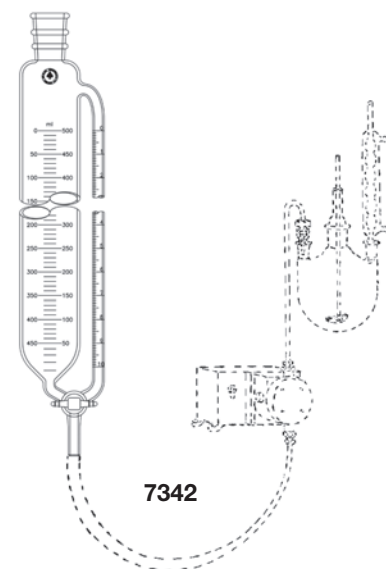
Capacity, mL	F Joints	Qty.	Order Code	Each
500	24/40	1	7281-08	433.44
500	29/42	1	7281-12	433.44
1000	24/40	1	7281-14	498.62
1000	29/42	1	7281-16	498.62
1000	29/32	1	7281-18	498.62
2000	29/42	1	7281-22	644.18
2000	29/32	1	7281-24	644.18

7342 FUNNEL-RESERVOIR *Rate Measuring with PTFE Plug,
 120° Bore Stopcock ★*

Cylindrical, graduated reservoir permits determination of volume added at any time during pumping cycle. By stopcock manipulation, material may be pumped from graduated (10mL in 0.1mL) side tube only. This permits obtaining accurate pumping rate over short periods of time. Top joint is $\text{N} 24/40$ outer. Outside diameter of bottom outlet is 9.5mm (3/8-inch) tubing which fits Swagelok.

Tubing approximately 9.5mm in diameter may be used to connect reservoir outlet to pump. Pump outlet fitting may also be connected via same type tubing to 9.5mm glass tubing then to reactor by using Ace-Thred adapter 5030 with #11 thread.

Capacity, mL	Subdivision, mL	Plug Bore, mm	Qty.	Order Code	Each
250	5	2	1	7342-12	365.14
500	5	2	1	7342-14	388.92
1000	10	4	1	7342-16	394.64
2000	20	4	1	7342-18	685.78



ACE Scientific Glass Repair Service

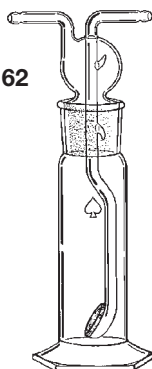
www.aceglass.com

ACE Custom Glass Design Service

www.aceglass.com

1-800-223-4524

7162

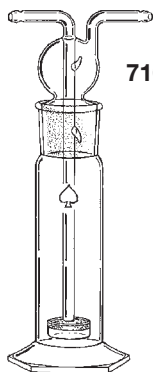
**7162 BOTTLE** Gas Washing ♠

Large disc size provides greater capacity. 125mL size has a 25mm fritted disc. The 250mL and 500mL sizes are fitted with a 30mm disc. Joints are K 40/35. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

Capacity, mL		Qty.				Complete
			Por. A Order Code	Por. B Order Code	Por. C Order Code	
125	1		7162-02	7162-04	7162-06	226.05
250	1		7162-12	7162-14	7162-16	243.22
500	1		7162-22	7162-24	7162-26	266.39

Capacity, mL		Qty.	Bottle Only		Stopper Only		
			Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code
125	1		7162-50	86.55	7162-60	7162-62	7162-64
250	1		7162-52	97.17	7162-70	7162-72	7162-74
500	1		7162-54	120.34	7162-80	7162-82	7162-84

7163

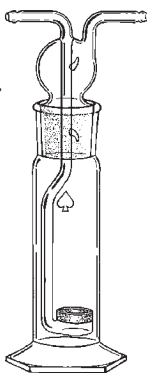
**7163 BOTTLE** Gas Washing ♠

With 25mm fritted disc diameter. K 40/35 joints for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

Capacity, mL		Qty.				Complete
			Por. A Order Code	Por. B Order Code	Por. C Order Code	
125	1		7163-02	7163-04	7163-06	233.22
250	1		7163-12	7163-14	7163-16	247.63
500	1		7163-22	7163-24	7163-26	270.80

Capacity, mL		Qty.	Bottle Only		Stopper Only		
			Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code
125	1		7162-50	86.55	7163-60	7163-62	7163-64
250	1		7162-52	97.17	7163-70	7163-72	7163-74
500	1		7162-54	120.34	7163-80	7163-82	7163-84

7164

**7164 BOTTLE** Gas Washing ♠

With 25mm fritted disc diameter. K 40/35 joints for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.

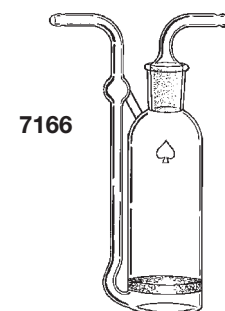
Capacity, mL		Qty.				Complete
			Por. A Order Code	Por. B Order Code	Por. C Order Code	
125	1		7164-02	7164-04	7164-06	212.42
250	1		7164-12	7164-14	7164-16	225.95
500	1		7164-22	7164-24	7164-26	249.12

Capacity, mL		Qty.	Bottle Only		Stopper Only		
			Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code
125	1		7162-50	86.55	7164-60	7164-62	7164-64
250	1		7162-52	97.17	7164-70	7164-72	7164-74
500	1		7162-54	120.34	7164-80	7164-82	7164-84

For springs, see 8030 on page 315.

7166 BOTTLE Gas Washing ♠

With fritted disc. Joint is ₧ 29/42 for all sizes. All porosities of a given size are priced the same. Inlet/outlet arms are 8mm O.D.



Complete			Por. A Order Code	Por. B Order Code	Por. C Order Code	Complete
Capacity, mL	Disc Diameter, mm	Qty.				
250	50	1	7166-12	7166-14	7166-16	269.80
500	75	1	7166-22	7166-24	7166-26	364.56

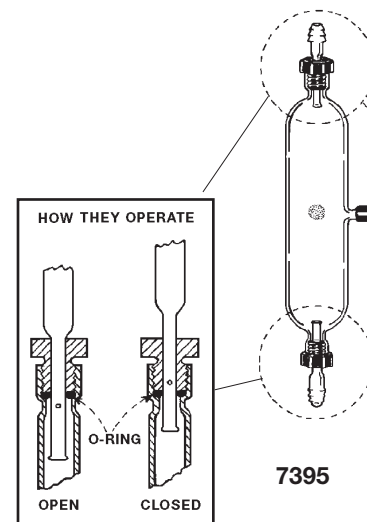
		Stopper Only		Bottle Only			
Capacity, mL	Qty.	Order Code	Each	Por. A Order Code	Por. B Order Code	Por. C Order Code	Bottle Only
250	1	7166-40	30.54	7166-60	7166-62	7166-64	231.05
500	1	7166-40	30.54	7166-70	7166-72	7166-74	323.17

7395 GAS COLLECTING BULB Ace-Thred ♠

Designed with #7 Ace-Thred end valves that insure tight fit without grease. No stopcock plugs to “pop out.” Nylon bushing tightens into the internally threaded glass to form an o-ring compression seal.

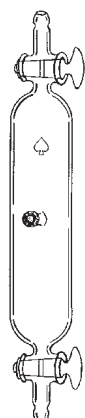
Operation: With bushings at fingertip tightness, push plungers into bulb until flow holes are inside o-rings (enlarged end of plunger acts as automatic stop). Valves are now OPEN and ready for flush sampling. When sampling is complete and with bushing still at finger tip tightness, pull plungers out so flow holes are outside o-rings. Valves are now CLOSED. Bushings can then be tightened more for handling until ready to analyze.

Note: A bulge is built on the small end of the plunger to help guard against complete pullout. Each bulb has a side syringe sampling port, with two bushings, two FETFE o-rings and one septum. Plungers are supplied with hose connections. Special bulb capacities and plungers can be made to order. Complete item consists of bulb with two bushings, two FETFE o-rings, one septum and two plungers. Use with 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 5 for more detailed hose connection information.



		Bulb		Hose Connection Plungers		Complete	
Capacity, mL	Qty.	Order Code	Each	Order Code	Each	Order Code	Each
10	1	7395-04	56.83	7395-50	22.00	7395-40	100.83
250	1	7395-18	78.71	7395-50	22.00	7395-44	122.71
1000	1	7395-30	102.67	7395-50	22.00	7395-48	146.67
			Qty.	Order Code	Each		
		Extra Bushings	1	5029-10	2.85		
		Extra Septa	12	9096-33	15.50		
		Extra o-rings	12	7855-704	14.09		

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning, Kimble & ChemGlass Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	Filtration and extraction



7401-18

7401 GAS COLLECTING TUBE ♠

Standard collecting tube with glass stopcocks on each end and capillary tubing for connecting to rubber tubing and a side syringe sampling port with septum. For replacement stopcock plugs, see 8223. For replacement septum, order 9096-33.

Capacity, mL	Stopcock No.	Qty.	Order Code	Each
125	2	1	7401-18	156.94
250	3	1	7401-20	185.85
500	3	1	7401-22	218.28

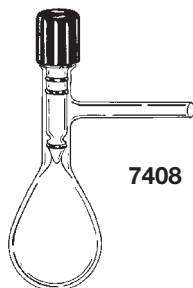
7401-50



7401 GAS COLLECTING TUBE with 1:5 PTFE Plug and Sampling Port ♠

Standard collecting tube supplied with 1:5 taper PTFE stopcock plugs in place of glass plugs on each end and a side syringe sampling port with septum. For replacement stopcock plug, see 8224-08. For replacement septum, order 9096-33.

Capacity, mL	Stopcock No.	Qty.	Order Code	Each
250	3	1	7401-50	207.01

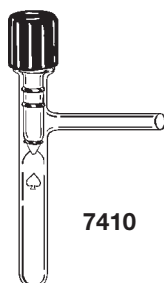


7408

7408 EQUILIBRATION FLASK ♠

Designed by Dr. H.R. Krouse, University of Calgary, for use in H_2O^{18}/H_2O^{16} determination. Unique design eliminates the use of grease or breakseals in CO_2 recovery. Water samples are introduced by pipet into bulb by removing PTFE plug. After reinstating plug, degassing of water and CO_2 is transferred to sample tube 7410. Unit consists of PTFE plug with FETFE o-ring and glass vessel with 25mL bulb at bottom.

Qty.	Order Code	Each
1	7408-10	188.86



7410

7410 SAMPLE TUBE ♠

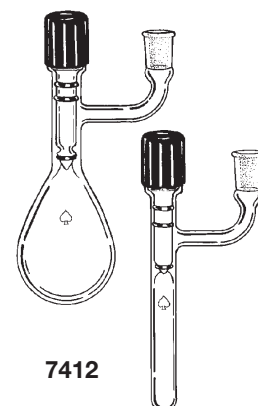
Designed by Dr. H.R. Krouse, University of Calgary, for use with 7408 in H_2O^{18}/H_2O^{16} determinations. CO_2 from the equilibration flask is transferred to the sample tube for isotopic analysis. Unit consists of PTFE plug with FETFE o-ring and glass vessel with 5mL tube at bottom.

Qty.	Order Code	Each
1	7410-10	169.66

7412 SAMPLE FLASK with F Joint \spadesuit

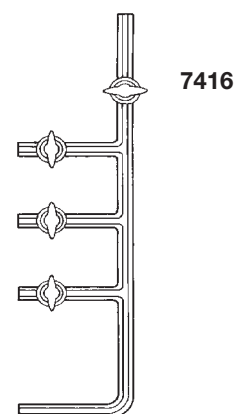
Similar in design to 7408 and 7410 except with F joint on side arm in the vertical position. 5mL size is tube style, 25mL size is bulb style.

Capacity, mL	Side F Joint	Qty.	Order Code	Each
5	14/20	1	7412-03	194.05
25	14/20	1	7412-07	215.70


7412
7416 GAS MANIFOLD \spadesuit

For portable gas analysis apparatus. Three or four straight 2mm bore glass stopcocks and one three-way stopcock with back port, fabricated on capillary tubing. (We can fabricate special gas manifolds of all kinds — contact ACE for quotation.)

No. Straight Bore Stopcocks	Qty.	Order Code	Each
3	1	7416-10	353.16
4	1	7416-14	409.93

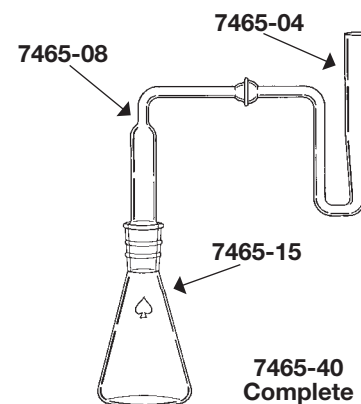

7416

Also see the Vacuum section for complete manifold listing.

7465 ARSINE GENERATOR Guthzeit \spadesuit

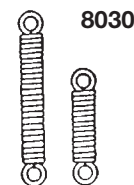
Designed for arsenic analysis by the diethylthiocarbamate colorimetric method. Meets APHA Standard 104A, ACS/USP, and EPA Specifications. Fabricated from borosilicate glass for grease free operation. Joint on 125mL flask is F 24/40, polished. Spherical joint between absorber and scrubber is F 12/2. Complete item consists of absorber, scrubber, and Erlenmeyer flask. Joint clamp sold separately. See 7668-12 or 7669-03.

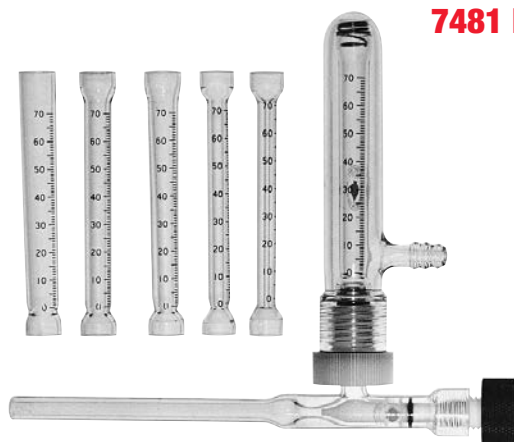
	Qty.	Order Code	Each		Qty.	Order Code	Each
Arsine Absorber	1	7465-04	98.89	Flask, 125mL, F 24/40	1	7465-15	60.77
Arsine Scrubber	1	7465-08	51.36		Complete	1	7465-40


7465-40 Complete
8030 SPRINGS Stainless Steel \star

For connecting interchangeable joints, Warburg flasks, washing bottles and other apparatus where glass hooks are provided. Supplied 12 per shelf-pack, or in assortment pack* containing 12 of each size (144 total).

Coil Length, cm (In.)	Qty.	Order Code	Per Shelf Pack
1.3 (1/2)	12	8030-02	25.11
1.0 (3/4)	12	8030-04	25.10
2.5 (1)	12	8030-08	33.62
3.2(1-1/4)	12	8030-12	26.02
3.8 (1-1/2)	12	8030-16	37.49
4.1 (1-3/4)	12	8030-20	45.33
5.1 (2)	12	8030-24	45.29
Assortment Pack*	144	8030-30	237.96


8030



7481

7481 ROTAMETER *Needle Valve, Compact, Ace-Thred*

All working parts and indicia are visible, meter readings are unobstructed; the outlet swivels 360°. By inverting the metering tubes, the outlet can be changed to inlet. This compact needle valve rotameter is used to regulate and measure flows conveniently. Pressure tight to 2Kg/cm² or more (air).

Flow rates from 5 to 50,000mL/min. air; or 0.1 to 500mL/min. water using six interchangeable tubes with fused-on 70mm scales (see table 1). Each tube is furnished with a 316 stainless steel and Pyrex glass ball float, except where noted, average calibration curves ±5% of flow; one set of correction curves for temperature, pressure and specific gravity.

Exposed surfaces within the system are glass, nylon 316 stainless steel (float ball and spring) and FETFE (silicone and ethylene-propylene rubber o-rings also available). Nylon is suitable for use from pH 3 to 14, unaffected by most ordinary solvents and chemicals except oxidizing acids and amines.

The components are readily disassembled for cleaning or interchanging metering tubes merely by unscrewing the threaded metering tube cap, and/or the needle plug. Supplied in plastic case convenient for storage.

	Qty.	Order Code	Each
Stopcock Body	1	7481-04	★ 62.53
Stopcock Plug	1	8192-261	♣ 38.97
Threaded Cap	1	7481-08	★ 43.27
Nylon Coupling	1	7481-10	★ 36.35
Rotameter tubes, complete with necessary floats:			
#31	1	7481-15	★ 48.68
#32	1	7481-17	★ 55.57
#33	1	7481-19	★ 55.03
#34	1	7481-21	★ 28.99
#35	1	7481-23	★ 56.02
#36	1	7481-25	★ 45.99
Tension Spring	1	7481-30	★ 2.76
Set of calibration curves	1	7481-32	★ 32.28
Complete	1	7481-40	★ 506.44
Replacement O-Ring Sets:			
FETFE	1	7481-46	★ 12.48
Silicone	1	7481-47	★ 15.03
Ethylene-Propylene	1	7481-48	★ 12.89

Table 1

Meter Tube No.	Float	Flow Range mL/min.	
		Air Flow	Water Flow
31	Stainless Steel Glass	5.0-45 None	0.065-0.65 —
32	Stainless Steel Glass	120-1200 48-475	03.0-30 0.5-6.0
33	Stainless Steel Glass	475-5700 240-2800	10-180 5-60
34	Stainless Steel Glass	950-17,000 None	50-500 —
35	Stainless Steel Glass	4.8-50L/min. 2.5-28L/min.	— —
36 Wide Range	Stainless Steel Glass	None 0.24-14.3 L/min.	— 6.5-300

6478 MANTLE *Fabric/Cloth*

For use with 6476 and 6511 reaction flasks. Upper temperature limit, 450°C. Must be operated through a temperature controller. CSA approved. Detachable 4-foot cord and locking connector.

For Flask Size, mL	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500	4.63/117.4 x 2.5/63.5	250w-115v	1	6478-05	362.14
1000	4.63/117.4 x 5.63/142.8	300w-115v	1	6478-10	338.34
1500	4.63/117.4 x 6.63/168.2	380w-115v	1	6478-15	362.31
2000	4.63/117.4 x 8.89/225.4	450w-115v	1	6478-20	392.97
3000	4.63/117.4 x 10/254	600w-115v	1	6478-25	400.28



6478-05

6478 MANTLE *Aluminum Housing, For Cylindrical Flasks*

Cylindrical type for use with 6476, 6477, and 6511 reaction flasks. With hard aluminum housing. CSA approved, 115 volt complete with 4-foot detachable cord with locking connector. Temperature range is Ambient +10°C to 450°C. Must be operated through a temperature controller. 230V versions available.

For Flask Size, mL	Maximum Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500	4.63/117.4	4.63/117.4 x 2.5/63.5	250w-115v	1	6478-45	332.80
1000	4.63/117.4	4.63/117.4 x 5.63/142.8	300w-115v	1	6478-47	347.36
1500	4.63/117.4	4.63/117.4 x 6.63/168.2	380w-115v	1	6478-49	360.88
2000	4.63/117.4	4.63/117.4 x 8.89/225.4	450w-115v	1	6478-51	370.24
3000	4.63/117.4	4.63/117.4 x 10/254	600w-115v	1	6478-53	401.15



6478

6494 FLASK HEATER *Fabric/Cloth*

Specially designed glass/fiber cloth mantle with bottom opening and zipper for use with 6491, 6492, 6518, and 6522 flasks to allow valve to protrude below heater. Upper temperature limit, 450°C. Must be operated through a temperature controller. CSA approved. Complete with 4-foot cord and locking connector.

For Flask Size, mL	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
1000	4.625/117.4 x 5.625/142.8	300w-115v	1	6494-10	432.46
1500	4.625/117.4 x 6.625/168.2	380w-115v	1	6494-15	456.48
2000	4.625/117.4 x 8.875/225.4	450w-115v	1	6494-20	484.08
3000	4.625/117.4 x 10/254	600w-115v	1	6494-25	515.67



6494

12031 MANTLE *Spherical*

Fabric mantle covers both top and bottom of 1-, 2-, or 3-neck flasks. Temperature range is Ambient +10°C to 450°C. The circumferential zipper holds the halves snugly together to prevent heat loss, and the side split in the top section allows for easy flask removal. CSA certified. Each half has a detachable four-foot cord and interlocking connector. **230v CE-approved versions are available.**

	For Flask Size, mL	Distribution		Qty.	Order Code	Each
		Lower Half	Upper Half			
Glass Fabric	50	60w-115v	None	1	12031-05	306.80
	100	80w-115v	None	1	12031-07	309.92
	200	100w-115v	None	1	12031-11	312.00
	250	180w-115v	None	1	12031-13	319.28
	500	270w-115v	None	1	12031-17	365.04
Silicone Impregnated Glass Fabric	1000	380w-115v	140w-115v	1	12031-19	611.52
	2000	500w-115v	200w-115v	1	12031-21	640.64
	3000	500w-115v	200w-115v	1	12031-23	672.88
	5000	600w-115v	300w-115v	1	12031-25	798.72



12031

12035 MANTLE *Hemispherical*

Fabric mantle, adaptable to unusual shapes and sizes. Temperature to 450°C. Detachable 4-foot cord, 2-wire cord and locking connector. CSA certified. Requires 12095 or 12096 supports. Must be used with a temperature controller.



12035

	For Flask Capacity mL	Wattage	Qty.	Order Code	Each
Glass Fabric ▶	5	12w- 30v	1	12035-01	142.48
	10	20w- 30v	1	12035-02	142.48
	25	30w- 60v	1	12035-03	153.92
	50	60w-115v	1	12035-05	146.97
	100	80w-115v	1	12035-07	163.53
	125	80w-115v	1	12035-09	164.57
	200	100w-115v	1	12035-11	166.64
	250	180w-115v	1	12035-13	180.09
	300	180w-115v	1	12035-15	180.09
	500	270w-115v	1	12035-17	201.83
Silicone Impregnated Glass Fabric ▶	1000	380w-115v	1	12035-19	224.48
	2000	500w-115v	1	12035-21	244.98
	3000	500w-115v	1	12035-23	272.69
	5000	600w-115v	1	12035-25	332.10
	12000	2-650w-115v	1	12035-27	680.00

12036 MANTLES *Fabric/Cloth*

For use with 6504 or 6511 reaction flasks. Upper temperature limit, 450°C. Four-foot cord and locking connector. Must be operated through a temperature controller. CSA approved.



12036

For Flask Size, mL	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500	3.75/95.2 x 4.5/114.3	270w-115v	1	12036-17	347.36
1000	4.25/107.9 x 5.2/132	335w-115v	1	12036-19	364.00
2000	5.5/139.7 x 6.0/152.3	470w-115v	1	12036-21	375.44
3000	5.5/139.7 x 9.0/228.6	550w-115v	1	12036-23	402.48
4000	5.5/139.7 x 11.0/279.4	750w-115v	1	12036-24	408.72

12037 MANTLE

For Griffin-type beakers. With separable 4-foot, 2-wire cord and locking connector. CSA certified.



12037

For Beaker Capacity, mL					For Beaker Capacity, mL				
Wattage	Qty.	Order Code	Each	Wattage	Qty.	Order Code	Each		
40w-115v	1	12037-04	218.40	600	325w-115v	1	12037-14	283.92	
100w-115v	1	12037-06	229.84	800	350w-115v	1	12037-16	313.04	
150w-115v	1	12037-08	236.08	1000	430w-115v	1	12037-18	332.80	
250w-115v	1	12037-10	242.32	2000	550w-115v	1	12037-20	343.20	
400w-115v	1	12037-12	251.68	3000	630w-115v	1	12037-22	361.92	
				4000	710w-115v	1	12037-24	383.76	

For large-size mantles, contact Ace for a copy of our reactor catalog.





12038 MANTLE

For Squibb type separatory funnels. With separable 4-foot, 2-wire cord and locking connector. Large sizes of one liter and up have viewing slots, as shown. CSA certified.

For Funnel Capacity, mL	Wattage	Qty.	Order Code	Each
250	140w-115v	1	12038-04	409.76
500	180w-115v	1	12038-06	438.88
1000	190w-115v	1	12038-08	534.56
2000	280w-115v	1	12038-10	585.52

12043



12043 MANTLE Aluminum Housing

Offers the benefit of grounding through aluminum housing. The heating element is embedded in layers of glass fabric to protect the flask wall from thermal strain, and is thoroughly covered with glass insulation to prevent heat from being radiated outward. Glass fabric affords operating temperatures to 450°C. With detachable 4-foot, 3-wire cord and locking connector. Requires 12094 support. CSA certified. Must be operated through a temperature controller. **230v version is also available for 250mL and larger mantles.**

For Flask Size, mL	Max. Flask		Watts/Volts	Qty.	Order Code	Each
	Dia., in./mm	I.D. x Depth, inches/mm				
1000	5.1/130	5.1/130 x 2.5/65	380w-115v	1	12043-19	306.80
2000	6.6/170	6.6/170 x 3.3/85	500w-115v	1	12043-21	324.48
3000	7.2/183	7.2/184 x 3.6/91.5	500w-115v	1	12043-23	390.00
5000	8.6/220	8.7/222 x 4.3/110	600w-115v	1	12043-25	488.80
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	1	12043-27	905.84
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	1	12043-29	1023.36
50000	17.9/456	18.0/458 x 8.9/228	(3) 1000w-115v	1	12043-31	1689.34
50000 (For Schott)	19.9/506	19.9/506 x 8.9/228	(3) 1000w-115v	1	12043-32	2020.10
72000	20.5/522	20.6/525 x 10.1/258.9	(2) 2000w-230v	1	12043-33	1855.36

12044



12044 MANTLE Aluminum Housing, with Bottom Opening

Same as 12043, above, but with bottom opening to accommodate flasks such as 6450, 6469, 6534, and 6536.

For Flask Size, mL	Max. Flask		Watts/Volts	Bottom Opening		Qty.	Order Code	Each
	Dia., in./mm	I.D. x Depth, inches/mm		Dia., in./mm				
3000	7.2/183	7.2/184 x 3.6/91.5	500w-115v	2.5/63.5		1	12044-24	602.61
5000	8.6/220	8.7/222 x 4.3/110	600w-115v	2.5/63.5		1	12044-26	687.30
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	2.5/63.5		1	12044-28	1145.21
12000	11.5/293	11.5/294 x 5.8/147.6	(2) 650w-115v	5.0/127		1	12044-29	1139.18
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	2.5/63.5		1	12044-30	1266.51
22000	13.6/347	13.7/350 x 6.8/173.5	(2) 770w-115v	5.0/127		1	12044-31	1200.21
50000	17.9/456	18.0/458 x 8.9/228	(3) 1000w-115v	5.0/127		1	12044-34	1799.71
72000	20.5/522	20.6/525 x 10.1/258.9	(2) 2000w-230v	5.0/127		1	12044-37	2012.46

12047 HEATING TOPS

For use with 1-, 2- and 3-neck flasks. Top can be put on flask without disturbing permanently attached equipment. Temperature range is Ambient +10°C to 450°C. For use with 12043, 12045, 12053 and 12058 mantles. With detachable 4-foot, 2-wire cord and locking connector. 115v units are CSA certified. Must be operated through a temperature controller.

For Flask Capacity, mL	Wattage	Qty.	Order Code	Each
250	140w-115v	1	12047-13	201.76
300	140w-115v	1	12047-15	236.08
500	140w-115v	1	12047-17	249.60
1000	140w-115v	1	12047-19	278.72
2000	200w-115v	1	12047-21	288.08
3000	200w-115v	1	12047-23	318.24
5000	300w-115v	1	12047-25	402.48

All 115v units are also available in 230v versions.



12047

12053 MANTLE Aluminum Housing, Solid Bottom, for Spherical Flasks

Solid, aluminum housed, heating mantles can be used on lab bench, stand or floor for smaller sizes. Fit cylindrical and spherical flasks. Temperature range ambient +10°C to 450°C. All have 4-foot detachable cord with interlocking connector. CSA approved. Must be operated through a temperature controller.

For Flask Size, mL	For Flask Type	Maximum Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
50	Spherical	1.8/48	1.9/49 x 0.9/23.9	60w-115v	1	12053-05	223.56
100	Either	2.3/60	2.3/60 x 1.1/30.2	80w-115v	1	12053-07	223.56
250	Either	3.2/83	3.3/84 x 1.6/41.4	180w-115v	1	12053-13	228.74
500	Either	3.9/101	4.0/102 x 2.0/50.8	270w-115v	1	12053-17	262.89
1000	Either	5.1/130	5.1/130 x 2.5/65	380w-115v	1	12053-19	280.49
2000	Either	6.6/170	6.6/170 x 3.3/86	500w-115v	1	12053-21	291.87
3000	Either	7.2/183	7.2/183 x 3.6/91.5	500w-115v	1	12053-23	347.76
5000	Either	8.6/220	8.6/220 x 4.3/109.5	600w-115v	1	12053-25	431.60
6000	Spherical	9.25/235	9.25/235 x 4.7/120.6	700w-115v	1	12053-26	950.93

12053



12058 MANTLE Aluminum Housing, Cylindrical Flasks

Resin and reaction flask mantle mainly used for ACE pressure reactors, but fit many other cylindrical reaction flasks such as 6476, 6511-06 series, 6521, Aluminum housed with solid bottom. The code -03 is for a flask with a flat bottom with rounded corners such as the 6511-24 series. CSA approved. 4-foot detachable cord with locking connector. Temperature range is ambient +10°C to 450°C. Must be operated through a temperature controller.

For Flask Size, mL	Max. Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500 (tall)	2.75/69.9	2.76/70 x 6.25/158.8	280w-115v	1	12058-03	653.37
500 (short)	4.38/111.3	4.5/114.3 x 3.0/76.2	250w-115v	1	12058-07	866.18
3000	6.38/162	6.4/162.6 x 6.0/152.4	600w-115v	1	12058-30	684.43
5000	6.38/162	6.4/162.6 x 10.9/276.9	1000w-115v	1	12058-33	907.08

12058





12058 MANTLES *Aluminum Housing*

Resin and reaction flask mantle. Bench top size with small footprint, aluminum housing. **For use with ONLY the following ACE flasks:** 6521-12, 6521-14, 6472-15, 6472-20 and 6472-25. CSA approved, 115 volt. Complete with 4-foot detachable cord with locking connector. Must be operated through a temperature controller.

For Flask Size, mL	Maximum Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500	3.75/95.2	3.75/95.2 x 4.5/114.3	270w-115v	1	12058-08	324.48
1000	4.25/107.9	4.25/107.9 x 5.25/133.3	335w-115v	1	12058-12	338.00
2000	5.5/139.7	5.5/139.7 x 6.0/152.3	470w-115v	1	12058-16	348.40
3000	5.5/139.7	5.5/139.7 x 9.0/228.6	550w-115v	1	12058-22	391.04
4000	5.5/139.7	5.5/139.7 x 11.0/279.4	750w-115v	1	12058-28	426.40



12058 MANTLES *Aluminum Housing, Cylindrical Flasks, Bottom Opening*

Resin and reaction flask mantle mainly used for ACE pressure reactors with a bottom valve or outlet, but fit many other cylindrical reaction flasks such as 6518, 6522, 6521, 6300. The code -44 is for a flask with a flat bottom with rounded corners such as 6437 series. Aluminum housed with bottom opening. CSA approved. 4-foot detachable cord with locking connector. Temperature range is ambient +10°C to 450°C. Must be operated through a temperature controller.

For Flask Size, mL	Max. Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
500 (tall)	2.75/69.9	2.8/70 x 6.25/158.8	280w-115v	1	12058-44	709.71
500 (short)	4.38/111.3	4.4/111.8 x 3.0/76.2	250w-115v	1	12058-47	623.80
1000	4.25/107.9	4.28/109 x 5.25/133.4	335w-115v	1	12058-49	632.61
2000	5.5/139.7	5.7/144.8 x 6.0/152.4	470w-115v	1	12058-51	589.39
3000	6.38/162.1	6.4/162.6 x 6.0/152.4	600w-115v	1	12058-53	787.67
5000	6.38/162.1	6.4/162.6 x 10.8/276.4	1000w-115v	1	12058-55	927.76



12075 MANTLE *Aluminum Housing, For Cylindrical Flasks*

Resin and reaction flask mantle. Bench top size with small footprint. Aluminum housing for 6423, 6436, 6526, 6476, 6477, 9526, 6516-01, 6521-10,-12,-14, 6511-06,-42,-24,-53 ACE flasks. CSA approved, 115 volt complete with 4-foot detachable cord with locking connector. Temperature range is Ambient +10°C to 450°C. Must be operated through a temperature controller. 230V versions available.

For Flask Size, mL	Maximum Flask Dia., in./mm	I.D. x Depth, inches/mm	Watts/Volts	Qty.	Order Code	Each
1000	4.5/114.3	4.5/114.3 x 4.5/114.3	270w-115v	1	12075-08	347.36
2000	4.5/114.3	4.5/114.3 x 7.5/190.5	400w-115v	1	12075-10	361.92
3000	4.5/114.3	4.5/114.3 x 11/279.4	600w-115v	1	12075-12	401.44

12062 CAL-CORD *High Temperature Heating Cord*

Glas-Col Cal-Cord is designed specially for high-temperature laboratory heating problems. Only 6.4mm in diameter, this wrap-around heater can be installed and removed quickly.

It can be wrapped and unwrapped on tubes as small as 12.7mm without damage. Power supply connections are made with lock plug at one end. All cords are furnished with separable extension cord with two-blade cup. Because of the high temperature capabilities of the Cal-Cord insulation, the cord should be used in dry- or low-moisture areas only.

12062


Medium "Cal-Cord" — 400°C Specifications

Length, meters	Wattage	Qty.	Order Code	Each
0.6 (2 ft)	80w-115v	1	12062-03	92.56
0.9 (3 ft)	120w-115v	1	12062-05	100.88
1.2 (4 ft)	160w-115v	1	12062-07	119.60
1.8 (6 ft)	240w-115v	1	12062-09	133.12
2.4 (8 ft)	340w-115v	1	12062-11	147.28
3.0 (10 ft)	400w-115v	1	12062-13	159.12

Made of glass fabric material.

Super "Cal-Cord" — 600°C Specifications

Length, meters	Wattage	Qty.	Order Code	Each
0.6 (2 ft)	200w-115v	1	12062-32	114.40
1.2 (4 ft)	400w-115v	1	12062-36	146.64
1.8 (6 ft)	500w-115v	1	12062-38	178.18

Made of quartz fabric material.

12063 HEATING TAPES *Lab Type*

Glas-Col heating tapes which allow even short tapes, 0.9m long, to be used on 115v without the need of a reducing voltage transformer. Can be operated directly through a temperature control at normal outlet voltage. Operating temperatures to 249°C. Both power supply connections are made at one end of the tape. All tapes are supplied with separable 1.2m extension cord with two-blade cup.

FET SERIES — 15mm wide (complete with cord and plug)

Length, meters	Wattage	Qty.	Order Code	Each
1.5 (5 ft)	145w-115v	1	12063-02	141.44
1.8 (6 ft)	120w-115v	1	12063-04	147.68
2.1 (7 ft)	105w-115v	1	12063-06	158.08
2.4 (8 ft)	90w-115v	1	12063-08	172.64
2.7 (9 ft)	80w-115v	1	12063-10	180.96
3.0 (10 ft)	300w-230v	1	12063-12	198.64

SET SERIES — 25mm wide (complete with cord and plug)

Length, meters	Wattage	Qty.	Order Code	Each
0.9 (3 ft)	150w-115v	1	12063-42	142.48
1.2 (4 ft)	120w-115v	1	12063-44	149.76
1.5 (5 ft)	100w-115v	1	12063-46	171.60
1.8 (6 ft)	300w-230v	1	12063-48	189.28


12063



12064

12064 HEATING TAPES¹ Ribbon-Type Elements

Glas-Col heating tapes use two-ribbon-type heating elements running lengthwise in the tape and encased in durable glass braid, then impregnated and covered with tough silicone rubber. This construction method easily passes a 1000-volt test for electrical insulation. Silicone rubber is also used to insulate the stranded terminal leads at one end for waterproof fittings at both ends of the tape. The only limitation is the upper temperature limit of 249°C for the silicone covering.

6.4mm (1/4-inch) wide heating tapes
(standard lengths complete w/cord & plug)

Length, meters	Wattage*	Qty.	Order Code	Each
1.2 (4 ft)	60w- 45v	1	12064-02	100.88
1.8 (6 ft)	90w- 70v	1	12064-04	109.20
2.4 (8 ft)	120w- 95v	1	12064-06	121.68
3.0 (10 ft)	150w-120v	1	12064-08	125.84

12.7mm (1/2-inch) wide heating tapes
(standard lengths complete w/cord & plug)

Length, meters	Wattage*	Qty.	Order Code	Each
1.2 (4 ft)	140w- 45v	1	12064-23	104.00
1.8 (6 ft)	210w- 70v	1	12064-25	120.64
2.4 (8 ft)	280w- 95v	1	12064-27	136.24
3.0 (10 ft)	340w-115v	1	12064-29	154.96
6.1 (20 ft)	680w-230v	1	12064-31	243.36



6.4 mm double element heating tape wraps easily around smallest objects — it's flexible and strong.

Ohms per meter of tape, 29.8 (9.08/foot)

Ohms per meter of tape, 12.4 (3.77/foot)

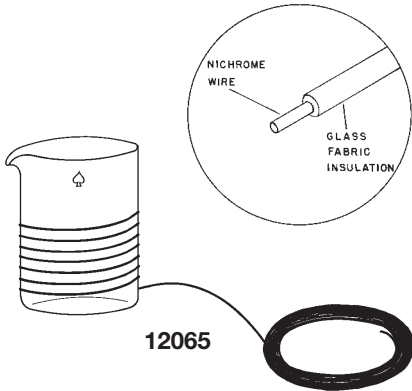
25.4mm (1-inch) wide heating tapes
(standard lengths complete with cord and plug)

Length, meters	Wattage*	Qty.	Order Code	Each
3.0 (10 ft)	700w-115v	1	12064-42	216.32
6.1 (20 ft)	1400w-230v	1	12064-44	354.05

Ohms per meter of tape, 6.2 (1.88/ft.)

*These limits are arbitrary since the heating element can be used at much higher wattage and voltage provided the silicone rubber covering does not exceed 249°C.

NOTE: Temperature level and heat input control on heating tapes should be effected with a Powerstat.



12065

12065 HEATER ELEMENT WIRE Electrically Insulated

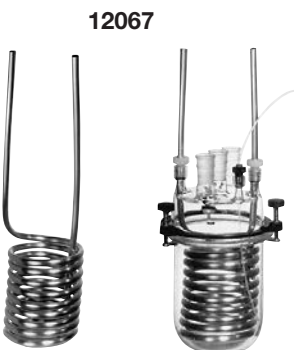
The do-it-yourself heater that can be wrapped on metal or glass sampling probes, columns, or vessels of any size that need heat. This is the same wire used on our Nichrome-wrapped probes, approximately five feet per foot of glass. This electrically insulated 25 gauge Nichrome wire can be wound closed- or open-spaced. Maximum temperature is 594°C (1100°F). Including the glass-fabric insulation, the wire is approximately 1mm in diameter and has a resistivity of 2.1ohms/foot at 20°C; maximum ampere rating in open air at 594°C is 3.7 amps. The amperes are derated when enclosed and tightly wound; typical for 316°C (600°) operation is 2.5 amps. Electrical insulation voltage is 1000 volts. Note: Proper contact, welding or mechanical, must be made when attaching the power source leads. The use of a line voltage controller is recommended to properly power the heater element.

Qty.	Order Code	Per 50 Feet
50 ft.	12065-25	90.79

12067 HEAT EXCHANGER TUBING Fluorocarbon Covered

Copper tubing encapsulated with fluorocarbon for use as a make-your-own heat exchanger coil (Shipped in two three-foot diameter coils for forming to desired shape, at a 50-foot maximum continuous run. ACE can supply coiled tubing to suit your needs. For a quotation, please email or fax us specifications.). Can be used in corrosive solutions or strong solvents like ammonia, fuming sulfuric acid, potassium hydroxide concentrate, sodium sulfate, etc. Eliminates need for costly metals like Tantalum. Highly temperature resistant, electrically insulated and will not stain, corrode or contaminate. Does not support bacteria, and anti-stick property of fluorocarbon rinses easily.

Easy to custom make your own exchanger for heat or cooling by wrapping around simple mandrel or forming to desired size. Tubing ends can be connected to almost any compression type fitting.



12067

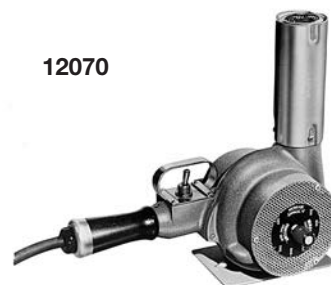
Nominal Copper O.D., in.	Fluoro-Carbon Wall (In.)	Copper Wall (In.)	Approx. Min. Bend Diameter, in.	Approx. Sq. Ft. of Surface Per Linear Ft.	Qty.	Order Code	Per Foot
1/4	.015	.030	2	.0733	One 3 ft. coil	12067-15	20.62
3/8	.015	.030	4	.106	One 3 ft. coil	12067-20	25.96
1/2	.020	.030	8	.141	One 3 ft. coil	12067-25	32.16

12070 HEAT GUN *Varitemp*®

Heavy-duty, flameless heat gun featuring an exclusive locking electronic temperature control that enables the user to dial in just the right temperature for the job. Control locks in place so same setting can be used over and over. Approximate temperature range at nozzle, ambient to 400°C. Has 13/16-inch nozzle with a powerful turbo fan controlled by a three-way switch, "Off," "Cold" or "Hot" with guard. Reinforced ceramic heating element with double-jacketed heater housing for protection. Rugged, die-cast aluminum housing with externally replaceable carbon brushes. Supplied with eight-foot neoprene cord with three-wire ground plug.

Volts	Amps	Approx. Air Vol., CFM	Approx. Air Vel., FPM	Shipping Wt., lbs.	Qty.	Order Code	Each
120	14	9	1300	6	1	12070-10	253.75

®Varitemp, TM Master Appliance Corp.



12070

12072 DRYER *Heat Gun, Mite*®

Economical, compact, flameless heat gun for heat shrinkage as well as countless other industrial applications. Input is 120v, 5.4 amps. Supplied with 2.1m, three-conductor grounded cord. Unit consists of heat gun with silver nozzle and deflector adapter.

Qty.	Order Code	Each
1	12072-20	129.72

®Mite, TM Master Appliance Corp.



12072

12073 DRYER *Heat Gun*

Heavy-duty type, flameless heat gun. Compact gun-type housing is of die-cast aluminum with 30mm diameter, screen-capped nozzle. Adjustable air-intake shutter gives exact degree of heat desired. Three-way switch provides the option of hot, cold or off at a flick of a finger. With 2.4m, three-wire molded plug neoprene cord and adjustable "slide-on" base.

Temp. °C	Master No.	Voltage	Amps	Order Code	Each
93-149	HG-201A	120	5	12073-04	186.06
149-260	HG-301A	120	12	12073-08	186.75
260-399	HG-501A	120	14	12073-12	186.06
399-538	HG-751B	120	20	12073-16	186.41



12073

12080 POWERSTAT® 0-140 Volts

Variable transformer for all heating mantles up to and including 50 liters. Suitable for standard resin reaction flask. Input 120 volts, 50/60 cycles, single phase. Output voltage range 0-140 volts. Maximum output current 10 amperes, maximum 1.4 Kva rating. Fitted with NEMA standard three-blade plug and receptacle. Case is grounded.

Qty.	Order Code	Each
1	12080-10	442.13



12080

11150 POWERSTAT® MOUNTING BRACKET ★

Mounting bracket permits easy and convenient mounting of 12080 or 12081 Powerstats on standard laboratory racks or stands having up to 16mm O.D. rods. Made of strong, rust and corrosion resistant aluminum alloys. Bracket is attached to the bottom of the powerstat by two screws and to the rack or stand by a twist of two thumbscrews.

Qty.	Order Code	Each
1	11150-17	27.49



11150



12082/83

12082 POWERSTAT® 0–280 Volts

Variable transformer for 12043 and 12053, 72L mantles; 12051 and 12050, 72L mantles; 12047-33 heating top; 12062-15, -17, -19, -40 heating cords; 12063-12, -48 and 12064-31, -44 heating tapes. Input 240 volts, 50/60 cycles, single phase. Output 0–280 volts, 10 amperes, 2.8 Kva. Fitted with standard NEMA three-blade plug and receptacle.

Qty.	Order Code	Each
1	12082-10	1164.90

12083 POWERSTAT® 0–140 Volts

Same as 12082 except input 120 volts, 50/60 cycles, single phase. Output 0–140 volts, 22 amperes, 3.1 Kva. Fitted with NEMA standard three-blade plug and receptacle.

Qty.	Order Code	Each
1	12083-05	1539.19



12084

12084 POWERSTAT® 0–140 Volts

Variable transformer ideally suited for use in applications requiring a portable source of variable AC voltage up to 1.4KVA capacity. Controls on panel are recessed for eye appeal and protection from accidental bumping. Equipped with grounded NEMA cord-plug assembly, on-off switch, pilot light, output receptacle and fuse. Supplied with slots at rear that accept wall hanger brackets. Measures 9.4 high x 6.5 wide x 6.25 (inches) deep. Input 120 volts, 50/60 cycles. Output 0–140 volts, 10 amps.

Qty.	Order Code	Each
1	12084-20	608.12



12085

12085 VOLTAGE CONTROLLER *Mantle Minder II™*

For controlling all Glas-Col mantles. Time proportioning, 1/16 DIN, automatic control for use with mantles, tapes, cords, small ovens, and other resistive heating loads up to 1800 watts at 120 volts. Features a detachable iron-constantan "J" thermocouple with 6-inch stainless steel probe, lighted ON/OFF power switch with auxiliary indication, load and thermocouple receptacles located on front panel for easy accessibility, and set point dial calibrated in °C in 20 degree increments. Fused to protect small loads. Operates on 120 VAC, 50/60 Hz input. Range 0–750°C. Ambient temperature range 30–130°F. Accuracy ±1.5% of full scale. Supplied with three-wire load receptacle, three-wire line cord with molded plug. Power consumption four watts plus load. Thermocouple included. Measures 8 wide x 6 deep x 3-3/8 (inches) high.

Qty.	Order Code	Each
1	12085-20	591.76



12087

12087 VOLTAGE CONTROLLER 0–120v at 10 Amps, Solid State ★

Variable control from zero output to 95% line voltage. A voltage-limit, rear-mounted center-off switch is used to select a 40v or 120v maximum output with the control knob full on.

With 0–10 ammeter. 5% accuracy. (Since this is a solid state transformerless line voltage controller, it is NOT recommended for heaters rated less than 120 volts.) Warning glow light mounted next to correcting switch which lights when dangerous reversed wiring condition exists. (Flip switch to extinguish light and correct condition.) Easy-access 10 amp fuse type 3 AG (rear mounted). Line voltage pilot light. Standard 1.8 meter heavy duty neoprene three-wire power cord (grounded to case) with NEMA plug. Dimensions: 17.8cm (7 inches) x 10.2cm (4 inches) x 8.9cm (3-1/2 inches). Weight: 794 grams. Input 120 volts, 60 cycles.

Qty.	Order Code	Each
1	12087-10	643.05

DynaBloc

Cylindrical Heating Blocks

ACE DynaBloc anodized aluminum blocks are ideal for heating and mixing solutions in a variety of vials and small round bottom flasks.

ACE DynaBloc heating blocks use a universal base plate (13698), which fits easily on top of any circular-top hotplate stirrers. Simply match the top I.D. to the appropriate base plate.

The **ACE DynaBloc** system is low-cost, and its efficient heating blocks utilize a wide range of standard laboratory glassware. They can be used for stirring and/or heating multiple samples in applications such as digestion, extraction, distillation, and synthesis. The system is easy to set up, allows switching from vials to flasks in seconds, and is also easy to disassemble for cleaning. The configuration of the vial/flask holes allows for optimum heating and mixing in every well.

Use **ACE DynaBloc** heating blocks with your standard labware and hotplates for highly economical and efficient heating/stirring.

13698 DYNABLOC BASE PLATE ★

Anodized aluminum base plate for use with 13698, 13689 and 13696 DynaBloc heads and fits the standard circular 135mm or 145mm diameter stirrer/hotplate top. The base has a hole in the side to accommodate a standard thermocouple sensor to measure the heat at the base.

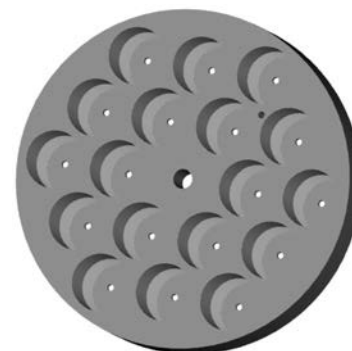
I.D., mm	O.D., mm	Qty.	Order Code	Each
145	164	1	13698-03	104.48
135	164	1	13698-05	104.48



13698 DYNABLOC Cylindrical, for Vials & Tubes ★

Anodized aluminum blocks for use with 13698-05 base plate. Pre-drilled openings for standard-size glass vials and tubes including small dram vials, chromatography vials, scintillation vials, EPA vials, VOC vials, and standard test tubes. The blocks can be separated from the base plate for easy cleaning and handling. All blocks have a predrilled hole to accommodate sensor probe and have another hole to accommodate the T-handle extractor for easy removal of the block, even when hot. Order base plate, block and T-handle separately.

Number of Holes	For Vessel Size	Hole Size, mm	Qty.	Order Code	Each
18	20mL Vial	28 x 27.6	1	13698-12	120.58
18	40mL Vial	28 x 50.0	1	13698-13	120.58
18	10mL Reaction V-Vial® or 25x100mm tubes	26 x 50.0	1	13698-14	133.97
28	4 Dram/16mL Vial	22 x 35.6	1	13698-20	132.64
54	1mL Reaction V-Vial® or 12 x 75mm tubes	13 x 27.6	1	13698-21	133.97
40	16mm O.D. tubes	17 x 50.0	1	13698-30	147.38
28	5mL Reaction V-Vial®	22 x 35.6	1	13698-37	133.97
36	2 Dram/8mL Vial	17 x 27.6	1	13698-38	132.64
52	1 Dram/4mL Vial	15 x 27.6	1	13698-41	132.64
54	0.5 Dram or 1.2mL Chrom. Vial	13 x 27.6	1	13698-49	127.28

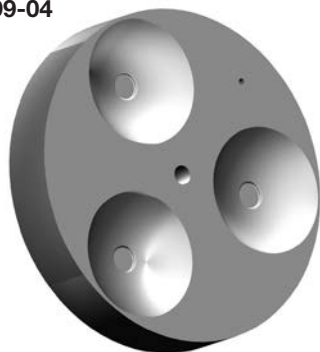


13698-12

DynaBloc

Cylindrical Heating Blocks

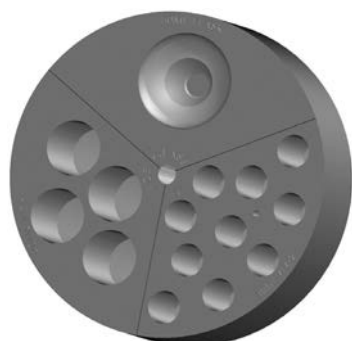
13699-04



13699 DYNABLOC Cylindrical, for Flasks ★

Anodized aluminum blocks are machined to accommodate small round bottom flasks and small Erlenmeyer flasks. The blocks fit the universal base plate, and have one hole to accommodate the extension rods and the T-handle extractor which assists moving the blocks even while hot. The blocks also have a hole for a temperature sensor probe. Short support rod (31cm long) is for supporting flasks in the flask blocks; long (61cm) rod supports condensers and other taller glass apparatus. Clamp devices are necessary to stabilize glassware while in blocks. Order base plate, block, clamp device, and support rod separately.

# of Holes	For Vessel Size	Well Dia., mm	Block Height	Qty.	Order Code	Each
3	125mL Erlenmeyer Flask	69.0	27.6mm	1	13699-03	301.43
3	250 or 300mL Round Bottom Flask	62.2	27.6mm	1	13699-04	301.43
4	100mL Round Bottom Flask	60.3	27.6mm	1	13699-06	267.94
5	50mL Round Bottom Flask	48.5	27.6mm	1	13699-09	267.94



13696-11

13696 DYNABLOC Segmented ★

New heating/mixing blocks with even more versatility. These aluminum blocks have three segments within each block that have different size holes per each segment to accommodate a broad range of a flask or vials at the same time. Chose different size vials, tubes or a flask to run simultaneously. Block fits standard base plate and blocks fit all standard size 135mm diameter round top hotplate/stirrers. Order base plate, block, clamp device, and support rod separately.

# of Holes	For Vessel Size	Block Height	Qty.	Order Code	Each
12	0.5 Dram/2mL Vials	30.8mm	1	13696-03	293.82
12	1 Dram/4mL Vials				
8	2 Dram/8mL Vials				
12	1 Dram/4mL Vials	30.8mm	1	13696-07	293.82
4	4 Dram/16mL Vials				
8	2 Dram/8mL Vials				
10	16 mm Tubes	53mm	1	13696-11	293.82
1	50mL Round Bottom Flask				
4	40mL Vials				



13698-09

13698/13699 DYNABLOC ACCESSORIES For ACE DynaBlocs ★

	Qty.	Order Code	Each
Flask/Condenser Clamp Device	1	13699-63	30.16
Stainless Steel Short Support Rod (31cm)	1	13699-40	29.47
Stainless Steel Long Support Rod (61cm)	1	13699-44	33.48
T-handle Extractor (fits all ACE blocks)	1	13698-09	66.99

DynaBloc

Cylindrical Heating Blocks

9600 COMPLETE INSTATHERM®/BLOCK SYSTEM ★

A combination of two great ideas. The best and most accurate way of heating combined with the new Dynabloc technology.

Instatherm® baths now available with newly engineered aluminum Dynablocs that fit into the bath body and hold popular size vials and tubes. Just use your existing 1,200mL bath and block for precise heating or place the entire unit on any magnetic stirrer to combine stirring with Instatherm® heat. Use existing equipment or buy a complete system.



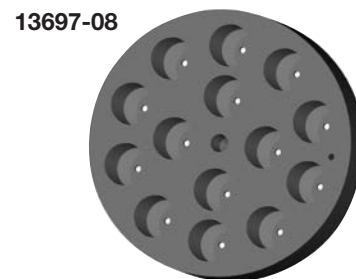
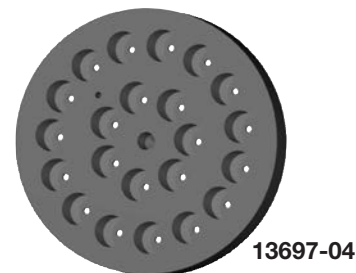
9600-20 Complete System			
<i>(contains all items listed below)</i>			
Description	Qty.	Order Code	Each
Aluminum Block for 16mm Tubes	1	13697-16	256.12
Economy Temperature Controller, 120v with "J" Type Thermocouple	1	12125-32	926.95
Talboys Magnetic Stirrer (4 x 4 inches)	1	13470-10	319.79
12-inch Aluminum Rod	1	11166-37	13.93
1,200mL Instatherm® bath, complete with clip	1	9601-46	547.00

13697 INDIVIDUAL INSTATHERM® BLOCKS ★

Individual blocks for use with Instatherm® baths only. Block diameter (141mm) is for use in the 9601-16, 1,200mL Instatherm® bath.

Description	Block Height	Qty.	Order Code	Each
For 22, 2 Dr./8mL or 17 mm O.D. vials	30.8mm	1	13697-04	256.12
For 14, 4 Dr./16mL or 22mm O.D. vials	38.8mm	1	13697-08	256.12
For 24, 16mm O.D. tubes	50mm	1	13697-16	256.12
For 8, 40mL or 28mm O.D. vials	50mm	1	13697-40	256.12

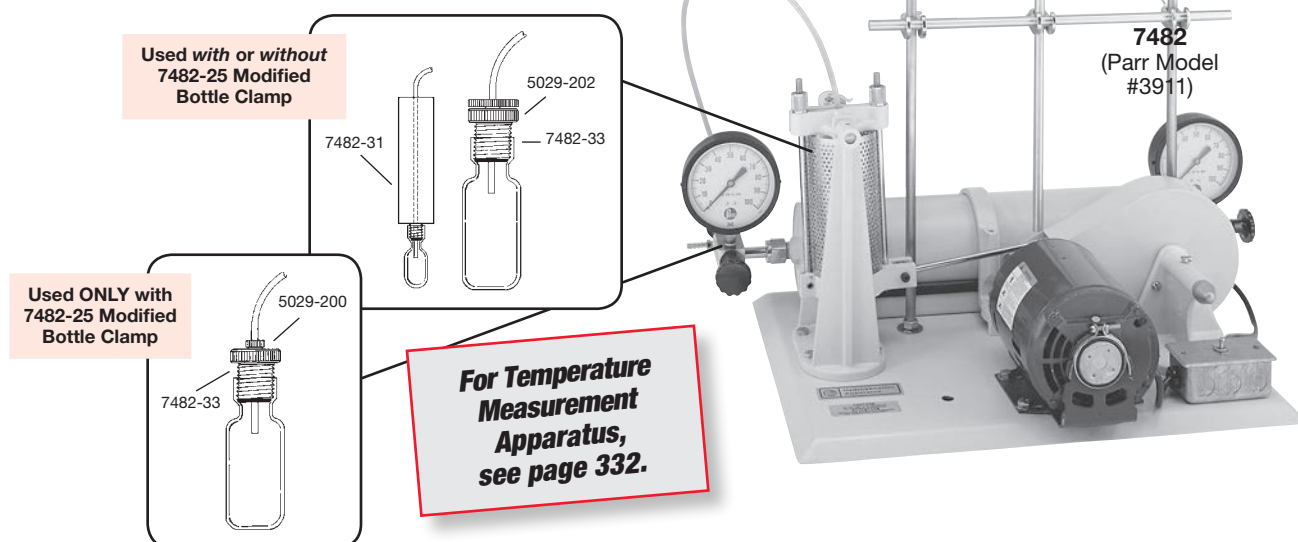
These blocks require NO base plate.



Shaker Type

Hydrogenation/Gas Apparatus I

Ace-Threds eliminate the use of rubber stoppers — no more cross contamination



Three small-volume reactors are supplied with #7 Ace-Thred that accepts a nylon bushing-spacer, 7482-31, with a #7 male thread at bottom to secure tubing from gas tank via an o-ring compression seal. This bushing-spacer is used to take up the space between the vessel and the top of the shaker. Three larger-volume reactors supplied accept 7482-33 adapter #25 to #7. Tubing is secured via 5029-202 big head #7 bushing. These vessels are large enough to fill space to top of shaker.

Complete System	Order Code	Each
	7482-50	★ 5857.24

The individual parts and glassware below, along with Hydrogenation/Gas Apparatus I (7482-20, at right), comprise the complete item listed above. These parts may also be ordered separately.

Individual Items	Ace-Thred Size	Capacity, mL	Qty.	Order Code	Each
Glass Vessel*	#7	9	1	8648-120	♠ 53.15
Glass Vessel*	#7	16	1	8648-124	♠ 54.74
Glass Vessel*	#7	46	1	8648-126	♠ 66.13
Glass Vessel*	#25	77	1	8648-135	♠ 68.77
Glass Vessel*	#25	180	1	8648-138	♠ 136.10
Glass Vessel*	#25	335	1	8648-140	♠ 178.67
Spacer-Bushing, Nylon	#7	—	1	7482-31	★ 60.53
Bushing, Nylon, Big Head	#7	—	1	5029-202	★ 29.21
Adapter, PTFE	#7-#25	—	1	7482-33	★ 54.96
Upper Rubber Pad	—	—	1	7482-37	★ 12.00
Lower Rubber Pad	—	—	1	7482-38	★ 12.00
Aluminum Mounting Frame	—	—	1	7482-77	★ 266.74

*Each glass vessel is pressure tested to 1½ x the recommended working pressure (60 psi), but cannot be guaranteed due to the nature of glass.

The three items listed below consist of the unit ONLY. **No glassware or additional parts are supplied with these units.**

Apparatus Only	Qty	Order Code	Each
Apparatus I	1	7482-20	★ 4920.00
Apparatus IA, for Hazardous Locations, 115v-60Hz [Conforms to NEC Class I, Grp. D and Class II, Grp. E, F, G]	1	7482-70	★ 5764.93
Apparatus IB, with Air Motor	1	7482-74	★ Call

Optional Accessories	Qty.	Order Code	Each
Top Bottle Clamp, only, Modified	1	7482-25	★ 98.01
Tubing, PTFE, 1/4-inch O.D. x 3/6-inch I.D. x 1/32-inch wall	10 ft.	12687-12	★ 42.00
Bushing, Nylon, #7	1	5029-200	★ 14.93
Replacement o-rings, FETFE, for 5029-200 and 5029-202	12	7855-711	♠ 20.45
Replacement o-rings, FETFE, for 7482-31	12	7855-704	♠ 14.09
Ferrules, PTFE, for #7 Ace-Thred	12	11710-07	★ 30.19
Replacement o-rings, FETFE, for 7482-33	6	7855-734	♠ 20.74

Working volume of pressure reaction vessels is approximately ½ of the actual capacity listed.

Shaker Type

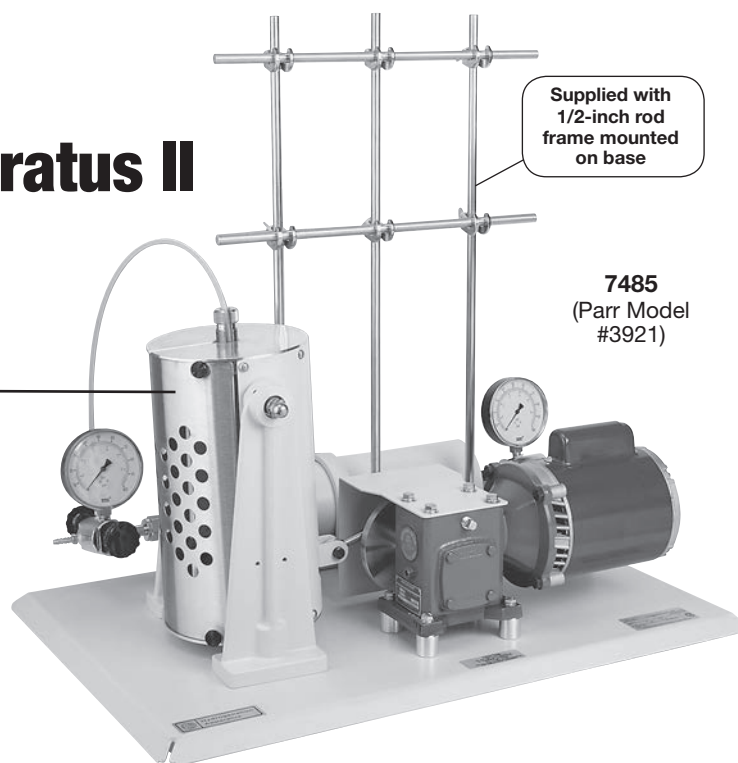
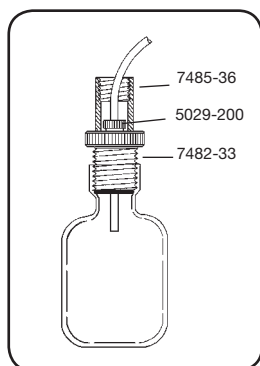
Hydrogenation/Gas Apparatus II

The ACE Difference in Parr Hydrogenation Apparatus...

- **No more** rubber stoppers
- **No more** crossover contamination because of leeching or sample retention

By using...

The Ace-Thred



Supplied with 1/2-inch rod frame mounted on base

7485
(Parr Model #3921)

Two reactors are supplied with #25 Ace-Thred that accepts 7482-33 PTFE adapter (#25 to #7 Ace-Thred) or 5844-105 (#25 to 3/8-inch NPT). The former is for use with 5029-202 nylon bushing; the latter is suitable for use with 12770-27 tubing adapter with 3/8-inch NPT. Both are used to secure tubing from tank via an o-ring compression seal. The only adjustment in Apparatus II (as opposed to the regular Parr Apparatus #3921) is the addition of an aluminum spacer-adapter, 7485-36, that threads onto the slotted bottle screw clamp located at top of the bottle guard. This adapter butts against the #25 PTFE adapter on top of the reaction vessel, and may be purchased separately to allow use of ACE vessels with your existing Parr unit.

Complete System	Order Code	Each
	7485-55	★ 8321.64

The individual parts and glassware below, along with Hydrogenation/Gas Apparatus I (7485-25, at right), comprise the complete item listed above. These parts may also be ordered separately.

Individual Items	Ace-Thred Size	Capacity, mL	Qty.	Order Code	Each
Glass Vessel*	#25	950	1	8648-155	♠ 283.41
Glass Vessel*	#25	1850	1	8648-157	♠ 444.98
Spacer-Bushing, Aluminum	#7	—	1	7485-36	★ 69.18
Bushing, Nylon, Big Head	#7	—	1	5029-202	★ 29.21
Adapter, PTFE	#7-#25	—	1	7482-33	★ 54.96
Upper Rubber Pad	—	—	1	7482-37	★ 12.00
Lower Rubber Pad	—	—	1	7482-38	★ 12.00
Aluminum Mounting Frame	—	—	1	7482-77	★ 266.74

*Each glass vessel is pressure tested to 1-1/2 x the recommended working pressure (60 psi), but cannot be guaranteed due to the nature of glass. Available in either epoxy of plasted coated. Call or email for quote.

The three items listed below consist of the unit ONLY. **No glassware or additional parts are supplied with these units.**

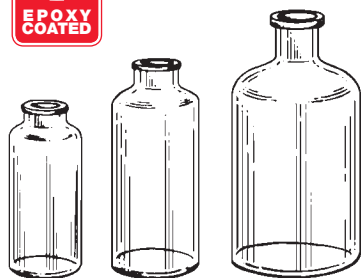
Apparatus Only	Qty.	Order Code	Each
Apparatus II	1	7485-25	★ 7236.28
Apparatus IIA, for Hazardous Locations, 115v-60Hz [Conforms to NEC Class I, Grp. D and Class II, Grp. E, F, G]	1	7485-72	★ Call
Apparatus IIB, with Air Motor	1	7485-78	★ Call

Optional Accessories	Qty.	Order Code	Each
Replacement o-rings, for 5029-200	12	7855-711	♠ 20.45
Replacement o-rings, for 5844-105	6	7855-734	♠ 20.74
Bushing, Nylon, #7	1	5029-200	★ 14.93
Ferrules, PTFE, for #7 Ace-Thred	12	11710-07	★ 30.19
Adapter, PTFE, #25 Ace-Thred to 3/8-inch NPT	1	5844-105	♠ 91.51
Adapter, Tube Fitting, 3/8-inch NPT to 1/4-inch tube	1	12770-27	♠ 32.54

Working volume of pressure reaction vessels is approximately 1/2 of the actual capacity listed.



7478



7478 REACTION BOTTLES for Hydrogenation/Gas Apparatus ★

Borosilicate glass bottles with tooled neck to accept a #6 rubber stopper. Bottles are epoxy coated to help prevent scratching. Bottles and stoppers sold separately. Rated at 60 psi @ 20°C. Working capacity is 1/2 actual capacity. For hydrogenation apparatus, turn to page 330.

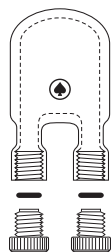
Actual mL	Use with Apparatus	Approx. O.D. x Hght., mm	Qty.	Order Code	Each
50	7482	30 x 160	1	7478-05	42.46
100	7482	40 x 160	1	7478-10	48.21
250	7482	60 x 143	1	7478-12	79.87
500	7482	73 x 175	1	7478-15	93.70
1000	7485	94 x 216	1	7478-34	97.81
2500	7485	133 x 240	1	7478-37	527.04
Neoprene #6 rubber stopper for use with 7478 bottles, with one hole:			1	7478-60	4.59

7479



7479 HEATING MANTLES for Hydrogenation/Gas Bottles ★

For Use with Vessel Size	Qty.	Order Code	Each
250 & 500mL (7478)	1	7479-20	297.76
1000 & 2500mL (7478)	1	7479-42	345.31



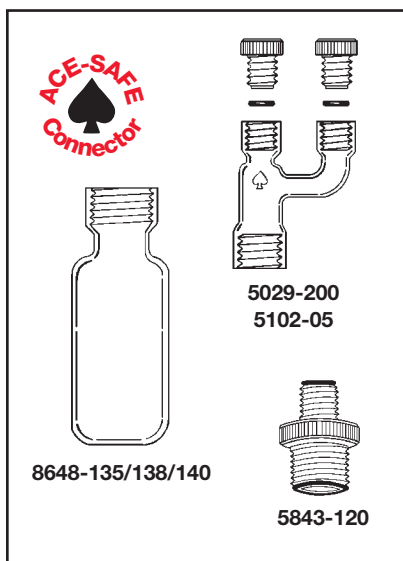
7482-46



7482 TRAP Hydrogenation/Gas

Used normally between hydrogen source and reaction flask. Bottle measures approximately 41mm I.D. x 90mm long, with two #7 Ace-Threds. Use 5029-200 bushing and o-ring in each neck to secure tubing.

	Qty.	Order Code	Each
Bottle, only	1	7482-42	♠ 145.69
Bushing, Nylon, #7 with o-ring (2)	1	5029-200	★ 14.93
Complete	1	7482-46	♠ 175.55



8648 TEMPERATURE MEASUREMENT APPARATUS

for 7482 Hydrogenation/Gas Apparatus

Borosilicate glass vessel, offset adapter, coupling and modified top bottle clamp for use with 7482 shaker type Parr Hydrogenation/Gas Apparatus I to allow temperature measurement while connected to hydrogen source. For use with three larger vessels only, with #25 Ace-Thred neck. Capacities listed are for working volumes (approximately 1/2 actual volume of vessel) @ 20°C.

	Qty.	Order Code	Each
Reaction Vessel, glass, #25 Ace-Thred, 10-35mL	1	8648-135	♠ 68.77
Reaction Vessel, glass, #25 Ace-Thred, 25-75mL	1	8648-138	♠ 136.10
Reaction Vessel, glass, #25 Ace-Thred, 50-200mL	1	8648-140	♠ 178.67
Adapter, Offset, (2) #7, (1) #15 Ace-Threds	1	5102-05	♠ 52.57
Bushing, Nylon, #7, with o-ring, (2)	1	5029-200	★ 14.93
Coupling, PTFE, #15 to #25 Ace-Thred	1	5843-120	♠ 78.91
Top Bottle Clamp, only, modified	1	7482-25	★ 98.01
Ferrules, #7	12	11710-07	★ 30.19
Complete	1	8648-57	♠ 673.08

THE SAFEST HEATING METHOD...

ACE INSTATHERM® FOR GLASS VESSELS

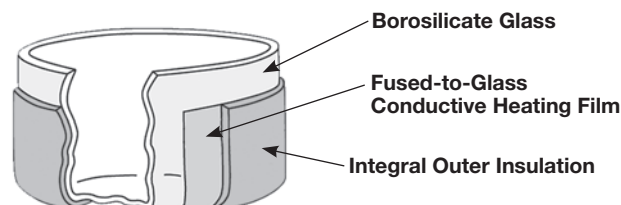
Eliminate the need for heating tapes, immersion heaters and heating mantles.



INSTATHERM® OIL BATHS

Instatherm® is a safer, more precise heating method for the laboratory. It is an Ace Glass proprietary process that fuses a noble metal alloy coating directly onto the glass surface. Once the insulating and protective covering is applied, the Instatherm electrical circuit provides the most rapid and precise heating method available. Thermal lag is minimal with no hot spots. When placed on a magnetic stirrer, it becomes the best heating and mixing combination on the market. Because Instatherm® is a process, it can be adhered to any glass vessel. This section features our standard vessels for your convenience, however custom application inquiries are most welcome.

- **Rapid, even heat – low thermal lag**
- **No super-heating**
- **Suitable for magnetic stirrers**
- **Extremely accurate heating**
- **More precise than mantles**
- **Accommodates variety of vessel sizes and shapes**



9601 INSTATHERM® OIL BATH *Low Form* ★

Low form, glass open vessels coated with Instatherm®. Designed to operate up to 250°C, heating response time is very rapid, (5° per minute), with very low thermal lag. The bottom is uncoated so the bath can be put on any popular magnetic stirrer for stirring while heating. Baths are designed to run with oil or a heating media. Never run Instatherm baths dry or breakage can occur, especially at higher temperatures. Capacity is without a vessel. Connector plug is designed to work with Ace or J-Kem temperature controllers where the output voltage can be automatically limited to match the bath. Bath can also be matched with ACE or J-Kem temperature thermocouple sensors for complete automatic operation. If using another type temperature controller, **voltage should not exceed the rated voltage** (see below). Complete item includes clip for sensor and/or thermometer. Integral six-foot controller cord.



9601-16

Low Form Instatherm Baths

Allows small Mini-Lab size flasks to be stirred internally with magnetic stirrer bars while being heated in baths

Approx. (mm) I.D. x O.D. x Hgt.	Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Bath & Cord	Order Code	Complete with Clip
64 x 70 x 50	160	20/5	1	9601-08	422.54	9601-38	452.27
94 x 125 x 65	340	40/6	1	9601-12	458.38	9601-42	488.11
119 x 125 x 65	700	40/8	1	9601-14	470.20	9601-44	499.93
142 x 150 x 75	1200	120/5	1	9601-16	517.27	9601-46	547.00
182 x 190 x 100	2600	120/10	1	9601-18	605.86	9601-48	635.59

For a quick guide to ACE & J-Kem temperature controllers, see page <OV>.

A line voltage control should not be used on ACE Instatherm low voltage oil baths unless it incorporates a step-down transformer that limits the voltage to the heater rating, e.g. 20 volts or 40 volts.



9601-23

9601 INSTATHERM® OIL BATH *Large* ★

Large version bath that can accept round bottom flask up to 5L and other larger vessels. Bath measure 300mm (11.8 inches) I.D. by 250mm (9.8 inches) deep. The bath has a rolled lip for easy handling. The maximum temperature on this bath is 100°C. The full capacity is 15L without a vessel, and typically should have a minimum of six liters when using a vessel like a 5L round bottom flask. Baths must be run with a heating media or oil. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord. Complete item includes clip for sensor and/or thermometer.

Approx. (mm) I.D. x O.D. x Hgt.	Capacity, Liters	Volt/Amp Rating	Qty.	Order Code	Bath & Cord	Order Code	Complete with Clip
290 x 300 x 240	15	120/14	1	9601-23	2510.30	9601-55	2567.43



9602

9602 INSTATHERM® OIL BATH *Low Form, with 12-foot Cord* ★

The same vessels as listed under 9601 Low Form series except with longer integral cord that is 12 feet in length and is PTFE clad. Complete item includes clip for sensor and/or thermometer.

Approx. (mm) I.D. x O.D. x Hgt.	Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Bath & Cord	Order Code	Complete with Clip
64 x 70 x 50	160	20/5	1	9602-07	549.97	9602-37	579.70
94 x 100 x 55	340	40/6	1	9602-11	558.26	9602-41	587.99
119 x 125 x 65	700	40/8	1	9602-13	584.11	9602-43	613.84
142 x 150 x 75	1200	120/5	1	9602-15	597.10	9602-45	626.83
182 x 190 x 100	2600	120/10	1	9602-17	627.17	9602-47	656.90

9603



9603 INSTATHERM® OIL BATH *High Form* ★

High form, heavy walled glass vessels coated with Instatherm® to accommodate larger and taller vessels. A thermocouple well is imbedded in the insulation in this series. Do not run baths dry or above max voltage or breakage can occur. Bottom is uncoated so it can be used with or without magnetic stirrers. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord. Complete item includes clip for sensor and/or thermometer.

Approx. (mm) I.D. x O.D. x Hgt.	Volt/Amp Rating	Takes Flask Size, mL	Qty.	Order Code	Bath & Cord	Order Code	Complete with Clip
90 x 100 x 100	40/10	300 & smaller	1	9603-02	617.01	9603-20	646.74
140 x 150 x 155	120/8	1000 & smaller	1	9603-04	745.86	9603-22	775.59
200 x 210 x 200	120/10	3000 & smaller	1	9603-06	937.56	9603-24	979.46



9605

9605 INSTATHERM® BEAKER *Griffin Low Form* ★

With lip and pouring spout. With silicone rubber treated glass cloth insulation for use up to 250°C. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Approx. (mm) I.D. x O.D. x Hgt.	Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Each
64 x 68 x 90	250	20/7	1	9605-40	305.93
72 x 77 x 110	400	40/6	1	9605-42	331.84
85 x 90 x 124	600	40/8	1	9605-44	362.85

ACE Instatherm® Temperature Controller *Kits*

Complete Bath Kits for your convenience

For complete information on temperature controllers, see page 609.



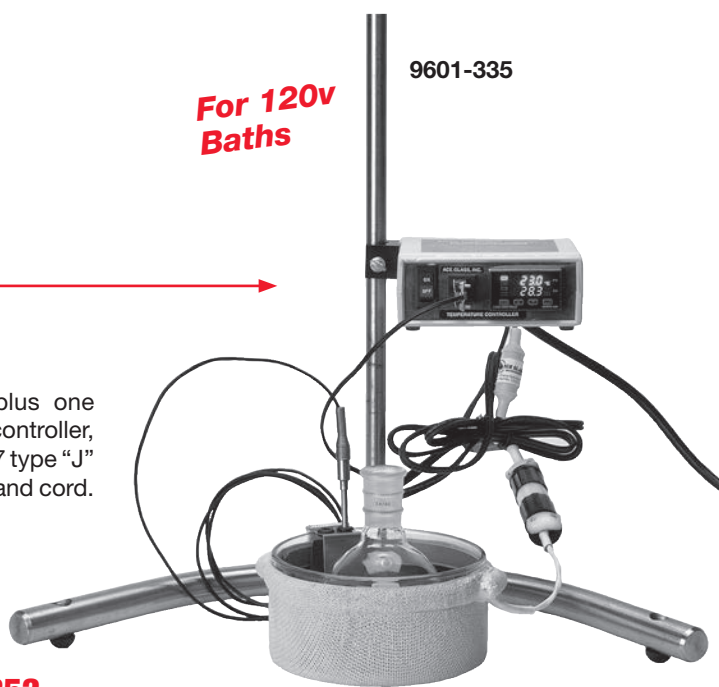
9601-355

9601-355

Bath Kit Complete ★

Consists of one each 9601-14 and 9601-16 bath, plus one 12324-25 digital temperature controller with one "J" type temperature sensor and controller cord.

Qty.	Order Code	Each
1	9601-355	1915.08



9601-335

For 120v Baths

9601-335

Bath Kit Complete ★

Economy

Consists of one 9601-16 bath plus one 12125-14 Economy temperature controller, one 9601-30 clip, and one 12110-17 type "J" thermocouple temperature sensor and cord.

Qty.	Order Code	Each
1	9601-335	1459.57



9601-352

For All Size Baths

9601-352

Bath Kit Complete ★

Consists of one each 9601-12, 9601-14 and 9601-16 baths, three 9601-30 clips, three 9698-16 cords, plus one 12324-25 digital temperature controller with one "J" type temperature sensor and controller cord.

Qty.	Order Code	Each
1	9601-352	2403.19

Also available with extended 12-foot controller cord baths:

Qty.	Order Code	Each
1	9602-364	2696.81



14115

14115 BATH OIL ★

An extremely stable, medium viscosity silicone oil. Available in two temperature ranges:
 Low Temp — maximum 180°C; or
 High Temp — maximum 230°C.

Type	Size	Qty.	Order Code	Each
Low Temp (180°C)	.9L (1 Qt.)	1	14115-05	56.58
High Temp (230°C)	.9L (1 Qt.)	1	14115-12	78.82
Type	Size	Qty.	Order Code	Each
Low Temp (180°C)	1.8L (½ Gal.)	1	14115-10	92.05
High Temp (230°C)	1.8L (½ Gal.)	1	14115-14	140.08

Low temp oil color is CLEAR. High temp oil color is AMBER.



9601/9698 CONNECTING CORD & CLIPS ★

Controller cords with various connectors for connecting all Instatherm vessels to temperature controllers. -16 and -20 cords have 10 amp, “fast-acting” fuse to protect both vessel and controller from over-voltage or surges.

Description	Qty.	Order Code	Each
Cinch Type	1	9698-05	35.00
Pin Type	1	9698-10	35.00
Banana Type (old style)	1	9698-16	60.34
Twist Lock Type (new style)	1	9698-20	60.34

Clip for thermocouple or thermometer:

Description	For Bath Series	Qty.	Order Code	Each
Small clip with one hole	9601-07 and -08	1	9601-29	29.73
Medium clip with two holes	All other baths	1	9601-30	29.73
Medium clip with two 1/4-inch holes	All other baths	1	9601-32	29.73
Large clip with two 1/4-inch holes	9603-06	1	9601-34	41.90
Extra large clip with two 1/4-inch holes	9603-23	1	9601-36	57.13



9610

9610 INSTATHERM® FUNNEL Addition ★

Graduated addition funnel with Instatherm coating for critical heating. The funnel has a bottom inner standard taper joint and an outer joint on top. The funnel can be hooked to an Ace temperature controller and heated for liquefying solids or keeping liquids at a set temperature for addition to system or a reactor. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Capacity, mL	Volt/Amp Rating	§ Joints	§ Stopcock	Qty.	Order Code	Each
125	40/5	24/40	2	1	9610-08	343.68
250	40/6	24/40	2	1	9610-10	411.60
500	40/10	24/40	2	1	9610-12	485.03
500	40/10	29/42-24/40	4	1	9610-14	485.03

For a quick guide to ACE & J-Kem temperature controllers, see page <OV>.

A line voltage control should not be used on ACE Instatherm low voltage oil baths unless it incorporates a step-down transformer that limits the voltage to the heater rating, e.g. 20 volts or 40 volts.

9625 INSTATHERM® DESICCATOR *Vacuum Oven*

250mm diameter with bottom Instatherm heated (low voltage: 40 volts, 10 amps max.). Top is not heated, but has insulation cover. May be used as a vacuum oven at temperatures up to 180°C continuously.

The top has an observation stripe for visibility and is supplied with vacuum take-off valve. Insulation is resilient silicone rubber impregnated glass cloth, and electrical connections are covered. Temperatures can be regulated by means of Ace temperature controllers. Also available with uncoated top. Supplied complete with detachable cord, -10 to 250°C. 100mm immersion 10/30 ground joint thermometer, thermometer adapter.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Desiccator	1	9625-04	★ 3085.13	Thermometer	1	8314-31	♠ 66.27
Adapter	1	9061-10	♠ 32.62	Complete	1	9625-10	★ 3214.14

9625-04 and 9625-10 supplied with 9698-16 controller cord for connection to temperature controllers.


9625
9632 INSTATHERM® DRYING APPARATUS *Vacuum, Abderhalden*

Instantly variable jacket temperature, to 200°C, enables programmed drying. The jacket is coated with Instatherm with a viewing strip. A thermowell, 6-7mm O.D., may be substituted for the purpose of employing a thermistor. The heater operates on AC or DC up to 40v, 3 amps. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

	Qty.	Order Code	Each
Desiccant Tube	1	9632-02	♠ 239.43
Drying Chamber	1	9632-04	★ 533.64
Cord	1	9698-16	★ 60.34
Nylon Bushing	1	5029-10	♠ 2.85
Complete	1	9632-10	★ 775.92


9632
9635 INSTATHERM® FLASK *High Temp Type, Single Neck ★*

Distilling, round bottom with 24/40 joint. With silicone rubber treated glass cloth insulation for use up to 250°C. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Cap., mL	Volt/Amp Rating	Qty.	Order Code	Each
500	40/6	1	9635-158	329.02
1000	40/10	1	9635-160	353.04


9635



9637

9637 INSTATHERM® FLASK *High Temp Type, Two Necks* ★

Distilling, round bottom with 24/40 joints. With silicone rubber treated glass cloth insulation for use up to 250°C. No clamp needed. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Capacity, mL	Volt/Amp Rating	Qty.	\$24/40		\$29/42	
			Order Code	Each	Order Code	Each
250	20/8	1	9637-136	248.48	—	—
500	40/6	1	9637-138	399.30	—	—
3000	120/10	1	—	—	9637-170	461.79



9642

9642 INSTATHERM® FLASK *High Temp, Three Necks* ★

Distilling, round bottom with three 24/40 joints. With silicone rubber treated glass cloth insulation for use up to 250°C. No clamp needed. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Each
250	20/8	1	9642-127	363.42
500	40/7	1	9642-129	422.49
1000	40/10	1	9642-131	479.35



9655-39



9655-17

9655 INSTATHERM® REACTION FLASK AND HEAD ★

Rugged cylindrical reaction flask and head with Schott-Duran, flat ground 4-inch flange with o-ring groove for use with 6517-25 quick release clamp and integral heating element that eliminates the local superheating commonly associated with more conventional heating methods and eliminates cumbersome and dangerous oil baths. The response is rapid and accurate. Supplied with silicone coating for insulation and protection. End contacts are standard banana plugs. Comes with 9698-20 (for flask) or 9698-16 (for head) connecting cord for connection to temperature controllers. O-Ring, supplied with flask, is a CAPFE (PTFE encapsulated silicone o-ring). Flask is coated to within approximately 38 mm of the flange for 200 °C operation. Interchangeable with Ace reaction heads, code -33, -37, -39, and non-heated tops listed in the Ace complete catalog. Order flask, head, and clamp separately.

Flask, only

Cap., mL	Volt/Amp Rating	Watts	Qty.	Order Code	Each
1000	40/8	400	1	9655-17	793.60
2000	120/5	600	1	9655-22	900.34

Head, Four Necks, only

Center 24/40 Joint	Side 24/40 Joints	Volt/Amp Rating	Qty.	Order Code	Each
24/40	24/40	40/8	1	9655-33	543.18
29/42	24/40	40/8	1	9655-37	552.39
45/50	24/40	40/8	1	9655-39	569.67
	Clamp, only		1	6517-25	100.27
	Connecting Cord, only		1	9698-16	60.34

9656 REACTION FLASK *Instatherm® Heated, Conical, 4-Inch Flange* ★

Same flask as listed under 6476, except with Instatherm coating. Has flat-ground, 4-inch conical flange. This integral heating element eliminates the local super-heating commonly associated with more conventional heating methods. Eliminates cumbersome and dangerous oil baths. The heating response is rapid and accurate. Supplied with 9698-20 cord for connection to variable voltage or temperature controller. Flask is coated to within 38mm of the flange for 200°C operation, 360°C maximum on special order. Interchangeable with all ACE 4-inch reaction heads. For controllers, see ACE or J-Kem temperature controllers with voltage limiting output, such as 12125, 12324. Use 6496 clamp for securing head to flask.

Capacity, Liters	O.D., mm	I.D., mm	Height, mm (A)	Volt/Amp Rating	Watts	Qty.	Order Code	Each
1	110	100	180	40/8	400	1	9656-08	785.13
2	114	104	260	120/5	500	1	9656-12	894.27


9633 INSTATHERM® FLASK *Erlenmeyer* ★

Ace Erlenmeyer flask with Instatherm provide a convenient, safe heating of contents in the popular Erlenmeyer flask format for bench or magnetic stirrer use. For operation up to 250°C. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Capacity, mL	Volt/Amp Rating	Qty.	Order Code	Each
125	20/8	1	9633-08	260.34
250	20/8	1	9633-10	334.74
500	40/7	1	9633-14	427.73


3704 INSTATHERM® FILTRATION FUNNEL *47mm* ★

This 47mm filtration funnel uses Ace Glass proprietary Instatherm technology to evenly heat viscous materials, keeping them in a flowing, liquid state. Excellent for filtering oils or thick slurries using either 47mm membranes or filter paper disks. Perfect for sample prep for various ASTM petroleum and polymer testing procedures and for new biofuel testing protocols. For the complete filtration apparatus, see page <?>. Three-pronged plug for insertion into Ace temperature controllers. Integral six-foot controller cord.

Description	Qty.	Order Code	Each
500mL Instatherm coated filter funnel w/temp controller connecting cord	1	3704-01	228.23



Instatherm Specials

Ace INSTATHERM®, “*the heat without a mantle,*” is a self-heating, fused heat source that adds speed, accuracy and convenience to every reaction requiring heat. You get reproducible results.

No mantle to detach. Better observation. Less current used. Instatherm provides convenience and assures better results and economy for the lab.

Instatherm adapts readily to custom applications on any glass, quartz or porcelain apparatus. It can be applied to stopcocks, adapters, manifolds, receivers — even the most complicated systems.

Contact the Ace Technical Department at 1-800-223-4524; Fax: 1-800-543-6752.

3704 INSTATHERM® FILTRATION APPARATUS Funnel, 47mm ★

This apparatus differs from the standard 47mm filter apparatus as it uses Ace Glass' proprietary Instatherm technology to evenly heat the top 400mL funnel, thus keeping the viscous materials in a flowing liquid state. The middle adapter is PTFE with a PTFE snap-ring. The interchangeable fritted disk is the coarse, 25-to-50 micron size. The entire assembly can be easily taken apart for cleaning and the fritted filter disc can easily and in-expensively be cleaned or replaced. This system is excellent for filtering oils or thick slurries and using either 47mm membranes or filter paper disks. Perfect for sample prep for various ASTM petroleum and polymer testing procedures and for new biofuel testing protocols. Filter funnel has three-pronged plug for insertion into Ace temperature controllers and integral six-foot controller cord.

Description	Qty.	Order Code	Each
Complete Apparatus	1	3704-10	768.24
<i>Complete Consists of (may be ordered separately):</i>			
1L Filter flask w/ Ace Thred	1	3702-08	153.45
PTFE Adapter w #25 btm and #50 top Ace Threds	1	3704-05	338.10
PTFE retaining ring	1	3704-06	16.30
47mm OD "C" fritted disc	1	3703-49	32.16
500mL Instatherm coated filter funnel w/temp controller connecting cord	1	3704-01	228.23



D120676 FLASK, INSTATHERM® ROBO REACTOR for ASTM D7528-09 ★

Flask for use with ASTM Protocol D7528-09 Standard Test Method. For bench oxidation of engine oils by ROBO. Use ONLY 9698-16 controller cord (supplied) for connection to temperature controllers.

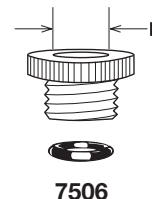
Capacity	Volts/Amps	Qty.	Order Code	Each
1,000mL	40/10	1	D120676	Call



7506 BUSHING ♠

Bushing connector for use with Ace-Threads, threaded glass or stainless steel connectors, for joining threaded end to a reduced end tube. Available in either nylon* or PTFE. One FETFE o-ring supplied with each bushing. For replacement o-rings, see 7855.

For Ace-Thread Size	B, mm	O-Ring Size	Qty.	Nylon		PTFE	
				Order Code	Each	Order Code	Each
7	7.5	-008	1	5029-10	2.85	5029-35	14.49
11	10	-012	1	7506-02	11.39	7506-23	39.80
15	14	-110	1	7506-06	12.35	7506-27	40.65
18	17	-112	1	7506-08	20.61	7506-29	49.46
25	26	-212	1	7506-10	21.17	7506-31	56.15
36	36	-217	1	7506-12	50.46	7506-33	108.52
50	49	-225	1	7506-14	73.24	7506-35	122.29
80	80.7	-336	1	7506-20*	95.35	7506-39	192.62



*7506-20 fabricated from High Density Polyethylene.

7565 JOINTS Inner, Full Length

§ inner ground joint for use with outer members 7565, 7566, 7567, 7651 and 7652. Can also be used with half joints 7568 and 7585.

§ Size	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	O.D. of Tube, mm	Qty.	Order Code	Each
7/25	6	1	7565-07 ♠	10.46	40/50	38	1	7565-47 ★	21.56
10/30	8	1	7565-12 ♠	8.77	45/50	45	1	7565-52 ★	25.78
12/30	11	1	7565-17 ♠	9.44	50/50	45	1	7565-57 ★	33.41
14/35	13	1	7565-22 ♠	10.17	55/50	51	1	7565-62 ★	44.98
19/38	16	1	7565-27 ♠	10.77	60/50	54	1	7565-67 ★	60.70
24/40	22	1	7565-32 ♠	11.08	71/60	64	1	7565-72 ★	84.75
29/42	28	1	7565-37 ♠	12.48	86/50	80	1	7565-71 ★	154.76
34/45	32	1	7565-42 ♠	16.38	103/60	102	1	7565-77 ★	233.55

7565

7566 JOINTS Outer, Straight-Through

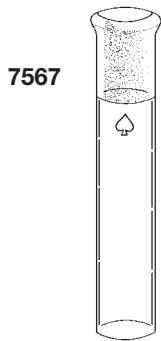
Tubing is same diameter as reinforcing rings on the joint. Strain on the joint is reduced from expansion due to temperature increase. Properly clamped, the joint tends to remain cooler, with less tendency toward lubrication loss. Very heavy walls are not desirable for thermal shock resistance, but are desirable for resistance to mechanical pressure and shock. Therefore, providing reinforcement rings instead of heavy wall results in a better balanced design. No holdup below joint makes this an ideal joint for flask necks, receivers, etc.

§ Size	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	O.D. of Tube, mm	Qty.	Order Code	Each
7/25	9	1	7566-08 ♠	11.85	29/42	32	1	7566-38 ♠	14.83
10/30	13	1	7566-13 ♠	11.40	34/45	38	1	7566-43 ♠	21.00
12/30	16	1	7566-18 ♠	11.85	40/50	45	1	7566-48 ♠	27.34
14/20	19	1	7566-21 ♠	12.35	45/50	51	1	7566-53 ♠	29.40
14/35	16	1	7566-23 ♠	12.35	50/50	54	1	7566-58 ★	46.14
19/22	22	1	7566-26 ♠	12.35	55/50	64	1	7566-63 ★	47.99
19/38	22	1	7566-28 ♠	13.10	60/50	64	1	7566-68 ★	67.15
24/40	28	1	7566-33 ♠	12.32	71/60	75	1	7566-73 ★	100.39
					86/50	95	1	7566-75 ★	166.31

7566


Reinforced Joint¹

¹All FULL LENGTH flask joints are reinforced.



7567

7567 JOINTS *Outer, Straight-Sided*

O.D. of joint and tube are approximately same size, allowing for ease in clamping.

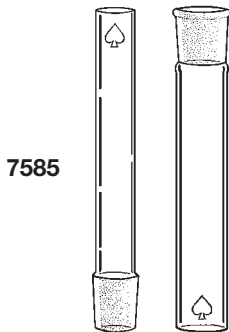
Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
7/25	10	1	7567-08	11.97	40/50	45	1	7567-48	27.62
10/30	13	1	7567-13	11.52	45/50	48	1	7567-53	29.71
12/30	14	1	7567-18	12.70	50/50	54	1	7567-58	67.70
14/35	17	1	7567-23	12.44	55/50	60	1	7567-63	45.19
19/38	22	1	7567-28	12.44	60/50	64	1	7567-68	94.89
24/40	28	1	7567-33	12.61	71/60	75	1	7567-73	84.46
29/42	32	1	7567-38	14.97					
34/45	38	1	7567-43	20.01					



7568

7568 JOINTS *Outer, Medium Length, Straight-Sided* ♠

Size	O.D. of Tube, mm	Qty.	Order Code	Each
10/18	13	1	7568-04	11.52
14/20	17	1	7568-06	11.68
19/22	22	1	7568-08	12.44
24/25	28	1	7568-10	14.03
29/26	32	1	7568-12	15.28
34/28	38	1	7568-14	19.86



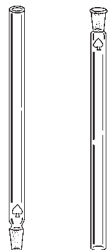
7585

7585 JOINTS *Inner, Medium Length* ♠

Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
5/12	4	1	7585-02	11.26	24/25	22	1	7585-38	12.16
7/15	6	1	7585-08	11.26	29/26	25	1	7585-44	12.81
10/18	8	1	7585-14	8.25	34/28	32	1	7585-50	17.32
12/18	10	1	7585-20	10.12	40/35	38	1	7585-56	22.16
14/20	13	1	7585-26	9.99	60/40	54	1	7585-65	93.67
19/22	16	1	7585-32	10.77					

7585 JOINTS *Outer, Medium Length* ♠

Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
5/12	8	1	7585-04	13.12	24/25	28	1	7585-40	15.00
7/15	11	1	7585-10	13.12	29/26	32	1	7585-46	15.92
10/18	13	1	7585-16	12.35	34/28	38	1	7585-52	20.13
12/18	16	1	7585-22	12.48	40/35	45	1	7585-58	27.77
14/20	19	1	7585-28	12.64	60/40	64	1	7585-67	98.88
19/22	22	1	7585-34	13.12					



7602

7602 JOINTS *Luer-Lok Type* ♠

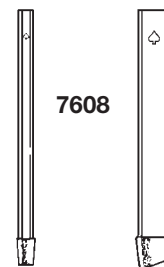
Standard Luer-Lok type joint as found on syringes. Inside diameter through ground tip approximately 1.2mm.

Approx. Tube I.D., mm	Joint Type	Wall Thickness	Qty.	Order Code	Each
1	Inner	Capillary	1	7602-10	12.11
1	Outer	Capillary	1	7602-15	14.59
2	Inner	Capillary	1	7602-20	12.11
2	Outer	Capillary	1	7602-25	15.48
4	Inner	Medium Wall	1	7602-30	12.11
4	Outer	Medium Wall	1	7602-35	15.48

7608 JOINTS *Inner, Microscale* ♠

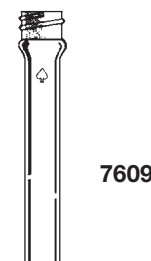
Inner ground ⌘ joints used in fabrication of ACE Microscale glassware. Use with 7609 outer member. Codes -11, -12 and -13 have drip tip.

⌘ Size	O.D. x I.D., mm	Qty.	Order Code	Each
5/5	5 x 2	1	7608-04	10.76
7/10	6 x 1	1	7608-06	10.76
7/10	6.35 x 4	1	7608-07	10.76
7/25	6.35 x 4	1	7608-09	10.76
10/10	6 x 1	1	7608-11	11.85
10/10	8 x 5	1	7608-12	11.85
14/10	12.7 x 9.5	1	7608-13	12.88


7609 JOINTS *Outer, Threaded, Microscale* ♠

Outer ground ⌘ joints with external thread for making an “O-Ring-CAP SEAL” connection with mating 7608 inner joint. Used in fabricating ACE Microscale glassware. Joints **not** supplied with cap or o-ring, see 9590 and 7855, below.

⌘ Size	O.D. x I.D., mm	Qty.	Order Code	Each
7/10	12.7 x 9.5	1	7609-05	14.06
10/10	12.7 x 9.5	1	7609-07	15.18
10/10	16 x 13.5	1	7609-08	15.18
10/10	20 x 17.5	1	7609-09	15.18
14/10	20 x 17.5	1	7609-15	16.28
14/10	22 x 19.5	1	7609-17	16.28


9590 CAPS *Replacement* ♠

Used with 7609 joints along with o-ring to make an “O-Ring-CAP SEAL” connection and with GPI threads on solid phase reaction vessels. Solid supplied with PTFE-faced rubber liner. Open top caps do not have linings.

GPI Size	Type	For Use With	Qty.	Order Code	Per Pkg.
5 mm	With Hole	5/5 Joint	48	9590-44	7.38
13 mm	With Hole	7/10 Joint	48	9590-45	9.48
13 mm	Solid	7/10 Joint	48	9590-55	45.94
15 mm	With Hole	10/10 Joint	48	9590-47	13.71
15 mm	Solid	10/10 Joint	48	9590-58	49.67
20 mm	With Hole	14/10 Joint	48	9590-46	17.94
20 mm	Solid	14/10 Joint	48	9590-60	182.23
24 mm	With Hole	—	48	9590-48	19.02
24 mm	Solid	—	48	9590-64	96.49
38 mm	With Hole	—	24	9590-50	16.16
38 mm	Solid	—	24	9590-66	94.22


7855 O-RINGS *FETFE* ♠

Used with 7609 joints along with caps to make an “O-Ring-CAP SEAL” connection. O-Rings are fabricated of FETFE.

Size	For Use With	Qty.	Order Code	Per Pkg.
-010	7/10 Joint	12	7855-705	14.93
-011	10/10 Joint	12	7855-706	15.21
-112	14/10 Joint	12	7855-720	21.84



7612-19



7612 JOINTS Inner, with Ring, Rodaviss ★

⌘ inner ground glass joint with ring on shank for use with threaded outer member, o-ring and cap to form a leak-tight seal. For cap, see 7616; for o-ring, see 7617.

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
14/20	1	7612-19	11.89	24/40	1	7612-27	12.71
14/35	1	7612-21	13.46	29/42	1	7612-29	19.74
19/22	1	7612-23	15.37	45/50	1	7612-35	48.21



7612-20

7612 JOINTS Outer, Threaded, Rodaviss ★

⌘ outer member glass joint with external thread for use with inner member, o-ring and cap to form a leak tight-seal. For cap, see 7616; for o-ring, see 7617.

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
14/20	1	7612-20	13.02	24/40	1	7612-28	13.40
19/22	1	7612-24	15.01	29/42	1	7612-30	19.95
				45/50	1	7612-36	48.21



7613

7613 JOINTS Inner, w/Ring and Drip Tip, Rodaviss ★

⌘ inner ground glass joint with drip tip and ring on shank for use with 7612 outer member, o-ring and cap to form a leak-tight seal. For cap, see 7616; for o-ring, see 7617.

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
14/20	1	7613-03	14.84	24/40	1	7613-11	15.84
19/22	1	7613-07	17.10	45/50	1	7613-17	43.48



7616

7616 CAP Joint, with Hole, Rodaviss ★

Threaded resin cap for use with 7617 o-ring to secure 7612 or 7613 inner members to 7612 outer member joints.

For ⌘ Joints	Qty.	Order Code	Each
14/20, 14/35	1	7616-17	2.38
19/22	1	7616-19	3.11
24/40	1	7616-21	3.38
29/42	1	7616-23	5.35
34/45	1	7616-25	7.04
45/50	1	7616-27	11.72



7617

7617 O-RINGS Rodaviss ♠

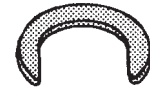
For use with 7612, 7613 and 7616 Rodaviss joints and cap to form a leak-tight seal.

For ⌘ Joints	Qty.	Nitrile		Viton	
		Order Code	Per Pkg.	Order Code	Per Pkg.
14/20, 14/35	12	7617-02	9.63	7617-13	18.49
19/22	12	7617-04	13.89	7617-15	21.32
24/40	6	7617-06	6.81	7617-17	17.64
29/42	6	7617-08	6.82	7617-19	19.21
34/45	6	7617-10	10.13	7617-21	30.09
45/50	3	7617-12	15.47	7617-23	18.23

7618 LOOSENING RING *Polyamide, Rodaviss* ★

Use to free frozen joints. Insert between top of cap and ring on shank of inner member, unscrew cap and inner member will release.

For ♂ Joint Size	Qty.	Order Code	Each	For ♀ Joint Size	Qty.	Order Code	Each
14/20, 14/35	1	7618-03	1.47	29/42	1	7618-09	1.94
19/22, 19/38	1	7618-05	1.49	34/45	1	7618-11	2.43
24/40	1	7618-07	1.49	45/50	1	7618-13	2.41


7618
7620 CONNECTORS *Screwthread, GL* ★

Externally threaded glass connectors. For use as replacement on apparatus using the GL thread or when designing items where the external thread is preferred. Supplied in 100mm overall length.

GL Thread Dimensions, mm			
Thread Size	O.D.	Height	I.D.
14	13.75	12.0	8.45
18	17.5	15.5	11.0
25	24.5	18.5	18.0
32	31.5	16.0	23.0
45	44.5	26.0	34.5
120	119.5	21.0	106.0

Thread Size (GL No.)	Tubing O.D. x Wall, mm	Qty.	Order Code	Each
14	12 x 1.5	1	7620-14	5.70
18	16 x 1.8	1	7620-18	6.83
25	22 x 1.8	1	7620-25	8.07
32	28 x 2.0	1	7620-32	15.31
45	40 x 2.3	1	7620-45	48.43
120	120 x 5.0	1	7620-60	52.68


7620-14
7621 CAP *with Hole, GL* ★

Open top red polybutylene terephthalate (PBT) cap for use with 7620 GL threads. When used with 7623 hose connection and 7624 sealing ring, will accommodate tubing of approximate diameter. Temperature range is -45°C to 180°C.

For Thread Size	Temperature Range, °C	Aperture Size, mm	O.D., mm	Height, mm	Qty.	Order Code	Each
14	-45 to +180				1	7621-04	2.35
18	-45 to +180				1	7621-08	2.40
25	-45 to +180	15	33	19	1	7621-15	2.97
32	-45 to +180	20	40	24	1	7621-22	3.54
45	-45 to +180	34	54	26	1	7621-25	6.21

7621

7622 CAP *Solid, GL, with PTFE Liner* ★

Solid red polybutylene terephthalate (PBT) cap with PTFE liner* for use with 7620 GL threads. Temperature range is -45°C to 180°C.

For GL Thread Size	Qty.	Order Code	Each
14	1	7622-103	3.15
18	1	7622-107	3.69
25	1	7622-114	5.52
32	1	7622-121	8.60
45	1	7622-124	12.58
120	1	7622-155	189.49

*120 GL size has a CAPFE o-ring seal.


7622



7623 HOSE CONNECTION for GL Thread, with Rubber Seal ★

Polypropylene hose connections with a silicone rubber seal for use with 7620 screwthread connector, sizes 14 and 18. Allows connection of tubing for cooling/heating, etc. to hose connection and securing to thread with 7621 holed cap. To remove, simply unscrew cap. Two styles: straight and bent, both are 8mm O.D. x 4mm I.D. Temperature limit: 110°C.

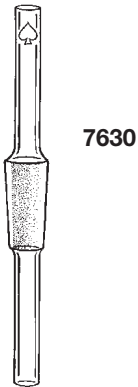
For GL Thread Size	Style	Qty.	Order Code	Each
14	Bent	1	7623-20	2.40
14	Straight	1	7623-22	2.55
18	Bent	1	7623-24	10.37
18	Straight	1	7623-26	11.25



7624 SEALING RING for GL Thread, with Rubber Seal ★

Silicone rubber seal, for use with 7621 holed cap to allow sealing of tubing in 7620 Threads.

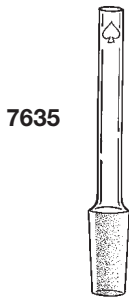
For GL Thread Size	Fits Tubing O.D., mm	Qty.	Order Code	Each
14	5.5 to 6.5	1	7624-40	4.52
18	5.5 to 6.5	1	7624-42	5.75
18	9.0 to 11.0	1	7624-45	5.75
25	7.5 to 9.0	1	7624-47	8.08
25	11.0 to 13.0	1	7624-49	8.08
32	11.0 to 13.0	1	7624-52	12.78
45	25.0 to 27.0	1	7624-54	21.10



7630 JOINTS Inner ♠

♠ inner joint with reduced tube at both ends. Length of tube below joint is 100mm.

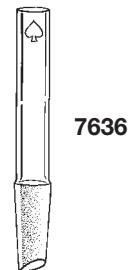
♠ Size	O.D. Tube, mm	Qty.	Order Code	Each
10/30	5	1	7630-04	21.32
14/35	7	1	7630-08	24.68
24/40	12	1	7630-12	29.65



7635 JOINTS Inner ♠

♠ inner joint with extending tube reduced in diameter.

♠ Size	O.D. Tube, mm	Qty.	Order Code	Each
14/20	7	1	7635-05	21.40
24/40	12	1	7635-10	26.03



7636 JOINTS Inner, Drip Tip ♠

♠ inner joint with an unstricted 30° angle drip tip extending from bottom of joint.

♠ Size	O.D. Tube, mm	Qty.	Order Code	Each
24/40	22	1	7636-06	17.85

7640 JOINTS *Extended Drip Tip* ♠

Inner ⌘ joint with lower tube reduced in diameter to size listed. Length of extended tube is 101mm.

⌘ Size	O.D. of Lower Tube, mm	Qty.	Order Code	Each	⌘ Size	O.D. of Lower Tube, mm	Qty.	Order Code	Each
10/30	5	1	7640-02	17.60	24/40	12	1	7640-10	19.93
14/35	7	1	7640-06	20.57	29/42	13	1	7640-12	23.90
19/38	10	1	7640-08	19.72	34/45	14	1	7640-14	30.12


7641 PTFE SLEEVES *0.4 mm* ★

Sturdy, reusable. knurled, reinforced gripping ring for easy and safe removal from ⌘ ground joints. Wall thickness is 0.4mm (.016 inches).

To Fit ⌘ Size	Qty.	Order Code	Per Pkg.
14/20	3	7641-04	29.41
24/40	3	7641-08	43.40
29/42	3	7641-10	58.73
34/45	3	7641-12	71.40
45/50	3	7641-16	111.81


7642 PTFE SLEEVES *0.13mm* ★

Ground joint standard taper sleeve for greaseless connections. NOT intended for cementing. Wall thickness is 0.13mm (.005 inches).

To Fit ⌘ Size	Qty.	Order Code	Per Pkg.	To Fit ⌘ Size	Qty.	Order Code	Per Pkg.
7/10	3	7642-02	16.01	29/42	3	7642-15	14.42
10/10	3	7642-04	16.57	34/45	3	7642-19	15.11
10/18	3	7642-03	12.35	45/50	3	7642-23	27.93
14/10	3	7642-06	9.64	60/50	1	7642-25	34.48
14/20	3	7642-07	10.29	71/60	1	7642-27	36.25
24/40	3	7642-11	11.01				


7643 PTFE SLEEVES *0.050mm* ★

This sleeve provides a vacuum-tight seal to a ground joint without grease wherever used. The sleeve is an elongated cone, PTFE, 0.050mm (.002 inches) thick, accurately tapered to fit tightly over the male ground glass cone, in sizes from ⌘ 10/30 to 55/50 inclusive. Sleeve completely eliminates the problem caused by seizure of joints, as well as precludes contamination due to stopcock lubricants and leaking ground joints.

To Fit ⌘ Size	Qty.	Order Code	Per Pkg.
10/30	12	7643-102	76.38
14/10	12	7643-107	24.56
14/20	12	7643-109	22.32
19/38	12	7643-106	23.36
24/40	12	7643-108	23.44
29/42	12	7643-110	25.11
34/45	12	7643-112	29.13
45/50	12	7643-116	47.97
60/50	12	7643-125	84.92
71/60	12	7643-129	111.72





7551 PTFE SLEEVES 0.38mm ★

Designed for use with F inner member regular joints with only a slight mismatch. Treated on inner surface so that it may be cemented to glass with ACE 7560 epoxy adhesive. Sleeves may also be used uncemented to replace lubricant at low pressure differentials. ACE PTFE sleeves are accurately shaped to 1:10 taper. Rugged, approximately 0.38mm (0.015-inch) wall thickness.

F Size	Qty.	Order Code	Each	F Size	Qty.	Order Code	Each
10/30	1	7551-02	16.92	29/42	1	7551-14	21.35
14/20	1	7551-06	18.42	34/45	1	7551-16	23.16
14/35	1	7551-08	18.42	40/50	1	7551-18	24.70
19/22	1	7551-09	18.93	45/50	1	7551-20	27.49
19/38	1	7551-10	18.93	50/50	1	7551-22	28.19
24/40	1	7551-12	20.65	55/50	1	7551-24	30.93

7556 PTFE SLEEVES for Spherical Joints, 0.38mm ★

Used in place of lubricant for average laboratory use (not intended for high vacuum use) unless cemented to glass with ACE 7560 epoxy adhesive. Rugged, approximately 0.38mm (0.015-inch) wall thickness.



F Size	Qty.	Order Code	Each	F Size	Qty.	Order Code	Each
12/5	1	7556-02	15.85	35/25	1	7556-10	19.42
18/9	1	7556-04	15.85	50/30	1	7556-12	23.02
28/15	1	7556-06	16.62	65/40	1	7556-14	26.37
35/20	1	7556-08	19.42				

7557 JOINTS Ball, Spherical ♠

For use with PTFE sleeves; ground slightly undersize so that with 7556 sleeves in place, joint conforms to standard F dimensions.

F Size	O.D. of Tube, mm	Qty.	Order Code	Each	F Size	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	9	1	7557-02	25.73	28/15	19	1	7557-06	31.20
18/9	13	1	7557-04	30.87	35/25	28	1	7557-10	37.15

7558 JOINTS Socket, Polished, Spherical ♠

Recommended for use with PTFE-clad ball member. Polished surface does not wear PTFE, assures more precise fit than the standard ground surface.

F Size	O.D. of Tube, mm	Qty.	Order Code	Each	F Size	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	9	1	7558-02	14.26	35/20	25	1	7558-08	20.49
18/9	13	1	7558-04	14.76	35/25	28	1	7558-10	20.49
28/15	19	1	7558-06	17.22					

7560 EPOXY ADHESIVE ♠

A two component epoxy system, which cures to a chemical resistant film. The epoxy is used to tightly bond a PTFE sleeve to a glass joint. Supplied in 30mL jars with the activator in a separate container. The 30mL supply will cement at least 25 joints depending on size.

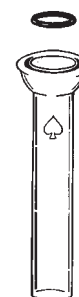


Qty.	Order Code	Each
1	7560-10	38.93

7646 JOINTS O-Ring Seal ♠

Joint tooled with groove to take o-ring and provide greaseless, vacuum-tight connection. Joints (codes -02 thru -16) are held together with 7669 pinch type clamps; code -18 is secured by using 6509-03. O-Rings are FETFE and may be used to 230°C. Each joint is furnished with an o-ring so you get a spare o-ring with every two joints purchased. For replacement o-rings, see 7855.

Approx. I.D., mm	Approx. O.D. of Stem, mm	Use Clamp No.	O-Rings Size	Qty.	Order Code	Each
5	8	7669-08	-110	1	7646-02	9.86
7	10	7669-10	-111	1	7646-04	10.54
9	13	7669-10	-112	1	7646-06	10.84
15	19	7669-12	-116	1	7646-08	11.47
20	25	7669-14	-214	1	7646-10	13.90
25	28	7669-14	-217	1	7646-12	13.90
40	45	7669-20	-226	1	7646-14	29.75
50	57	7669-22	-229	1	7646-16	38.63
75	83	6509-03	-341	1	7646-18	54.46


7646

ACE o-ring joints can be supplied in Stainless Steel. Email or call for information.

7648 JOINTS O-Ring Seal, † ♠

† inner member ground joint with groove for o-ring. For use with outer members 7566, 7567, 7651, and 7652. Leak-proof at high vacuum (up to 1 x 10⁻⁸ mm Hg.). O-Ring permits use without grease. Supplied with one FETFE o-ring. For replacement o-rings, see 7855.

† Size	Approx. O.D. of Stem, mm	O-Ring Size	Qty.	Order Code	Each
12/30	10	-011	1	7648-06	13.79
14/20	12	-012	1	7648-07	15.73
14/35	12	-012	1	7648-08	15.73
19/22	17	-111	1	7648-09	19.40
19/38	17	-111	1	7648-10	19.40
24/40	22	-115	1	7648-12	19.40
29/42	25	-118	1	7648-14	19.90

7648

7649 JOINTS O-Ring Seal, Spherical Ball ♠

‡ spherical ball, precision ground, with groove for o-ring, for use with matching socket members. Leak-proof at high vacuums when clamped. O-Ring permits use without grease. Supplied with one FETFE o-ring. For replacement o-rings, see 7855. See 7669 or 7670 for clamps.

‡ Size	Approx. O.D. of Stem, mm	O-Ring Size	Qty.	Order Code	Each
12/5	9	-011	1	7649-11	15.69
18/9	13	-014	1	7649-23	16.47
28/15	19	-116	1	7649-41	17.93
35/25	28	-118	1	7649-53	22.25


7649
7651 JOINTS Stainless Steel, † ★

Interchangeable, full length. These joints are machined from 18-8 type 303 free machining stainless steel and are supplied in accordance with CS21-58 of the N.I.S.T., O.D. and I.D. dimensions approximately the same as the glass joints listed under 7565. Shanks are machined for thread size listed, but are NOT threaded.

† Size	Thread Size (In.)	O.D. (In.)	Qty.	Inner		Outer	
				Order Code	Each	Order Code	Each
10/30	—	.345	1	7651-02	89.76	7651-04	113.34
24/40	1/2	.840	1	7651-20	181.63	7651-22	203.41
29/42	3/4	1.050	1	7651-26	219.66	7651-28	262.40

7651-04

7651-02

7651-222

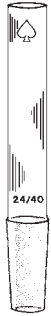


7651-220

7651 JOINTS *Stainless Steel, Threaded, § ★*

Same as listed under 7651 above, except these joints are machined with NPT male thread.

§ Size	Thread Size (In.)	O.D. (In.)	Qty.	Inner		Outer	
				Order Code	Each	Order Code	Each
24/40	1/2	.840	1	7651-220	218.58	7651-222	242.01
29/42	3/4	1.050	1	7651-226	279.52	7651-228	320.69



7652-02

7652 JOINTS *Inner, Quartz ★*

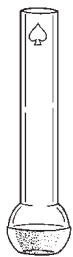
§ Size	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	O.D. of Tube, mm	Qty.	Order Code	Each
19/38	17	1	7652-14	87.66	45/50	40	1	7652-44	213.61
24/40	21.6	1	7652-20	98.98					

7652-04



7652 JOINTS *Outer, Quartz ★*

§ Size	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	O.D. of Tube, mm	Qty.	Order Code	Each
19/38	20	1	7652-16	87.23	45/50	45	1	7652-46	213.88
24/40	25	1	7652-22	99.01					



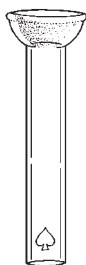
7655-04

7655 JOINTS *Ball, Spherical ♠*

Full length, standard wall. These famous ACE spherical joints are precision ground.

§ Size	Diameter of Ball, mm	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	Diameter of Ball, mm	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	12	9	1	7655-10	13.44	35/25	35	28	1	7655-52	17.66
18/7	18	11	1	7655-16	14.65	50/30	50	35	1	7655-58	35.97
18/9	18	13	1	7655-22	13.44	65/40	65	45	1	7655-64	53.97
28/11	28	16	1	7655-28	17.25	75/50	75	57	1	7655-70	64.72
28/12	28	16	1	7655-34	14.88	102/75	102	83	1	7655-76	88.81
28/15	28	19	1	7655-40	13.81						

7655-06

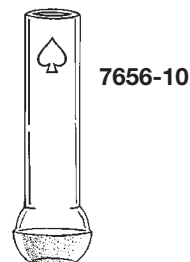


7655 JOINTS *Socket, Spherical, Borosilicate ♠*

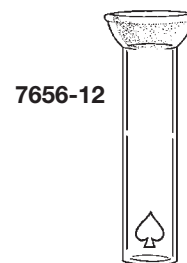
§ Size	Fits Ball, mm	O.D. of Tube, mm	Qty.	Order Code	Each	§ Size	Fits Ball, mm	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	12	9	1	7655-12	13.44	35/25	35	28	1	7655-54	17.30
18/7	18	11	1	7655-18	14.65	50/30	50	35	1	7655-60	35.43
18/9	18	13	1	7655-24	13.28	65/40	65	45	1	7655-66	53.60
28/11	28	16	1	7655-30	21.09	75/50	75	57	1	7655-72	68.23
28/12	28	16	1	7655-36	13.28	102/75	102	80	1	7655-78	87.28
28/15	28	19	1	7655-42	13.44						

7656 JOINTS *Ball, Spherical, Borosilicate, Heavy Wall* ♠

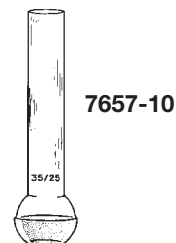
Size	I.D. of Tube, mm	O.D. of Tube, mm	Wall Thickness, mm (Inches)	Qty.	Order Code	Each
35/25	25	32	3.5 (1/8)	1	7656-10	34.31
50/30	30	38	3.5 (1/8)	1	7656-22	47.82
65/40	40	51	4.0 (5/32)	1	7656-28	67.51


7656 JOINTS *Socket, Spherical, Borosilicate, Heavy Wall* ♠

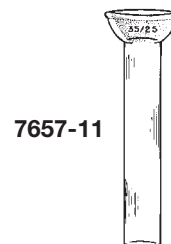
Size	I.D. of Tube, mm	O.D. of Tube, mm	Wall Thickness, mm (Inches)	Qty.	Order Code	Each
35/25	25	32	3.5 (1/8)	1	7656-12	37.91
50/30	30	38	3.5 (1/8)	1	7656-24	54.72
65/40	40	51	4.0 (5/32)	1	7656-30	75.84


7657 JOINTS *Ball, Spherical, Quartz* ★

Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	8	1	7657-10	75.63	28/15	18	1	7657-25	97.55
18/9	12	1	7657-16	75.63	35/25	29	1	7657-31	141.01


7657 JOINTS *Socket, Spherical, Quartz* ★

Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
12/5	8	1	7657-11	75.85	28/15	18	1	7657-26	97.55
18/9	12	1	7657-17	75.63	35/25	29	1	7657-32	141.01


7658 JOINTS *Stainless Steel, Spherical* ★

Fabricated from 18-8 type stainless steel No. 303 free machining. Inside diameter the same as our glass joints, 7655, and are fully interchangeable. Can also be supplied from other metals, made to order. Shanks are machined for thread sizes listed, but are NOT threaded.

Size	Thread Size (In.)	O.D. (In.)	Qty.	<i>Ball</i>		<i>Socket</i>	
				Order Code	Each	Order Code	Each
12/5	1/8	.405	1	7658-08	81.25	7658-10	101.06
18/9	1/4	.540	1	7658-20	110.50	7658-22	138.03
28/12	1/2	.840	1	7658-32	157.45	7658-34	179.07
28/15	1/2	.840	1	7658-38	157.45	7658-40	179.07
35/25	1	1.315	1	7658-50	184.61	7658-52	228.99
40/25	1	1.315	1	7658-56	232.63	7658-58	255.60
50/30	1-1/4	1.660	1	7658-62	295.12	7658-64	409.31



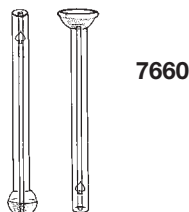


7658 JOINTS *Stainless Steel, Spherical, Threaded* ★

Same as previous item 7658, except these joints are machined with an NPT male thread.

Size	Thread Size (In.)	O.D. (In.)	Qty.	Ball		Socket	
				Order Code	Each	Order Code	Each
12/5	1/8	.405	1	7658-208	138.74	7658-210	156.11
18/9	1/4	.540	1	7658-220	188.18	7658-222	216.78
28/12	1/2	.840	1	7658-232	263.61	7658-234	284.44
28/15	1/2	.840	1	7658-238	263.61	7658-240	284.44
35/25	1	1.315	1	7658-250	405.83	7658-252	449.19

7658-210 7658-208



7660 JOINTS *Capillary, Spherical* ♠

Size	Diameter of Ball, mm	I.D. of Tube, mm	Qty.	Ball		Socket	
				Order Code	Each	Order Code	Each
12/2	12	2	1	7660-14	18.78	7660-16	23.37

7660



7663 SOCKET *Rubber Septum* ♠

End tooled to accept rubber stopper septa. Used on chromatography columns. Overall length 15cm, opening is 5mm. Rubber septa listed below. Socket also works well with 12898 septa.

Tube I.D., mm	Tube O.D., mm	Qty.	Order Code	Each
4	6.4	1	7663-01	8.23
2	7.5	1	7663-02	8.23
3	7.8	1	7663-04	8.23
Rubber septum		12	9096-32	15.50

7663

For use with #7 Ace-Thred, see 7644 for listing.



8455 GRADED SEALS *Quartz to Borosilicate* ★

For connecting Kimax, Pyrex, Simax or Duran 33 Expansion borosilicate glass parts to quartz. Quartz length is 7.6cm, glass length, 10.2cm.

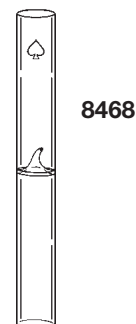
I.D., mm	Qty.	Order Code	Each	I.D., mm	Qty.	Order Code	Each
3	1	8455-02	44.61	17	1	8455-28	97.18
4	1	8455-04	44.73	19	1	8455-30	89.64
5	1	8455-06	45.31	20	1	8455-32	107.06
6	1	8455-08	42.03	22	1	8455-34	117.93
7	1	8455-10	46.93	25	1	8455-36	130.53
8	1	8455-12	55.43	27	1	8455-38	158.02
9	1	8455-14	58.65	30	1	8455-40	175.23
10	1	8455-16	60.76	32	1	8455-42	196.53
11	1	8455-18	62.79	35	1	8455-44	202.27
12	1	8455-20	72.52	37	1	8455-46	237.59
13	1	8455-22	71.04	40	1	8455-48	252.70
15	1	8455-24	84.03	50	1	8455-50	467.57
16	1	8455-26	89.75				

8455

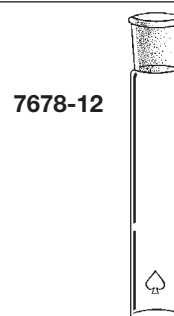
8468 TUBE *Break Seal* ♠

Used as a one-time opening valve. Drawn to a point so that a small weight will fracture seal.

Tube O.D., mm	Qty.	Order Code	Each
10	1	8468-03	19.57
3	1	8468-05	20.70
16	1	8468-07	21.66


7678 JOINTS *Flask Length, Outer* ♠

Size	O.D. of Tube, mm	Qty.	Order Code	Each	Size	O.D. of Tube, mm	Qty.	Order Code	Each
#13	17	1	7678-12	11.47	#27	32	1	7678-28	15.80
#16	20	1	7678-15	12.43	#32	38	1	7678-32	23.25
#22	25	1	7678-24	15.14	#38	45	1	7678-36	27.56



See page 134 for joint clamps.

U.S. Government Buyer?

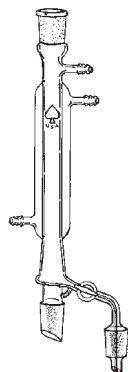
Ace Glass is proud to be on the General Services Administration (GSA) website!



Schedule
 Contract GS24F0066M

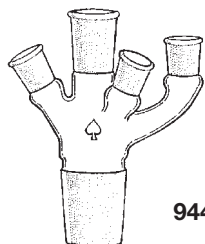
www.gsasmart.com

9244

**9244 CONDENSER & ANALYTICAL STILL HEAD COMBINED** ♠

By closing the glass stopcock, serves as a reflux condenser; open serves as a still head for Claisen type distillation. Top joint can be used for thermometer or cold finger condenser insertion. Side vent enables head to be used in vacuum distillation. Jacketed section 140mm. Use with 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

⌘ Joints	Qty.	Order Code	Each
14/20	1	9244-06	345.69

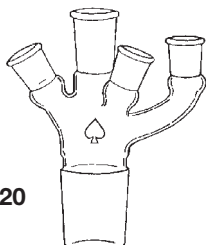


9443-10

9443 FLASK HEAD ♠

Standard interchangeable Mini-Lab head for use with 9448-05 through code -15, 9451 or 9456 flasks. Top has ⌘ 14/20 joints with the exception of top center joint which is ⌘ 19/38. Side arms are placed at the proper angle so that the thermometer or addition tube can be placed in the flask without interfering with stirring.

Bottom Inner Joint	Qty.	Order Code	Each
⌘45/50	1	9443-10	194.25

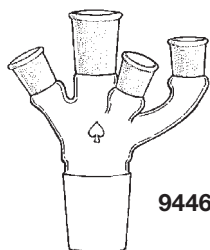


9443-20

9443 FLASK HEAD ♠

Interchangeable Mini-Lab head for use with 9448-50 or 9450 flasks. Top polished joints, ⌘ 19/38 polished center and ⌘ 14/20 polished sides. Side arms are placed at the proper angle so that the thermometer or addition tube can be placed in the flask without interfering with stirring. PTFE-clad bottom joint.

Bottom Inner Joint	Qty.	Order Code	Each
⌘45/50	1	9443-20	266.28



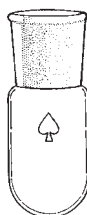
9446

9446 FLASK HEAD ♠

Interchangeable Mini-Lab head with ⌘ 45/50 bottom joint. Top ⌘ 19/38 center joint, and ⌘ 14/20 side necks. Side arms are placed at proper angles so that a thermometer or addition tube may be placed in the flask without interfering with the stirring. For use with 9448-50 or 9450 flasks. PTFE-clad bottom joint.

Bottom Inner Joint	Qty.	Order Code	Each
⌘45/50	1	9446-10	259.12

9448-05

**9448 FLASK** ♠

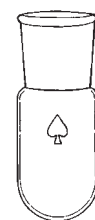
Round bottom, cylindrical sides. Useful in many Mini-Lab assemblies. Can also be applied to many other applications in the laboratory where a wide-mouthed flask of small capacity is desired. Glas-Col mantles listed under 9515. Use with 9443 or 9446 head.

Capacity, mL	⌘ Joint	Qty.	Order Code	Each
50	45/50	1	9448-05	48.03
100	45/50	1	9448-10	49.07
150	45/50	1	9448-15	51.56

9448 FLASK with Polished Joint ♦

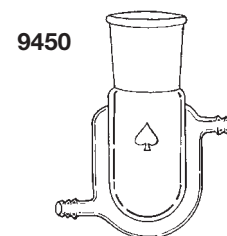
⌘ 45/50 joint is polished to fit 9443 or 9446 head. Round bottom, cylindrical sides, useful in many Mini-Lab assemblies and in other applications where a wide-mouth flask of small capacity is desired. Glas-Col mantles (Order Code 9515) can be used with this flask.

Capacity, mL	⌘ Joint	Qty.	Order Code	Each
100	45/50	1	9448-50	99.68


9448-50
9450 FLASK Jacketed, with Polished Joint ♦

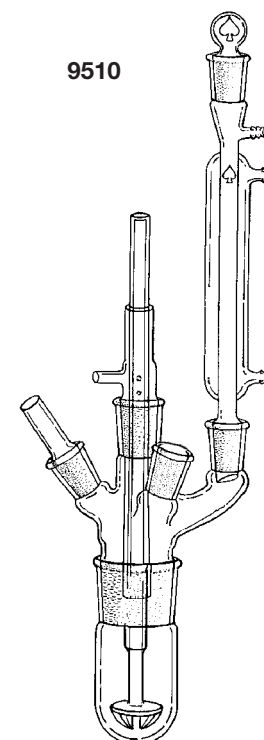
Jacketed version of standard 9448 flask. Furnished with polished ⌘ 45/50 outer joint so that it can be used with 9443 or 9446 heads.

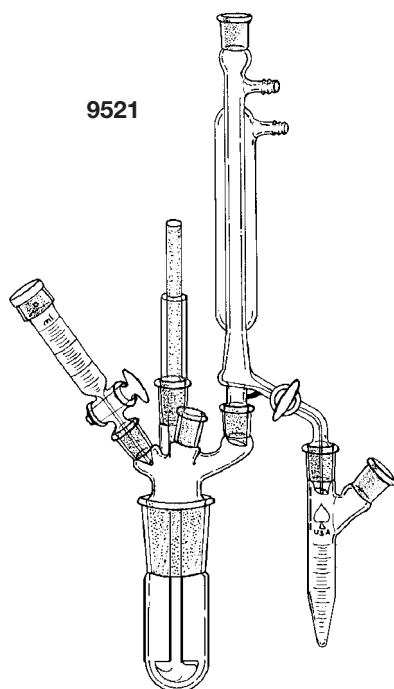
Capacity, mL	⌘ Joint	Qty.	Order Code	Each
100	45/50	1	9450-08	234.65


9450
9510 GAS EQUILIBRIUM ASSEMBLY ♦

A practical set-up for the study of chemistry which involves the reaction of a gas-liquid or a liquid-solid heterogeneous system. The agitator is constructed to permit gas introduced through side arm of the bearing to enter the hollow agitator shaft and pass into the reaction system underneath the disc which supports the four blades. With the agitator running between 800-1600 rpm, a very fine dispersion of gas-liquid is obtained. The catalytic hydrogenation of aromatic nitro derivatives with platinum, palladium or Raney-nickel catalyst serves as an excellent example. Center joint on flask is ⌘ 45/50, center joint on head is ⌘ 19/38. All others are ⌘ 14/20. Assembly consists of one each 9448, 9443, 9523, 9532, 9258, 9543, and two 9554. *Thermometer not included.* Condenser uses 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

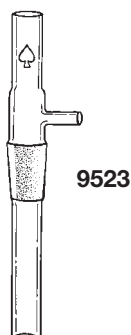
Flask Cap., mL	Qty.	Order Code	Complete
50	1	9510-06	649.67
100	1	9510-13	650.71


9510

**9521 MINI-LAB ASSEMBLY** ♠

The flask is fabricated with an ACE F 45/50 joint and is available in either 50 or 100mL capacity. Head is fabricated with three F 14/20 outer joints surrounding the F 19/38 center opening. The Trubore bearing is 8038. The agitator is constructed as a solid shaft with the blades shaped in the form of a half propeller. Blades are rounded to permit close tolerance with the flask bottom. The shaft is inserted in the bearing from underneath, rather than through the neck as in a conventional flask; design of the agitator is limited only by the joint dimensions. The analytical still head with stopcock serves as a reflux condenser. Top joint is for thermometer or cold finger condenser. Controlled addition of liquids is done by graduated weighing buret used as a dropping funnel. Heating of assembly is done with a 9515 Glas-Col mantle with a 12080 voltage controller. Heater and controller not included. *Thermometer not included.* Assembly consists of 9176, 9443, 9448, 9555, 8038, 9533, 9244 and 9373. Use with 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

Flask Cap., mL	Qty.	Order Code	Complete
50	1	9521-05	1026.25
100	1	9521-15	1027.29

**9523 BEARING** Trubore, 10mm ♠

For use with flask head 9443. By using precision bore tubing throughout the length of the bearing, a stirrer bearing can be produced that will hold to within 1mm of vacuum and withstand pressures in the flask up to 300psi. The 9532 agitator used with this bearing actually develops a negative pressure of 230mm water at operation speeds. The side opening on the bearing is used to add gases through the hollow rod stirrer as listed under 9532. 10mm I.D.

F Joint	Qty.	Order Code	Each
19/38	1	9523-04	134.62

**9515 HEATING MANTLE**

Designed especially for 9448 Mini-Lab flasks. Special heaters can also be made to order for flask with stopcock opening at lower end. Power with ACE 120 volt temperature controllers or 12080 variable voltage controller.

For Flask Cap., mL	Qty.	Order Code	Each
50	1	9515-04	285.62
100	1	9515-06	357.75
150	1	9515-08	338.86

**9516 HEATING MANTLE** Pear Shaped

Lower section only.

For Flask Cap., mL	Approx. Dia., mm	Wattage	Qty.	Order Code	Each
5	25	12w – 30v	1	9516-02	154.96
10	31	15w – 30v	1	9516-04	155.10
25	45	25w – 60v	1	9516-06	174.72
50	51	35w – 60v	1	9516-08	188.24
100	59	70w – 115v	1	9516-10	197.45
250	81	135w – 115v	1	9516-12	228.80

9560-30 ACE BASIC KIT* II

Basic MICRO/MINI-LAB KIT, approved by the authors of *Microscale Organic Laboratory* — Dana W. Mayo, Ronald M. Pike, Samuel S. Butcher; John Wiley and Sons, New York. This kit will do 95% of the experiments in the text.

This basic kit will also do the majority of experiments in *Organic Laboratory Techniques* — Donald L. Pavia, Gary M. Lampman, George S. Kriz, Randall G. Engel; Saunders College Publishing, Chicago.

Basic Kit II includes the 9599-62 Hickman-Hinkle Still with side port. (With the 9599-20 PTFE band, still can be used as a spinning Hickman distillation still.) Also, the 5261-06 multi-purpose adapter has replaced the 5028-25 thermometer adapter to allow more versatility, including reduced pressure operations.

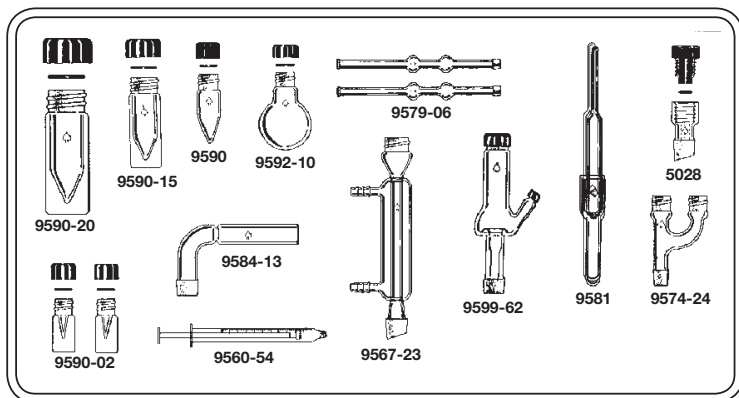
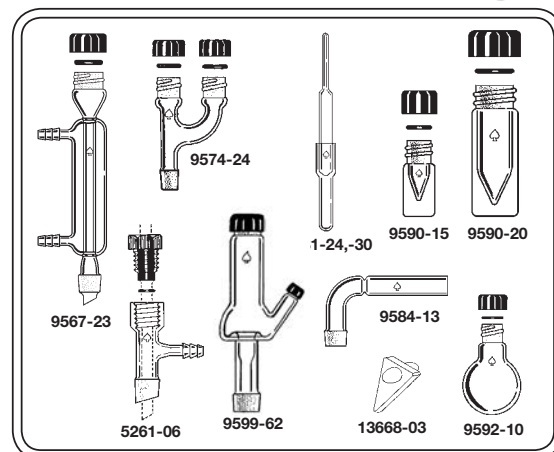
All joints are F 14/10. Supplied in a clear, flexible plastic, tilt lid, compartmentalized box.



KIT COMPONENTS

(1) 9567-23 Jacketed Condenser	(1) 9581-24 2mL Outer, Craig
(1) 9599-62 Hickman-Hinkle Column, with Side Port	(1) 9581-30 PTFE Plug, Craig
(1) 9574-24 Claisen Adapter	(1) 9592-10 10mL RB Flask
(1) 9590-15 3.0mL Vial	(1) 9584-13 Drying Tube
(1) 9590-20 5.0mL Vial	(1) 5261-06 Multi-Purpose Adapter
	(1) 13668-03 Magnetic "V" Stir Bar

Qty.	Order Code	Per Kit
1	9560-30	373.55



Micro/Mini-Lab is a registered trademark of Ace Glass Inc.

9560-18 KIT* Deluxe, F 14/10, with Spinning Hickman

Deluxe micro/mini-lab kit with microscale glassware to do all experiments in *Microscale Organic Laboratory* — Dana W. Mayo, Ronald M. Pike, Samuel S. Butcher; John Wiley and Sons, New York. This kit is supplied with F 14/10 joints and makes converting from F 14/20 to microscale realistic and convenient. Included in this kit is the Hickman-Hinkle spinning distillation column. Supplied in plastic tilt lid box with foam inserts.

KIT COMPONENTS

(1) 9560-54 Sample Syringe	(1) 9584-13 Drying Tube	(1) 9590-15 3.0mL Vial
(1) 9567-23 Jacketed Condenser	(2) 9579-06 GC Coll. Tube	(1) 9591-16 3.0mL Vial, Thin
(1) 9574-24 Claisen Head	(1) 9581-23 1mL Outer, Craig	(1) 9590-20 5.0mL Vial
(1) 9599-62 Hickman-Hinkle Col.	(1) 9581-30 (PTFE Plug, Craig	(1) 9591-21 5.0mL Vial, Thin
(1) 9599-20 PTFE Band	(1) 9592-10 10mL RB Flask	(1) 5028-25 Adapter, Therm.
(1) 9599-23 Plastic Insulator	(2) 9590-02 0.1mL Vial	

Qty.	Order Code	Per Kit
1	9560-18	580.14

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Micro/Mini-Lab is a registered trademark of Ace Glass Inc.

9560-14 ACE KIT* Deluxe, with $\text{\textcircled{F}}$ 14/10 Joints ★

Deluxe MICRO/MINI-LAB KIT with microscale glassware to do all experiments described in *Microscale Organic Laboratory* — Dana W. Mayo, Ronald M. Pike, Samuel S. Butcher; John Wiley and Sons, New York.

This kit, supplied with $\text{\textcircled{F}}$ 14/10 joints (in place of the $\text{\textcircled{F}}$ 7/10 and $\text{\textcircled{F}}$ 14/10 joints in 9560-05 Original Deluxe Kit), makes converting from $\text{\textcircled{F}}$ 14/20 to micro more convenient. This kit includes a 9560 sample retrieval syringe, plus the improved, unbreakable, PTFE inner plug for the Craig recrystallization tube. Supplied in plastic tilt lid box with foam insert.

Qty.	Order Code	Per Kit
1	9560-14	537.95

KIT COMPONENTS

(1) 9560-54	Sample Syringe	(1) 9581-24	2mL Outer, Craig
(1) 9566-17	Air Condenser	(1) 9581-30	PTFE Plug, Craig
(1) 9567-23	Jacketed Condenser	(1) 9584-13	Drying Tube
(1) 9574-24	Claisen Head	(1) 9586-18	Gas Del Tube
(1) 9576-04	Hickman Still	(2) 9590-02	0.1mL Vial
(2) 9579-06	GC Coll. Tube	(2) 9590-15	3.0mL Vial
(1) 9581-23	1mL Outer, Craig	(1) 9590-20	5.0mL Vial

REPLACEMENT FOAM INSERTS

for Microscale Kits ♠

3 Piece Set

For Kit	Qty.	Order Code	Per Set
9560-05	1	9560-65	18.79
9560-14	1	9560-63	18.80
9560-18	1	9560-62	18.88

REPLACEMENT FOAM INSERTS

for Spinning Band Column ♠

3 Piece Set

Qty.	Order Code	Per Set
1	9595-60	12.63

REPLACEMENT BOX Plastic, Tilt Lid, for 9560-05,-14,-18 Kits ♠

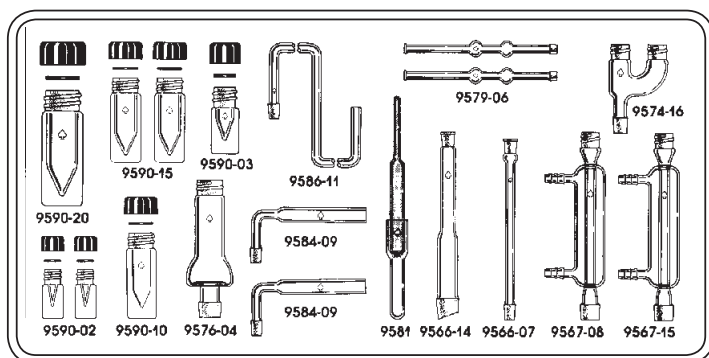
Qty.	Order Code	Per Set
1	9560-66	24.72

REPLACEMENT BOX Plastic, Tilt Lid, for Spinning Band Column ♠

Qty.	Order Code	Per Set
1	9595-61	24.73

REPLACEMENT BOX Plastic, Tilt Lid, for 9560-30 Kit

Qty.	Order Code	Per Set
1	9560-68	12.82



Micro/Mini-Lab is a registered trademark of Ace Glass Inc.

9560-05 ACE KIT* Deluxe ★

The original deluxe MICRO/MINI-LAB KIT with all microscale glassware necessary to conduct the 52 experiments described in *Microscale Organic Laboratory* – Dana W. Mayo, Ronald M. Pike, Samuel S. Butcher; John Wiley and Sons, New York. This equipment, originally developed by the authors, is supplied with K 5/5, K 7/10 and K 14/10 joints and includes the improved, unbreakable PTFE inner plug for the Craig recrystallization tube. Supplied in plastic tilt lid box with foam insert.

Qty.	Order Code	Per Kit
1	9560-05	610.87

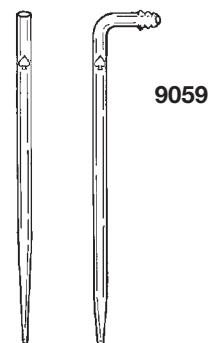
KIT COMPONENTS

(1) 9566-07 Air Condenser	(2) 9579-06 GC Coll. Tube	(2) 9590-02 0.1mL Vial
(1) 9566-14 Air Condenser	(1) 9581-23 1mL Outer, Craig	(1) 9590-03 0.3mL Vial
(1) 9567-08 Jacketed Condenser	(1) 9581-24 2mL Outer, Craig	(1) 9590-10 1.0mL Vial
(1) 9567-15 Jacketed Condenser	(1) 9581-30 PTFE Plus, Craig	(2) 9590-15 3.0mL Vial
(1) 9574-16 Claisen Adapter	(2) 9584-09 Drying Tube	(1) 9590-20 5.0mL Vial
(1) 9576-04 Hickman Still	(1) 9586-11 Gas Delivery Tube	

9059 ADAPTER Bleed ♠

With drawn capillary tip for the introduction of gases below the liquid surface. Outside diameter is 7mm. Length approximately 270mm (10-3/4 inches). For use with #7 Ace-Thred. Hose connection on bent adapter is size A hose connection, 5/16-inch I.D. tubing. See page 7 for more detailed hose connection information.

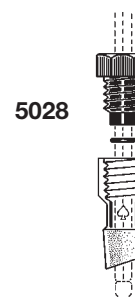
	Qty.	Order Code	Each
Straight Adapter	1	9059-08	5.87
Bent Adapter	1	9059-12	12.80

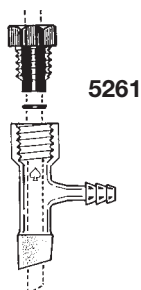


5028 ADAPTER "Mini" #7 Ace-Thred ♠

With K ground inner drip joint at bottom and #7 Ace-Thred at top that forms an o-ring compression seal with thermometers, bleed tubes, etc. Supplied complete with bushing and FETFE o-ring that will accommodate 6.5 to 7.0mm O.D. For smaller thermometers, like 9548, substitute 11710-04 PTFE ferrule for o-ring. For normal student thermometers, use 11710-07 ferrule. Bottom joint supplied with a drip tip.

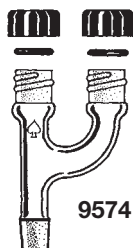
K Joint	Qty.	Order Code	Complete
14/10	1	5028-25	27.37




5261 ADAPTER *with Hose Connection, "Mini" #7 Ace-Thred* ♠

With $\frac{1}{4}$ 14/10 ground inner drip joint at bottom, #7 Ace-Thred at top that forms an o-ring compression seal with 6.5-7mm thermometers, bleed tubes, etc., and side hose connection. Supplied complete with nylon bushing and FETFE o-ring. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

$\frac{1}{4}$ Joint	Qty.	Order Code	Complete
14/10	1	5261-06	37.72


9574 ADAPTER *Claisen, Threaded* ♠

Microscale Claisen adapter/head often used to facilitate syringe addition of reagents to sealed or moisture-sensitive systems. The top joints are combination cap, thread and $\frac{1}{4}$ joints to accommodate and seal other microscale apparatus. The O.D. of the top joints have an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. With inner $\frac{1}{4}$ joint at bottom. Supplied with two threaded caps with hole, two PTFE-faced silicone rubber septa and two o-rings. For replacement caps, see 9590-45, -46, -47; for septa, see 8787-41, -42, -43; for o-rings, see 7855-705, -706, -720.

Top Threaded/Outer $\frac{1}{4}$ Joint	Inner $\frac{1}{4}$ Joint	Qty.	Order Code	Each
7/10	14/10	1	9574-16	54.95
10/10	10/10	1	9574-20	54.95
14/10	14/10	1	9574-24	54.95

9069


9069 ADAPTER *Connecting Hose* ♠

With $\frac{1}{4}$ 14/10 inner joint and three-ring hose connection. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
1	9069-04	19.85

9080


9080 ADAPTER *Connecting Hose, with 1:5 PTFE Plug* ♠

With $\frac{1}{4}$ 14/10 inner joint and solid PTFE stopcock plug. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
1	9080-10	75.49


9562 ADAPTER *Distilling* ♠

The top joint is a combination cap, thread and $\frac{1}{4}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\frac{1}{4}$ 14/10 outer joint. $\frac{1}{4}$ 14/10 inner joint at bottom and at 75° angle. Supplied with cap and o-ring.

Top Threaded/Outer $\frac{1}{4}$ Joint	Inner $\frac{1}{4}$ Joints	Qty.	Order Code	Each
14/10	14/10	1	9562-11	49.75

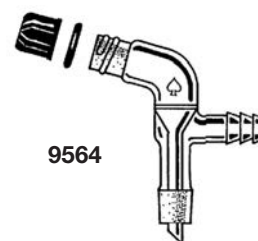

9563 ADAPTER *Distillate Take-Off* ♠

The top joint is a combination cap, thread and $\frac{1}{4}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\frac{1}{4}$ 14/10 outer joint. 105° angle. Supplied with cap and o-ring.

Top Threaded/Outer $\frac{1}{4}$ Joint	Qty.	Order Code	Each
14/10	1	9563-07	25.64

9564 ADAPTER Vacuum Take-Off, with Hose Connection ♠

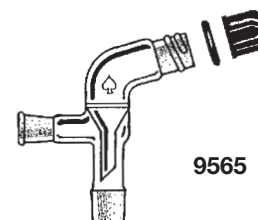
Used for Microscale vacuum distillations. The top joint is a combination cap, thread and $\text{\textcircled{S}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{S}}$ 14/10 outer joint. Inner $\text{\textcircled{S}}$ joint at other end and size C hose connection for vacuum. 105° angle. Supplied with cap and o-ring. See page 7 for more detailed hose connection information.



Top Threaded/Outer $\text{\textcircled{S}}$ Joint	Bottom Inner $\text{\textcircled{S}}$ Joint	Qty.	Order Code	Each
14/10	14/10	1	9564-10	53.10

9565 ADAPTER Vacuum Take-Off, with $\text{\textcircled{S}}$ Side Joint ♠

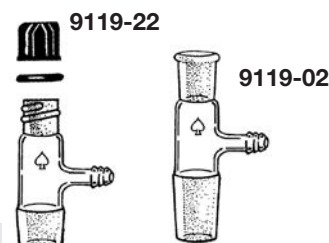
Used for Microscale vacuum distillations, especially for use with 9595 spinning band micro-distillation column. The top joint is a combination cap, thread and $\text{\textcircled{S}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. Inner $\text{\textcircled{S}}$ joint at other end and $\text{\textcircled{S}}$ 7/10 outer side joint for vacuum connection or stopper when using spinning band column technique. 105° angle. Supplied with cap and o-ring.



Top Threaded/Outer $\text{\textcircled{S}}$ Joint	Bottom Inner $\text{\textcircled{S}}$ Joint	$\text{\textcircled{S}}$ Side Joint	Qty.	Order Code	Each
7/10	10/10	7/10	1	9565-05	50.87
7/10	14/10	7/10	1	9565-06	50.87

9119 ADAPTER Gas Inlet/Vacuum, Microscale ♠

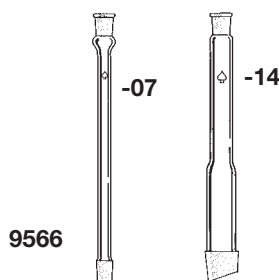
Use as gas inlet or vacuum adapter. Code -02 has a $\text{\textcircled{S}}$ 14/10 top joint and a $\text{\textcircled{S}}$ 19/38 bottom joint. Code -22 has an externally threaded top outer joint and $\text{\textcircled{S}}$ 14/10 bottom joint, and it is supplied with a holed cap and FETFE o-ring. Both have a serrated size B hose connection off to the side, and should be used with 5/16-inch or 3/8-inch I.D. tubing. See page 7 for more detailed hose connection information.



Qty.	Order Code	Each
1	9119-02	43.16
1	9119-22	42.51

9566 CONDENSER Air Reflux, Mini-Lab ♠

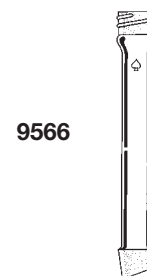
Micro scale air condensers used in reflux experiments. When packed with desiccant material, condensers become a drying tube. Inner $\text{\textcircled{S}}$ joint at bottom and an outer $\text{\textcircled{S}}$ joint at top. The code -14 has a drip tip bottom $\text{\textcircled{S}}$ joint for use with the 9595 spinning band column. Effective length is approximately 100mm.



Tube O.D., mm	Bottom $\text{\textcircled{S}}$ Inner Joint	Top $\text{\textcircled{S}}$ Outer Joint	Qty.	Order Code	Each
6.4	7/10	7/10	1	9566-07	29.79
10	14/10	7/10	1	9566-14	29.79

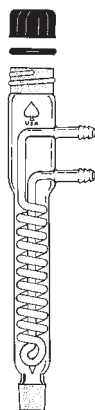
9566 CONDENSER Air Reflux, with Cap ♠

Micro scale air condensers used in reflux experiments. When packed with desiccant material, condensers become a drying tube. Inner drip tip, $\text{\textcircled{S}}$ joint at bottom and a combination outer cap thread at top with a ground outer joint inside to accommodate other microscale components. Use 9590 caps and 7855 FETFE o-rings, or 9590 flat septa. Effective length is approximately 100mm.



Tube O.D., mm	Bottom $\text{\textcircled{S}}$ Inner Joint	Top Cap x $\text{\textcircled{S}}$ Outer Joint	Qty.	Order Code	Each
8	10/10	15-425 Thread x 10/10	1	9566-10	29.79
10	14/10	20-400 Thread x 14/10	1	9566-17	31.52

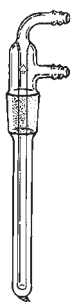
9569


9569 CONDENSER *Coil Reflux, Microscale* ♠

High efficiency coil condenser especially suited for vacuum applications. Coil length is 70mm. The top joint is a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Bottom is $\text{\textcircled{F}}$ 14/10 inner joint. Supplied with cap and o-ring.

Qty.	Order Code	Each
1	9569-24	157.53

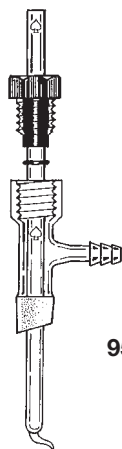
9250


9250 CONDENSER *Cold Finger* ♠

Can be used with 9119 adapter and 9785 still for micro distillations. Length of finger below joint is 80mm. Joint is $\text{\textcircled{F}}$ 14/10. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
1	9250-02	67.19

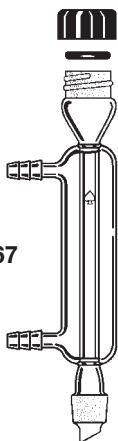
9573


9573 CONDENSER *Cold Finger, Adjustable, Micro* ♠

Micro cold finger condenser with drip tip on bottom for directing drops into the well of $\text{\textcircled{F}}$ 14/10 jointed 9576 or 9599 Hickman Stills. Cold water is introduced into cold finger periodically by means of a Pasteur pipet. Complete item consists of cold finger condenser and multi-purpose vacuum adapter with #7 Ace-Thred that makes compression o-ring seal with cold finger and allows for vertical adjustment. Threaded adapter supplied with nylon bushing and FETFE o-ring. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Cold Finger Condenser, only	1	9573-08	10.37
Vacuum Adapter, only	1	5261-06	37.72
Complete	1	9573-20	48.09

9567


9567 CONDENSER *Jacketed Reflux, Threaded* ♠

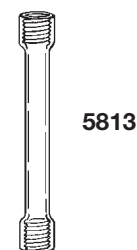
Microscale, water-jacketed condenser used in reflux experiments. The top joint is a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. Inner $\text{\textcircled{F}}$ joint at bottom, with drip tip. I.D. of inner tube on codes -19 and -23 is sufficiently large enough to accept regular size thermometer. Jacket length approximately 80mm. Inlet and outlet water connections are three-ring serrated fittings. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Bottom $\text{\textcircled{F}}$ Inner Joint	Top $\text{\textcircled{F}}$ Outer Joint	Qty.	Order Code	Each
7/10	7/10	1	9567-08	66.47
14/10	7/10	1	9567-15	66.47
10/10	10/10	1	9567-19	66.47
14/10	14/10	1	9567-23	66.47

5813 COLUMN *Chromatography, Micro, Threaded* ♠

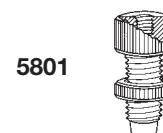
With internally threaded ends. Threads are #7 Ace-Thred for use with 5801-07 end fitting. Column measures 85mm effective length, 8mm I.D.

Qty.	Order Code	Each
1	5813-23	37.77


5801 ADAPTER *End Fitting, 1/4-28 to Ace-Thred, Michel-Miller* ♠

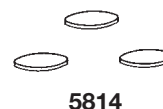
Precision made PTFE end fitting for use at either end of the 5813 column. Designed to make a leak-tight seal without the use of o-rings. Simply tighten until white ring appears, indicating a seal has been made, then secure locknut; no need to over tighten. Use paper filter disc, 5814-06, to retain packing material. Female thread at top is 1/4-28 to accept standard miniature plumbing systems. Bore is 1.5mm (.060 inches).

For Thread Size, mm	Qty.	Order Code	Each
7	1	5801-07	56.23


5814 FILTER DISCS ★

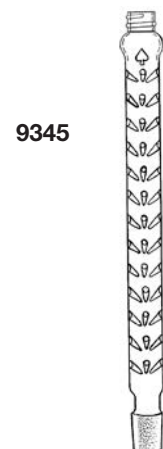
For use with 5801 end fittings to retain packing material. Made from a specially pure, very uniform, highly absorbent paper.

For Thread Size, mm	Disc Dia. mm	Qty.	Order Code	Per Pkg.
7	7.5	100	5814-06	16.00


9345 COLUMN *Distilling, Vigreux, Microscale* ♠

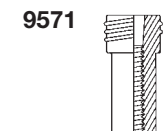
For vacuum distillation of high boiling materials. The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. Bottom ⌘ 14/10 inner, and indents. Supplied with holed cap and FETFE o-ring. Length stated is length of indents.

Length, mm	Qty.	Order Code	Each
75	1	9345-32	65.89
100	1	9345-35	68.47


9571 GC CONNECTION ADAPTER *Stainless Steel* ♠

Microscale gas chromatography connection-adapter for making direct connection between GC column and 9579-06 collection tube. Stainless steel adapter has a 6-32 NPT female thread for attaching to heated port on GC and a ⌘ 5/5 outer joint, externally threaded, to allow an "O-Ring-CAP-SEAL" connection with 9579 tube.

G-M Model	Qty.	Order Code	Each
#150	1	9571-40	64.76
#350	1	9571-42	64.61



9579

**9579 TUBE** *GC Collection* ♠

Microscale gas chromatography collection tube for fraction collection followed by transfer of sample to 9590-02, 0.1mL, conical vial for storage. $\frac{5}{8}$ inner joint on tube allows direct connection to heated exit port of GC column via 9571-40 stainless steel connection adapter. Inner joint facilitates transfer since 0.1mL vial has $\frac{5}{8}$ outer joint.

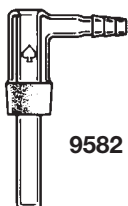
Qty.	Order Code	Each
1	9579-06	27.67

9581

**9581 TUBE** *Craig Recrystallization* ♠

Microscale Craig tube for recrystallizing small quantities of reaction product. Consists of a glass outer tube with non-uniform grind to purposely allow leakage, and a PTFE inner plug. This plug eliminates breakage normally experienced with glass plugs. Volume stated is capacity below grind. **NOTE:** ACE Microscale kits are now supplied with PTFE plug. For those who would prefer the original glass inner plug, it is also available.

Capacity, mL	Qty.	<i>Glass Outer</i>		<i>PTFE Plug</i>		<i>Complete</i>	
		Order Code	Each	Order Code	Each	Order Code	Each
1	1	9581-23	11.97	9581-30	11.49	9581-05	23.46
2	1	9581-24	11.97	9581-30	11.49	9581-03	23.46
			Qty.	Order Code	Each		
Glass Inner Plug, Only			1	9581-28	14.75		



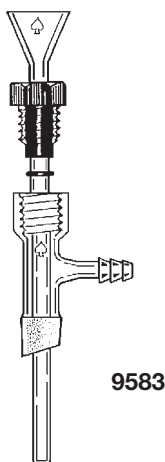
9582

9582 SUBLIMATION ADAPTER ♠

Microscale sublimation adapter for use with 9591-21 vial and 9592-10 flask. Supplied with $\frac{1}{4}$ 14/10 inner joint. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Qty.	Order Code	Each
1	9582-12	49.28

Designed by Dr. Anthony Winston, West Virginia Univ. Dept. of Chemistry, Morgantown, WV 26506



9583

9583 SUBLIMATION ADAPTER *Adjustable* ♠

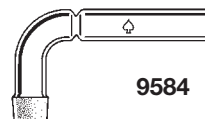
Microscale sublimation adapter with vertically adjustable condenser tube that allows use with 3 mL, 5 mL, and 10 mL microscale vessels. Two-piece adapter features a #7 Ace-Thred at top of vacuum adapter that, with nylon bushing and o-ring, forms a compression seal with condenser tube, bottom $\frac{1}{4}$ 14/10 inner drip joint, and side hose connection. **Note:** without condenser tube, threaded vacuum adapter will accept thermometer, bleed tube, etc. Complete item consists of vacuum adapter with nylon bushing and FETFE o-ring, and condenser tube. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Vacuum Adapter with Bushing & o-ring	1	5261-06	37.72
Condenser Tube, only	1	9583-02	11.83
Complete	1	9583-24	49.55

9584 TUBE *Drying* ♠

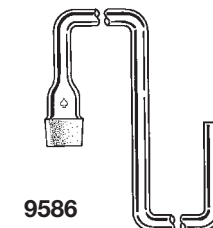
Microscale drying tube used to protect moisture sensitive reaction components from atmospheric water vapor while allowing a reaction system to be kept unsealed. With inner ⚗ joint, bent 90° to main chamber.

⚗ Inner Joint	Qty.	Order Code	Each
7/10	1	9584-09	24.41
10/10	1	9584-11	24.41
14/10	1	9584-13	24.41


9584
9586 TUBE *Capillary Gas Delivery* ♠

Microscale bent capillary gas delivery tube for transferring gases generated during reactions to storage containers, such as 9588 sampling reservoir.

⚗ Inner Joint	Qty.	Order Code	Each
7/10	1	9586-11	40.97
10/10	1	9586-15	40.97
14/10	1	9586-18	40.97


9586
9588 GAS RESERVOIR ♠

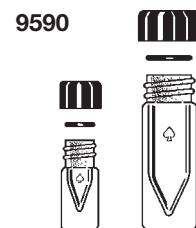
Gas collecting reservoir, described in *Microscale Organic Laboratory*, Mayo, Pike, Butcher text, as a means of collecting and sampling gaseous products when using 9586 capillary gas delivery tube. Open-bottom tube has single line graduation at 3 and 4mL level and 20-400 thread at top. The top joint is a combination cap, thread and ⚗ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⚗ 14/10 outer joint. Supplied with cap and septum. For extra septa, see 8787-42; for extra caps, see 9590-46.

Qty.	Order Code	Each
1	9588-14	8.96


9588
9590 VIAL *Conical Bottom, Reaction* ♠

Microscale, heavy-wall reaction vial. The top joint is a combination cap, thread and ⚗ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. This type connection eliminates the need for clamps while offering the positive leak-tight seal of ground glass joints. Replace o-ring in cap with PTFE-faced silicone rubber septa and vial can be capped for storage. Each vial supplied with threaded cap with hole, one PTFE faced silicone rubber septum and one o-ring for making "O-Ring-CAP-SEAL." For replacement caps, see 9590-44, -45, -46, -47; for o-rings, see 7855-01, -705, -706, -720; for septa, see 8787-40, -41, -42, -43. This is not a standard V-Vial. For standard V-bottom reaction vials, see page 657.

Cap., mL	Top Threaded/Outer ⚗ Joint	Qty.	Order Code	Each
0.1	5/5	1	9590-02	15.42
0.3	7/10	1	9590-03	23.10
0.3	10/10	1	9590-04	23.10
1.0	7/10	1	9590-10	23.10
1.0	10/10	1	9590-11	23.10
3.0	10/10	1	9590-14	24.04
3.0	14/10	1	9590-15	24.04
5.0	10/10	1	9590-19	24.04
5.0	14/10	1	9590-20	24.04


9590



9591-16

9591 VIAL *Conical Reaction, Research* ♠

Microscale, thin-wall reaction vial. The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. Similar to 9590, but major difference is this thin-walled vial has better heat transfer for the more demanding research project. Supplied with threaded cap with hole, one PTFE faced silicone rubber septum and one o-ring. For replacement caps, see 9590-46.

Cap., mL	Top Threaded/Outer ⌘ Joint	Qty.	Order Code	Each
3	14/10	1	9591-16	23.25
5	14/10	1	9591-21	23.25
10	14/10	1	9591-23	23.25



9591-46

9591 VIAL *Conical Reaction, with Side Port* ♠

Similar to research reaction vial listed above, except with the addition of an externally threaded side port. Side port supplied with holed cap and septum that facilitates syringe retrieval or injection. ⌘ outer joint supplied with holed cap, PTFE-faced silicone rubber septum and FETFE o-ring. For large cap replacements, see 9590-46. Replacement cap for side port, see 9590-44; for septa, see 8787-40.

Cap., mL	Top Threaded/Outer ⌘ Joint	Qty.	Order Code	Each
3	14/10	1	9591-46	43.88
5	14/10	1	9591-47	43.88
10	14/10	1	9591-48	43.88

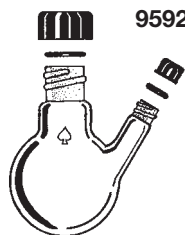


9592-04

9592 FLASK *Round Bottom, with Threaded Joint* ♠

Microscale, single-neck, round-bottom reaction flask. The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. This type connection eliminates the need for clamps while offering the positive leak-tight seal of ground glass. Supplied with threaded cap with hole, one PTFE-faced silicone rubber septum and one o-ring. For replacement caps, see 9590-46, -47; for septa, see 8787-41, -42; for o-rings, see 7855-706, -720.

Cap., mL	Top Threaded/ Outer ⌘ Joint	Cap	O-Ring	Septa	Qty.	Order Code	Each
5	14/10	9590-46	7855-720	8787-42	1	9592-04	24.47
10	10/10	9590-47	7855-706	8787-43	1	9592-09	24.47
10	14/10	9590-46	7855-720	8787-42	1	9592-10	24.47
25	14/10	9590-46	7855-720	8787-42	1	9592-15	24.47



9592-35

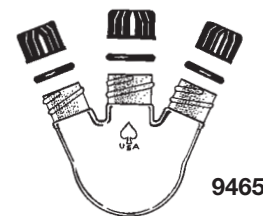
9592 FLASK *Round Bottom, with Side Port* ♠

Microscale, single-neck, round-bottom reaction flask, similar to the above, but with the addition of an externally threaded side port. Side port is supplied with holed cap and PTFE-faced silicone rubber septum that facilitates retrieval or injection. ⌘ outer joint supplied with holed cap, PTFE-faced septum and FETFE o-ring. For replacement cap for side port, see 9590-44; for replacement septa for side port, see 8787-40.

Cap., mL	Top Threaded/ Outer ⌘ Joint	Cap	O-Ring	Septa	Qty.	Order Code	Each
5	14/10	9590-46	7855-720	8787-42	1	9592-35	42.98
10	14/10	9590-46	7855-720	8787-42	1	9592-37	42.98

9465 FLASK *Round Bottom, Three Necks* ♠

Microscale, round-bottom flask with three $\text{\textcircled{F}}$ 14/10 outer ground joints externally threaded. The joints are a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the joints have an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Supplied with holed caps, PTFE faced septa and FETFE o-rings.



Capacity, mL	Qty.	Order Code	Each
25	1	9465-34	68.09
50	1	9465-36	68.41

9477 FLASK *Pear Shaped* ♠

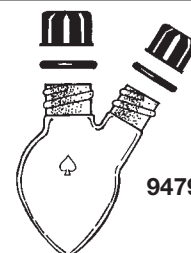
Microscale, pear-shaped, single-neck flask. The top joint is a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Supplied with holed cap, PTFE-faced septum and FETFE o-ring. For replacements, see page 391.



Capacity, mL	Qty.	Order Code	Each
5	1	9477-60	23.69
10	1	9477-62	23.69
25	1	9477-64	23.69

9479 FLASK *Pear Shaped, Two Necks* ♠

Microscale, pear-shaped flask. The joints are combination cap, thread and $\text{\textcircled{F}}$ joints to accommodate and seal other microscale apparatus. The O.D. of the joints have an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Supplied with holed caps, PTFE-faced septa and FETFE o-rings. For replacements, see page 391.



Capacity, mL	Qty.	Order Code	Each
25	1	9479-29	47.11

9470 FLASK *Recovery, Rotary Evaporator* ♠

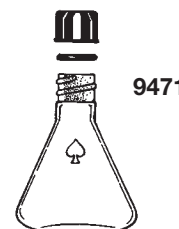
Microscale, recovery type flask with sides modified for ease in inserting spatula or brush for removing solids or cleaning. The top joint is a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Supplied with holed cap, PTFE-faced silicone rubber septum and FETFE o-ring. For replacements, see page 391.



Capacity, mL	Qty.	Order Code	Each
10	1	9470-43	26.88
25	1	9470-45	26.88

9471 FLASK *Erlenmeyer* ♠

Microscale, Erlenmeyer flask. The top joint is a combination cap, thread and $\text{\textcircled{F}}$ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground $\text{\textcircled{F}}$ 14/10 outer joint. Supplied with holed cap, PTFE-faced silicone rubber septum and FETFE o-ring. For replacements, see page 391.



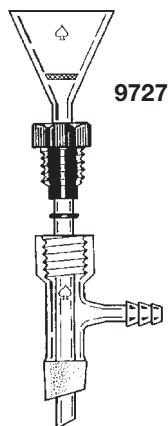
Capacity, mL	Qty.	Order Code	Each
10	1	9471-42	20.96
25	1	9471-44	20.96

7078

**7078 FLASK** *Dewar, Low Form* ★

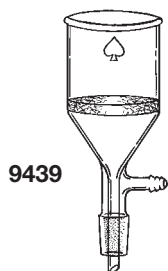
Cylindrical low form, silvered and evacuated. Ideal for sub ambient work. Low form allows use of multineck flask and magnetic stirring.

Cap., mL	Inside Dia., mm	Inside Hgt., mm	Qty.	Order Code	Each
150	80	35	1	7078-04	251.04
350	80	75	1	7078-06	251.04

**9727 FUNNEL** *Filter, Hirsch, Adjustable* ♠

Microscale, vacuum adapter with vertically adjustable Hirsch filter funnel that is suitable for use with all Microscale flasks and vials with § 14/10 joints. This two-piece vacuum adapter features a #7 Ace-Thred at top with a nylon bushing and o-ring that forms a compression seal with funnel stem, bottom joint, and side hose connection. Plain stem funnel has a disc diameter of 10 mm with a capacity above disc of approximately 7mL. Sintered disc offered in Porosity C (25-50 micron) or Porosity D (10-20 micron). Note: without funnel, vacuum adapter will accept thermometers, bleed tubes, etc. Complete item consists of vacuum adapter with nylon bushing and FETFE o-ring, and funnel. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

Funnel Porosity	Qty.	<i>Funnel Only</i>		<i>Adapter Only</i>		<i>Complete</i>	
		Order Code	Each	Order Code	Each	Order Code	Each
C	1	9727-03	40.79	5261-06	37.72	9727-20	78.51
D	1	9727-07	40.79	5261-06	37.72	9727-30	78.51

**9439 FUNNEL** *Filter* ♠

Buchner type. Diameter of sintered glass disc is 18mm. Measures 40mm from disc to top. Inner joint is § 14/10. All porosities are priced the same. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

§ Joint	Qty.	Por. A	Por. B	Por. C	Por. D	Por. E	Each
		Order Code	Order Code	Order Code	Order Code	Order Code	
14/10	1	9439-11	9439-13	9439-15	9439-17	9439-19	69.08



9594-12

9594 HEAT TRANSFER BLOCK* *Microscale* ★

Aluminum heat transfer block for magnetic hotplate/stirrers, used in place of a glass sand bath in Microscale experiments. Offers excellent heat transfer and will not interfere with magnetic stirring. Block has four holes to accommodate all ACE Microscale reaction vials and one hole for thermometer. 9594-12 measures 3 inches square x 3/4 inches thick. 9594-08 auxiliary heat block for 3mL and 5mL conical vials.

9594-08



Qty.	Order Code	Each
1	9594-08	16.07
1	9594-12	17.27

*Designed by Dr. Siegfried Lodwig, Centralia College, Centralia, WA 98531



9594-16

9594 HEAT TRANSFER BLOCK *Microscale* ★

Aluminum heat transfer block for use on top of stirrer-hot plate to effect better heat transfer. Block has three bowl-shaped recesses for 3 and 5mL thin-walled vials and 5, 10 and 25mL round-bottom flasks; one 20mm straight-thru hole, one deep bowl-shaped hole for 10mm test tubes and one hole for a thermometer. Measures 3-1/2 inches square x 3/4 inches thick.

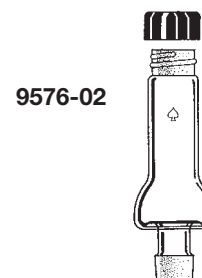
Qty.	Order Code	Each
1	9594-16	43.10

For stirrer/hotplates, see page 370 or page 550.

9576 HEAD Hickman Still ♠

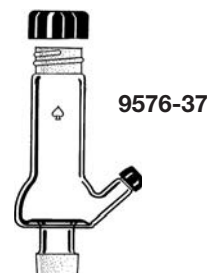
Microscale Hickman still head used to carry out micro-sample fractional distillations. The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground outer joint. Inner ⌘ joint at bottom. Inner joint can be secured in 9590 reaction vials via "O-Ring-CAP-SEAL" connection. Supplied with cap, o-ring and septa. For replacement caps, see 9590-46 or -47; for o-rings, see 7855-706 or -720; for septa, see 8787-42 or -43, page 485.

Top Threaded/ Outer ⌘ Joint	Inner ⌘ Joint	Qty.	Order Code	Each
10/10	10/10	1	9576-02	53.21
14/10	14/10	1	9576-04	53.21


9576 HEAD Hickman Still, with Side Port ♠

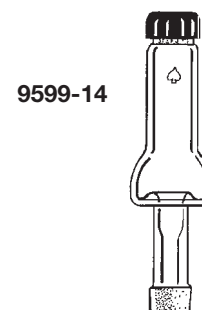
Same still head as listed under 9576-02 and -04, except with externally threaded outer side port off reservoir. Both side port and top outer ⌘ joint are supplied with cap and septum for syringe injection or retrieval. The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring (supplied) and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. For replacement caps, see 9590-44 or -46; for o-rings, see 7855-720; for septa, see 8787-40 or -42, page 485.

Top Threaded/ Outer ⌘ Joint	Inner ⌘ Joint	Qty.	Order Code	Each
14/10	14/10	1	9576-37	76.90


9599 HEAD Hickman-Hinkle Still ♠

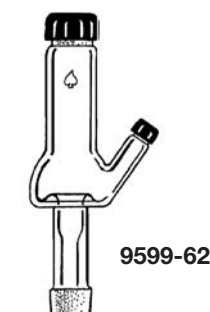
Microscale Hickman-Hinkle still head used to carry out simple and fractional distillations. Similar to 9576 Hickman Still except this still has an elongated section below well to accommodate a PTFE spinning band, if so desired. When operated carefully, with this band, the Hickman-Hinkle still will yield 6-10 theoretical plates (data from Bowdoin College reports). The top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. ⌘ 14/10 inner joint at bottom. Top outer joint supplied with cap, o-ring and septa. For replacement caps, see 9590-46; for o-rings, see 7855-720; for septa, see 8787-42. For PTFE band, see listing under 9599 spinning band column.

Qty.	Order Code	Each
1	9599-14	53.27


9599 HEAD Hickman-Hinkle Still, with Side Port ♠

Same head as listed under 9599-14, except this head has a threaded side port with septum and cap for easier syringe access to contents. Top outer joint and side port are supplied with cap, and septum; top outer also supplied with o-ring. For replacements, see listing above.

Qty.	Order Code	Each
1	9599-62	70.03



9599-20



9599 SPINNING BAND PTFE ♠

PTFE band only for use with Hickman-Hinkle stills. Band controls flooding of the concentric tube section of the Still.

Qty.	Order Code	Each
1	9599-20	91.43

13468-06



13468-12

CE SF approved.

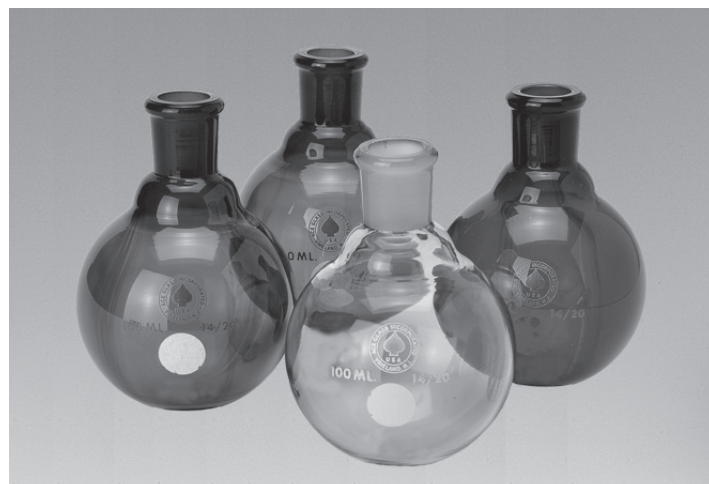
13468 STIRRER/HOTPLATE *Talboys Advanced Series*

Talboys Advanced Series hotplate/stirrers. Available in three popular sizes and with either a ceramic top (temperature range ambient +5 to 500°C) or aluminum top (temperature range ambient +5 to 400°C). Speed range 60-1600 rpm. LED display with last set point recall. Safety features include: HOT top indicator light, 10° over-temp shut-off and stirrer motor failure shut-off. 120v (230v available), CE, CSA & CSAUS approved. Two-year manufacturer's limited warranty.

Top Size, In.	Capacity, mL	Top	Qty.	Order Code	Each
4x4	600	Cermamic	1	13468-06	466.38
4x4	600	Aluminum	1	13468-08	489.89
7x7	2500	Cermamic	1	13468-10	476.63
7x7	2500	Aluminum	1	13468-12	506.95
10x10	6000	Cermamic	1	13468-20	584.25
10x10	6000	Aluminum	1	13468-22	673.58

Accessories	Order Code	Each
Support Rod & Clamp Kit	13468-30	114.70

Color Coated Glassware



Ace Glass offers many of our existing glass vessels in various coated versions. Flasks, pressure bottles, beakers, bottles, and many other items listed in this catalog can be amber or color coated on request. The coating is a proprietary process and gives excellent UV protection characteristics. Contact Ace for more details and pricing.

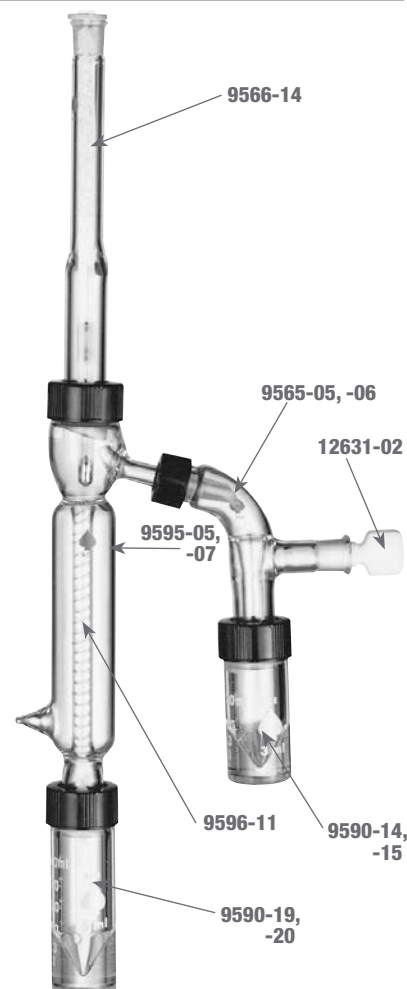
9595 SPINNING BAND COLUMN *Microscale* ♠

High performance, low cost, Microscale Spinning Band Distillation Column system effective in separating low-boiling liquid mixtures with volumes in the 0.5 to 5mL range. Designed by Drs. Dana Mayo, Ronald M. Pike, and Samuel S. Butcher, authors of *Microscale Organic Laboratory*, John Wiley and Sons, New York, this 2.5 inch microdistillation column separates close-boiling (5-10°C) mixtures without stopcocks, utilizing a PTFE band uniquely driven by a bottom magnet. Coupled to a conventional magnet stirrer, experimental data indicate satisfactory performance at 1000 rpm. Column has been shown to achieve height equivalent/theoretical plate values approaching 0.2 inches/plate within 90 minutes of boil-up.

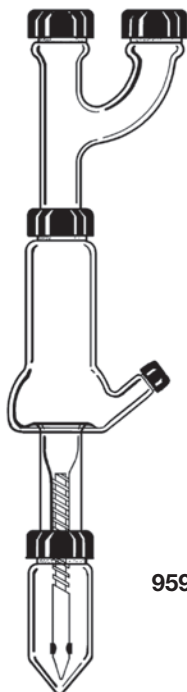
The column top joint is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. Inner ⌘ joint at bottom and ⌘ 7/10 inner drip tip on takeoff arm. Body is vacuum jacketed. Band is virgin PTFE spiral with permanently attached "V" bottom magnet.

Complete item consists of column with 24-400 thread size caps, PTFE band, top air condenser, vacuum takeoff adapter, reactor vial, receiver vial, PTFE ⌘ 7/10 stopper. **Note:** air condenser, reactor vial and receiver vial are also part of kits 9560-05 and 9560-06.

	Qty.	Order Code	Each	Order Code	Each
⌘ Joint 14/10-10/10 Column, only	1	9595-05 ♠	144.99	—	—
⌘ Joint 14/10-14/10 Column, only	1	—	—	9595-07 ♠	144.99
PTFE Band	1	9596-11 ♠	156.84	9596-11 ♠	156.84
Adapter, Vacuum Takeoff w/ ⌘ 7/10 Threaded Outer Side Joint, ⌘ 10/10 Inner Joint	1	9565-05 ♠	50.87	—	—
Adapter, Vacuum Takeoff w/ ⌘ 7/10 Threaded Outer Side Joint, ⌘ 14/10 Inner Joint	1	—	—	9565-06 ♠	50.87
Vial, Reaction, 5mL	1	9590-19 ♠	24.04	9590-20 ♠	24.04
Vial, Receiver, 3mL	1	9590-14 ♠	24.04	9590-15 ♠	24.04
Air Condenser	1	9566-14 ♠	29.79	9566-14 ♠	29.79
Stopper, ⌘7/10, PTFE	1	12631-02 ★	11.83	12631-02 ★	11.83
Complete	1	9595-43 ♠	442.40	9595-47 ♠	442.40



Complete Item:
9595-43 or 9595-47



9599-49

9599 SPINNING HICKMAN-HINKLE COLUMN* with Side Port, Microscale ♦

Low cost Microscale distillation column designed similar to 9576 Hickman still with threaded side port on reservoir, but with elongated section below well to accommodate a longer PTFE spinning band. When operated carefully, the Hickman-Hinkle column will yield 6-10 theoretical plates (data from Bowdoin College reports that this type column achieved an equivalent to HETP of better than 0.33cm/plate).

This apparatus is really a hybrid system. It is a concentric tube/spinning band distillation column. The purpose of the band is to control flooding of the concentric tube (the shaft of the PTFE band). High plate values are achieved by expanding the shaft diameter to the maximum amount until flooding occurs. Plastic tubing is fitted around PTFE band area of column for insulation. Column hold-up is approximately 20ul. Temperature range of this non-reduced pressure still is 45° to 110°C. The top joint of this heavy walled still is a combination cap, thread and ⌘ joint to accommodate and seal other microscale apparatus. The O.D. of the top joint has an external thread to facilitate an o-ring and open-top phenolic cap. The internal or I.D. at the top is a ground ⌘ 14/10 outer joint. ⌘ 14/10 inner joint at bottom. Complete item consists of modified Hickman still, Claisen head, PTFE band, thin-walled vial, plastic insulator, and operating instructions.

	Qty	Order Code	Each
Column, w/side port, only	1	9599-62	70.03
PTFE Band	1	9599-20	91.43
Claisen Head	1	9574-24	54.95
Plastic Insulator	1	9599-23	0.40
Vial, Reaction	1	9591-21	23.25
Complete	1	9599-49	265.84

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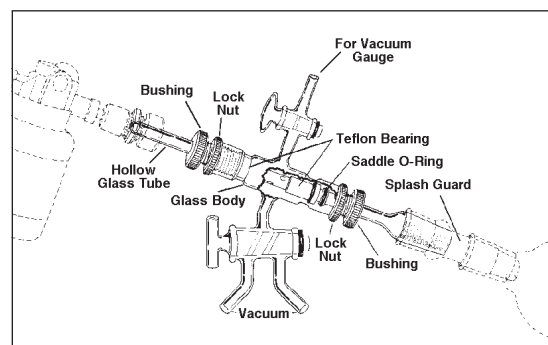
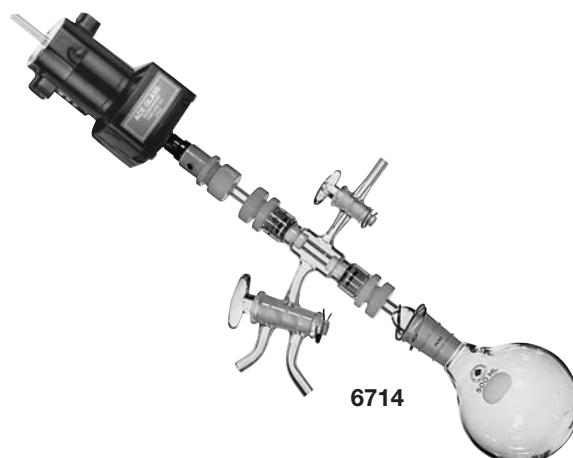
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6714 ROTARY EVAPORATOR *Firestone, Micro* ♦

Ingenious micro rotary evaporator constructed of glass, PTFE and nylon that operates without metal devices normally associated with this type of equipment. Use with any laboratory stirring motor.

Hollow glass, 10mm O.D. tube with $\frac{1}{8}$ 14/10 inner joint at one end for flask and holes drilled near center for vacuum, couples to lab stirring motor. Tube turns inside PTFE bearing held in #15 Ace-Threds by nylon bushing, saddle o-ring and lock nut. 2mm straight bore stopcock attaches to drying tube and/or McLeod gauge. One arm of double oblique stopcock attaches to dry ice trap and vacuum line; other arm is for easy vacuum release and can be connected to trap. For flasks, see 9592; for chuck, see 8124; for dry ice trap, order 8758.

Complete item supplied with $\frac{1}{8}$ joint clamp; does **not** include stirring motor, chuck, flask or splash guard.

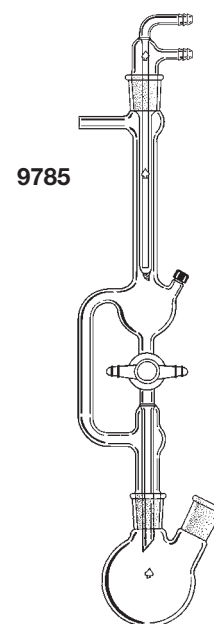


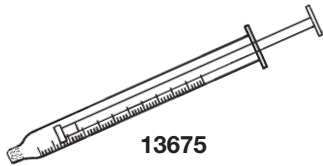
	Qty.	Order Code	Complete
Complete, $\frac{1}{8}$ 14/10	1	6714-31	463.66
REPLACEMENT PARTS		Order Code	Each
Glass Body, only	1	6714-04	236.19
Nylon Bushing, with o-ring	2	8066-12	31.34
Nylon Lock Nut	2	8066-13	10.23
Saddle o-ring	2	8066-15	11.37
PTFE Bearing	2	6714-06	32.42
Hollow Glass Tube, $\frac{1}{8}$ 14/10	1	6714-09	61.68
Splash Guard, $\frac{1}{8}$ 14/20	1	5258-06	61.83

9785 STILL *Solvent Reflux, Micro* ♦

Microscale size solvent still that allows continuous reflux of solvents with stopcock open and collection of pure solvent when closed. Capacity of collection bulb is 15mL and has side port with cap and septum for syringe removal of contents. Still has 2mm bore PTFE stopcock $\frac{1}{8}$ 14/20 joints top and bottom and side connection at top for vacuum. Use with 5/16-inch I.D. tubing, size A hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Still Head, only	1	9785-24	246.58
Finger Condenser, 100mm, $\frac{1}{8}$ 14/20	1	9250-02	67.19
Flask, 2N, 25mL, $\frac{1}{8}$ 14/20	1	9464-06	50.35
Complete	1	9785-40	364.12

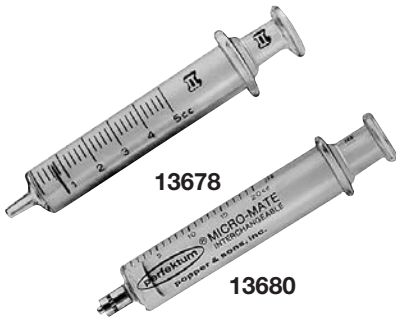




13675 SYRINGE *Sample Retrieval, All Plastic* ♠

1mL all plastic syringe intended for use in Microscale sample retrieval applications. Features built-in dead space tip plug, safety stop, Luer-Lok tip for needle connection, blue colored piston and is smooth drawing. Supplied in package of 25 or box of 100 units. Needles **not** included. For needles, see 5936 or 13682.

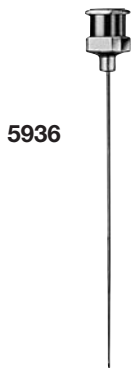
Quantity	Order Code	Pkg/25	Box/100
Pack of 25 or Box of 100	13675-09	8.78	31.59



13678/13680 SYRINGE *Interchangeable* ♠

Interchangeable borosilicate glass syringe with permanently fused graduations. Colored plunger end facilitates dosage measurement. Reinforced flanges are flat on two sides to avoid rolling. 13678 supplied with glass tip. 13680 supplied with Luer-Lok tip.

Type	Capacity, mL	Qty.	Order Code	Each
Glass Tip	2	1	13678-03	23.79
Luer Lock Tip	2	1	13680-02	22.62



5936 NEEDLE *Syringe* ★

Standard hypodermic type needles made from 304 full hard stainless steel tubing with chrome-plated brass American standard Luer-Lok hub. Supplied 51mm (2 inches) long with point style #2 (20° bevel) for septum penetration. Supplied five needles per package.

Gauge	O.D.,mm	I.D., mm	Qty.	Order Code	Per Pkg.
23	.63	.32	5	5936-32	39.57
19	1.07	.65	5	5936-39	52.60
18	1.27	.80	5	5936-40	52.60
14	2.1	1.6	5	5936-44	91.70



13682 NEEDLE *Stainless Steel* ★

Sterile, stainless steel syringe needles with inert plastic Luer-Lok hub and regular 12° medical point. Can be sterilized. Supplied 25 needles per package.

Gauge	O.D., in.	I.D., in.	Length (In.)	Qty.	Order Code	Per Pkg.
20	.035	.023	1-1/2	25	13682-12	15.68
22	.028	.016	1-1/2	25	13682-15	15.12

Note: 20 gauge needle fits 12684-23, 0.8mm I.D. PTFE Tubing.



9590 CAPS *Replacement* ♠

Replacement caps with hole for use with 9590 Microscale reaction vials as well as other Microscale equipment with externally threaded joints.

Size	For Use With	Qty.	Order Code	Per Pkg.
8 mm	5/5 Thread Joint	48	9590-44	7.38
13 mm	7/10 Thread Joint	48	9590-45	9.48
15 mm	10/10 Thread Joint	48	9590-47	13.71
20 mm	14/10 Thread Joint	48	9590-46	17.94
22 mm	24-410 Thread	48	9590-48	19.02
20 mm	9060-04 Bushing	48	9590-49	16.11
38 mm	38-430 Thread	24	9590-50	16.16

9590 CAPS Replacement, without Hole ♠

Solid replacement caps without hole for use with 9590 Microscale reaction vials as well as other Microscale equipment with externally threaded joints. Supplied with PTFE-faced rubber liner.

Size	For Use With	Qty.	Order Code	Per Pkg.
13 mm	7/10 Thread Joint	48	9590-55	45.94
15 mm	10/10 Thread Joint	48	9590-58	49.67
20 mm	14/10 Thread Joint	48	9590-60	182.23
22 mm	24-410 Thread	48	9590-64	96.49
38 mm	38-430 Thread	24	9590-66	94.22


7855 O-RINGS Replacement ♠

Replacement o-rings for use with 9590, 9591 and 9592 Microscale reaction vials as well as other Microscale equipment with externally threaded joints for making an "O-Ring-CAP-SEAL" type connection.

Size	For Use With	Material	Qty.	Order Code	Per Pkg.
-006	5/5 Thread Joint	Viton	12	7855-01	10.80
-010	7/10 Thread Joint	FETFE	12	7855-705	14.93
-011	10/10 Thread Joint	FETFE	12	7855-706	15.21
-112	14/10 Thread Joint	FETFE	12	7855-720	21.84

For Septa, see **8787**. For Needles, see **5936**. For Cannula, see **5935**.


8787 SEPTUM Replacement ♠

Replacement septa for use with 9590 Microscale reaction vials and 9574 Claisen head. Made of silicone rubber with PTFE face.

Size	For Use With	Qty.	Order Code	Per Pkg.
8 mm	5/5 Thread Joint	48	8787-40	20.09
13 mm	7/10 Thread Joint & Claisen Head	48	8787-41	22.21
15 mm	10/10 Thread Joint	48	8787-43	26.74
20 mm	14/10 Thread Joint	48	8787-42	50.38
24 mm	24-410 Thread	48	8787-55	80.48
38 mm	38-430 Thread	48	8787-58	106.18


13658 MICRO STIRRER MAGNETS PTFE ★

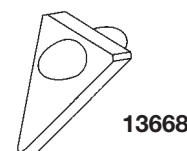
PTFE-coated magnetic bar for use in microscale reaction flasks.

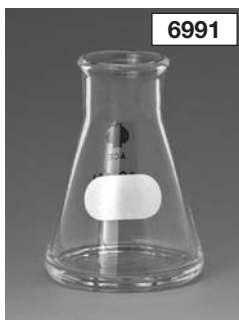
Length, mm	Diam., mm	Qty.	Order Code	Each
8	1.5	1	13658-04	5.20
5	2.0	1	13658-05	5.18
7	2.0	1	13658-07	5.19
3	3.0	1	13658-08	5.70
6.35	3.0	1	13658-10	5.68
10	3.0	1	13658-12	5.72


13668 STIRRER MAGNETS Micro, Triangular, PTFE ★

PTFE "V" shaped vane with magnetic bar cross mounted. For use with 9590 and 9591 Microscale vials.

For Use With ⚙ Joint Size	Qty.	Order Code	Each
7/10 & 10/10	1	13668-01	11.15
14/10	1	13668-02	11.11
14/10	1	13668-03	11.14




6991 FLASK *Erlenmeyer, Reaction* ♠

Erlenmeyer flask, 10 and 25mL capacity, used to carry out reactions or to hold items such as 9581 Craig tube in microscale work.

Capacity, mL	Qty.	Order Code	Each
10	1	6991-03	6.34
25	1	6991-05	15.97



9543

9543 STOPPER *Glass* ♠

Ground glass stopper for use with microscale equipment.

Joint	Qty.	Order Code	Each
7/10	1	9543-02	14.43
14/20	1	9543-04	14.71



8277


8277 STOPPER *Hy-n-Dry, Firestone* ♠

Hy-n-Dry stopper makes any jointed vessel a desiccator, inexpensively. Allows sample storage for long periods, free from atmospheric moisture, even during overnight temperature changes or when refrigerating.

Bottom of stopper has a Porosity B (70-100 microns) sintered glass disc sealed-in. Fill stopper with 10-20 mesh drying agent, cover with plastic cap, insert into any jointed vessel, i.e., boiling flask, volumetric flask, cylinder, etc., and you have an inexpensive desiccator. A pin hole in cap allows assembled unit to "breathe" with temperature fluctuations through, not around, the desiccant; this prevents pressure buildup.

Joint	Height Above Joint, mm	Top O.D., mm	Approx. Vol., mL	Qty.	Order Code	Each
14/10	35	17	6	1	8277-12	38.21

7642


7642 PTFE SLEEVES *0.13mm Thickness* ♠

For use with ground joints on microscale glassware. Wall thickness: 0.13mm (0.005 inches).

To Fit Size	Qty.	Order Code	Per Pkg.
7/10	3	7642-02	16.01
10/10	3	7642-04	16.57
14/10	3	7642-06	9.64



7643

7643 PTFE SLEEVES *0.050mm Thickness* ♠

For use with ground joints on microscale glassware. Wall thickness: 0.050mm (0.002 inches).

To Fit Size	Qty.	Order Code	Per Pkg.
14/10	3	7643-07	6.12

The first complete line of Microscale Schlenk and Photochemical Schlenk Glassware.

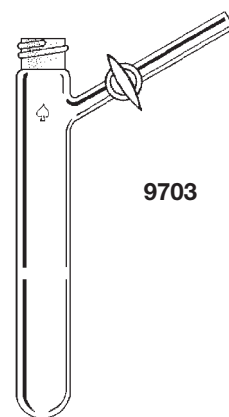
Designed by ACE and Dr. Thomas Bitterwolf of The University of Idaho, Moscow, ID. This glassware allows the full range of applications of standard Schlenk glassware, at 10–100mg scale. In addition, unique head designs make it possible to conduct photochemical reactions in microscale without a glove box or costly quartz equipment.

Like Microscale Organic Laboratory Glassware, listed on previous pages, Micro No-Air Glassware uses the O-RING-CAP-SEAL connections to make leak-tight seals that enable typical transfers, filtrations, etc., while under inert atmosphere. This connection eliminates the need for clamps.

9703 STORAGE TUBE *Micro Schlenk* ♠

Used for storage or simple reactions. With F 10/10 or F 14/10 outer joint externally threaded for making an O-RING-CAP-SEAL connection with mating inner joint. Stopcock on side arm is 1mm bore glass. Item supplied with holed cap, o-ring and septa for sealing or syringe retrieval. For replacement caps (holed), see 9590-46, -47; (solid), see 9590-58, -60; for o-rings, see 7855-706, -720; for septa, see 8787-42, -43.

Capacity, mL	Threaded Outer F Joint	Qty.	Order Code	Each
5	10/10	1	9703-04	76.22
15	14/10	1	9703-06	80.50



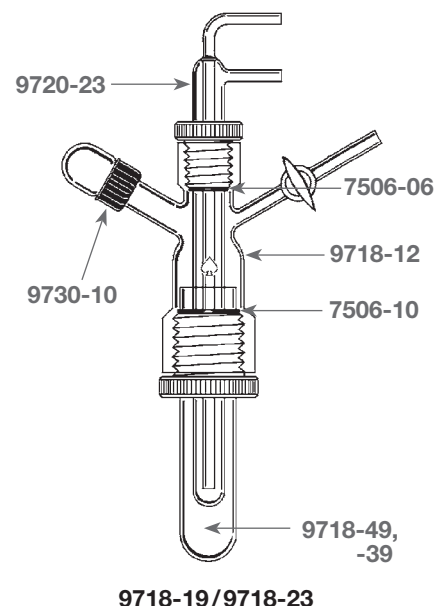
9718 REACTOR *Micro Photochemical, with "Giant" #25 Ace-Thred* ♠

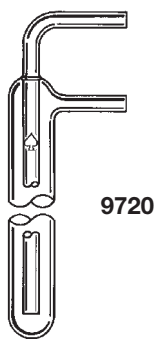
Microscale photochemical reactor with internally threaded connections both top and bottom of head. Top is #15 Ace-Thred that accepts 12.5-14mm O.D. tubes such as 9720-23 finger condenser; bottom is #25 Ace-Thred that accepts a 24mm O.D. quartz or glass (borosilicate) reactor tube for photolysis experiments. Complete item consists of head, #15 and #25 nylon bushings with o-rings, 9730 cap stopper with cap and o-ring, finger condenser, and either quartz or glass 25 x 120mm reactor tube.

	Top Ace-Thred	Bottom Ace-Thred	Inner F Joint	Reactor Type	Qty.	Order Code	Complete
Complete Reactor	15	25	14/10	Quartz	1	9718-19	258.59
Complete Reactor	15	25	14/10	Glass	1	9718-23	228.68

Components

	Top Ace-Thred	Bottom Ace-Thred	Inner F Joint	Qty.	Order Code	Each
Head, only	15	25	14/10	1	9718-12	125.86
Nylon Bushing, #15, with o-ring, only				1	7506-06	12.35
Nylon Bushing, #25, with o-ring, only				1	7506-10	21.17
Cap Stopper, F 14/10, only				1	9730-10	23.43
Quartz Reactor Tube, 25 x 120mm, only				1	9718-39	40.28
Condenser, Finger, only				1	9720-23	35.50
Borosilicate Glass Reactor Tube, 25 x 150mm, only				3	9718-49	31.10



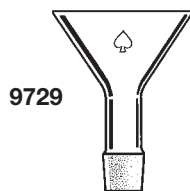


9720

9720 CONDENSER *Finger, Micro* ♠

Code -23 for use with 9718 reactor. Outside body diameter is 10 mm or 14 mm to fit #11 or #15 Ace-Thred bushing respectively. Water connection tubing is 5mm O.D. Overall body length is 200mm.

	Qty.	Order Code	Each
For #11 Ace-Thred	1	9720-13	35.50
For #15 Ace-Thred	1	9720-23	35.50



9729

9729 FUNNEL *Micro* ♠

With 1/4" inner joint. Top diameter is 40mm.

Bottom Inner 1/4" Joint	Qty.	Order Code	Each
14/10	1	9729-21	33.16

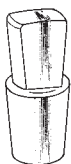


9730

9730 CAP STOPPER *Micro* ♠

With 1/4" 14/10 outer joint externally threaded for making o-ring-CAP-SEAL connection with mating inner joint. Supplied with cap and o-ring. For replacement caps, see 9590-46; for o-rings, see 7855-720.

Inner 1/4" Joint	Qty.	Order Code	Each
14/10	1	9730-10	23.43



12631

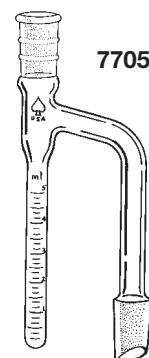
12631 STOPPER *PTFE, Micro* ★

Inner 1/4" Joint	Qty.	Order Code	Each
10/10	1	12631-04	11.84
14/10	1	12631-06	11.87

7705 RECEIVER, MOISTURE TEST *Bidwell & Sterling* ♠

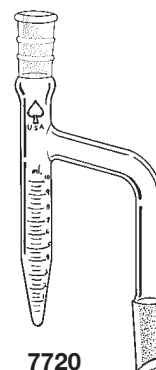
For determination of moisture contents in foods, fatty acids, etc. Conforms to specifications of ASTM and A.O.A.C.

Capacity, mL	⌘ Joints	Qty.	Order Code	Each
5	24/40	1	7705-02	103.28


7705
7720 RECEIVER, MOISTURE TEST *Dean-Stark* ♠

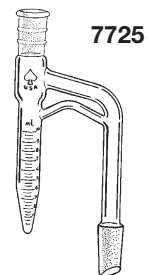
Suitable for ASTM D 95 and E 123. Subdivided 0.1mL to 2mL and 0.2mL above 2mL.

Capacity, mL	Qty.	Joints ⌘24/40		Joints ⌘35/20		Joints ⌘29/42	
		Order Code	Each	Order Code	Each	Order Code	Each
10	1	7720-02	131.56	7720-08	149.14	7720-20	149.14
25	1	7720-04	134.93	—	—	—	—


7720
7725 RECEIVER, MOISTURE TEST *Dean-Stark* ♠

With return line to allow excess solvent to return to boiling flask. Suitable for ASTM D 95 and E 123. Joints are ⌘24/40.

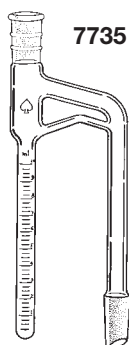
Capacity, mL	Qty.	Order Code	Each
10	1	7725-02	145.46
25	1	7725-04	147.76


7725
7729 RECEIVER, MOISTURE TEST ♠

Used in phosphorus determination. Receiver capacity 5mL, graduated in 0.05mL subdivisions. Upper joint is ⌘24/40, side arm joint, ⌘45/50.

Qty.	Order Code	Each
1	7729-10	202.48


7729

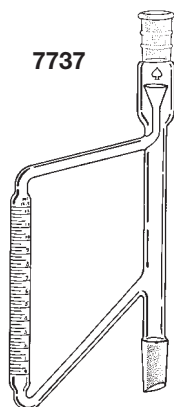


7735

7735 RECEIVER, MOISTURE TEST ♠

Modified Bidwell & Sterling type with overflow to allow excess solvent to return to boiling flask. Both capacities are calibrated in 0.1mL subdivisions. Joints are $\text{K} 24/40$.

Capacity, mL	Qty.	Order Code	Each
5	1	7735-02	147.67
10	1	7735-04	172.99



7737

7737 MOISTURE TRAP ♠

For solvents heavier than water. Used in the method of quantitative separation and determination of glycol mixture by azeotropic distillation described in *Analytical Chemistry*, Vol. 29, No. 1, page 100. Capacity is 12.5mL, graduated in 0.1mL. Joints are $\text{K} 24/40$.

Capacity, mL	Qty.	Order Code	Each
12.5	1	7737-02	324.91



7744

7744 RECEIVER, MOISTURE TEST *Barrett Type, Pilot Plant* ♠

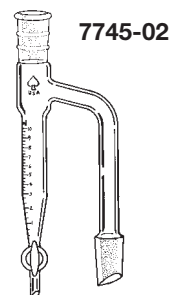
One liter Barrett type moisture test receiver. 2mm PTFE stopcock on bottom for draining contents. $\text{K} 45/50$ joints at top and on side arm. 60mm distance between side arm and body for clearance on spherical or cylindrical reactor bodies. Graduated in 10mL subdivisions.

Qty.	Order Code	Each
1	7744-50	1863.34

7745 RECEIVER, MOISTURE TEST Barrett Type ♠

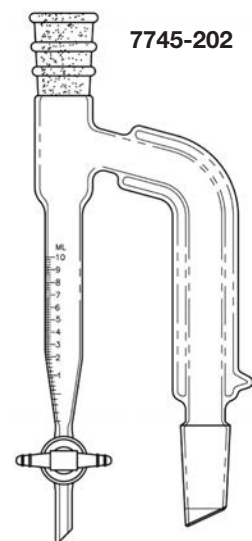
Used to determine the water content in petroleum and bituminous material. Similar to ASTM type, except supplied with joints and stopcock to empty measuring tube during the determination. The 10mL size is subdivided in 0.1mL from 0-1mL, 0.2mL from 1-10mL; 20mL size in 0.1mL from 0-1mL, 0.2mL from 1-20mL. With 2mm bore glass or 1:5 solid PTFE stopcock plug. Joints are $\text{F} 24/40$.

Plug Style	Capacity, mL	Qty.	Order Code	Each
Glass	10	1	7745-02	170.60
PTFE	10	1	7745-21	186.40
Glass	20	1	7745-04	181.68
PTFE	20	1	7745-26	195.56


7745 RECEIVER, MOISTURE TEST Barrett Type, Jacketed ♠

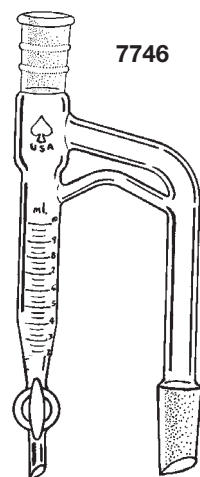
Same as 7745 above, except this item has a vacuum jacketed side arm to prevent condensation and improve performance. The 10mL size is subdivided in 0.1mL from 0-1mL, 0.2mL from 1-10mL; 20mL size in 0.1mL from 0-1mL, 0.2mL from 1-20mL. With 2mm bore glass or 1:5 solid PTFE stopcock plug. Joints are $\text{F} 24/40$.

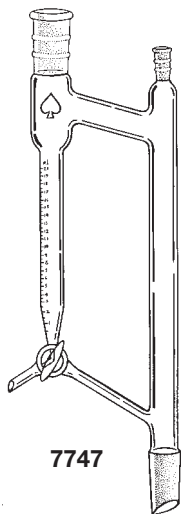
Plug Style	Capacity, mL	Qty.	Order Code	Each
Glass	10	1	7745-102	248.82
PTFE	10	1	7745-202	267.82
Glass	20	1	7745-104	256.27
PTFE	20	1	7745-206	286.34


7746 RECEIVER, MOISTURE TEST Barrett Type ♠

Similar to 7745 except with overflow line to allow excess solvent to return to boiling flask. The 10mL size is subdivided in 0.1mL from 0-1mL, 0.2mL from 1-10mL; 25mL size, in 0.1mL from 0-1mL, 0.2mL from 1-25mL; 50mL size in 1mL from 1-50mL. Joints are $\text{F} 24/40$.

Capacity, mL	Qty.	Order Code	Each
10	1	7746-03	237.97
25	1	7746-07	227.18
50	1	7746-13	235.65





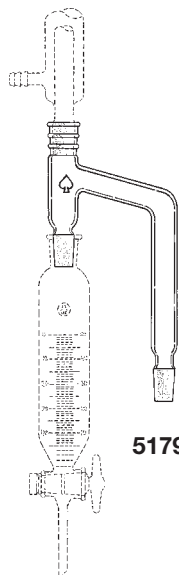
7747

Note: Graduated section on Codes -17, -19 does not have cutdown as on -02, -04.

7747 RECEIVER, MOISTURE TEST *Recycle Type* ♠

Especially useful when heavier-than-water solvents are employed. A 120°, 1:5 PTFE stop-cock provides adequate shut-off in the intermediate position. Thermometer joint is F 10/30.

Capacity, mL	F Joints	Stopcock Bore, mm	Qty.	Order Code	Each
20	24/40	2	1	7747-02	366.07
20	29/42	2	1	7747-04	395.17
125	29/42	2	1	7747-17	684.16
500	45/50	2	1	7747-19	1023.67



5179/9101

5179/9101 ADAPTER *Moisture Trap* ♠

Unique adapter used in place of a Dean & Stark moisture test receiver. Simply add a condenser to top F outer joint, any graduated funnel from 125mL to 2000mL to bottom F inner joint, attach sample flask to F inner side arm joint and you have a moisture test receiver.

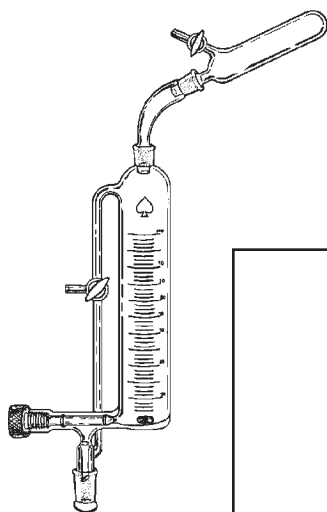
Top Outer F Joint	Bottom Inner F Joint	Inner Side Arm F Joint	Qty.	Order Code	Each
14/20	14/20	14/20	1	9101-20	83.88
24/40	24/40	24/40	1	5179-07	94.57

Also, see the Vacuum section for manifolds, etc.

No-Air Glassware Operations

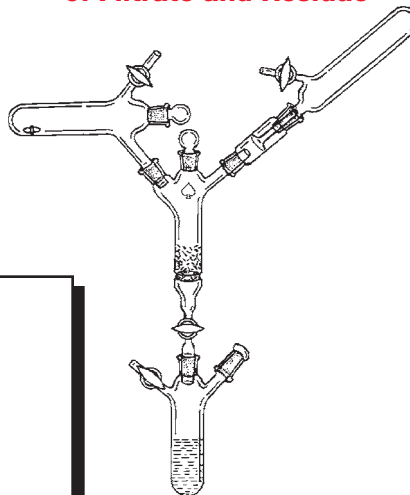
NO-AIR GLASSWARE

**Solid Transfer for
Solution Preparation**

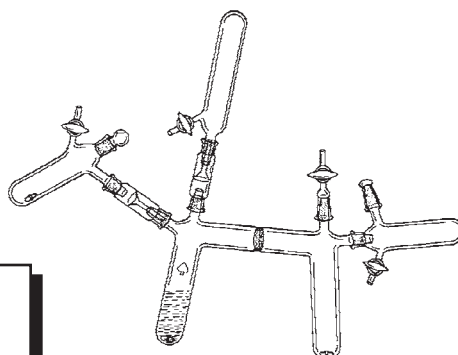


ACE GLASS
INCORPORATED

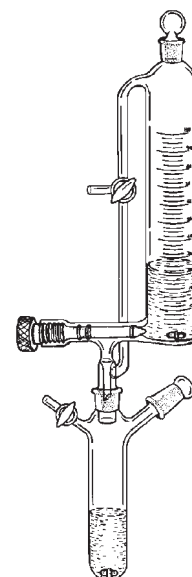
**Filtration, Collection
of Filtrate and Residue**



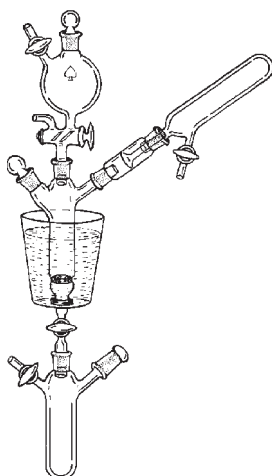
**Loading the
Multiple Recrystallizer**



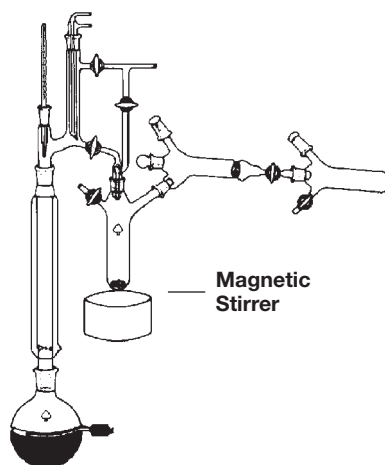
**Controlled Addition
of Stored Solution**



**Low Temperature
Recrystallization**



Solvent Distillation





7752 STORAGE TUBE Schlenk ♠

Used for storage, but also may be used for simple reactions. With F 14/20 or F 24/25 outer joint and either a 2 or 4mm bore stopcock or 2mm inlet valve. For top joint stoppers, see 8250 or 9543.

Capacity, mL	Side Port	Top F Joint	Qty.	Order Code	Each
25	2mm Glass Stopcock	14/20	1	7752-08	93.36
40	2mm Glass Stopcock	14/20	1	7752-12	94.61
100	2mm Glass Stopcock	24/40	1	7752-15	98.23
200	4mm Glass Stopcock	24/25	1	7752-26	101.25
25	0-4 Hi-Vac Valve	14/20	1	7752-108	110.81
40	0-4 Hi-Vac Valve	14/20	1	7752-112	89.76
100	0-4 Hi-Vac Valve	24/40	1	7752-114	103.93
200	0-4 Hi-Vac Valve	24/40	1	7752-116	109.28
25	Inlet Valve	14/20	1	7752-208	81.38
40	Inlet Valve	14/20	1	7752-212	81.71
100	Inlet Valve	24/40	1	7752-215	88.70
200	Inlet Valve	24/25	1	7752-226	86.57



7753 STORAGE TUBE Schlenk ♠

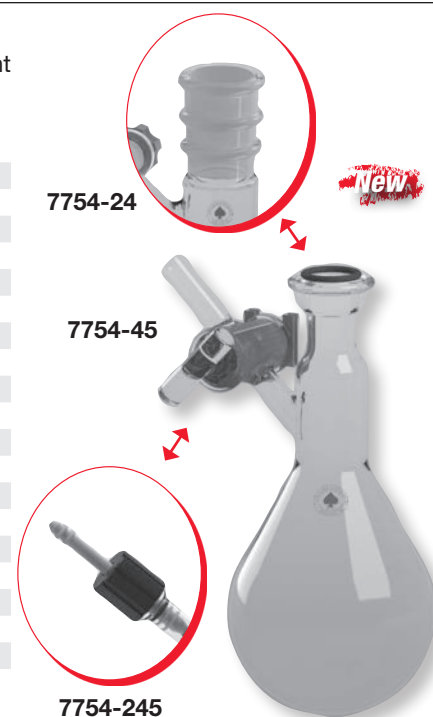
Similar to 7752, except with F 14/35 or F 24/40 inner joint. For top joint caps, see 7795 and 7797.

Capacity, mL	Side Port	Top F Joint	Qty.	Order Code	Each
25	2mm Glass Stopcock	14/35	1	7753-08	93.10
40	2mm Glass Stopcock	14/35	1	7753-12	93.10
100	2mm Glass Stopcock	24/40	1	7753-18	94.24
200	4mm Glass Stopcock	24/40	1	7753-26	101.56
25	0-4 Hi-Vac Valve	14/35	1	7753-110	98.84
40	0-4 Hi-Vac Valve	14/35	1	7753-112	98.84
100	0-4 Hi-Vac Valve	24/40	1	7753-114	102.21
200	0-4 Hi-Vac Valve	24/40	1	7753-116	106.14
25	Inlet Valve	14/35	1	7753-208	80.02
40	Inlet Valve	14/35	1	7753-212	80.02
100	Inlet Valve	24/40	1	7753-218	86.37
200	Inlet Valve	24/40	1	7753-226	86.83

7754 STORAGE FLASK Schlenk ♠

Used for storage, but may also be used for simple reactions. With F 14/20 or F 24/40 inner joint or #15 o-ring joint and 2mm or 4mm bore glass stopcock or 2mm inlet valve.

Capacity, mL	Side Port	Top Joint	Qty.	Order Code	Each
10	2mm Stopcock	F 14/20	1	7754-05	74.73
25	2mm Stopcock	F 14/20	1	7754-07	83.39
50	2mm Stopcock	F 14/20	1	7754-09	86.44
100	2mm Stopcock	F 14/20	1	7754-11	89.39
200	2mm Stopcock	F 14/20	1	7754-13	95.25
100	2mm Stopcock	F 24/40	1	7754-22	95.25
200	4mm Stopcock	F 24/40	1	7754-24	102.15
500	4mm Stopcock	F 24/40	1	7754-26	111.22
200	4mm Stopcock	#15 o-ring	1	7754-45	109.18
500	4mm Stopcock	#15 o-ring	1	7754-47	115.78
10	Valve	F 14/20	1	7754-205	63.84
25	Valve	F 14/20	1	7754-207	72.81
50	Valve	F 14/20	1	7754-209	76.00
100	Valve	F 14/20	1	7754-211	79.05
200	Valve	F 14/20	1	7754-213	85.12
100	Valve	F 24/40	1	7754-222	85.12
200	Valve	F 24/40	1	7754-224	92.26
500	Valve	F 24/40	1	7754-226	115.36
200	Valve	#15 o-ring	1	7754-245	99.56
500	Valve	#15 o-ring	1	7754-247	106.39


7756 FLASK Reaction, Schlenk ♠

Used for carrying out most reactions in solution with **7759** filter tube. Also may be used with **7807** finger condenser in center joint for reflux reactions. Available with either a 2mm glass stopcock or 0-3 inlet valve side port and a F 14/35 or F 24/40 side joint, and either a F 14/20 or F 24/25 outer center joint opening. Graduated. For hollow stoppers, see **9543**.

Capacity, mL	Side Port	F Ports	F Joint	F Center Joint	Qty.	Order Code	Each
50	2mm Stopcock		14/35	14/20	1	7756-11	136.09
100	2mm Stopcock		14/35	14/20	1	7756-17	133.49
250	4mm Stopcock		24/40	24/25	1	7756-23	145.18
50	Inlet Valve		14/35	14/20	1	7756-211	123.80
100	Inlet Valve		14/35	14/20	1	7756-217	121.21
250	Inlet Valve		24/40	24/25	1	7756-223	131.33





7759

7759 CONNECTING TUBE *Schlenk* ♠

Used for filtration of solvents and collection of precipitate. With two F 14/20 or F 24/25 outer joints and two F 14/35 or F 24/40 inner joints. With glass fritted disc at bottom (Porosity C = 20-25 micron; Porosity D = 10-20 micron).

Capacity, mL	F Joints	Qty.	Porosity C Order Code	Porosity D Order Code	Each
20	14/20-14/35	1	7759-11	7759-12	154.23
80	14/20-14/35	1	7759-21	7759-22	156.08
250	24/25-24/40	1	7759-31	7759-32	158.09



7761

7761 CONNECTING TUBE *Schlenk* ♠

Similar to 7759, except with 2mm bore PTFE stopcock on 20 and 80mL sizes, 3mm bore PTFE on 250mL size. In addition to collecting and filtering, this vessel may be used as a crystallizer. With two F 14/20 or F 24/25 outer joints and two F 14/35 or F 24/40 inner. With glass fritted disc (Porosity C = 20-25 micron; Porosity D = 10-20 micron).

Capacity, mL	F Joints	Qty.	Porosity C Order Code	Porosity D Order Code	Each
20	14/20-14/35	1	7761-16	7761-17	265.12
80	14/20-14/35	1	7761-26	7761-27	268.48
250	24/25-24/40	1	7761-36	7761-37	275.43



7772

7772 TUBE *Double Recrystallizer* ♠

Used for multiple recrystallization of extremely air-sensitive compounds. A solid crystallized in one arm may be recrystallized in a closed system by decanting the supernatant liquid into the other arm and vacuum distilling the solvent back into the crystals in the first arm. This process may be repeated as often as necessary. After removal of the final supernatant liquid, dried crystals may be transferred to a Schlenk tube. With four F 14/20 outer joints and Porosity B (70-100 micron) glass fritted disc. Approximate volume in each section is 75mL.

Qty.	Order Code	Each
1	7772-11	250.75

7812 HEAD *Solvent Distillation, NO-AIR™* ♠

Solvent distillation head designed to maintain solvents or vapors in an air-free atmosphere. Top has an outer ⚗ joint. Bottom and bottom side port has an inner ⚗ joint. Top takeoff port has a 14/20 outer ⚗ joint on all sizes. Upper stopcock is 2mm glass. Bottom takeoff is a double oblique glass stopcock. The top, bottom, and the bottom takeoff ⚗ joints are all the same size.

Capacity, mL	⚗ Joints	Qty.	Order Code	Each
250	14/20	1	7812-08	410.97
500	24/40	1	7812-10	440.69
1,000	24/40	1	7812-14	462.21


7812
7413 BUBBLER *Air Metering Valve, NO-AIR™* ♠

Bubbler with metering valve for precise control of inert gas introduction. Features 9mm O.D. tube-end side arms for use with 3/8-inch vacuum tubing.

Qty.	Order Code	Each
1	7413-01	123.31


7413

7827



7827 TUBE Filter, Inner Joints, NO-AIR™ ♦

Connecting tube for building Schlenk lines. Upper and lower inner joints. Both joint sizes are the same. Integral porous glass fritted disc is located midway in the center of the tube.

Joint	Disc Porosity (micron)	Qty.	Order Code	Each
14/20	C (25-50)	1	7827-01	125.61
14/20	D (10-20)	1	7827-03	125.61
24/40	D (10-20)	1	7827-05	138.11
24/40	C (25-50)	1	7827-07	138.11

7813

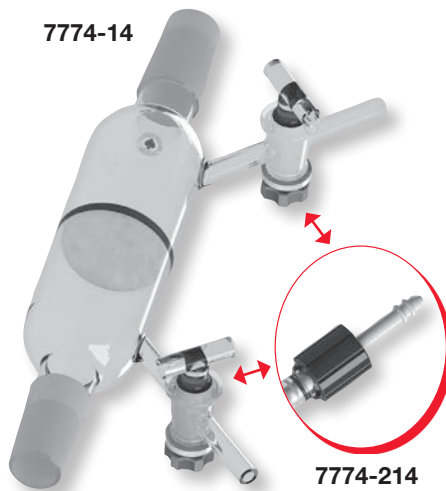


7813 FLASK Storage Vessel, Cajon Side Port, NO-AIR™ ♦

Tube shaped reaction or storage vessel with a 9mm O.D side arm for use with 3/8-inch Cajon connections. Has a 0-4 Hi-Vac stopcock/valve for control of inlet/outlet flow.

Capacity, mL	Valve Size	Qty.	Order Code	Each
25	0-4	1	7813-05	98.69
60	0-4	1	7813-07	115.21
140	0-4	1	7813-11	130.71
210	0-4	1	7813-15	138.54

7774-14



7774-214

7774 FILTER TUBE Fritted Disc, Two Side Ports, NO-AIR™ ♦

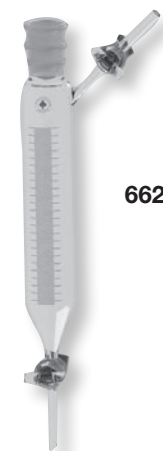
Filter tube for NO-AIR™ applications, with two inner joints top and bottom. Two, upper and lower side arms with either 2mm glass stopcocks or a 0-3 inlet valve. Two porosities are standard for the inner fritted disc made from scintered glass fiber for stronger and more precise flow. Approximate overall length is 240mm; approximate O.D. is 45mm.

Joint	Approx. Disc O.D. (mm)	Disc Porosity (Micron)	Outlet Type	Qty.	Order Code	Each
24/40	40	D (10-20)	Glass	1	7774-14	230.33
14/20	40	D (10-20)	Glass	1	7774-18	233.08
14/20	40	C (25-50)	Glass	1	7774-20	234.05
24/40	40	C (25-50)	Glass	1	7774-24	260.95
24/40	40	D (10-20)	Inlet Valve	1	7774-214	253.40
14/20	40	D (10-20)	Inlet Valve	1	7774-218	257.19
14/20	40	C (25-50)	Inlet Valve	1	7774-220	254.50
24/40	40	C (25-50)	Inlet Valve	1	7774-222	254.50

6629 FUNNEL *Distillation Receiver, Vacuum Type, NO-AIR™* ♠

With ⌘ joint at top. Capacity 125mL, in 1mL subdivisions. Double scale. With 2mm glass stopcocks on side and at bottom. Side and bottom tubes have 8mm O.D.

⌘ Joint	Qty.	Order Code	Each
24/40	1	6629-10	224.42


6629
6635 FUNNEL *Distillation Receiver, NO-AIR™* ♠

Specially designed receiver to draw samples during distillation or to return the condensed vapor to the flask. Capacity 125mL. With 2mm glass double oblique stopcock. Outlet tube is 10mm O.D.

⌘ Joints	Qty.	Order Code	Each
24/40	1	6635-10	263.93

6635-10
6635-20

6635 FUNNEL *Distillation Receiver, 2mm PTFE Plug* ♠

Similar to **6635** above, except with solid 2mm PTFE oblique stopcock plug. Outlet tube is 8mm O.D.

⌘ Joint	Qty.	Order Code	Each
24/40	1	6635-20	308.42

7773 FUNNEL *Filter, Addition, Side Stopcock, Bottom Valve, NO-AIR™* ♠

Filter, addition funnel; with integral fritted disc, ⌘ top inner joint, 2mm glass side stopcock and a 0-4 Hi-Vac valve bottom outlet with an inner ⌘ joint. For Schlenk lines and air sensitive materials. Top outer joint and bottom inner joint are the same size.

Approx. Capacity, mL	⌘ Joint	Disc O.D., mm	Porosity (micron)	Qty.	Order Code	Each
60	14/20	40	C (25-50)	1	7773-30	254.93
60	14/20	40	D (10-20)	1	7773-42	257.10
200	24/40	50	C (25-50)	1	7773-44	261.50
200	24/40	50	D (10-20)	1	7773-46	262.74


7773
New



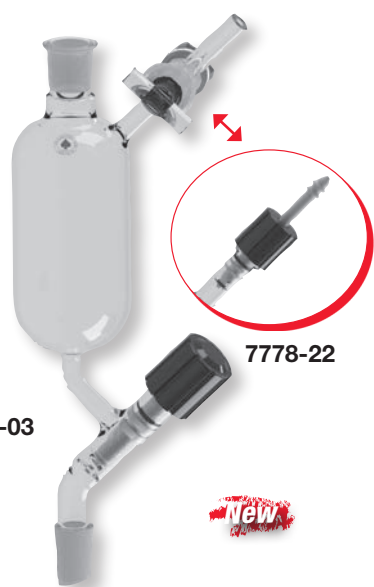
7776

New

7776 FUNNEL *Filter, Addition, Side Outlet, Bottom Valve, NO-AIR™* ♠

Filter, addition funnel; with integral fritted disc, ♂ top outer, joint, 2mm glass side stopcock and a 0-4 Hi-Vac valve bottom outlet with an inner ♂ joint. For Schlenk lines and air sensitive materials. Top inner joint and bottom inner joints are the same size.

Capacity, mL	♂ Joint	Disc O.D., mm	Porosity (micron)	Qty.	Order Code	Each
60	14/20	40	C (25-50)	1	7776-09	263.99
60	14/20	40	D (10-20)	1	7776-11	266.12
200	24/40	50	C (25-50)	1	7776-23	291.17
200	24/40	50	D (10-20)	1	7776-25	293.52



7778-03

7778-22

New

7778 FUNNEL *Addition, Side Outlet, Bottom Valve, NO-AIR™* ♠

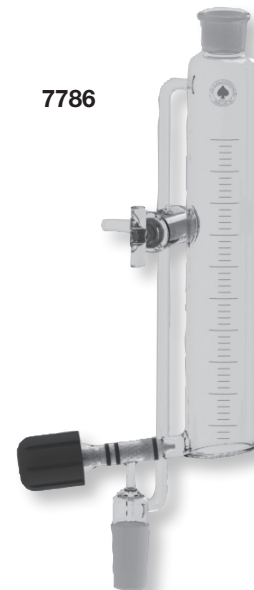
Addition funnel designed for air sensitive compound work. Outer ♂ joint on top and an inner ♂ joint on bottom outlet. Side outlet with either a 2mm glass stopcock or a 0-3 inlet valve. Bottom outlet is a 0-4 Hi-Vac valve.

Capacity, mL	♂ Joint	Body O.D., mm	Outlet Type	Qty.	Order Code	Each
60	14/20	45	Glass	1	7778-03	200.32
100	24/40	38	Glass	1	7778-05	205.61
200	24/40	57	Glass	1	7778-07	216.58
60	14/20	45	Inlet Valve	1	7778-22	201.38
100	24/40	38	Inlet Valve	1	7778-24	207.86
200	24/40	57	Inlet Valve	1	7778-26	219.18

7786 FUNNEL *Addition/Storage* ★

The T-bore 2mm stopcock in the equalizing arm permits isolation of the contents for storage. Capacity, 100 or 250mL. Lower threaded 0-3 PTFE valve. Outer joint is $\text{K} 14/20$ or $\text{K} 24/25$, inner joint is $\text{K} 14/35$ or $\text{K} 24/40$ with drip tube. The 100mL size is calibrated in 1mL subdivisions, the 250mL in 10mL subdivisions.

Capacity, mL	K Joints	Qty.	Order Code	Each
100	14/20	1	7786-20	538.53
250	24/40	1	7786-25	555.54

7786

7789 FLASK *Solvent Collector And Dispenser, NO-AIR™* ♠

Used for collection and long-term storage of solvents. With $\text{K} 14/20$ outer joint and a 2mm bore PTFE stopcock at top, double oblique 2mm bore PTFE stopcock and $\text{K} 14/35$ joint at bottom. Capacity is 250mL.

Qty.	Order Code	Each
1	7789-12	267.83


7789



6933/9461 FLASK with Septum Port, Heavy Wall, NO-AIR™ ♠

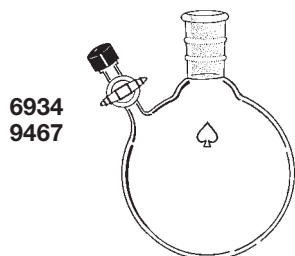
Used when handling air-sensitive materials. Fabricated with heavy walls, approximately 30% heavier than standard-wall flasks. With F outer joint and septum joint for use with **9096-32** septum. Supplied with septum. F 24/40 center joints are reinforced.

Capacity, mL	F Joint	Qty.	Order Code	Each
50	14/20	1	9461-210	34.13
100	14/20	1	9461-212	35.14
250	14/20	1	9461-214	36.63
250	24/40	1	6933-224	47.53
500	24/40	1	6933-226	53.47
1000	24/40	1	6933-227	61.31

6933/9461 FLASK with Septum Port, Standard Wall, NO-AIR™ ♠

Used when handling air-sensitive materials. With F outer joint and septum joint for use with **9096-32** septum. Supplied with septum. F 24/40 joints are reinforced.

Capacity, mL	F Joint	Qty.	Order Code	Each
50	14/20	1	9461-10	34.13
100	14/20	1	9461-12	35.14
250	14/20	1	9461-14	36.63
250	24/40	1	6933-24	47.53
500	24/40	1	6933-26	53.47
1000	24/40	1	6933-27	61.31



6934/9467 FLASK Short Neck, with Stopcock and Septum Inlet ♠

Used when handling air-sensitive materials. With F 14/20 or F 24/40 joint, 2mm bore PTFE stopcock and septa port for use with 9096-32 septa (supplied with one septa).

Cap., mL	Qty.	F 14/20		F 24/40	
		Order Code	Each	Order Code	Each
50	1	9467-11	115.74	—	—
100	1	9467-13	116.42	—	—
250	1	9467-15	118.13	6934-25	120.23
500	1	—	—	6934-27	124.38
1000	1	—	—	6934-29	127.62



7003 FLASK Single Neck, Side Outlet, NO-AIR™ ♠

Round bottom flask for use with Schlenk and for air sensitive compounds and reactions. With either F 24/40 or F 14/20 outer center neck joint, and either a 2mm bore glass stopcock or 0-3 valve side outlet. Can be used with a **9096** septa for a septa inlet. Supplied with one **9096-32** septa.

Capacity, mL	F Joint	Outlet Type	Qty.	Order Code	Each
50	14/20	Glass	1	7003-11	110.75
100	14/20	Glass	1	7003-13	111.33
250	14/20	Glass	1	7003-15	113.61
250	24/40	Glass	1	7003-25	120.59
500	24/40	Glass	1	7003-27	124.73
1,000	24/40	Glass	1	7003-29	127.93
50	14/20	Inlet Valve	1	7003-211	114.07
100	14/20	Inlet Valve	1	7003-213	114.07
250	24/40	Inlet Valve	1	7003-215	123.55
500	24/40	Inlet Valve	1	7003-217	127.52
1,000	24/40	Inlet Valve	1	7003-219	130.99

7764 FLASK *Reaction, Side Valve, NO-AIR™* ♠

Round bottom reaction flask for air sensitive compounds. f joint center neck. Side arm has either a 0-4 Hi-Vac stopcock/valve for precise control. The 8mm outlet tube can accept a rubber septa for sample insertion via syringe.

Capacity, mL	Valve Size	f Joint	Qty.	Order Code	Each
50	0-4	14/20	1	7764-02	109.88
100	0-4	14/20	1	7764-04	111.50
250	0-4	14/20	1	7764-06	112.75
500	0-4	24/40	1	7764-08	121.10
1,000	0-4	24/40	1	7764-10	126.40


7764
New
7799 FLASK *Round Bottom, Two Necks, Side Port, NO-AIR™* ♠

Round bottom, NO-AIR™ reaction flask with two f necks and one side port. Side port is available with either a 2mm bore glass stopcock or 0-3 Inlet valve. The glass stopcock can be fitted with a rubber septum and used as an injection port.

Capacity, mL	f Joints	Outlet Type	Qty.	Order Code	Each
50	14/20	2mm Glass Stopcock	1	7799-02	115.36
100	14/20	2mm Glass Stopcock	1	7799-04	118.45
250	24/40	2mm Glass Stopcock	1	7799-06	128.75
500	24/40	2mm Glass Stopcock	1	7799-08	132.36
50	14/20	Inlet Valve	1	7799-100	119.28
100	14/20	Inlet Valve	1	7799-110	120.41
250	24/40	Inlet Valve	1	7799-112	132.46
500	24/40	Inlet Valve	1	7799-114	135.09

7799
New

7814 FLASK *Round Bottom, Cajon® Side Arm, NO-AIR™* ♠

A round bottom storage/reaction flask with a 0-4 Hi-Vac valve and a 9mm O.D. side arm tube to use with Cajon® 3/8-inch connections. The Hi-Vac valve gives precise control for gas or liquid flow into or out of the vessel.

Capacity, mL	Valve Size, mm	Qty.	Order Code	Each
50	0-4	1	7814-02	102.85
100	0-4	1	7814-04	106.94
250	0-4	1	7814-06	110.58
500	0-4	1	7814-08	115.89
1,000	0-4	1	7814-10	125.52


7814
New



7815

New

7815 FLASK *Storage Tube, O-Ring Side Arm, NO-AIR™* ♠

Tube shaped, storage vessel with a side arm with a No. 15 o-ring joint for air free connections. Complete with a 0-4 Hi-Vac valve for excellent gas or liquid flow control. Made with **medium** wall tubing for better pressure capability. Adapts easily to NO-AIR™/vacuum manifolds with No. 15 o-ring ports. Comes with one size -116, **7855-726** FETFE o-ring.

Capacity, mL	Valve Size, mm	Qty.	Order Code	Each
25	0-4	1	7815-01	111.61
60	0-4	1	7815-03	125.23
140	0-4	1	7815-05	141.44
210	0-4	1	7815-07	149.35



7816

New

7816 FLASK *Round Bottom, Storage, O-Ring Side Arm, NO-AIR™* ♠

Round bottom shaped flask with No. 15 o-ring joint side arm. Complete with a 0-4 Hi-Vac valve for excellent control for gases or liquids. Made from medium wall glass blanks for higher pressure capability. Adapt easily to ACE NO-AIR™/vacuum manifold ports with No. 15 o-ring joints. Comes with one size -116, **7855-726** FETFE o-ring.

Capacity, mL	Valve Size, mm	Qty.	Order Code	Each
50	0-4	1	7816-02	113.75
100	0-4	1	7816-04	118.24
250	0-4	1	7816-06	121.54
500	0-4	1	7816-08	125.52



7817

New

7817 FLASK *Round Bottom, Storage, Side Arm § Joint, NO-AIR™* ♠

Similar to 7816 storage flask except with an outer § joint on side arm. Complete with a 0-4 Hi-Vac valve for excellent control for gases or liquids. Made from medium wall glass blanks for better pressure capability.

Capacity, mL	Valve Size, mm	§ Joint	Qty.	Order Code	Each
50	0-4	14/20	1	7817-02	110.34
100	0-4	14/20	1	7817-04	115.46
250	0-4	24/40	1	7817-06	124.89
500	0-4	24/40	1	7817-08	136.70

7821 FLASK *Storage Tube, O-Ring Side Arm, NO-AIR™* ♦

Tube shaped, storage vessel similar to **7815** except with a side arm with a F joint. Complete with a 0-4 Hi-Vac valve for excellent gas or liquid flow control. Made with **medium** wall tubing for better pressure capability.

Capacity, mL	Valve Size, mm	F Joint	Qty.	Order Code	Each
25	0-4	14/20	1	7821-01	106.56
60	0-4	14/20	1	7821-03	123.60
140	0-4	24/40	1	7821-05	143.17
210	0-4	24/40	1	7821-07	150.38


7821
7791 FLASK *Solvent Collector, NO-AIR™* ♦

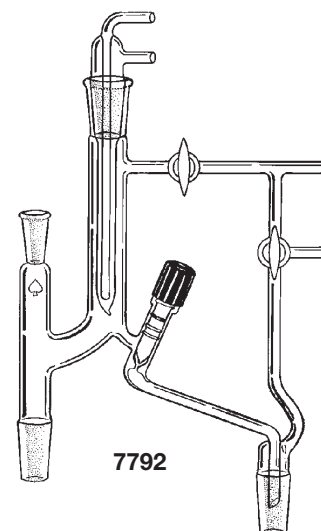
Used for collection and short-term storage of solvents. With 2mm bore PTFE stopcock and F 14/20 joint. A precision septa is used on side port for syringe removal of solvents.

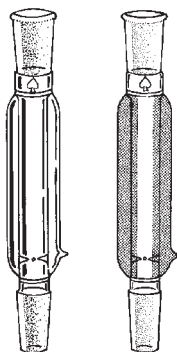
Capacity, mL	Qty.	Order Code	Each
50	1	7791-06	92.84
250	1	7791-21	99.33


7791
7792 CONNECTING TUBE *Distillation Head, Vacuum Type* ★

Used for distilling solvents directly into Schlenk tubes. With F 10/18 thermometer joint for 51mm immersion thermometer. All other joints are F 24/40. Use **9092-27** adapter to collect in smaller size Schlenk tubes. Takeoff arm has a 0-3 PTFE stopcock. Stopcocks on manifold and reflux arms are 2mm bore, glass, or 1:5 taper solid PTFE. Allow isolation of head from receiver so that receiver may be removed without disturbing the refluxing solvent. Takeoff arms on cold finger and on main assembly are 8mm O.D.

<i>With 2mm Glass Stopcock</i>				<i>With 1:5 Solid PTFE Stopcock</i>			
	Qty.	Order Code	Each		Qty.	Order Code	Each
Head, only	1	7792-04	544.94	Head, only	1	7792-06	626.58
Cold Finger	1	7792-07	71.09	Cold Finger	1	7792-07	71.09
Complete	1	7792-15	616.03	Complete	1	7792-20	697.67


7792



7793

7793 COLUMN *Distillation, Hempel* ♠

Vacuum jacketed and silvered with viewing strip or unsilvered. For use with 7792 head. With F 24/40 joints. Effective length, 250mm.

	Qty.	Order Code	Each
Unsilvered	1	7793-04	223.87
Silvered	1	7793-12	488.26

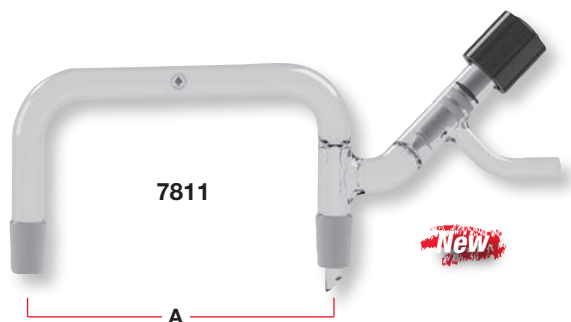


7794

7794 CONNECTING TUBE *Distillation Apparatus, Trap-to-Trap* ♠

Used for the removal of solvents or other volatiles by vacuum distillation at ambient temperature. When used with **7756** Schlenk reaction vessel, the trap prevents excessive loss of solution in the event of a "bump." The distillate is collected in a **9477** pear-shaped flask or other suitable receiver and cooled by dry ice. For low-boiling solvents, closed system conditions can be maintained. With F 14/35 joints and 2mm bore stopcock. Tube off the stopcock is 8mm O.D. Length is approximately 190mm.

F Joints	Qty.	Order Code	Each
14/35	1	7794-08	390.69
24/40	1	7794-10	412.69



7811

7811 TUBE *Connecting/Transfer, NO-AIR™* ♠

Straight horizontal tube for assembling Schlenk lines. Can be used for transfer solvents or other volatiles with vacuum distillation directly into storage flask or tubes. Both end F joints are the same size. Receiving end has a drip tip joint. Has a 0-4 Hi-Vac valve to control liquid or gas flow.

F Joint	Length A,		Qty.	Order Code	Each
	mm				
14/20	125		1	7811-08	171.36
24/40	125		1	7811-10	176.59

7795



7795 CAP ♠

For 7753 storage tubes. The F 14/35 and F 24/40 sizes are used when it is important to evacuate completely. The F 14/20 and F 24/25 are used when there is more concern about grease not entering the storage tube.

F Joint	Qty.	Order Code	Each	F Joint	Qty.	Order Code	Each
14/20	1	7795-04	18.59	24/25	1	7795-09	26.41
14/35	1	7795-06	24.34	24/40	1	7795-11	24.79



7797

7797 CAP *with Stopcock, NO-AIR™* ♠

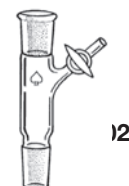
For **7753** storage tubes. With 2mm bore stopcock for evacuating or introduction of inert gases. The F 14/35 or F 24/40 joints are used when it is necessary to evacuate completely.

F Joint	Qty.	Order Code	Each	F Joint	Qty.	Order Code	Each
14/20	1	7797-05	67.79	24/40	1	7797-16	69.36
14/35	1	7797-07	75.20				

7802 ADAPTER *Connecting, Side Outlet, NO-AIR™* ♠

Straight connecting adapter with upper and lower ⌘ joints, side outlet with either a 2mm glass stopcock or a 0-3 inlet valve. Upper and lower joint sizes are the same. Great for Schlenk line assemblies and connecting several NO-AIR™ flasks and other components.

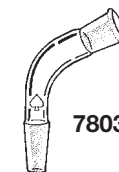
⌘ Joints	Side Outlet	Qty.	Order Code	Each
14/20	Glass	1	7802-09	90.49
24/40	Glass	1	7802-15	93.61
14/20	Inlet Valve	1	7802-23	93.56
24/40	Inlet Valve	1	7802-25	96.66



7803 ADAPTER *105° Angle, ⌘ Joints* ♠

With ⌘ joints, one 14/20 outer and one 14/35 inner, or one 24/25 outer and one 24/40 inner.

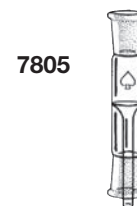
Inner ⌘ Joint	Outer ⌘ Joint	Qty.	Order Code	Each
14/35	14/20	1	7803-12	38.92
24/40	24/25	1	7803-25	40.22



7805 ADAPTER *Straight, NO-AIR™* ♠

With two ⌘ 14/20 outer joints, one 7mm drip tube at bottom.

Qty.	Order Code	Each
1	7805-12	54.66



8876 ADAPTER *Two No. 15 O-Ring Joint ends with 1/2-Inch Hose Connection* ♠

Adapter for Schlenk line with No. 15 o-ring joints on both ends and a #15 Ace-Thred port with a 1/2-inch hose connection.

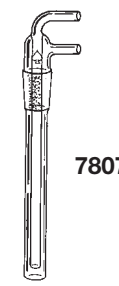
O-Ring Joint	Qty.	Order Code	Each
No. 15	1	8876-22	71.65



7807 CONDENSER *Finger* ♠

For use with 7756 reaction vessel. Top takeoff tubes are 8mm O.D.

Inner ⌘ Joint	Length, mm	Qty.	Order Code	Each
14/20	125	1	7807-04	62.05
24/25	150	1	7807-06	71.59



7809

**7809 ADAPTER** NO-AIR™ ♠With F inner joint and T-Bore, 2mm glass stopcock. Arms are 8mm O.D.

Inner F Joint	Qty.	Order Code	Each
14/20	1	7809-03	80.90
24/25	1	7809-07	84.99
24/40	1	7809-10	Call



7810

7810 ADAPTER NO-AIR™ ♠With F outer joint and T-Bore, 2mm glass stopcock. Arms are 8mm O.D.

Outer F Joint	Qty.	Order Code	Each
14/35	1	7810-04	91.02
14/20	1	7810-06	Call
24/40	1	7810-08	94.67

5110

**5110 ADAPTER** Septa Inlet, Single Port, NO-AIR™ ♠Sampling adapter with F joint at bottom and septa port at top for handling air-sensitive materials. Supplied with septa. For replacement septa, see **9096-32**.

Inner F Joint	Qty.	Order Code	Each
14/20	1	5110-13	29.84
24/40	1	5110-11	29.84

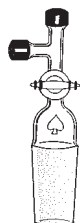
New



8105

8105 VALVE Adapter, Hi-Vac, O-Ring Joints, NO-AIR™ ♠Hi-Vac valve adapter with two, No. 15 o-ring ball joint ports. Helps with set up of NO-AIR™/vacuum manifolds and Schlenk lines. Comes with two size -116, **7855-726** FETFE o-rings.

Valve Size	Qty.	Order Code	Each
0-4	1	8105-08	241.89
0-8	1	8105-10	247.64
0-10	1	8105-14	252.79
0-15	1	8105-100	255.16

9094
5111**5111/9094 ADAPTER** Septum Inlets, PTFE Stopcock, NO-AIR™ ♠Sampling adapter with F inner joint at bottom, 2mm bore PTFE or glass stopcock and two septum ports at top. Can be used to handle air-sensitive materials. Supplied with two 8mm sleeve septa. For extra septa, order **9096-32**.

F Joint	Stopcock Type	Qty.	Order Code	Each
14/20	PTFE	1	9094-04	106.59
14/20	Glass	1	9094-14	83.17
24/40	PTFE	1	5111-09	103.45
24/40	Glass	1	5111-19	85.59

5112/9091 ADAPTER *Septum Inlets* ♠

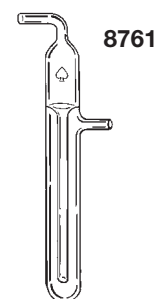
Sampling adapter with F inner joint at bottom and two septum at top for handling air-sensitive materials. Supplied with two 8mm sleeve septa. For extra septa, order **9096-32**.


9091
5112

F Joint	Qty.	Order Code	Each
14/20	1	9091-03	53.84
24/40	1	5112-14	60.31

8761 TUBE *Bubbler, Mineral Oil* ♠

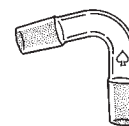
Used to make a vent to the atmosphere. Reservoir head prevents oil from being sucked back into the system. With 8mm O.D. tubing connections. Volume approximately 40mL below side arm.


8761

Qty.	Order Code	Each
1	8761-10	48.41

5070/9052 ADAPTER *75° Angle* ♠

With F inner joints at both ends.


9052/5070

F Joints	Qty.	Order Code	Each
14/20-14/20	1	9052-08	32.16
14/35-24/40	1	9052-12	34.42
24/40-24/40	1	5070-10	38.00

9092 ADAPTER *Reducing and Enlarging* ♠

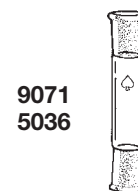
With F outer joint at top and F inner at bottom.


9092

Top Outer F Joint	Bottom Inner F Joint	Qty.	Order Code	Each
14/20	24/40	1	9092-24	30.84
24/25	14/35	1	9092-27	32.20

5036/9071 ADAPTER *Straight Connecting* ♠

With F outer joints at both ends.


9071
5036

F Joints	Qty.	Order Code	Each
14/35-14/35	1	9071-05	31.20
24/40-24/40	1	5036-06	36.24

5200/9080 ADAPTER *Angled Hose Connection, Stopcock, NO-AIR™* ♠

2mm glass stopcock adapter with hose connection and bottom F inner joint.


9080
5200

F Joint	Connecting Tubing Size (In.)	Qty.	Order Code	Each
14/20	A (5/16)	1	9080-02	59.39
24/40	C (5/16 or 3/8)	1	5200-10	69.65



5238

5238 ADAPTER Connecting, NO-AIR™ ♠

Three way, "Y" shaped adapter for connecting three other NO-AIR™ or Schlenk vessels. One outer ⌘ joint and two inner ⌘ joints, all the same joint size.

⌘ Joints	Qty.	Order Code	Each
14/20	1	5238-01	69.91
24/40	1	5238-03	77.40

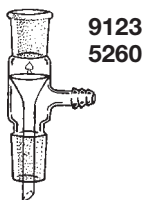


5239

5239 ADAPTER Connecting, NO-AIR™ ♠

Three way, "Y" shaped adapter for connecting three other NO-AIR™ or Schlenk vessels. One inner ⌘ joint and two outer ⌘ joints, all the same joint size.

⌘ Joints	Qty.	Order Code	Each
14/20	1	5239-02	82.26
24/40	1	5239-04	87.91

9123
5260**5260/9123 ADAPTER** Vacuum ♠

With ⌘ outer joint at top and ⌘ inner at bottom. See page 7 for more detailed hose connection information.

⌘ Joints	Tubing Size (In.)	Qty.	Order Code	Each
14/20	B (5/16 or 3/8)	1	9123-06	47.85
24/25	D (3/8)	1	5260-07	59.68



9175

9175 ADAPTER Vacuum, with Stopcock, NO-AIR™ ♠

With 2mm bore glass stopcock on side arm. Side tube is straight, 8mm O.D. Drip-tip center tube.

⌘ Joint	Qty.	Order Code	Each
14/20	1	9175-04	100.12

9543
8250**8250/9543 STOPPER** ♠

With hollow head, ⌘ 14/20 or ⌘ 24/40.

⌘ Joint	Qty.	Order Code	Each
14/20	1	9543-04	14.71
24/40	1	8250-12	20.36

This system is designed for maximum convenience and versatility in the handling of air-sensitive compounds in conjunction with ACE No-Air Labware or suitably adapted conventional glassware.

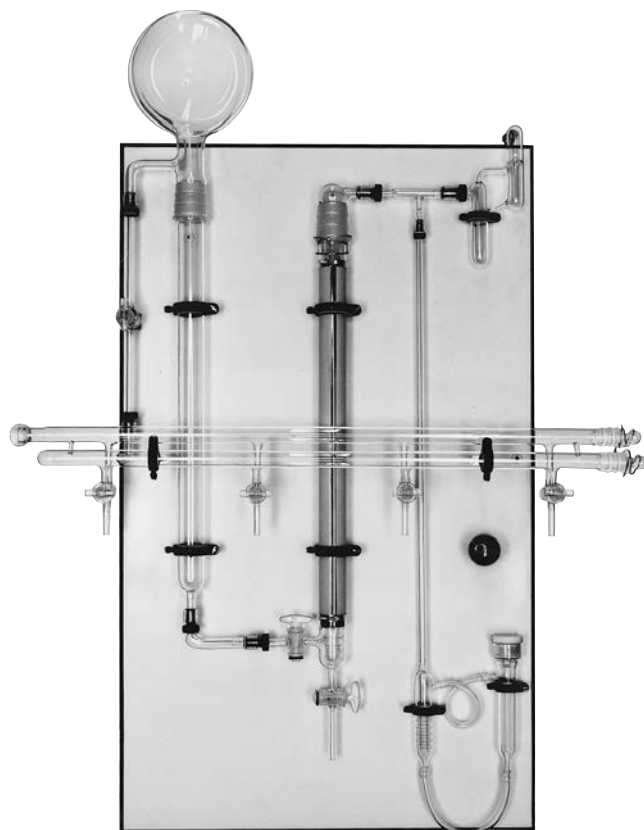
Four two-way, high-vacuum stopcocks on a double-tube manifold permit convenient and rapid access to either vacuum (0.005 torr is common) or inert gas as required for simultaneous manipulations. The inert gas flow is controlled with a panel-mounted needle valve and is monitored with an oil bubbler that has a built-in overflow trap. Excess gas is vented to the atmosphere through the mercury bubbler-manometer which may be adjusted to control the over-pressure in the system. Traces of oxygen and carbon dioxide in the inert gas are removed by a BASF catalyst in a column that is coated with Instatherm® for convenient activation and regeneration of the catalyst. (Column holds approximately 0.5 Kg. of catalyst.) Residual moisture is removed from the inert gas by a drying agent* (not supplied) in a second column.

Pressure surges are reduced by a three-liter bulb in the system. Threaded fittings with FETFE o-rings are employed to facilitate assembly and disassembly, drying agent replacement, etc. The double tube manifold may be removed easily without contaminating the rest of the system and is supplied with $\text{F}24/40$ stoppers at the end of each manifold for rapid cleaning. All of these components are conveniently mounted on a 104 x 62cm wooden panel painted white for better observation of the equipment.

In addition to the panel-mounted system, as pictured, a supplemental vacuum line with two service stopcocks, a McLeod Gauge (8726-12) and a liquid nitrogen trap are supplied.

*For Drierite, see 10175. Complete instructions on assembly, leak testing and preparation of the system are included.

* Items in components listing marked with an asterisk are either not shown or cannot be seen in above photo.



**THE ACE-BURLITCH
INERT ATMOSPHERE SYSTEM**

7818 ACE-INERT ATMOSPHERE SYSTEM

Qty.	Order Code	Complete
1	7818-10	★ 5191.89

COMPONENTS

Qty.	Order Code	Each	Qty.	Order Code	Each
1	7818-24	♠ 1268.29	1	7818-87	♠ 1053.72
1	7818-26	♠ 216.50	1	5217-35	♠ 30.79
1	7818-28	♠ 65.84	1	7818-50	♠ 409.66
1	7818-30	♠ 145.67	1	8294-15	♠ 25.49
1	7818-32	♠ 27.26	1	8250-12	♠ 20.36
1	7818-34	★ 733.65	1	7818-52	♠ 36.67
1	9698-16	★ 60.34	1	7818-54	♠ 9.99
1	7818-35	♠ 16.57	1	7506-02	♠ 11.39
1	7818-36	♠ 85.46	1	5029-10	♠ 2.85
1	7818-38	♠ 56.48	1	7818-56	★ 73.27
1	7818-39	♠ 155.73	1	7818-58	★ 8.93
1	7818-42	♠ 61.66	1 Kg.	7818-60	★ 644.44
1	7818-44	♠ 83.00	10	7598-24	★ 39.91
1	7818-46	♠ 198.36	10	7598-45	★ 52.00
1	7818-70	♠ 30.04	1	7669-12	★ 16.57
			1	7669-14	★ 18.51
			1	7669-20	★ 36.80
			1	7818-65	★ 219.72

VACUUM/NO-AIR

Ace Glass standard, stock carts for either NO-AIR™ or vacuum applications. Carts have all components to set up for vacuum or air sensitive chemistry runs. Carts have wheels and a power strip attached for easy mobility and can be moved from lab to lab. One version comes with a three-port, vacuum/NO-AIR™ manifold and a 34L/min flow rate, PTFE diaphragm type, vacuum pump. The other has a four-port, NO-AIR™/Vacuum manifold with a 60L/min, PTFE diaphragm, vacuum pump for even lower pumping. The KNF diaphragm pumps do not require messy oil or extra components such as large oil traps. The carts are complete with all the basic components and are turn key. All you have to do is to select the various adapters for the No. 15 o-ring joint outlet ports and what type of reaction flasks you want to use for your particular chemistry.

3-PORT SYSTEM

COMPONENT LISTING:

Description	Qty.	Order Code
Vacuum Cart Complete with Two Trays	1	15000-10
Aluminum LabFrame 61cm wide, 61 cm high, with 46 cm base	1	11160-04
Vacuum NO-AIR™ 3-Port Manifold	1	8745-14
Valve Adapter, 0-10 Hi-Vac, Two No. 15 O-Ring Joints	2	8105-14
NO-AIR™ Vacuum Trap with Flange Connection	1	8771-100
J-Kem Vacuum Gauge with Internal Transducer, 120v	1	14065-05
FETFE O-Rings, size -116, for No. 15 Joints	Pkg/12	7855-726
Size 28 Stainless Steel Pinch Clamp for $\frac{1}{2}$ 28/15	6	7669-12
Four-Outlet Power Strip with Six-Foot Cord	1	12195-20
Three-Prong Grip Clamp with Vinylized Jaws	4	11067-14
Clamp Holder, Nickle Plated Zinc	4	11080-20
Heavy Wall, Red Rubber Vacuum Tubing	10 ft.	12690-122
Stainless Steel Tubing Clamps	4	11148-20
Adapter, No. 15 O-Ring Joint to 1/2-inch Hose Connection	1	8877-22
Adapter, No. 15 O-Ring Joint to 0-10mm Valve with #15 Ace-Thred	1	15428-37
KNF Diaphragm Vacuum Pump, Oil Free, 15 psi Maximum, 34 Lpm Flow Rate	1	14100-10



4-PORT SYSTEM

COMPONENT LISTING:

Description	Qty.	Order Code
Vacuum Cart Complete with Two Trays	1	15000-10
Aluminum LabFrame 61cm wide, 61 cm high, with 46 cm base	1	11160-04
Vacuum NO-AIR™ 4-Port Manifold	1	8745-35
Valve Adapter, 0-10 Hi-Vac, Two No. 15 O-Ring Joints	2	8105-14
NO-AIR™ Vacuum Trap with Flange Connection	1	8771-100
J-Kem Vacuum Gauge with Internal Transducer, 120v	1	14065-05
FETFE O-Rings, size -116, for No. 15 Joints	Pkg/12	7855-726
Size 28 Stainless Steel Pinch Clamp for $\frac{1}{2}$ 28/15	8	7669-12
Four-Outlet Power Strip with Six-Foot Cord	1	12195-20
Three-Prong Grip Clamp with Vinylized Jaws	4	11067-14
Clamp Holder, Nickle Plated Zinc	4	11080-19
Heavy Wall, Red Rubber Vacuum Tubing	10 ft.	12690-122
Stainless Steel Tubing Clamps	4	11148-19
Adapter, No. 15 O-Ring Joint to 1/2-inch Hose Connection	1	8877-22
Adapter, No. 15 O-Ring Joint to 0-10mm Valve with #15 Ace-Thred	1	15428-37
KNF Diaphragm Vacuum Pump, Oil Free, 15 psi Maximum, 60 Lpm Flow Rate	1	14100-12



VITON A — A linear copolymer of Vinylidene Fluoride and Hexafluoropropylene.
SILICONE — A group of elastomeric materials made from Silicone, Hydrogen and Carbon.
BUNA-N — A copolymer of Butadiene and Acrylonitrile.
FETFE® — A fluoroelastomer with special TFE Additives.
EPDM (ETHYLENE-PROPYLENE) — An elastomer prepared from Ethylene and Propylene Monomers.

7855 O-RINGS ♠



Size	Dimensions I.D.,mm	W.	Qty.	VITON Order Code	Per Pkg.	SILICONE Order Code	Per Pkg.	BUNA-N Order Code	Per Pkg.	FETFE Order Code	Per Pkg.	EPDM Order Code	Per Pkg.
-006	2.9	1.78	12	7855-01	10.80	7855-201	13.85	7855-401	4.52	7855-701	13.55	—	—
-007	3.7	1.78	12	7855-02	11.17	7855-202	13.99	7855-402	4.52	7855-702	13.24	—	—
-008	4.5	1.78	12	7855-04	11.32	7855-204	14.93	7855-404	4.74	7855-704	14.09	7855-904	14.73
-009	5.3	1.78	12	7855-07	11.78	7855-207	15.91	7855-407	4.74	7855-707	15.21	—	—
-010	6.1	1.78	12	7855-05	11.87	7855-205	15.36	7855-405	4.74	7855-705	14.93	—	—
-011	7.7	1.78	12	7855-06	11.93	7855-206	15.60	7855-406	4.74	7855-706	15.21	7855-906	14.73
-012	9.2	1.78	12	7855-08	11.89	7855-208	16.13	7855-408	4.74	7855-708	15.91	7855-908	14.56
-013	10.8	1.78	12	7855-10	12.63	7855-210	16.79	7855-410	4.78	7855-710	15.60	7855-910	15.61
-014	12.4	1.78	12	7855-12	13.06	7855-212	16.13	7855-412	4.74	7855-712	16.10	7855-912	15.60
-015	14.0	1.78	12	7855-13	14.65	7855-213	17.42	7855-413	7.30	7855-713	17.33	—	—
-016	15.6	1.78	12	7855-14	14.41	7855-214	17.34	7855-414	7.30	7855-714	17.24	7855-914	16.19
-018	18.8	1.78	12	7855-15	15.60	7855-215	18.44	7855-415	7.56	7855-715	19.29	—	—
-021	23.5	1.78	12	7855-19	20.40	7855-219	22.62	7855-419	7.60	7855-719	19.37	—	—
-022	25.1	1.78	12	7855-17	20.25	7855-217	22.29	7855-417	7.60	7855-717	18.50	—	—
-105	3.6	2.6	12	7855-03	15.83	7855-203	16.54	7855-403	4.50	7855-703	20.26	—	—
-107	5.2	2.6	12	7855-09	15.82	7855-209	16.07	7855-409	4.59	7855-709	20.80	—	—
-108	6.0	2.6	12	7855-11	16.24	7855-211	16.54	7855-411	4.96	7855-711	20.45	—	—
-110	9.2	2.6	12	7855-16	15.82	7855-216	16.58	7855-416	5.11	7855-716	20.37	7855-916	19.13
-111	10.8	2.6	12	7855-18	15.70	7855-218	16.58	7855-418	5.11	7855-718	21.07	—	—
-112	12.4	2.6	12	7855-20	16.79	7855-220	17.02	7855-420	5.11	7855-720	21.84	—	—
-113	13.9	2.6	12	7855-21	18.64	7855-221	17.34	7855-421	5.11	7855-721	24.00	—	—
-114	15.5	2.6	12	7855-22	18.54	7855-222	17.45	7855-422	5.19	7855-722	25.13	7855-922	21.96
-115	17.1	2.6	12	7855-24	19.75	7855-224	17.49	7855-424	5.71	7855-724	27.16	—	—
-116	18.7	2.6	12	7855-26	20.81	7855-226	18.07	7855-426	5.71	7855-726	26.84	7855-926	25.74
-118	21.9	2.6	12	7855-70	22.66	7855-270	19.54	7855-470	6.17	7855-770	31.96	—	—
-121	26.6	2.6	12	7855-27	27.80	7855-227	26.56	7855-427	5.69	7855-727	34.90	7855-927	31.87
-122	28.2	2.6	6	7855-71	14.47	7855-271	11.23	7855-471	4.49	7855-771	18.57	—	—
-123	29.8	2.6	6	7855-28	14.70	7855-228	13.74	7855-428	4.52	7855-728	20.39	7855-928	15.95
-125	33.0	2.6	6	7855-72	14.81	7855-272	13.52	7855-472	4.50	7855-772	20.51	—	—
-127	36.2	2.6	6	7855-76	15.51	7855-276	16.44	7855-476	4.57	7855-776	19.56	—	—
-128	37.8	2.6	6	7855-73	15.20	7855-273	16.64	7855-473	4.62	7855-773	19.60	—	—
-136	50.5	2.6	6	7855-29	15.35	7855-229	15.37	7855-429	5.11	7855-729	19.90	7855-929	17.69
-210	18.6	3.5	6	7855-30	13.61	7855-230	15.87	7855-430	4.74	7855-730	17.75	7855-930	15.66
-211	20.2	3.5	6	7855-32	14.81	7855-232	16.09	7855-432	4.74	7855-732	18.84	7855-932	15.66
-212	21.8	3.5	6	7855-34	16.19	7855-234	16.16	7855-434	4.74	7855-734	20.74	7855-934	15.48
-213	23.4	3.5	6	7855-36	16.17	7855-236	15.91	7855-436	4.81	7855-736	20.37	—	—
-214	25.0	3.5	6	7855-38	18.66	7855-238	16.15	7855-438	4.90	7855-738	25.05	7855-938	38.49
-215	26.6	3.5	6	7855-37	25.87	—	—	7855-437	4.95	—	—	—	—
-216	28.2	3.5	6	7855-39	25.66	7855-239	16.26	7855-439	4.95	7855-739	27.74	7855-939	39.68
-217	29.7	3.5	6	7855-40	25.70	7855-240	16.17	7855-440	4.95	7855-740	28.49	—	—
-218	31.3	3.5	6	7855-41	25.92	—	—	7855-441	4.96	—	—	—	—
-219	32.9	3.5	6	7855-43	25.95	—	—	7855-443	4.96	—	—	—	—
-220	34.5	3.5	6	7855-42	25.83	7855-242	16.36	7855-442	5.00	7855-742	34.93	7855-942	16.73
-221	36.1	3.5	6	7855-51	25.88	—	—	7855-451	4.96	—	—	—	—
-222	37.7	3.5	6	7855-52	25.96	—	—	7855-452	4.96	—	—	—	—
-223	40.9	3.5	3	7855-74	14.84	7855-274	6.16	7855-474	2.83	7855-774	18.91	—	—
-225	47.2	3.5	3	7855-44	16.86	7855-244	8.94	7855-444	3.26	7855-744	21.84	7855-944	12.36
-226	50.4	3.5	3	7855-46	17.63	7855-246	8.87	7855-446	4.52	7855-746	24.69	7855-946	12.94
-227	53.6	3.5	3	7855-45	18.38	7855-245	8.81	7855-445	4.52	7855-745	23.61	—	—
-228	56.7	3.5	3	7855-47	19.75	7855-247	9.13	7855-447	4.52	7855-747	25.53	—	—
-229	59.9	3.5	3	7855-48	20.27	7855-248	9.60	7855-448	4.52	7855-748	26.31	7855-948	13.26
-230	63.1	3.5	3	7855-75	21.31	7855-275	21.44	7855-475	4.62	7855-775	29.73	7855-975	15.94

Continued on following page



VITON A — A linear copolymer of Vinylidene Fluoride and Hexafluoropropylene.
SILICONE — A group of elastomeric materials made from Silicone, Hydrogen and Carbon.
BUNA-N — A copolymer of Butadiene and Acrylonitrile.
FETFE® — A fluoroelastomer with special TFE Additives.
EPDM (ETHYLENE-PROPYLENE) — An elastomer prepared from Ethylene and Propylene Monomers.

7855 O-RINGS (listing continued from previous page) ♠

Size	Dimensions		Qty.	VITON		SILICONE		BUNA-N		FETFE		EPDM	
	I.D.,mm	W.		Order Code	Per Pkg.	Order Code	Per Pkg.	Order Code	Per Pkg.	Order Code	Per Pkg.	Order Code	Per Pkg.
-233	72.6	3.5	3	—	—	—	—	—	—	7855-778	29.69	—	—
-235	79.0	3.5	3	7855-64	22.61	7855-264	10.16	7855-464	—	7855-764	32.55	—	—
-239	91.7	3.5	3	7855-69	Call	—	—	—	—	—	—	—	—
-240	94.9	3.5	3	7855-78	Call	—	—	—	—	—	—	—	—
-325	37.5	5.3	6	7855-65	29.08	—	—	7855-453	5.56	—	—	—	—
-326	40.6	5.3	6	7855-67	29.04	—	—	7855-454	5.56	—	—	—	—
-327	43.8	5.3	6	7855-68	28.91	7855-278	16.99	7855-455	5.56	—	—	—	—
-329	50.2	5.3	3	—	—	7855-283	17.37	—	—	7855-783	41.75	—	—
-335	69.2	5.3	3	—	—	—	—	7855-499	150.52	—	—	—	—
-336	72.4	5.3	3	7855-82	35.82	7855-282	18.79	—	—	7855-782	49.10	—	—
-338	78.7	5.3	3	7855-77	38.76	7855-277	19.51	—	—	7855-777	55.64	—	—
-341	88.3	5.3	3	7855-50	48.21	7855-250	20.17	7855-450	4.71	7855-750	64.36	—	—
-343	94.6	5.3	3	7855-66	53.24	7855-266	21.95	—	—	7855-766	64.36	—	—
-348	110.5	5.3	3	7855-79	88.51	—	—	—	—	7855-779	64.36	—	—
-349	113.7	5.3	3	—	—	7855-287	22.60	—	—	7855-787	66.44	—	—
-359	145.4	5.3	3	—	—	7855-289	25.57	—	—	—	—	—	—
5-101	2.5	0.97	12	7855-80	18.27	—	—	—	—	—	—	—	—
5-193	4.5	1.0	12	7855-81	Call	7855-281	Call	—	—	—	—	—	—
5-017	6.1	2.6	12	—	—	—	—	7855-482	Call	—	—	—	—
—	75.5	4.0	1	—	—	7855-251	14.79	—	—	—	—	—	—
—	110.0	5.0	1	—	—	7855-254	23.20	—	—	—	—	—	—
—	150.0	5.0	1	—	—	7855-260	44.00	—	—	—	—	—	—
—	215.0	5.0	1	—	—	7855-288	54.73	—	—	—	—	—	—
o-ring Kits — 30 Sizes	—	—	500	7855-99	251.96	—	—	7855-499	150.52	—	—	—	—
o-ring Sets: one box of 18 sets	—	—	—	—	—	—	—	—	—	8194-310	71.35	—	—
o-ring Sets: one box of 18 sets	—	—	—	—	—	—	—	—	—	8194-313	80.44	—	—
o-ring Sets: one box of 12 sets	—	—	—	—	—	—	—	—	—	8194-315	78.33	—	—
o-ring Sets: one box of 6 sets	—	—	—	—	—	—	—	—	—	8194-317	52.92	—	—

*Sizes not listed are available via special order. Call or email for quotation.

CHEMICAL COMPATIBILITY CHART

Key: 1=Recommended; 2=Satisfactory; 3=Poor; 4=Marginal; 5=Not Recommended; A=Acceptable; NA=Not Acceptable

	Viton	Silicone	Buna-N	EPDM	Chemraz 514	Kalrez 4079	FETFE	CAPFE
Temperature Range °C	-26 to 204	-62 to 204	-37 to 121	-54 to 149	-30 to 220	-15 to 316	-18 to 204	-60 to 204
Compression set	2	2	2	2	2	2	2	3
Durometer	75	70	70	70	70	75	70	70
Steam < 120 °C	3	4	4	4	1	1	1	5
Acetone	4	3	3	2	1	1	5	1
Toluene	2	3	3	3	1	1	2	2
Tetrachloroethane	1	3	3	3	1	1	1	2
THF	4	4	4	4	1	1	5	3
Methyl Ethyl Ketone	5	5	5	2	1	1	5	2
Acetonitrile	5	5	5	5	1	1	5	2
Hydrochloric Acid (conc)	2	5	4	5	1	1	2	4
Ammonia Gas (cold)	4	1	2	2	1	1	4	2
Tetrachloroethylene	3	5	3	3	1	1	3	2
Sulfuric Acid (dilute)	2	5	1	5	2	2	2	2
Nitric Acid (conc)	2	5	4	5	1	1	2	4
Calcium Carbonate	2	5	1	1	1	1	2	2
Xylene	2	4	4	3	1	1	2	2
Mineral Oils	1	2	1	4	1	1	1	1
Sodium Carbonate	1	1	1	1	1	1	1	2
Vacuum	1	4	2	4	4	4	1	2
FDA	A	A	A	A	NA	NA	NA	A

Chemical compatibility information courtesy of the respective manufacturers of each o-ring type. Ace is not responsible for errors.

CAPFE – A “Rubbery” PTFE O-Ring

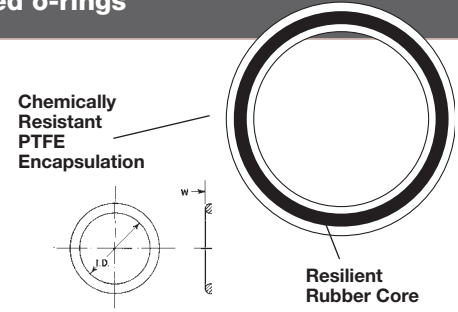
7855 O-RINGS CAPFE ♠

A totally different o-ring having a resilient rubber core encased in a continuous, thick, non-porous FEP/PTFE encapsulation. This unique o-ring solves the sealing problems where the chemical inertness of PTFE is a MUST and where maintenance-free dependability and long service life are required.

- Low friction
- High chemical resistance
- Low compression set compared to solid PTFE o-rings
- Low gas and water vapor permeability compared to “flash” coated o-rings

CAPFE Advantages

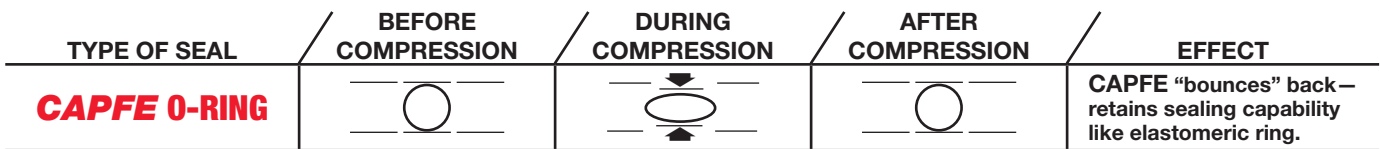
- Continuous encapsulation of thick, pure PTFE offers no seams or weak spots to break and leak.
- CAPFE offers both resilience and chemical resistance.
- Thick PTFE encapsulation permits wide application without leakage or deterioration.
- Resistant to all chemicals except molten alkali metals, hot fluorine and certain complex halogenated compounds.
- Extreme slipperiness of PTFE reduces friction in dynamic applications.
- CAPFE ranges from **-60°C to +204°C**, deterioration vacuum to 10,000 psi.



Size	Dimensions		Order Code	Each
	I.D.,mm	W., mm		
-010	6.1	1.78	7855-805	16.03
-011	7.7	1.78	7855-806	16.96
-012	9.3	1.78	7855-808	18.03
-013	10.8	1.78	7855-810	19.71
-015	12.4	1.78	7855-813	17.56
-018	18.8	1.78	7855-815	20.14
-021*	23.5	1.78	7855-819	20.14
-022	25.1	1.78	7855-817	20.14
-110	9.2	2.6	7855-816	15.53
-111	10.8	2.6	7855-818	17.29
-112	12.4	2.6	7855-820	16.64
-113	13.9	2.6	7855-821	17.75
-114	15.5	2.6	7855-822	17.75
-115	17.1	2.6	7855-824	17.75
-116	18.7	2.6	7855-826	17.75
-118	21.9	2.6	7855-870	19.48
-121	26.6	2.6	7855-827	19.48
-122	28.2	2.6	7855-871	19.48
-123	29.8	2.6	7855-828	19.48
-125	33.0	2.6	7855-872	20.78
-127	36.2	2.6	7855-876	20.78
-128	37.8	2.6	7855-873	20.78
-136	50.5	2.6	7855-829	23.62
-210	18.6	3.5	7855-830	20.88
-211	20.2	3.5	7855-832	20.88
-212	21.8	3.5	7855-834	21.29

Size	Dimensions		Order Code	Each
	I.D.,mm	W.,mm		
-213	23.4	3.5	7855-836	Call
-214	25.0	3.5	7855-838	23.02
-217	29.7	3.5	7855-840	23.11
-220	34.5	3.5	7855-842	23.11
-223	40.9	3.5	7855-874	26.99
-225	47.2	3.5	7855-844	26.99
-226	50.4	3.5	7855-846	26.99
-227	53.6	3.5	7855-845	27.82
-228	56.7	3.5	7855-847	27.82
-229	59.9	3.5	7855-848	27.82
-230	63.1	3.5	7855-875	27.82
-232	69.4	3.5	7855-877	27.82
-235	79.0	3.5	7855-864	28.91
-	134.37	3.5	7855-885	35.42
-317	23.2	5.3	7855-860	31.01
-329	50.2	5.3	7855-883	29.36
-341	88.3	5.3	7855-850	34.18
-348	110.5	5.3	7855-879	52.48
-349	113.7	5.3	7855-887	53.01
-359	145.4	5.3	7855-889	56.87
-361	151.8	5.3	7855-861	63.92
-	75.0	4.0	7855-878	28.38
-	110.0	5.0	7855-880	29.49
-	150.0	5.0	7855-881	61.44
-	215.0	5.0	7855-884	76.02

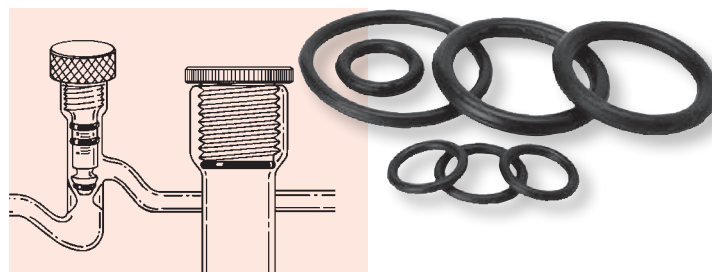
Value
ACE EXCLUSIVE!



KALREZ® 4079

7855 KALREZ 4079 O-RINGS ★

Offer the resilience and sealing force of an elastomer with chemical inertness and thermal stability similar to PTFE fluorocarbon resin.



Sealing Performance

- Compared with other elastomers, KALREZ is normally more resistant to swelling and embrittlement and will retain these properties for a longer period of time.
- Compared with metal seals, KALREZ is easily installed and conforms to the sealing surface despite irregularities due to improper assembly or wear.
- Compared with PTFE seals, KALREZ is not likely to creep or cold flow.

Chemical Resistance

KALREZ has excellent chemical resistance, far above that of other commercial elastomers. KALREZ should be considered for service in hot, corrosive environments, including:

- Polar solvents (ketones, esters, ethers)
- Strong organic solvents (benzene, dimethyl formamide, perchloroethylene, tetrahydrofuran (THF))
- Inorganic and organic acids (hydrochloric, nitric, sulfuric, trichloroacetic) and bases (hot caustic soda)
- Strong oxidizing agents (dinitrogen tetroxide, fuming nitric acid)
- Metal halogen compounds (titanium tetrachloride, diethylaluminum chloride)
- Hot mercury/caustic soda
- Chlorine, wet or dry
- Inorganic salt solutions
- Fuels, (ASTM Reference Fuel C, JP-5 Jet Fuel, aviation gas, kerosene)
- Hydraulic fluids (SKYDROL¹, 500A, PYDRAUL¹ 312, ANDEROL² L-774, and transmission fluids)
- Heat transfer fluids (DOWTHERM³A)
- Oil well sour gas (methane, hydrogen sulfide/carbon dioxide/steam)
- Steam

Thermal Stability

KALREZ o-rings retain their elastic properties in long-term service at temperatures as high as 316°C and in intermittent service up to 327°C. Generally KALREZ provides reliable performance at temperatures up to 83°C (150°F) higher than o-rings made from other commercial elastomers.

®Registered DUPONT Trademark

¹ U.S. Trademark of Solutia Co., ²U.S. Trademark of Tenneco Chemicals,

³ U.S. Trademark of Dow Chemical Co.

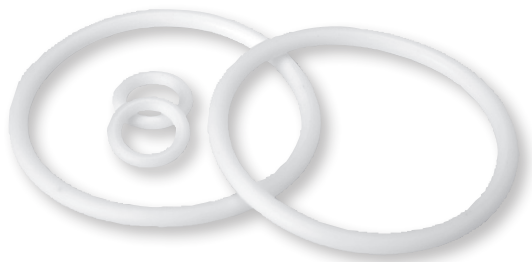
Size	Dim., mm		Order Code	Per Pkg.	(Use)
	I.D.	W			
-006	2.9	1.78	7855-601	38.82	
-007	3.7	1.78	7855-602	38.79	(S)
-008	4.5	1.78	7855-604	42.53	(T,C,S)
-009	5.3	1.78	7855-607	44.64	
-010	6.1	1.78	7855-605	44.97	
-011	7.7	1.78	7855-606	44.61	(T,J,S)
-012	9.3	1.78	7855-608	45.42	(C,T,J)
-013	10.8	1.78	7855-610	47.13	(C,T)
-014	12.4	1.78	7855-612	48.33	(O)
-015	14.0	1.78	7855-613	33.89	(O,G)
-016	15.6	1.78	7855-614	52.29	(T,J)
-018	18.8	1.78	7855-615	49.50	(J,S)
-110	9.2	2.6	7855-616	80.38	(J,S)
-021	23.5	1.78	7855-617	63.56	(C,T,G)
-111	10.8	2.6	7855-618	72.56	(C,T,S)
-022	25.1	1.78	7855-619	64.89	(C,T,G)
-112	12.4	2.6	7855-620	91.00	
-113	13.9	2.6	7855-621	76.36	
-114	15.5	2.6	7855-622	113.51	(J,S)
-115	17.1	2.6	7855-623	92.55	
-116	18.7	2.6	7855-626	105.27	(C,T,G)
-121	26.6	2.6	7855-627	141.14	(C,T,G)
-136	50.5	2.6	7855-629	336.49	(C,T,G)
-210	18.6	3.5	7855-630	199.68	
-211	20.2	3.5	7855-632	202.93	(T,G)
-212	21.8	3.5	7855-634	171.10	(T)
-217	29.7	3.5	7855-640	196.51	(C,T,G)
-220	34.5	3.5	7855-642	254.47	(T,G,J)
-225	47.2	3.5	7855-644	399.68	(C,T,G,J)
-229	59.9	3.5	7855-648	487.20	(C,T,G,J)
-105	3.6	2.6	7855-650	46.67	(C,T,G)
-108	6.0	2.6	7855-653	56.22	(T,G)
-118	21.9	2.6	7855-655	110.53	(O)
-122	28.2	2.6	7855-657	98.43	(C,T,J)
-123	29.8	2.6	7855-658	87.02	(C,T)
-125	33.0	2.6	7855-659	100.03	(O)
-127	36.2	2.6	7855-670	111.45	(T,J)
-128	37.8	2.6	7855-671	112.90	(J,S)
-213	23.4	3.5	7855-675	100.13	(C,T,G)
-214	25.0	3.5	7855-676	88.22	(T,G)
-216	28.2	3.5	7855-677	110.63	(C,T,G)
-223	40.9	3.5	7855-680	162.94	(C,T,G,J)
-226	50.4	3.5	7855-684	168.49	(C,T,G,J)
-227	53.6	3.5	7855-685	173.95	
-228	56.7	3.5	7855-686	197.61	
-230	63.1	3.5	7855-689	194.60	
-327	43.8	5.3	7855-690	305.44	
-341	88.3	5.3	7855-691	724.73	
-348	110.0	5.3	7855-692	758.22	

USE REFERENCE CODES

T = Ace-Threds S = Stopcocks C = Chromatographic Fittings
 G = Gaskets J = O-Ring Joints O = Special

CHEMRAZ® 514

THE **WHITE** O-RING



7859 CHEMRAZ O-RINGS *White* ★

Molded of a perfluoroelastomer polymer, CHEMRAZ has the broadest chemical resistance of any elastomeric material. Combines the resilience and sealing force of an elastomer with chemical resistance approaching that of PTFE.

Sealing Performance

- Compared with other elastomers, CHEMRAZ is normally more resistant to swelling and embrittlement and will retain these properties for a longer period of time.
- Compared with metal seals, CHEMRAZ is easily installed and conforms to the sealing surface despite irregularities due to improper assembly or wear.
- Compared with PTFE seals, CHEMRAZ is not likely to creep or cold flow.

Chemical Resistance

CHEMRAZ has excellent chemical resistance, far above that of other commercial elastomers. CHEMRAZ should be considered for service in hot, corrosive environments including:

- Polar solvents (ketones, esters, ethers)
- Strong organic solvents (benzene, dimethyl formamide, perchloroethylene, tetrahydrofuran (THF))
- Inorganic and organic acids (hydrochloric, nitric, sulfuric, trichloroacetic) and bases (hot caustic soda)
- Strong oxidizing agents (dinitrogen tetroxide, fuming nitric acid)
- Metal halogen compounds (titanium tetra-chloride, diethylaluminum chloride)
- Hot mercury/caustic soda
- Chlorine, wet or dry
- Inorganic salt solutions
- Fuels, (ASTM Reference Fuel C, JP-5 Jet Fuel, aviation gas, kerosene)
- Hydraulic fluids (SKYDROL¹, 500A, PYDRAUL¹ 312, ANDEROL² L-774, and transmission fluids)
- Heat transfer fluids (DOWTHERM³A)
- Oil well sour gas (methane, hydrogen sulfide/carbon dioxide/steam)
- Steam

Size	Dimensions, mm		Order Code	Per Pkg.	(Use)
	I.D.	W			
-006	2.9	1.78	7859-501	31.68	(O)
-007	3.7	1.78	7859-502	31.68	(S)
-008	4.5	1.78	7859-504	42.22	(T,C,S)
-009	5.3	1.78	7859-507	34.24	(O)
-010	6.1	1.78	7859-505	35.31	(T,J,S)
-011	7.7	1.78	7859-506	35.32	(T,J,S)
-012	9.3	1.78	7859-508	36.43	(C,T,J)
-013	10.8	1.78	7859-510	36.79	(C,T)
-014	12.4	1.78	7859-512	44.16	(O)
-015	14.0	1.78	7859-513	41.29	(J,S)
-016	15.6	1.78	7859-514	40.08	(T,J)
-018	18.8	1.78	7859-515	45.78	(J,S)
-021	23.5	1.78	7859-519	54.93	(C,T,G)
-022	25.1	1.78	7859-517	55.35	(C,T,G)
-105	3.6	2.6	7859-503	42.18	(C,T,G)
-108	6.0	2.6	7859-511	46.26	(T,G)
-110	9.2	2.6	7859-516	48.59	(J,S)
-111	10.8	2.6	7859-518	49.36	(C,T,S)
-112	12.4	2.6	7859-520	52.39	(T,G,J)
-113	13.9	2.6	7859-521	56.87	(C,T,G,J)
-114	15.5	2.6	7859-522	57.09	(J,S)
-115	17.1	2.6	7859-524	65.93	(S)
-116	18.7	2.6	7859-526	65.82	
-118	21.9	2.6	7859-570	73.46	(O)
-121	26.6	2.6	7859-527	76.21	(C,T,G)
-122	28.2	2.6	7859-571	77.93	(C,T,J)
-123	29.8	2.6	7859-528	83.93	(C,T)
-125	33.0	2.6	7859-572	102.19	(O)
-127	36.2	2.6	7859-576	109.74	(T,J)
-128	37.8	2.6	7859-573	123.65	(J,S)
-136	50.5	2.6	7859-529	166.20	(C,T,G)
-210	18.6	3.5	7859-530	96.38	(J,S)
-211	20.2	3.5	7859-532	96.41	(T,G)
-212	21.8	3.5	7859-534	97.95	(T)
-213	23.4	3.5	7859-536	109.13	(C,T,G)
-214	25.0	3.5	7859-538	113.53	(T,G)
-216	28.2	3.5	7859-539	146.88	(C,T,G)
-217	29.7	3.5	7859-540	122.80	(T,G,J)
-220	34.5	3.5	7859-542	143.55	(T,G,J)
-223	40.9	3.5	7859-574	176.56	(C,T,G,J)
-225	47.2	3.5	7859-544	198.13	(C,T,G,J)
-226	50.4	3.5	7859-546	217.38	
-227	53.6	3.5	7859-545	231.59	
-228	56.7	3.5	7859-547	236.10	
-229	59.9	3.5	7859-548	236.31	(C,T,G,J)
-230	63.1	3.5	7859-575	254.37	
-327	43.8	5.3	7859-578	335.27	
-341	88.3	5.3	7859-550	623.54	
-348	110.5	5.3	7859-579	801.51	

USE REFERENCE CODES

T= Ace-Threds S= Stopcocks C= Chromatographic Fittings
G= Gaskets J= O-Ring Joints O= Special

Thermal Stability

CHEMRAZ o-rings retain their elastic properties longer in harsh chemical environments at temperatures from -30°C to 220°C.

®Chemraz is a Registered Trademark of Greene Tweed & Co.
¹U.S. Trademark of Solutia Co., ²U.S. Trademark of Tenneco Chemicals,
³U.S. Trademark of Dow Chemical Co.

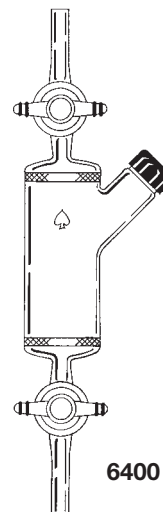


6400 VESSEL *Peptide* ♠

Cylindrical vessel with 2mm bore PTFE stopcock at either end, and porosity C (25-50 micron) fritted disc top and bottom. With threaded side port, angled, for charging vessel. Designed so all wetted surfaces are glass or PTFE. Sold complete with cap for side port.

Actual Capacity, mL	Working Capacity, mL	Length*, mm	Disc Dia., mm	GPI Cap Thread Size	Qty.	Order Code	Complete
20	10	60	18-20	15-415	1	6400-07	203.06
60	30	105	25	15-415	1	6400-10	218.44
120	60	110	30	20-400	1	6400-16	230.15
250	125	160	40	20-400	1	6400-19	234.66
500	250	210	50	20-400	1	6400-23	253.31

*Distance between filter discs.



6400

PEPTIDE VESSELS

6402 VESSEL *Peptide* ♠

Cylindrical vessel with 2mm bore PTFE stopcock and porosity C (25-50 micron) fritted disc at bottom, GPI thread at top. Supplied with solid cap, holed cap, and PTFE-faced silicone rubber septum. All wetted surfaces are either glass or PTFE. For replacement caps and septa, see 9590 and 8787 respectively.

Actual Capacity, mL	Working Capacity, mL	Length*, mm	Disc Dia., mm	GPI Cap Thread Size	Qty.	Order Code	Complete
20	10	60	18-20	15-415	1	6402-12	138.23
60	30	105	25	15-415	1	6402-15	148.16
120	60	110	30	20-400	1	6402-20	152.51
250	125	160	40	24-440	1	6402-24	163.88
500	250	210	50	38-430	1	6402-27	169.77

*Distance from filter disc to thread.



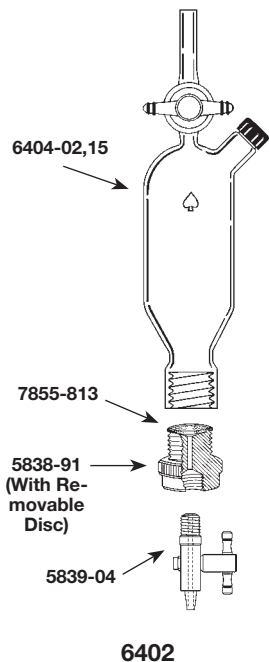
6402

Large-scale peptide vessels available via special order.

ACE Designation	Porosity Maximum Pore Dia. Range (micron)	Corning, Kimble & ChemGlass Equivalent	Most Frequent Uses
A	145-174	EC (170-220)	Coarse filtration. Gas Dispersion
B	70-100	—	Coarse filtration. Gas Dispersion
C	25-50	C (40-60)	Filtration. Gas Dispersion
D	10-20	M (10-15)	Filtration and extraction
E	4-8	F (4-5.5)	Filtration and extraction

6404 VESSEL Peptide, Ace-Thred, with Side Port

Cylindrical vessel with a 2mm bore PTFE stopcock at top, GPI threaded side port, angled, and #15 Ace-Thred at bottom that accepts a PTFE adapter with removable filter disc and a PTFE shut-off valve. PTFE adapter has a “front”-type seal using a CAPFE (PTFE encapsulated silicone) o-ring to make a compression seal in the #15 Ace-Thred on vessel. Porosity C (25-50 micron) glass filter disc is press fit into recess at top of the adapter and it can be replaced easily. Other end of adapter has a 1/4-inch FNPT thread that allows connection of a 2.5mm bore PTFE shut-off valve with a luer extension. Supplied with a solid cap for side port. For replacement cap, see 9590. **Complete item consists of vessel, PTFE adapter, CAPFE o-ring, and valve.**



Actual Capacity, mL	Working Capacity, mL	Length*, mm	Body Dia., mm	GPI Thread Size	Qty.	Order Code	Complete ♠
20	10	60	25	15-415	1	6404-30	256.72
60	30	105	31	15-415	1	6404-33	266.73
120	60	110	44	15-415	1	6404-36	269.44
250	125	160	51	15-415	1	6404-40	287.77
500	250	210	63	15-415	1	6404-44	300.26

*Distance from stopcock to thread.

ACCESSORIES

Actual Capacity, mL	Qty.	Glass Vessel only		#15 Ace-Thred PTFE Adapter only		PTFE Valve only	
		Order Code	Each ♠	Order Code	Each ♠	Order Code	Each ★
20	1	6404-02	129.42	5838-91	58.38	5839-04	51.36
60	1	6404-05	139.43	5838-91	58.38	5839-04	51.36
120	1	6404-08	142.14	5838-91	58.38	5839-04	51.36
250	1	6404-11	160.47	5838-91	58.38	5839-04	51.36
500	1	6404-15	172.96	5838-91	58.38	5839-04	51.36

Actual Capacity, mL	Replacement Glass Disc			Size -015 CAPFE O-Ring		
	Qty.	Order Code	Each Pkg/6 ♠	Qty.	Order Code	Each ♠
20	Pkg/6	5848-23	60.23	1	7855-813	17.56
60	Pkg/6	5848-23	60.23	1	7855-813	17.56
120	Pkg/6	5848-23	60.23	1	7855-813	17.56
250	Pkg/6	5848-23	60.23	1	7855-813	17.56
500	Pkg/6	5848-23	60.23	1	7855-813	17.56

**ACE DESIGN:
Removable Frit
& PTFE Fittings**

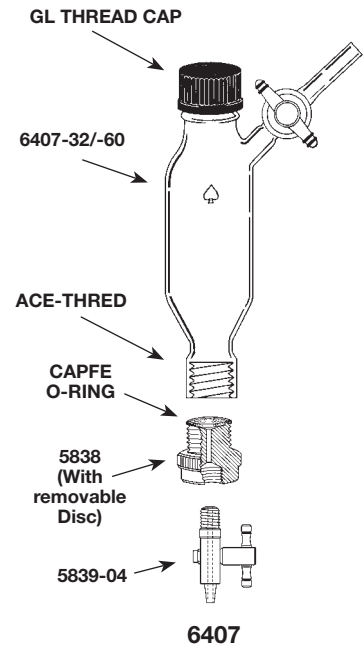
ACE does custom work.
 For an economical solution...**made-to-order** glassware!
Whether you need one piece or a thousand.
 Call or email for a consultation and/or quotation.

6407 VESSEL Peptide, Ace-Thred, with Side Port

Cylindrical vessel with a 2mm bore PTFE stopcock, GL thread at top, Ace-Thred at bottom that accepts a PTFE adapter with removable filter disc and a PTFE shut-off valve. PTFE adapter has a “front”-type seal using a CAPFE (PTFE encapsulated silicone) o-ring to make a compression seal in the Ace-Thred on vessel. Porosity C (25-50 micron) glass filter disc is press fit into recess at top of the adapter and it can be replaced easily. Other end of adapter has a 1/4-inch FNPT thread that allows connection of a 2.5mm bore PTFE shut-off valve with a luer extension. Supplied with a solid cap GL thread. For replacement caps, see 7622. **Complete item consists of vessel, PTFE adapter, CAPFE o-ring, and valve.**

Actual Capacity, mL	Working Capacity, mL	Length*, mm	Body Dia., mm	Top Cap GL Thread Size	Bottom Ace-Thred Size	Qty.	Order Code	Complete ♠
20	10	20	25	14	15	1	6407-32	250.57
60	30	105	31	25	25	1	6407-36	306.34
125	60	110	44	25	25	1	6407-42	315.56
250	125	160	51	32	25	1	6407-48	340.49
250	125	160	51	32	50	1	6407-54	493.16
500	250	210	63	32	50	1	6407-57	514.18
1000	500	260	76	32	50	1	6407-60	546.49

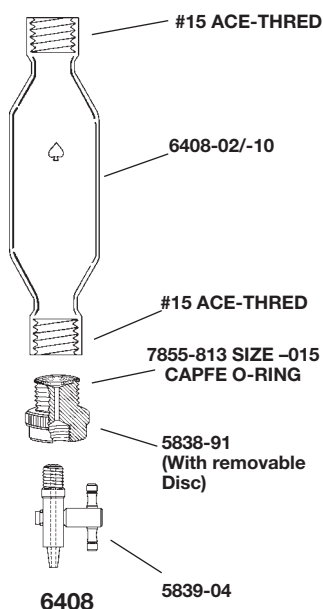
*Distance from thread to thread.



ACCESSORIES

Actual Capacity, mL		Qty.		Glass Vessel only		PTFE Adapter only			PTFE Valve only	
Order Code	Each ♠	Ace-Thred Size	Order Code	Each ♠	Order Code	Each ★				
6407-02	140.83	#15	5838-91	58.38	5839-04	51.36				
6407-06	147.15	#25	5838-94	107.83	5839-04	51.36				
6407-08	156.37	#25	5838-94	107.83	5839-04	51.36				
6407-11	181.30	#25	5838-94	107.83	5839-04	51.36				
6407-12	202.33	#50	5838-96	239.47	5839-04	51.36				
6407-15	223.35	#50	5838-96	239.47	5839-04	51.36				
6407-19	255.66	#50	5838-96	239.47	5839-04	51.36				

For PTFE Adapter/ Ace-Thred Size		Qty.		Replacement Glass Disc		CAPFE O-Ring		
Order Code	Each ♠	O-Ring Size	Qty.	Order Code	Each ★			
5838-91 / #15	60.23	-015	1	7855-813	17.56			
5838-94 / #25	68.04	-121	1	7855-827	19.48			
5838-96 / #50	134.59	-136	1	7855-829	23.62			



6408 VESSEL Peptide, Ace-Thred Top and Bottom ♠

Cylindrical vessels with #15 Ace-Thred at both ends, no side port. Use 5838-91 PTFE adapter (not included) with removable filter disc and 5839-04 PTFE valve (also not included) with Luer-Lok extension at either end. See 6404 for a complete listing of accessories that fit this vessel.

Actual Cap., mL	Working Cap., mL	Length*, mm	Top and Bottom Ace-Thred Size	Qty.	Order Code	Vessel Only
20	10	60	15	1	6408-02	64.63
60	30	105	15	1	6408-04	67.88
120	60	110	15	1	6408-06	76.04
250	125	160	15	1	6408-08	106.69
500	250	210	15	1	6408-10	112.01

*Distance between threads



Custom Fritted Ware
Featuring the only *Glass Fiber* filters

*You design it,
we'll make it!*

Special Shapes

- Square — up to 11 x 11 inches
- Rectangular
- Discs — up to 8 inches
- Cylindrical

Micron Range

- 4 – 174

Special Sizes

- Up to 1-inch thick





PHOTOCHEMICAL/PHOTOBIOLOGICAL EQUIPMENT

**For complete assemblies,
see 7840 on page 421, and 7861 on page 417.**

Individual components listed.



7825

7825 IMMERSION LAMP Photochemical (Medium Pressure)

Medium pressure, quartz, mercury-vapor lamp. For use in all ACE immersion wells. 61cm PTFE covered lead wires, fitted with pin type connectors. A 6-foot power cord also allows for lowering lamp into well for vertical operation. Approximately 40-48% of the radiated energy is in the ultraviolet portion of the spectrum, 40-43% in the visible region and the balance in the Infrared. Can be inserted into a glass well/sleeve with a 25mm I.D. For replacement cord, order 9698-10.

Watts	Lamp Volts	Lamp Amps	Arc Length, mm	Distance from Lamp to Bottom, mm	Approx. Total Length, mm	Order Code	Each
100	90-110	1.2	69.85	42.86	155.58	7825-30	688.89
200	110-130	1.9	121.92	64.52	250.95	7825-32	784.06
450	125-145	3.6	131.50	56.50	244.35	7825-34	776.64
450	125-145	3.6	279.40	57.15	400.05	7825-35	788.52
550	140-150	4.5	109.54	57.15	236.54	7825-36	879.30
1200	270-300	4.7	317.50	87.38	492.25	7825-40	923.12

Warranty: One year from date of shipment (WHEN USED UNDER NORMAL CONDITIONS WITH ACE EQUIPMENT). Typical lamp life 1000 hrs.

CAUTION:

Ultra-violet radiation is permanently damaging to the retina of the eye. Never operate lamp where it can be viewed directly.

Spectral Characteristics (Watts)

Lamp No.	Far U.V	Middle U.V	Near U.V.	Visible	Infrared	Total Radiated Energy
7825-30	2200A-2800A	2800A-3200A	3200A-4000A	4000A-6000A	10000A-14000A	11.49
7825-32	1.14	1.97	1.53	4.73	2.12	11.49
7825-34	2.88	4.14	3.46	10.6	4.1	25.18
7825-35	27.0	28.7	28.0	75.7	16.4	175.8
7825-36	27.0	28.7	28.0	75.7	16.4	175.8
7825-36	29.2	32.8	32.9	87.2	20.6	202.7
7825-40	116.15	117.01	104.03	187.07	48.68	572.9

FOR SAFETY:

We recommend use of 7836 Safety Cabinet plus Water-Flo Power Cut-Off when operating these lamps.

Newly Redesigned



7830

7830 POWER SUPPLY Photochemical ★

Newly redesigned power supply transformers, for 7825 photochemical lamps, that supply the extra voltage and current required to initiate the arc and to reduce power for operation. Sizes A-1, B-1, C-1 and D-1 operate at 115v, 60 Hz. Size A-2, C-21 and G-22 operate at 230v, 50 Hz. G-21 operates at 230v, 60 Hz.

Size	For Lamp No.	Primary Volts	Weight	Hz.	Case Dimensions, cm			Order Code	Each
					L	W	H		
A-1	7825-30	120	8 lbs.	60	17.8	12.7	11.4	7830-52	1002.77
A-2	7825-30	230	8 lbs.	50	17.8	12.7	11.4	7830-53	1255.05
B-1	7825-32	120	28 lbs.	60	30.5	21.6	22.9	7830-56	1942.46
C-1	7825-34 & -35	120	36 lbs.	60	30.5	21.6	22.9	7830-60	2080.25
C-21	7825-34 & -35	230	40 lbs.	50	30.5	21.6	22.9	7830-61	2416.49
D-1	7825-36	120	64 lbs.	60	45.7	28.3	27.9	7830-64	3031.24
G-21	7825-40	230	65 lbs.	60	45.7	28.3	27.9	7830-71	4014.23
G-22	7825-40	230	65 lbs.	50	45.7	28.3	27.9	7830-89	4738.37

Warranty: Two years from date of shipment (WHEN USED UNDER NORMAL CONDITIONS WITH ACE EQUIPMENT).

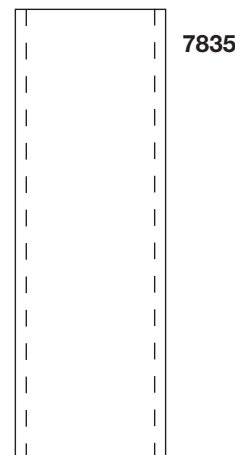
Note that sizes A-2, C-21 and G-22 are for international use only due to 230V, 50Hz operation.

7835 ABSORPTION SLEEVES ★

Filter sleeve for use with all ACE Immersion Wells to restrict portions of the radiated energy from reaching the reactant material. An invaluable aid in predetermining which portion of the spectrum creates the reaction. Sleeves are glass, open end tubes which telescope into well assembly to surround the light source. For use with 100, 200, 450, and 1200 watt lamps, only.

Type Glass	Length, mm	O.D., mm	I.D., mm	Order Code	Each
Pyrex 7740	280	30	26	7835-44	32.05
Pyrex 7740*	762	30	26	7835-45	58.63

*762mm long for 7885 pilot plant reactor.



7836 PHOTOCHEMICAL SAFETY REACTION CABINET* ★

This steel cabinet allows for the safe operation of ACE photochemical reaction equipment. Eliminates the need for a hood, or to construct a special safe area to operate the U.V. lamp. The cabinet has welded seams and a fully hinged door with lip to prevent light from escaping. The door has a key lock for positive closure and it controls a safety switch that prevents U.V. lamp operation unless door is closed. The floor of cabinet is sealed to one-inch height to contain any possible spills.

Inside the cabinet is a plug-in light, auxiliary 120v socket and a 60 CFM exhaust fan, all controlled by an ON/OFF switch. Also inside are pin jack sockets for lamp connection and a removable 1/2-inch aluminum rod, mounted vertically, for clamping the reactor.

The cabinet is supplied with a six-foot grounded power cord with NEMA plug for connection to a 120v source, and a six-foot, two-wire cord with male pin jacks for connection to the lamp power supply. Handles are mounted on both sides for easier carrying, and there are rubber feet on the bottom of the cabinet for stability. Measures: 36 (H) x 21-1/4 (W) x 18-1/2 (D) inches. Painted black inside, chemically resistant blue outside. Weight: 60 lbs.



7836

Order Code	Each
7836-20	2979.24

*Designed by Dr. John Penn, West Virginia University Dept. of Chemistry, Morgantown, WV 26506
For international use, 230 volts, 50Hz, use with step-up/step-down transformer 7834-17.

7837 STAND Photochemical Reactor ★

Sturdy aluminum, powder coated stand for use with cylindrical reactors such as those listed under 7840, 7841, 7844, 7861, 7863, 7864 or 7865. Design allows vessel to be operated in a cold bath in the event the reactant material needs cooling. Also can be used stand-alone.

	Qty.	Order Code	Each
Stand, only	1	7837-75	239.92

PTFE Stand Inserts

Vessel Size, mL	Vessel Style	Qty.	Order Code	Each
250	Plain	1	7837-02	184.47
500	Plain	1	7837-05	183.79
1,000	Plain	1	7837-10	184.99
250	Jacketed	1	7837-25	184.99
500	Jacketed	1	7837-60	189.08
1,000	Jacketed	1	7837-100	184.80

Stand is universal for all sizes. User must select the appropriate PTFE insert to accommodate desired vessel size.



7837

**Complete
ready-to-use
unit**



7861 REACTION ASSEMBLY *Photochemical, Ace-Thred, Complete* ★

Complete reaction assembly with all parts needed for immediate operation. Utilizes an internally threaded connection in place of the ground glass joint. Bushing and FETFE o-ring form a compression type seal with immersion well. Well has removable inner cooling tube. Reactor has one- $\frac{1}{4}$ " 14/20 angled joint for sparger tube, one- $\frac{1}{4}$ " 24/40 vertical joint for condenser, and one-#7 Ace-Thred for thermometer. Volume indicated is total volume. Actual working volume is approximately 40-50% of total.

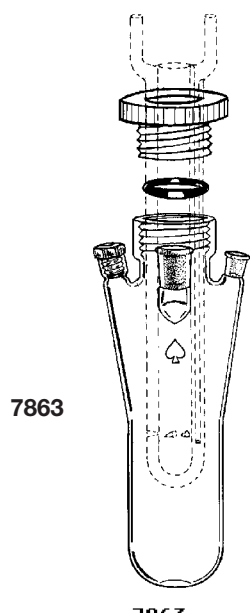
Complete assembly consists of reactor, 7874-38 quartz immersion well, sparger tube, PTFE stir bar, #7 nylon bushing with o-ring, three meters of 4.8mm I.D. PTFE tubing, stand, 450 watt lamp and 450 watt power supply.

115 Volts, 60 Hz

Capacity, mL	Order Code	Complete
250	7861-245	4629.94
500	7861-250	4595.29
1000	7861-255	4598.29

230 Volts, 50 Hz

Capacity, mL	Order Code	Complete
250	7861-410	4966.18
500	7861-430	4931.53
1000	7861-450	4934.53



7863 REACTION VESSEL *Photochemical, Ace-Thred* ♠

Reaction vessel fabricated of borosilicate glass to accommodate the 7874, 7875 or 7876 immersion wells only. With #50 Ace-Thred at top which accepts a 7506-14 bushing and FETFE o-ring to form a compression seal with the immersion well, one- $\frac{1}{4}$ " 14/20 angled joint for sparger tube, one- $\frac{1}{4}$ " 24/40 vertical joint for condenser and one #7-Ace-Thred side arm for thermometer. Bottom of reactor is flat to allow use of magnetic stirrer. Volumes indicated are total volumes. Working volume in reactive area of lamp is approximately 40-50% of total volume. **Complete unit consists of vessel, sparger tube, PTFE stir bar, threaded nylon thermometer bushing, #50 nylon bushing and three meters of 4.8mm (3/16-inch) I.D. PTFE tubing.**

Capacity, mL	Order Code	Vessel Only	Order Code	Complete
250	7863-16	397.82	7863-36	537.61
500	7863-18	414.49	7863-38	554.28
1000	7863-20	416.49	7863-40	556.28

Order Code **Each**

Sparger Tube, $\frac{1}{4}$ " 14/20	7841-09	15.86
PTFE Stir Bar, 38mm x 8mm	13654-14	5.84
Nylon Thermometer Bushing, #7	5029-10	2.85
Nylon #50 Bushing	7506-14	73.24
PTFE Tubing, 4.8mm I.D. x 3m (for sparger)	12687-12	42.00



7864 REACTION VESSEL *Photochemical, Ace-Thred* ♠

Jacketed reaction vessel designed to enable cooling of reactant material during photolysis. Constructed of borosilicate glass to accommodate the 7874, 7875 or 7876 immersion wells. With one- $\frac{1}{4}$ " 14/20 angled joint for sparger tube, one- $\frac{1}{4}$ " 24/40 vertical joint for condenser and one #7-Ace-Thred side arm for thermometer. Center joint is #50 Ace-Thred. Bottom of reactor is flat to allow use of stir bar. Volumes indicated are total volumes. Volume in reactive area of lamp is approximately 40-50% of total volume. Size C hose connections. **Listing is vessel only.**

Capacity, mL	Order Code	Vessel, Only
250	7864-08	635.62
500	7864-10	687.64
1,000	7864-12	803.21

Order Code **Each**

Sparger Tube, $\frac{1}{4}$ " 14/20	7841-09	15.86
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7865 REACTION VESSEL *Photochemical, Jacketed, Ace-Thred* ♦

Jacketed reaction vessel to enable cooling of reactant material during photolysis plus the added feature of a 2mm bore, 1:5 PTFE stopcock at bottom for draining inner vessel contents. Constructed of borosilicate glass to accommodate the 7874, 7875 or 7876 immersion wells. With one- $\frac{1}{4}$ " 14/20 angled joint for sparger tube, one- $\frac{1}{4}$ " 24/40 vertical joint for condenser and one-#7 Ace-Thred side arm for thermometer. Center joint is #50 Ace-Thred. Bottom of reactor is flat to allow use of stir bar. Volumes indicated are total volumes. Volume in reactive area of lamp is approximately 40-50% of total volume. Size C hose connections. **Listing is vessel only.**

Capacity, mL	Order Code	Vessel, only
250	7865-06	855.22
500	7865-08	918.77
1,000	7865-10	1034.33



13470 STIRRER *Talboys Advanced Series* ★

Talboys Advanced series magnetic stirrer with either a ceramic or aluminum top. Microprocessor controlled with analog speed knob. Speed range 60-1600 rpm. The new low-profile design makes it easier to place under reactors like our Ace photochemical reactor vessels. PTFE stir bar included. Accessory support rod kit available on request. 120v (230v available). CE, UL and CUL approved. Two-year manufacturer's limited warranty.

Top Size, In.	Capacity, mL	Top	Order Code	Each
4x4	600	Ceramic	13470-10	319.79
4x4	600	Aluminum	13470-14	335.83
7x7	2500	Ceramic	13470-16	325.17
7x7	2500	Aluminum	13470-18	487.77

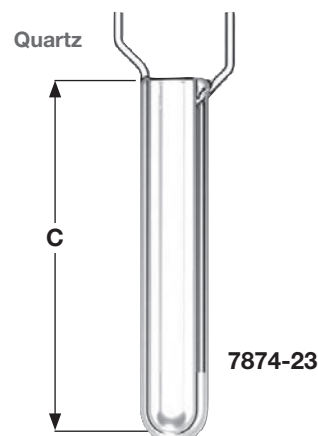


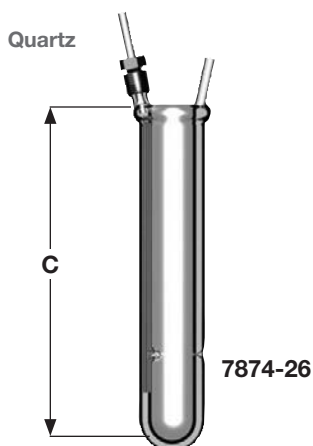
CE   approved.

7874 IMMERSION WELL *Photochemical, Quartz, without Joint* ★

Double-walled, quartz, immersion well for use with 7863, 7864, 7865, or 7891 reactors and 7825 lamps only. A small diameter inner tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well is used with 7506-14 nylon bushing with FETFE o-ring to form a compression type seal with threaded vessels. Well offers a greaseless connection and can be adjusted to desired height. **Code -23 is for use in 7891 turntable reactor; code -35 for use in 7863, 7864, and 7865 reaction vessels, all capacities.**

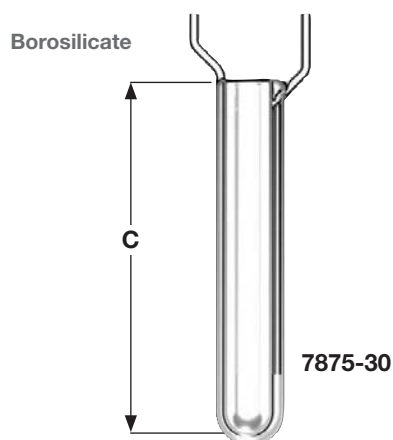
I.D., mm	O.D., mm	Total Length (C), mm	Order Code	Each
31	48	255	7874-23	811.06
31	48	450	7874-35	873.42




7874 IMMERSION WELL *Photochemical, Quartz, Modified, without Joint* ★

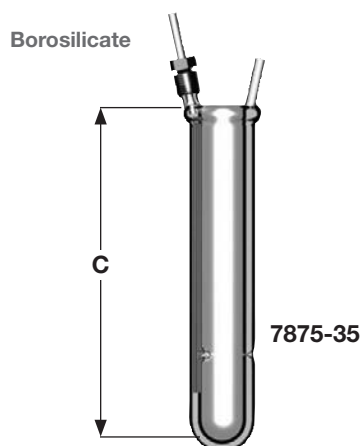
Double-walled quartz immersion well for use with 7863, 7864, 7865, 7891, or 7885 pilot scale reactors and 7825 lamps only. Coolant is introduced through a 4.8mm I.D. PTFE tube attached to a glass tube and secured with a #7 Ace-Thred bushing. PTFE tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well is used with 7506-14 nylon bushing with FETFE o-ring to form a compression type seal with threaded reaction vessels. Well offers a greaseless connection and can be adjusted to desired height. The Ace-Thred means easier dismantling since there is no chance of freezing. **Code -26 is for use in 7891 turntable reactor; code -38 for use in 7863, 7864, and 7865 reaction vessels, all capacities.**

I.D., mm	O.D., mm	Total Length (C), mm	Order Code	Each
31	48	255	7874-26	770.20
31	48	450	7874-38	811.05
31	48	840	7874-48	1139.17


7875 IMMERSION WELL *Photochemical, Borosilicate, without Joint* ♠

Double-walled, borosilicate glass, immersion well for use with 7863, 7864, 7865, or 7891 reactors and 7825 lamps only. A small diameter inner tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well is used with 7506-14 nylon bushing with FETFE o-ring to form a compression type seal with threaded reaction vessels. Well offers a greaseless connection and can be adjusted to desired height. **Code -30 for use with 7891 turntable reactor; code -40 for use in 7863, 7864, and 7865, all capacities.**

I.D., mm	O.D., mm	Total Length (C), mm	Order Code	Each
31	48	255	7875-30	242.59
31	48	450	7875-40	274.99


7875 IMMERSION WELL *Photochemical, Borosilicate, Modified, without Joint* ♠

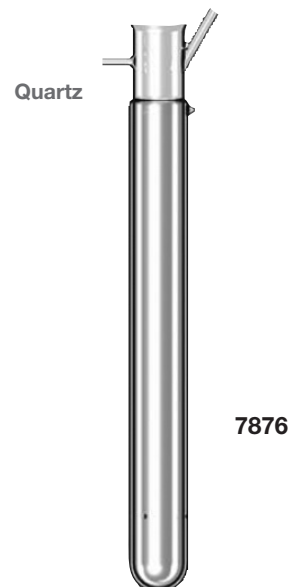
Double-walled, borosilicate glass, immersion well for use with 7863, 7864, 7865, or 7891 reactors and 7825 lamps only. Coolant is introduced through a 4.8mm I.D. PTFE tube attached to a glass tube and secured with a #7 Ace-Thred bushing. PTFE tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well is used with 7506-14 nylon bushing with FETFE o-ring to form a compression type seal with threaded reaction vessels. Well offers a greaseless connection and can be adjusted to desired height. The Ace-Thred joint means easier dismantling since there is no chance of freezing. **Code -35 for use with 7891 turntable reactor; code -45 for use in 7863, 7864, and 7865, all capacities.**

I.D., mm	O.D., mm	Total Length (C), mm	Order Code	Each
31	48	255	7875-35	216.61
31	48	450	7875-45	242.59

7876 IMMERSION WELL *Low temperature, Photochemical, Plain* ★

Tripled walled, quartz, immersion well for use in temperatures as low as -78°C. Same as 7858 immersion well, except, plain-sided, (without standard taper joint), for use with #50 Ace-Thred bushing and all 7863, 7864, and 7865 vessels. 415mm total jacket length. Will accommodate 7858-85 and -88 inner tubes.

Description	Order Code	Each
Complete	7876-50	1031.74
"Complete" consists of all of the following items (may be purchased separately):		
Outer Well	7876-10	890.54
Stopper	7858-84	5.74
O-Ring	7855-740	28.49
Inlet Tube	7858-82	16.32
Inlet Holder	7858-81	3.69
#50 Nylon Bushing with FETFE o-ring	7506-14	73.24
Inner Tubes (480mm x 30 mm)		
Quartz	7858-85	81.34
Borosilicate Glass	7858-88	24.61


7506 BUSHING *#50 Ace-Thred* ♠

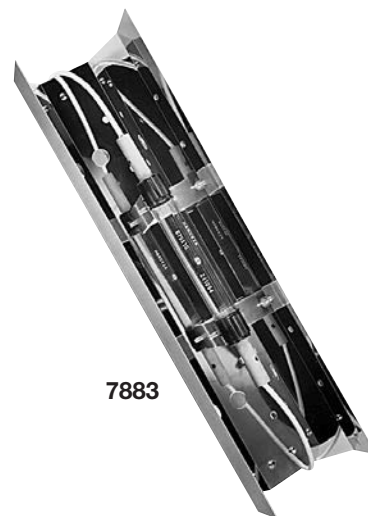
Bushing connector for securing 7874, 7875, or 7876 Immersion Wells in 7863, 7864, or 7865 reaction vessels by forming a FETFE o-ring compression seal. Supplied with o-ring. For replacement o-rings, see 7855-744. Fits all #50 Ace-Thred joints.

Material	Order Code	Each
Nylon	7506-14	73.24
PTFE	7506-35	122.29


7883 REFLECTOR *For Medium Pressure Lamp*

Reflector, for use with Ace-Hanovia U.V. lamps. Reflects 85% of spectral rays. Made of aluminum with 44.5 x 10cm opening. Lamp is the same as listed under 7825, except ends are adapted for reflector. **Lamp and reflector must be ordered separately.** Holes in reflector are drilled to accept 11.4cm lamp and are adjustable for 19.1cm and 30.5cm lamps, (Larger lamps available on special order). Reflector supplied with clamps on rear brackets for mounting to 1/2-inch rod (not supplied) and 6-foot power cord. Power supply operates on 120v, 60Hz. (230v, 50Hz available, order 7830-61 in place of 7830-60). **Complete unit consists of reflector, lamp and power supply.**

Reflector only					
Order Code		Each			
7883-02		604.40			
Lamp, only			Power Supply, only		
Lamp Watts	Arc Length, cm	Order Code	Each	Order Code	Each
450	11.4 (4.5 in.)	7883-14	804.79	7830-60	2080.25



**Complete
ready-to-use
unit**



7840 REACTION ASSEMBLY *Photochemical, Complete, ⌘ Joint* ★

Complete reaction assembly with all parts needed for immediate operation. Borosilicate glass reactor has a ⌘ 60/40 center joint, one-⌘ 14/20 angled joint for sparger tube, one-⌘ 24/40 vertical joint for condenser, and one-#7 Ace-Thred joint to accommodate thermometer. Volumes indicated are total volumes. Volume in reactive area of lamp is 40-50% of the total volume. **Complete assembly consists of reactor, 7854 quartz immersion well, sparger tube, PTFE stir bar #7 thermometer bushing, three meters of 4.8mm (3/16-inch) I.D. PTFE tubing, stand, 450 watt lamp and 450 watt power supply.**

115 Volts, 60 Hz			230 Volts, 50 Hz		
Capacity, mL	Order Code	Complete	Capacity, mL	Order Code	Complete
250	7840-175	4855.59	250	7840-320	5191.83
500	7840-180	4860.98	500	7840-340	5197.22
1000	7840-185	4983.70	1000	7840-360	5319.94

For Low Pressure Lamps, see 12128 or 12132.

7841 REACTION VESSEL *Photochemical* ♠

Reaction vessel constructed of borosilicate glass to accommodate the 7854, 7857 or 7858 immersion wells. With one-⌘ 14/20 angled joint for sparger tube, one-⌘ 24/40 vertical joint for condenser and one-#7 Ace-Thred side arm for thermometer. Center joint is ⌘ 60/40. Bottom of reactor is flat to allow use of magnetic stirrer. Volumes indicated are total volumes. Volume in reactive area of lamp is approx. 40-50% of total volume. **Complete unit consists of vessel, sparger tube, PTFE stir bar, threaded nylon bushing and three meters of 4.8mm (3/16-inch) I.D. PTFE tubing.**



Capacity, mL	For Immersion Well Size, mm	Order Code	Vessel Only	Order Code	Complete
250	220	7841-03	441.18	7841-14	507.73
500	220	7841-04	447.25	7841-15	513.80
1000	290	7841-06	458.74	7841-19	525.29
				Order Code	Each
Sparger Tube, ⌘14/20				7841-09	15.86
PTFE Stir Bar, 38mm x 8mm				13654-14	5.84
Nylon Bushing, #7				5029-10	2.85
PTFE Tubing, 4.8mm I.D. x 3m (for sparger)				12687-12	42.00

7841 REACTION VESSEL *Photochemical, Jacketed* ♠

Jacketed reaction vessel designed to enable cooling of reactant material during photolysis. Constructed of borosilicate glass to accommodate the 7854 or 7857 immersion wells. With one-⌘ 14/20 angled joint for sparger tube, one-⌘ 24/40 vertical joint for condenser and one #7-Ace-Thred side arm for thermometer. Center joint is ⌘ 60/40. Bottom of reactor is flat to allow use of stir bar. Volumes indicated are total volumes. Volume in reactive area of lamp is approximately 40-50% of total volume. Size C hose connections. **Listing is vessel only.**



Capacity, mL	For Immersion Well Size, mm	Order Code	Vessel, only
250	220	7841-05	629.99
500	220	7841-10	678.22
1000	290	7841-16	810.68
			Order Code
Sparger Tube, ⌘14/20			7841-09
			Each
			15.86

7844 REACTION VESSEL *Photochemical, Jacketed, with Stopcock* ♦

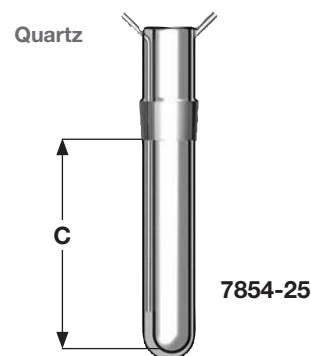
Jacketed reaction vessel to enable cooling of reactant material during photolysis plus the added feature of a 2mm bore, 1:5 PTFE stopcock at bottom for draining inner vessel contents. Constructed of borosilicate glass to accommodate the 7874, 7875, or 7876 immersion wells. With one- $\frac{1}{4}$ " 14/20 angled joint for sparger tube, one- $\frac{1}{4}$ " 24/40 vertical joint for condenser and one-#7 Ace-Thred side arm for thermometer. Center joint is $\frac{1}{4}$ " 60/40. Bottom of reactor is flat to allow use of stir bar. Volumes indicated are total volumes. Volume in reactive area of lamp is approximately 40-50% of total volume. Size C hose connections. **Listing is vessel only.**

Capacity, mL	For Immersion Well Size, mm	Order Code	Vessel, only
250	220	7844-03	868.99
500	220	7844-06	920.53
1000	290	7844-09	1026.51
		Order Code	Each
Sparger Tube, $\frac{1}{4}$ " 14/20		7841-09	15.86


7854 IMMERSION WELL *Photochemical, Quartz* ★

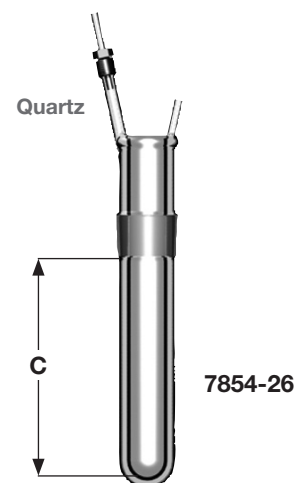
Double-walled, quartz immersion well for use with 7825-30, -32, -34, and -36 lamps. With inlet and outlet tubes for cooling. A small diameter inlet tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well has $\frac{1}{4}$ " 60/40 inner joint. Outer jacket 53mm O.D. Length above joint is 76mm. Order 7854-25 for use with 7841-03 (250mL) and 7841-04 (500mL) reaction vessels. Order 7854-27 for use with 7841-06 (1000mL) reaction vessel.

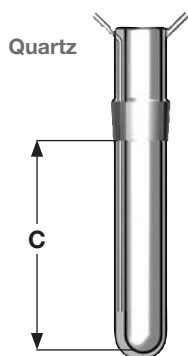
I.D. mm	O.D., mm	For Use With These Reaction Vessels	Distance (C) From Bottom of Well to Bottom of Joint	Order Code	Each
31	53	250, 500mL	220mm	7854-25	1066.58
31	53	1000mL	290mm	7854-27	1176.61


7854 IMMERSION WELL *Photochemical, Quartz, Modified* ★

Double-walled, quartz immersion well for use with 7825-30, -32, -34, and -36 U.V. lamps. Coolant is introduced through a 4.8mm I.D. PTFE tube attached to a glass tube and secured with a #7 Ace-Thred bushing. PTFE tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well has $\frac{1}{4}$ " 60/40 inner joint. Outer jacket is 53mm OD. Length above joint is 76mm. Order 7854-26 for use with 7841-03-(250mL) and 7841-04-(500mL), reaction vessels. Order 7854-28 for use with 7841-06 (1000mL) reaction vessel.

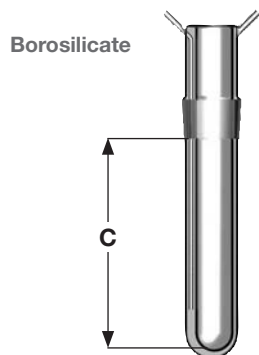
I.D. mm	O.D., mm	For Use With These Reaction Vessels	Distance (C) From Bottom of Well to Bottom of Joint	Order Code	Each
31	53	250, 500mL	220mm	7854-26	1042.29
31	53	1000mL	290mm	7854-28	1160.03




7856
7856 IMMERSION WELL *Photochemical, Quartz, PTFE-Clad Joint* ★

Double-walled, quartz immersion well, for use with 7825-30, -32, -34, and -36 lamps, With inlet and outlet tubes for cooling. A small diameter inlet tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet. Well has PTFE-clad 3/16 60/40 inner joint. Outer jacket 53mm O.D. Length above joint is 76mm. Order 7854-25 for use with 7841-03 (250mL) and 7841-04 (500mL) reaction vessels. Order 7854-27 for use with 7841-06 (1000mL) reaction vessel.

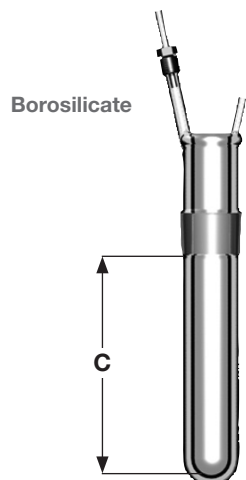
I.D. mm	O.D., mm	For Use With These Reaction Vessels	Distance (C) From Bottom of Well to Bottom of Joint	Order Code	Each
31	53	250, 500mL	220mm	7856-10	1158.94


7857-05
7857 IMMERSION WELL *Photochemical, Borosilicate* ♠

Double-walled, borosilicate glass immersion well for use with 7825-30, -32, -34, and -36 U.V. lamps. With inlet and outlet tubes for cooling. A small diameter inlet tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet.

Well has 3/16 60/40 inner joint. Outer jacket is 53mm OD. Length above joint is 76mm. Order 7857-05 for use with 7841-03 (250mL) and 7841-04 (500mL), reaction vessels. Order 7857-10 for use with 7841-06(1000mL), reaction vessel.

I.D. mm	O.D., mm	For Use With These Reaction Vessels	Distance (C) From Bottom of Well to Bottom of Joint	Order Code	Each
31	53	250, 500mL	220mm	7857-05	539.47
31	53	1000mL	290mm	7857-10	557.77


7857-06
7857 IMMERSION WELL *Photochemical, Borosilicate, Modified* ♠

Double-walled, borosilicate immersion well for use with 7825-30, -32, -34, and -36 U.V. lamps. Coolant is introduced through a 4.8mm I.D. PTFE tube attached to a glass tube and secured with a #7 Ace-Thred bushing. PTFE tube extends down the annular space to insure flow of coolant from bottom of well upward to outlet.

Well has 3/16 60/40 inner joint. Outer jacket is 53mm OD. Length above joint is 76mm. Order 7857-06 for use with 7841-03 (250mL) and 7841-04 (500mL), reaction vessels. Order 7857-11 for use with 7841-06 (1000mL), reaction vessel.

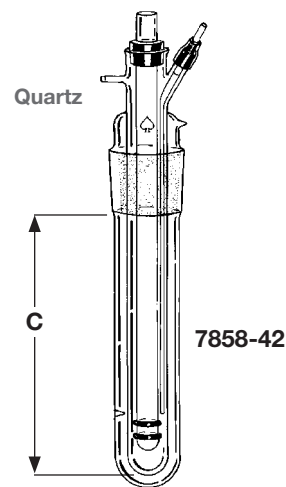
I.D. mm	O.D., mm	For Use With These Reaction Vessels	Distance (C) From Bottom of Well to Bottom of Joint	Order Code	Each
31	53	250, 500mL	220mm	7857-06	483.41
31	53	1000mL	290mm	7857-11	501.91

7858 IMMERSION WELL *Photochemical, Low Temperature* ★

Triple-walled, quartz, immersion well for use at temperatures as low as -78°C. With 3/60/40 center inner joint. Outer two walls are permanently sealed together and the space between evacuated. This keeps lamp coolant water from warming the reactant and also prevents coolant water from freezing, thus lamp emits correct wavelengths and operates at optimum temperature for longer life. Innermost wall is held in place via a stopper and permits a carefully positioned, PTFE water inlet tube to extend below the lamp bottom. Inner tube is removable and may be interchanged with borosilicate glass tubes. One size tube fits both wells. Well is for use only with 7825 code -30, -32, -34 and -35 lamps. Outer chamber consists of a 7858-84 drilled neoprene stopper, 7855-740 spacer o-rings, metal water inlet, connecting tube and PTFE tubing.

Complete unit consists of quartz evacuated outer chamber, one each quartz and borosilicate glass inner tube and assembly Instructions.

Size	Distance (C) From Bottom of Well to Joint	Order Code	Outer Chamber only	Order Code	Complete
AA	220mm	7858-08	889.79	7858-42	995.74
BB	290mm	7858-14	985.74	7858-45	1091.69
		Inner Tubes, only		Order Code	Each
		Quartz		7858-85	81.34
		Borosilicate Glass		7858-88	24.61



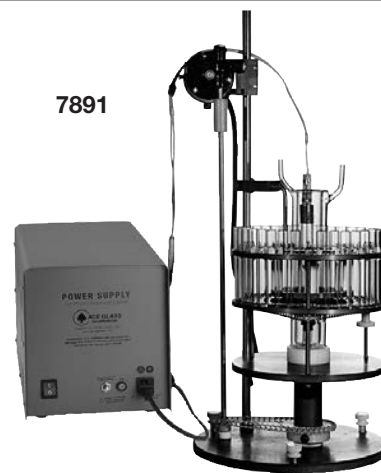
7891 TURNTABLE REACTOR ★

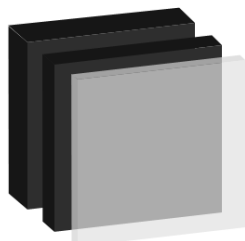
ACE photochemical reactor with sample roundtable feature for the determination of relative and absolute quantum yields. Features adjustable height slots for up to 33 sample tubes in outer circle and 18 tubes in inner circle, 13mm O.D.

Samples rotate equidistantly around lamp at 6 rpm. Chamber between lamp and samples holds four, 51mm square, removable flat filters. Unit is constructed of anodized aluminum, brass and PTFE. Measures 25.4cm diameter at base x 61cm high at top of motor stand. Except for motor, reactor is completely immersible and can be easily disassembled for cleaning. We recommend use with 7825-34 Lamp and 7874-23 or 7875-30 immersion well. Operates on 115v, 50/60 Hz. A 230v, 50Hz version is available by special order. Supplied with two-wire, ground NEMA plug.

Complete unit includes motor, but does not include filters, immersion well, lamp, power supply or sample tubes. For sample tubes, see 8683-08 or 8686-09.

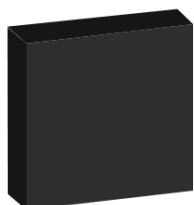
Order Code	Each
7891-30	4966.08




7891-40, -42, -44
7891 FILTER GLASSES *Color, Polished* ★

A combination of either 7891-40 and 7891-42 or 7891-40 and 7891-44 isolates 3650 line. 51 x 51mm. For use in four-sided filter chamber supplied with 7891 reactor.

Corning #	Thickness	Color	Order Code	Each
CS 0-52	1.9-2.1mm	Clear	7891-40	204.46
CS 7-37	4.9-5.1mm	Black	7891-42	147.66
CS 7-60	4.4-4.6mm	Black	7891-44	124.13


7891-46
7891 FILTER GLASSES *Color, Polished* ★

When used in conjunction with a filter solution of potassium chromate and sodium hydroxide less than 3% of the 3340 line passes. The solution may be circulated via pump as a coolant through well. 51 x 51mm. For use in four-sided filter chamber supplied with 7891 reactor.

Corning #	Color	Order Code	Each
CS 7-54	Black	7891-46	172.27


7892-24
7892 PLATFORM REACTOR *Photochemical/Photobiological* ★

Used by water chemists for radiating metals in water to obtain metal-free water. Also used to remove unbound chlorine from drinking water. This reactor is similar to the unit published in Nature, London, Vol. 211, pgs. 481-483, 1966; *Photochemical Combustion of Organic Matter in Sea Water, for Nitrogen, Phosphorus and Carbon Determination*, by Armstrong and Tibbits. This aluminum reactor consists of a top platform with eight 33mm I.D. sample tube holes encircling a 40mm lamp well hole; adjustable height, 0-20.5cm, middle platform with grooves to stabilize sample tubes; and a lower platform holding a fan for blowing air up the side of center lamp well. Lamp well is held in a basket pouch attached to the middle platform low enough so that the effective area of the U.V. lamp radiates the very bottom of the sample tubes. Fan is shielded top and bottom by a stainless steel screen and is supplied with 1.8m grounded line cord. Operates on 115v, 50/60 Hz. Overall height approximately 40cm. Lamp, power supply, lamp well and sample tubes NOT included. Available for 230v, 50 cycle operation, ask for quotation. Recommended for up to 450 watt rated lamp.

Order Code	Each
7892-24	942.74

7892 SAMPLE TUBES

Sample tubes, for 7892 photochemical platform reactor, made from quartz or borosilicate glass. Tubes are 20cm long x 32mm O.D. and hold approximately 130mL. Available with plain end or with 24/40 joint.

Style	Order Code	Each
Quartz, Plain end	7892-30 ★	91.37
Borosilicate, Plain End	7892-35 ♠	14.51
Quartz, 24 Joint	7892-31 ★	126.24
Borosilicate, 24 Joint	7892-36 ♠	37.18

7892 IMMERSION WELL

Single walled, quartz or borosilicate glass immersion well for use with 7892 photochemical platform reactor. Measure 25.5cm long x 38mm O.D. Will accept **only** 7825-30, -32 and -34 immersion lamps and 7835 absorption sleeves.

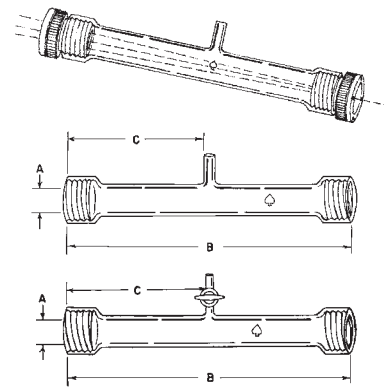
Style	Order Code	Each
Quartz	7892-40 ★	97.30
Borosilicate	7892-45 ♠	16.67

7894 PHOTOCHEMICAL CELL with Removable Window ♠

Straight, borosilicate glass, photochemical cell with threaded end fittings for use with 7896 cell window holder. The ease in removing these holders makes cleaning the cell easier. Available with single or plain port or with single, straight, 2mm bore, glass stopcock. **NOT** supplied with windows or holders. Please state dimension B, otherwise we will supply B = 12 inches. Port will be centered between threaded ends unless requested otherwise. For lengths smaller than one foot, use single foot prices.

Type Port	Size (A) I.D., mm	Order Code	12-Inch Length
Plain	25	7894-10	69.33
Plain	50	7894-15	178.10
w/Stopcock	25	7894-30	93.53
w/Stopcock	50	7894-35	223.12

For additional or larger lengths, call for quote.



7894

For an operational unit, order one 7894, two 7895 Windows and two 7896 Window Holders. You choose cell length and inside diameter.

7895 CELL WINDOWS ★

Windows to be used with 7894 photochemical cells and 7896 cell window holder. The windows are ground and polished (optical grade).

<i>For #25 Ace-Thred</i>				<i>For #50 Ace-Thred</i>		
Material	Size Diameter, mm x W.T., in.	Order Code	Each	Size Diameter, mm x W.T., in.	Order Code	Each
Quartz	30 x 1/8	7895-03	22.58	62 x 1/8	7895-08	52.24

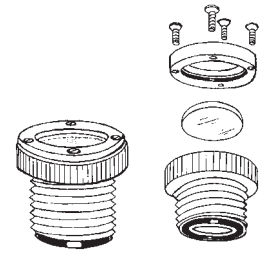


7895

7896 CELL WINDOW HOLDER ♠

Nylon cell window holder for use with 7894 photochemical cells and 7895 cell windows. The removable cell window is compressed between two FETFE o-rings for a leak-tight fit. Holder is then threaded into end of a 7894 cell until o-ring compression seal is formed between the holder and the cell. Supplied complete, consisting of threaded body, two FETFE o-rings, compression ring and four flat-head screws. For replacement o-rings, see 7855-727, -729.

Ace-Thred Size	Order Code	Each
25	7896-20	65.01
50	7896-30	138.07



7896

7900 PHOTOBIOLOGICAL-OXIDATION APPARATUS U.V.

Standard unit for liberation of inorganic phosphate from organically bound phosphorus compounds, oxidation of carbon in organic matter and oxidation of organic nitrogen compounds. Oxidation of organic compounds in water and sediment samples is accomplished by exposure to ultraviolet radiation in the presence of excess oxygen. Organically bound phosphorus is liberated as the ortho-phosphate in as little as one hour. Organic matter is oxidized to CO₂. Nitrogen compounds are oxidized to the nitrate and nitrite ions.

Additional applications include decomposition of organo-metallic compounds, providing organic-free samples for culture, nutrition and vitamin assay, destruction of algal suspensions, and oxidation of sediment or residue samples.

Apparatus consists of a cylindrical lamp housing with twelve-position sample tube chamber for twelve quartz tubes of approximately 100mL capacity that surround a 1200 watt medium pressure photochemical lamp. **Access door is provided for set-up, inspection and repairs only — for your safety, do not use this door while the unit is in operation.**

A cooling fan is located at bottom of housing for air movement. Lamp power supply includes a manual or automatic twelve-hour timer selector for programming exposure time. Available in 230v, 60Hz. or 230v, 50Hz. Lamp housing measures 12 inches wide x 20 inches deep x 36 inches high, and weighs 75 lbs. Power supply measures 11 inches wide x 18 inches deep x 11 inches high, and weighs approximately 75 lbs.

- Liberation of inorganic phosphate from organically bound phosphorous compounds
- Oxidation of organic nitrogen compounds, and carbon in organic matter

	230v, 60Hz.		230v, 50Hz.	
	Order Code	Each	Order Code	Each
Lamp Housing, only	7900-81	4054.87	7900-81	4054.87
Power Supply with Timer	7900-71	4209.15	7900-74	5010.54
Lamp, 1200 watt	7825-40	923.12	7825-40	923.12
Quartz Sample Tubes, 35 x 2.5cm (12)	7900-12	164.31	7900-12	164.31
Pyrex Stopper (12)	7900-13	18.92	7900-13	18.92
Complete	7900-31	11385.90	7900-30	12187.29


7900-30, -31
ACE Photochemical/Photobiological Reactors are ideal for:

- Environmental Applications
- Product Aging Tests
- Polymerization
- Catalysis
- Photo-oxidation
- Nanotechnology

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7901-55, -58



- Coil available with cooling jacket for slow flow rate or without cooling jacket for high flow
- Flow-thru quartz or borosilicate glass coil for continuous radiation of small (as little as 175mL) or large volumes

7901 PHOTOBIOLOGICAL-OXIDATION APPARATUS

U.V., Flow-Thru

Modified version of 7900 Apparatus. Sample tubes have been replaced with a flow-thru quartz or borosilicate coil for continuous radiation of small (as little as 175mL) or large samples. Coil is available with cooling jacket for slow flow rates or without jacket when heating of sample is not a concern because of the higher flow rate.

Apparatus consists of a cylindrical lamp housing, medium pressure 1200 watt photochemical lamp, quartz or borosilicate glass coil (with or without jacket), and power supply. **Access door is provided for set-up, inspection and repairs only – for your safety, do not use this door while the unit is in operation.**

A cooling fan is located at bottom of housing for air movement. Lamp power supply includes a manual or automatic twelve-hour timer selector for programming exposure time. Available in 230v, 60 Hz. or 230v, 50 Hz. Lamp housing measures 12 inches wide x 20 inches deep x 36 inches high, and weighs 75 lbs. Power supply measures 11 inches wide x 18 inches deep x 11 inches high, and weighs approximately 75 lbs. Coil is 12.7mm O.D. x 8.0mm (5/16-inch) I.D. with 1/2-inch Swagelok ends, 16 ±1 turns with approximate capacity of 175mL, maximum flow rate of 10L/min.

	230v, 60 Hz.		230v, 50 Hz.	
	Order Code	Each	Order Code	Each
Lamp Housing, only	7901-65	3917.74	7901-65	3917.74
Power Supply w/Timer	7900-71	4209.15	7900-74	5010.54
Lamp, 1200 watt	7825-40	923.12	7825-40	923.12
Quartz Coil, 12.7mm O.D. x 8.0mm I.D., 175mL	7901-76	1481.78	7901-76	1481.78
Complete	7901-55	10531.79	7901-58	11333.18
Optional Items:				
Borosilicate Coil, 12.7mm O.D. x 8.0mm I.D., 175mL	7901-80	1016.66	7901-80	1016.66
Quartz Coil, Jacketed, 12.7mm O.D. x 8.0mm I.D., 175mL	7901-88	1868.07	7901-88	1868.07
Borosilicate Coil, Jacketed, 12.7mm O.D. x 8.0mm I.D., 175mL	7901-89	1312.01	7901-89	1312.01

New

Auto-Reactors

Ace introduces our new Auto-Reactors with Touch-Screen Control for Speed, Temperature and Vacuum/Pressure!

1L up to 6L Plain or Jacketed, Pressure or Filter Reactors

For more information, see our reactors catalog



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6962 REACTION FLASK *Photochemical, Kriel**

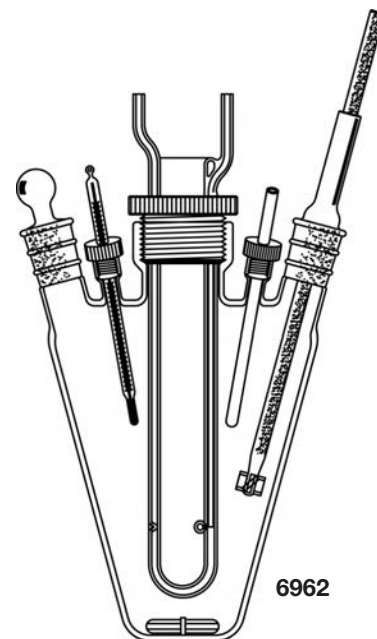
Tapered wall style reaction vessel for prep-scale photolysis. Tapered sides assure that the effective area of a 450w or 550w photochemical lamp can be entirely submersed into the liquid, contrary to traditional round bottom reaction flasks. Net result is approximately a 20% savings in reaction time. An additional advantage of this design is in the initial mixing of reactants. The flat bottom allows immediate stirring with a magnetic stirrer and after only one-third full, mechanical stirring can be implemented. Center neck is #50 Ace-Thred for use with 7874 or 7875, 450mm Immersion Wells. **Threaded design offers convenience of vertical depth positioning of well to suit your needs.** Two side joints are $\text{\textcircled{R}}29/42$, one for 10mm stirring shaft and bearing, the other for charging flask or condenser, etc. Two front ports are #7 Ace-Threds, one with 7mm I.D. bushing for a thermometer, the other with 8mm I.D. bushing for sparger tube, etc.

Complete unit consists of flask, immersion well (quartz), glass stopper, stirring shaft, bearing, one #7 nylon bushing with 7mm I.D. hole, one #7 bushing with 8mm I.D. hole and PTFE stir bar. For stirrer coupling, flexible shaft, see 8124-10 and 8081. For motor and controller, see 13649 and 13530.

Style Center Neck	Capacity, mL	For Immersion Well Size, mm	Order Code	Complete
#50 Ace-Thred	3000	450	6962-62	★ 1587.87
#50 Ace-Thred	5000	450	6962-65	★ 1757.51

COMPONENTS

	Order Code	Each
Flask Only, 3L, #50 CN, (2) $\text{\textcircled{R}}29/42$, (2) #7 threads w/bushings and o-rings	6962-32	♠ 397.74
Flask Only, 5L, #50 CN, (2) $\text{\textcircled{R}}29/42$, (2) #7 threads w/bushings and o-rings	6962-35	♠ 567.38
Immersion Well, Quartz, 450mm for #50 Ace-Thred	7874-35	★ 873.42
Bushing, Nylon, with o-ring, for -62 and -65	7506-14	♠ 73.24
Stopper, $\text{\textcircled{R}}29/42$	8250-14	♠ 25.78
Bearing, $\text{\textcircled{R}}29/42$	8038-20	♠ 77.13
Stirring Shaft, 10mm	8068-303	♠ 133.38
PTFE Stir Bar, 7.9mm x 50.8mm long	13654-18	♠ 7.18



*Designed and evaluated by Dr. Dennis Kriel, The Dow Chemical Co., Central Research-Polymer Research Lab, Midland, MI 48640.

12132 LAMP *Low Pressure, PenRay®*

Cold cathode, low pressure, mercury arc, gaseous discharge lamps made of double-bore quartz. Lamp power consumption is 5.5 or 15 watts, with principal output at 254 nanometers. Lamps are rated for 5000 hours of operation.

Lamp, Only

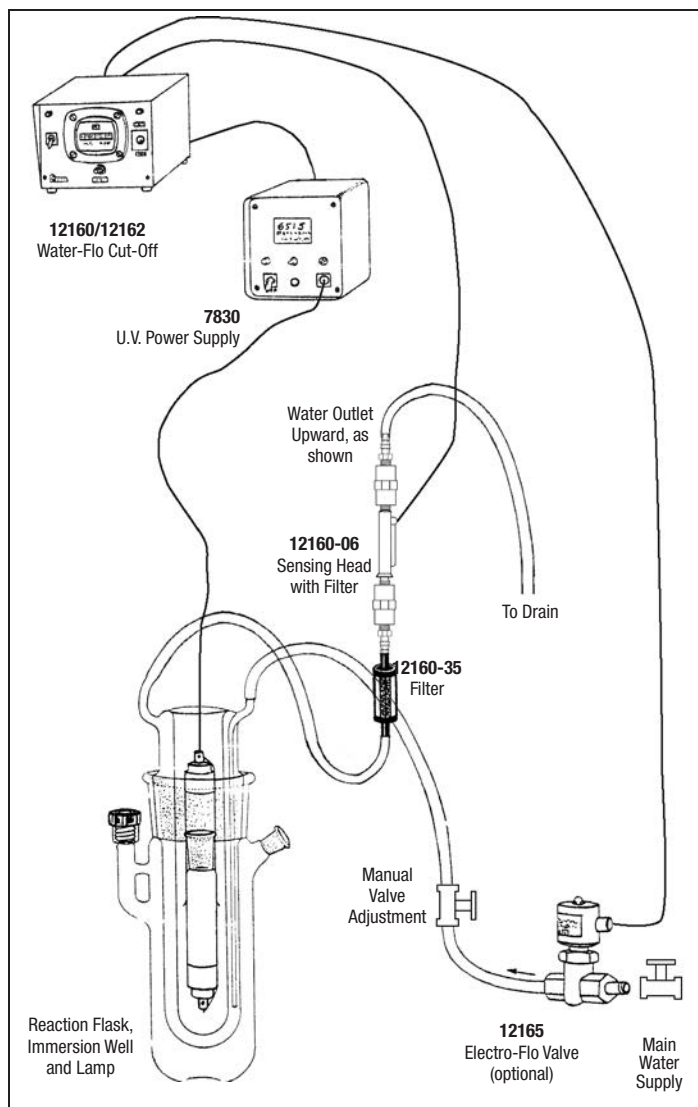
Lamp	Lamp Power Consumption, Watts	Operating Voltage	Starting Voltage	Lighted Length, In.	Lamp O.D., In.	Plastic Handle O.D., In.	Total Length, In.	Order Code	Each
A	5.5	270	800	2-1/8	1/4	3/8	4-5/8	12132-08	583.23
B	15	560	640	9	3/8	1/2	11-5/8	12132-15	736.72

Lamp comes with 90-day warranty. CUL approved.

Power Supply, Only

For Lamp	Operating Voltage	Primary Current	Lamp Current	Dimensions, Inches (LxWxH)	Order Code	Each
A	115v/60Hz	400 ma	18 mA	6.3 x 3.7 x 2.3	12132-30	710.94
B	230v/50Hz	600 ma	26 mA	4.6 x 5.8 x 3.8	12132-35	710.94





Typical Installation



12160-15

12160 WATER-FLO POWER CUT-OFF 15 amps ★

- Prevents damage caused by water or power failure.
- Controls 1.8 kw AC power at 120* volts, 15 amperes (12160 and 12162); or 4.6 kw AC power at 230 volts, 20 amperes (12164).
- Provides automatic reset for power outages of less than 90 seconds' time and water line pressure drops of less than 5.0 seconds.

A water flow monitoring unit that will shut off all power in the event of water or main power failure. On/Off control normally operates with water flow above 0.2 L/Min. One front and two rear outlets allow control of up to three apparatus at once at 1.8 kilowatts AC power. 120 volts* (up to 15 amps), fused. Unit starts with push button reset located on front panel.

In the event of water flow failure and later correction, monitor must be reset to operate. Main ON-OFF. Yellow indicator light monitors output power outlet; red pilot light indicates when power is at input (120v AC-15 amps). Heavy duty contractor relay delivers up to 1.8 kilowatts output. Low voltage at detector (5 volts) means user safety, isolation from ground shock. With 5.0 second time delay OFF to address water line air bubble or short pressure drops.

This improved version provides automatic reset for power outages of less than 90 seconds time. This allows output power to re-start for brown-outs of the main, that would normally stop the process.

Water-Flo Power Cut-Off is functional with any type detector using an on-off switch such as 12160-06 Sensing Head, micro-switches, proximity switches, bimetal thermostats. It will control any type load such as ACE 7830 Photochemical Power Supplies, 12165 Shut-Off Solenoid Valve, heaters, mantles, AC motors, pumps, or any load using 120v AC line power and maximum 15 amps.

Supplied with 1.8 meter grounded line cord with NEMA plug. Water sensing head, supplied complete with water filter, connects via pin jacks to rear of panel and is marked IN and OUT for proper installation. With 9.5mm (3/8-inch) hose connections.

	Order Code	Each
Sensing Head, w/Water Filter	12160-06	243.42
Power Pack, only	12160-10	774.28
Complete	12160-15	1017.70

We recommend the use of a sediment filter at the water source to avoid long term failure, see 12165-70.
2-year Conditional Warranty.
For 240 volt use, see 12164-30.

12160 WATER FILTER

Installs *ahead of* sensing head. 50 micron screen prevents failure of sensing head due to dirt or rust coming from the water supply. Supplied with replaceable filter cartridge. Has 3/8-inch O.D. hose connections. Labeled inlet and outlet.



12160-35

Order Code	Each
12160-35	33.53

12162 WATER-FLO POWER CUT-OFF 15 amps, with Timer ★

Similar to 12160 except supplied with front panel mounted timer. In the event of water flow failure and subsequent power shut-off at the outlets, timer indicates accumulated elapsed time. Timer runs for up to 10,000 hours before starting at zero again, smallest reading is 0.1 hour. Cannot be reset. **Note:** a reset-able timer is available, at slightly higher cost. Call for quotation.



12162-14

	Order Code	Each
Sensing Head, w/Water Filter	12160-06	243.42
Power Pack, only	12162-07	852.79
Complete	12162-14	1096.21

12164 WATER-FLO POWER CUT-OFF 20 amps (230 volts) ★

Similar to 12160 except will control one or two apparatus at 4.6 kilowatts AC power, 208-250 volts, 50/60 Hz. (up to 20 amps), fused. Two rear outlets allow use with our 7830-71 power supply and 12165 shut-off water valve (230v).

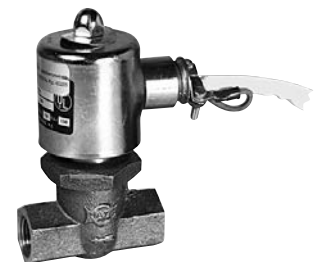


12164

	Order Code	Each
Sensing Head, w/Water Filter	12160-06	243.42
Power Pack, only	12164-20	996.09
Complete	12164-30	1239.51

12165 "ELECTRO-FLO" SHUT-OFF VALVE

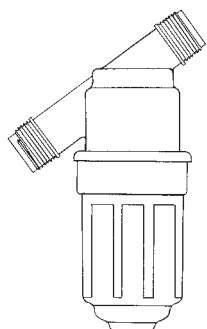
A water or air* shut-off solenoid valve for use with 12160, 12162 or 12164 water-flo power cut-off or as a general laboratory shut-off valve. Operates from 0.35Kg/cm² to 10.5Kg/cm² (5 to 150 psi) for water or 0.35Kg/cm² for air and up to 91°C. Internal design of pilot-operated, piston-type, valve assures exceptional flow performance. Constructed of cast bronze with waterproof cast-coil that has a lifetime warranty. Valve must be installed in horizontal piping with solenoid in vertical position. Supplied with 1.8 meter grounded cord and female pipe thread. Codes -14, -20 and -26 for use with 12160 and 12162. Codes -48, -54 and -57 for use with 12164. **Note:** a pre-filter is recommended when this product is used with water or air (15 micron or less).



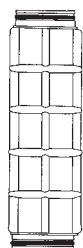
12165

Pipe Sizes, mm	(For 120v)		(For 230v)	
	Order Code	Each	Order Code	Each
9.5 (3/8 in.)	12165-14	250.53	12165-48	253.33
12.7 (1/2 in.)	12165-20	267.41	12165-54	267.88
19.1 (3/4 in.)	12165-26	316.12	12165-57	316.02

*When used as air shut-off valve, a strainer is recommended.



12165-64



12165-67

12165 WATER FILTER *Screen*

General purpose, chemically resistant, non-corrosive water filter with a polyester housing and filter screen. Recommended for use with ACE No. 12165 Solenoid Valves*, above, or other in-line valves to prevent particulate matter from entering valve and causing malfunction. Fluid flows along longitudinal axis of cylinder, resulting in minimum pressure drop. Flow direction is indicated by arrow on top of housing body. Filtered particles collect in bottom of cylinder. Bottom housing unscrews to allow cleaning. Top and bottom neoprene o-rings on filter screen eliminate the possibility of fluid by-pass and assure complete fluid filtration. Filter supplied is 22 micron (450 mesh). Maximum working temperature: 140°F; maximum pressure: 115 psi; maximum flow rate: 12 GPM. Measures: 10-1/4 inches high x 6-5/8 inches wide. Connections are 3/4-inch NPT male.

	Qty.	Order Code	Each
Filter Housing , only	1	12165-64	37.75
Filter Screen, 22 micron, only	1	12165-67	94.56
Complete	1	12165-70	132.31

*Also for use with 12160, 12162 and 12164 Water-Flo Power-Cutoff.



12168

12168 WATER FLOW MONITOR *J-Kem Model WFM-120*

J-Kem monitor precisely measures the flow of water through a condenser, bath or a photochemical reactor. Upon interruption or if the flow drops below an operator set rate, power to the monitored equipment is cutoff. Manual power reset. Inclusion of a 12168-10 shut-off valve and either a 12169-01 audible alarm or a 12169-05 digital alarm is recommended.

J-Kem Model	Description	Flow Rate, LPM	Qty.	Order Code	Each
WFM-01	Flow Sensor	0.1 to 2.5	1	12168-01	252.63
WFM-02	Flow Sensor	1 to 10	1	12168-02	252.63
WFM-03	Flow Sensor	2 to 30	1	12168-03	252.63
—	Shut-Off Valve	—	1	12168-10	181.58
WFM-120	Water Flow Monitor	—	1	12168-120	373.45



12167

12167 LAB SAFETY CONTROLLER *J-Kem Model LS-120*

Lab safety controller by J-Kem combines all the features of the digital temperature monitor and the water-flow monitor into a single versatile instrument. Plug any piece of equipment into the monitor, then if the water flow rate falls below the set level, or if the reaction temperature goes above or below the user set limits, the outlet power turns off automatically. The unit will also cut off power if the main power is interrupted. The controller then has to be reset. See ACE 12168 product family for flow sensors.

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
LS-120-T	No	-200 to 250	T	1	12167-01	814.80
LS-120-J	No	0 to 800	J	1	12167-03	814.80
LS-120-K	No	-50 to 1200	K	1	12167-05	814.80

J-Kem Model	Description	Flow Rate, LPM	Qty.	Order Code	Each
WFM-01	Flow Sensor	0.1 to 2.5	1	12168-01	252.63
WFM-02	Flow Sensor	1 to 10	1	12168-02	252.63
WFM-03	Flow Sensor	2 to 30	1	12168-03	252.63
—	Shut-Off Valve	—	1	12168-10	181.58

12169 ALARM J-Kem

Digital alarm outlet and audible alarm accessories for J-Kem safety controller and water-flow monitors. Allows 12167 and 12168 units to be set up for alarm warnings when in unsafe conditions. The audible alarm sounds during low or no water conditions for the 12168 monitor and the digital alarm activates on either the water flow monitor or the safety controller when conditions are out of set ranges.



J-Kem Model	Alarm Type	For Controllers	Order Code	Each
WFM-AA	Digital	12167 & 12168	12169-01	68.42
WFM-OC	Audible	12168	12169-05	36.84

For a full listing of temperature controllers & thermocouples, go to page 595 of this catalog.

ACE Custom Glass Design Service

www.aceglass.com

ACE Scientific Glass Repair Service

www.aceglass.com

1-800-223-4524





12450-07 POLYSCIENCE BENCHTOP MINI-CHILLER

High Performance at a Reasonable Price ★

12450

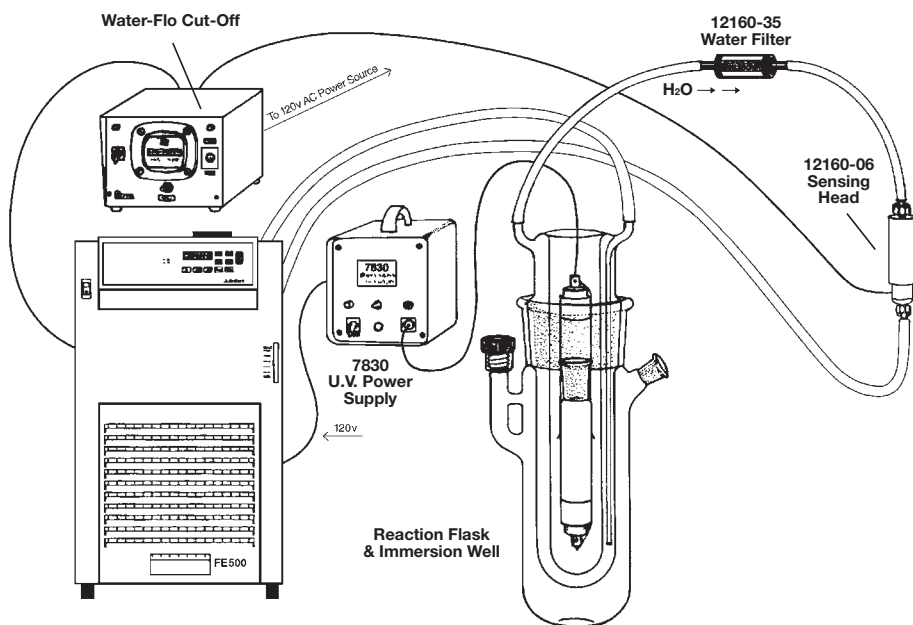


Benchtop mini-chiller by PolyScience. Compact size for bench applications such as photochemistry, Chromatography or jacketed bench reactors. Features include:

- 130 watts of cooling @ 5°C
- Top-mounted fill port with spill protection cup
- Lighted fluid level indicator on front panel
- Easy access front panel and air filter
- Low flow rate and energy consumption
- High and low liquid level alarms
- Low flow alarm
- Temperature range -5 to 50° C at 0.1° stability
- Maximum pump flow 7.9LPM
- Pump type: centrifugal
- Reservoir capacity 2.65L
- 120V, 60Hz, 130W, 12 amp
- Also available in 240V, 50hz, CE-approved version

Order Code	Each
12450-07	2559.55

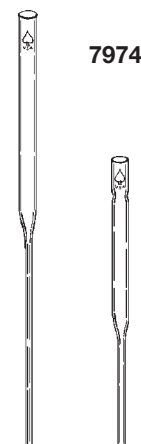
Highly recommended for use in the operation of Ace 7861 and 7840 reactors.



7974 PIPET Disposable ♠

Used for transferring blood in blood testing work and other areas where transfer of material is essential but accuracy not important. Each box contains extra pipets to compensate for possible breakage due to fragility of the item. Available in 14.6cm (5-3/4-inch) and 22.9cm (9-inch) lengths. Minimum order 1-1/4 gross.

Size, cm	Qty.	Order Code	Per Box
14.6	Box of 1,000	7974-10	71.84
22.9	Box of 1,000	7974-20	118.88

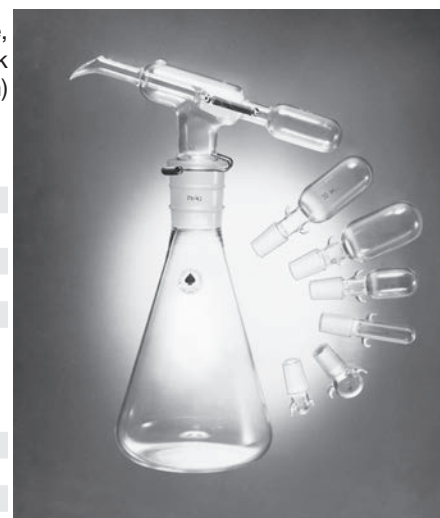

PIPETTS
8004 DISPENSING PIPET Automatic ♠

Fills and pours automatically, rapidly. One head for all capacities, all volumes. Short tipping angle, interchangeable volumetric bulbs give reproducible volumes. Bulb joint is 3/16 14/20, head and flask 3/16 29/42. Complete apparatus consists of head, flask, volumetric bulb, clip, two 19mm (3/4-inch) springs, one 38mm (1-1/2-inch) spring. See 8030 for replacement springs.

	Qty.	Order Code	Each
Head (including spring and clip)	1	8004-10	129.87
Flask:	Capacity, mL	Qty.	Order Code
	500	1	6965-40 31.61
	1000	1	6965-41 36.41
Clip for Head only	Pkg. of 3	1	8004-03 11.56

Volumetric Bulbs:

Capacity, mL	Qty.	Order Code	Each	Capacity, mL	Qty.	Order Code	Each
1	1	8004-15	39.58	15	1	8004-30	39.88
2	1	8004-18	39.19	20	1	8004-33	40.54
3	1	8004-21	39.19	25	1	8004-36	42.77
4	1	8004-22	39.19	30	1	8004-39	57.64
5	1	8004-24	39.19	50	1	8004-42	58.47
6	1	8004-23	39.19	60	1	8004-44	59.63
10	1	8004-27	39.19	100	1	8004-45	61.02


8004
7940 BULB Pipet, Rubber ♠

Black rubber, dropper pipette, bulb. For use with pipettes and glass dropper pipettes.

Qty.	Order Code	Per Pkg.
12	7940-03	3.58

7940


Contact Ace to get a copy of our reusable glassware catalog!

Pressure tubes/bottles/flasks with easy-to-use threaded PTFE caps that create a tight seal – completely reusable



Pressure vessels are tested and appropriately rated



8648-03



8648-313

8648 PRESSURE VESSEL with Ace-Thred ♠

Heavy-wall vessel used for polymerization and analysis of halogens by thermal decomposition in presence of lime. Vessel is unique in that the Ace-Thred allows easy closing with plug and o-ring with assurances of a tight seal. No need for extra equipment, simply hand tighten or release. The closures are reusable. Also available (as an option) for monitoring purposes, the vessel can be assembled with a stainless steel, 0-160 psi pressure gauge using a 5844 Adapter in place of the 5846. Stainless steel tube extensions are offered to allow for use of the tube in an oven.

Vessels are offered in several lengths with #7, #15, #25 and #36 Ace-Threds and are fabricated of heavy-wall borosilicate glass in various body diameters. Complete item includes glass vessel and PTFE Plug with FETFE o-ring. Replacement o-rings and o-rings of different composition are offered. Vessels can be fabricated in lengths and diameters other than what is listed; ask for a quotation. **For pressure work, 5846 "Front Seal" plug is recommended.**

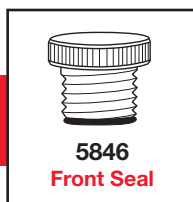


COMPLETE WITH 5845 PLUG

5845 Back Seal
Not available in #7

#15 Ace-Thred							
Length*, cm (In.)	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete	
10.2 (4)	25.4	15	150	1	8648-03	65.39	
10.2 (4)	38.1	60	150	1	8648-98	85.82	
17.8 (7)	25.4	35	150	1	8648-06	66.04	
17.8 (7)	38.1	120	150	1	8648-89	86.30	
20.3 (8)	25.4	38	150	1	8648-08	66.99	
20.3 (8)	38.1	140	150	1	8648-97	91.19	
30.5 (12)	25.4	60	150	1	8648-103	70.95	
30.5 (12)	38.1	210	150	1	8648-106	93.34	
#25 Ace-Thred							
Length*, cm (In.)	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete	
10.2 (4)	38.1	60	150	1	8648-137	102.23	
11.5 (4-9/16)	57.2	175	60	1	8648-246	195.84	
11.5 (4-9/16)	75.0	325	60	1	8648-248	238.41	
12.3 (4-7/8)	38.1	75	60	1	8648-250	128.51	
17.0 (6-13/16)	114.3	950	60	1	8648-252	343.15	
17.0 (6-13/16)	152.4	1850	60	1	8648-254	504.72	
17.8 (7)	38.1	120	150	1	8648-110	102.90	
20.3 (8)	38.1	140	150	1	8648-114	103.87	
30.5 (12)	38.1	210	150	1	8648-116	107.79	
#36 Ace-Thred							
Length*, cm (In.)	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete	
10.2 (4)	50.0	90	150	1	8648-118	225.33	
11.5 (4-9/16)	75.0	325	60	1	8648-309	342.96	
17.0 (6-13/16)	114.3	950	60	1	8648-311	454.33	
17.0 (6-13/16)	152.4	1850	60	1	8648-313	624.45	
17.8 (7)	50.0	170	150	1	8648-122	230.21	
20.3 (8)	50.0	200	150	1	8648-125	235.43	
30.5 (12)	50.0	300	150	1	8648-128	244.75	

*Length measured below thread



**COMPLETE WITH
5846 PLUG**

**5846
Front Seal**

**“The number one
pressure vessel
and seal”**

8648 PRESSURE VESSEL with Ace-Thred ♠

#7 Ace-Thred

Length*, cm (In.)	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete
4.0 (19/16)	25.4	8	60	1	8648-230	75.94
4.0 (19/16)	31.7	14	60	1	8648-232	77.53
5.0 (2)	44.5	25	60	1	8648-234	88.92
10.2 (4)	8.0	1	150	1	8648-10	47.21
10.2 (4)	13.0	4	150	1	8648-12	47.29
10.2 (4)	19.0	9	150	1	8648-17	50.90
17.8 (7)	8.0	2	150	1	8648-21	47.26
17.8 (7)	13.0	8	150	1	8648-25	48.32
17.8 (7)	19.0	18	150	1	8648-34	52.67
20.3 (8)	8.0	2.5	150	1	8648-36	47.33
20.3 (8)	13.0	9	150	1	8648-38	49.34
20.3 (8)	19.0	21	150	1	8648-43	54.50
30.5 (12)	8.0	3	150	1	8648-48	48.60
30.5 (12)	13.0	15	150	1	8648-53	50.53
30.5 (12)	19.0	27	150	1	8648-55	57.02

#15 Ace-Thred

Length*, cm	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete
10.2 (4)	25.4	15	150	1	8648-04	65.67
10.2 (4)	38.1	60	150	1	8648-77	86.10
17.8 (7)	25.4	35	150	1	8648-07	66.32
17.8 (7)	38.1	120	150	1	8648-88	86.58
20.3 (8)	25.4	38	150	1	8648-09	67.27
20.3 (8)	38.1	140	150	1	8648-96	91.47
30.5 (12)	25.4	60	150	1	8648-102	71.23
30.5 (12)	38.1	210	150	1	8648-105	93.62

#25 Ace-Thred

Length*, cm (In.)	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete
10.2 (4)	38.1	60	150	1	8648-136	103.76
11.5 (4-9/16)	57.2	175	60	1	8648-245	197.37
11.5 (4-9/16)	75.0	325	60	1	8648-247	239.94
12.3 (4-7/8)	38.1	75	150	1	8648-249	130.04
17.0 (6-13/16)	114.3	950	60	1	8648-251	344.68
17.0 (6-13/16)	152.4	1850	60	1	8648-253	506.25
17.8 (7)	38.1	120	150	1	8648-109	104.43
20.3 (8)	38.1	140	150	1	8648-113	105.40
30.5 (12)	38.1	210	150	1	8648-115	109.32

#36 Ace-Thred

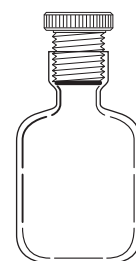
Length*, cm	Body O.D., mm	Approx. Cap., mL	Pressure Rating PSI	Qty.	Order Code	Complete
10.2 (4)	50.0	90	150	1	8648-117	241.08
11.5 (4-9/16)	75.0	325	60	1	8648-308	358.71
17.0 (6-13/16)	114.3	950	60	1	8648-310	470.08
17.0 (6-13/16)	152.4	1850	60	1	8648-312	640.20
17.8 (7)	50.0	170	150	1	8648-121	245.96
20.3 (8)	50.0	200	150	1	8648-123	251.18
30.5 (12)	50.0	300	150	1	8648-127	260.50

*Length measured below thread

*Pressure vessels
are tested and
appropriately rated*



8648-04

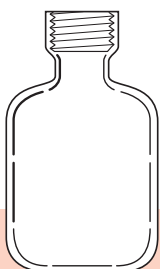


8648-312

8648 PRESSURE VESSEL COMPONENTS ♠



8648



Pressure Tubes/Bottles can be epoxy- or plastic-coated

NOTE!

Hydrogenation bottles (listing boldface) are used in 7482 or 7485 Hydrogenation Apparatus. They have a flat bottom and thus a lower recommended operating pressure, not to exceed 60 psi.



5845



5846

PRESSURE RATINGS

8648 Tubes (non-Highlighted):
150 psig @ 120°C
8648 Bottles (Highlighted):
60 psig @ ambient

	Tube/Bottle, only Lgth*, cm x O.D., mm	Thread Size	Approx. Cap., mL	Qty.	Order Code	Each
Bottle only, 4.0 x 25.4	4.0 x 25.4	7	8	1	8648-120	53.15
Bottle only, 4.0 x 31.7	4.0 x 31.7	7	14	1	8648-124	54.74
Bottle only, 5.0 x 44.5	5.0 x 44.5	7	25	1	8648-126	66.13
Tube only, 10.2 x 8	10.2 x 8	7	1	1	8648-40	24.42
Tube only, 10.2 x 13	10.2 x 13	7	4	1	8648-41	24.50
Tube only, 10.2 x 19	10.2 x 19	7	9	1	8648-42	28.11
Tube only, 17.8 x 8	17.8 x 8	7	2	1	8648-132	24.47
Tube only, 17.8 x 13	17.8 x 13	7	8	1	8648-133	25.53
Tube only, 17.8 x 19	17.8 x 19	7	18	1	8648-134	29.88
Tube only, 20.3 x 8	20.3 x 8	7	2.5	1	8648-45	24.54
Tube only, 20.3 x 13	20.3 x 13	7	9	1	8648-46	26.55
Tube only, 20.3 x 19	20.3 x 19	7	21	1	8648-47	31.71
Tube only, 30.5 x 8	30.5 x 8	7	3	1	8648-50	25.81
Tube only, 30.5 x 13	30.5 x 13	7	15	1	8648-51	27.74
Tube only, 30.5 x 19	30.5 x 19	7	27	1	8648-52	34.23
Tube only, 10.2 x 25.4	10.2 x 25.4	15	15	1	8648-23	26.15
Tube only, 10.2 x 38.1	10.2 x 38.1	15	60	1	8648-24	46.58
Tube only, 17.8 x 25.4	17.8 x 25.4	15	35	1	8648-26	26.80
Tube only, 17.8 x 38.1	17.8 x 38.1	15	120	1	8648-27	47.06
Tube only, 20.3 x 25.4	20.3 x 25.4	15	38	1	8648-29	27.75
Tube only, 20.3 x 38.1	20.3 x 38.1	15	140	1	8648-30	51.95
Tube only, 30.5 x 25.4	30.5 x 25.4	15	60	1	8648-32	31.71
Tube only, 30.5 x 38.1	30.5 x 38.1	15	210	1	8648-33	54.10
Tube only, 10.2 x 38.1	10.2 x 38.1	25	60	1	8648-187	42.49
Bottle only, 11.5 x 57.2	11.5 x 57.2	25	175	1	8648-138	136.10
Bottle only, 11.5 x 75.0	11.5 x 75.0	25	325	1	8648-140	178.67
Bottle only, 12.3 x 38.1	12.3 x 38.1	25	75	1	8648-135	68.77
Bottle only, 17.0 x 114.3	17.0 x 114.3	25	950	1	8648-155	283.41
Bottle only, 17.0 x 152.4	17.0 x 152.4	25	1850	1	8648-157	444.98
Tube only, 17.8 x 38.1	17.8 x 38.1	25	120	1	8648-162	43.16
Tube only, 20.3 x 38.1	20.3 x 38.1	25	140	1	8648-165	44.13
Tube only, 30.5 x 38.1	30.5 x 38.1	25	210	1	8648-166	48.05
Tube only, 10.2 x 50.0	10.2 x 50.0	36	90	1	8648-190	109.29
Bottle only, 11.5 x 75.0	11.5 x 75.0	36	325	1	8648-191	226.92
Bottle only, 17.0 x 114.3	17.0 x 114.3	36	950	1	8648-192	338.29
Bottle only, 17.0 x 152.4	17.0 x 152.4	36	1850	1	8648-193	508.41
Tube only, 17.8 x 50.0	17.8 x 50.0	36	170	1	8648-194	114.17
Tube only, 20.3 x 50.0	20.3 x 50.0	36	200	1	8648-195	119.39
Tube only, 30.5 x 50.0	30.5 x 50.0	36	300	1	8648-196	128.71
PTFE #7 Plug, only	—	—	—	1	5846-44	22.79
PTFE #15 Plug, only	—	—	—	1	5846-48	39.52
PTFE #15 Plug, only	—	—	—	1	5845-47	39.24
PTFE #25 Plug, only	—	—	—	1	5846-50	61.27
PTFE #25 Plug, only	—	—	—	1	5845-49	59.74
PTFE #36 Plug, only	—	—	—	1	5846-51	131.79
PTFE #36 Plug, only	—	—	—	1	5845-50	116.04

*Length measured below thread

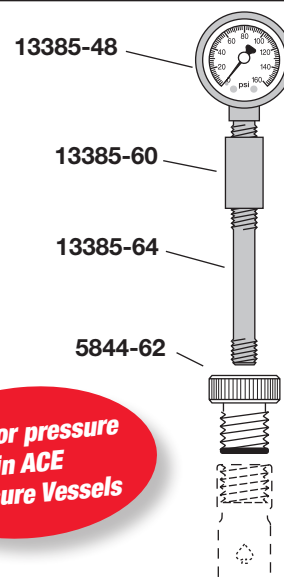
Replacement O-Rings

	Qty.	Order Code	Per Pkg.		Qty.	Order Code	Per Pkg.
For 5846-44 (Size -009)				For 5845-49 (Size -220)			
FETFE o-ring	12	7855-707	15.21	FETFE o-ring	6	7855-742	34.93
Silicone o-ring	12	7855-207	15.91	Silicone o-ring	6	7855-242	16.36
For 5846-48 (Size -110)				For 5846-51 (Size -125)			
FETFE o-ring	12	7855-716	20.37	FETFE o-ring	12	7855-772	20.51
Silicone o-ring	12	7855-216	16.58	Silicone o-ring	12	7855-272	13.52
For 5845-47 (Size -210)				For 5845-50 (Size -223)			
FETFE o-ring	6	7855-730	17.75	FETFE o-ring	3	7855-774	18.91
Silicone o-ring	6	7855-230	15.87	Silicone o-ring	3	7855-274	6.16
For 5846-50 (Size -212)							
FETFE o-ring	6	7855-734	20.74				
Silicone o-ring	6	7855-234	16.16				

13385 PRESSURE GAUGE 0-160 PSI

Can be used to monitor pressure in 8648 pressure vessel. Gauge has a 1-1/2-inch dial, Grade B dry, 0–160 psi with 1/8-inch npt male threaded extension. Connection can be made to 8648 vessel by substituting 5844-62 adapter for the 5846 stopper. Gauge can be threaded directly into the 5844 or in the event the pressure vessel is being heated in an oven, a 3-inch stainless steel extension is offered to keep gauge outside the oven. We suggest you use PTFE sealing tape when making these connections to assure a tight seal. **Order all items individually.**

	Qty.	Order Code	Each
Gauge, Pressure, 0-160psi, stainless steel internal materials, 1/8-inch male NPT bottom fitting, 1.5-inch diameter	1	13385-48	★ 187.26
Gauge, Compound, pressure/vacuum, full vacuum-60psi, stainless steel internal materials, 1/8-inch male NPT bottom fitting, 1.5-inch diameter	1	13385-52	★ 213.14
Adapter, #15 to 1/8-inch, PTFE	1	5844-62	♠ 69.71
Coupling adapter, stainless steel, 1/8-inch to 1/8-inch female NPT, 1.5-inch length	1	13385-60	★ 19.46
Extension, stainless steel, 1/8-inch male NPT ends, 3-inch length	1	13385-64	★ 12.25
PTFE Sealing Tape, 1/4-inch width	1	14120-14	★ 12.26



8415 PRESSURE FLASK Round Bottom ♠

Heavy-wall flasks with a rounded bottom to facilitate use in heating mantles, and for other round bottom flask applications. Several sizes are available, with either a #15 or #25 Ace-Thred top fitting for easy sample access and re-sealing. These flasks have a PTFE front-seal plug for better sealability with FETFE o-rings. Flasks are rated @ 60 psi maximum up to 120°C. Safety coated versions of these vessels are available upon special request.

Size, mL	Dia., mm	Ace-Thred Size	Qty.	Order Code	Each
50	50	15	1	8415-05	102.81
100	62	15	1	8415-07	105.30
250	82	15	1	8415-11	118.47
500	100	15	1	8415-15	129.13
100	62	25	1	8415-17	105.86
250	82	25	1	8415-21	120.23
500	100	25	1	8415-25	131.71



8417 PRESSURE FLASK Round Bottom, with Side Thermowell ♠

Heavy-wall flasks with a rounded bottom to facilitate use in heating mantles, and for other round bottom flask applications. Several sizes are available, with either a #15 or #25 Ace-Thred top fitting for easy sample access and re-sealing. These flasks have a PTFE front-seal plug for better sealability with FETFE o-rings. Side thermowell to accommodate either temperature sensors or thermometers. Flasks are rated @ 60 psi maximum up to 120°C. Safety coated versions of these vessels are available upon special request.

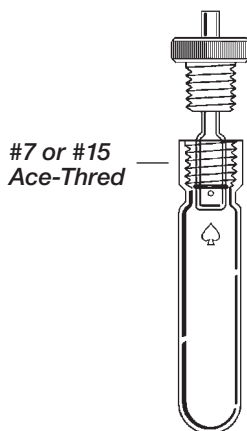
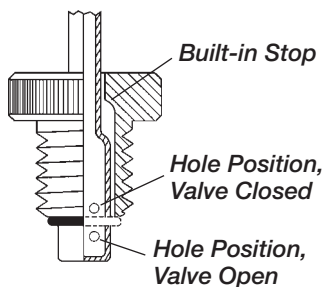
Size, mL	Dia., mm	Ace-Thred Size	Qty.	Order Code	Each
50	50	15	1	8417-03	126.80
100	62	15	1	8417-05	132.96
250	82	15	1	8417-07	148.81
500	100	15	1	8417-09	162.74
100	62	25	1	8417-13	141.05
250	82	25	1	8417-15	161.10
500	100	25	1	8417-17	176.09



Ace does not recommend using stir bars in pressure vessels.

**Pressure rated
at 150 psig
at 20 °C**

Easy-to-use threaded PTFE Caps create tight seal – completely reusable



8648-60, 75

**Can be Plastic Coated
for added safety.**

8648 PRESSURE TUBE with Ace-Thred and Plunger Valve ♠

Heavy-wall tube, similar to listing on previous page, except with bushing and plunger valve that allows purging of tube. Closed-bottom plunger has a hole in side that when positioned in relation to o-ring seal, will open Tube to the atmosphere; i.e., pull to close, push to open. Plunger has step-down extension that acts as stop in bushing, vacuum tubing, when attached to extension, prohibits pull-in. Complete item consists of tube (#7 or #15 Ace-Thred), PTFE bushing with FETFE o-ring, and plunger valve.

#7 Ace-Thred						#15 Ace-Thred					
Length, cm (In.)	Body O.D., mm	Approx. Cap., mL	Qty.	Order Code	Complete	Length, cm (In.)	Body O.D., mm	Approx. Cap., mL	Qty.	Order Code	Complete
10.2 (4)	8	1	1	8648-60	70.38	10.2 (4)	25.4	15	1	8648-75	82.83
10.2 (4)	13	4	1	8648-61	70.46	10.2 (4)	38.1	60	1	8648-76	103.26
10.2 (4)	19	9	1	8648-62	74.07	17.8 (7)	25.4	35	1	8648-78	83.48
20.3 (8)	8	2	1	8648-64	70.50	17.8 (7)	38.1	100	1	8648-79	103.74
20.3 (8)	13	8	1	8648-65	72.51	20.3 (8)	25.4	38	1	8648-82	84.43
20.3 (8)	19	18	1	8648-66	77.67	20.3 (8)	38.1	120	1	8648-83	108.63
30.5 (12)	8	3	1	8648-68	71.77	30.5 (12)	25.4	60	1	8648-85	88.39
30.5 (12)	13	15	1	8648-69	73.70	30.5 (12)	38.1	185	1	8648-86	110.78
30.5 (12)	19	27	1	8648-70	80.19						

Components

	Qty.	Order Code	Each		Qty.	Order Code	Each
Tube only, 10.2 x 8	1	8648-40	24.42	Tube only, 10.2 x 25.4	1	8648-23	26.15
Tube only, 10.2 x 13	1	8648-41	24.50	Tube only, 10.2 x 38.1	1	8648-24	46.58
Tube only, 10.2 x 19	1	8648-42	28.11	Tube only, 17.8 x 25.4	1	8648-26	26.80
Tube only, 20.3 x 8	1	8648-45	24.54	Tube only, 17.8 x 38.1	1	8648-27	47.06
Tube only, 20.3 x 13	1	8648-46	26.55	Tube only, 20.3 x 25.4	1	8648-29	27.75
Tube only, 20.3 x 19	1	8648-47	31.71	Tube only, 20.3 x 38.1	1	8648-30	51.95
Tube only, 30.5 x 8	1	8648-50	25.81	Tube only, 30.5 x 25.4	1	8648-32	31.71
Tube only, 30.5 x 13	1	8648-51	27.74	Tube only, 30.5 x 38.1	1	8648-33	54.10
Tube only, 30.5 x 19	1	8648-52	34.23	Bushing only, #15 w/o-ring	1	8648-19	32.28
Bushing only, #7 w/o-ring	1	8648-15	27.47	Plunger Valve, 15mm to 3/8-in.	1	8648-20	24.40
Plunger Valve, 7mm to 1/4-in.	1	8648-16	18.49	Replacement o-rings for #15 Ace-Thred	12	7855-710	15.60
Replacement o-rings for #7 Ace-Thred	12	7855-704	14.09				

IMPORTANT – General Warnings for Pressurized Glassware

Due to varying conditions, ACE cannot guarantee glass vessels from breakage under pressure.

ALL LABORATORY SAFETY PROCEDURES SHOULD BE OBSERVED. ALWAYS WORK BEHIND A SHIELD.

- Do not use with materials which solidify on standing and create excessive stress on glass.
- Before applying pressure, examine glassware carefully for surface scratches which may weaken its strength.
- Questions regarding the safe operating conditions of a particular glass vessel under pressure may be directed to ACE GLASS INCORPORATED.
- Safety coatings: epoxy and plastic coating help prevent scratching and shattering and reduce spills; however, they do not prevent breakage

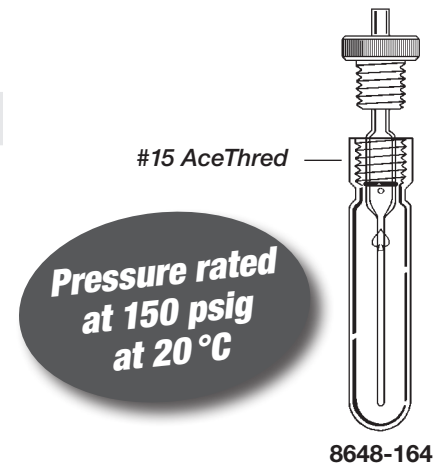
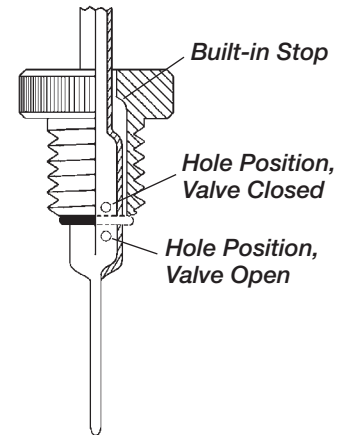
8648 PRESSURE TUBE with Ace-Thred, Plunger Valve and Thermowell ♦

Rugged, heavy-wall tube, similar to listing above, except glass plunger valve has a 5mm I.D. thermowell for a thermocouple wire or sheathed probe up to 1/8-inch (3.2mm) O.D. Closed-bottom plunger has a hole in side that when positioned in relation to o-ring seal, allows Tube to be open or closed to the atmosphere; i.e., pull to close, push to open. Step-down extension on upper end of plunger acts as stop in bushing; vacuum tubing, when attached to extension, prohibits pull-in. **Complete item consists of tube (#15 Ace-Thred), PTFE bushing with FETFE o-ring, and plunger valve with thermowell.** See listing above for replacement tube only with #15 Ace-Thred and 8648-19 bushing.

Length, cm (In.)	Body O.D., mm	Approx. Cap., mL	Qty.	Order Code	Complete	Length, cm (In.)	Body O.D., mm	Approx. Cap., mL	Qty.	Order Code	Complete
10.2 (4)	25.4	15	1	8648-164	82.05	20.3 (8)	25.4	38	1	8648-175	83.65
10.2 (4)	38.1	60	1	8648-167	102.48	20.3 (8)	38.1	120	1	8648-177	107.85
17.8 (7)	25.4	35	1	8648-170	82.70	30.5 (12)	25.4	60	1	8648-179	87.61
17.8 (7)	38.1	100	1	8648-172	102.96	30.5 (12)	38.1	185	1	8648-181	110.00

Components

	Qty.	Order Code	Each		Qty.	Order Code	Each
Plunger Valve, with Thermowell for 4-in. Tube	1	8648-104	23.62	Plunger Valve, with Thermowell for 8-in. Tube	1	8648-108	23.62
Plunger Valve, with Thermowell for 7-in. Tube	1	8648-107	23.62	Plunger Valve, with Thermowell for 12-in. Tube	1	8648-112	23.62

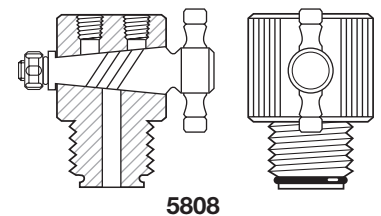


8648-164

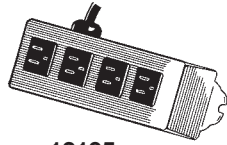
5808 ADAPTER PTFE, Purge with Shutoff ♦

PTFE purge/shutoff adapter allows purging of air-sensitive contents from within our 8648 pressure vessels. Ace-Thred adapter features two top taps, either 1/4-inch UNF or 1/8-inch NPT, controlled by a two-way stopcock.

Ace-Thred Size	Tap Size	Qty.	Order Code	Each
#15	1/4-inch-28 UNF	1	5808-05	122.55
#15	1/8-inch NPT	1	5808-09	122.55
#25	1/4-inch-28 UNF	1	5808-16	186.83
#25	1/8-inch NPT	1	5808-18	186.83
#36	1/4-inch-28 UNF	1	5808-24	354.22
#36	1/8-inch NPT	1	5808-27	354.22



5808

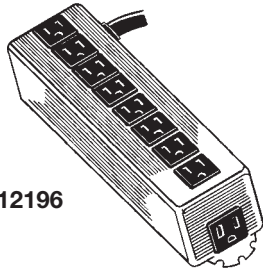


12195

12195 POWER OUTLET STRIP *Four Outlets* ♠

Power outlet strip with four outlets. Furnished with 15 amp push-to-reset circuit breaker, U-ground outlets with electrically wired ground and heavy duty UL listed cord set. Sturdy, blue finished steel housing measures 8-5/8 x 2-3/8 x 1-1/2 inches high. Rated 15 amps, 130 volts continuous duty. Supplied with six-foot cord. Shipping weight, 2 lbs.

Qty.	Order Code	Each
1	12195-20	48.38



12196

12196 POWER OUTLET STRIP *Nine Outlets* ♠

Power outlet strip with nine outlets, one on end of box for series string wiring. Furnished with 15 amp push-to-reset circuit breakers, U-ground outlets with electrically wired ground and heavy duty UL listed cord set. Sturdy, blue finished steel housing measures 13-1/8 x 2-3/8 x 1-1/2 inches high. Rated 15 amps, 130 volts continuous duty. Supplied with six-foot cord. Shipping weight, 2 lbs.

Qty.	Order Code	Each
1	12196-40	77.53



12207

12207 POWER STRIP *Surge and Noise Protection, Dataguard®* ★

Protects computer and electronic equipment like ACE programmable temperature controllers from potential disaster. 330V clamping voltage. EMI/RFI noise filtration 60dB. Lightning protection. U.L. 1449 listed. 497A Communications rated.

Features

- Illuminated on/off switch.
- Fast acting catastrophic fuses shut off power in event of major disturbance.
- Eight outlet strip for multiple plug-in with phone line protection
- Built-in pilot light tells when unit is working
- 15 amp resettable circuit breaker.

Supplied with 6-foot double insulated power cord with three-prong grounding insulated plug.

Qty.	Order Code	Each
1	12207-36	81.32

GENERAL SPECIFICATIONS

Operating Line Voltage..... 120VAC
 Operating Line Current..... 15 Amps, Max.
 Resettable Circuit Breaker

Frequency..... 60 Hz
 Operating Environment Temperature -40°F to 158°F
 Humidity (non-condensing) for Indoor Use in Dry Locations..... 0-99%
 Maximum Surge Protection..... 6500A

UL 1449 Suppressed Voltage Rating 330V
 Clamping Response Time < 1 nsec typical
 Maximum Energy Dissipation..... 1270 Joules

Beaded Process Pipe

BEADED PROCESS PIPE

Ace Glass has been manufacturing and fabricating glassware and equipment for the scientific and research communities for over 75 years. Ace fabricates glass process pipe here in the USA, from medium- and heavy-wall borosilicate tubing such as Scimax and Schott Duran, to provide you with a high quality product to fit into your process stream. From glass process pipe to glass reactors and pilot plants, to temperature equipment and sensors, Ace offers a broad line of products to the process engineer. Ace will also fabricate custom sizes and shapes for your needs — if you don't see what you need in this catalog, contacts us at www.aceglass.com to discuss your needs with our engineering staff.

Glass meets an ASTM spec for borosilicate glass, ASTM E-438 and Federal spec DD-G-541B. The "system" can be constructed by a contractor to meet ASTM spec C1053-90, ASTM spec C1053-00, Federal spec DD-G-541B, Military spec MIL-P 2256B(YD) when it is all put together using the same pipe and couplings.

Glass also meets specs for USP Type 1 glass.

Process Piping Systems

Industry has long regarded borosilicate glass piping components to be one of the best corrosion resistant materials of construction. For a wide range of manufacturing and process piping applications Ace Glass brand glass pipe installations have provided excellent service in the most difficult piping applications, positive evidence of its outstanding performance. The use of glass offers many advantages over other conventional piping materials such as:

Long Service Life

Low-expansion borosilicate glass is resistant to almost all substances except hydrofluoric acid, hot concentrated phosphoric acid and strong alkalis at elevated temperatures.

Product Purity

All glass piping systems are comprised of chemically inert borosilicate glass and TFE gaskets to ensure no chemical contamination of process fluids. Materials that do not corrode do not contaminate.

Smooth Interior Surface

The hard, liquid smooth surface inhibits or prevents scale formation and product buildup. For example, sticky latex dispersions easily move through smooth glass pipe. Glass resists fouling and is easy to clean.

Transparency

You can see what is happening inside glass systems. Process and product can be inspected at a glance. Trouble cannot hide behind glass, so processes stay in better control.

Low Maintenance Cost

Over the life of a piping system this can be the smallest cost component for glass piping systems and the largest cost consideration for many other competitive piping systems. Chances are that low maintenance cost is the prime reason for considering, specifying, and operating a glass piping system.

Properties of Borosilicate Glass

Chemical Composition

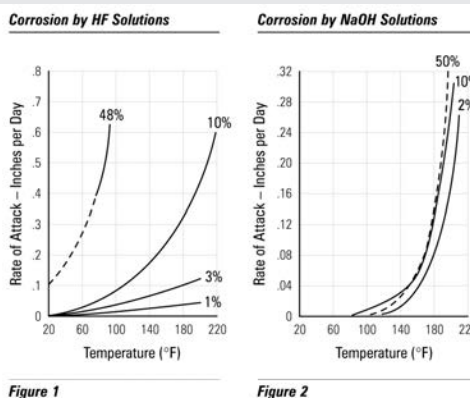
The borosilicate glass used in the manufacture of our pipeline components conforms to the standard ASTM E 438 and has the following approximate composition.

Component	% By Weight
SiO ₂	81%
B ₂ O ₃	13%
Na ₂ O	4%
Al ₂ O ₃	2%

Chemical Resistance

Borosilicate glass is resistant to almost all substances except hydrofluoric acid, phosphoric acid and hot strong caustic solutions. Of these, hydrofluoric acid has the most serious effect and, even when a solution contains a few parts per million, corrosion will occur. Phosphoric acid and caustic solutions at elevated temperatures will also attack glass.

Under service conditions, the effects of turbulence and some trace chemicals in solution may increase or decrease the rate of attack. Therefore, it is not possible to give precise figures for corrosion by hydrofluoric acid and caustic solutions, but Figures 1 and 2 show typical rates.



Beaded Process Pipe

Physical Properties — Borosilicate Glass

Coefficient of mean linear expansion Between 20°C and 300°	(3.3 ±0.1) x 10 ⁻⁶ K ⁻¹
Mean thermal conductivity Between 20°C and 200°C	1.3 W/mK
Mean specific heat capacity Between 20°C and 200°	0.98 kJ/kgK
Density at 20°C	2.23 g/cm ³
Operating Temperature (Maximum)	Short term: Do not operate below 0°C Normal Use: 230°C

Versatility

For comparison purposes, weights of various 2-inch pipes are given in the table below.

Material	Approx. Weight of 2-inch Pipe, Lbs/Ft.
Glass Process Pipe	1.13
Steel (Schedule 40)	3.65
High Silicon Iron	7.70
Stainless Steel (Schedule 40)	3.65
TFE Lined Steel	4.10
Glass Lined Steel	3.95
FRP	1.25

Relative Thermal Expansion

The thermal expansion of Ace brand pipe is 0.022 inches per 100 feet of pipe and 100°F temperature change. Values of other materials relative to this (assuming glass Pipe = 1) are given below. These relative thermal expansions should be considered when connecting glass pipe into other materials. When other materials expand more than glass pipe, allowance must be made for the expansion difference. A common way to accommodate this differential expansion is with flexible “bellows” or hose at critical locations.

Material	Relative Thermal Expansion
Glass Process Pipe	1.00
Steel (Schedule 40)	3.60
High Silicon Iron	4.90
Stainless Steel (Schedule 40)	6.20
TFE Lined Steel	3.65
Glass Lined Steel	3.65
FRP	7.00

Beaded Pressure System

A large bead design feature assures a tight leak-free joint under pressure conditions.

The one-bolt compression coupling shell is made from 300-series stainless steel. The flexible, elastomeric sleeve is lined with a tough layer of TFE fluorocarbon plastic. The flexibility feature allows deflections up to 3° per joint from the axis under bending loads due to misalignment or pitching.

Pressure

The permissible operating pressure for Ace beaded pipe and fittings depends on the pipe diameter.

Pipe Diameter	Maximum Working Pressure
1-inch	100 psig
1-1/2-inch	75 psig
2-inch	75 psig
3-inch	50 psig
4-inch	50 psig
6-inch	30 psig

When a system is assembled from several glass components with different pressure ratings, the maximum operating pressure of the system is limited to the pressure rating of the component with lowest permissible working gauge pressure.

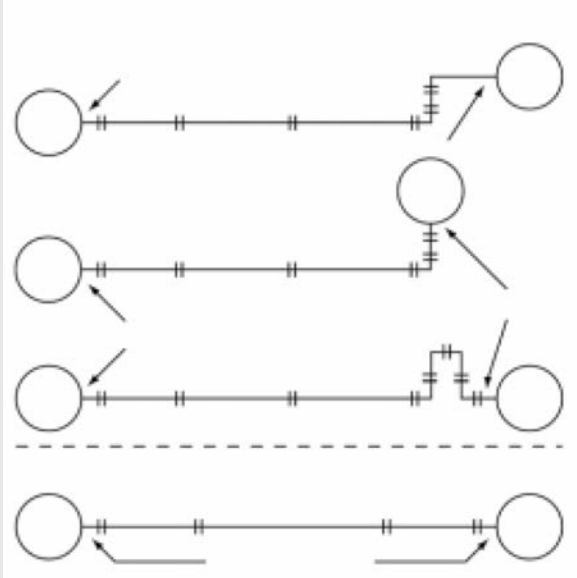
All sizes of glass piping are suitable for full vacuum service. Full vacuum is defined as 29.92-inch (760mm) of Hg below standard sea-level pressure. Of course the vacuum actually achieved is a function of system design, tightness of the gasket joints, types of gasket used and other operating factors.

Permissible operating pressures require the use of Ace bead to bead process couplings. Ace process pipe is tested at 1.5x the stated maximum working pressure.

Anchor Points

An anchor point is a rigid support for the glass line tying it into the building structure, or to fixed equipment such as tanks, pumps or independently supported valves. There should be one — and only one — anchor point in each straight run of pipe. The diagrams below show the correct and incorrect installation methods between anchor points. Note the use of right-angle bends to obtain flexibility.

Beaded Process Pipe



All valves, strainers, meters or other heavy equipment must be supported rigidly and independently of the glass pipeline. This prevents transmitting the dead weight to the glass pipeline. It also prevents transmitting stresses to the line when valves are operated; equipment shifts positions, or expands more than the glass pipe. Rigidly supported equipment such as the above are considered anchor points. No more than one anchor point should be used in any straight run of glass pipe. Flexible “bellows” or hose can be used at the tie-in place.

Pipe Hanging and Support

Glass piping must be installed without mechanical restraint and the pipe should be free to move to prevent stresses. A mechanical restraint may set up a tensile stress that over a period of time will cause the pipe to fail. Hangers should not clamp the pipe tightly. Some lengthwise and sidewise movements are desirable. Padded hangers should always be used and spaced 8-10 feet apart. Use an extra hanger where there are two or more couplings in an 8-10 foot span. Do not pull or spring the pipe into place. Always move the hanger to the pipe do not force the pipe to the hanger.

Vertical Line Support

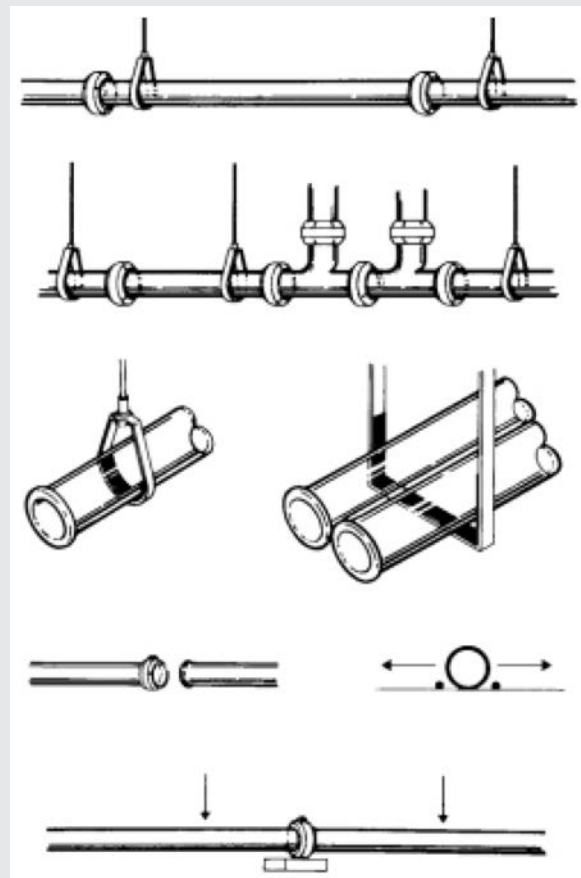
Vertical lines should be supported by plates beneath the couplings or by padded saddles beneath 90-degree elbows at the bottom of vertical rises. Do not support by rigid clamp anchorages around the vertical pipe. Usually only one rigid support is used. Lateral guides should be used approximately every 20 feet of unsupported riser. The horizontal run at the top of the riser should not be supported within 7 feet of the riser. This reduces bending strains in the horizontal run.

Vibration

Connection to vibrating machinery such as a pump can be made with the use of a flexible connection consisting of either hoses, or PTFE “bellows” as determined by the characteristics of the service.

Pressure Surges

Pressure surges must be controlled to prevent end motion in a line. If lines have hydraulic pressure surges, (positive displacement pumps or shutoff valves), it may be necessary to provide a pressure relief valve. It is usually necessary to provide a protected air dome to reduce the pressure surge. The domes can be installed on the discharge side of the pump, next to a valve, or at the highest point in the vertical rise of the discharge line. Use a tee at the top of the riser, plus a straight section and a cap.



Beaded Process Pipe

Protection

It is usually desirable to run glass pipe close to structures such as walls, columns, ceilings, etc., where conditions are favorable for obtaining a firm support. This also would keep the pipelines away from the heaviest traffic. When the pipelines are run through congested areas, provision should be made for protection. Angle or channel iron, or expanded metal guards, should be provided around exposed sections of glass pipe.

Testing

Tighten bolts on all couplings and flanges at the time of installation. The pipeline, when empty, should be examined for stresses by gently shaking the line. There should be some limited movement the lines. To make sure all joints are tight when line is ready for service, test at 1-1/2 times the working pressure. However, do not test at more than the maximum working pressure. All air must be removed from the pipeline so there is no trapped air. **DO NOT TEST WITH AIR PRESSURE.** If a joint leaks, carefully check the joint assembly, retighten to recommended torque value, and retest. If leaking persists, remove coupling, check the gasket surface to be sure they are free from dirt, sand or other particles, and replace if necessary.

Spare Parts

Generally, one spare for every twelve should be provided. The proper storage of spare parts will ensure they are available when required. Keep lengths of pipe on racks and store them in a protected area. Keep fittings in their original packaging.

Cleaning

Flush line clean with water, other cleaning fluids, or atmospheric pressure steam (open drain). Do not use hydrofluoric acid, hot caustic solutions, abrasives or metallic tube cleaners.

Tools Required

Tools need to install glass piping (installation tools):

a) Wrenches	7/16-inch Open End, 1/2-inch Open End 9/16-inch Open End, 3/4-inch Open End
b) Ratchet	3/8-inch Drive
c) Sockets	7/16-inch Deep Socket, 1/2-inch Deep Socket 9/16-inch Deep Socket, 3/4-inch Deep Socket
d) Torque Wrench	Calibrated in inch-lbs. Preferred ratchet type 3/8-inch Drive.
e) Water-pump pliers	3/8-inch Drive
f) Various screw-drivers	
g) Hammer	Plastic or rubber head

Structural Tools:

a) Allen wrenches	5/16-inch and 3/8-inch
b) Hammer	
c) Hack saw	

Making Joints with Process Pipe Couplings

1. Dip coupling in water or wipe beaded ends with damp cloth.
2. Snap coupling over one end of pipe making certain TFE liner is behind bead... then stab other section of pipe into opposite side of coupling.
3. Tighten coupling bolt with 6-inch ratchet wrench until the gap between segments is approximately 3/16-inch.



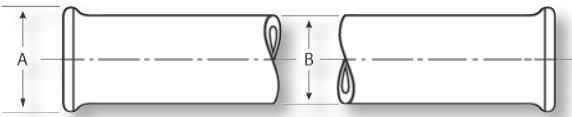
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2



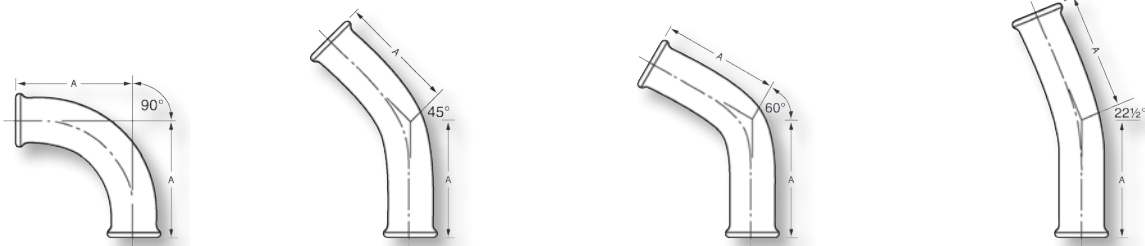
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8828 BEADED PIPE ★

All pipe is available from stock in lengths shown; special lengths available at slightly higher cost.

Qty.	1/2-inch I.D.			3/4-inch I.D.			1-inch I.D.			1-1/2-inch I.D.		
	Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each
1	3	8828-02	27.64	3	8828-102	36.50	3	8828-202	49.89	—	—	—
1	4	8828-03	28.47	4	8828-103	37.61	4	8828-203	49.89	4	8828-303	68.40
1	6	8828-05	27.65	6	8828-105	37.61	6	8828-205	49.89	6	8828-305	68.40
1	12	8828-09	30.60	12	8828-109	38.78	12	8828-209	52.85	12	8828-309	72.89
1	18	8828-11	33.79	18	8828-111	42.55	18	8828-211	56.66	18	8828-311	77.72
1	24	8828-13	35.96	24	8828-113	44.20	24	8828-213	61.63	24	8828-313	82.96
1	30	8828-15	37.61	30	8828-115	47.96	30	8828-215	66.30	30	8828-315	88.56
1	36	8828-20	40.14	36	8828-120	50.48	36	8828-220	71.03	36	8828-320	93.38
1	48	8828-25	44.60	48	8828-125	56.07	48	8828-225	78.91	48	8828-325	98.34
1	60	8828-30	47.63	60	8828-130	60.59	60	8828-230	88.94	60	8828-330	105.41
1	72	8828-38	52.73	72	8828-138	65.80	72	8828-238	98.45	72	8828-338	126.70
1	84	8828-45	56.83	84	8828-145	71.15	84	8828-245	107.73	84	8828-345	142.57
1	96	8828-56	61.63	96	8828-156	76.22	96	8828-256	115.03	96	8828-356	167.81
1							108	8828-260	122.13	108	8828-360	189.79
1							120	8828-262	135.65	120	8828-362	210.52
Qty.	2-inch I.D.			3-inch I.D.			4-inch I.D.			6-inch I.D.		
Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each	Length (Inches)	A Order Code	B Each	
1	4	8828-403	89.84	4	8828-503	142.16	—	—	—	—	—	
1	6	8828-405	87.22	6	8828-505	142.16	6	8828-605	257.76	6	8828-705	420.74
1	12	8828-409	98.10	12	8828-509	149.45	12	8828-609	268.21	12	8828-709	443.96
1	18	8828-411	105.88	18	8828-511	156.24	18	8828-611	279.62	18	8828-711	467.02
1	24	8828-413	113.35	24	8828-513	162.86	24	8828-613	291.60	24	8828-713	542.08
1	30	8828-415	121.42	30	8828-515	165.03	30	8828-615	301.89	30	8828-715	568.00
1	36	8828-420	124.68	36	8828-520	176.73	36	8828-620	303.84	36	8828-720	712.01
1	48	8828-425	136.59	48	8828-525	179.81	48	8828-625	323.34	48	8828-725	742.74
1	60	8828-430	142.96	60	8828-530	191.84	60	8828-630	323.79	60	8828-730	864.12
1	72	8828-438	172.61	72	8828-538	230.10	72	8828-638	400.59	72	8828-738	993.57
1	84	8828-445	201.64	84	8828-545	268.85	84	8828-645	467.18	84	8828-745	1082.56
1	96	8828-456	231.13	96	8828-556	306.45	96	8828-656	533.95	96	8828-756	1241.14
1	108	8828-460	258.82	108	8828-560	344.20	108	8828-660	600.72	108	8828-760	1398.11
1	120	8828-462	286.74	120	8828-562	383.06	120	8828-662	645.39	120	8828-762	1487.13

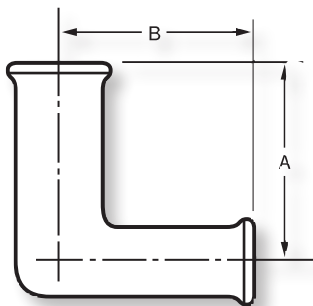


8830 SWEEP ELBOW ★

Qty.	90°				45°				60°				22 1/2°			
	Size (inches)	A (In.)	Order Code	Each	Size (inches)	A (In.)	Order Code	Each	Size (inches)	A (In.)	Order Code	Each	Size (inches)	A (In.)	Order Code	Each
1	1/2 – 90°	2 1/4	8830-03	42.53	1/2 – 45°	2 1/4	8830-103	43.80	1/2 – 60°	2 1/4	8830-203	43.80	1/2 – 22°	2 1/4	8830-303	43.80
1	3/4 – 90°	2 1/2	8830-05	51.60	3/4 – 45°	2 1/2	8830-105	51.60	3/4 – 60°	2 1/2	8830-205	51.60	3/4 – 22°	2 1/2	8830-305	51.60
1	1 – 90°	2 3/4	8830-07	68.29	1 – 45°	2 3/4	8830-107	68.29	1 – 60°	2 3/4	8830-207	67.88	1 – 22°	2 3/4	8830-307	69.93
1	1-1/2 – 90°	5	8830-09	71.90	1-1/2 – 45°	3 1/2	8830-109	71.90	1-1/2 – 60°	3 1/2	8830-209	71.90	1-1/2 – 22°	3 1/2	8830-309	71.90
1	2 – 90°	6	8830-11	96.54	2 – 45°	4	8830-111	96.54	2 – 60°	4	8830-211	96.54	2 – 22°	4	8830-311	96.54
1	3 – 90°	7	8830-13	169.64	3 – 45°	5	8830-113	169.80	3 – 60°	5	8830-213	169.64	3 – 22°	5	8830-313	169.59
1	4 – 90°	10	8830-15	286.61	4 – 45°	7	8830-115	286.31	4 – 60°	7	8830-215	287.56	4 – 22°	7	8830-315	287.02
1	6 – 90°	12	8830-17	746.13	6 – 45°	9	8830-117	747.22	6 – 60°	9	8830-217	747.11	6 – 22°	9	8830-317	747.11

Use catalog dimensions for piping layout as gasket thickness allowance is included.

8831 REDUCER ELBOW ★

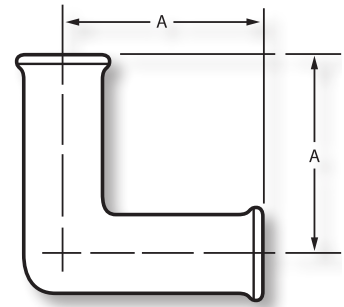


8831

Size (inches)	A (inches)	B (Inches)	Qty.	Order Code	Each
3/4 x 1/2	2-1/2	2-1/2	1	8831-02	80.53
1 x 1/2	2-3/4	2-3/4	1	8831-04	96.35
1 x 3/4	2-3/4	2-3/4	1	8831-06	103.37
1-1/2 x 1/2	3-1/2	3	1	8831-08	103.37
1-1/2 x 3/4	3-1/2	3	1	8831-10	103.37
1-1/2 x 1	3-1/2	3	1	8831-12	103.37
2 x 1/2	4	3	1	8831-14	131.24
2 x 3/4	4	3	1	8831-16	157.77
2 x 1	4	3	1	8831-18	157.77
2 x 1-1/2	4	3-1/2	1	8831-20	157.77
3 x 1	5	3-1/2	1	8831-22	240.16
3 x 1-1/2	5	4	1	8831-24	240.16
3 x 2	5	4-1/2	1	8831-26	240.16
4 x 1	7	4	1	8831-28	435.21
4 x 1-1/2	7	4-1/2	1	8831-30	435.21
4 x 2	7	5	1	8831-32	435.21
4 x 3	7	5-1/2	1	8831-34	435.21
6 x 1-1/2	9	5-1/2	1	8831-36	858.98
6 x 2	9	6	1	8831-38	858.98
6 x 3	9	6-1/2	1	8831-40	858.98
6 x 4	9	8	1	8831-42	858.98

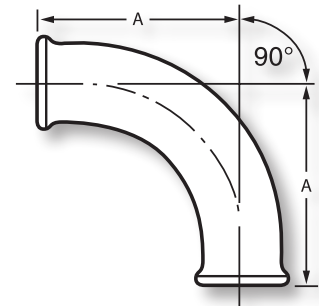
8832 MITERED ELBOW 90° ★

Size (inches)	A (inches)	Qty.	Order Code	Each
1-1/2	3-1/2	1	8832-03	100.17
2	4	1	8832-05	137.93
3	5	1	8832-07	208.65
4	7	1	8832-09	397.57
6	9	1	8832-11	750.53

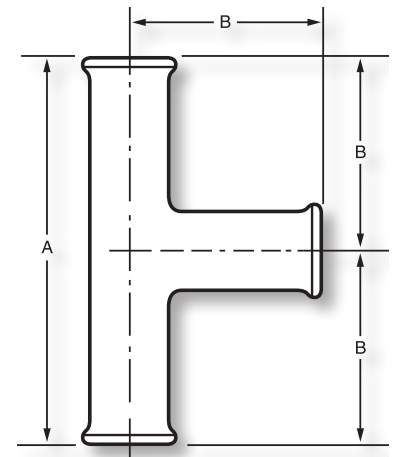

8832
8833 SHORT RADIUS ELBOW 90° ★

Size (inches)	A (inches)	Qty.	Order Code	Each
1-1/2	3-1/2	1	8833-32	79.40
2	4	1	8833-34	109.21
3	5	1	8833-36	188.12
4	7	1	8833-38	336.52

Interchangeable with 8836 – TEE

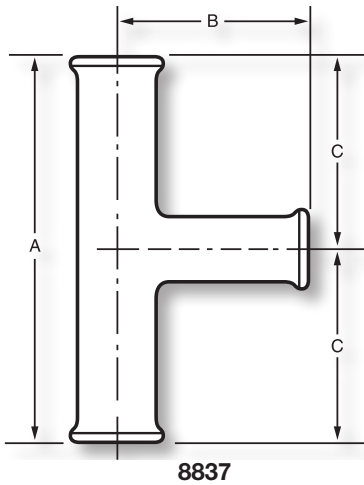

8833
8836 TEE Straight ★

Size (inches)	A (inches)	B (inches)	Qty.	Order Code	Each
1/2	4-1/2	2-1/4	1	8836-02	72.72
3/4	5	2-1/2	1	8836-04	74.91
1	5-1/2	2-3/4	1	8836-06	83.38
1-1/2	7	3-1/2	1	8836-08	122.61
2	8	4	1	8836-10	145.46
3	10	5	1	8836-12	318.47
4	14	7	1	8836-14	406.47
6	18	9	1	8836-16	709.80


8836

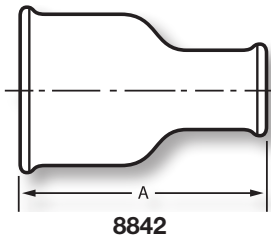
Custom lengths, O.D. and shapes are available – Just ask!

8837 TEE Reducing ★



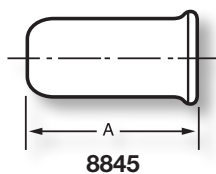
Size Run x Branch (Inches)	A (inches)	B (inches)	C (inches)	Qty.	Order Code	Each
3/4 x 1/2	5	2-1/2	2-1/2	1	8837-03	74.91
1 x 1/2	5-1/2	2-3/4	2-3/4	1	8837-05	92.06
1 x 3/4	5-1/2	2-3/4	2-3/4	1	8837-07	92.06
1-1/2 x 1/2	7	3	3-1/2	1	8837-09	122.61
1-1/2 x 3/4	7	3	3-1/2	1	8837-11	122.61
1-1/2 x 1	7	3	3-1/2	1	8837-13	122.61
2 x 1/2	8	3	4	1	8837-15	148.25
2 x 3/4	8	3	4	1	8837-17	148.25
2 x 1	8	3	4	1	8837-19	148.25
2 x 1-1/2	8	3-1/2	4	1	8837-21	148.25
3 x 1	10	3-1/2	5	1	8837-23	183.97
3 x 1-1/2	10	4	5	1	8837-25	183.97
3 x 2	10	4-1/2	5	1	8837-27	183.97
4 x 1	14	4	7	1	8837-29	380.97
4 x 1-1/2	14	4-1/2	7	1	8837-31	380.97
4 x 2	14	5	7	1	8837-33	380.97
4 x 3	14	5-1/2	7	1	8837-35	380.97
6 x 1-1/2	18	5-1/2	9	1	8837-37	736.91
6 x 2	18	6	9	1	8837-39	736.91
6 x 3	18	6-1/2	9	1	8837-41	736.91
6 x 4	18	8	9	1	8837-43	736.91

8842 REDUCER Straight ★



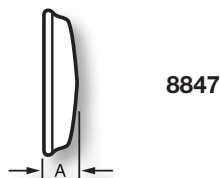
Size (Inches)	A (inches)	Qty.	Order Code	Each	Size (Inches)	A (inches)	Qty.	Order Code	Each
3/4 x 1/2	4	1	8842-03	42.82	3 x 1-1/2	5	1	8842-25	99.29
1 x 1/2	4	1	8842-05	44.83	3 x 2	5	1	8842-27	99.29
1 x 3/4	4	1	8842-07	46.20	4 x 1	7	1	8842-29	142.72
1-1/2 x 1/2	4	1	8842-09	55.65	4 x 1-1/2	7	1	8842-31	151.86
1-1/2 x 3/4	4	1	8842-11	55.65	4 x 2	7	1	8842-33	179.59
1-1/2 x 1	4	1	8842-13	55.65	4 x 3	7	1	8842-35	216.20
2 x 1/2	4	1	8842-15	66.81	6 x 1	9	1	8842-37	394.91
2 x 3/4	4	1	8842-17	66.81	6 x 1-1/2	9	1	8842-39	394.91
2 x 1	4	1	8842-19	68.81	6 x 2	9	1	8842-41	419.59
2 x 1-1/2	4	1	8842-21	68.81	6 x 3	9	1	8842-43	448.59
3 x 1	5	1	8842-23	99.29	6 x 4	9	1	8842-45	462.37

8845 END CAP Extended ★



Size (inches)	A (inches)	Qty.	Order Code	Each
1/2	2	1	8845-03	24.58
3/4	2	1	8845-05	25.33
1	2	1	8845-07	43.69
1-1/2	3	1	8845-09	54.24
2	4	1	8845-11	64.26
3	4-3/4	1	8845-15	99.54
4	6	1	8845-17	185.02
6	7	1	8845-19	216.13

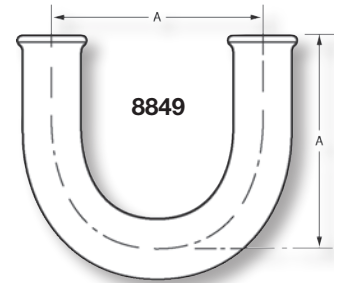
8847 END CAP Short ★



Size (inches)	A (inches)	Qty.	Order Code	Each
1-1/2	7/8	1	8847-02	30.20
2	1	1	8847-04	34.23
3	1-1/8	1	8847-06	46.15
4	1-1/4	1	8847-08	94.27
6	1-1/2	1	8847-10	128.82

8849 U BEND ★

Size	A (inches)	Qty.	Order Code	Each
1/2	2-1/4	1	8849-03	67.86
3/4	2-1/2	1	8849-05	80.33
1	5-1/2	1	8849-07	124.64
1-1/2	7	1	8849-09	177.96
2	7	1	8849-11	264.91
3	9	1	8849-13	430.55
4	12	1	8849-15	800.04



8856 PROCESS PIPE COUPLINGS *Bead to Bead*

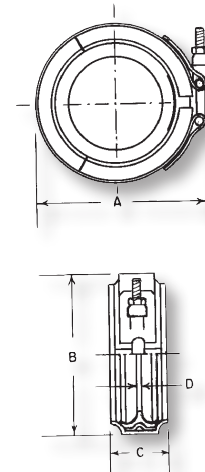
Coupling assemblies consist of a 0.300 series stainless steel outer band with T-Bolt and hex nut; Buna-N liner and a TFE seal ring.

No. 8856 coupling is designed for temperature service up to 450°F.

High Temperature – Buna-N Liner (450°, Black)

Size	A (inches)	B (inches)	C (inches)	D (inches)	Max. Torque, in-lbs	Qty.	Order Code	Each
1/2	1-5/8	1-3/8	7/8	3/16	20	1	8856-03	77.35
3/4	1-3/4	1-1/2	7/8	3/16	25	1	8856-05	92.74
1	2-5/8	1-7/8	1	3/16	35	1	8856-07	115.44
1-1/2	3	2-5/8	1-5/16	3/16	50	1	8856-09	129.83
2	3-1/2	3-1/8	1-5/16	3/16	60	1	8856-11	155.11
3	4-3/4	4-1/4	1-7/16	3/16	75	1	8856-13	274.44
4	6	5-1/2	1-1/2	3/16	80	1	8856-15	330.20
6	8-3/4	8	1-3/4	1/4	90	1	8856-17	625.27

Use catalog dimensions for piping layout as gasket thickness allowance is included.



8856

8862 PADDED PIPE HANGER *with Mounting Foot*

Size	Qty.	Order Code	Each
1-inch (25mm)	1	8862-03	15.25
2-inch (50mm)	1	8862-07	16.63
3-inch (76mm)	1	8862-11	33.37

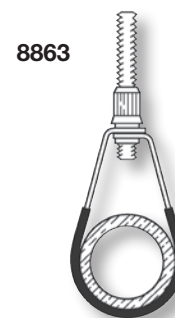


8862

8863 PADDED PIPE HANGER *without Mounting Foot*

All hangers are zinc coated and have factory applied plastic sleeve to prevent glass-to-metal contact. Use one hanger every 8 or 10 feet. Support all valves and gauges individually.

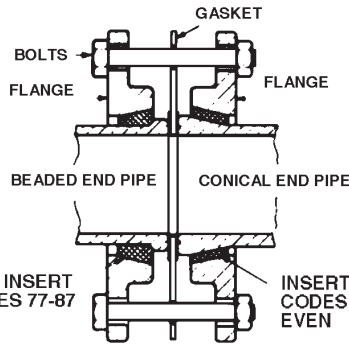
Size (inches)	Qty.	Order Code	Each
1/2	1	8863-02	8.43
3/4	1	8863-04	8.43
1	1	8863-06	8.92
1-1/2	1	8863-08	12.27
2	1	8863-10	13.59
3	1	8863-12	20.10
4	1	8863-14	22.45



8863

8866 COUPLING ASSEMBLY *Beaded to Conical End Pipe* ★

To join beaded end pipe to conical end pipe. Kit includes two flanges, inserts, bolts and TFE sheath gasket.



ADAPTER INSERT
8867 CODES 77-87
ODD

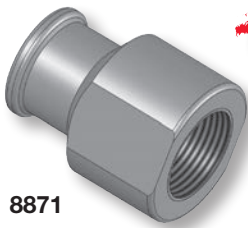
INSERT 8867
CODES 76-86
EVEN

Pressure rating limited to that of Conical Pipe Stem. Not to be used with Beaded Armored Pipe.

Size	Order Code	Each
1"	8866-03	309.05
1½"	8866-05	325.66
2"	8866-07	344.57
3"	8866-09	371.61

Assembly Consists of...

Size (In.)	Flange	Insert	Gasket	7190 Nuts & Bolts	Qty.
1	8867-68	8867-76	8868-16	3/8 -16 x 2-1/4	4
		8867-77			
1-1/2	8867-69	8867-78	8868-17	3/8 -16 x 2-1/4	4
		8867-79			
2	8867-70	8867-80	8868-18	3/8 -16 x 2-1/2	4
		8867-81			
3	8867-71	8867-82	8868-19	3/8 -16 x 3	4
		8867-83			



8871

new

8871 ADAPTER *Beaded Process Pipe to Female NPT, 304 Stainless Steel* ★

A 304 stainless steel adapter for matching glass beaded process pipe to male NPT fittings, gauges and flanges.

Size	Qty.	Order Code	Each
3/4-inch beaded pipe to 3/4-inch female NPT	1	8871-20	226.03
1-inch beaded pipe to 1-inch female NPT	1	8871-22	293.28
1.5-inch beaded pipe to 1.5-inch female NPT	1	8871-24	348.78
2-inch beaded pipe to 2-inch female NPT	1	8871-28	371.74



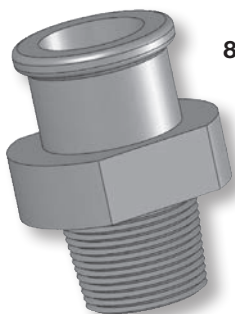
8872

new

8872 ADAPTER *Beaded Process Pipe to Sanitary Flange, 304 Stainless Steel* ★

A 304 stainless steel adapter with sanitary type flange on one end. Mates glass beaded pipe to sanitary type flanges.

Size	Qty.	Order Code	Each
3/4-inch beaded pipe to 3/4-inch sanitary flange	1	8872-04	149.31
3/4-inch beaded pipe to 1-inch sanitary flange	1	8872-06	198.05
1-inch beaded pipe to 1-inch sanitary flange	1	8872-08	198.05
1-inch beaded pipe to 3/4-inch sanitary flange	1	8872-10	198.05
1-inch beaded pipe to 1.5-inch sanitary flange	1	8872-12	198.05
1.5-inch beaded pipe to 1.5-inch sanitary flange	1	8872-14	213.30
1.5-inch beaded pipe to 1-inch sanitary flange	1	8872-16	198.05
1.5-inch beaded pipe to 2-inch sanitary flange	1	8872-18	215.72
2-inch beaded pipe to 2-inch sanitary flange	1	8872-20	228.53
2-inch beaded pipe to 1.5-inch sanitary flange	1	8872-22	213.30
2-inch beaded pipe to 1-inch sanitary flange	1	8872-24	213.30



8870

8870 MALE THREADED ADAPTER *304 Stainless Steel* ★

Used to join threaded female fittings, valves and flanges to beaded pipe. Size, below, refers to the bead and the NPT thread. Length, below, refers to the overall length of the adapter.

Size (Inches)	Length (Inches)	Qty.	Order Code	Each
1/2	2-9/16	1	8870-02	216.41
3/4	2-9/16	1	8870-04	226.03
1	2-9/16	1	8870-06	293.28
1-1/2	2-9/16	1	8870-08	348.78
2	2-5/8	1	8870-10	371.74
3	3-1/8	1	8870-12	432.67

13200/13201 HEIDOLPH PERISTALTIC PUMPS

Ace Glass now offers a full line of laboratory peristaltic pumps from Heidolph. Ace lists the complete packages, but there are many configurations available from Heidolph through ACE.

General Features:

- Convex rollers that do not squeeze and crush cell cultures
- Numerous drive combinations
- Three basic configurations; standard, interchangeable pump heads, cassette heads.
- Superior for highly viscous media up to 10,000mPas
- Self priming, no valves or seals.
- Run easily under pressure or vacuum
- Flow rates from 0.005 up to 4,000ml/min
- Serial and analog interfaces available
- Stackable design
- Three-year warranty
- 115V, 50Hz



13202-22

PERISTALTIC PUMPS



13200-10

For Peristaltic Pump tubing sizer and flow rates, see chart on page 11.

Heidolph Model	PD 5001	PD 5006	PD 5201	PD 5206
Electronic Motor Control	Condensor Motor	Condensor Motor	DC Motor	DC motor
Flow Rates, Single-Channel Pumps-mL	0.8 – 830	4.0 – 4,000	0.3 – 790	1.3 – 3,900
Flow Rates, Multi-Channel Pumps-mL	0.01 – 320	–	0.01 – 320	–
Flow Rate Accuracy-%	±5	±5	±1	±2
Speed Range-rpm	10 – 120	50 – 600	5 – 120	24 – 600
Electronic Speed Control	Analog	Analog	Digital	Digital
Control Accuracy Motor-%	±2	±2	±0.5	±0.5
Select Direction of Rotation	CW/CCW	CW/CCW	CW/CCW	CW/CCW
Digital Interface	–	–	RS232	RS232
Flow Rate Indicator	–	–	Digital	Digital
Weight-kg	6.8	6.2	8.3	7.7
Dimensions (WxDxH)-mm	166 x 256 x 225	166 x 256 x 225	166 x 256 x 225	166 x 256 x 225

Peristaltic Pumps — Complete Packages, Special Prices



13200-10

13200-10 PERISTALTIC PUMP

For Standard Applications

Heidolph PD 5001 SP-Quick

Pump has a flow rate from 11 to 130mL/min with Model 5001 pump drive and SP quick pump head 1.6. Analog speed control. Set includes one meter of each of 3.1 mm I.D. Tygon and silicone tubing.

Qty.	Order Code	Each
1	13200-10	2011.00



13200-14

13200-14 PERISTALTIC PUMP

For Standard Applications

Heidolph PD 5006 SP-Quick

Pump has a flow rate of 57 to 695mL/min. with Model PD5006 pump drive and pump head SP quick 1.6. Analog speed control. Set Includes one meter each of 3.1mm I.D. silicone and Tygon tubing.

Qty.	Order Code	Each
1	13200-14	1913.00

13200-18



13200-18 PERISTALTIC PUMP

For Standard Applications

Heidolph PD 5006 SP-Standard

Pump flow rates are from 313 to 3,800mL/min. with Model PD5006 pump drive and pump head SP standard 2.5. Analog speed control. Set includes one meter each of 6.3mm I.D. Tygon and silicone tubing.

Qty.	Order Code	Each
1	13200-18	1829.00

13201-15



13201-15 PERISTALTIC PUMP

High-Performance Series

Heidolph PD 5201 SP-Quick

Model PD5201 pump drive with flow rates from 0.3 to 9.0mL/min. Complete with pump head SP quick 1.6. Digital speed control. Set Includes one meter each of 0.8mm I.D. silicone and Tygon tubing.

Qty.	Order Code	Each
1	13201-15	3398.00

Peristaltic Pumps — Complete Packages, Special Prices

13201-17 PERISTALTIC PUMP

High-Performance Series

Heidolph PD 5206 SP-Quick

Model PD5206 pump drive with flow rates from 26 to 650mL/min. Complete with pump head SP quick 1.6. Digital speed control. Set Includes one meter each of 3.1mm I.D. silicone and Tygon tubing. Minimum dispensing volume 5.9mL.

Qty.	Order Code	Each
1	13201-17	3300.00



13201-17

13201-19 PERISTALTIC PUMP

High-Performance Series

Heidolph PD 5206 SP-Standard

Model PD5206 pump drive with flow rates from 140 to 3,800mL/min. Complete with pump head SP standard 2.5. Digital speed control. Set Includes one meter each of 6.3mm I.D. silicone and Tygon tubing. Minimum dispensing volume 33.4 mL.

Qty.	Order Code	Each
1	13201-19	3216.00



13201-19

13202-22 PERISTALTIC PUMP

Multi-Channel for Small Volumes

Heidolph PD 5201 MC C4

Model 5201 pump drive with flow rates from 0.1 to 2mL/min. complete with adapter, multichannel pump head C-4, four size small cassettes. Digital speed control. Includes tubing set; four lengths 0.5mm ID Tygon, two meters 0.5mm I.D. extension Tygon tubing, eight lengths for extension tube fittings. Minimum dispensing volume: 23 microliter.

Qty.	Order Code	Each
1	13202-22	5283.00



13202-22



New

13180-12

13180 PUMP, SYRINGE SYSTEM *Single Position Module*

J-Kem

The 1400 series is a pump module and software for PC control for the 13185 single position syringes and the 13186 valves. Flow rates available from 0.75 µL/min. up to 375mL/min. The syringe automatically refills to deliver any volume. Four standard pump programs preloaded and custom programs available. Programs include; timed addition, multi-step timed addition, multi-reactor addition and program builder. The J-Kem commander software allows for custom control and data-logging on your PC. User must select the 13185 glass syringe for your dispensing volumes and a 13186 PTFE distribution valve that allows for interface with up to eight reactors or reagent bottles. Available in 120V or CE 230V models.

Voltage	Model	Qty.	Order Code	Each
120V	SYR-1200-Net	1	13180-12	2449.25
230V	SYR-1240-Net	1	13180-124	2449.25



New

13180-22

13180 PUMP, SYRINGE SYSTEM *Dual Position Module*

J-Kem

Same controller as above except for dual position pump systems. Dual position controller requires user to select two 13185 glass syringes and two 13186 distribution valves to complete system. Available in either 120V or CE approved 230V versions.

Voltage	Model	Qty.	Order Code	Each
120V	SYR-2200-Net	1	13180-22	4437.75
230V	SYR-2240-Net	1	13180-224	4340.75

Custom systems available.



New

13185

13185 SYRINGE *Glass/PTFE Plunger*

J-Kem SPGS

Syringe modules for Model SYR, Code 13180 syringe pumps, All borosilicate glass or PTFE wetted components. One syringe is needed for each syringe module or two for dual position module.

Volume	Qty.	Order Code	Each
10µL	1	13185-01	244.42
25µL	1	13185-03	194.74
50µL	1	13185-05	157.89
100µL	1	13185-07	157.89
250µL	1	13185-09	157.89
500µL	1	13185-11	157.89
1.0mL	1	13185-13	157.89
1.25mL	1	13185-15	157.89
2.5mL	1	13185-17	157.89
5.0mL	1	13185-19	157.89
10mL	1	13185-21	157.89
25mL	1	13185-23	205.26
50mL	1	13185-25	244.47



New

13186

13186 VALVE *PTFE, Distribution*

J-Kem SPDV

All PTFE wetted parts, distribution valve for 13180 syringe pump systems. One needed for each 13185 syringe module. Choose from three to eight addressable ports. Valves fit into pump modules.

Number of Ports	Qty.	Order Code	Each
3	1	13186-03	167.68
4	1	13186-04	184.16
6	1	13186-06	235.79
8	1	13186-08	250.68

6390 REACTOR PTFE, Filter, Complete ★

All PTFE filter reactor. An extension of the famous ACE borosilicate glass filter reactor product line. The head, head joints, body, stir-bearing, bottom filter assembly with valve, and stir shaft with agitator are all PTFE. Even the o-rings are PTFE encapsulated. The filter supports are polypropylene. The bottom filter assembly is either #50 or #80 Ace-Thred and threads in/out for easy capture of filtrate, or for cleaning. Unit is excellent for fluorine chemistry work as well as any work using strong alkalis where glass can't be used. Halar coated stainless steel internal coil included for heating or cooling the contents. Three sizes area available as standard. Other sizes are available on request. Support stand (13586 or 13550-21) and chain clamp (11079) not included. We recommend Caframo BDC2010 stir-motor (13566-05). Recommend Julabo recirculator (12254-33) for heating/cooling and ACE/J-Kem 260T temperature controller (12318-05) with a 12-inch PTFE coated "T" temperature sensor (12318-25).



6390

250mL Reactor

Key Components	Qty.	Order Code	Each
Reactor Body (A = 5.8 in.; O.D. = 3.5 in.)	1	6391-02	1218.84
PTFE Head (60mm, 4 openings, 24/40)	1	12858-15	198.84
CAPFE o-ring (60mm)	1	7855-878	28.38
Quick Release Clamp (60mm)	1	6517-22	88.80
Bottom Filter Assembly (#50)	1	5838-83	239.47
Bottom Valve (1/4-inch/3/8-inch)	1	5839-42	113.46
Adapter	1	5844-120	88.91
Polypropylene Filter Supports (#50)	12	5814-348	37.01
Stirrer Bearing (10mm)	1	13443-12	441.37
PTFE Coated Stainless Steel Shaft with Agitator (10mm)	1	13852-10	345.55
Complete	1	6390-02	2954.46

500mL Reactor

Key Components	Qty.	Order Code	Each
Reactor Body (A = 8.88 in.; O.D. = 3.5 in.)	1	6391-05	1484.88
PTFE Head (60mm, 4 openings, 24/40)	1	12858-15	198.84
CAPFE o-ring (60mm)	1	7855-878	28.38
Quick Release Clamp (60mm)	1	6517-22	88.80
Bottom Filter Assembly (#50)	1	5838-83	239.47
Bottom Valve (1/4-inch/3/8-inch)	1	5839-42	113.46
Adapter	1	5844-120	88.91
Polypropylene Filter Supports (#50)	12	5814-348	37.01
Stirrer Bearing (10mm)	1	13443-12	441.37
PTFE Coated Stainless Steel Shaft with Agitator (10mm)	1	13852-10	345.55
Complete	1	6390-05	3220.50

1,000mL Reactor

Key Components	Qty.	Order Code	Each
Reactor Body (A = 7.84 in.; O.D. = 4.33 in.)	1	6391-10	1917.97
PTFE Head (100mm, 7 openings, 5x24/40, 2x#7)	1	12860-12	359.07
CAPFE o-ring (100mm)	1	7855-880	29.49
Quick Release Clamp (100mm)	1	6517-25	100.27
Bottom Filter Assembly (#80)	1	5857-86	335.88
Bottom Valve (1/4-inch/3/8-inch)	1	5839-42	113.46
Adapter	1	5844-120	88.91
Polypropylene Filter Supports (#80)	12	5814-350	48.44
Stirrer Bearing (10mm)	1	13443-12	441.37
PTFE Coated Stainless Steel Shaft with Agitator (10mm)	1	13852-15	345.55
Halar Coated Heating Coil	1	12069-06	859.36
Complete	1	6390-10	4945.96

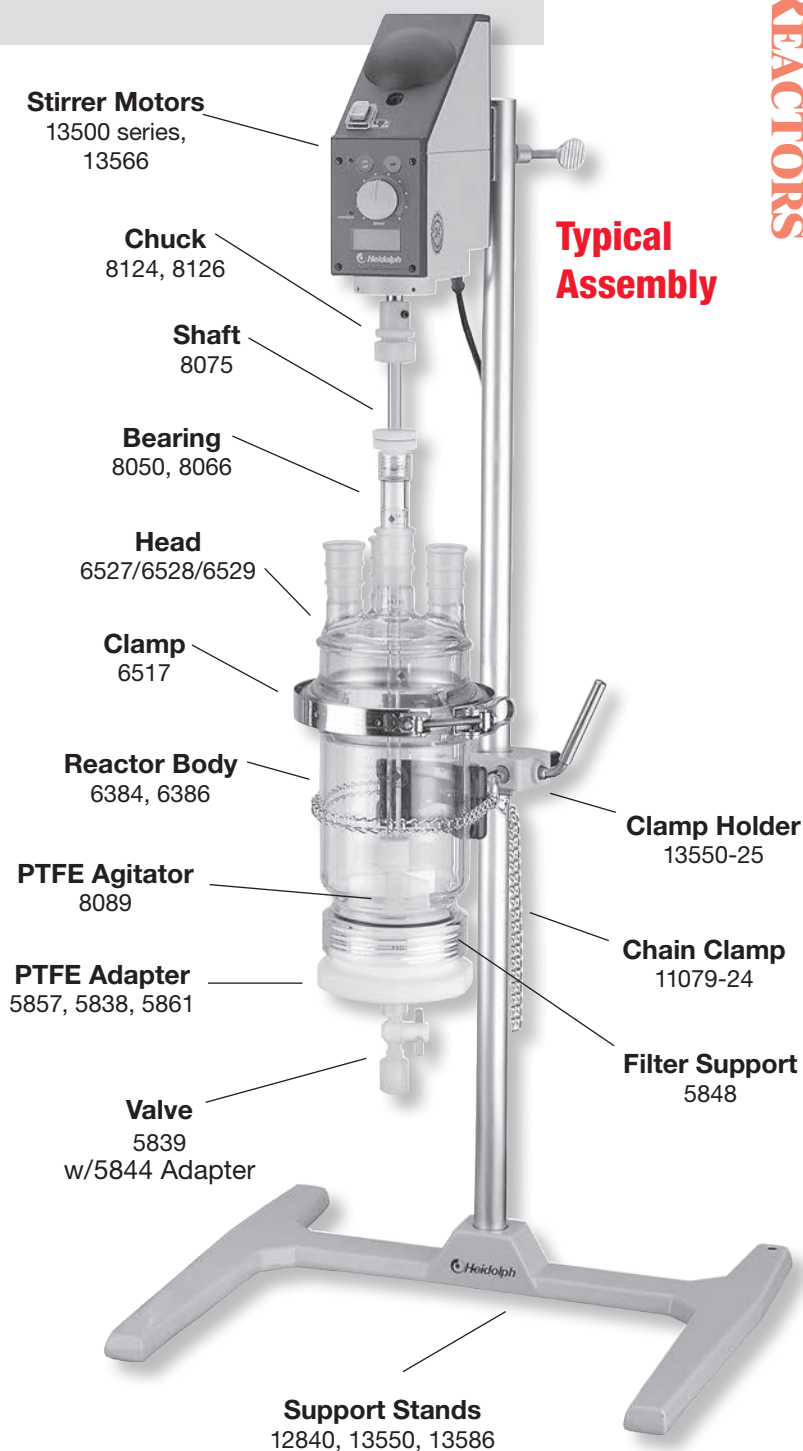
ACE Filter Reactors allow single or multi-step reactions *and* filtrations in the same vessel.



Contact ACE to get a copy of our complete reactors catalog

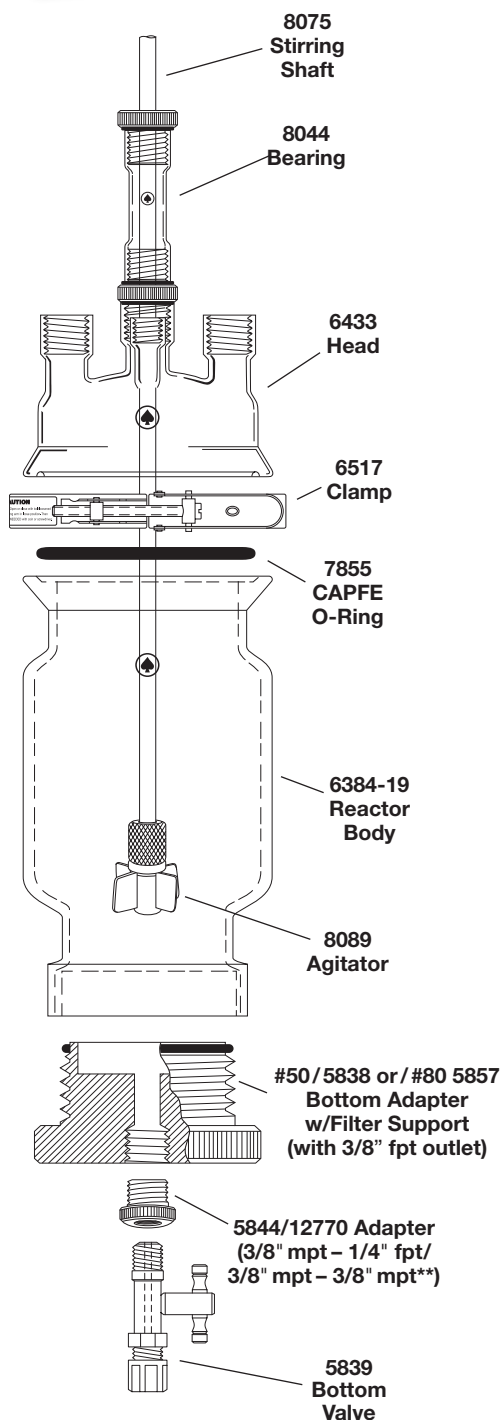
Major Design Features

- 100 mL to 6000 mL standard
- Unjacketed or jacketed
- All inert materials
- Reactions at ambient or pressure conditions
- Filtering by vacuum and/or pressure
- Removable/changeable filters, poly screen or glass, wide choice of porosities
- Mechanical agitation
- Inert bottom drain valve
- Easy assembly/disassembly for cleaning



6384 UNJACKETED FILTER REACTOR, PRESSURE VERSION

**35 PSIG
@100°C**



Heavy wall glass reactor available with 60mm (2.4-inch), 100mm (4-inch), or 150mm (6-inch) diameter Schott style flange with o-ring groove at top. Connects to #6433 head with a #6517 quick release clamp. Reactor bottom has an Ace-Thred for installing a 5838-83 (size 80) or 5857-86 (size 50) adapter with a filter support and bottom drain valve. The 60mm reactor head has a #15 Ace-Thred center neck, (2) #15 and (1) #7 Ace-Thred side necks. The 100mm head has a #15 Ace-Thred center neck, (3) #15 and (1) #7 Ace-Thred side necks. The 150mm head has a #15 Ace-Thred center neck, (4) #15 and (1) #7 Ace-Thred side necks. The Ace-Threds allow for vacuum or pressure applications and for easy draining of material out of the reactor. The main bearing, funnel and condenser are designed to connect to the threads on the head via compression bushing connections. The #7 Ace-Thred is used for connecting a 1/4-inch O.D. tubing fitting to allow for a direct connection to a pressure source or a #6448 pressure manifold.

Complete item consists of: reactor body with 60mm CAPFE o-ring, head with Ace-Threds, 6517 clamp, PTFE bottom threaded adapter and valve with CAPFE o-ring, retainer ring, 350 micron polypropylene screen support, 100 micron polyethylene support, 5844 adapter, 8044 bearing, 8075 stir rod, 8089 paddle agitator, 6024 condenser, 7299 addition funnel and #7 Ace-Thred bushing. Size 80 bottom adapter also comes with a perforated glass plate support.

Pressure manifold page 466), stand and clamps are optional. For replacement glass fritted discs and supports see 5848 or 5814. See 13511 or 13566 motor; for chuck, see 8124 or 8126. Use 7855-829 CAPFE o-ring for #50 adapter, 7855-864 for #80 bottom adapter.

Cap., mL	Flange I.D., mm (in.)	Bottom Thread Size	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Order Code	Each
150	60 (2.4)	#50	60	125	7855-878	6384-225	1753.29
600	60 (2.4)	#50	99	205	7855-878	6384-231	1805.37
1000	100 (4)	#80	100	180	7855-880	6384-235	2064.18
2000	100 (4)	#80	126	210	7855-880	6384-239	2256.06
3000	150 (6)	#80	150	205	7855-881	6384-243	2708.51
6000	150 (6)	#80	150	395	7855-881	6384-247	2829.74

*Height measurements are measured from top of flask flange to seal on top thread.
Note: 150mL and 600mL heads have angled side necks.

Stand (13586) and Support Shelf (11173) not included.



Also available in standard non-pressure version. Contact ACE for more information.



(For #80, bottom also available with 1/2" mpt.)

6386 JACKETED FILTER REACTOR

Rugged heavy wall reactor, jacketed for cooling and/or heating of reaction material. With 60mm (2.4-inch), 100mm (4-inch), or 150mm (6-inch) Schott style flange with o-ring groove at top, for connection to 6527, 6528 or 6529 heads, with 6517 quick release clamp. Bottom has an Ace-Thred (internal glass thread) for installing 5838-83 (size 50) or 5857-86 (size 80) bottom adapter with filter support and drain valve. Body is jacketed with size 28/15 o-ring ball joints on inlet/outlet, sealed tangentially for more efficient circulation. Head has three $\frac{3}{8}$ 24/40 joints on 60mm size; four $\frac{3}{8}$ 24/40 joints on 100mm and 150mm sizes.

Complete item consists of: reactor body with 60mm CAPFE o-ring, head with joints, 6517 clamp, PTFE bottom adapter with CAPFE o-ring (with perforated plate — #80 thread only), retainer ring, 350 micron polypropylene screen support and 100 micron polyethylene support, 5844 adapter, 5839 shutoff valve (optional larger valve is available), non-flaking 8066 bearing, 8075 stirring rod, 8089 multipaddle agitator.

For replacement glass fritted support, polyethylene support or polypropylene screen, see 5848 or 5814. For condenser and funnel, see 6029 and 7298; stoppers with $\frac{3}{8}$ 24/40 joints, see 8250. For stirring motor, see 13511 or 13566 motor; for chuck, see 8124 or 8126. Use 7855-829 CAPFE o-ring for #50 adapter, 7855-864 for #80 bottom adapter.

Cap., mL	Flange I.D., mm (in.)	Bottom Thread Size	Body I.D., mm	Approx. Height*, mm	Top CAPFE O-Ring	Order Code	Each
150	60 (2.4)	#50	60	125	7855-878	6386-40	2019.47
600	60 (2.4)	#50	79	205	7855-878	6386-45	2293.73
1000	100 (4)	#80	100	180	7855-880	6386-50	2788.06
2000	100 (4)	#80	126	210	7855-880	6386-55	3138.36
3000	150 (6)	#80	150	205	7855-881	6386-60	3795.11
6000	150 (6)	#80	150	395	7855-881	6386-65	4125.08

*Height measurements are measured from top of flask flange to seal on top thread.

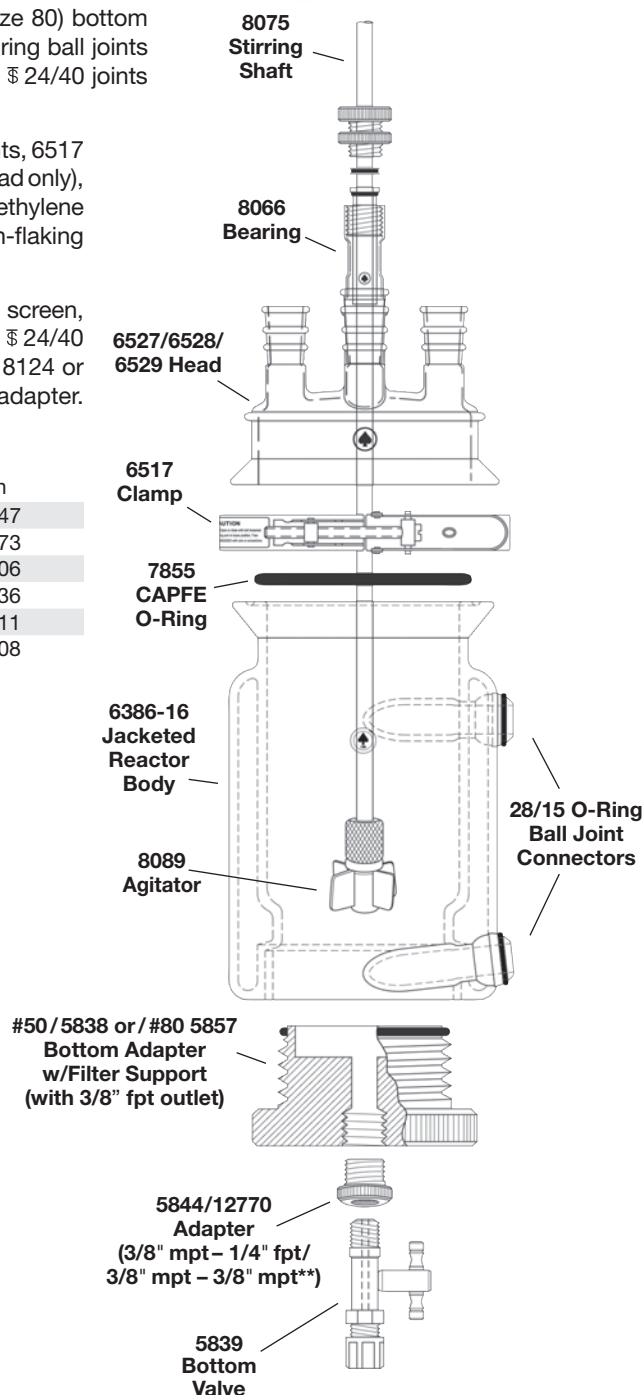
Note: 150mL and 600mL heads have angled side necks.

For complete reactor systems, contact ACE to get a copy of our reactor catalog.



Stand (13586) and Support Shelf (11173) not included.

For replacement parts and accessories, request a copy of our Reactor catalog.



(For #80, bottom also available with 1/2-inch mpt.)

All-in-One Benchtop Reactor

1 or 2 liter Cylindrical

- Large 4-inch diameter flange on flask and head with CAPFE (PTFE encapsulated silicone rubber) o-ring and quick release clamp facilitate assembly/disassembly and removal of contents.
- All glass and PTFE wetted components.
- PTFE joint sleeves and valves and FETFE o-rings for high-purity, grease-free system with high chemical resistance.
- Suitable for high-vacuum situations.
- Overhead mechanical stirring with 10 mm diameter glass stirring shaft, PTFE multi-paddle agitator, flexible shaft and variable speed motor with controller.



A complete, general purpose benchtop cylindrical reactor. Self-supported and portable, with a small footprint.

- Electric heating mantle with digital temperature controller and Type "J" PTFE-covered sensor for operation from room temperature to 200°C
- 125 mL pressure equalizing addition funnel
- Reflux condenser
- Support stand, clamps, clamp holders and joint clips

Note: This reactor is available with bottom outlet on flask; call or e-mail for pricing.

1 LITER

	Order Code		Each
FLASK, 1-liter, Cylindrical, 4-inch (100mm) Grooved Flange with CAPFE o-ring	6521-10	♣	156.41
HEAD, 4-inch (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♣	289.58
CLAMP, Quick Release, 4-inch	6517-25	★	100.27
CONDENSER, 3/4", 300mm Jacket Length with "Ace-Safe" Connectors	5946-118	♣	156.70
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4" Joints	7298-05	♣	238.63
STIRRING SHAFT, 10mm, Polished with Ring, 44cm	8075-32	♣	58.77
AGITATOR, PTFE, 4-Blade Multipaddle, 64 mm dia.	8089-06	♣	114.66
BEARING, 10mm, PTFE, 3/4", Complete	8066-43	♣	114.98
CHUCK, Flex-Grip, for 10mm Rod, 5/16-inch Motor Shaft	8124-10	♣	45.19
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19		1310.03
FLEXIBLE SHAFT, 91.4cm (36-inch)	8081-30	★	192.51
HEATING MANTLE, Aluminum Housed, 335 watts, 115v	12058-12		338.00
TEMPERATURE CONTROLLER, Digital, Type "J," 120 volts	12125-14	★	820.23
SENSOR, Type "J," 1/4-inch O.D. x 12 inches long, PTFE covered	12141-25	★	122.29
SENSOR, Lead Only, Detachable, Type "J"	12141-80	★	71.75
ADAPTER, Offset, 3/4"-#7, Complete	5032-22	♣	35.30
ADAPTER, 3/4", 2mm Bore PTFE Stopcock	5202-12	♣	82.33
ADAPTER, Offset, 3/4"-3/4"	5268-10	♣	37.62
STOPPER, Glass 3/4" (3)	8250-12	♣	20.36
SLEEVES, PTFE 3/4", Pkg/3 (2)	7642-11	★	11.01
JOINT CLIPS, Plastic 3/4", Pkg/10	7598-24	★	39.91
SUPPORT STAND, 29 inches High x 5/8-inch Dia. Rod, "U" Base	13586-10	★	281.37
CLAMP, Three-jaw, Medium	11067-14	★	40.70
CLAMP HOLDER, Regular (4)	11080-19	★	19.27
COMPLETE	6542-12	★	4068.52

2 LITER

	Order Code		Each
FLASK, 2-liter, Cylindrical, 4-inch (100mm) Grooved Flange with CAPFE o-ring	6521-12	♣	166.42
HEAD, 4-inch (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♣	289.58
CLAMP, Quick Release, 4-inch	6517-25	★	100.27
CONDENSER, 3/4", 300mm Jacket Length with "Ace-Safe" Connectors	5946-118	♣	156.70
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4" Joints	7298-05	♣	238.63
STIRRING SHAFT, 10mm, Polished with Ring, 58 cm	8075-34	♣	62.08
AGITATOR, PTFE, 4-Blade Multipaddle, 64mm dia.	8089-06	♣	114.66
BEARING, 10mm, PTFE, 3/4", Complete	8066-43	♣	114.98
CHUCK, Flex-Grip, for 10mm Rod, 5/16-inch Motor Shaft	8124-10	♣	45.19
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19		1310.03
FLEXIBLE SHAFT, 91.4cm (36-inch)	8081-30	★	192.51
HEATING MANTLE, Aluminum Housed, 450 watts, 115v	6478-51		370.24
TEMPERATURE CONTROLLER, Digital, Type "J," 120 volts	12125-14	★	820.23
SENSOR, Type "J," 1/4-inch O.D. x 12 inches long, PTFE covered	12141-25	★	122.29
SENSOR, Lead Only, Detachable, Type "J"	12141-80	★	71.75
ADAPTER, Offset, 3/4"-#7, Complete	5032-22	♣	35.30
ADAPTER, 3/4", 2mm Bore PTFE Stopcock	5202-12	♣	82.33
ADAPTER, Offset, 3/4"-3/4"	5268-10	♣	37.62
STOPPER, Glass 3/4" (3)	8250-12	♣	20.36
SLEEVES, PTFE 3/4", Pkg/3 (2)	7642-11	★	11.01
JOINT CLIPS, Plastic 3/4", Pkg/10	7598-24	★	39.91
SUPPORT STAND, 36-inch High x 5/8-inch Dia. Rod, "U" Base	13586-13	★	321.43
CLAMP, Three-jaw, Medium	11067-14	★	40.70
CLAMP HOLDER, Regular (4)	11080-19	★	19.27
COMPLETE	6542-25	★	4239.81

All-in-One Jacketed Benchtop Reactor

1 or 2 liter Cylindrical

- Large 4-in. diameter flange on flask and head with CAPFE (PTFE encapsulated silicone rubber) o-ring and Quick Release clamp facilitate assembly/disassembly and removal of contents.
- All glass and PTFE wetted components.
- PTFE joint sleeves and valves and FETFE o-rings for high-purity, grease-free system with high chemical resistance.
- Overhead mechanical stirring with 10 mm diameter glass stirring shaft, PTFE multi-paddle agitator, flexible shaft and variable speed motor with controller.



A complete, general purpose benchtop cylindrical reactor. Self-supported and portable, with a small footprint.

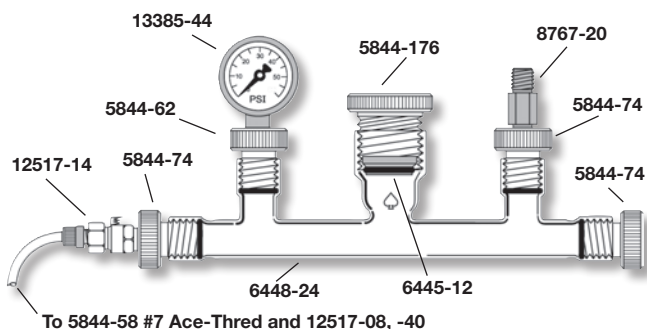
- Temperature controller and Type "J" PTFE-covered thermoprobe for operation from room temperature to 200°C
- 125 mL pressure equalizing addition funnel
- Reflux condenser
- Support stand, clamps, clamp holders and joint clips

1 LITER

	Order Code		Each
FLASK, Jacketed, 1-liter, Cylindrical, 4-inch (100mm) Grooved Flange with CAPFE o-ring, Bottom Outlet	6524-13	♠	909.59
HEAD, 4-inch (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♠	289.58
CLAMP, Quick Release, 4-inch	6517-25	★	100.27
CONDENSER, 3/4"/40, 300mm Jacket Length with Ace-Safe Connectors	5946-118	♠	156.70
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4"/40 Joints	7298-05	♠	238.63
STIRRING SHAFT, 10mm, Polished with Ring, 44cm	8075-32	♠	58.77
AGITATOR, PTFE, 4-Blade Multipaddle, 64 mm dia.	8089-06	♠	114.66
BEARING, 10mm, PTFE, 3/4"/40, Complete	8066-43	♠	114.98
CHUCK, Flex-Grip, for 10mm Rod, 5/16-in. Motor Shaft	8124-10	♠	45.19
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19		1310.03
FLEXIBLE SHAFT, 91.4cm (36-inch)	8081-30	★	192.51
TEMP. CONTROLLER, Digital, Type "J," 120 volts	12125-14	★	820.23
THERMOPROBE, Type "J," 1/4-in. O.D. x 12 in. long, PTFE covered	12141-25	★	122.29
THERMOPROBE, Lead Only, Detachable, Type "J"	12141-80	★	71.75
ADAPTER, Offset, 3/4"/40-#7, Complete	5032-22	♠	35.30
ADAPTER, 3/4"/40, 2mm Bore PTFE Stopcock	5202-12	♠	82.33
ADAPTER, Offset, 3/4"/40-3/4"/40	5268-10	♠	37.62
STOPPER, Glass 3/4"/40 (3)	8250-12	♠	20.36
SLEEVES, PTFE 3/4"/40, Pkg/3 (2)	7642-11	★	11.01
JOINT CLIPS, Plastic 3/4"/40, Pkg/10	7598-24	★	39.91
SUPPORT STAND, 29 in. High x 5/8-in. Dia. Rod, "U" Base	13586-10	★	281.37
CLAMP, Three-jaw, Medium	11067-14	★	40.70
CLAMP HOLDER, Regular (4)	11080-19	★	19.27
CLAMP, Chain Clamp	11079-24	★	52.48
PLATE SUPPORT SHELF, w/102mm center hole	11173-17	★	114.61
STAINLESS STEEL SUPPORT ROD, 28 inches high	13586-25	★	107.12
COMPLETE	6539-05	★	Call

2 LITER

	Order Code		Each
FLASK, Jacketed, 2-liter, Cylindrical, 4-in. (100mm) Grooved Flange with CAPFE o-ring, Bottom Outlet	6524-15	♠	1024.00
HEAD, 4-in. (100mm) 3/4" Center Neck, (3) 3/4" Side Necks	6528-31	♠	289.58
CLAMP, Quick Release, 4-inch	6517-25	★	100.27
CONDENSER, 3/4"/40, 300mm Jacket Length with Ace-Safe Connectors	5946-118	♠	156.70
FUNNEL, Addition, 125mL, Pressure Equalizing, 3/4"/40 Joints	7298-05	♠	238.63
STIRRING SHAFT, 10mm, Polished with Ring, 58 cm	8075-34	♠	62.08
AGITATOR, PTFE, 4-Blade Multipaddle, 64mm dia.	8089-06	♠	114.66
BEARING, 10mm, PTFE, 3/4"/40, Complete	8066-43	♠	114.98
CHUCK, Flex-Grip, for 10mm Rod, 5/16-in. Motor Shaft	8124-10	♠	45.19
STIRRING MOTOR & CONTROLLER, Reversible, Variable Speed, Complete	13649-19		1310.03
FLEXIBLE SHAFT, 91.4cm (36")	8081-30	★	192.51
TEMP. CONTROLLER, Digital, Type "J," 120 volts	12125-14	★	820.23
THERMOPROBE, Type "J," 1/4-in. O.D. x 12" long, PTFE covered	12141-25	★	122.29
THERMOPROBE, Lead Only, Detachable, Type "J"	12141-80	★	71.75
ADAPTER, Offset, 3/4"/40-#7, Complete	5032-22	♠	35.30
ADAPTER, 3/4"/40, 2mm Bore PTFE Stopcock	5202-12	♠	82.33
ADAPTER, Offset, 3/4"/40-3/4"/40	5268-10	♠	37.62
STOPPER, Glass 3/4"/40 (3)	8250-12	♠	20.36
SLEEVES, PTFE 3/4"/40, Pkg/3 (2)	7642-11	★	11.01
JOINT CLIPS, Plastic 3/4"/40, Pkg/10	7598-24	★	39.91
SUPPORT STAND, 36 in. High x 5/8-in. Dia. Rod, "U" Base	13586-13	★	321.43
CLAMP, Three-jaw, Medium	11067-14	★	40.70
CLAMP HOLDER, Regular (4)	11080-19	★	19.27
CLAMP, Chain Clamp	11079-24	★	52.48
PLATE SUPPORT SHELF, w/102mm center hole	11173-17	★	114.61
STAINLESS STEEL SUPPORT ROD, 28 inches high	13586-25	★	107.12
COMPLETE	6539-10	★	Call



6448 MANIFOLD *Pressure, Epoxy Coated*

Complete glass manifold, fitted with a pressure gauge, primary adjustable pressure relief valve, and secondary rupture disc to allow for safer operation of pressure and filter reactors.

13385 Pressure Gauge is a 0-60 psi stainless steel internal, with 1-1/2-inch face and 1/8-inch npt male connection for use with 5844-74 adapter in #15 Ace-Thred.

8767 Pressure Relief Valve is adjustable from 3-50 psig by adjusting set screws to desired cracking pressure. Ends are 1/4-inch npt for connecting to #15 Ace-Thred on manifold with 5844-74 adapter.

6445 Rupture Disc is a secondary safety device that, in the event of an overpressure (one that cannot be handled by the 8767 relief valve) will rupture at a predetermined burst rating; 55 psig (±3 psig) for -12 version, 65 psig (±3 psig) for -41 version. Disc is manufactured from high-purity carbon with a PTFE coating on the underside. No springs or moving parts, disc is secured directly in #25 Ace-Thred of manifold with 5844-176 adapter.

Manifold is connected to #7 Ace-Thred on 6433 head using 5844-58 adapter (must be ordered separately) and 12517 tubing connectors with 1/4-inch tubing.

Qty.	<i>For Two-Piece Pressure Reactors (55 psig) and Filter Reactors</i>			<i>For One-Piece Pressure Reactors (65 psig)</i>		
	Order Code	Each		Order Code	Each	
1	♠ 5844-62	69.71		♠ 5844-62	69.71	
3	♠ 5844-74	69.71		♠ 5844-74	69.71	
1	♠ 5844-176	91.51		♠ 5844-176	91.51	
1	♠ 6445-12	137.26				
1				♠ 6445-41	137.26	
1	★ 6448-24	202.74		★ 6448-24	202.74	
1	♠ 8767-20	88.58		♠ 8767-20	88.58	
1	♠ 12517-08	11.75		♠ 12517-08	11.75	
1	♠ 12517-14	12.42		♠ 12517-14	12.42	
2	♠ 12517-40	12.62		♠ 12517-40	12.62	
1	♠ 12681-110	13.60		♠ 12681-110	13.60	
1	♠ 13385-44	177.09		♠ 13385-44	177.09	
1	★ 6448-54*	1018.78		★ 6448-68**	1018.78	
Complete						
Replacement o-rings						
12	♠ 7855-716	20.37		♠ 7855-716	20.37	
6	♠ 7855-734	20.74		♠ 7855-734	20.74	
Additional Items						
1	♠ 5844-58	41.18		♠ 5844-58	41.18	

*6448-54 is for use with two-piece pressure and filter style reactors.

**6448-68 is for use with one-piece pressure reactors only.

ACE heavy-wall borosilicate glass Pressure Reactors have been designed and tested to provide the chemist with a system to perform low to moderate positive pressure reactions, synthesis, and catalysis, or simply to run reactions under inert gas conditions. Reactor capacities range from 500mL to 5000mL, and use Ace-Threds to achieve a leak-tight system.

Two types of Pressure Reactors are available:

- 1— **Two-Piece System, with a maximum pressure limit of 35 psig @ 100°C.**
- 2— **One-Piece System, with a maximum pressure limit of 45 psig @ 100°C**

The **Two-Piece System** consists of a flanged flask and head with a shallow o-ring groove, o-ring and quick release clamp. Flange sizes range from 60mm to 150mm inside diameter, allowing the use of large agitators and facilitating product removal and clean-out.

The **One-Piece System** provides a 25mm center opening, with smaller openings as side necks, and has a higher allowable operating pressure.

Both systems offer vessels with or without bottom outlet valves and with or without heating/cooling jackets. These jackets are heat sealed.

Complete systems are available with:

- **Mechanical Stirring**, using stirring shaft with agitator, and a unique bearing designed with internal o-ring seals.

Due to varying conditions, ACE cannot guarantee glassware against breakage caused by pressure or vacuum.

Safety is the foremost concern when operating pressurized glass reactors. With this in mind, ACE offers a separate manifold, 6448, which MUST be used in conjunction with all pressure systems. It consists of



a glass manifold with Ace-Threds, PTFE adapters, a pressure gauge, a primary adjustable pressure release valve, and a secondary fixed pressure rupture disc. In addition, approved safety shields, eye and body protection should be used to avoid personal injury.

For complete reactor systems, contact ACE to get a copy of our reactor catalog.

IMPORTANT— General Warnings for Pressurized Glassware

Due to varying conditions, ACE cannot guarantee glass vessels from breakage under pressure.

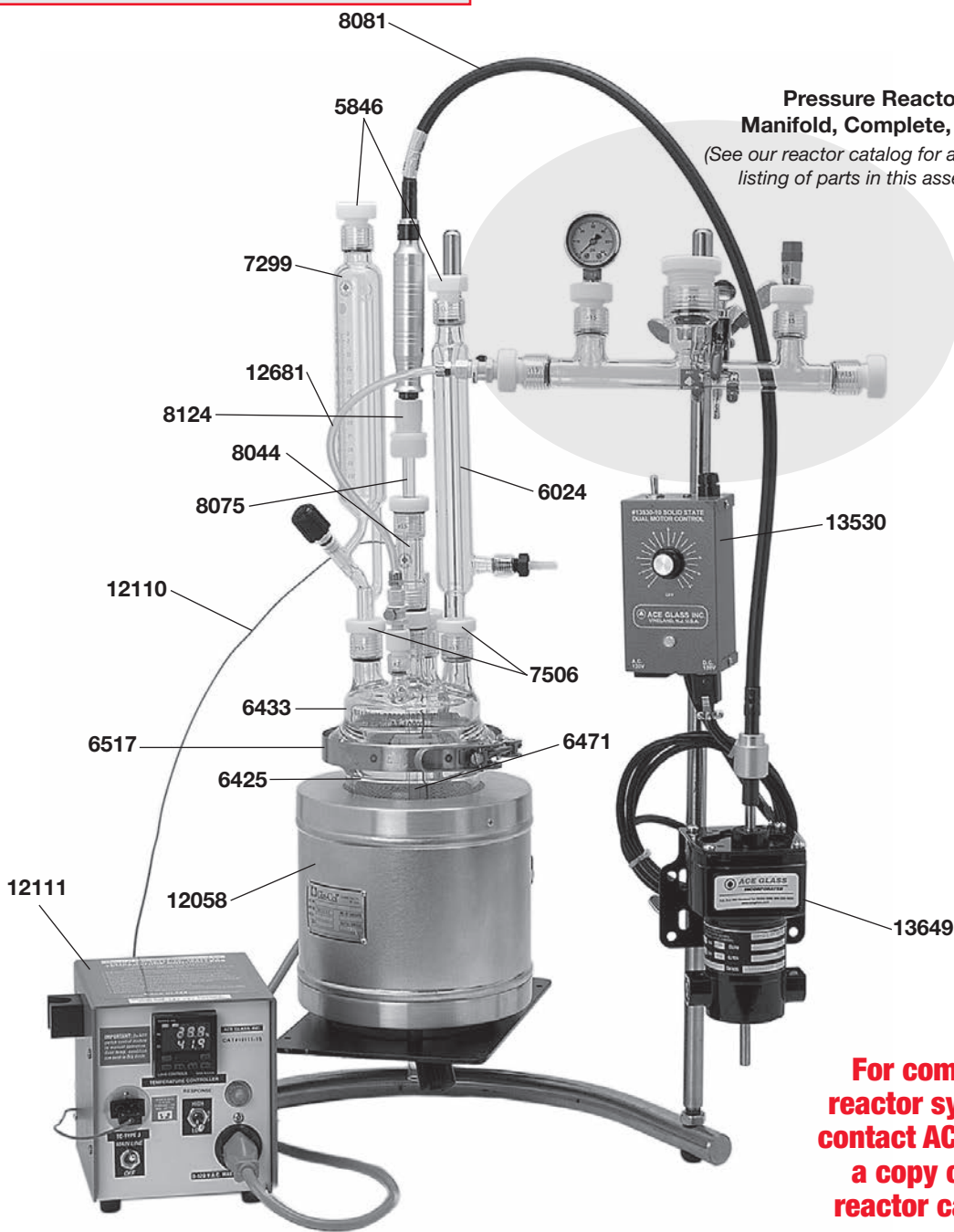
ALL LABORATORY SAFETY PROCEDURES SHOULD BE OBSERVED. ALWAYS WORK BEHIND A SHIELD.

- Do not use with materials which solidify on standing and create excessive stress on glass.
- Before applying pressure, examine glassware carefully for surface scratches which may weaken its strength.
- Questions regarding the safe operating conditions of a particular glass vessel under pressure may be directed to ACE GLASS INCORPORATED.
- Safety coatings: epoxy and plastic coating help prevent scratching and shattering and reduce spills; however, they do not prevent breakage

PRESSURE REACTORS

6425 SERIES TWO

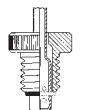
Complete ACE
**Two-Piece Unjacketed
Pressure Reactors**
Bottom Outlet



**Pressure Reactor
Manifold, Complete, 6448**
*(See our reactor catalog for a complete
listing of parts in this assembly)*

**For complete
reactor systems,
contact ACE to get
a copy of our
reactor catalog.**

Does NOT include stand, base or clamps



8648-19



8082-04



8116



14120

6425 SERIES TWO

Complete Unjacketed Two-Piece Pressure Reactor

Two-piece systems with a maximum pressure limit of 35 psig @ 100°C. Flask has bottom outlet.

6425-201 Complete System

(contains all items listed below)

	Order Code	Each
500mL, 60mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 500mL, 60mm flange top with bottom outlet	6425-04	▲ 309.43
Head, 60mm, #15 center neck, three side necks	6433-23	▲ 304.05
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-04	▲ 37.83
Clamp, 60mm, quick release	6517-22	★ 88.80
Addition Funnel, 60mL	7299-06	▲ 314.14
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-02	▲ 8.64
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-44	709.71
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6425-206 Complete System

(contains all items listed below)

	Order Code	Each
500mL, 100mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 500mL, 100mm flange top with bottom outlet	6425-06	▲ 364.62
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-10	▲ 37.83
Clamp, 100mm, quick release	6517-25	★ 100.27
Addition Funnel, 60mL	7299-06	▲ 314.14
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-47	623.80
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6425-211 Complete System

(contains all items listed below)

	Order Code	Each
1000mL, 100mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 1000mL, 100mm flange top with bottom outlet	6425-12	▲ 387.11
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-14	▲ 38.73
Clamp, 100mm, quick release	6517-25	★ 100.27
Addition Funnel, 125mL	7299-12	▲ 322.38
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-49	632.61
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6425-214 Complete System

(contains all items listed below)

	Order Code	Each
2000mL, 100mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 2000mL, 100mm flange top with bottom outlet	6425-15	▲ 670.69
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-14	▲ 38.73
Clamp, 100mm, quick release	6517-25	★ 100.27
Addition Funnel, 250mL	7299-25	▲ 346.04
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-51	589.39
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6425-221 Complete System

(contains all items listed below)

	Order Code	Each
3000mL, 150mm Flange		
#15 PTFE Plug ("Complete" contains THREE)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 3000mL, 150mm flange top with bottom outlet	6425-19	▲ 916.09
Head, 150mm, #15 center neck, five side necks	6433-44	▲ 559.82
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-22	▲ 39.17
Clamp, 150mm, quick release	6517-27	★ 120.09
Addition Funnel, 250mL	7299-25	▲ 346.04
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 24mm wide	8082-06	▲ 12.97
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-53	787.67
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

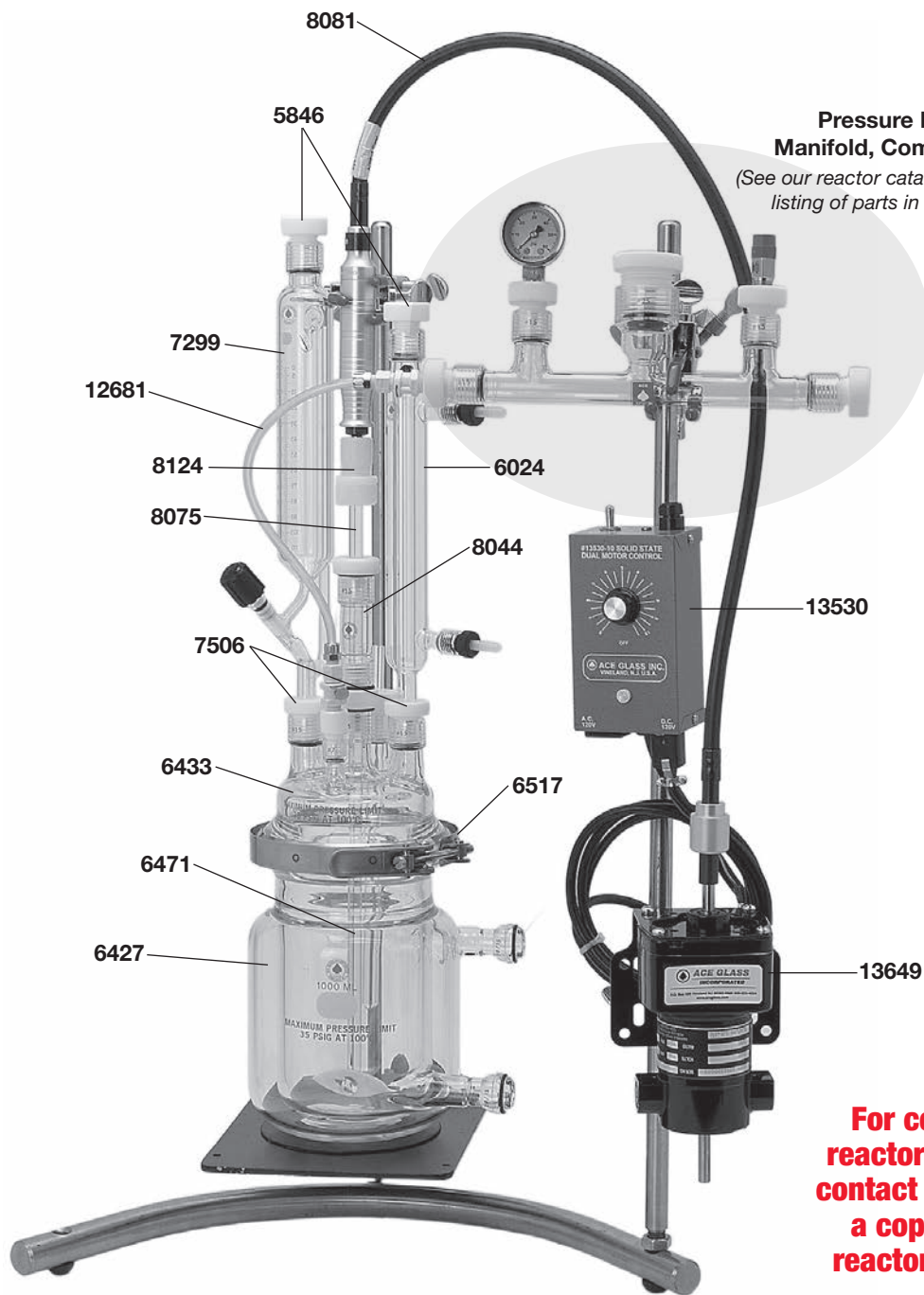
6425-226 Complete System

(contains all items listed below)

	Order Code	Each
5000mL, 150mm Flange		
#15 PTFE Plug ("Complete" contains THREE)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 5000mL, 150mm flange top with bottom outlet	6425-23	▲ 1019.16
Head, 150mm, #15 center neck, five side necks	6433-44	▲ 559.82
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-24	▲ 39.63
Clamp, 150mm, quick release	6517-27	★ 120.09
Addition Funnel, 500mL	7299-34	▲ 378.66
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-14	▲ 59.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 24mm wide	8082-06	▲ 12.97
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Aluminum Heating Mantle	12058-55	927.76
Type "J" Thermocouple Sensor, PTFE-clad	12110-25	★ 52.36
Digital Temperature Controller, "J" output	12111-15	★ 1465.51
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427
SERIES ONE

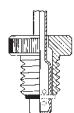
Complete ACE
**Two-Piece Jacketed
Pressure Reactors**



**Pressure Reactor
Manifold, Complete, 6448**
(See our reactor catalog for a complete
listing of parts in this assembly)

**For complete
reactor systems,
contact ACE to get
a copy of our
reactor catalog.**

*Does NOT include stand, base or clamps.
Shown without clamps for better visibility.*



8648-19



8082-04



8116



14120

6427

SERIES ONE

Complete Jacketed Two-Piece Pressure Reactor

Two-piece systems with a maximum pressure limit of 35 psig @ 100°C.

6427-207 Complete System

(contains all items listed below)

	Order Code	Each
500mL, 60mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 500mL, 60mm flange top	6427-09	▲ 820.96
Head, 60mm, #15 center neck, three side necks	6433-23	▲ 304.05
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-04	▲ 37.83
Clamp, 60mm, "Quick Release"	6517-22	★ 88.80
Addition Funnel, 60mL	7299-06	▲ 314.14
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-02	▲ 8.64
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427-209 Complete System

(contains all items listed below)

	Order Code	Each
500mL, 100mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 500mL, 100mm flange top	6427-13	▲ 805.82
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-10	▲ 37.83
Clamp, 100mm, "Quick Release"	6517-25	★ 100.27
Addition Funnel, 60mL	7299-06	▲ 314.14
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427-212 Complete System

(contains all items listed below)

	Order Code	Each
1000mL, 100mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 1000mL, 100mm flange top	6427-16	▲ 824.45
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-14	▲ 38.73
Clamp, 100mm, "Quick Release"	6517-25	★ 100.27
Addition Funnel, 125mL	7299-12	▲ 322.38
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427-217 Complete System

(contains all items listed below)

	Order Code	Each
2000mL, 100 Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 2000mL, 100mm flange top	6427-18	▲ 1286.75
Head, 100mm, #15 center neck, four side necks	6433-35	▲ 408.28
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-14	▲ 38.73
Clamp, 100mm, "Quick Release"	6517-25	★ 100.27
Addition Funnel, 150mL	7299-25	▲ 346.04
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 19mm wide	8082-04	▲ 10.32
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427-223 Complete System

(contains all items listed below)

	Order Code	Each
3000mL, 150mm Flange		
#15 PTFE Plug ("Complete" contains THREE)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 3000mL, 150mm flange top	6427-23	▲ 3535.05
Head, 150mm, #15 center neck, five side necks	6433-44	▲ 559.82
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-22	▲ 39.17
Clamp, 150mm, "Quick Release"	6517-27	★ 120.09
Addition Funnel, 150mL	7299-25	▲ 346.04
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-12	▲ 57.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 24mm wide	8082-06	▲ 12.97
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

6427-228 Complete System

(contains all items listed below)

	Order Code	Each
5000mL, 150mm Flange		
#15 PTFE Plug ("Complete" contains TWO)	5846-48	▲ 39.52
West Condenser w/Ace-Threds	6024-20	▲ 133.51
Flask, 5000mL, 150mm flange top	6427-26	▲ 3642.37
Head, 150mm, #15 center neck, five side necks	6433-44	▲ 559.82
Pressure Reactor Manifold, complete	6448-54	★ 1018.78
Thermowell	6471-24	▲ 39.63
Clamp, 150mm, "Quick Release"	6517-27	★ 120.09
Addition Funnel, 500mL	7299-34	▲ 378.66
#15 PTFE Bushing ("Complete" contains TWO)	7506-27	▲ 40.65
Bearing, complete, with Ace-Threds	8044-24	▲ 239.85
Stir Shaft, 10mm	8075-14	▲ 59.26
Flexible Shaft, complete, 91.4cm	8081-30	★ 192.51
Stirrer Blade, PTFE, 24mm wide	8082-06	▲ 12.97
Krytox® High Vacuum Grease	8116-10	★ 108.14
Flex-Grip Chuck	8124-10	▲ 45.19
Bushing, PTFE, #15 with o-ring	8648-19	★ 32.28
Polypropylene Tubing, 1/4-inch OD x 0.170-inch ID	12681-110	★ 46.57
Stirrer Motor Controller, Solid State	13530-10	★ 538.34
Stirrer Motor with Mounting Rod, Solid State	13649-09	771.69
PTFE Sealing Tape, 1/2-inch Width	14120-18	★ 12.26

ACE Pilot Plant Reactors

ACE cylindrical and spherical pilot plant reactors have been field tested and improved to provide a portable, self-contained reaction system for research and production purposes.

Standard Design Specifications:

- Complete listing of domed as well as flat head Reactor Assemblies.
- Cylindrical, jacketed, and spherical type flasks.
- Various bottom outlet valve versions available.
- Stainless Steel Support Frame with reactor support platform/ring, and stirring motor mount.
- Three-point adjustable top bracing system that provides greater stability of flask and head on four-post stands.
- Large, locking wheels on support frame for easier movement and greater stability.
- Unique design for securing bottom and upper agitators on shaft.
- Digital Temperature Control System for added safety.
- Various stirring motor combinations and types
- Clear Safety Shields for Support Frame available, call or email for details.

LIMITATIONS AND PRECAUTIONS

The strength of glass is primarily determined by its surface condition, thickness, and uniformity. Mechanical stress applied to glass contributes to strain, which results in breakage when the total strain exceeds its allowable limit (i.e., tensile strength). Thus, careful handling and use of glassware are important to avoid scratching and mechanical shock to outside and inside surfaces.

Thermal stress may produce the same result — catastrophic breakage. It is important to avoid rapid or uneven temperature changes across any glass wall. This refers to temperature increases from externally applied heat (mantles) or internally generated heat (exothermic reactions), as well as temperature decreases such as rapidly introducing large quantities of cold liquids to hot reactants, etc. Remember: Mechanical and Thermal Stresses are additive.

MAXIMUM ALLOWABLE TEMPERATURES

The standard reactors have a maximum operating temperature of 160°C. The maximum allowable temperature difference (ΔT) across the glass wall for units with domed head is 80°C; 30°C for flat head.

Also, these values limit the rate at which a reactor may heat up or cool down. ACE recommends continuous monitoring of internal and external temperatures to avoid exceeding allowable temperature differences. Caution must be used when heating a reactor vessel with mantles since they produce local temperatures in excess of 350°C. When using variable voltage controllers, we suggest 3/4 voltage (i.e., half power) during warm-up and gradually increasing voltage until desired internal temperature is reached, never exceeding the maximum ΔT .

MAXIMUM PRESSURE

Maximum pressure for reactors is 5 psi with standard taper joints (domed head) using clips. Flat head NOT recommended for use with pressure.

MAXIMUM VACUUM

Maximum permissible operating vacuum for spherical and cylindrical vessels with 50°C max. ΔT :

10 liter = "Full" Vacuum (i.e., 5 mm Hg)

30 & 50 liter Cylindrical }
 50, 72 & 100 liter Spherical } 50mm Hg

100 & 200 liter Cylindrical }
 200 liter Spherical } 200mm Hg

Flat head NOT recommended for use under vacuum.

Contact Ace to get a copy of our complete Reactor catalog!

Visit www.aceglass.com for a custom design and quotation

A Guide to Ordering Custom Pilot Plants

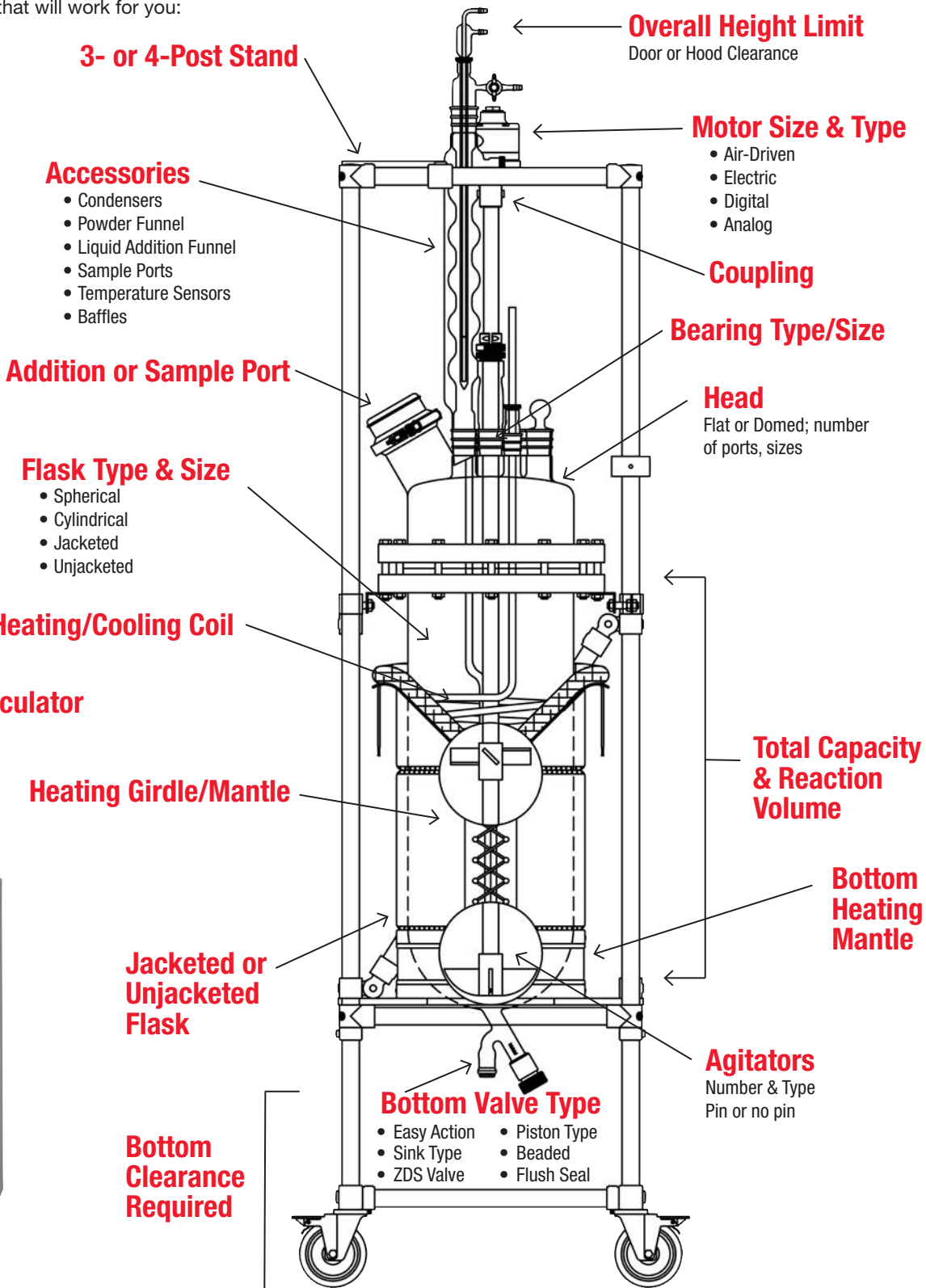
It's easy to customize one of our standard listings with a Pilot Plant Reactor design that will meet your specific application needs. Here are some key points to consider when specifying a Pilot Plant that will work for you:



Temperature Controller Needed?

Heating/Cooling Circulator needed?

If so, what capacity?
 What temperature range?





6469

**Flask with Sink Valve
or Zero Dead Space Valve
available upon request.**

- ▶ **Complete 12 & 22 liter**
- ▶ **Elevated mantle support**
- ▶ **Bottom outlet**

6469 REACTION ASSEMBLY Complete, 12 and 22 Liter

Complete self-supporting pilot plant assembly. Needs only to be located near electrical outlet. When not in use, entire assembly can be moved, intact, without breakdown.

Features

- Flask with 4 inch (10.2 cm) center opening, two 3/4 45/50 side necks, one #7 Ace-Thred thermometer opening and one 3/8 28/15 ball joint take-off at bottom.
- Electric stirring motor, Cat. No. 13649-07, is self-standing on flask-mounted motor mount. (Air motor also available.)
- Flat-sided powder funnel offers easier additions.
- With PID Digital readout temperature controller and PFA coated sensor for better temperature control.
- Rugged steel-reinforced PTFE stirring rod needs no lubrication. Turns in a precision Trubore® economy bearing. The PTFE paddle agitator is removable for cleaning.
- Mantle supports raise the mantle about 91.4 cm (36 inches) to allow easy access to bottom of flask.
- Approximate overall height: 12 L and 22L, 71 inches; Base width: 28 inches

	12 Liter		22 Liter	
	Order Code	Each	Order Code	Each
FLASK, Center Neck 10.2cm Flange, Two 3/4 45/50 Side Necks, One #7 Ace-Thred and One 3/8 28/15 Ball Outlet At Bottom	6469-16	▲ 785.42	6469-18	▲ 1092.82
HEAD, 3/4 45/50	6469-26	▲ 205.43	6469-26	▲ 205.43
GASKET, PTFE	6495-10	▲ 11.61	6495-10	▲ 11.61
CHUCK, "Flex-Grip"	8124-10	▲ 45.19	8124-15	▲ 156.67
ROD, PTFE with Stainless Steel Core	8071-07	▲ 272.29	8079-03	★ 491.42
AGITATOR, PTFE Paddle	8089-08	▲ 116.00	8091-10	▲ 232.90
MOTOR, only	13649-07	414.70	13649-07	414.70
MOTOR MOUNT	6469-30	★ 501.12	6469-32	★ 501.12
MOTOR CONTROLLER, only	13530-10	★ 445.25	13530-10	★ 445.25
BEARING, Economy, 3/4 45/50	8042-121	▲ 108.81	8065-64	▲ 174.51
CLAMP, Head, Aluminum	6468-13	★ 518.40	6468-13	★ 518.40
ADAPTER, Stopcock, 3/8 28/15, PTFE, 6mm Bore	6469-40	▲ 178.05	6469-40	▲ 178.05
TEMPERATURE CONTROLLER	12126-24	★ 900.09	12126-24	★ 900.09
SENSOR, PFA Coated, 12 inch x 1/4 inch	12141-25	★ 122.29	12141-25	★ 122.29
SENSOR LEAD, only, Type "J"	12141-80	★ 71.75	12141-80	★ 71.75
FUNNEL, Powder, 3/4 45/50	6469-52	▲ 235.45	6469-52	▲ 235.45
STOPPER, 3/4 45/50	8250-20	▲ 45.98	8250-20	▲ 45.98
CLAMP, 3/8 28/15	7666-15	▲ 41.22	7666-15	▲ 41.22
CLAMP Holder, Regular	11080-19	★ 19.27	11080-19	★ 19.27
MANTLE, Heating, with Hole	12044-28	1145.21	12044-30	1266.51
MANTLE, Support	12097-45	485.68	12097-47	511.68
COMPLETE	6469-62	★ 6575.26	6469-67	★ 7493.79

ACE Reaction Assemblies are available as listed. If you require a design change or just a modification, we'll fabricate to order.

Email, phone or fax for a quotation.

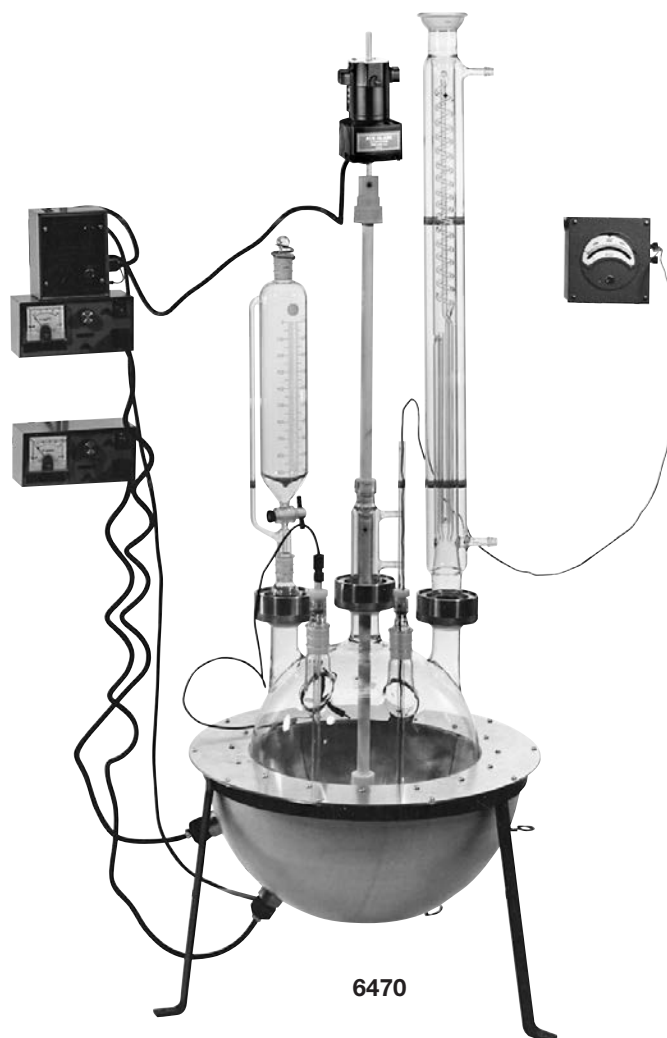
- ▶ **Full range of pilot size flasks**
- ▶ **Rugged, steel-reinforced PTFE stirring rod**
- ▶ **Heavy duty mechanical lab stirrer**

6470 REACTION ASSEMBLY 12 thru 72 Liter

Complete reaction assembly using standard ACE reaction equipment. The 12 thru 72 liter flasks have three $\$65/40$ in-line spherical joints and two $\$29/42$ standard taper joints.

Features

- Full range of pilot-size flasks from 12 liter to 72 liter with spherical and standard taper joints.
- Rugged 19mm diameter, steel-reinforced PTFE stirring rod needs no lubrication. Runs in a precision Trubore® bearing augmented with a PTFE sealed stuffing box. The PTFE paddle is removable and other interchangeable agitators, available from ACE, may be substituted.
- The 12 liter assembly has a 10mm diameter, steel-reinforced PTFE rod as well as a 10mm bearing, chuck, and paddle.
- Highly efficient 6016 condenser attached directly to $\$65/40$ side joint.
- Thermowell is completely adjustable via an Ace-Thred adapter.
- Unit as supplied has a heavy-duty mechanical lab stirrer; for situations that call for non-electric motors, ACE can supply a compact air-driven motor and support. Write for quotation.
- Approximate overall height: 12L and 22L– 59 inches; 50L and 72L – 63 inches.



	12 Liter		22 Liter		50 Liter		72 Liter	
	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
FLASK, Center and Two Side $\$65/40$, Two $\$29/42$	6470-20	▲ 917.92	6470-24	▲ 1064.77	6470-26	★ 1721.86	6470-28	★ 2225.39
CONDENSER, Pilot Plant	6016-75	★ 972.51	6016-77	★ 1048.01	6016-79	★ 1328.76	6016-79	★ 1328.76
BEARING, $\$65/40$, Water-Cooled	8040-55	▲ 224.31	8060-10	▲ 308.36	8060-10	▲ 308.36	8060-10	▲ 308.36
ROD, PTFE with S-S Core	8071-10	▲ 275.71	8079-05	★ 498.75	8079-10	★ 543.51	8079-10	★ 543.51
AGITATOR, PTFE, Single Blade	8088-10	▲ 228.84	8092-10	▲ 263.79	8092-10	▲ 263.79	8092-10	▲ 263.79
CHUCK, "Flex-Grip"	8124-10	▲ 45.19	8124-15	▲ 156.67	8124-15	▲ 156.67	8124-15	▲ 156.67
FUNNEL, Pressure Equalizing, $\$24/40$, 1000 mL	7297-37	▲ 342.30	7297-37	▲ 342.30	7297-37	▲ 342.30	7297-37	▲ 342.30
STOPPER, $\$24/40$	8250-12	▲ 20.36	8250-12	▲ 20.36	8250-12	▲ 20.36	8250-12	▲ 20.36
ADAPTER, $\$24/40$ - $\$65/40$	5025-24	▲ 121.72	5025-24	▲ 121.72	5025-24	▲ 121.72	5025-24	▲ 121.72
ADAPTER, Maxi $\$29/42$	5030-42	▲ 46.70	5030-42	▲ 46.70	5030-42	▲ 46.70	5030-42	▲ 46.70
ADAPTER, Midi $\$29/42$	5030-24	▲ 45.95	5030-24	▲ 45.95	5030-24	▲ 45.95	5030-24	▲ 45.95
THERMOWELL, 10 mm O.D.	6470-42	▲ 17.48	6470-44	▲ 17.48	6470-46	▲ 19.07	6470-46	▲ 19.07
STIRRER MOTOR & CONTROLLER	13649-19	1310.03	13647-35	1313.42	13647-35	1313.42	13647-35	1313.42
CLAMPS, $\$65/40$ Union Type (3)	7666-30	▲ 175.95	7666-30	▲ 175.95	7666-30	▲ 175.95	7666-30	▲ 175.95
HEATING MANTLE, Aluminum Housing	12043-27	905.84	12043-29	1023.36	12043-31	1689.34	12043-33	1855.36
MANTLE SUPPORT	12097-08	144.56	12097-10	193.44	12097-12	210.85	12097-14	244.42
VOLTAGE CONTROLLER (2)	12087-10	★ 643.05	12087-10	★ 643.05	—	—	12082-10	★ 643.05
VOLTAGE CONTROLLER (3)	—	—	—	—	12087-10	★ 643.05	—	—
COMPLETE	6470-60	★ 7038.18	6470-64	★ 7868.60	6470-68	★ 10335.32	6470-72	★ 11439.09

Julabo

Presto Series

Air Cooled Closed System Circulators

Contact ACE for complete information on Julabo recirculators and accessories.



	Presto A30	Presto A40	Presto A80
Ace Order Code	Call	12262-52	12262-38
Operating Temp Range	-30° to 250°	-40° to 250°	-80° to 250°
Temperature Stability	+/- .01 to .05	+/- .01 to .05	+/- .01 to .05
Heating Capacity	2.3kW	2.3kW	1.5kW
Cooling Capacity @ 100°C	.50kW	1.2kW	1.2kW
Cooling Capacity @ 20°C	.50kW	1.2kW	1.2kW
Cooling Capacity @ 0°C	.40kW	.90kW	1.2kW
Cooling Capacity @ -20°C	.20kW	.60kW	1.1kW
Cooling Capacity @ -40°C	—	.10kW	1.1kW
Cooling Capacity @ -60°C	—	—	.65kW
Cooling Capacity @ -80°C	—	—	.10kW
Flow Rate @ 10 PSI	25 LPM (7.25 PSI)	20 LPM	27 LPM
Pump Connection	M24 x 1.5 Male	M24 x 1.5 Male	M24 x 1.5 Male
Condenser Cooling	Air Cooled	Air Cooled	Air Cooled
Dimension (LxWxH)	9.53" x 22.95" x 24.09"	12.72" x 22.95" x 26.06"	16.93" x 25.59" x 49.53"
Weight	137 lbs	174 lbs	362 lbs
Power Requirement	208V, 1PH, 60Hz, 13.5A	208V, 1PH, 60Hz, 15A	208V, 1PH, 60Hz, 20A
Each	Call	21884.00	33953.00

Julabo

Presto Series

Water Cooled Closed System Circulators

Contact ACE for complete information on Julabo recirculators and accessories.



	Presto W40	Presto LH50 PLUS	Presto W80
Ace Order Code	12262-50	12262-40	Call
Operating Temp Range	-40° to 250°	-50° to 250°	-80° to 250°
Temperature Stability	+/- .01 to .05	+/- .01 to .05	+/- .01 to .05
Heating Capacity	2.30kW	6.00kW	1.5kW
Cooling Capacity @ 100°C	1.20kW	5.50kW	1.20kW
Cooling Capacity @ 20°C	1.20kW	7.00kW	1.20kW
Cooling Capacity @ 0°C	1.0kW	4.6kW	1.2kW
Cooling Capacity @ -20°C	.60kW	2.60kW	1.10kW
Cooling Capacity @ -40°C	.10kW	.50kW	1.10kW
Cooling Capacity @ -60°C	—	—	.65kW
Cooling Capacity @ -80°C	—	—	.10kW
Flow Rate @ 10 PSI	20 LPM	20 LPM	27 LPM
Pump Connection	M24 x 1.5 Male	M16 x 1 Male	M24 x 1.5 Male
Condenser Cooling	Water Cooled	Water Cooled	Water Cooled
Cooling Water Connection	G 3/4	G 3/4	G 3/4
Dimension (LxWxH)	12.72" x 22.95" x 26.06"	15.7" x 21.7" x 50"	16.93" x 25.59" x 49.53"
Weight	172 lbs	401 lbs	351 lbs
Power Requirement	208V, 1PH, 60Hz, 15A	230V,3PH,60Hz, 27A	208V, 1PH, 60Hz, 20A
Each	22729.00	37125.00	Call



12450-07 POLYSCIENCE BENCHTOP MINI-CHILLER

High Performance at a Reasonable Price ★

Benchtop mini-chiller by PolyScience. Compact size for bench applications such as photochemistry, Chromatography or jacketed bench reactors. Features include:

- 130 watts of cooling @ 5°C
- Top-mounted fill port with spill protection cup
- Lighted fluid level indicator on front panel
- Easy access front panel and air filter
- Low flow rate and energy consumption
- High and low liquid level alarms
- Low flow alarm
- Temperature range -5 to 50° C at 0.1° stability
- Maximum pump flow 7.9LPM
- Pump type: centrifugal
- Reservoir capacity 2.65L
- 120V, 60Hz, 130W, 12 amp
- Also available in 240V, 50hz, CE-approved version

Order Code	Each
12450-07	2559.55

Highly recommended for use in the operation of Ace 7861 and 7840 Photochemistry reactors.

12450



H E I D O L P H

“Hei-Vap” Series Rotary Evaporators

- Four glassware sets to choose from
- Coated or non-coated glassware
- Flask ejector presses off sticking evaporation flasks
- 20-210°C bath for water or oil, with $\pm 1.0^\circ\text{C}$ accuracy
- Large bath area allows for large flask sizes and additional glass such as bump traps
- 20-270 RPM rotation speed range
- Three-year warranty
- Choice of manual or electric motor lift
- Optional protection shield available
- Safety bath temperature back-up system
- Optional chiller system available
- Flask angle can be changed quickly to accommodate larger flasks.
- 115V — 60 Hz standard.
- Required accessories — valve control vacuum pump or reliable house vacuum source; VAC Sensor; and vacuum valve (see accessories list)
- Easy angle adjust
- Three different series of rotary evaporators available

Single bath features non-slip handles for safe and easy handling.



PolyScience Model MM7, Lauda Model WK500, or Heidolph RotaCool recommended for use with Rotary Evaporators.

HEIDOLPH

“Advantage” Series Rotary Evaporators

Capacity of supplied evaporating and collecting flasks is 1000mL; joints are $\text{€}24/40$ and $\text{€}35/20$ respectively.

Hei-VAP Advantage rotary evaporators feature a built-in vacuum controller, digital display and water/oil heating bath. They are ideal for the most demanding applications that require precise operating parameters and the finest integrated vacuum control capabilities.

Meet the most advanced evaporator in its class. Choose either the Hei-VAP Advantage HL (hand lift) or the Hei-VAP Advantage ML (motor lift), and your work couldn't get any easier: set the required bath temperature, vapor temperature and vacuum with the user-friendly digital control panel; start the rotation, vacuum control and process timer all at once with just one press of a button; you can even set and program nine of your most common applications. The unique process timer allows for unattended operation. **There's no other evaporator this easy and hassle-free!**

13289 HEI-VAP ADVANTAGE HL Digital Controls, Hand Lift

Heidolph Hei-VAP Advantage HL Digital Rotary Evaporator with heating bath, condenser hand-lift.

Supplied Glassware Set	Safety Coated?	Order Code	Each
G1	No	13289-01	5912.00
G3	No	13289-03	6479.00
G5	No	13289-05	6917.00
G6	No	13289-06	7512.00
G1	Yes	13289-11	6240.00
G3	Yes	13289-13	6691.00
G5	Yes	13289-15	7198.00
G6	Yes	13289-16	7669.00

13289 HEI-VAP ADVANTAGE ML Controls, Motor Lift

Heidolph Hei-VAP Advantage ML Digital Rotary Evaporator with heating bath, condenser motor-lift.

Supplied Glassware Set	Safety Coated?	Order Code	Each
G1	No	13289-21	6309.00
G3	No	13289-23	6760.00
G5	No	13289-25	7142.00
G6	No	13289-26	7812.00
G1	Yes	13289-31	6527.00
G3	Yes	13289-33	6910.00
G5	Yes	13289-35	7400.00
G6	Yes	13289-36	7894.00

For illustrations of the glassware sets provided with these units, see page 497.

User-friendly digital control panel makes your job easier



Contact ACE for a complete listing of accessories and glassware.

H E I D O L P H

“Value” Series Rotary Evaporators

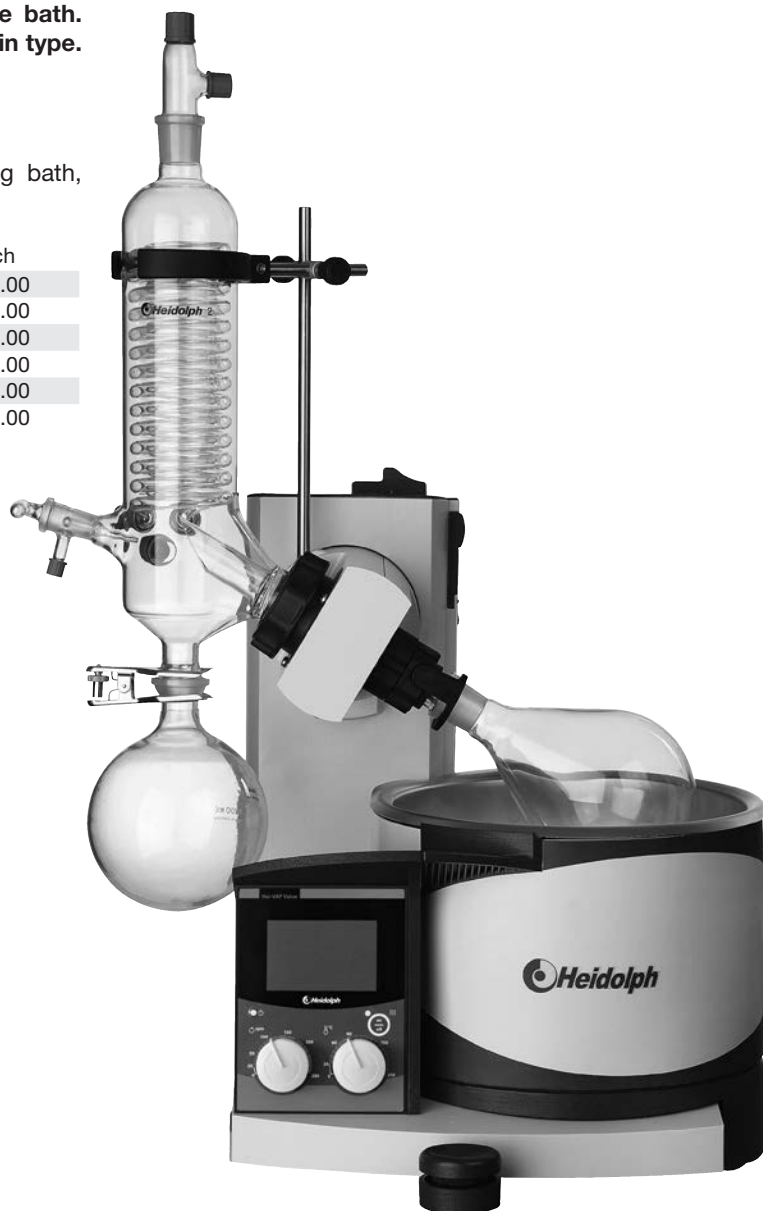
Capacity of supplied evaporating and collecting flasks is 1000mL; joints are $\text{K}24/40$ and $\text{J}35/20$ respectively.

The affordable Hei-VAP Value Series rotary evaporators feature a hand lift for all standard applications. The units have large dial controls for adjustment of speed and bath temperature, and an easily adjustable angle. The hand lift provides easy height adjustment of the bath. Four glassware sets are available in either poly-coated or plain type. Temperature range up to 210°C. Three-year warranty.

13284 HEI-VAP VALUE Large Dial Controls, Hand Lift

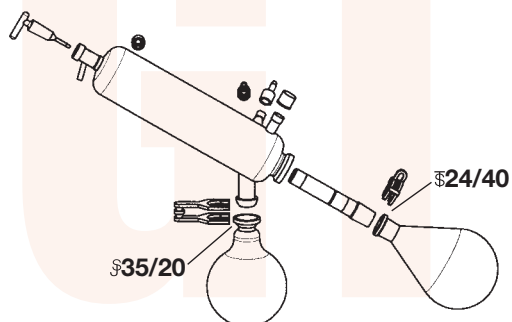
Heidolph Hei-VAP Value Series Rotary Evaporator with heating bath, condenser hand-lift.

Supplied Glassware Set	Safety Coated?	Order Code	Each
G1	No	13284-03	5086.00
G3	No	13284-05	5964.00
G5	No	13284-07	6382.00
G1	Yes	13284-23	5865.00
G3	Yes	13284-25	6220.00
G5	Yes	13284-27	6648.00



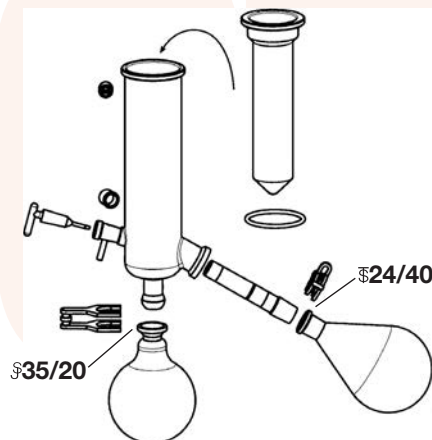
Contact ACE for a complete listing of accessories and glassware.

Supplied Glassware Set G1



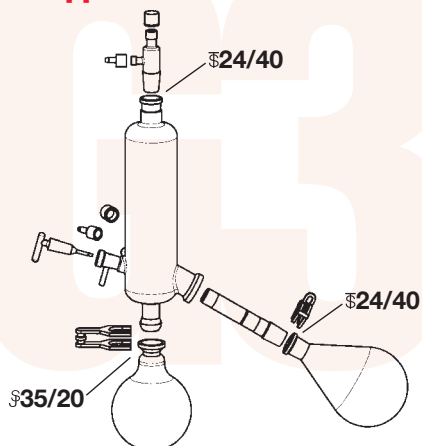
Diagonal condenser for all standard distillations

Supplied Glassware Set G5



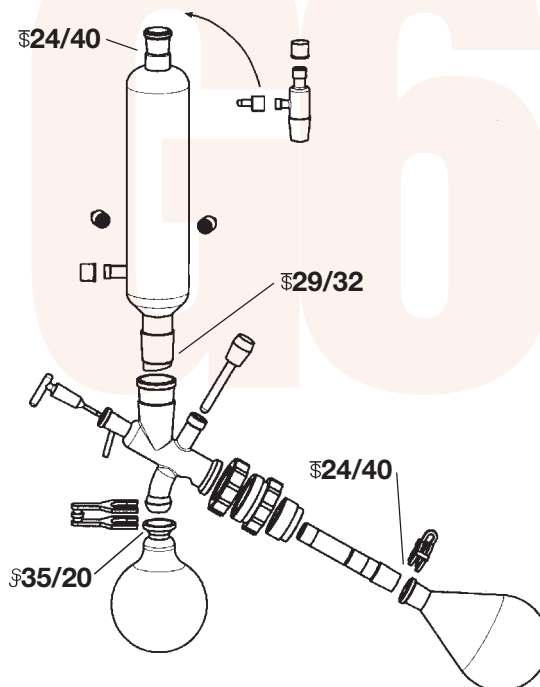
Condensate trap for low boiling solvents

Supplied Glassware Set G3



Vertical condenser for all standard distillations

Supplied Glassware Set G6



Vertical condenser; centerpiece with valve for reflux distillation. **Not available on the Value Series rotavaps.**

Glassware sets for Hei-VAP Value Series and Hei-VAP Advantage Series Rotary Evaporators

HEIDOLPH HEI-VAP SERIES ROTARY EVAPORATOR GLASSWARE
Capacity of supplied evaporating and collecting flasks is 1000mL; joints are 24/40 and 35/20 respectively.

H E I D O L P H

Rotary Evaporator Accessories

Rotary evaporators require a reliable vacuum source to optimize distillation. Heidolph® vacuum pumps offer high suction capacity for fast evacuation and distillation rates. They can be used with the VAC Control Automatic vacuum controller (vacuum valve required; see next page), which allows for automated distillations and even better control of volatile solvent distillations.

13286-101



13286-101 ROTOCOOL® CHILLER

The perfect accessory for completing your evaporation workstation.

The only chiller designed specifically for rotary evaporator workstations. Its unique “L-shaped” design allows any benchtop evaporator to fit right on its platform. With its innovative technology, the ROTACOOL chiller offers high cooling capacity while occupying minimal bench space.

Temperature Range -10 to +40°C

Temperature Constancy ±0.5C

Cooling Capacity in watts at 20°C

at 15°C 400W

at 0°C 300W

at -10°C 270W

Refrigerant R134a (FCKW-free)

Coolant Charge 2.5 Liters

Weight 35Kg

Base Area 470mm W x 580mm D

Rotary Evap. Stand Area 470mm W x 405mm D

Supply Voltage 115v/60Hz

Order Code

Each

13286-101

8815.00

Contact ACE for a complete listing of accessories and glassware.

5531 RUBBER STOPPER FOR SERUM BOTTLES ♠

Rubber pharmaceutical style stopper septa for all serum vials and bottles with 13x20mm opening necks. These are referred to as 20mm stoppers. Made with tight tolerances to fit easily and securely. Rubber formulations include; gray butyl and natural red rubber. Silicone and other compounds are available.

For Mouth I.D. x O.D.	Case Qty.	Sleeve Style, Red Rubber Order Code	Case Price	Flange Style, Red Rubber Order Code	Case Price
13 x 20	1000	5531-06	348.33	5531-23	164.65
For Mouth I.D. x O.D.	Case Qty.	Slotted, Gray Butyl Order Code	Case Price	Flange Style, Gray Butyl Order Code	Case Price
13 x 20	1000	5531-33	201.56	5531-45	213.49
For Mouth I.D. x O.D.	Case Qty.	Flange Style, Gray Butyl, PTFE face Order Code	Case Price		
13 x 20	1000	5531-60	214.24		


SEPTA

8787 SEPTA Flat ★

Replacement flat septa for use with 9590 microscale reaction vials and any other V-bottom reaction vials. Septa are white silicone rubber bonded with white PTFE face. All 3mm thick. Septa resist coring when punctured via syringe needle.

Size	For Use With	Qty.	Order Code	Per Pkg.
8 mm	5/5 Thread Joint	48	8787-40	20.09
13 mm	7/10 Thread Joint & Claisen Head	48	8787-41	22.21
15 mm	10/10 Thread Joint	48	8787-43	26.74
20 mm	14/10 Thread Joint	48	8787-42	50.38
24 mm	24-410 Thread	48	8787-55	80.48
38 mm	38-430 Thread	48	8787-58	106.18


8787

9096 SEPTA Sleeve Type (Red) ★

With hollow plug. Top is flanged with sleeve-like extension that folds down over the neck of vessel. The diaphragm can be punctured readily with a syringe needle. Puncture seals automatically after the needle is withdrawn.

Use:	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
For 5mm O.D. NMR Tubes & for small tubing	Pkg/12	9096-25	15.50	72	9096-125	51.22	144	9096-225	86.22
For 8mm O.D. Std. Wall Glass Tubing	Pkg/12	9096-32	15.50	72	9096-132	51.22	144	9096-232	86.25
For 1/4", 3/8" Joints	Pkg/12	9096-43	17.02	72	9096-143	57.79	144	9096-243	98.10
For 13-18mm O.D. Test Tubes	Pkg/12	9096-48	13.71	72	9096-148	46.96	144	9096-248	79.56
For 1/2", 3/4" Joints	Pkg/12	9096-54	18.21	72	9096-154	64.82	144	9096-254	110.15
For 1", 1 1/2" Joints	Pkg/12	9096-56	20.86	72	9096-156	87.17	144	9096-256	137.68


9096

9096 SEPTA Sleeve Type (White) ★

Same type septum as above except supplied in white rubber.

Use:	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
For 5mm O.D. NMR Tubes & for small tubing	Pkg/12	9096-26	15.50	72	9096-126	51.22	144	9096-226	86.22
For 7mm O.D. Std. Wall Glass Tubing	Pkg/12	9096-31	13.42	72	9096-131	43.80	144	9096-231	78.80
For 8mm O.D. Std. Wall Glass Tubing	Pkg/12	9096-33	15.50	72	9096-133	51.22	144	9096-233	86.25
For 9-12mm O.D. Std. Wall Glass Tubing	Pkg/12	9096-39	16.08	72	9096-139	56.13	144	9096-239	96.35
For 1/4", 3/8" Joints	Pkg/12	9096-44	17.02	72	9096-144	57.79	144	9096-244	98.10
For 13-18mm O.D. Test Tubes	Pkg/12	9096-49	13.71	72	9096-149	46.96	144	9096-249	79.56
For 1", 1 1/2" Joints	Pkg/12	9096-57	20.86	72	9096-157	87.17	144	9096-257	137.68


9096



12898

12898 SEPTUM ★

Thicker, 3.5mm bonded PTFE faced silicone flat septa with a 6mm O.D.

Qty.	Order Code	Per Package
Pkg/50	12898-24	72.64

12901



12901 SEPTUM ★

Three layer flat septa. Two harder layers of rubber outside and a softer silicone rubber inside. Available in either 7mm or 10mm O.D., both 4mm thick. 12901-42 is for 5037 electrode adapter, the 12901-48 is ideal for the Code 5029, #7 Ace-Thred bushing. These septa reseal easily.

Size, mm	Qty.	Order Code	Per Package
7	Pkg/12	12901-42	18.23
10	Pkg/12	12901-48	18.90

12904 SEPTUM ♠

Septa are flat 3mm thick gray silicone. Also for use with Ace-Thred fittings. Use 12904-06 with #7 Ace-Thred and 12904-10 with #11 Ace-Thred.

Size, mm O.D. x Thickness	Qty.	Order Code	Per Package
11 x 3	Pkg/12	12904-06	10.51
12 x 3	Pkg/12	12904-08	9.39
13 x 3	Pkg/12	12904-10	9.48



12904, 12908, 12913

12908 SEPTUM ★

19mm O.D. by 3mm thick, flat, white silicone septa bonded with white PTFE face. Resists coring when punctured via syringe needle.

Qty.	Order Code	Per Package
Pkg/72	12908-60	76.60

12913 SEPTUM ★

32mm O.D. x 2mm thick, white bonded PTFE faced white silicone septa. Fits 12487 series, GPI 33-430 phenolic caps. PTFE faced silicone resists coring when punctured via syringe needle.

Qty.	Order Code	Per Package
Pkg/100	12913-40	112.48

9106 PRECISION SEAL™ SEPTA White Rubber ★

Engineered for a precision fit (80% glass to rubber contact) in standard taper glassware joints and tubes. Precision Seals are manufactured under "white room" conditions, from one certified raw material formulation for absolute consistency in all sizes, from lot-to-lot.

For Use With	Qty.	Order Code	Per Pack	Qty.	Order Code	Per Pack
5 mm NMR tubes	100	9106-119	38.55	10	9106-19	11.54
Neck O.D. 7 mm glass tubing	100	9106-121	41.32	10	9106-21	12.31
Neck O.D. 8 mm glass tubing	100	9106-123	43.14	10	9106-23	12.90
Neck O.D. 10 mm glass tubing	100	9106-125	43.72	10	9106-25	13.08
Neck O.D. 13 mm tubing	100	9106-127	74.47	10	9106-27	22.33
10/30 Joint	100	9106-129	53.96	10	9106-29	16.02
14/20 Joint	100	9106-131	84.83	10	9106-31	25.58
19/22 Joint	100	9106-133	117.40	10	9106-33	35.12
24/40 Joint	100	9106-135	159.52	10	9106-35	47.93
29/42 Joint	100	9106-137	223.47	10	9106-37	67.20
Mixed Set	145	9106-139	103.15			

9106-19

9106 PRECISION SEAL™ SEPTA Red Rubber ★

Same as above, except red in color.

For Use With	Qty.	Order Code	Per Pack	Qty.	Order Code	Per Pack
5 mm NMR tubes	100	9106-120	38.55	10	9106-20	11.55
Neck O.D. 7 mm glass tubing	100	9106-122	41.33	10	9106-22	12.32
Neck O.D. 8 mm glass tubing	100	9106-124	43.14	10	9106-24	12.90
Neck O.D. 10 mm glass tubing	100	9106-126	43.68	10	9106-26	13.07
Neck O.D. 13 mm tubing	100	9106-128	74.47	10	9106-28	22.33
10/30 Joint	100	9106-130	53.95	10	9106-30	16.02
14/20 Joint	100	9106-132	84.87	10	9106-32	25.58
19/22 Joint	100	9106-134	117.40	10	9106-34	35.12
24/40 Joint	100	9106-136	159.52	10	9106-36	47.90
29/42 Joint	100	9106-138	223.69	10	9106-38	67.22
Mixed Set	145	9106-140	103.25			

9106-20


Precision Seal and Suba-Seal are Registered Trademarks of Sigma-Aldrich.

ACE Glass introduces...

A full line of **Replacement Glassware** for Rotary Evaporators!

Ace Glass, founded in 1936, continues our long tradition of manufacturing high quality specialty glassware. We would like to introduce a new, comprehensive line of glassware to fit today's popular rotary evaporators. Ace also offers both custom glass and glass repair services for rotary evaporators. Ace Glass rotary evaporator replacement glass, all manufactured in the USA to exacting specifications and standards.

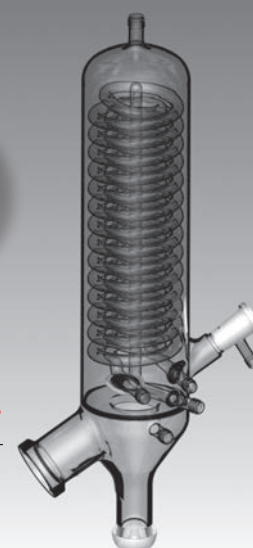
Toll-free: **800-223-4524** Toll-free fax: **800-543-6752**
 856-692-3333 • Fax: 856-692-8919

www.aceglass.com
sales@aceglass.com


ACE GLASS
 INCORPORATED

P.O. Box 688
 Vineland, NJ 08362-0688

Contact us
 today for a copy
 of our new
 brochure!



9107 SUBA-SEAL™ SEPTA Red Rubber ★

Suba-Seal™ Septa, the highest quality roll-over style septa in the world. The bottom of the septa is serrated for maximum sealing even in open-top vessels and containers. Certain sizes are also perfect for maximum sealing in standard taper joints. These septa are ideal for moisture or air sensitive applications. The septa when pierced with a non-coring needle have excellent re-sealing capability. The septa have double sealing feature as the turn-over top seals on the outside of the vessel and the serrated bottom flanges seal excellently to the inner surface of the container. Suba-Seal septa are autoclaveable and are packaged in "white room" conditions. Suba-Seal is a trade mark of Sigma-Aldrich Biotechnology LP.

9107



Description	Fits	Qty.	Order Code	Each
Sample kit, 10 of each size	All	100	9107-04	226.68
#9 fits neck I.D. 8mm		100	9107-116	65.26
#13 fits neck I.D. 9.5mm	§10/30	100	9107-110	64.25
#17 fits neck I.D. 11mm		100	9107-114	75.47
#21 fits neck I.D. 12.5mm		100	9107-118	81.60
#25 fits neck I.D. 14mm	§14/20, §14/35	100	9107-124	113.18
#29 fits neck I.D. 16mm		100	9107-126	122.11
#33 fits neck I.D. 17.5mm		100	9107-130	128.88
#37 fits neck I.D. 19mm	§19/22, §19/38	100	9107-134	138.54
#41 fits neck I.D. 20.5mm		100	9107-138	169.09
#45 fits neck I.D. 22mm	§24/40, §24/25	100	9107-142	195.96
#49 fits neck I.D. 24mm		100	9107-146	243.67
#53 fits neck I.D. 25.5mm		100	9107-150	273.91
#57 fits neck I.D. 27mm	§29/42, §29/38	100	9107-154	320.71

9107 SUBA-SEAL™ SEPTA White Rubber ★

Same as above except white in color.

9107



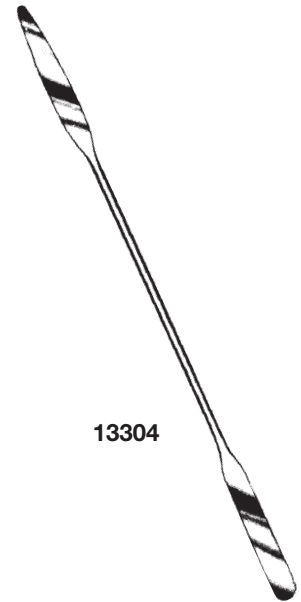
Description	Fits	Qty.	Order Code	Each
Sample kit, 10 of each size	All	100	9107-104	226.87
#9 fits neck I.D. 8mm		100	9107-109	65.26
#13 fits neck I.D. 9.5mm	§10/30	100	9107-111	64.25
#17 fits neck I.D. 11mm		100	9107-115	75.46
#21 fits neck I.D. 12.5mm		100	9107-119	81.60
#25 fits neck I.D. 14mm	§14/20, §14/35	100	9107-123	113.18
#29 fits neck I.D. 16mm		100	9107-127	122.02
#33 fits neck I.D. 17.5mm		100	9107-131	128.88
#37 fits neck I.D. 19mm	§19/22, §19/38	100	9107-135	138.54
#41 fits neck I.D. 20.5mm		100	9107-139	169.22
#45 fits neck I.D. 22mm	§24/40, §24/25	100	9107-143	202.23
#53 fits neck I.D. 25.5mm		100	9107-151	273.91
#57 fits neck I.D. 27mm	§29/42, §29/38	100	9107-155	320.71

Suba-Seal is a Registered Trademark of Sigma-Aldrich.

13304 SPATULA *Micro* ★

Made of stainless steel with flat ends, one rounded, one tapered. Blade size; approximately 51 x 8mm (2 inches x 5/16 inches); overall length 203mm (8 inches).

Qty.	Order Code	Per Package
Pkg/3	13304-12	54.86

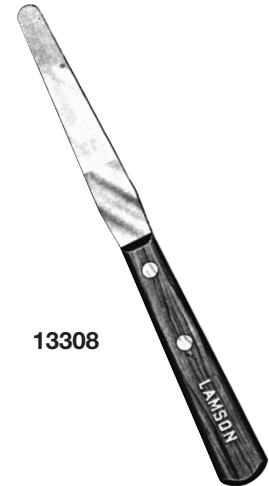


13304

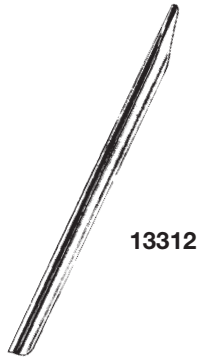
SPATULAS
13308 SPATULA *Weighing, Wood Handle* ★

Flexible stainless steel blade with wood handle. Excellent for handling samples while weighing. Overall length is 188mm.

Qty.	Order Code	Per Package
1	13308-08	35.12



13308



13312 LAB SCOOP ★

Stainless steel lab scoop, blade only. Overall length is 229 mm. Excellent for sample addition while weighing.

Qty.	Order Code	Per Package
Pkg/6	13312-07	22.87



13316 SPOON *Micro* ★

Stainless steel, narrow spoon with plastic handle. Spoon is approximately 25.4mm x 6.4mm. Overall length is approximately 165mm.

Qty.	Order Code	Per Package
Pkg/3	13316-07	5.68

13318 SPATULA *Micro* ★

PTFE-coated, stainless steel spatula with 4mm diameter. Double flat ends, one end square, one rounded. Approximately 51mm x 8mm. Overall length is 184mm.

Qty.	Order Code	Per Package
Pkg/12	13318-11	54.66


13318
13320 SPATULA *Micro* ★

Stainless steel spatula with double flat ends, one rounded, one tapered. Rounded end is 52 x 8.5mm, tapered end is 52 x 7.5mm. Overall length is 195mm.

Qty.	Order Code	Per Package
Pkg/3	13320-06	9.64


13320
13320 SPATULA *Micro, PTFE Coated* ★

Same as above, except PTFE coated stainless steel spatula. With double flat ends, one rounded, one tapered. Rounded end is 52 x 8.5mm, tapered end is 52 x 7.5mm. Overall length is 195mm.

Qty.	Order Code	Per Package
Pkg/12	13320-10	29.49

13322 LAB SPOON ★

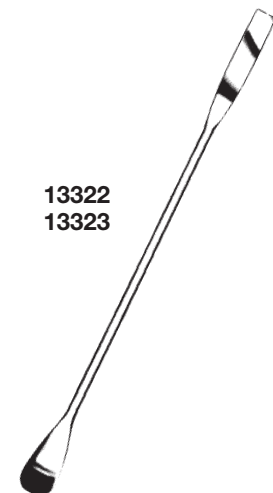
Double-ended, stainless steel lab spoon. Spoon end is 29mm x 14.3mm; flat end is 48mm x 14.3mm. Overall length is 229mm.

Qty.	Order Code	Per Package
Pkg/3	13322-11	54.22

13323 LAB SPOON *PTFE Coated* ★

Same as 13322, except PTFE coated stainless steel.

Qty.	Order Code	Per Package
1	13323-32	33.66


**13322
13323**

General Stirring Information

Bearings:

Trubore®, glass bearings are for use with precision-ground glass shafts or PTFE-covered, stainless steel (8071) shafts. They are not recommended for use with polished glass or plain, stainless steel shafts.

Trubore® bearings with a **PTFE inner** component are for use with polished glass shafts and plain, stainless steel shafts. They are not recommended for precision-ground glass shafts or PTFE-covered, stainless steel shafts.

Glass pressure bearings (8044) are for use with 8074 plain stainless steel or 8075 polished glass shafts.

8050 Mechanical Seal Bearing may be used with polished or precision-ground glass and plain stainless steel shafts (10, 19 & 28mm). Not recommended for use with PTFE-covered shafts.

13443 PTFE Collet Bearing may be used with any type shaft (6, 8 & 10mm).

13445 Debris-free PTFE Bearing should be used with polished glass shafts or plain, stainless steel shafts. They are not recommended for precision-ground glass shafts or PTFE-covered, stainless steel shafts (6, 10 & 19mm).

Stirring Shafts:

Glass, Polished: use only in 8044 glass, pressure bearings or Trubore® bearings with a PTFE inner component (8066) or our 13443 PTFE collet type, 8050 PTFE mechanical seal and 13445 PTFE debris-free bearings.

Glass, Precision-Ground: use only Trubore® glass bearings such as our 8059, 8060, 8061, 8065, etc. series or our 13443 PTFE collet seal type and 8050 PTFE mechanical seal bearings.

Stainless Steel, Plain: use only in 8044 glass, pressure bearings or Trubore® bearings with a PTFE inner component (8066) or our 13443 PTFE collet type, 8050 PTFE mechanical seal and 13445 debris-free bearings.

Stainless Steel, PTFE-Covered: use with Trubore® glass bearings such as our 8059, 8060, 8061, 8065, etc. series or our 13443 PTFE collet type bearings. Not recommended for use with our PTFE debris-free 13445 bearing.



Trubore® Stirring Equipment — Precision Fit and Performance

Bearings and shafts guaranteed interchangeable

Trubore® stirrers, pioneered and developed by ACE, are the most widely used precision glass stirrers in research today.

If both shaft and bearing of a given size are manufactured by ACE, we guarantee them to be interchangeable.

Precision fit and performance

Every shaft and bearing is individually inspected to insure clearance fit of less than .025 mm (0.001-inch).

ACE bearings are smooth and transparent. This feature automatically reduces leak path for a given fit clearance and surface roughness; it also prolongs bearing life.

Special “plateau” grinding is employed on shafts. This provides maximum smoothness consistent with optimum retention of lubricant. In terms of performance, this texture means a low leak rate, which permits attainment of at least

1mm absolute with unlubricated surfaces at speeds less than 100 rpm. It also means that plastic shafts, including Fluorocarbon coated glass shafts, may be used with bearings — a practice not feasible with ground bearings.

Operation

If the components have been properly cleaned prior to operating. A Trubore® stirring unit can be run unlubricated for a limited time at a maximum speed of 500 rpm.

For continuous operation, or operation at speeds greater than 500 rpm, proper lubrication is required. We recommend ACE 8117 Stir-Lube® be used as a proper all-purpose lubricant up to 2000 rpm (water cooled) or 1500 rpm (non-cooled).

For high-speed stirring over 2000 rpm, we recommend a thin base of 8229 grease with application of 8119 Hi-Lube heavy-duty liquid stirrer lubricant. Both materials are also chemically inert. If accidentally introduced

into a solvent system reaction, they will not react with your product, but will be removed with the solvent. Under no circumstances should glycerin be used; it acts as a grinding medium rather than a lubricant.

Note that only a small lubricant well is provided at the top of some ACE bearings; this is because only a slight amount of Stir-Lube® is needed for many hours of stirring.

Care and cleaning

Because of the very close fit between shaft and bearing, a slight amount of dust or grit will quickly scratch the smooth surface of the bearing. To prevent this, both shaft and bearing should be washed with a good detergent and dried with acetone — instead of with a wiping cloth — prior to use.

ACE lubricants may be completely removed with acetone or most other ketones.



Matching Ace Stir Bearings to the Appropriate Shafts

Bearing Type	Size	Ace Stir Bearing Codes	Use with Ace Code Stirring Shafts Listed Below
Trubore®, Glass	5mm	9524-04, 9527-08	9534-04, 9535-06, 9541-04, 9541-15
Trubore®, Glass	6mm	9524-06, 9524-08, 9527-12, 9527-14, 9529	9534-06
Vacuum	9mm	8098, 8099, 8133, 9528	8134, 9530
Trubore®, Glass	10mm	8036, 8038, 8039, 8040, 8042, 8043, 8047, 8051, 8053, 8055	8068, 8070, 8071, 8073, 9532, 9533
Trubore®, Glass	10mm	8041	Complete Assemblies
Trubore®, Glass	19mm	8059, 8060, 8061, 8065	8076*, 8077, 8078, 8079
Glass, Pressure	10mm	8044	8074, 8075
Trubore®, PTFE/Glass	10mm	8066 (Plain), 8066 (Debris Trap)	8074, 8075
Trubore®, PTFE/Glass	19mm	8067 (Trubore®), 8067 (Debris Trap)	8076
Trubore®, PTFE/Glass	28mm	8067 (Trubore®), 8067 (Debris Trap)	8080
Mechanical Seal/PTFE	10mm	8050	8068, 8073, 8074, 8075, 9532, 9533
Mechanical Seal/PTFE	19mm	8050	8076, 8077, 8078
Mechanical Seal/PTFE	28mm	8050	8080
Collet Type/PTFE	6mm	13443-06, 13443-08	9534-06, 9534-40
Collet Type/PTFE	8mm	13443-10	9534-06, 9534-40
Collet Type/PTFE	10mm	13443-12	8068, 8070, 8071, 8073, 8074, 8075, 9532, 9533
PTFE	6mm	13445-06, 13445-09	9534-40
PTFE	10mm	13445-30, 13445-32, 13445-34, 13445-36	8074, 8075
PTFE	19mm	13445-46, -44	8076

*Polished shaft not recommended for 8076.

ACE Stir Shaft Quick Reference Chart

Ace Code	Size		Type	Material	Recommended Use				
	O.D., mm	L, mm			Bearing	Chuck	Agitators		
9534-04	5	318	Button Bottom	Solid Ground Borosilicate Glass	9524-04, 9524-06, 9524-08, 9527-08, 9527-12, 9527-14, 9529	8124, 8126	9542		
9534-06	6	318		Solid Polished Borosilicate Glass	8066-120				
9534-40	6	318		Hollow Borosilicate Glass					
9535-06	5	318	Knob Bottom	Solid Ground Borosilicate Glass	9524-04, 9527-08	8124, 8126	9541-06		
9541-04		318		PTFE Coated Stainless Steel			9541-07		
9541-15		318					Attached		
8134-15	9	380	With Paddles	Solid Polished Borosilicate Glass	8098, 8099, 8133, 9528	8124, 8126	8083, 8085, 8086		
8134-25		610					9530		
9530		416							
8068-02	10	440	Button Bottom	Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8041, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 13443	8124, 8125, 8126	8082, 8083, 8085, 8086, 8087, 8096		
8068-03		580						Attached	
8068-04		690							
8068-06		740							
8068-08		440	Multi-Blade						
8068-17		580	Double Multi-Blade						
8068-18		440							
8068-25		440	Button Bottom				Hollow Ground Borosilicate Glass	8082, 8083, 8085, 8086, 8087, 8096	
8068-27		580							
8068-30		440							
8068-31	690	Bead Bottom	Solid Ground Borosilicate Glass	8088, 8089, 8090					
8068-32	580								
8070-05	440	Button Bottom	PTFE Coated Glass	8036, 8038, 8039, 8040, 8041, 8042, 8043, 8047, 8051, 8053, 8055, 8066, 8133, 13443	8124, 8125, 8126	8082, 8083, 8085, 8086, 8087, 8096			
8070-10	690								
8071-05	460								
8071-07	640	Bottom Drilled Hole	PTFE Coated Stainless Steel	8088, 8089, 8090					
8071-10	690								
8073	10	410	Crescent Shaft	Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8041, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 8066, 8133, 13443	8124, 8125, 8126	Attached		
8074-02	420								
8074-04	450	Remove Button Bottom	Stainless Steel	8044, 8050, 8066, 13443, 13445			8082, 8083, 8085, 8086, 8087, 8094, 8095, 8096		
8074-07	580								
8075-12	440								
8075-14	580	Button Bottom		8044, 8066	8124, 8125, 8126	8082, 8083, 8085, 8086, 8087, 8096			
8075-15	690								
8075-21	440								
8075-23	580	Plain Shaft	Solid Polished Borosilicate Glass			8094, 8095			
8075-24	690								
8075-32	440								
8075-34	580	Bead Bottom		8044, 8050, 8066, 13443, 13445			8088, 8089, 8090		
8075-36	690								
9523	10	445	Complete W/Vanes	Hollow Polished Borosilicate Glass	8036, 8038, 8039, 8040, 8041, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 8066, 8133, 13443	8124, 8125, 8126	Attached		
9533		475		Solid Ground Borosilicate Glass	8036, 8038, 8039, 8040, 8041, 8042, 8043, 8047, 8050, 8051, 8053, 8055, 13443				
8076-05	19	700	Button Bottom	Hollow Polished Borosilicate Glass	8067, 13445, 8050	8124, 8125, 8126	8085		
8076-07		900							
8076-10		1200							
8076-40		900	Bottom Drilled Hole					Solid Polished Borosilicate Glass	
8076-42		800	Bottom Knob					Hollow Polished Borosilicate Glass	
8076-43		800	Bottom Drilled Hole					Solid Polished Borosilicate Glass	
8076-44		1200	Bottom Knob					Hollow Polished Borosilicate Glass	
8076-45		1140	Bottom Drilled Hole					Solid Polished Borosilicate Glass	
8076-46		1400	Bottom Knob					Hollow Polished Borosilicate Glass	
8076-48		1400	Bottom Drilled Hole					Solid Polished Borosilicate Glass	
8077-23		700							
8077-25		900	Button Bottom					Solid Ground Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445
8077-27		1200							
8078-05	900	Bottom Knob	Hollow Ground Borosilicate Glass	8050, 8059, 8060, 8061, 8065, 13445					
8078-10	1200								
8079-03	700								
8079-05	900	Bottom Drilled Hole	PTFE Coated Stainless Steel	8059, 8060, 8061, 8065					
8079-10	1200								
8080-12	1010								
8080-14	1140								
8080-18	1320								
8080-22	1470	Bottom Drilled Holes	Solid Polished Borosilicate Glass	8050, 8067	6472-155, 6472-156, 6472-157	8091, 8093, 8101			
8080-24	1400								
8080-25	2030								
8080-30	1600								

5 & 6mm Shafts, Bearings & Agitators

9524 BEARING *Trubore*[®], 5 & 6mm ♠

Trubore[®] bearing with standard taper joint for use with our 9534, 9535 and 9541 precision ground stir shafts. Lubricant well at top will accept enough 8117 Stir-Lube to provide hours of operation at up to 1000 rpm. Match bearing I.D. with stir shaft O.D.

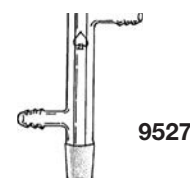
Joint	I.D., mm	Qty.	Order Code	Each
14/20	5	1	9524-04	48.30
14/20	6	1	9524-06	49.74
19/22	6	1	9524-08	51.79



9527 BEARING *Trubore*[®], Water Cooled, 5 & 6mm ♠

Jacketed, *Trubore*[®] bearing with standard taper joint for use with our 9534, 9535 and 9541 precision ground stir shafts. Hose connections fit 5/16-inch or 3/8-inch ID tubing. Match bearing ID of 5mm or 6mm to stir shaft O.D.

Joint	I.D., mm	Qty.	Order Code	Each
14/20	5	1	9527-08	90.09
14/20	6	1	9527-12	92.63
19/22	6	1	9527-14	95.53



9529 BEARING *Trubore*[®], Economy, 6mm ♠

Trubore[®] bearing, heavy duty, standard taper joint, self-aligning. Unique design is forgiving of slight misalignment of stir motor and shaft. Recommended for use with our 9534 6mm precision ground stir shaft.

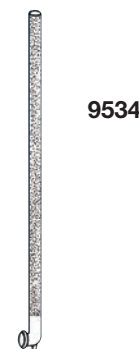
	Qty.	Order Code	Each		Qty.	Order Code	Each
Inner Bearing, only	1	9529-04	34.09	Ace-Thred Adapter	1	5030-04	28.73
Bushing, w/o-ring	1	9529-07	29.73	Complete	1	9529-10	92.55



9534 STIRRING SHAFT 5 & 6mm, Glass ♠

Button type solid glass stirring shafts, 5mm & 6mm O.D. Precision ground shafts, codes -04 & -06, should be used in matching glass *Trubore*[®] 9524 and 9527 bearings. Polished shaft, code -40, should be used only in our 8066-120, 6mm PTFE inner bearing. All accept our 9542 blades. Join to stirrer motor using 8124 series chucks. 318mm overall length ideal for use in 250ml and smaller flasks.

Rod Size O.D., mm	Glass Type	Qty.	Order Code	Each
5	Ground	1	9534-04	36.56
6	Ground	1	9534-06	38.26
6	Polished	1	9534-40	43.95



5,6MM SIZE SHAFTS, BEARINGS, AND AGITATORS

5 & 6mm Shafts, Bearings & Agitators

13443



13443 STIRRER BEARING PTFE, 6mm ★

Inert PTFE stirrer bearing. Features a totally enclosed bearing body for non-shedding, anti-whip, chemically resistant design. The bearing can also be used in slight vacuum or slight pressure applications. The design has a composite PTFE/PEEK main internal seal and a specially fabricated glass ball-bearing for rigidity and smoothness during lengthy operation. Maximum recommended speeds up to 500 rpm continuous operation. Ideal for glass, metal or PTFE stir shafts. Bottom is a molded, inner standard taper joint. Average length is 96mm and 45mm OD at bearing center.

Joint	Order Code	Each
19/22	13443-06	360.12
24/40	13443-08	360.12

13445 BEARING Debris Free, PTFE, 6mm ★

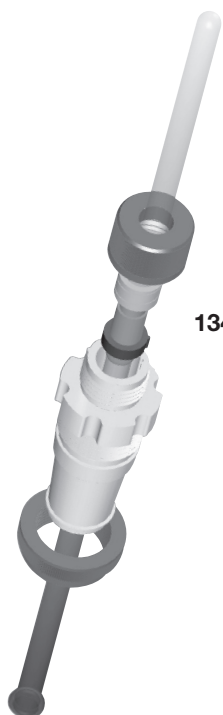
Vacuum tight (~5 Torr), flake free, chemically resistant stirrer bearing makes a mechanical seal against a polished glass shaft. Debris trap section consists of a PTFE sleeve for a wide range of joint and shaft diameter sizes. For use with 6 mm polished glass or stainless steel shafts, NOT recommended for PTFE shafts. Bearing consists of a PTFE standard taper body with added PEEK for better stability, glass filled polypropylene screw cap, PEEK compression spring, PTFE/PEEK sleeve and a glass filled polypropylene loosening nut. For use up to 500 rpm.

Joint	Order Code	Each
19/22	13445-06	176.71
24/40	13445-09	178.40

Replacement Seals & Springs:

	Order Code	Each
PTFE/PEEK sleeve seal	13445-302	33.09
PEEK compression spring	13445-304	36.28

13445



5 & 6mm Shafts, Bearings & Agitators

9535 STIRRING SHAFT *Hollow Glass, 5mm* ♦

Precision ground, hollow, 5mm glass stirring shaft. Button type shaft accepts 9542 blades and can be used in matching 9524 and 9527 bearings. Holes are provided in the side of the shaft for material introduction and at the bottom for emission into the flask contents. Join to stirrer motor using 8124 series chucks.

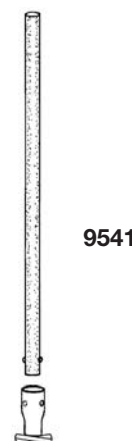
Shaft Size O.D., mm	Qty.	Order Code	Each
5	1	9535-06	50.75



9541 STIRRING SHAFT *with PTFE Agitator, 5mm* ♦

Stirring shaft agitator combination available in either a solid, precision ground glass shaft or all PTFE knob type shaft with a PTFE snap-fit agitator designed to fit through $\text{§ } 14/20$ and $\text{§ } 18/11$ joints. Designed for use with our 5mm I.D. 9524 or 9527 bearings and flasks of 50ml and smaller.

Type Rod	Qty.	<i>Rod</i>		<i>Agitator</i>		<i>Complete</i>	
		Order Code	Each	Order Code	Each	Order Code	Each
Glass	1	9541-04	32.96	9541-06	73.14	9541-10	106.10
PTFE	1	9541-15	39.00	9541-07	73.14	9541-40	112.14



9542 STIRRING BLADE *5 & 6mm* ♦

PTFE stirring blades for use with our button type 9524 and 9527 stirring shafts. Blades are 41mm wide x 12mm high and are designed for use in flasks 250ml and less. Match blade to shaft O.D.

Rod Size O.D., mm	Qty.	Order Code	Each
5	1	9542-10	9.72
6	1	9542-20	9.72



9542

8124 CHUCK *"Flex-Grip," 5 & 6mm* ♦

Nylon chuck for use with ACE stirring shafts or other shafts of the same dimensions. Chuck has flexible insert which allows for misalignment of shaft without danger of breakage.

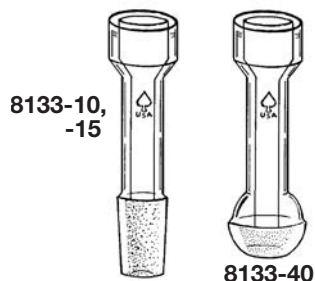
For Stirring Shaft Size, mm	For Motor Shaft, mm (In.)	Qty.	Order Code	Each
6	6.4 (1/4)	1	8124-04	40.87
5	8 (5/16)	1	8124-05	38.83
6	8 (5/16)	1	8124-07	38.60

Insert Only Size	Qty.	Order Code	Per Package
6 mm	6	8124-24	17.53
5 mm	6	8124-26	17.53



8124

9mm Shafts, Bearings & Agitators



8133 BEARING High Speed Vacuum, 9mm ♠

Used with 8111 aluminum packing box. For shaft speeds of 1000 r.p.m. and higher, and vacuum operation down to 0.5mm Hg. The seal is made entirely by the packing box. Only infrequent lubrication is required using 8122 packing and 8117 Stir-Lube. We recommend that you use 8113 vacuum adapter to avoid contaminating the flask contents with lubricant. For use with 9mm O.D. shafts.

Bottom Joint	Qty.	Order Code	Each
§ 24/40	1	8133-10	55.60
§ 29/42	1	8133-15	63.55
§ 35/25	1	8133-40	53.52

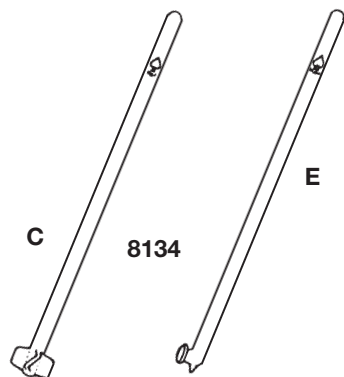


8098-12

8098 STIRRER BEARING Vacuum, 9mm ♠

A rugged, compact, inexpensive stirrer. The upper member turns with stirring shaft, bottom member remains stationary. Upper member supplied with vinyl connector. Use with ACE 8134 size 9mm stirring shafts. Assembly may also be used to make your own rotary evaporator.

Qty.	Lower Member			Upper Member			Complete	
	§ Joint	Order Code	Each	§ Joint	Order Code	Each	Order Code	Each
1	24/40	8098-04	61.94	18/10	8098-01	25.75	8098-12	87.68
			Qty.	Order Code		Per Dozen		
	Vinyl Connector only, for all sizes			1	8098-45	38.87		



8134 STIRRING SHAFTS 9mm ♠

Unground, 9mm OD shaft for use in liquid seal bearings and our debris free 8098 and 8099 stirrer assemblies. Code -25 is a button type shaft which accepts our 8083, 8084, 8085 and 8086 blades. Shaft length accommodates flasks from 500ml to 5000ml.

Style	Length, mm	Qty.	Order Code	Each
C	380	1	8134-15	34.14
E	610	1	8134-25	19.40

9528



9528 VACUUM STIRRER BEARING ASSEMBLY 9mm ♠

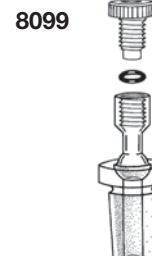
Rotating ball joint seal gives vacuum-tight connection good into the micron range. Ultimate vacuum is determined primarily by the tightness of the vinyl tubing connector which fastens the unground shaft to the ball member. Operate below 500 rpm. Use with unground stirring shafts (8134, 9530). Lubricate the § 18/11 rotating ball joint with our 8117 Stir-Lube. Bottom joint is § 19/22. Upper member is supplied with a vinyl connector.

	Qty.	Order Code	Each	Qty.	Order Code	Per Dozen
Upper Member	1	9528-02	33.24			
Lower Member	1	9528-04	68.74			
Complete	1	9528-10	101.98			
				Vinyl Conn., only	1	8098-45 38.87

9mm Shafts, Bearings & Agitators

8099 STIRRER BEARING Vacuum, Threaded, 9mm ♠

Modified version of 8098 in that upper member is internally threaded on the top. #7 Ace-Thred nylon bushing and FETFE o-ring form a compression seal on stirring shaft in place of the conventional tubing arrangement. Easier to adjust shaft, suitable for vacuum work. For use with 8134 stirring shafts.

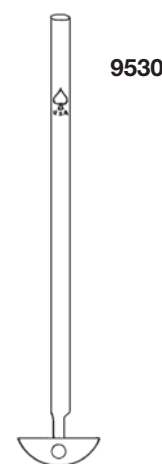


Qty.	Lower Member			Upper Member			Nylon Bushing		Complete	
	⌘ Joint	Order Code	Each	⌘ Joint	Order Code	Each	Order Code	Each	Order Code	Complete
1	24/40	8098-04	61.94	18/10	8099-03	41.95	8099-38	20.55	8099-40	123.38

9530 STIRRING SHAFTS 9mm ♠

Unground, 9mm O.D. stirring shaft design for use with our 9528 vacuum and debris free stirrer assembly. 380mm straight section, 416mm overall length. Use our 9530-08 blade.

	Qty.	Order Code	Each
Rod	1	9530-04	21.84
Blade	1	9530-08	11.04





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10mm Shafts, Bearings & Agitators

8036



8036 BEARING *Trubore®*, 10mm ♠

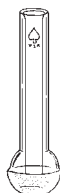
Interchangeable bearing designed to be used with our precision ground stirring shafts (8068, 8070, 8071, 8073, 9532, 9533). Recommended top stirring speed with our 8117 Stir-Lube is 1500 rpm.

Qty.	Order Code	Each
1	8036-10	41.10

8038-10



8038-40



8038 BEARING *Trubore®*, 10mm ♠

Interchangeable ground joint bearing for use with our precision ground stirring shafts (8068, 8070, 8071, 8073, 9532, 9533). Recommended top stirring speed with our 8117 Stir-Lube is 1500 rpm.

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
19/22	1	8038-04	75.56	35/20 & 35/25	1	8038-40	79.44
19/38	1	8038-05	73.34	65/40	1	8038-55	94.87
24/40	1	8038-10	76.54				
29/42	1	8038-20	77.13				
34/45	1	8038-30	77.27				
45/50	1	8038-32	82.74				

8039-10



8039-35

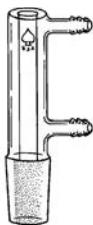


8039 BEARING *Trubore®*, 10mm ♠

Interchangeable ground joint bearing with top lubricant well for use with our precision ground stirring shafts (8068, 8070, 8071, 8073, 9532, 9533). Recommended top stirring speed with our 8117 Stir-Lube is 1500 rpm.

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
19/22	1	8039-03	81.37	35/25	1	8039-35	88.76
19/38	1	8039-05	81.37				
24/40	1	8039-10	81.86				
29/42	1	8039-20	86.45				
34/45	1	8039-25	88.29				

8040-40

8040-10
8040-60

8040 BEARING *Trubore®*, Water-Cooled, 10mm ♠

Interchangeable, ground joint bearing with jacket for water cooling. May be operated as high as 2000 rpm using our 8119 high-speed lubricant. Can be operated at 1500 rpm unevacuated using our 8117 Stir-Lube. Hose connections for use with 5/16-inch or 3/8-inch ID tubing. Available with PTFE-clad joint to eliminate the need for grease. Use with our precision ground stirring shafts (8068, 8070, 8071, 8073, 9532, 9533).

⌘ Joint	Qty.	Order Code	Each	⌘ Joint	Qty.	Order Code	Each
24/40	1	8040-10	107.18	35/20 & 35/25	1	8040-40	117.32
29/42	1	8040-20	110.11	65/40	1	8040-55	224.31
34/45	1	8040-30	114.28				
45/50	1	8040-35	123.88				

8040 BEARING *Trubore®*, Water-Cooled, PTFE-Clad, 10mm ♠

Similar to 8040, above, except bottom joint is PTFE-clad to eliminate the need for grease.

⌘ Joint	Qty.	Order Code	Each
24/40	1	8040-60	153.55
29/42	1	8040-64	153.66
34/45	1	8040-68	156.85
45/50	1	8040-70	160.84

10mm Shafts, Bearings & Agitators

**Complete
Trubore®
Assemblies**

8041 STIRRER ASSEMBLY *Glass Blade, 10mm* ♦

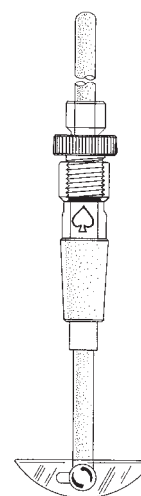
Precision Trubore® Stirrer Assembly consisting of 10mm I.D. glass bearing, ground glass shaft with button, and glass blade. Bearing consists of inner glass bearing, bushing and threaded glass adapter (see bearing only listing under 8042).

For Flask Cap., mL	Joint	Bearing No.	Shaft No.	Blade No.	Qty.	Order Code	Each
250- 500	24/40	8042-115	8068-03	8083-08	1	8041-11	139.78
500- 1000	29/42	8042-117	8068-03	8083-12	1	8041-15	163.27
2000- 3000	29/42	8042-117	8068-03	8083-16	1	8041-19	163.41
5000-12000	45/50	8042-121	8068-02	8083-20	1	8041-20	185.61
Replacement size -110 FETFE o-ring					12	7855-716	20.37

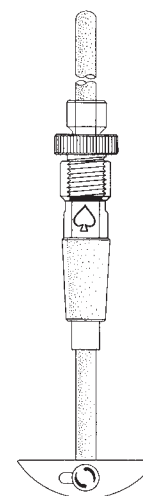
8041 STIRRER ASSEMBLY *PTFE Blade, 10mm* ♦

Precision Trubore® Stirrer Assembly consisting of 10mm I.D. glass bearing, ground glass shaft with button, and PTFE blade. Bearing consists of inner glass bearing, bushing and threaded glass adapter (see bearing only listing under 8042).

For Flask Cap., mL	Joint	Bearing No.	Shaft No.	Blade No.	Qty.	Order Code	Each
250- 500	24/40	8042-115	8068-03	8085-07	1	8041-30	141.10
500- 1000	29/42	8042-117	8068-03	8085-11	1	8041-34	145.20
2000- 3000	29/42	8042-117	8068-03	8085-15	1	8041-38	149.20
5000-12000	45/50	8042-121	8068-02	8085-19	1	8041-40	174.69
Replacement size -110 FETFE o-ring					12	7855-716	20.37



8041-11



8041-30

8042 BEARING *Trubore®, Glass*, Ace-Thred, 10mm* ♦

Self-aligning three-piece bearing. Complete consists of inner Trubore® glass bearing, nylon bushing with o-ring, and threaded adapter. Unique design eliminates costly replacement since inner bearing will spin if shaft binds or will self-align at o-ring seal in the event the motor is slightly cocked. Inner bearing and bushing can be used with any joint size. For use with 10mm O.D. shafts 8068, 8070, 8071, 8073, 9532, and 9533. For replacement o-ring, order 7855-716.

	Qty.	Order Code	Each
Inner Bearing, only	1	8042-05	28.28
#15 Bushing with size -110 FETFE O-ring	1	8042-09	28.49

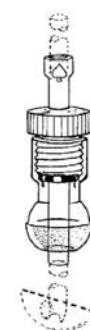
Threaded Glass Adapter, only

Joint	Qty.	Order Code	Each
24/40	1	8042-15	32.13
29/42	1	8042-17	34.35
34/45	1	8042-19	40.93
45/50	1	8042-21	52.04
35/25	1	8042-35	36.96

Complete Assembly

Joint	Qty.	Order Code	Each
24/40	1	8042-115	88.90
29/42	1	8042-117	91.12
34/45	1	8042-119	97.70
45/50	1	8042-121	108.81
35/25	1	8042-135	93.73

*For assembly with inner PTFE bearing, see 8066.



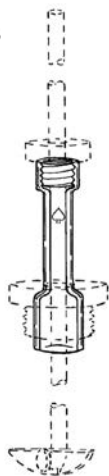
8042-135



8042-115

10mm Shafts, Bearings & Agitators

8043



8043 BEARING *Trubore®*, Ace-Thred, 10mm ★

Designed for use with #25 Ace-Thred bushing. Consists of a Trubore® bearing, pressure bushing, gland with two FETFE o-rings and retainer bushing with FETFE o-ring. For use with our precision ground stirring shafts (8068, 8070, 8071, 8073, 9532, 9533).

	Qty.	Order Code	Each
Bearing, only	1	8043-08	88.27
Pressure Bushing	1	8043-16	27.72
Gland with Two o-rings	1	8043-20	15.58
Retainer Bushing with o-ring	1	8043-30	43.00
Complete	1	8043-45	174.57

8044 BEARING *Pressure*, with Ace-Threds, 10mm ♠

Glass bearing with #15 Ace-Thred at each end and glass tubing between for use with 10mm O.D. 8074 and 8075 stirring shafts. PTFE coupling, with internal o-ring seal, connects bottom of bearing to either #15 or #25 Ace-Thred on vessels such as 6433 pressure reactor head or one-piece pressure reactors. Top bushing also has an internal o-ring seal for additional seal on shaft to allow pressure reactions. Maximum operating speed 600 rpm. Coupling and bushing supplied with o-rings. For replacement o-rings: for #15-#15 coupling, 7855-730 external, 7855-716 internal; for #15-#25 coupling, 7855-730 and 7855-742 external, 7855-716 internal; for #15 bushing, 7855-730 external, 7855-716 internal.

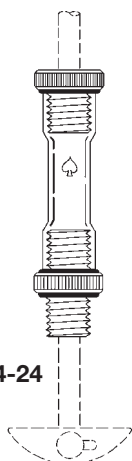
For Coupling to #15 Ace-Thred

	Qty.	Order Code	Each
Glass Bearing, only, #15-#15	1	8044-07	40.28
Coupling, PTFE, #15-#15	1	5840-60	117.03
Bushing, PTFE, #15	1	8044-13	82.54
Complete	1	8044-24	239.85

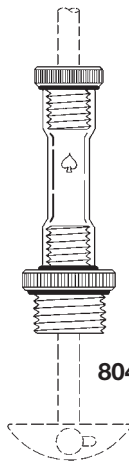
For Coupling to #25 Ace-Thred

	Qty.	Order Code	Each
Glass Bearing, only, #15-#15	1	8044-07	40.28
Coupling, PTFE, #15-#25	1	5843-62	132.03
Bushing, PTFE, #15	1	8044-13	82.54
Complete	1	8044-55	254.85

8044-24



8044-55



8047 BEARING *Trubore®*, 10mm ♠

This glass bearing is supplied with tubulation for feeding inert gases around the bearing to balance any pressure possibly being developed in the flask. Can also be used for gas-liquid reactions and gas dispersions using hollow shafts as listed under 8068 and 9532. I.D. is 10mm. Also for use with 8070, 8071, 8073, and 9533 10mm shafts. Use with 3/8-inch or 5/16-inch I.D. tubing, size C hose connection. See page 7 for more detailed hose connection information.

8047

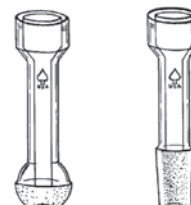


Joint	Qty.	Order Code	Each
24/40	1	8047-10	131.65
29/42	1	8047-15	133.76

10mm Shafts, Bearings & Agitators

8051 BEARING *Trubore®*, 10mm ♠

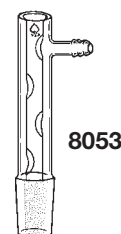
Used with 8111 aluminum packing box. It may be used for low positive pressure and vacuum applications. Using the graphite-impregnated PTFE packing 8122 and 8117 ACE Stir-Lube, a very-high-film-strength lubricant, pressures down to 7 microns have been obtained at 170 rpm using only a mechanical pump. Speeds over 1000 rpm are not advisable due to the heat generated. Lubrication (4 or 5 drops) is required at intervals depending on the speed of operation (about every two hours at 200 rpm). Packing life is indefinite. Frequent tightening of the packing box is unnecessary once the packing has run in. The high-vacuum lubricant trap adapter, No. 8113, prevents lubricant from running into material being stirred. I.D. is 10mm. For use with 8068, 8070, 8071, 8073, 9532, and 9533, 10mm shafts.



Joint	Qty.	Order Code	Each	Joint	Qty.	Order Code	Each
24/40	1	8051-10	140.78	35/20 & 35/25	1	8051-35	141.48
29/42	1	8051-15	141.48				
34/45	1	8051-20	145.26				
45/50	1	8051-25	103.05				

8053 BEARING *Trubore®*, 10mm ♠

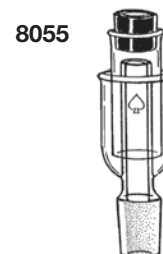
Especially useful for controlled atmospheric work. Used with 8068 solid shaft to balance small pressure differentials across the bearing. Used with No. 8068 hollow shafts for introduction and dispersion of gaseous catalysts, etc. Holes in bearing and shaft coincide. I.D. is 10mm. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.



Joint	Qty.	Order Code	Each
24/40	1	8053-10	210.34

8055 BEARING *High Vacuum, Trubore®*, 10mm ♠

This bearing is the standard liquid seal type except that the use of Trubore® tubing enables this unit to perform very satisfactorily under high vacuum conditions. I.D. is 10mm. For use with 8068, 8070, 8071, 8073, 9532, and 9533 10mm shafts.



Joint	Qty.	Order Code	Each
24/40	1	8055-10	146.15

8050 STIRRER BEARING *Mechanical Seal, PTFE*, 10mm ★

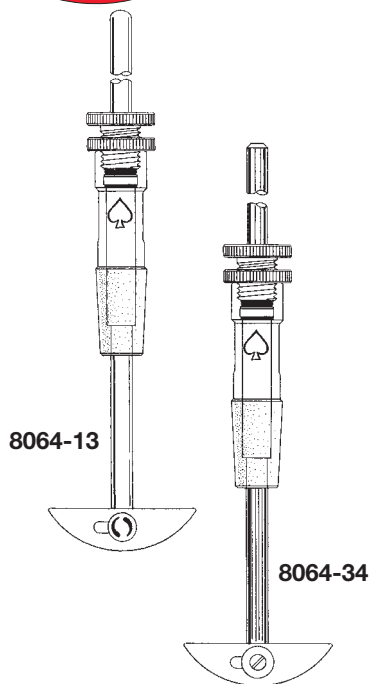
Newly designed mechanical stirrer bearing from ACE. All PTFE, Rulon or PEEK wetted area construction provides for low extractables. Completely contained bearing and internal parts also provides non-shedding of materials into the reaction. The bearing is excellent for vacuum applications and can be operated at sub-torr levels. Rated for up to 400rpm speeds. It can be used on either glass polished or stainless steel 8068, 8073, 8074, 8075, 9532, and 9533 stir shafts. See below for joint sizes.



Joint Size	Qty.	Order Code	Each
24/40	1	8050-02	563.06
29/42	1	8050-04	594.35
#15 Ace-Thred	1	8050-10	613.46
#25 Ace-Thred	1	8050-12	632.02
Replacement size -116 Outside FETFE o-ring	12	7855-726	26.84

**Complete
Trubore®
Assemblies**

10mm Shafts, Bearings & Agitators



8064 STIRRER ASSEMBLY *Glass Shaft, PTFE Blade, 10mm* ♦

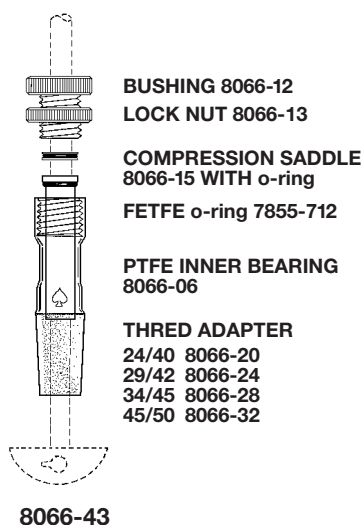
Precision Trubore® Stirrer Assembly consisting of 10mm I.D. glass and PTFE bearing, polished glass shaft with button, and PTFE blade. Bearing consists of PTFE inner bearing, glass-filled PTFE bushing and lock nut, compression saddle with o-ring and threaded glass adapter (see complete component listing under 8066).

For Flask Cap., mL	Joint	Bearing No.	Shaft No.	Blade No.	Qty.	Order Code	Each
250- 500	24/40	8066-43	8075-12	8085-07	1	8064-13	183.08
500- 1000	29/42	8066-46	8075-12	8085-11	1	8064-18	188.57
2000- 3000	29/42	8066-46	8075-12	8085-15	1	8064-21	192.57
5000-12000	34/45	8066-50	8075-14	8085-19	1	8064-22	204.97
5000-12000	45/50	8066-55	8075-14	8085-19	1	8064-24	219.38

8064 STIRRER ASSEMBLY *Stainless Steel Shaft, PTFE Blade, 10mm* ★

Precision Trubore® Stirrer Assembly consisting of 10mm I.D. glass and PTFE bearing, polished stainless steel shaft with button, and PTFE blade. Bearing consists of PTFE inner bearing, glass-filled PTFE bushing and lock nut, compression saddle with o-ring and threaded glass adapter (see complete component listing under 8066).

For Flask Cap., mL	Joint	Bearing No.	Shaft No.	Blade No.	Qty.	Order Code	Each
250- 500	24/40	8066-43	8074-02	8085-07	1	8064-34	270.00
500- 1000	29/42	8066-46	8074-02	8085-11	1	8064-39	275.49
2000- 3000	29/42	8066-46	8074-04	8085-15	1	8064-42	285.96
5000-12000	45/50	8066-55	8074-07	8085-19	1	8064-45	314.67



BUSHING 8066-12
LOCK NUT 8066-13

COMPRESSION SADDLE 8066-15 WITH o-ring

FETFE o-ring 7855-712

PTFE INNER BEARING 8066-06

THRED ADAPTER
24/40 8066-20
29/42 8066-24
34/45 8066-28
45/50 8066-32

8066 BEARING *Trubore®, PTFE, Ace-Thred, 10mm* ♦

Self-aligning, lubricant-free PTFE Trubore® glass and PTFE bearing for use with 8074 stainless steel or 8075 glass 10mm stirring shafts. Complete consists of PTFE inner Trubore® bearing, Ace-Thred glass adapter, non-flaking PTFE compression saddle with o-ring and glass-reinforced PTFE bushing and lock nut with FETFE o-ring. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with o-ring maintains constant force with little attention. Vacuum down to 1mm. Not recommended for precision ground glass shafts. For replacement compression saddle o-ring, see 7855-718; for bearing o-ring, see 7855-712.

	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8066-06	31.98
Glass Filled/PTFE Bushing, only	1	8066-12	31.34
Glass Filled/PTFE Lock Nut, only	1	8066-13	10.23
Compression Saddle w/o-ring, only	1	8066-15	11.37

Threaded Glass Adapter, only

Joint	Qty.	Order Code	Each
24/40	1	8066-20	30.06
29/42	1	8066-24	33.67
34/45	1	8066-28	39.01
45/50	1	8066-32	53.42
35/25	1	8066-33	35.43

Complete Assembly

Joint	Qty.	Order Code	Each
24/40	1	8066-43	114.98
29/42	1	8066-46	118.59
34/45	1	8066-50	123.93
45/50	1	8066-55	138.34
35/25	1	8066-60	120.35

10mm Shafts, Bearings & Agitators

8066 BEARING/DEBRIS TRAP PTFE, Ace-Thred, 10mm ♦

Combination, all-in-one, stirring shaft bearing and debris trap, designed to prevent particles from bearing wear from entering reaction vessel. Lubricant free PTFE bearing with compression saddle o-ring makes a mechanical seal against a polished glass shaft. Debris trap section consists of a PTFE washer and particle well. #7 Ace-Thred on glass body side allows access for clean out, or may be used for evacuation/gas purge port. Complete item supplied with glass body, inner PTFE bearing, PTFE bushing and lock nut, Rulon saddle o-ring, "Ace-Safe" connector for 1/4-inch tubing, and PTFE plug. Use with 8074 and 8075 10mm shafts.

	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8066-08	45.75
Glass Filled/PTFE Bushing, only	1	8066-12	31.34
Glass Filled/PTFE Lock Nut, only	1	8066-13	10.23
Compression Saddle w/o-ring, only	1	8066-15	11.37
PTFE Washer	1	8066-03	29.61
PTFE Plug, #7	1	5846-44	22.79
"Ace-Safe" Connector, #7 x 1/4-inch	1	5853-06	13.92

Threaded Glass Adapter, only

Joint	Qty.	Order Code	Each
§24/40	1	8066-220	109.93
§29/42	1	8066-224	112.71
§34/45	1	8066-228	118.28
§45/50	1	8066-232	129.41
§35/25	1	8066-233	114.12

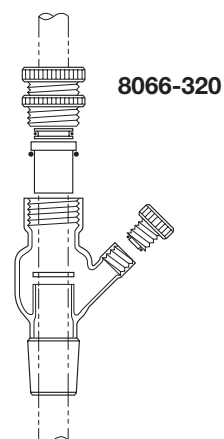
Complete Assembly

Joint	Qty.	Order Code	Each
§24/40	1	8066-320	274.94
§29/42	1	8066-324	277.72
§34/45	1	8066-328	283.29
§45/50	1	8066-332	294.42
§35/25	1	8066-333	279.13

Replacement FETFE o-rings

FETFE, Size -014	12	7855-712	16.10
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NOTE: Glass Trap Body is available without side port. Call or email for details.



8066 BEARING Trubore®, PTFE, Ace-Thred, 10mm ♦

Self-aligning, lubricant-free PTFE Trubore® bearing for use with 8074 stainless steel or 8075 glass 10mm stirring shafts. Added side port hose connection allows purging flask contents with a gas, or in airless work, allows for an inert gas blanket. Complete consists of PTFE inner Trubore® bearing, Ace-Thred glass adapter, non-flaking PTFE compression saddle with o-ring, and glass-reinforced PTFE bushing and lock nut with FETFE o-ring. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with o-ring maintains constant force with little attention. Vacuum down to 1mm. Not recommended for precision ground glass shafts. Use with 8074 and 8075 10mm shafts. For replacement compression saddle o-ring, order 7855-718; for bearing o-ring, order 7855-712.

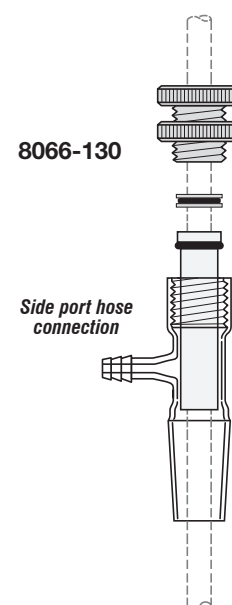
	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8066-06	31.98
Glass Filled/PTFE Bushing, only	1	8066-12	31.34
Glass Filled/PTFE Lock Nut, only	1	8066-13	10.23
Compression Saddle w/o-ring, only	1	8066-15	11.37

Threaded Glass Adapter, only

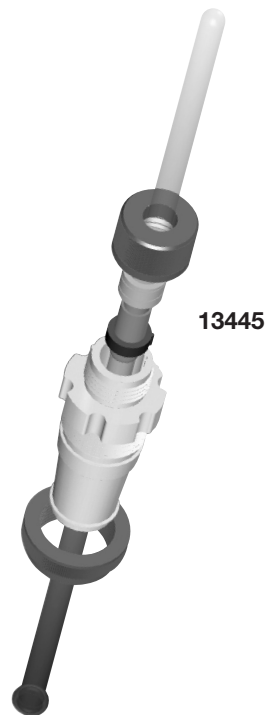
Joint	Qty.	Order Code	Each
§24/40	1	8066-70	40.65
§29/42	1	8066-71	44.23
§34/45	1	8066-72	49.59
§45/50	1	8066-73	63.98
§35/25	1	8066-79	46.01

Complete Assembly

Joint	Qty.	Order Code	Each
§24/40	1	8066-130	125.57
§29/42	1	8066-132	129.15
§34/45	1	8066-134	134.51
§45/50	1	8066-136	148.90
§35/25	1	8066-140	130.93



10mm Rods, Bearings & Agitators



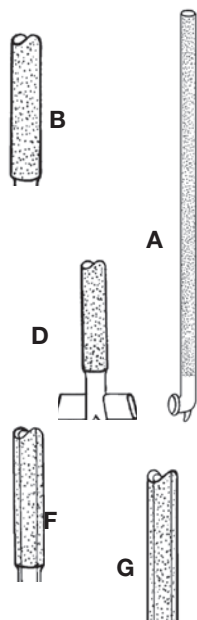
13445 BEARING *Debris Free, PTFE, 10mm* ★

Vacuum tight (~5 Torr), flake free, chemically resistant stirrer bearing makes a mechanical seal against a polished glass shaft. Debris trap section consists of a PTFE sleeve for a wide range of joint and shaft diameter sizes. For use with 10mm polished glass or stainless steel shafts, NOT recommended for PTFE shafts. Bearing consists of a PTFE standard taper body with added PEEK for better stability, glass filled polypropylene screw cap, PEEK compression spring, PTFE/PEEK sleeve and a glass filled polypropylene loosening nut. For use up to 500 rpm.

For Shaft Size, mm	⌀ Joint	Qty.	Order Code	Each
10	24/40	1	13445-30	178.38
10	29/42	1	13445-32	187.94
10	34/45	1	13445-34	208.36
10	45/50	1	13445-36	210.53

Replacement Seals & Springs:

	Qty.	Order Code	Each
PTFE/PEEK sleeve seal	1	13445-420	28.33
PEEK compression spring	1	13445-426	30.78



8068 STIRRING SHAFT *Borosilicate, Precision Ground, 10mm* ♠

Precision ground glass stirring shafts, 10mm OD, paddled, button type and bead type. Button type shafts accept 8083, 8085, 8086, 8087 and 8096 stir blades. Beaded shafts accept 8088, 8089 and 8090 agitators. Use with Trubore® bearings 8036, 8038, 8039, 8040, 8042, 8043, 8047, 8051, 8053, 8050 and 13443. Join to motor using 8124 series chucks.

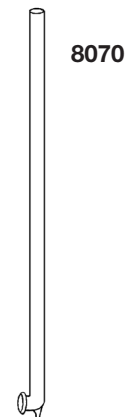
	For Flask Size, mL	Lengths, mm		Qty.	Order Code	Each	Description
		Ground	Overall				
A	250- 3000	420	440	1	8068-03	41.36	BUTTON TYPE, used with any blade listed under 8083, 8084, 8085, and 8086. For bearings, see 8036, 8038, 8039, 8040, 8042, 8043, 8051 or 8055.
	3000- 5000	560	580	1	8068-02	44.10	
	12000-22000	660	690	1	8068-04	46.27	
	50000	710	740	1	8068-06	49.39	
B	250- 3000	420	440	1	8068-08	63.23	PADDLE TYPE, will fit through ⌀45/50 joint on boiling flask.
D	250- 3000	360	440	1	8068-18	89.70	PADDLE TYPE, for large neck boiling flask such as ⌀71/60 or larger.
	3000- 5000	500	580	1	8068-17	92.37	
F	250- 3000	420	440	1	8068-25	69.18	HOLLOW TYPE, for material introduction. Use with 8053 bearing.
	3000- 5000	560	580	1	8068-27	94.14	
G	250- 3000	420	440	1	8068-30	54.58	BEAD TYPE, for use with 8088, 8089 and 8090 PTFE Agitators.
	3000- 5000	560	580	1	8068-32	56.20	
	12000-22000	660	690	1	8068-31	60.84	

10mm Shafts, Bearings & Agitators

8070 STIRRING SHAFT *PTFE-Coated Glass, 10mm* ♠

Precision ground glass stirring shafts, 10mm O.D., button type, PTFE coating permits higher stirring speeds with Trubore® bearings. If used unlubricated, 500 rpm max with water-cooled 8040 bearing. Compatible with 8036, 8038, 8039, 8043, 8047, 8051, 8055 and 13443 bearings. Button type shafts accept 8083, 8085, 8086, 8087 and 8096 stir blades. Join to stirrer motor using 8124 series chucks.

For Flask Cap., mL	Length, mm	Qty.	Order Code	Each
250- 5000	440	1	8070-05	77.92
12000-22000	690	1	8070-10	86.29



8071 STIRRING SHAFT *PTFE-Coated Steel, 10mm* ♠

PTFE covered stainless steel stirring shafts, 10mm O.D., drilled type. If used unlubricated, 500 rpm max with water cooled 8040 bearing, 100 rpm maximum recommended with 8036, 8038, 8039, 8043, 8047, 8051 and 8055 bearings. With condensate film as added heat transfer agent, 2000 rpm can be attained. Drilled type shaft accepts 8088, 8089 and 8090 agitators. Compatible with our 13443 collet-type bearing. Join to stirrer motor using 8124 series chucks.

For Flask Cap., mL	Length, mm	Qty.	Order Code	Each
250- 5000	460	1	8071-05	213.68
12000-22000	640	1	8071-07	272.29
12000-22000	690	1	8071-10	275.71



13443 STIRRER BEARING *PTFE, 8, & 10mm* ★

Inert PTFE Stirrer bearing. Features a totally enclosed bearing body for non-shedding, anti-whip, chemically resistant design. The bearing can also be used in slight vacuum or slight pressure applications. The design has a composite PTFE/PEEK main internal seal and a specially fabricated glass ball-bearing for rigidity and smoothness during lengthy operation. Max recommended speeds up to 500 rpm continuous operation. Ideal for glass, metal or PTFE stir shafts. Bottom is a molded, inner standard taper joint. Average length is 96mm and 45mm O.D. at bearing center.

For Shaft Size, mm	Joint	Qty.	Order Code	Each
8	24/40	1	13443-10	441.37
10	24/40	1	13443-12	441.37

13443



10mm Shafts, Bearings & Agitators

13850



13850 STIRRING SHAFT *PTFE Coated Stainless Steel, 10mm* ★

Chemically resistant, PTFE, three bladed, retreat curve stir shaft. Fully molded bottom blade is designed with a 30° retreat angle. 10mm shaft is PTFE encapsulated stainless steel.

Shaft O.D., mm	Length, mm	Blade		Qty.	Order Code	Each
		Height, mm	Rotor Degree			
10	400	10	50	1	13850-01	318.12
10	500	10	50	1	13850-04	345.55

New



13852

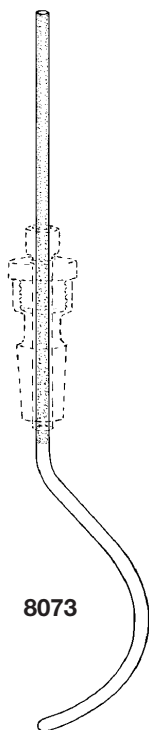
13852 STIRRING SHAFT *PTFE, 10mm* ★

Chemically inert, four bladed, screw propeller design, PTFE stir shaft. Comes in two lengths with 10mm OD, steel reinforced shaft. EX means that the end of the shaft has 50mm of steel shaft exposed at one end for better chuck grip. Pitch angle is 45°.

Shaft O.D., mm	Length, mm	Rotor Diameter	Qty.	Order Code	Each
10	650EX	70	1	13852-10	345.55
10	750EX	70	1	13852-15	345.55



10mm Shafts, Bearings & Agitators

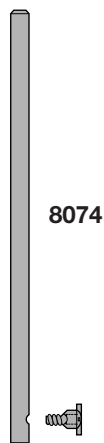


8073

8073 STIRRING SHAFT "C" Type, Borosilicate, 10mm

Precision ground glass stirring shafts, 10mm O.D., crescent type. Useful for stirring viscous materials at low rpm. Available for round bottom flasks of 1, 3 and 5 liters. Code -19, three liter size will fit a two liter flask, but closely. Flask opening must be 29/42 or larger. Use with Trubore® bearings 8036, 8038, 8039, 8040, 8043, 8047, 8051, 8053 and 8055. Compatible with our 8050 PTFE mechanical seal and 13443 PTFE collet type bearings. Join to stirrer motor using 8124 series chucks.

For Flask Cap., mL	Qty.	Order Code	Each
1000	1	8073-16	64.94
3000	1	8073-19	64.94
5000	1	8073-23	64.94



8074

8074 STIRRING SHAFT Stainless Steel, 10mm ★

Polished stainless steel stirring shafts, 10mm O.D., drilled type with removable button. When used with 8066 PTFE bearing, a lubricant-free vacuum seal can be realized at speeds up to 200 rpm. Recommended for use with 8044, 8050, 8066, 13443 and 13445 bearings. With button, shaft accepts 8083, 8085, 8086, 8087 and 8096 stir blades. With button removed, shaft will accept 8094 and 8095 agitators secured with a set-screw anywhere along its ground flat section. Join to stirrer motor using 8124 series chucks.

For Flask Cap., mL	Lengths, mm		Qty.	Order Code	Each
	Flat Section	Overall			
250- 1000	100	420	1	8074-02	144.18
2000- 5000	200	450	1	8074-04	150.65
5000-12000	280	580	1	8074-07	154.55

Replacement Buttons:

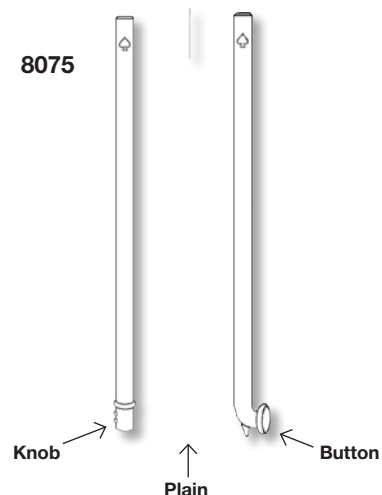
Qty.	Order Code	Each
1	8074-40	255.21

10mm Shafts, Bearings & Agitators

8075 STIRRING SHAFT *Borosilicate, Polished, 10mm* ♦

Polished glass stirring shafts, 10mm O.D. Recommended for use with only our 8050, 8066, 13443 and 13445 bearings. Join 8083, 8085, 8086, 8087 & 8096 blades to button type shafts. Join 8088, 8089 and 8090 agitators to beaded shafts. Plain shafts will accept 8094 and 8095 agitators secured with a set-screw anywhere along its ground flat section. Join to stirrer motor using 8124 series chucks.

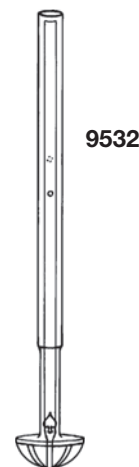
For Flask Cap., mL	Type	Length, mm	Qty.	Order Code	Each
250- 3000	With Button	440	1	8075-12	57.26
3000- 5000	With Button	580	1	8075-14	59.26
12000-22000	With Button	690	1	8075-15	61.89
250- 3000	Plain, w/o Button	440	1	8075-21	48.51
3000- 5000	Plain, w/o Button	580	1	8075-23	50.60
12000-22000	Plain, w/o Button	690	1	8075-24	52.64
250- 3000	With Bead/Knob	440	1	8075-32	58.77
3000- 5000	With Bead/Knob	580	1	8075-34	62.08
12000-22000	With Bead/Knob	690	1	8075-36	67.74



9532 STIRRING SHAFT *Hollow, Borosilicate, 10mm* ♦

Precision ground glass stirring shaft with attached vanes, 10mm. For use when agitation and gas introduction are desired at the same time. Agitator will fit through a F 45/50 joint. Designed for use with our 9523 Trubore® bearing and 9443 or 9446 mini-lab flask heads. Introduced gas exits the hollow shaft within the agitator and produces a fine dispersion. Join to stirrer motor with 8124 series chucks.

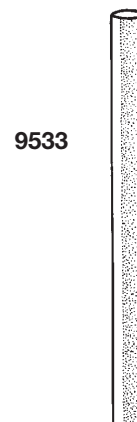
Qty.	Order Code	Each
1	9532-10	144.22



9533 STIRRING SHAFT *Borosilicate, Ground, 10mm* ♦

Precision ground glass stirring shaft, 10mm OD, attached vanes. Vanes will fit through a F 45/50 joint and are contoured for use with our 9448 and 9456 series Mini-Lab flasks. Use with Trubore® bearings 8036, 8038, 8039, 8040, 8042, 8043, 8047, 8051, 8053 and 8055. Compatible with our 8050 mechanical seal and 13443 PTFE collet type bearings. Join to stirrer motor using 8124 series chucks.

Qty.	Order Code	Each
1	9533-02	88.19



10mm Shafts, Bearings & Agitators



8082

8082 STIRRER BLADES *PTFE, Oval, 10mm ♠*

PTFE oval stir blades for 10mm O.D. button type stir shafts. 10mm O.D. shafts can be found in our 8068, 8070, 8074 and 8075 series.

Width, mm	Length, mm	Flask Cap., mL	Qty.	Order Code	Each
19	40	100- 500	1	8082-02	8.64
19	60	250- 500	1	8082-04	10.32
24	80	1000-2000	1	8082-06	12.97
24	115	2000-3000	1	8082-08	14.45



8083

8083 STIRRER BLADES *Borosilicate Glass, 10mm ♠*

Glass stir blades for 10mm O.D. button type stir shafts. 10mm O.D. stir shafts can be found in our 8068, 8070, 8074 and 8075 series.

Width, mm	Length, mm	Flask Cap., mL	Qty.	Order Code	Each
19	48	100- 500	1	8083-04	9.43
19	60	250- 500	1	8083-08	9.52
19	76	500- 1000	1	8083-12	30.79
23	113	2000- 3000	1	8083-16	30.93
24	134	5000-12000	1	8083-20	32.70
24	160	22000-72000	1	8083-24	32.88



8085

8085 STIRRER BLADES *PTFE, 10mm ♠*

PTFE stir blades for button type stir shafts. 10mm O.D. shafts can be found in our product series 8068, 8070, 8074 and 8075. 19mm O.D. shafts can be found in our 8076 and 8077 series.

Width, mm	Length, mm	Flask Cap., mL	Qty.	Order Code	Each
19	48	100- 500	1	8085-03	9.97
19	60	250- 500	1	8085-07	10.84
19	76	500- 1000	1	8085-11	12.72
23	113	2000- 3000	1	8085-15	16.72
24	130	5000-12000	1	8085-19	21.78
24	160	22000-72000	1	8085-23	27.28



8086

8086 STIRRER BLADES *Stainless Steel, 10mm ♠*

304 stainless steel stir blades for 10mm O.D. button type stir shafts. 10mm O.D. stir shafts can be found in our 8068, 8070, 8074 and 8075 series.

Width, mm	Length, mm	Flask Cap., mL	Qty.	Order Code	Each
19	76	500- 1000	1	8086-04	31.06
23	113	2000- 3000	1	8086-08	30.82
24	134	5000-12000	1	8086-12	36.19
24	160	22000-72000	1	8086-16	39.46

8126-24



8126 STIRRING SHAFT *Pass-through Assembly, 10mm ♠*

Item includes the 8126-10 stir shaft coupling with pin that is fitted into 7mm O.D. stainless steel drive shaft. Shaft that is 305mm long and fits up through the chuck and opening in the Heidolph RZR model and Caframo BDC model overhead stir motors and allows for adjusting the height of the entire stir shaft assembly. For 10mm stir shafts.

Qty.	Order Code	Each
1	8126-24	246.82

10mm Shafts, Bearings & Agitators

8096 STIRRER BLADES *Stainless Steel, 10mm* ♦

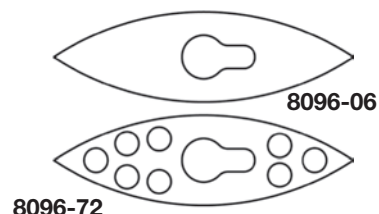
316 stainless steel, football shaped, stir blades for 10mm O.D. button type stir shafts. Holed versions, codes -70 thru -74, provide even greater agitation. 10mm O.D. stir shafts can be found in our 8068, 8070, 8074 and 8075 series.

Without holes

Width, mm	Length, mm	Qty.	Order Code	Each
19	40	1	8096-04	32.34
24	80	1	8096-06	33.36
24	115	1	8096-10	38.74

With holes

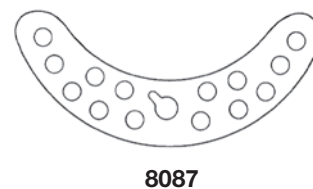
Width, mm	Length, mm	Qty.	Order Code	Each
19	60	1	8096-70	37.05
24	80	1	8096-72	37.72
24	115	1	8096-74	43.13



8087 STIRRER BLADES *Banana Type, PTFE, 10mm* ♦

PTFE banana shaped stir blades for 10mm O.D. button type stir shafts. 3mm thick blades have a number of perforations and are designed to closely fit various sizes of round bottom flasks. 10mm O.D. stir shafts can be found in our 8068, 8070, 8074 and 8075 series.

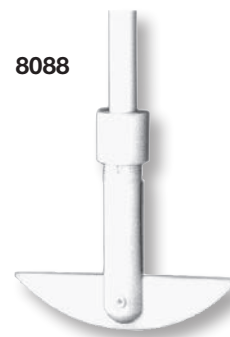
For Flask Cap., mL	Width, mm	Lgth., mm	Qty.	Order Code	Each	For Flask Cap., mL	Width, mm	Lgth., mm	Qty.	Order Code	Each
500	21	87	1	8087-05	27.31	5000	35	175	1	8087-13	50.73
1000	23	109	1	8087-07	33.06	12000	37	222	1	8087-15	53.17
2000	31	146	1	8087-09	35.59	22000	40	263	1	8087-19	74.19
3000	31	157	1	8087-11	42.56						



8088 AGITATOR *PTFE, Single Blade Type, 10mm* ♦

PTFE agitator with removable blade secured with a PTFE pin. Supplied 76mm long blade will fit through a 29/42 joint. Fits 10mm O.D. drilled type or beaded type 8068, 8071 and 8075 shafts.

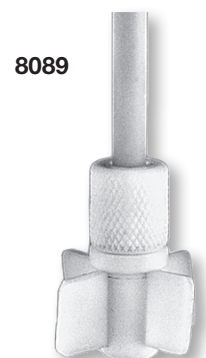
Complete			Replacement Blade		
Qty.	Order Code	Each	Qty.	Order Code	Each
1	8088-10	228.84	1	8088-03	34.91



8089 AGITATOR *PTFE, Multi-Paddle, 10mm* ♦

PTFE multi-paddle agitator for 10mm O.D. drilled or knob type shafts. Paddles are replaceable. Fits 10mm O.D. drilled or knob type 8068, 8071 and 8079 shafts.

Size, mm	Qty.	Complete		Blades, Only	
		Order Code	Each	Order Code	Each
38	1	8089-04	107.12	8089-14	19.04
64	1	8089-06	114.66	8089-16	24.85
76	1	8089-08	116.00	8089-18	27.09



10mm Shafts, Bearings & Agitators

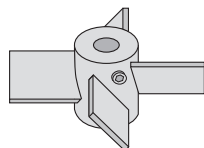
8090



8090 AGITATOR PTFE, Turbine, 10mm ♦

All-PTFE, turbine type agitator. Unique locking arrangement assures positive grip. Agitator fits 10mm shafts. Shaft opening is drilled straight through to allow positioning of agitator at any height on shaft as well as at the bottom. For use with glass stirring shaft, 8068-G, 8075 or PTFE shaft, 8071.

Size, mm	Qty.	Order Code	Complete
38	1	8090-04	142.49
64	1	8090-08	155.77



8094

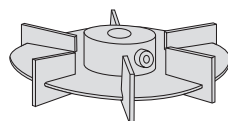
8094 AGITATOR 316 Stainless Steel, Multi-Paddle, 10mm ★

For use with 8074 stainless steel shaft or 8075 borosilicate straight shaft. Center hole is 10mm I.D. and one or more can be positioned on shaft at various locations using set screws to secure. With stainless shaft use stainless set screw; with glass shaft use Kel-F-tipped set screw. Both screws supplied with agitator.

Size, mm	Qty.	Order Code	Each
75	1	8094-23	199.47
89	1	8094-27	211.59

Replacement set screws:

	Qty.	Order Code	Each
Stainless	1	8094-50	4.57
Stainless/Kel-F	1	8094-52	7.04



8095

8095 AGITATOR 316 Stainless Steel, Turbine, 10mm ★

10mm steel agitator with multiple fins which may be bent, with care, to different angles. See 8094 listing, above, for replacement set screws.

Size, mm	Qty.	Order Code	Each
75	1	8095-31	211.00
89	1	8095-35	225.41

8113



8113 ADAPTER Lubricant Trap, High Vacuum, 10mm ♦

Primarily designed for use with ACE 8051 bearings. The inner tube through which the stirring shaft passes, plus the PTFE o-ring supplied with each unit, prevents the lubricant or foreign particles from contaminating the flask contents. For replacement PTFE ring, order 8113-89.

Top Joint	Bottom Joint	Qty.	Order Code	Each
24/40	24/40	1	8113-10	75.71
29/42	29/42	1	8113-20	78.96
29/42	34/45	1	8113-25	87.50

8124



8124 CHUCK "Flex-Grip," 10mm ♦

Nylon chuck for use with ACE stirring shafts or other shafts of the same dimensions. Chuck has flexible insert which allows for misalignment of shaft without danger of breakage. Top has set screw for coupling to stir motor shaft.

For Stirring Shaft Size, mm	For Motor Shaft, mm (In.)	Qty.	Order Code	Each
10	8 (5/16)	1	8124-10	45.19
10	9.5 (3/8)	1	8124-12	45.19
10	13	1	8124-13	45.19

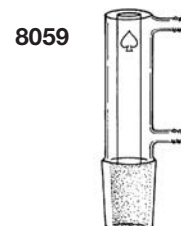
Insert Only Size, mm	Qty.	Order Code	Per Package
10	6	8124-25	17.53

19mm Shafts, Bearings & Agitators

8059 BEARING *Trubore®*, Water-Cooled, 19mm ♦

Trubore® 19mm I.D., stirrer bearing with standard taper joint bottom. Jacketed for water cooling. Designed for use with 19mm O.D. 8077 and 8078 precision ground glass shafts and 8079 PTFE shafts with stainless steel core. Hose connections are size D for use with 3/8-inch I.D. tubing.

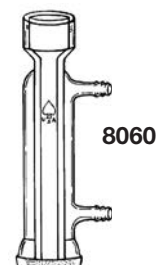
‡ Joint	Qty.	Order Code	Each
45/50	1	8059-05	236.66
55/50	1	8059-09	241.31



8060 BEARING *Trubore®*, Water-Cooled, 19mm ♦

Trubore® 19mm I.D., glass stirrer bearing with bottom spherical ground joint. Joint can be clamped to prevent rotation. Length is 15.2cm (6 inches). Designed to accommodate ACE 8112-10 packing box which sits directly into the top of the bearing. Designed for use with 19mm O.D. 8077 and 8078 precision ground glass shafts and 8079 PTFE shafts with stainless steel core. Hose connections are size D for use with 3/8-inch I.D. tubing.

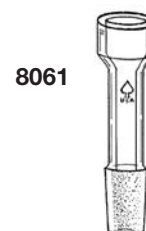
‡ Joint	Qty.	Order Code	Each
65/40	1	8060-10	308.36



8061 BEARING *Trubore®*, Heavy Duty, 19mm ♦

Heavy duty, 19mm I.D., Trubore® stir bearing with bottom standard taper joint. Designed to accommodate ACE 8112-10 packing box which sits directly into the top of the bearing. Designed for use with 19mm O.D. 8077 and 8078 precision ground glass shafts and 8079 PTFE shafts with stainless steel core. Length is 20.3 cm (8 inches). Heavy duty style for use with larger capacity flasks.

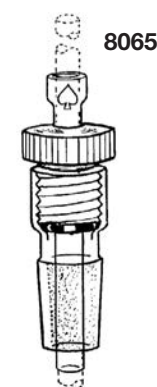
‡ Joint	Qty.	Order Code	Each
45/50	1	8061-04	183.89



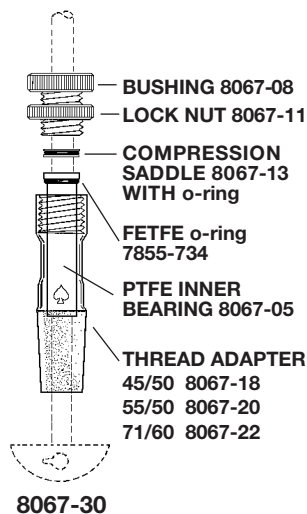
8065 BEARING *Trubore®*, Glass, Heavy Duty, 19mm ♦

Trubore®, self aligning, heavy duty three piece bearing. Complete consists of inner 19mm I.D. Trubore® bearing, compression seal nylon bushing, with o-ring and #25 Ace-Thred adapter with standard taper, ground joint bottom. Design allows for slight misalignment of stir motor and the bearing without breaking or shaft seizing as the inner bearing will spin. Designed for use with 19mm O.D. 8077 and 8078 precision ground glass shafts and 8079 PTFE shafts with stainless steel core. Heavy duty style for use with larger capacity flasks. For replacement o-ring, see 7855-734.

Qty.	‡ 34/45 Bottom Joints		‡ 45/50 Bottom Joints		
	Order Code	Each	Order Code	Each	
Inner Bearing, only	1	8065-06	68.36	8065-06	68.36
Bushing with o-ring	1	8065-10	41.66	8065-10	41.66
#25 Ace-Thred Adapter, only	1	8065-14	60.95	8065-16	64.49
Complete	1	8065-60	170.97	8065-64	174.51


19MM SIZE SHAFTS, BEARINGS, AND AGITATORS

19mm Shafts, Bearings & Agitators



8067 BEARING *Trubore®*, PTFE, Ace-Thred, 19mm ♠

Self-aligning, lubricant-free PTFE Trubore® bearing for use with 8076, 19mm polished glass stirring shaft. Complete consists of PTFE inner Trubore® bearing, #25 Ace-Thred glass adapter, non-flaking PTFE compression saddle with o-ring and glass-reinforced PTFE bushing and lock nut with FETFE o-ring. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with o-ring maintains constant force with little attention. Vacuum down to 1mm of Hg. Not recommended for precision ground glass shafts. For replacement "saddle" o-ring, order 7855-730; for bearing o-ring, order 7855-734.

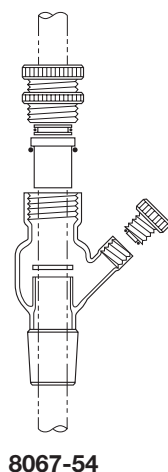
	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8067-05	85.82
Glass Filled/PTFE Bushing, only	1	8067-08	47.30
Glass Filled/PTFE Lock Nut, only	1	8067-11	17.28
Saddle o-ring, only	1	8067-13	16.95

#25 Ace-Thred Glass Adapter, only

§ Joint	Qty.	Order Code	Each
45/50	1	8067-18	109.49
55/50	1	8067-20	105.09
71/60	1	8067-22	115.31

Complete Assembly

Bottom			
§ Joint	Qty.	Order Code	Each
45/50	1	8067-30	276.84
55/50	1	8067-34	272.44
71/60	1	8067-38	282.66



8067-54

NOTE: Glass trap body is available without side port. Call or e-mail for details.

8067 BEARING/DEBRIS TRAP *PTFE, Ace-Thred, 19mm ♠*

Combination all-in-one stirring shaft bearing and debris trap. Designed to prevent particles from entering the reaction vessel. Lubricant-free PTFE Bearing with compression saddle o-ring makes a mechanical seal against 8076 polished glass shaft. Debris trap section consists of a PTFE washer and particle well. #11 Ace-Thred on glass body side allows access for clean-out, or may be used for evacuation/gas purge port. Complete item supplied with glass body, inner PTFE bearing, PTFE bushing and lock nut, Rulon saddle o-ring, "Ace-Safe" connector for 3/8-inch tubing, and PTFE plug.

	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8067-07	80.60
Glass Filled/PTFE Bushing, only	1	8067-08	47.30
Glass Filled/PTFE Lock Nut, only	1	8067-11	17.28
Compression Saddle w/o-ring, only	1	8067-13	16.95
PTFE Washer	1	8067-09	34.12
PTFE Plug, #7	1	5846-46	33.07
"Ace-Safe" Connector, #7 x 1/4-inch	1	5853-15	22.66

#25 Ace-Thred Glass Adapter, only

Bottom			
§ Joint	Qty.	Order Code	Each
45/50	1	8067-45	152.31
55/50	1	8067-47	167.40
71/60	1	8067-49	184.42

Complete Assembly

Bottom			
§ Joint	Qty.	Order Code	Each
45/50	1	8067-54	404.29
55/50	1	8067-57	419.38
71/60	1	8067-59	436.40

19mm Shafts, Bearings & Agitators

8076 STIRRING SHAFT *Borosilicate, Polished, 19mm* ♠

Polished glass stirring shafts, 19mm O.D. Available in solid and hollow styles and in various lengths. Join 8085 blades to button type shafts, Join 8091, 8092, 8093 and 8100 agitators to either knob or drilled style shafts. Join all shafts to stirrer motor using 8124 series chucks. Recommended for use with our 8050 mechanical seal, 8067 PTFE and 13445 PTFE debris-free bearings.

For Flask Cap., Liters	Length, mm (Inches)	Bottom Style	Qty.	Order Code	Each
22	700 (28)	Button	1	8076-05	195.52
22	900 (36)	Button	1	8076-07	196.97
50-72	1,200 (48)	Button	1	8076-10	197.84

8076-05
Button



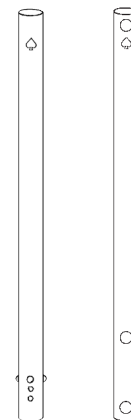
8076 STIRRING SHAFT *Borosilicate, Polished, 19mm* ♠

19mm O.D. polished stirring shaft. Can be used with 8050, 8059, 8060, 8061, 8065, 8067, or 13445 bearings and 8091, 8092 or 8093 agitators. Fits 8124 chuck.

For Flask Cap., Liters	Type Shaft	Length, mm (Inches)	Bottom Style	Qty.	Order Code	Each
10	Hollow	800 (32)	Knobed Bottom	1	8076-42	217.26
10	Solid	800 (32)	Drilled Holes	1	8076-43	246.99
20	Solid	900 (36)	Drilled Holes	1	8076-40	255.21
30	Hollow	1,200 (48)	Knobed Bottom	1	8076-44	217.26
50	Solid	1,140 (45)	Drilled Holes	1	8076-45	298.80
50	Hollow	1,400 (54.5)	Knobed Bottom	1	8076-46	303.16
50	Solid	1,400 (54.5)	Drilled Holes	1	8076-48	315.53

8076-42,
-44, -46
Knobed

8076-40,
-43, -45, -48
Drilled



8077 STIRRING SHAFT *Precision-Ground, Borosilicate, 19mm* ♠

19mm O.D. button type, hollow shaft for use with all 19mm I.D. ACE Trubore® bearings, 8059, 8060, 8061 or 8065. Also compatible with 8050 mechanical seal and 13445 PTFE bearings. Fits 8124 or 8126 chucks. Ground surface approximately 380mm long. For stir blades, see 8085.

For Flask Cap., Liters	Length, mm (Inches)	Qty.	Order Code	Each
22	700 (28)	1	8077-23	116.81
22	900 (36)	1	8077-25	131.64
50-72	1,200 (48)	1	8077-27	125.76

8077



19mm Shafts, Bearings & Agitators



13852

13852 STIRRING SHAFT PTFE, 19mm ★

Chemically inert, four bladed, screw propeller design, PTFE stir shaft. Comes in two lengths and two different propeller rotor pitches with 19mm OD, steel reinforced shaft. EX means that the end of the shaft has 50mm of steel shaft exposed at one end for better chuck grip.

Shaft O.D., mm	Length, mm	Rotor Diameter	Qty.	Order Code	Each
19	750EX	80	1	13852-19	537.51
19	100EX	120	1	13852-22	Call

8126 STIRRING SHAFT Pass-through Assembly, 19mm ♠

Item includes the 8126-19 stir shaft coupling with pin that is fitted into 7mm O.D. stainless steel drive shaft. Shaft that is 305mm long and fits up through the chuck and opening in the Heidolph RZR model and Caframo BDC model overhead stir motors and allows for adjusting the height of the entire stir shaft assembly. For 19mm stir shafts.

8126-22



Qty.	Order Code	Each
1	8126-22	284.12

8078



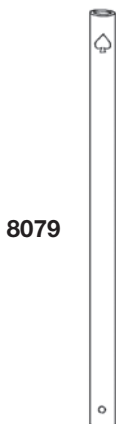
8078 STIRRING SHAFT Precision-Ground, Heavy Duty, 19mm ♠

Precision ground glass stirring shafts, 19mm O.D., hollow, heavy duty. Knob type shafts accept 8091, 8092, 8093, 8100 agitators and can be used in all 19mm I.D. Trubore® 8059, 8060, 8061 and 8065 bearings. Compatible with our 8050 mechanical seal and 13445 PTFE debris-free bearings. Join to stirrer motor using 8124 series chucks. Heavy duty design intended for use with large flasks up to 72 liters.

For Flask Cap., Liters	Length, mm (Inches)	Qty.	Order Code	Each
22	900 (36)	1	8078-05	183.61
50-72	1,200 (48)	1	8078-10	199.75



19mm Shafts, Bearings & Agitators



8079 STIRRING SHAFT *Precision, PTFE, Heavy Duty, 19mm* ★

Precision PTFE covered stainless steel stirring shafts, 19mm O.D. Drilled type shafts accept 8091, 8092, 8093, 8100 agitators and can be used in 19mm Trubore® bearings (8059, 8060, 8061 & 8065). *Not recommended for PTFE bearings 8050, 8067 and 13445.* Join to stirrer motor using 8124 series chucks.

For Flask Cap., Liters	Length, mm (Inches)	Qty.	Order Code	Each
22	700 (29)	1	8079-03	491.42
22	900 (36)	1	8079-05	498.75
50-72	1,200 (48)	1	8079-10	543.51

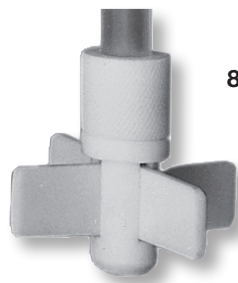


8085-52

8085 STIRRER BLADE *PTFE, 19mm* ♠

PTFE stir blades for button type stir shafts. 10mm O.D. shafts can be found in our product series 8068, 8070, 8074 and 8075. 19mm O.D. shafts can be found in our 8076 and 8077 series.

Width, mm	Length, mm	Qty.	Order Code	Each
35	150	1	8085-52	64.73
39	160	1	8085-54	84.03
44	175	1	8085-56	93.95
54	190	1	8085-58	97.47



8091-10

8091 AGITATOR *PTFE, Multi-Paddle, 19mm* ♠

PTFE agitators for use with large-scale reactors with 6-inch, 8-inch or 12-inch flanges. These heavy-duty agitators impart maximum energy and are offset at bottom to accommodate slurries. 19mm agitators fit drilled type or knob type 8076, 8078 & 8079 shafts. 28mm agitators fit 8080 shafts.

Size, mm	Qty.	Order Code	Complete	<i>Replacement Blades</i>		
				Qty.	Order Code	Each
102	1	8091-10	232.90	1	8091-14	47.08
152	1	8091-20	252.93	1	8091-15	51.79

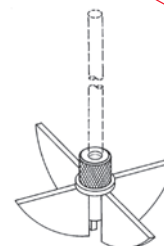


19mm Shafts, Bearings & Agitators

8091 AGITATOR PTFE, Large Scale, Multi-Paddle, 19mm ★

PTFE agitators for use with large-scale reactors with 6-inch, 8-inch or 12-inch flanges. These heavy-duty agitators impart maximum energy and are offset at bottom to accommodate slurries. 19mm agitators fit drilled type or knob type 8076, 8078 & 8079 shafts. 28mm agitators fit 8080 shafts.

Size, mm (Inches)	Qty.	Complete		Replacement Blades		
		Order Code	Each	Qty.	Order Code	Each
140 (5.5)	1	8091-26	327.85	1	8091-28	70.52
203 (8)	1	8091-40	362.44	1	8091-44	104.83

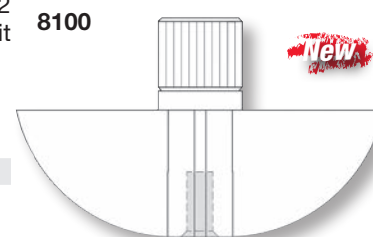


8091-40

8100 AGITATOR PTFE, Multi-Paddle with Receptacle, 19mm ♠

PTFE, large-scale, multi-paddle agitator design to accept pinned bottom valves, like our 6482 flush-seal valve. The pin helps reduce wobble or flexing at higher rpm. 19mm agitators will fit drilled type or knob type 8076, 8078 and 8079 shafts.

Complete			
Size, mm	Qty.	Order Code	Each
140	1	8100-09	380.68
200	1	8100-19	880.13



8100

8092 AGITATOR PTFE, Single Blade, 19mm ♠

PTFE bottom agitator, with single 152mm length, removable blade. Agitator body is secured to 19mm shaft by removable PTFE "pin". Top forked tines are then secured with threaded PTFE nut. Blade will fit through a 45/50 joint opening. Fits 8076, 8078 and 8079 drilled or knob-type 19mm shafts.

Complete			Replacement Blade		
Qty.	Order Code	Each	Qty.	Order Code	Each
1	8092-10	263.79	1	8092-14	33.77



8092

8093 AGITATOR PTFE, Turbine, 19mm ♠

A 102mm or 152mm total diameter agitator for 19mm O.D. 8076, 8078 or 8079 drilled or knob-type shafts. Turbine blade unit is removable. Shaft opening is open straight through to allow positioning of agitator at any height on shaft. NOT supplied with shaft.

Size, mm	Qty.	Complete		Replacement Blades	
		Order Code	Each	Order Code	Each
102	1	8093-12	191.97	8093-15	55.49
152	1	8093-22	442.83	8093-16	97.41



8093

19mm Shafts, Bearings & Agitators



8124

8124 CHUCK "Flex-Grip," 19mm ♦

Nylon chuck for use with ACE stirring shafts or other shafts of the same dimensions. Chuck has flexible insert which allows for misalignment of shaft without danger of breakage.

For Stirring Shaft Size, mm	For Motor Shaft, mm (In.)	Qty.	Order Code	Each
19	8 (5/16)	1	8124-15	156.67
19	9.5 (3/8)	1	8124-17	156.67
19	12.7 (1/2)	1	8124-20	156.67
19	13	1	8124-22	156.67
19	15.9 (5/8)	1	8124-23	156.67
Insert Only Size	Qty.	Order Code	Per Package	
19 mm	Pkg/3	8124-30	21.83	

8050




8050 STIRRER BEARING Mechanical Seal, PTFE, 19mm ★

Newly designed mechanical stirrer bearing from ACE. All PTFE, Rulon or PEEK wetted area construction provides for low extractables. Completely contained bearing and internal parts also provides non-shedding of materials into the reaction. The bearing is excellent for vacuum applications and can be operated at sub-Torr levels. Rated for up to 400 rpm speeds. It can be used on either glass polished or stainless steel stir shafts. See below for joint sizes.

Shaft Size, mm	Joint Size	Qty.	Order Code	Each
19	⌀ 45/50	1	8050-06	619.39
Replacement Outside size -128 o-ring		6	7855-773	19.60

13445 BEARING Debris Free, PTFE, 19mm ★

Vacuum tight (~5 Torr), flake free, chemically resistant stirrer bearing makes a mechanical seal against a polished glass shaft. Debris trap section consists of a PTFE sleeve for a wide range of joint and shaft diameter sizes. For use with 19mm polished glass or stainless steel shafts, NOT recommended for PTFE shafts. Bearing consists of a PTFE standard taper body with added PEEK for better stability, glass filled polypropylene screw cap, PEEK compression spring, PTFE/PEEK sleeve and a glass filled polypropylene loosening nut. For use up to 500 rpm.

For Shaft Size, mm	⌀ Joint	Qty.	Order Code	Each
19	45/50	1	13445-46	338.55

Replacement Seals & Springs:

	Qty.	Order Code	Each
PTFE/PEEK sleeve seal, for 19 mm	1	13445-504	47.25
PEEK compression spring, for 19mm	1	13445-506	56.37

13445



28mm Shafts, Bearings & Agitators

8050 STIRRER BEARING *Mechanical Seal, PTFE, 28mm* ★

Newly designed mechanical stirrer bearing from ACE. All PTFE, Rulon or PEEK wetted area construction provides for low extractables. Completely contained bearing and internal parts also provides non-shedding of materials into the reaction. The bearing is excellent for vacuum applications and can be operated at sub-torr levels. Rated for up to 400rpm speeds. It can be used on either glass polished or stainless steel stir shafts. See below for joint sizes.

Shaft Size, mm	Joint Size	Qty.	Order Code	Each
28	⌘ 45/50	1	8050-08	686.94
Replacement Outside size -128 o-ring		6	7855-773	19.60

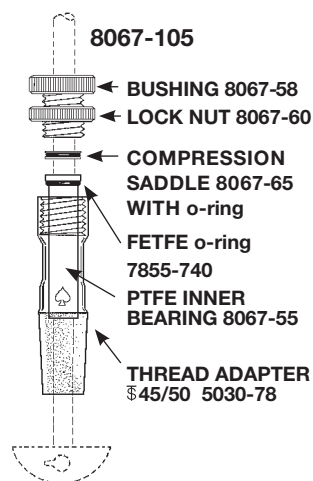


New

8067 BEARING *Trubore®, PTFE, Ace-Thred, 28mm* ★

Self-aligning, lubricant-free PTFE Trubore® bearing for use with #8080, 28mm polished glass stirring shaft. Complete consists of PTFE inner Trubore® bearing, Ace-Thred glass adapter (#36 to ⌘ 45/50), PTFE compression saddle with o-ring and glass-reinforced PTFE bushing, and lock nut with FETFE o-ring. The lock nut permits stirring in either direction without fear of unthreading. The compression saddle with o-ring maintains constant force with little attention. Vacuum down to 1mm Hg. Not recommended for precision ground glass shafts. For replacement "saddle" o-ring, see 7855-739; for bearing o-ring, see 7855-740

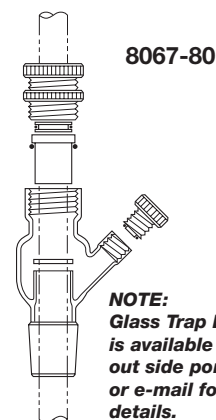
	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8067-55	118.05
Glass Filled/PTFE Bushing, only	1	8067-58	77.63
Glass Filled/PTFE Lock Nut, only	1	8067-60	22.22
Compression Saddle w/o-ring, only	1	8067-65	31.33
Threaded Glass Adapter, ⌘45/50, only	1	5030-78	80.14
Complete	1	8067-105	329.37



8067 BEARING/DEBRIS TRAP *PTFE, Ace-Thred, 28mm*

Combination all-in-one stirring shaft bearing and debris trap. Designed to prevent particles from entering the reaction vessel. Lubricant free PTFE bearing with compression saddle o-ring makes a mechanical seal against an #8080 polished glass shaft. Debris trap section consists of a PTFE washer and particle well. #15 Ace-Thred on glass body side allows access for clean-out, or may be used for evacuation/gas purge port. Complete item supplied with glass body, inner PTFE bearing, PTFE bushing and lock nut, Rulon saddle o-ring, "Ace-Safe" connector for 3/8-inch tubing, and PTFE plug. ⌘ 45/50 bottom joint.

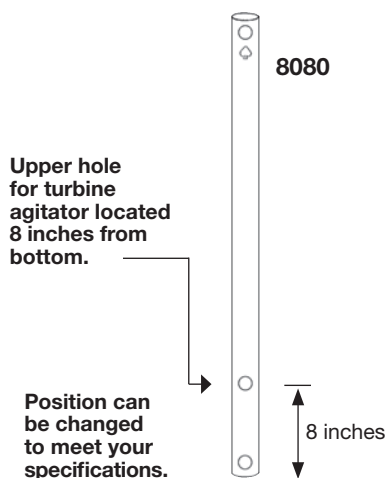
	Qty.	Order Code	Each
PTFE Inner Bearing w/o-ring, only	1	8067-70	★ 105.39
Glass Filled/PTFE Bushing, only	1	8067-58	★ 77.63
Glass Filled/PTFE Lock Nut, only	1	8067-60	★ 22.22
Compression Saddle w/o-ring, only	1	8067-65	★ 31.33
PTFE Washer	1	8067-72	★ 44.96
PTFE Plug, #15	1	5846-48	♠ 39.52
"Ace-Safe" Connector, #15 x 3/8-inch	1	5853-23	♠ 25.07
Glass Trap Body, only, ⌘45/50	1	8067-75	★ 198.84
Complete	1	8067-80	★ 544.96



NOTE:
Glass Trap Body is available without side port. Call or e-mail for details.

28MM SIZE SHAFTS, BEARINGS, AND AGITATORS

28mm Rods, Bearings & Agitators



8080 STIRRING SHAFT *Polished, Heavy Duty, 28mm* ★

Heavy duty, 28mm O.D. glass stirring shaft for use with ACE 6472, 6473 and 6474 reactors. Shaft has pre-drilled holes at top and bottom for positive attachment to motor coupling and agitator, respectively. Recommended for use with 8067 PTFE Trubore® and 8050 mechanical seal bearings. Use with 8091, 8093, 8101 agitators for 28mm rods. Fits Ace 6472-155 swivel connector and 6472-157 chuck.

For Flask Capacity	Length, mm (Inches)	Qty.	Order Code	Each
30L Cylindrical	1,140 (45)	1	8080-14	414.32
50L Low Profile	1,010 (40)	1	8080-12	389.53
50L Cylindrical	1,320 (52)	1	8080-18	458.95
72L & 100L Spherical	1,140 (45)	1	8080-14	414.32
100L Cylindrical	1,470 (58)	1	8080-22	486.03
100L Cylindrical	1,600 (63)	1	8080-30	603.45
200L Spherical	1,400 (55)	1	8080-24	471.70
200L Cylindrical	2,030 (80)	1	8080-25	653.38

6472 CONNECTOR *Flexible Beam for Motor Shaft to Chuck, 28mm* ★

For connecting 3/8-inch, 1/2-inch or 5/8-inch motor shaft to chuck that connects a 28mm O.D. shaft on pilot plant reactors.

Motor Shaft Size, in. (mm)	Qty.	Order Code	Each
3/8 (9.5)	1	6472-159	57.33
1/2 (12.7)	1	6472-155	57.33
5/8 (15.9)	1	6472-156	55.66



6472 CHUCK *for 28mm Rod* ★

For connecting a 28mm O.D. shaft (8080) to 6472-159, -155 and -156 beam connector.

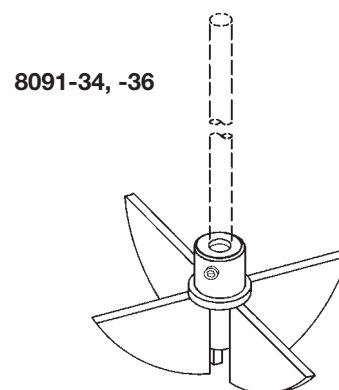
Chuck, only			Replacement Pin, only		
Qty.	Order Code	Each	Qty.	Order Code	Each
1	6472-157	92.50	1	6472-158	13.97

28mm Shafts, Bearings & Agitators

8091 AGITATOR PTFE, Large Scale, Multi-Paddle, 28mm ★

A four-blade, multipaddle agitator, used at lower end of #8080, 28mm Stirring Shaft. Supplied with PTFE bolt and nut for securing to 8080 Shaft to prevent detachment during operation. Blades on code -34 are 140mm (5.5 inches) long; on code -36 they are 178mm (7 inches) long x 6.35mm (.25-inch) thick. The increased length and depth of the blades imparts more energy to the load. NOT supplied with shaft.

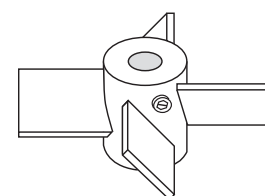
For Flask Capacity	Complete			Replacement Nut & Bolt		
	Qty.	Order Code	Each	Qty.	Order Code	Each
72L & 100L Spherical	1	8091-34	633.98	1	8091-134	63.07
200L Spherical; 30L, 50L, 100L & 200L Cylindrical	1	8091-36	631.64			



8093 AGITATOR PTFE, Large Scale, Turbine, 28mm ★

A four-blade, 45-degree-pitch, turbine-type agitator, used at upper section of #8080, 28mm stirring shaft. Supplied with PTFE bolt and nut for securing to 8080 shaft to prevent detachment during operation. Blades on code -25 are 140mm (5.5 inches) long, overall; on code -35 they are 152mm (6 inches) long, overall x 6.35mm (.25-inch) thick. The increased length and depth of the blades imparts more energy to the load. NOT supplied with shaft.

For Flask Capacity	Complete			Replacement Nut & Bolt		
	Qty.	Order Code	Each	Qty.	Order Code	Each
100L Spherical	1	8093-25	600.18	1	8093-125	60.95
100L & 200L Spherical; 30L, 50L, 100L & 200L Cylindrical	1	8093-35	646.27			

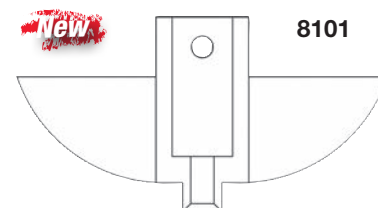


8093-25, -35

8101 AGITATOR PTFE, Multi-Paddle with Receptacle, 28mm ★

PTFE bottom agitator for large reactors. Multi-paddle solid assembly fits #8080, 28mm glass shafts. Agitator is attached to the shaft by a PTFE bolt. The bottom of the center piece is bored out to receive the pin from the #6482 flush seal valve. This agitator when coupled to the 6482 valve greatly reduces flexing or wobble from the shaft. Each blade on -28 is 180mm full length. Blades on -38 are 203 mm overall length. Order shaft separately.

Size, mm	Qty.	Order Code	Each
180	1	8101-28	614.80
203	1	8101-38	614.80

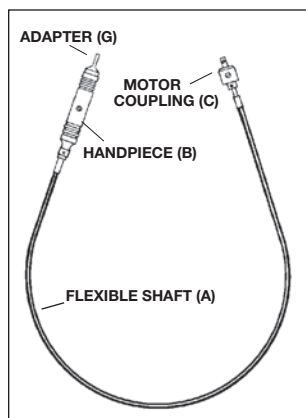


8101

Trubore® Stirrer Accessories

Use the ace flexible shaft for added convenience and safety

- Safer when stirring corrosive liquids
- Safer when stirring liquids with explosive vapor
- Available in two lengths

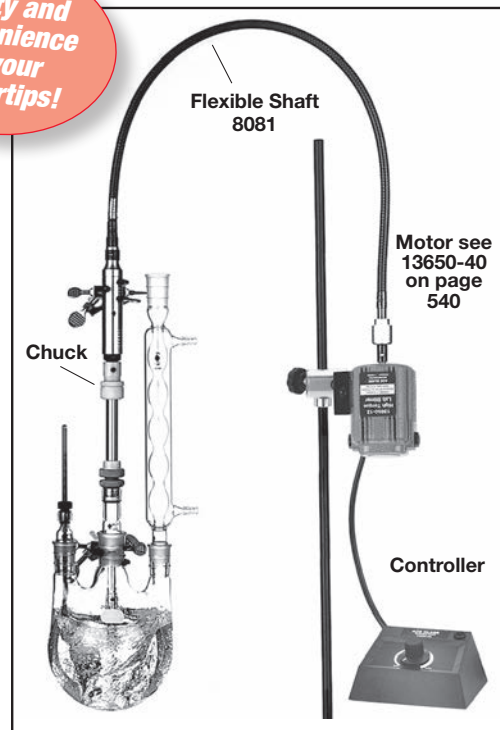


8081 FLEXIBLE SHAFT ★

Fully flexible drive shaft connects the motor to any size or type of reactor stir shaft. Designed with a ball bearing motor coupling at one end, for connection to any motor with an 8mm, (5/16-inch) diameter shaft. The other end has a detachable hand-piece with an 8mm round steel pin adapter (8081-24) for connection to our 8124 chucks, (supplied separately). The hand-piece can be supported by a standard lab clamp or hand held. The shafts operate up to 14,000rpm. Shafts should run in a counter-clockwise direction. Typical torque ratings: sharp bend in shaft, (4-inch loop) — 4.7 Kg-cm, (4 in-lbs). Straight shaft- 28 Kg-cm, (24 in-lbs). Shafts measure approximately 91.4 cm, (36 inches) or 152.4 cm, (60 inches) with hand-piece and motor coupling attached. Optional adapter 8081-27 allows

for connection to motors with 9.5mm (3/8-inch) O. D. shaft. Operating and lubrication instructions included. Complete units consist of: either shaft A -8081-05 or shaft A-1, 8081-06, motor coupling for 8mm motor shaft, 8081-12, hand-piece with 1/4-inch collet and adapter, chuck wrench and key chain.

Safety and convenience at your fingertips!



8124 CHUCK "Flex-Grip," Light Weight ★

Nylon chuck for use with 8081 flexible shaft and with stirring shafts or other shafts of approximately the same dimensions. Chuck has flexible insert that allows for misalignment of stirring shaft without danger of breakage. Fits standard 5/16-inch motor shaft or flexible shaft.

Size	Qty.	Order Code	Each
For Stirring Shafts approximately 6mm	1	8124-07	38.60
For Stirring Shafts approximately 10mm	1	8124-10	45.19
For Stirring Shafts approximately 19mm	1	8124-15	156.67



	Qty.	Order Code	Each
(A) Flexible Shaft (only), 91.4cm	1	8081-05	47.97
(A-1) Flexible Shaft (only), 152.4cm	1	8081-06	90.21
(B) Handpiece with 8mm 8081-24 adapter, includes 1/8-inch and 1/4-inch Collets	1	8081-08	118.89
(C) Motor Coupling (only) for 8mm shaft	1	8081-12	22.60
COMPLETE , 91.4cm (Consists of A, B, C & E)	1	8081-30	192.51
COMPLETE , 152.4cm (Consists of A-1, B, C & E)	1	8081-32	235.71

Additional Parts:

Chuck wrench with chained key (only)	1	8081-15	4.64
Shaft Lubricant (only), 30mL	1	8081-19	6.86
8mm Adapter (only) for 8081-08 handpiece	1	8081-24	14.62
Adapter (only) for connecting 3/8-inch O.D. motor shaft to 8081-12 motor coupling	1	8081-27	14.52
Handpiece (only) with 8081-15 chuck wrench/key	1	8081-07	104.27

8117 "STIR-LUBE" Ace Trubore®, Stirrer Lubricant ♦

A superior, low melting, silicone-base lubricant which liquifies at body temperature. Because of its composition, you need apply only a very thin film of "Stir-Lube" to a stirring shaft to increase bearing and shaft life at least three times over that of bearing lubricated with glycerine. Non-cooled ACE bearing can be operated at 1500 rpm and water-cooled bearings up to 2000 rpm for many hours with negligible wear.

Size, grams	Qty.	Order Code	Each
28 (1 oz.)	1	8117-10	20.93
113 (4 oz.)	1	8117-20	66.81


8117
8118 LUBRICANT Stopcock

A smooth, stable, odorless petroleum based (no silicone) lubricant for lubricating joints and stopcocks. Melts at 52°C (125°F). Can be removed with Xylene.

Size, grams	Qty.	Order Code	Each
75 (2.65 oz.)	1	8118-10	45.89
75 (2.65 oz.)	6	8118-10	247.80


8118
8119 "HI-LUBE" Heavy-Duty Liquid Stirrer Lubricant ★

Ace chlorofluorocarbon grease for use at speeds up to 6000 rpm with ACE standard glass assemblies. Use 8040 water-cooled type bearing for long-time stirring (over one hour). Below one hour, 8038 type may be used at 1500 rpm; eight hours at 1000 rpm.

High chemical inertness — unaffected by strong acids and alkalis. Soluble in most organic solvents. Suitable for use with oxidizing gases.

High heat resistance — thermally stable up to 260°C (500°F). Non-flammable; does not carbonize on decomposition. 30mL size.

Qty.	Order Code	Each
1	8119-07	29.01


8119
8111/8112 ALUMINUM PACKING BOX for 10mm or 19 mm ★

10mm size designed to be used with 8051 and 8133 bearings; 19 mm with 8060 or 8061 Bearings Supplied with PTFE packing. For replacement packing, see 8122.

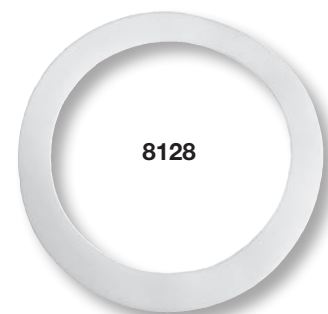
For Shaft Size	Qty.	Order Code	Each
10 mm	1	8111-10	152.28
19 mm	1	8112-10	189.48

**8111
8112**

8128 GASKET PTFE ♦

Designed to fit 8068, 8070, 8071, 8074 or 8078 stirring shafts. Useful as dust cover and as replacement for gasket supplied with 8127 collar. Twelve to a package.

For Rod Size, mm	Qty.	Order Code	Each
10	12	8128-10	20.38
19	12	8128-20	28.55
28	12	8128-42	43.43


8128

8115 KRYTOX® GPL Fluorinated Grease ★

Superior performance, non-contaminating, nonflammable, general purpose grease. Excellent as a glass bearing lubricant, as a super-inert grease for stopcocks and joints, as a high temperature grease in “baked-out” vacuum systems, or on distillation column joints because it is insoluble in almost all solvents except Freon® 113. Easy removal with fluorinated solvents.

CHEMICAL STABILITY

Krytox GPL grease has demonstrated an exceptional degree of inertness when contacted with a wide range of reactive chemicals. There is no reaction with the following chemicals:

- oxygen • caustic • fluorine • hydrazine • diethylene triamine • hydrocarbons
- chlorine • hydrogen • ethanol • hydrogen peroxide • phosphoric acid
- red fuming nitric acid • sulfuric acid • methanol • aniline • ammonia
- hydrochloric acid • unsymmetrical dimethyl hydrazine

THERMAL STABILITY

Krytox GPL can be used at operating temperatures up to 204°C (400°F) for extended periods of time and at 290°C (550°F) intermittently. Approximate minimum use temperature is -35°F.

*Reg. U.S. Pat. & Tm. Office, DuPont Company. Fluorinated Greases are made only by DuPont.

Size	Qty.	Order Code	Each
2 oz.	1	8115-08	61.18



8115/8116

8116 KRYTOX® LVP High Vacuum Grease ★

Very low vapor pressure, highly inert, nonflammable grease. The grease for high-vacuum systems. Superior performance in laboratory and pilot plant equipment, as a lubricant and sealant for stopcocks, valves, fittings and o-rings operating at high vacuum or in hostile environments.

DESCRIPTION

Krytox LVP high vacuum grease is a combination of an extremely low vapor pressure perfluoroalkylpolyether oil and a fluorocarbon resin thickener. This white, buttery grease is designed to lubricate the fittings and accessories of high vacuum systems at operating temperatures down to 10⁻¹² torr at 20°C (1.33 x 10⁻¹³ kPa).

The optimum useful temperature range of Krytox LVP is -20° to 260°C (-5° to 500°F).

PROPERTIES

- Krytox LVP high vacuum grease has the following important properties:
- Very low vapor pressure
- High degree of chemical inertness
- Excellent lubricating properties
- Complete nonflammability
- Compatibility with metals, plastics and elastomers
- Excellent oxidation and thermal stability
- Vapor Pressure: torr at 20°C — 1 x 10⁻¹³; torr at 200°C — 1 x 10⁻⁵

*Reg. U.S. Pat. & Tm. Office, DuPont Company. Krytox® LVP is made only by DuPont.

Size	Qty.	Order Code	Each
2 oz.	1	8116-10	108.14

8122 STIRRER PACKING ♠

PTFE packing for use in 8112 stuffing boxes. This material conforms readily to the contour of the stuffing box and shaft.

8122

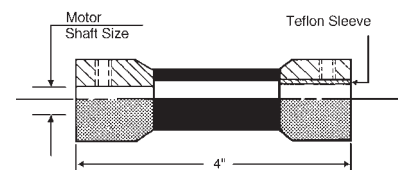


For Shaft Size, mm	Qty. Per Jar	Order Code	Per Jar
10	6	8122-10	83.48
19	1	8122-40	16.60

8125 SHAFT COUPLING *Stirring*

Couples stir motor shaft to reactor stir shaft. Flexible neoprene rubber body with PTFE sleeve inside corrosion-resistant metal end that provides angular and parallel misalignment of glass or metal stirring shaft without danger of breakage. Rubber body absorbs shock and provides quiet vibration free running with great torsional stiffness. Measures four inches overall.

- Easy to Use:
- (1) Slip coupling end with PTFE sleeve over stirring shaft as far as it will go, approximately three inches.
 - (2) Bring motor shaft down and align visually approximately 1/2-inch above coupling and shaft. Secure motor position and recheck alignment.
 - (3) After motor and reactor are securely in place, slide coupling over motor shaft and tighten set screw.
 - (4) Slide stirring shaft up into coupling just enough to clear bottom of reactor. Tighten PTFE sleeve over shaft, using brass set screw, just enough to prevent slippage.



8125

For 10mm Stirring Shaft

For 19mm Stirring Shaft

For 10mm Stirring Shaft				For 19mm Stirring Shaft			
For Motor Shaft Size, in.	Qty.	Order Code	Each	For Motor Shaft Size, in.	Qty.	Order Code	Each
1/4	1	8125-06	44.62	3/8	1	8125-21	74.40
5/16	1	8125-08	44.62	1/2	1	8125-25	74.76
3/8	1	8125-11	44.40	5/8	1	8125-27	74.76
1/2	1	8125-13	44.62	3/4	1	8125-29	82.00

8124 CHUCK *“Flex-Grip,” Light Weight* ★

Nylon chuck for use with 8081 flexible shaft and with stirring shafts or other shafts of approximately the same dimensions. Chuck has flexible insert that allows for misalignment of stirring shaft without danger of breakage. Fits standard 5/16-inch motor shaft or flexible shaft.



8124

Size	Qty.	Order Code	Each
For Stirring Shafts approximately 6mm	1	8124-07	38.60
For Stirring Shafts approximately 10mm	1	8124-10	45.19
For Stirring Shafts approximately 19mm	1	8124-15	156.67

8126 STIRRING SHAFT COUPLING ★

Universal swivel coupling for connection to metal chuck. Plastic compression connection secured via Allen screw for attaching various O.D. glass shafts. Code -22 pass-thru assembly enables height adjustment flexibility when used with pass-thru capable overhead stirrers such as 13500, 13501, 13504, 13507 & 13511 Heidolph RZR stirrers.



8126

For Glass Rod O.D., mm	Motor Coupling O.D. (Inches)	Qty.	Order Code	Each
6	1/4	1	8126-05	97.98
8, 9	1/4	1	8126-08	110.16
10	1/4	1	8126-10	110.16
19	3/8	1	8126-19	116.64

8127 COLLAR *with PTFE Gasket* ♠

Designed to be used with 8068, 8070, 8071, 8074 or 8078 stirring shafts. Handy for positioning shaft in bearing, and preventing shaft from dropping into flask. Supplied with PTFE gasket to prevent scratching top of bearing and to act as dust cover.



8127-42

8127-10

For Rod Size, mm	Type	Qty.	Order Code	Each
10	Glass-Filled/PTFE	1	8127-10	25.38
19	Glass-Filled/PTFE	1	8127-20	37.74
28	Glass-Filled/PTFE	1	8127-28	75.21
10	Stainless Steel	1	8127-42	27.34
19	Stainless Steel	1	8127-43	43.61
28	Stainless Steel	1	8127-44	82.94



13365-05

13365 AIR STIRRER *Light Duty*
Arrow Model A

This small, compact and quiet air motor is ideal for stirring all types of solvents, lacquers, paints, oils, synthetics, and fine and heavy chemicals where danger of explosion may exist, as there are no sparks. It is a complete unit, ready for mounting on a laboratory stand. Air supply of only 30 to 100 PSI is necessary. Variable speeds range from 200 rpm to 10,000 rpm merely by turning the air supply line valve. For bath sizes to 20 liters, this smooth running unit has little or no service cost. Unit adjusts itself to compensate for wear. The shaft and propeller are made of stainless steel to resist most acids and chemicals and for easier cleaning. Will start in most stalled positions with low air pressure and cannot burn out from overload. Air Motor — 0-1/3 hp. at 80 lbs. Coupler and stainless steel shaft 30.5cm overall. Propeller: stainless steel 6.4cm diameter. Shaft is 9.5mm (3/8-inch) O.D. For filter/regulator/lubricator, see 13372. Air consumption = 13 cfm.

Qty.	Order Code	Each
1	13365-05	365.96



13365-10

13365 AIR STIRRER *Heavy Duty*
Arrow Model G

Specially designed air motor for use on the more viscous materials, provides speed with power. More constant speed is attained through gear reduction, lowering speed fluctuations due to changes in air pressure. Speeds range from 50 to 1200 rpm by merely turning valve on air supply line. This smooth running unit is complete and ready to mount on laboratory stand. Air supply of only 30 to 80 PSI is necessary. Another outstanding feature of the unit is the muffler, which provides quiet operation. The shaft and propeller are stainless steel to resist most acids and chemicals and for easier cleaning. Service costs are almost nil as the unit adjusts itself to compensate for wear. Air Motor — 0-1/3 hp. at 80 lbs. Gear Ratio — 7-1. coupler and stainless steel shaft 30.5cm overall. Propeller: stainless steel 6.4cm diameter. Shaft is 9.5mm (3/8-inch) O.D. For filter/regulator/lubricator, see 13372. Air consumption = 13 cfm.

Qty.	Order Code	Each
1	13365-10	501.31

13370 AIR STIRRER *Heavy Duty, High Torque*

A compact, heavy duty air motor with highly damped muffler. Complete unit consists of an air hose with a snap coupling on motor end and shut-off valve on the other. Motor will develop 1.5 hp. at 90 lbs. air pressure. Speeds are variable from 300 to 3000 rpm. It consumes approximately 42 cfm at 3000 rpm. Shaft is 12.7mm (1/2-inch) diameter for use with 8124 chuck, not included. For filter/regulator/lubricator, see 13372.

Qty.	Order Code	Each
1	13370-10	423.68



13370

13372 FILTER/REGULATOR/LUBRICATOR

Arrow

Space-saving, multiple unit, recommended for use with 13665, 13665B and 13370 air motors. Pressurized air flows through louvered deflector in swirling pattern, with liquids and dirt falling into lower baffle where they are prevented from reentering the air stream. Element removes impurities down to 40 microns. Clean air then passes through precision needle valve feed mist lubricator that can be filled under pressure. 150 PSI maximum pressure range is adjustable through spring action of T-handle. Maximum operating temperature is 125°F. Manual drain. Shatter-proof polycarbonate bowls not recommended for use in atmospheres containing acetone, benzene, carbon tetrachloride, ethylene dichloride, gasoline or toluene. Inlet and outlet connections are 1/4-inch NPT. Supplied complete with gauge and mounting bracket.

Qty.	Order Code	Each
1	13372-45	244.88



13372

13385 GAUGE *Pressure*

Pressure gauges for monitoring pressure in laboratories; especially suited for use with the Michel-Miller HP/LPLC system (page 85), pressure reactors (page 455) or other applications when pressure monitoring is necessary. Available with brass or 316 SS internals. *Note: Code -52 is a compound gauge, pressure and vacuum.*

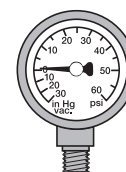
Pressure Range, psi	Dial Size (Inches)	Male npt Connector (In.)	Internals	Qty.	Order Code	Each
0-400	2-1/2	1/4	Brass	1	13385-12	58.50
0-400	2-1/2	1/4	Stainless Steel	1	13385-14	275.03
0-60	1-1/2	1/8	Stainless Steel	1	13385-44	177.09
0-160	1-1/2	1/8	Stainless Steel	1	13385-48	187.26
Full vacuum-60	1-1/2	1/8	Stainless Steel	1	13385-52	213.14



13385-12



13385-44



13385-52

AIR MOTOR ACCESSORIES

**RZR
Standard
Series**


13501-21



13504-41

- Digital or analog/dial speed display
- Two gear stages for high torque at low speeds
- Over-load protection – reset by power switch
- Over-load protection LED display

Designed for power and reliability. Easy to operate, safe, suitable for continuous operation. Stirrers are equipped with a maintenance-free brushless D.C. capacitor motor with overheating protection feature, reset by power switch. Large speed range of 40 to 2000 rpm has a mechanical speed adjustment and is monitored via a digital speed display on 13501-21 and 13504-41 making them ideal for reproducible applications; on 13500-10 the speed is adjusted and monitored with the help of a scaled control knob.

Supplied with 13 mm O.D. x 160 mm long (approximately 1/2-inch x 6.3-inch) motor support rod and key adjustable metal chuck, .5 to 10.5 mm, for metal shafts like ACE 8074, 10mm O.D. (Units feature a shaft that can be extended through the top to allow variable depth adjustment. To accomplish this, you need to order 7mm O.D. shafts, supplied by Heidolph. Contact ACE for details.)

To use 10mm O.D. glass or PTFE shafts, metal chuck should be replaced with ACE 8124-13 “Flex-Grip” chuck.

13500/13501/13504 STIRRERS Heidolph RZR Standard Series

Number of Gears		2	2	2
Speed Range	[rpm]	40–2000	40–2000	40–2000
Speed Display		Analog/Dial	Digital	Digital
Max. Torque	[in-lb]	42.79	42.79	55.63
Torque at 100/1000 rpm	[in-lb]	17.12/1.71	17.12/1.71	24.07/2.35
Max. Viscosity	[cp]	60,000	60,000	100,000
Max. Mixing Vol. (H ² O)	[liters]	25	25	40
Dimensions (W x H x D)	mm in.	82 x 206 x 176 3.23 x 8.1 x 6.9	82 x 206 x 176 3.23 x 8.1 x 6.9	82 x 211 x 176 3.23 x 8.3 x 6.9
Weight	[Kg/lbs]	3.0/6.62	3.0/6.62	3.3/7.28
Input Power*		115v/60Hz	115v/60Hz	115v/60Hz
Motor Input/Output	[Watts]	50/27	50/27	70/37
Qty.		1	1	1
Order Code		13500-10	13501-21	13504-41
Each		1448.00	1825.00	2143.00

*230V/50Hz version also available.

- **Digital speed display**
- **Two gear stages for constant speed**
- **Overheating protection – self reset**
- **Over-load protection LED display**

Similar to “Standard Series,” except with added features such as constant power. The electronic automatic control allows almost constant torque over respective speed range. The two-stage gear provides excellent mixing results even in highly viscous media, using only as much energy as actually needed. The speed desired is kept constant under changing loads, even in overload mode. (Power can be increased for a limited time to 175% or 200%, so there is no premature cutoff when overloaded.)

Changes in viscosity during the process can be followed via a digital display of the torque on both 13507 and 13511. Also, both models are equipped with an analog interface enabling output of speed and torque reading to an external device (such as a chart recorder), or specification of the desired speed via PC. Analog speed and torque output, along with computer controllability (speed), is 0-10 V/4-20 mA.

13507/13511 STIRRERS *Heidolph RZR Control Series*

Number of Gears		1	2
Speed Range	[rpm]	50–2000	12–400, 60–2000
Speed Display		Digital	Digital
Torque Display		Digital	Digital
Controller Response		Constant rpm under changes in viscosity	
Overload Response		Constant rpm under overload	
Max. Torque (continuous/limited)	[in-lb]	13.91/31.02	27.81/48.14
Torque at 100/1000 rpm	[in-lb]	13.37/2.67	26.74/5.35
Power Reserve under Overload		up to 200%	up to 200%
Max. Viscosity	[cp]	10,000	100,000
Max. Mixing Volume (H ² O)	[Liters]	40	100
Dimensions (W x H x D)	mm in.	72 x 206 x 176 3.23 x 8.1 x 6.9	82 x 211 x 176 3.23 x 8.3 x 6.9
Weight	[Kg/lbs]	2.8/6.17	3.7/8.16
Input Power*		115v/60Hz	115v/60Hz
Motor Input/Output	[Watts]	80/50	140/100
Qty.		1	1
Order Code		13507-51	13511-02
Each		2600.00	4195.00

*230V/50Hz version also available.

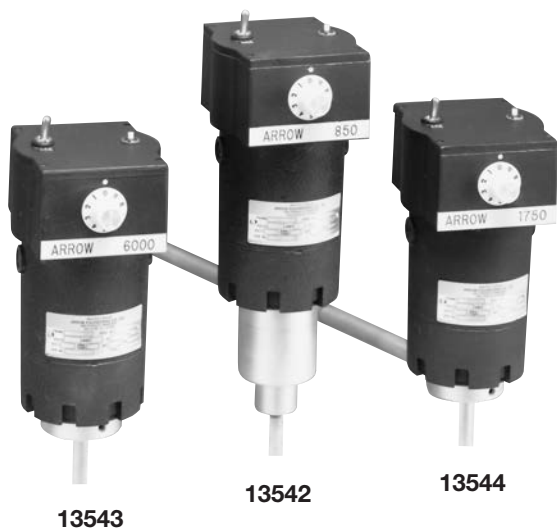
13507-51 is ideal for use with our Auto-Reactors and ROBO Reactors.

RZR Control Electronic Series



13511-02

Three State-of-the-Art Laboratory Stirrers



- Totally enclosed, non-ventilated, permanent magnet D.C. motor for long service life
- Eye level, heavy cast aluminum control box integrated with motor for safe and easy operation of stirrers
- Control knob electronically regulates speed of application required
- Overload protection — a manually resettable circuit breaker for total safety
- On/Off switch for quick stopping if necessary
- Stirrers come complete as shown, including 9/16-inch dia. x 10 inches long aluminum support rod
- 100% backed by the best guarantee in the business:
 - 30-day satisfaction guarantee
 - Six-month unconditional guarantee

Not supplied with shaft, propeller or coupling.
 For stainless steel shaft, propeller and coupling, order 13542-60.
 For glass shafts, agitators and coupling, see 8068-8124.

ARROW OVERHEAD STIR MOTORS

Optional Accessory

11082 CLAMP

“Power Hold” ★

Fits stirring stand with 3/8-inch to 5/8-inch diameter shaft and stirrers with mounting rod from 3/8-inch to 5/8-inch diameter. Stop collar included.

Qty.	Order Code	Each
1	11082-07	55.20



13542 STIRRER *Laboratory, Heavy Duty, Variable Speed*

- Handles high viscosity fluids up to 4400 cps in 5-gallon batch or up to 100L water
- Variable speed — up to 1000 rpm, Gear Head
- Constant torque throughout speed range is 7.35 in-lbs.
- 1/10 hp motor operates at 120 VAC, 60 hz
- Motor shaft is 3/8-inch (9.5 mm)

Qty.	Order Code	Each
1	13542-25	756.40

13543 STIRRER *Laboratory, Light Duty*

- Handles watery to light syrupy mixtures, or up to 20L water
- Variable speed — up to 6000 rpm, Direct Drive
- Constant torque throughout speed range is 1.05 in-lbs.
- 1/10 hp motor operates at 120 VAC, 60 hz
- Motor shaft is 3/8-inch (9.5mm)

Qty.	Order Code	Each
1	13543-12	569.78

13544 STIRRER *Laboratory, Medium Torque, Variable Speed*

- Handles light to syrupy mixtures, or up to 100L water
- Variable speed — up to 2000 rpm, Direct Drive
- Constant torque throughout speed range is 2.43 in-lbs.
- 1/15 hp motor operates at 120 VAC, 60 hz
- Motor shaft is 3/8-inch (9.5mm)

Qty.	Order Code	Each
1	13544-20	593.97

SPECIFICATIONS

Model #	Type	Speed Range	Constant Torque	Motor	Power	Shipping Wgt.
13542-25	Gear Head	to 1000 rpm	7.35 in-lbs	1/10 HP	120 VAC	8 lbs.
13543-12	Direct Drive	to 6000 rpm	1.05 in-lbs	1/10 HP	120 VAC	8 lbs.
13544-20	Direct Drive	to 2000 rpm	2.43 in-lbs	1/15 HP	120 VAC	8 lbs.

13545 STIRRER *Laboratory, "The Agitator"*

FORWARD-REVERSE rotation laboratory stirrer that provides powerful mixing action and eliminates cavitation. The instant-FORWARD, instant-REVERSE rotation of the agitator is electronically controlled and has a variable reversing time cycle of two seconds minimum, 20 seconds maximum. This feature, along with the variable speed control, allows you to create the most dynamic and violent mixing action with no formation of air bubbles. Can also be used as a regular stirrer by selecting standard mode. This stirrer has all the features of the 13544 Stirrer. It is direct drive and delivers 39.8 in-oz or 2.43 in-lbs of constant torque throughout its speed range up to 1,750 rpm. Motor shaft is 3/8-inch (9.5mm). The 1/15 hp motor operates on 120 VAC. Shipping weight: nine lbs. NOT supplied with shaft, propeller, coupling, clamp or stand. Order 13542-60 for shaft, propeller and coupling. For clamp and stand, see 11082-07 and 13546-20. For use with glass shafts, see 8124 chuck.


13545

Qty.	Order Code	Each
1	13545-40	975.97

13546 SUPPORT STAND

Base fabricated of steel with 5/8-inch O.D x 29-inch long stainless steel support rod.


13546

Qty.	Order Code	Each
1	13546-20	180.88

13550 STIRRER *Laboratory, Standard*
Model RZR-1

Compact 1/40 hp maximum torque 100 rpm laboratory stirrer with two speed ranges: Shaft One, 35–250 rpm; Shaft Two, 280–2200 rpm. Infinitely variable speed control works smoothly by rotary knob control — no rheostat! Precision speed indicator facilitates easy adjustment and control while in the operation mode. 140 in-oz. Fully enclosed split pole motor, output power 18W, was especially developed for continuous operation and is equipped with extra overload protection. Torque increases with decreasing speed. Result: very powerful drive at low operation range; steady power at any given speed. No brushes used, thus fire hazard is eliminated. This maintenance-free motor, with its ball bearings and series-connected friction gear (cone principle), guarantees quiet, vibration-free, safe operation, even under continuous load. Stirrer blade, see accessories, is inserted into chuck easily and extends through top of housing for variable depth adjustment. Stirrer is supplied with 13 mm O.D. rear mounting bar. Operates on 115 v, 60 Hz. Input power: 77 W. Supplied with 6.5 foot (two meter) cord with grounded plug and ON-OFF switch with pilot lamp. Weight: 6 lbs., 5 oz. Measures: 6-3/4 inches L x 2-3/4 inches W x 8-3/4 inches H (172 x 71 x 250mm).


13550

	Qty.	Order Code	Each
Stirrer, only	1	13550-05	1049.00

STIRRER ACCESSORIES FOR 13550 ★

	Qty.	Order Code	Each
Stand only: Cast iron 430mm x 420mm, stainless steel tube 25mm O.D. x 700mm (27 inches) long	1	13550-21	321.00
Fastening Clamp only: for connecting 13550 & 13551 motor to 13550-24 Stand	1	13550-25	146.00
Stirring Paddle, only: (for low rpm) stainless steel 2-1/2 inches x 2-1/2 inches, rod 18 inches long x 1/4-inch O.D.	1	13550-32	122.00
Stirring Blade, only: (for high rpm) stainless steel 2-1/2-inch diameter, rod 15-3/4 inches long x 1/4-inch O.D.	1	13550-34	136.00



IKA OVERHEAD STIR MOTORS

13523 STIRRER *Variable Speed, Scale*
RW 20 Digital

Robust, slimline, ergonomic design, with digital display. Unit features technical improvements on the trusted RW 20 series design.

- For stirring tasks up to 20L H₂O

Specifications:

MODEL	13523
Maximum viscosity	10,000 mPas
Motor rating, input/output	70/35W
Output at stirring shaft	26W
Maximum ON time	100%
Maximum torque at stirring shaft per 100 rpm	150 Ncm (13.3 in-lbs)
Speed range I (50 Hz)	60-500 rpm
Speed range II (50 Hz)	240-2000 rpm
Speed display	digital
Chuck range	0.5-10 mm
Dimensions: (W x D x H)	88 x 212 x 294 mm
Weight	3.1 kg, 6.8 lbs.
Permissible ambient temperature	5-40°C

	Input Power	Qty.	Order Code	Each
Motor, Only	115V 50/60 Hz	1	13523-10	943.00


13523-20

230V version also available

*Contact ACE regarding IKA Labworld software.



13565

Powerful!

13565-05 STIRRER Overhead, Digital ★

BDC6015

Rugged Ultra-Speed Model with range from 40-6000rpm. Microprocessor controlled brushless DC motor with automatic overload protection. Digital display of RPM and torque. Key-pad adjustable. Maintains set speed as viscosity changes. 2-speed transmission selects hi-torque or hi-speed range. Adjustable steel chuck with hinged chuck guard. 120V version UL and CSA approved. A 230V (CE approved) version is available via special order. Three-year warranty.

Specifications:

MODEL	13565-05
Low Speed Range	40-1200 rpm
High Speed Range	1200-6000 rpm
Maximum torque (low speed range)	170 N-cm (15 in-lbs)
Maximum torque (high speed range)	34 N-cm (3 in-lbs)
Speed Accuracy	+/- 1% of reading or +/- 1 rpm
Torque Accuracy	+/- 5% of reading or +/- 1 in-lb
Electrical Input	120V, 50/60 Hz, 5 Amps
Output Power	1/5 Hp, 150W
Weight	11 lbs (5 kg)
Chuck	accepts up to 3/8-in (10.1 mm) shafts
Maximum Volume	6.6 US Gallons (25 Liters)
Maximum Viscosity	20,000 cps

Qty.	Order Code	Each
1	13565-05	1740.31

UL CE SF approved.

13565-10 STIRRER Overhead, Digital ★

BDC3030

Universal Model with all the specifications and features of the BDC 6015 except with lower speed range (20-3000 rpm). Three-year warranty.

Specifications:

MODEL	13565-10
Low Speed Range	20-600 rpm
High Speed Range	600-3000 rpm
Maximum torque (low speed range)	339 N-cm (30 in-lbs)
Maximum torque (high speed range)	68 N-cm (6 in-lbs)
Speed Accuracy	+/- 1% of reading or +/- 1 rpm
Torque Accuracy	+/- 5% of reading or +/- 1 in-lb
Electrical Input	120V, 50/60 Hz, 5 Amps
Output Power	1/5 Hp, 150W
Weight	11 lbs (5 kg)
Chuck	accepts up to 3/8-in (10.1 mm) shafts
Maximum Volume	15.8 US Gallons (60 Liters)
Maximum Viscosity	50,000 cps

Qty.	Order Code	Each
1	13565-10	1740.31

UL CE SF approved.

13566 STIRRER *Overhead, Reversing, Digital* ★

BDC2010

The 2010 has a rugged DC brushless motor that delivers from 40-2010 RPM. This model has a small footprint and is loaded with features such as; "Stirlight" which lights a downward beam of light into the mixture, timer, reverse feature and xRx agitation for a controllable vortex effect, automatic overload protection and maintains speed at all viscosities. The 2010 is the only stirrer of it's kind and can be set up for automatic time and auto-reverse for better mixing. Three-year warranty

Specifications:

MODEL	13566-05
Speed	40-2010 rpm (clockwise and/or counterclockwise)
Timer	Set from 1-2000 minutes (33.3 hours)
Maximum torque	100 N-cm (8.8 in/lbs)
Electrical Input	100-240V, 50/60 Hz
Output Power	1/10 Hp, 70W
Weight	8.2 lbs (5.6 kg)
Chuck	accepts up to 3/8-in (10.1 mm) shafts
Maximum Volume	6.6 US Gallons (25 Liters)
Maximum Viscosity	20,000 cps

Qty.	Order Code	Each
1	13566-05	1218.00

 approved.

Auto Reverse!


13567 STIRRER MOTOR *Overhead, Compact* ★

BDC250

A compact versatile complete stirrer system for basic lab stirring applications. A Brushless DC motor delivers 50-2500 RPM in low viscosity solutions. Small footprint and weight less than one pound allows for easy transfer to bench to bench, or lab to lab. Comes complete with keyless chuck, stand, integral clamp, both Axial and Radial impeller. Three-year warranty.

Specifications:

MODEL	13567-05
Speed	50-2500 rpm
Maximum torque	10 N-cm (0.9 in/lbs)
Electrical Input	100-240V, 50/60 Hz, 12W
Weight	3.10 lbs (1.8 kg)
Chuck	Keyless, accepts up to 1/4-in (6 mm) shafts
Maximum Volume	0.5 US Gallons (2 Liters), water-like viscosity

Qty.	Order Code	Each
1	13567-05	361.85

 approved.

Compact Size!



13649 STIRRER *Laboratory, Solid State*

Totally enclosed, 1/40 hp., permanent magnet motor with dual 8mm (5/16-inch) armature and gear shafts with milled flats. Armature shaft with maximum speed of 4000 rpm; 18:1 ratio gear shaft rated 4.2 Kg.-cm (58.3 oz-in) torque, up to 333 rpm. Baked black enamel finish, precision die-cast housing, lifetime lubricated ball bearings with steel inserts in die-casting.

Motor: Supplied with 1.5 meter three-wire cable with plug and ground lead for connection to controller. Measures: 5-1/2 x 4 x 4 inches. Weight: 4 lbs. 7 oz.

Controller: ACE 13530* solid state 120v, 10 amp AC maximum or 0-120v, 6 amp DC maximum. Features rear ring stand clamp, Forward-Off-Reverse switch. Supplied with heavy duty 1.8 meter three-wire power cord with NEMA plug. Supplied with one-amp fuse to protect motor. Controller measures 102 (4 inches) x 54 (2-1/8 inches) x 41mm (1-5/8 inches). Weight: 4.1 lbs. Complete consists of motor, controller and mounting rod.

	Qty.	Order Code	Each
Motor, only, w/ Mounting Rod	1	13649-09	771.69
Controller, only	1	13530-10	538.34
Complete	1	13649-19	1310.03

MOTOR ATTACHMENTS *(Optional):*

	Qty.	Order Code	Each
Three-jaw, keyless chuck, 9.5mm (3/8-inch) Rod	1	13649-24	134.55
Nylon chuck, Flex-Grip, for shaft size approximately 10mm	1	8124-10	♠ 45.19
Set screw wrench	1	13649-26	6.34
Paddle, 3-6.4cm blades, S-S, on 22.2cm shaft	1	13649-32	107.64
Propeller, 3-3.8cm blades, S-S, on 22.2cm shaft	1	13649-34	100.40
Attachments Complete (Does not include 8124-10)	1	13649-40	380.11

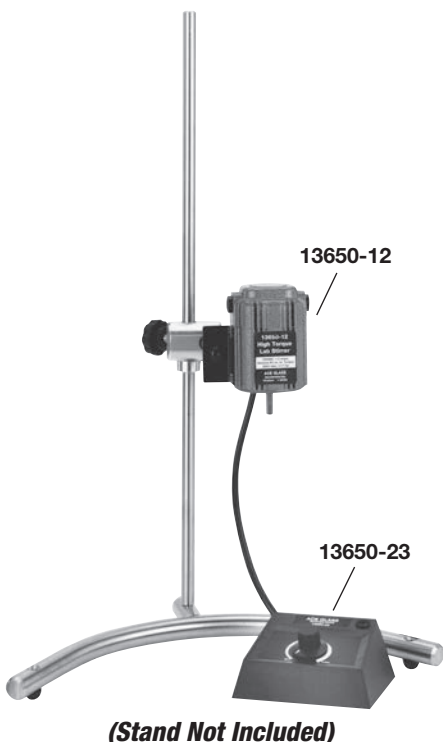
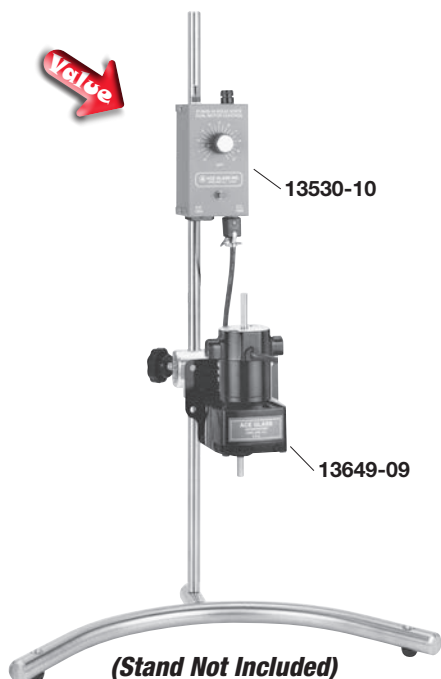
*ACE 13530 motor controller offers better performance at slower speeds; for more torque at higher speeds. use 13532.

13650 STIRRER *Laboratory, High Torque, Economy* ★

Motor: Totally enclosed, non-reversible, 1/17 hp. DC input with a 5/16-inch diameter shaft 1-inch long. Recommended for use with 8081 flexible shaft (shaft turns counter-clockwise when facing shaft) or general stirring. Motor is adjustable from 280 to 2800 rpm and generates 60 oz-in. of nominal torque. (Note: torque diminishes below 280 rpm with safety click off.) Cast aluminum motor case is painted chemically resistant grey. Supplied with 6-foot cord with NEMA plug end and 5/8-inch diameter mounting rod. Measures 4.65 x 3.25 x 3.65 inches. Weight: 4.75 lbs.

Controller: Durable plastic case for table top use. Rated at 120 volts, 50/60 Hz, 1.5 amp maximum to protect motor beyond its rated torque. Measures: 6W x 5D x 2.5H inches. Weight: 1.8 lbs. including 6-foot power cord.

	Qty.	Order Code	Each
Motor, only, w/ Mounting Rod	1	13650-12	394.14
Controller, only	1	13650-23	433.72
Complete	1	13650-40	827.86



13554 STIRRING MOTOR* AND CONTROLLER *Pilot Plant, for Hazardous Area (Motor Only)*

Motor: For hazardous area*, heavy duty, 1/4 or 1/2 hp, permanent magnet, DC reversible, 90 volt DC armature type. This 56C base frame, continuous duty, ball bearing, totally enclosed fan cooled (XPFC) motor has a variable speed range up to 1750 rpm. Operates at a maximum temperature of 40°C. With 5/8-inch O.D. motor shaft. Supplied with 30-foot cord with mating twistlock cap. Overall length: code -40 is 10-1/2 inches; code -50 is 12-3/4 inches. Maximum torque rating: code -40 is 9.1 in.-lbs.; code -50 is 18.3 in.-lbs., NEMA C-face. Shipping weight: code -40 is 34 lbs.; code -50 is 50 lbs.

Controller: Converts 120 volts AC to 90 volts DC. Supplied with 6-foot cord to a twistlock connector for connection to motor. (NOTE: controller should be mounted remote of hazardous area). NEMA classification 4/12 (water and dust proof for industrial use). Maximum speed preset at factory at 900 rpm for safety, can be increased or decreased internally, see instructions. Also has torque and current limit adjustments, all factory set.

Use 6472-872 mounting plate when using with some reactors. Use offset adapters when using this motor with 6472 reactors to move condenser, etc., away from motor mount. See listing on next page.

	Qty.	Order Code	Each
Motor, 1/4 hp, only	1	13554-40	1623.23
Controller, only	1	13554-24	1124.61
Complete , 1/4 hp	1	13554-45	2747.84
Motor, 1/2 hp, only	1	13554-50	2342.64
Controller, only	1	13554-26	1124.61
Complete , 1/2 hp	1	13554-55	3467.25

***UL Classified:**
Hazardous motors only
Class I, Div. I, Group D
Atmospheres
(Flammable Gases or Vapors)
Class II, Div. I, Group F & G
(Combustible Dust)



13554-45, -55

13554 STIRRING MOTOR AND CONTROLLER *Pilot Plant*

Motor: Non-hazardous area, heavy duty, 1/4 or 1/2 hp, permanent magnet, DC reversible, 90 volt DC armature type. This 56C base frame, continuous duty, ball bearing, totally enclosed fan cooled (TEFC) motor has a variable speed range up to 1750 rpm. Operates at a maximum temperature of 40°C. With 5/8-inch O.D. motor shaft. No UL classification. Supplied with 30-foot cord with mating twistlock cap. Overall length: code -05 is 10-1/2 inches; code -09 is 12-1/2 inches. Maximum torque rating: code -05 is 9.1 in.-lbs.; code -09 is 18.3 in.-lbs., NEMA C-face. Shipping weight: code -05 is 17 lbs.; code -09 is 25 lbs.

Controller: Converts 120 volts AC to 90 volts DC. Supplied with 6-foot cord to a twistlock connector for connection to motor. (NOTE: controller should be mounted remote of hazardous area). NEMA classification 4/12 (water- and dust-proof for industrial use). Maximum speed preset at factory at 900 rpm for safety, can be increased or decreased internally, see instructions. Also has torque and current limit adjustments, all factory set. See listing below of offset adapters necessary for use when using this motor with 6472 reactors. Use 6472-872 mounting plate when using with some reactors.

IMPORTANT:

The controller and connectors between controller and motor should be in line of sight of the motor. DO NOT disconnect controller from motor while operating or when controller is powered; damage to motor or controller could result.

	Qty.	Order Code	Each
Motor, 1/4 hp, only	1	13554-05 ★	739.56
Controller, only	1	13554-24 ★	1124.61
Complete , 1/4 hp	1	13554-07 ★	1864.17
Motor, 1/2 hp, only	1	13554-09 ★	787.69
Controller, only	1	13554-26 ★	1124.61
Complete , 1/2 hp	1	13554-10 ★	1912.30

13554-07, -10



OFFSET ADAPTER, only

§ Joints	Qty.	Order Code	Each
24/40	1	5268-10 ♦	37.62
29/42	1	5268-15 ♦	41.92
45/50	1	5268-21 ★	112.76

**13557
Hazardous Duty**

Digital Controller
Analog Controller
13557 STIRRING MOTOR *Offset, Hazardous duty series*

Stirring motor, controller and right-angle, off-set drive. Same motor and analog controller as 13554 — hazardous area unit except complete with right-angle drive gear box.

	Qty.	Order Code	Each
Analog, 1/4 horse power, complete	1	13557-110	3419.34
Analog, 1/2 horse power, complete	1	13557-120	4138.75

Stirring motor, controller and right-angle, off-set drive. Same motor and controller as 13554 — hazardous area unit except complete with right-angle drive gear box and digital control.

	Qty.	Order Code	Each
Digital, 1/4 horse power, complete	1	13557-220	4137.62
Digital, 1/2 horse power, complete	1	13557-240	4918.17

**13557
Standard Duty**

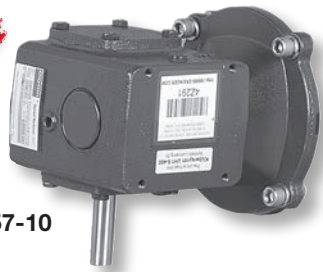
Digital Controller
Analog Controller
13557 STIRRING MOTOR *Offset, Standard duty series*

Stirring motor, controller and right-angle, off-set drive. Same motor and analog controller as 13554 — standard unit except complete with right-angle drive gear box.

	Qty.	Order Code	Each
Analog, 1/4 horse power, complete	1	13557-310	2535.67
Analog, 1/2 horse power, complete	1	13557-320	2583.80

Stirring motor, controller and right-angle, off-set drive. Same motor and controller as 13554 — standard unit except complete with right-angle drive gear box and digital control.

	Qty.	Order Code	Each
Digital, 1/4 horse power, complete	1	13557-420	3299.93
Digital, 1/2 horse power, complete	1	13557-440	3395.13


13557-10

13557 GEAR BOX *Fits Both Standard & Hazardous duty series*

Right-angle drive 5:1 gear box only. Bolts directly to motors with a 5/8-inch diameter shaft.

	Qty.	Order Code	Each
For 1/4 or 1/2 horse power motors	1	13557-10	671.50

13557 GEAR REDUCER *56C Flange, 4:1 Reduction*

In-line, offset 4:1 gear reducer. Top 56C flange accepts 13554 motor with 5/8-inch diameter shaft. Bottom has 56C flange with 5/8-inch diameter shaft. Shaft is offset approximately 1-5/8 inches. Flange face-to-face distance is approximately 4-3/4 inches. Can be used on new or existing reactor motor mounts to increase torque of reactor agitation system.

Qty.	Order Code	Each
1	13557-20	681.74


13557-20


13570 STIRRER *Overhead, Micro*

Micro sized overhead stir motor. Weighs less than a pound yet delivers 91 in./oz. of torque. The unit can easily stir up to 5L of water. Compact and light weight makes it easy to set-up and align with 10mm stir rods and even large flasks. Sealed housing, spark-less motor. Design also makes it easy to use in small hoods. 10-380rpm with 1rpm control. 100-120V. Comes with or without the controller box.

Description	Qty.	Order Code	Each
Complete w/ controller and 10mm chuck	1	13570-01	1036.84
Motor only, includes 10mm chuck	1	13570-03	615.79

13570-01


Glassware, stand and cork ring not included.

13532 DUAL MOTOR SPEED AND POWER CONTROLLER *Solid State ★*

Similar to 13530, but with buffered load control and DC filtration to provide more torque at higher speeds and a higher top speed than motor rating.

Ratings: AC three-prong output socket, standard NEMA type, 1200 watts. 0-120 volts, variable, 60 Hz. maximum 10 amps. DC four-prong output socket, "cinch" type. 360 watts, 0-150 volts, variable, filtered approximately 1/2 hp. max. 3 amps.

A compact 8.9 x 8.9 x 17.8cm (3-1/2 x 3-1/2 x 7 inches), lightweight 1 Kg. (2-1/4 lbs.) solid state control with rugged control regulation and rectification circuitry. Two output sockets AC and DC which work in conjunction. Fwd-Off-Rev. DC control switch only. Fused for AC and DC outputs, 10 amps and three (3) amps respectively. Rear ring stand clamp for easy mounting and access. Light blue modern type case with protective finish. Red pilot light. Large dial plate with 0-100 divisions. Red control knob with Click-Off. Heavy duty 1.8 meter neoprene, three-wire power cord with NEMA plug.

Uses — AC output socket, rear mounted: Heating mantles • Universal motors • Hot plates and heating baths • Incandescent lighting, resistive loads • Most loads accept 120v AC up to 10 amps — functions comparable to the autotransformer.

DC output socket, front mounted: Four-conductor output socket for DC reversible series wound motors • Plug supplied with instructions to obtain a DC output of 0-150 volts variable, maximum current three (3) amps at 360 watts.

Qty.	Order Code	Each
1	13532-10	641.36


13532

Use of 13649 motor is recommended with this controller.


13562
13563
13562 STIRRER *Medium Torque* ★

Model 134-1

This powerful 1/18 hp, two-shaft stirrer is extremely versatile and is excellent for mixing heavy viscous pastes, glues and oils as well as for high-speed stirring of emulsions and suspensions. Variable speeds from 50 to 750 rpm with 4.7 in.-lbs. torque at all speeds from this enclosed type motor. 120 volts AC input. It has a direct drive shaft which delivers 0.5 in.-lbs. of torque at speeds of 500 to 7500 rpm. The second shaft has a 10:1 gear ratio and delivers 4.7 in.-lbs. of torque at 50–750 rpm. Precision Jacobs chuck takes rods to 7.9mm. Finished in black baked enamel and white solvent-resistant epoxy paint. Motor shafts are 7.9mm (5/16 inches). Two shafts.

Qty.	Order Code	Each
1	13562-07	877.40

13563 STIRRER *Heavy Torque* ★

Model 134-2

Similar to 13562, but has a third shaft with a 60:1 gear reduction enabling it to be used for extremely heavy viscous materials in addition to the lighter viscous solutions mentioned above. Delivers 15 in.-lbs of torque at speeds of 10 to 125 rpm. Motor shafts are 7.9mm (5/16 inches). Enclosed type motor is 1/18 hp. Three shafts.

Qty.	Order Code	Each
1	13563-07	997.33


13580
13580 STIRRER *Variable Speed Direct Drive* ★

Model 101

Light duty, extremely compact (only 203mm high). Several used together can replace an expensive multiple stirrer. Precision, true running 6.4mm collet-type chuck. 1/75 hp.: 120 volts AC input to pen type motor. Calibrated-dial control with off position controls speed from 500 to 7500 rpm. Internal thermal overload protective device. Finished in black baked enamel and white solvent-resistant epoxy paint. Motor shaft is 6.4mm (1/4 inch). Low torque; 0.15 in.-lbs.

Qty.	Order Code	Each
1	13580-10	391.55


13583
13583 STIRRER *Variable Speed* ★

Model 102

One of the most powerful stirrers at its price. In addition to the direct output shaft of the 13580 stirrer, it also has a 10:1 gear reducer output shaft which permits stirring small quantities of viscous materials. 1/75 hp open type motor. Direct shaft delivers speeds from 500 to 7,500 rpm. Slow speed shaft gives speeds from 50 to 750 rpm. Torque of slow speed shaft is 1 in.-lbs. Speeds controlled by an electronic speed control. True running collet chuck. Internal thermal overload protective device. Finished in black baked enamel and white solvent-resistant epoxy paint. 120v, AC input. Motor shaft is 7.9mm (5/16 inches). Two shafts.

Qty.	Order Code	Each
1	13583-05	545.30


13584
13584 STIRRER *Variable Speed, Light-Medium Duty* ★

Model 104

One of the most powerful and versatile laboratory stirrers available. It has a 10:1 gear reduction delivering 4.7 in.-lbs. of torque. The two shafts permit stirring of heavy viscous pastes, glues and oils, or high-speed stirring of emulsions and suspensions. Continuous-duty 1/18 hp. motor with open type motor housing for cooling. Electronic speed control varies speeds from 100 to 7500 rpm over two ranges. Precision true running 7.9mm chuck. 120 volts, AC input. Finished in black baked enamel and white solvent-resistant epoxy paint. Two motor shafts are 7.9mm (5/16 inches).

Qty.	Order Code	Each
1	13584-10	798.48

13586 SUPPORT STAND ★

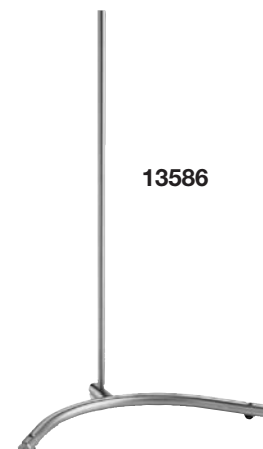
All-stainless-steel support stand. Heavy base, six pounds, can accommodate vessels up to 18 inches in diameter within its "U" shape. Support rod is 5/8-inch diameter, approximately 29 inches or 36 inches high, fastened to base with stainless steel lock nuts. Two additional threaded holes in base legs to accommodate extra support rods. Complete item consists of one base and one rod.

Stand complete with support rod

Rod Height (Inches)	Qty.	Order Code	Each
28	1	13586-10	281.37
36	1	13586-13	321.43

5/8-Inch Stainless Steel Support Rod, only

Rod Height (Inches)	Qty.	Order Code	Each
60	1	13586-15	187.05
28	1	13586-25	107.12
36	1	13586-27	136.33



13586

13588 CHUCK Adjustable, T-Line 191 ★

For rods 9.5mm (3/8 inches) in diameter. One chuck for 6.4mm (1/4-inch) motor shaft, the other for 7.9mm (5/16-inch) motor shaft.

Size	Qty.	Order Code	Each
6.4mm	1	13588-02	90.92
7.9mm	1	13588-04	42.21



13588

13590 THREE-BLADED PADDLE Stainless Steel, T-Line 150-151

Two inches in diameter that can be twisted to the desired pitch to throw either up or down. Blade is firmly riveted to a 25.4cm rod. No nuts or set screws to work loose.

Shaft Diameter	Qty.	Order Code	Each
6.4mm	1	13590-02	32.50
7.9mm	1	13590-04	32.50



13590

13598 EXTENSION BAR T-Line 180-181

Diameter	Length	Qty.	Order Code	Each
6.4mm	152mm	1	13598-03	15.17
6.4mm	305mm	1	13598-05	20.60
7.9mm	152mm	1	13598-07	15.17
7.9mm	305mm	1	13598-09	20.60



13598



HENDOLPH STIRRERS/HOTPLATES

13534 STIRRER/HOTPLATE

C-Mag HS Series

All glass/ceramic top stirrer/hotplates with digital readout of temperature. PID controller for accurate temperature setting and control. Light flashes to warn that surface is hot. Fixed safety circuit automatically shuts off heater if temperature rises above 550°C. Available in three popular top sizes.

Volume Limit – Water	5 L	10 L	15 L
Speed Range	100–1,500 rpm		
Temperature Range	50–500°C		
Output	250W	1,000W	1,500W
Dimensions/Top	120x120 mm 4.72x4.72 inches	200x200 mm 7.9x7.9 inches	280x280 mm 11x11 inches
Overall Dimensions	150x260x105 mm 6x10.25x4.2 inches	220x330x105 mm 8.7x13x4.2 inches	300x415x105 mm 11.8x16.35x4.2 in.
Weight/lbs.	6.5	11	13.2
Electric	115V, 50/60 Hz		
Certifications	UL, CUL, CE		
Qty.	1	1	1
Order Code	13534-05	13534-10	13534-15
Each	505.00	518.00	632.00


13534-05

13534-10

13534-15




13462


13462 HOTPLATE *Advanced Series, Ceramic Top*

Advanced Series hotplate with ceramic top. Temperature range is ambient +5° to 500°C. Low-profile design is ideal for use in fume hoods and under small reactors. Features include LED temperature set point, recall of last set point, **HOT** top indicator, 10° over-temp shut-off and a cool-touch corrosion resistant housing. 120v (230v available). CSA, CSAUS & CE approved. Two-year manufacturer's limited warranty.

Top Size, In.	Capacity, mL	Order Code	Each
4x4	600	13462-05	296.09
7x7	2500	13462-07	337.75
10x10	6000	13462-09	475.65

 approved.

13463-01


13463 STIRRER *Slow Speed*

Slow speed, 1-150rpm, stirrers designed for use in cold rooms, incubators and CO₂ environments from -10 to 60°C. Ideal for applications such as uniform suspensions of cell cultures or any slow controlled stirring that requires a constant speed under changing load or viscosity conditions. Standard models feature a speed control knob while advanced models feature a LED display, timer, alarm and ramping controls. Single position models have aluminum tops, multi-position models feature a glass-filled nylon top. 120v, 230v available. Two-year manufacturer's limited warranty.

Model	Capacity	Number of Positions	Qty.	Order Code	Each
Standard	2L	1	1	13463-01	703.30
Standard	1L	4	1	13463-04	1433.98
Advanced	2L	1	1	13463-11	902.00
Advanced	1L	4	1	13463-14	1791.70
Advanced	10L	1	1	13463-20	1309.95

 approved.

13463-14


13464 STIRRER *Multi-Position*

Multi-position stirrer, 60 to 140 rpm, designed for use in cold rooms, incubators and CO₂ environments from 5 to 40°C. Ideal for applications such as dissolution studies, media/reagent preparations and titration studies. Maintains constant speed under changing load or viscosity conditions. Standard models feature a speed control knob while advanced models feature a LED display, timer, alarm and ramping controls. Glass-filled nylon top. PTFE stir bar included for each position. 120v, 230v available. Two-year manufacturer's limited warranty.

Model	Capacity	Number of Positions	Qty.	Order Code	Each
Standard	1L	4	1	13464-04	1031.13
Advanced	400mL	6	1	13464-06	1254.60
Standard	1L	4	1	13464-14	1260.75
Advanced	400mL	6	1	13464-16	1676.72

 approved.

13464-14



13464-04





13465 STIRRER *High Capacity*

Advanced, digital magnetic stirrers for higher capacities and high viscosity solutions. Microprocessor controlled LED stirrer complete with alarm and ramping features. Two models, 100L and 200L capacity, feature large, 25 x21.5 inch stainless steel top plates capable of holding up to 425 lbs. 100 to 1800 rpm speed range. Includes PTFE covered stir bar. 120v, 230v available. Two year manufacturer's limited warranty.

Capacity	Qty.	Order Code	Each
100L	1	13465-01	2503.86
200L	1	13465-04	3620.30

CE  approved.



13465

13466 STIRRER *High Volume*

Large volume stirrer, up to 25L, designed for use in cold rooms, incubators and CO₂ environments from 5 to 40° C. Ideal for applications such as carboys, chromatography and large volume stirring. Maintains a constant speed under changing load or viscosity conditions. Standard model features a speed control knob, while advanced model feature an LED display, timer, alarm and ramping controls (60 to 1400 rpm). Glass-filled nylon top, 12.5 x 11 inches. Includes PTFE stir bar. 120v, 230v available. Two-year manufacturer's limited warranty.

Description	Qty.	Order Code	Each
Standard Model	1	13466-01	785.15
Advanced Model	1	13466-11	882.92

CE  approved.



13466-01

13466-11

13467 STIRRER & STIRRER/HOTPLATE

Mini stirrer and hotplate/stirrer models built for the educational lab. Rugged, compact design delivers 100-1200 rpm stirring. Heating models can attain temperatures up to 400°C. Cast aluminum top plate, 4.5 inch diameter and built-in support rod holder. Includes PTFE stir bar. 120v, 230v available. Two-year limited manufacturers warranty.

Description	Qty.	Order Code	Each
Mini Stirrer	1	13467-01	207.05
Mini Stirrer/Hotplate	1	13467-20	352.60

CE   approved.



Value 

13467-01

13467-20


New!

Value

13468-12



13468-20



13468 STIRRER/HOTPLATE *Advanced Series*

Talboys Advanced series hotplate/stirrers. Available in three popular sizes and with either a ceramic top (temperature range ambient +5 to 500°C) or aluminum top (temperature range ambient +5 to 400°C). Speed range 60-1600 rpm. LED display with last set point recall. Safety features include: **HOT** top indicator light, 10° over-temp shut-off and stirrer motor failure shut-off. 120v (230v available), CE, CSA & CSAUS approved. Two-year manufacturer's limited warranty.

Top Size, In.	Capacity, mL	Top	Order Code	Each
4x4	600	Cermamic	13468-06	466.38
4x4	600	Aluminum	13468-08	489.89
7x7	2500	Cermamic	13468-10	476.63
7x7	2500	Aluminum	13468-12	506.95
10x10	6000	Cermamic	13468-20	584.25
10x10	6000	Aluminum	13468-22	673.58
Accessories			Order Code	Each
Support Rod & Clamp Kit			13468-30	114.70


 approved.

13469-10



13469-08



13469 STIRRER/HOTPLATE *Professional Series*

Professional Series Talboys hotplate/stirrers. Microprocessor control LED readout of temperature, speed, and time. Touch-pad control panel for easy programming. Available with ceramic top (temperature range ambient +5 to 500°C) or aluminum top (temperature range ambient +5 to 400°C). Includes PTFE stir bar, rod, Pt100 probe and clamp. Speed range 60-1600 rpm. Safety features: **HOT** top indicator, 10° over-temp shut-off, stir motor failure shut-off, and probe failure shut-off. 120v (230v available). CE, CSA & CSAUS approved. Two-year manufacturer's limited warranty.

Top Size, In.	Capacity, mL	Top	Order Code	Each
7x7	2500	Ceramic	13469-08	937.88
7x7	2500	Aluminum	13469-10	986.44
10x10	6000	Ceramic	13469-20	1432.97
10x10	6000	Aluminum	13469-22	1504.01


 approved.

13470 STIRRER *Advanced Series*

Talboys Advanced series magnetic stirrer with either a ceramic or aluminum top. Microprocessor controlled with analog speed knob. Speed range 60-1600 rpm. The new low-profile design makes it easier to place under reactors like our ACE photochem reactor vessels. PTFE stir bar included. Accessory support rod kit available on request. 120v (230v available). CE, UL and CUL approved. Two-year manufacturer's limited warranty.

13470-18



13470-16



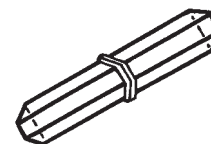
Top Size, In.	Capacity, mL	Top	Order Code	Each
4x4	600	Ceramic	13470-10	319.79
4x4	600	Aluminum	13470-14	335.83
7x7	2500	Ceramic	13470-16	325.17
7x7	2500	Aluminum	13470-18	487.77


 approved.

13654 STIRRER MAGNETS *PTFE, Octagonal* ♦

With pivot ring.

Length, mm (In.)	Diameter, mm (In.)	Qty.	Order Code	Each	Length, mm (In.)	Diameter, mm (In.)	Qty.	Order Code	Each
13 (1/2)	3 (1/8)	1	13654-02	4.22	13 (1/2)	10 (3/8)	1	13654-22	5.54
13 (1/2)	8 (5/16)	1	13654-04	4.75	15 (5/8)	10 (3/8)	1	13654-24	6.38
15 (5/8)	8 (5/16)	1	13654-06	4.73	25 (1)	10 (3/8)	1	13654-28	6.37
22 (7/8)	8 (5/16)	1	13654-08	5.12	35 (1-3/8)	10 (3/8)	1	13654-30	7.83
25 (1)	8 (5/16)	1	13654-10	5.18	38 (1-1/2)	10 (3/8)	1	13654-32	7.58
28 (1-1/8)	8 (5/16)	1	13654-12	5.47	51 (2)	10 (3/8)	1	13654-36	10.18
38 (1-1/2)	8 (5/16)	1	13654-14	5.84	64 (2-1/2)	10 (3/8)	1	13654-38	11.80
41 (1-5/8)	8 (5/16)	1	13654-16	6.75	38 (1-1/2)	13 (1/2)	1	13654-46	19.72
51 (2)	8 (5/16)	1	13654-18	7.18	75 (3)	13 (1/2)	1	13654-48	21.02
64 (2-1/2)	8 (5/16)	1	13654-20	11.48					

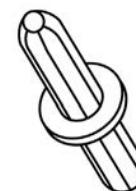


13654

13655 STIRRER MAGNETS *Raised Ring, PTFE, Octagonal* ♦

With large 25mm (1-inch) pivot ring (PTFE collar).

Length, mm (Inches)	Dia., mm (Inches)	For Use with Flask, mL	Qty.	Order Code	Each
15.9 (5/8)	9.5 (3/8)	500	1	13655-25	30.18
25.4 (1)	9.5 (3/8)	500-1000	1	13655-29	31.02
34.9 (1-3/8)	9.5 (3/8)	500-2000	1	13655-31	31.67
38.1 (1-1/2)	9.5 (3/8)	500-2000	1	13655-33	32.73
50.8 (2)	9.5 (3/8)	2000	1	13655-37	33.13
63.5 (2-1/2)	9.5 (3/8)	2000-5000	1	13655-39	33.88
38.1 (1-1/2)	12.7 (1/2)	1000-2000	1	13655-41	40.31
76.2 (3)	12.7 (1/2)	3000-5000	1	13655-44	42.33

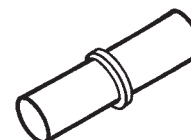


13655

13656 STIRRER MAGNETS *PTFE, Round* ♦

With removable pivot ring on 25.4mm and longer.

Length, mm (In.)	Diameter, mm (In.)	Qty.	Order Code	Each	Length, mm (In.)	Diameter, mm	Qty.	Order Code	Each
12 (1/2)	8 (5/16)	1	13656-06	6.28	38 (1-1/2)	10	1	13656-26	10.94
19 (3/4)	8 (5/16)	1	13656-08	6.38	42 (1-5/8)	10	1	13656-28	12.26
25 (1)	8 (5/16)	1	13656-10	6.57	51 (2)	10	1	13656-32	13.38
32 (1-1/4)	8 (5/16)	1	13656-12	6.65	64 (2-1/4)	16	1	13656-34	14.11
38 (1-1/2)	8 (5/16)	1	13656-14	8.62	75 (3)	12	1	13656-40	25.21
51 (2)	8 (5/16)	1	13656-18	11.23					

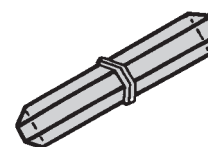


13656

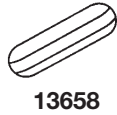
13657 STIRRER MAGNETS *PTFE, Octagonal, Colored* ♦

With pivot ring. Either red, yellow or blue for instant identification. Please specify color.

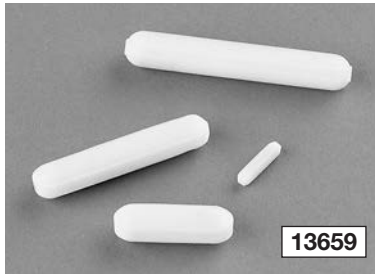
Length, mm (In.)	Diameter, mm (In.)	Qty.	Red Order Code	Blue Order Code	Yellow Order Code	Each
13 (1/2)	8 (5/16)	1	13657-05	13657-31	13657-57	5.77
15 (5/8)	8 (5/16)	1	13657-07	13657-33	13657-59	6.17
22 (7/8)	8 (5/16)	1	13657-09	13657-35	13657-61	6.53
25 (1)	8 (5/16)	1	13657-11	13657-37	13657-63	6.88
38 (1-1/2)	8 (5/16)	1	13657-17	13657-43	13657-69	8.43
51 (2)	8 (5/16)	1	13657-23	13657-49	13657-75	9.00
75 (3)	13 (1/2)	1	13657-25	13657-51	13657-76	28.15



13657

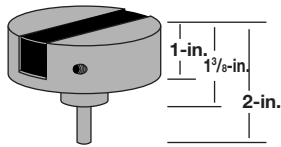
13658 MICRO STIRRER MAGNETS PTFE ♠


Length, mm	Diameter, mm	Qty.	Order Code	Each
8	1.5	1	13658-04	5.20
15	1.5	1	13658-06	5.08
5	2	1	13658-05	5.18
7	2	1	13658-07	5.19
3	3	1	13658-08	5.70
6.35	3	1	13658-10	5.68
10	3	1	13658-12	5.72
12.7	3	1	13658-13	5.72

Disposable

13659 STIRRER MAGNETS Disposable ♠

Designed for single use applications where efficiency and cross contamination is a concern. These Alnico V magnets have a PTFE coating which is inert for high purity contact. Packaged 100 pieces per bag.

Length, mm (In.)	Diameter, mm (In.)	Qty.	Order Code	Pkg./100
12 (1/2)	3 (1/8)	100	13659-14	121.59
25 (1)	8 (5/16)	100	13659-18	171.45
40 (1-5/8)	8 (5/16)	100	13659-22	205.11
50 (2)	8 (5/16)	100	13659-27	285.24



13660

13660 STIRRER MAGNET "Super Magnet" ★

Can be used in place of overhead mechanical stirring, in many cases, with equal or better agitation. This extremely strong 3-inch x 3/4-inch wide magnet is mounted in a 3-1/4-inch circular aluminum housing. Two studs supplied, 1/4-inch O.D. and 5/16-inch O.D., for attaching to chuck on a stirring motor. When used with 13655 stirrer magnets with large pivot ring, high velocity mixing can be achieved without spinout. This magnet is so strong, you can actually stir on the side of the vessel wall. Supplied with Allen wrench for attaching stud.

Qty.	Order Code	Each
1	13660-50	398.90



13560

13560 STIRRER MAGNETS X-Shaped, PTFE ♠

PTFE "X"-shaped vane with magnetic bar cross mounted. For use with 9590 and 9591 Microscale vials.

L x W, mm.	Qty.	Order Code	Each
20 x 20	1	13560-01	11.60
25 x 25	1	13560-02	12.44
30 x 30	1	13560-03	14.15

13663 EGG SHAPE MAGNETIC SPINBAR® PTFE ♠

This egg-shaped stirrer magnet provides its own pivot point without a separate ring or abrupt change in contour. Designed especially for round bottom vessels.

Fits Vessel Size/mL	Size, mm	Qty.	Order Code	Each
10 thru 100	20 x 10	1	13663-03	12.86
100, 200	25 x 12	1	13663-05	11.33
300, 500	30 x 16	1	13663-07	14.42
300, 500	35 x 16	1	13663-09	15.59
500, 1000	40 x 20	1	13663-11	19.68
2000, 3000	50 x 20	1	13663-13	23.26


13664 ROUND MAGNETIC SPINBAR Glass Coated ♠

Borosilicate glass coated magnetic stirring bars, great for high temperatures, (up to 275°C) or for zero absorption of the stirred solution is needed.

Size, mm	Qty.	Order Code	Each
12 x 5	1	13664-01	17.78
22 x 6.4	1	13664-02	15.82
25 x 6	1	13664-03	20.25
45 x 8	1	13664-04	21.22


13665 SPINWEDGE MAGNETIC STIR BAR PTFE ♠

Wedge shaped PTFE magnetic stir bar. Designed to "plow" up sediment for thorough dispersion. Provides very strong magnetic action. Great for viscous solutions.

Size, mm	Qty.	Order Code	Each
12 x 6	1	13665-02	9.04
25 x 8	1	13665-04	9.65
40 x 14	1	13665-06	14.81
50 x 12	1	13665-08	15.68


13666 STIRRER MAGNETS Cross, PTFE ♠

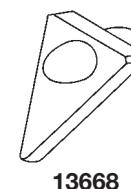
Designed specifically for use in round-bottom test tubes and flasks. All sizes are 12.7mm high.

Diameter x Height, mm.	Qty.	Order Code	Each
9 x 6	1	13666-04	10.21
10 x 8	1	13666-05	10.20
14 x 12	1	13666-06	10.76
17 x 13	1	13666-08	10.99
19.1 x 12.7	1	13666-10	12.10
25 x 15	1	13666-12	12.40


13668 STIRRER MAGNETS Triangular, PTFE ♠

PTFE "V"-shaped vane with magnetic bar cross mounted. For use with 9590 and 9591 Microscale vials. Also used with any V-bottom reaction vial or tubes.

For Use With § Joint Size	Qty.	Order Code	Each
7/10 & 10/10	1	13668-01	11.15
14/10	1	13668-02	11.11
14/10	1	13668-03	11.14





TREMNER BIOFORCE HOMOGENIZERS



New

13713 VORTEXER *Basic & Standard Models*

Basic and Standard models of vortex mixers with fixed and variable high speed mixing. Basic has fixed 3200rpm speed for rigorous mixing, which starts when button is pressed down. Standard has analog speed control from 300 to 3200rpm and can be set at continuous or touch mode which activates when the button is pressed down. Two-year limited warranty, and are CE, cUL and UL approved. 120V, 1.2A.

Description	Qty.	Order Code	Each
Basic 3200rpm fixed speed	1	13713-10	304.46
Standard 300-3200rpm continuous or touch modes	1	13713-20	358.75

CE   approved.



13714 VORTEXER *Advanced Model*

Advanced model of vortex mixers with fixed and variable high speed mixing. LED display for both speed and time, and includes both continuous and touch modes. Touch mode activates when top button is pressed. Timer will display elapsed time when activated and will shut unit off when it reaches zero. Advanced has 500 to 3000rpm speed range. Two-year limited warranty, and are CE, cUL and UL approved. 120V, 1.2A.

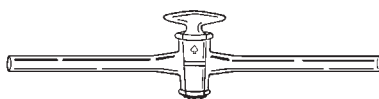
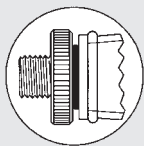
Description	Qty.	Order Code	Each
Advanced 500-3000rpm continuous or touch modes, with LED displays for both speed and time.	1	13714-03	446.53

CE   approved.



TREMNER VORTEXERS

Bores with asterisk (*) have threaded ends. 8 and 10 bores as per insert; 2 and 4 bores have a three-part retaining device.

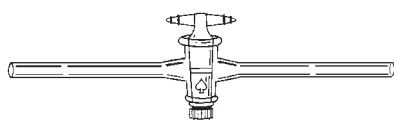


8137

8137 STOPCOCK *Straight Bore, Glass Plug* ♠

A ruggedly constructed stopcock with solid glass plug and tapered flange which insures maximum strength at the seal. Bore of side arms is equal to or slightly larger than bores of plug on all sizes. For plugs, see 8223.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
1	12/30	8	1	8137-02	50.56
2	12/30	8	1	8137-04	62.86
2*	12/30	8	1	8137-05	75.84
3	17/40	10	1	8137-06	82.80
4	17/40	10	1	8137-08	83.20
4*	17/40	10	1	8137-09	101.13
6	20/44	12	1	8137-10	101.43
8*	25/52	16	1	8137-12	233.91
10*	35/56	19	1	8137-14	233.91

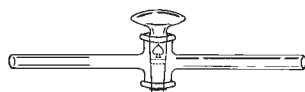


8138

8138 STOPCOCK *Straight Bore, 1:5 PTFE Plug* ♠

With polished barrels. For plug only, see 8224.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	11/25	8	1	8138-04	45.08
3	15.2/30	10	1	8138-06	66.32
4	15.2/30	10	1	8138-08	68.61
6	16/35	12	1	8138-10	85.05
8	24/40	16	1	8138-12	159.82

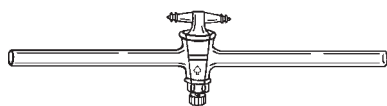


8139

8139 STOPCOCK *Micro* ♠

Specifically designed for micro chemical apparatus. The solid glass plug and barrel are lapped together to give a precision fit suitable for micro chemical requirements. Plugs are interchangeable within the meaning of ASTM Standard E 675.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
1	7/25	5	1	8139-10	73.37

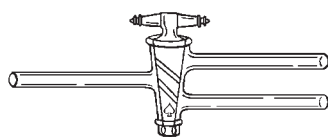


8141

8141 STOPCOCK *Metering Valve, 1:5 PTFE Plug* ♠

Metering valve, with 1:5 PTFE straight bore plug, provides fine control of rate of flow. With polished barrels. For plug only, see 8232.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	11/25	8	1	8141-03	103.12
4	15.2/30	10	1	8141-05	



8143

8143 STOPCOCK *Three-Way, 1:5 PTFE Plug* ♠

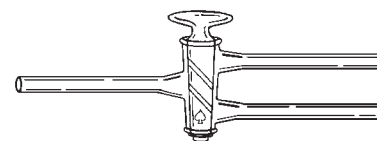
Oblique bore with polished barrels. For plug only, see 8226.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	12.9/44	8	1	8143-05	97.97
4	14.4/44	10	1	8143-09	114.62

8144 STOPCOCK *Three-Way, Double Oblique Bore* ♠

With solid glass plug. For plug only, see 8226.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	14.5/50	8	1	8144-04	79.71
3	16/56	10	1	8144-06	92.35
4	16/56	10	1	8144-08	100.54

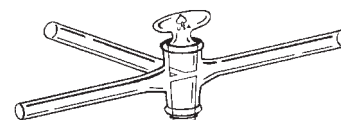


8144

8145 STOPCOCK *Three-Way, T-Bore* ♠

With solid glass plug. For plug only, see 8228, glass plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	12/30	8	1	8145-01	59.17
1	17/40	8	1	8145-02	71.21
2	17/40	8	1	8145-04	67.67
3	20/44	10	1	8145-06	83.08
4	17/40	10	1	8145-07	70.09
4	20/44	10	1	8145-08	81.26
6	25/52	12	1	8145-10	Call
6	20/44	12	1	8145-12	96.78

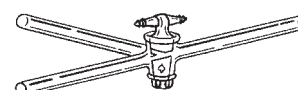


8145

8146 STOPCOCK *T-Bore, 1:5 PTFE Plug* ♠

With polished barrels. For plug, see 8228, PTFE plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	15.2/30	8	1	8146-05	103.62
4	16/35	10	1	8146-10	124.70

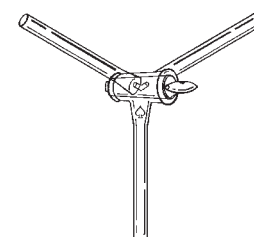


8146

8147 STOPCOCK *Three-Way* ♠

With 120° bore, solid glass plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	17/40	8	1	8147-04	73.43
4	20/44	10	1	8147-08	89.84

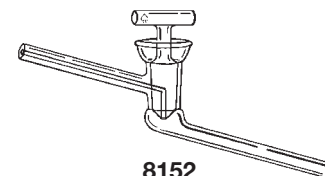


8147

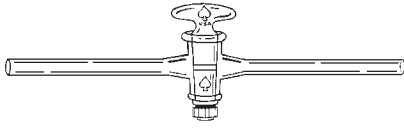
8152 STOPCOCK *Newman Type* ♠

Used with distilling head to enable operator to determine reflux ratios and take-offs.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	12/30	8	1	8152-04	102.05
4	17/40	8	1	8152-06	142.88



8152

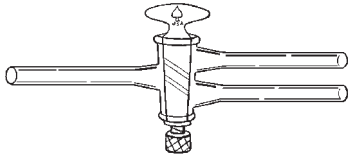


8184

8184 STOPCOCK High Pressure, Straight Bore ♠

With solid glass plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	12/30	8	1	8184-04	69.69
4	17/40	10	1	8184-08	91.15

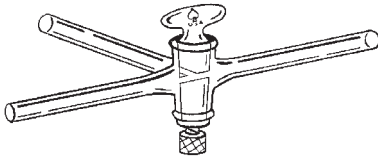


8186

8186 STOPCOCK High Pressure, Oblique Bore ♠

Three-way, with solid glass plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	14/50	8	1	8186-04	100.86
4	16/56	10	1	8186-08	115.55



8188

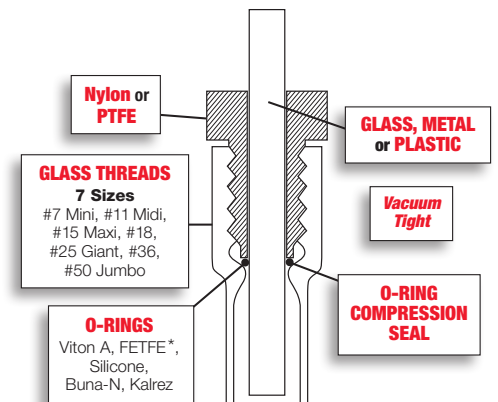
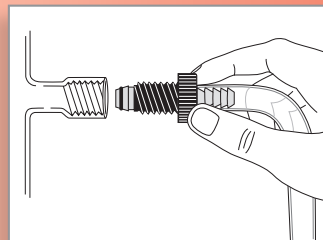
8188 STOPCOCK High Pressure, T-Bore ♠

Three-way, with solid glass plug.

Size-Bore of Plug, mm	Plug Size, mm	Stem O.D., mm	Qty.	Order Code	Each
2	17/40	8	1	8188-04	118.85
4	20/44	10	1	8188-08	145.15

Ace-Threads

Grease Free • Clamp Free
More Convenient



* Fluoroelastomer with special TFE additive (FETFE) offers superior compression set resistance with built-in lubricity.

FETFE is a registered trademark of Ace Glass Inc. Nylon and Kalrez are trademarks of the E.I. DuPont Company



Ace Stopcock Valves Feature:

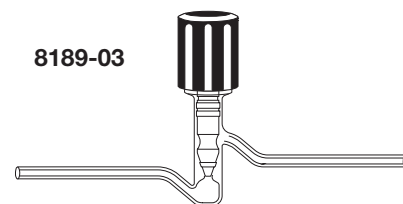
- Hooded UHDPE* handle with bakeable plug
- Fits all 0-5, 0-10 and 0-15 ACE threaded barrels
- Tef-Cap seals – PTFE-covered o-rings
- Smooth action – internal thread
- Sure-Grip cap & internal thread design protects inside of barrel from liquid spills

8189 STOPCOCK High Vacuum, Easy-Action Plug, with Tef-Cap O-Ring ♦

High vacuum stopcock with **Tef-Cap o-ring seals** that eliminate exposure to corrosive materials. For use to 3.5 Kg/cm² internal pressure. With variable openings from 0–3mm to 0–10mm. An ultimate vacuum of 10⁻⁷ can be realized with the standard three seals. Smooth acting valve permits fine adjustment of opening. Front ring seal makes a positive closure against a precision-formed heavy glass seat. Hooded handle is permanently attached to PTFE plug and is therefore not bakeable. O-Rings are NOT replaceable. Reference marks on body aid in repetitive setting.

Tef-Cap Seals – PTFE-Covered o-rings

Size Orifice	Stem O.D., mm	Qty.	Plug Only Order Code	Each	Barrel Only Order Code	Each	Complete Order Code	Each
0-3	8	1	8189-43	39.27	8194-34	48.34	8189-03	88.42
0-4	8	1	8189-43	39.27	8194-35	48.34	8189-04	87.89
0-5	9.5	1	8189-45	54.64	8194-25	73.09	8189-05	126.16
0-8	11	1	8189-45	54.64	8194-28	73.09	8189-08	126.16
0-10	12.7	1	8189-50	64.26	8194-26	77.63	8189-10	144.26



*UHDPE-Ultra High Density Polyethylene, Maximum Temperature Limit 130°C

8189 PTFE PLUG Replacement, Tef-Cap ♦

PTFE replacement plug with two upper **Tef-Cap o-ring seals**, lower machined ring seal and backup UHDPE* hooded handle. Not bakeable. O-Rings are NOT replaceable.



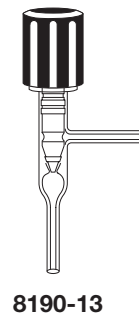
For Size	Qty.	Order Code	Each
0-3, 0-4	1	8189-43	39.27
0-5, 0-8	1	8189-45	54.64
0-10	1	8189-50	64.26

8190 STOPCOCK High Vacuum, Easy-Action Plug, 90°, with Tef-Cap O-Ring ♦

High vacuum stopcock with arms at 90° and **Tef-Cap o-ring seals** that eliminate exposure to corrosive materials. For use to 3.5 Kg/cm² internal pressure. With variable openings from 0–3mm to 0–10mm. An ultimate vacuum of 10⁻⁷ can be realized with the standard three seals. Smooth acting valve permits fine adjustment of opening. Front ring seal makes a positive closure against a precision-formed heavy glass seat. Hooded handle is permanently attached to PTFE plug and is therefore not bakeable. O-Rings are NOT replaceable. Reference marks on body aid in repetitive setting.

Tef-Cap Seals – PTFE-Covered o-rings

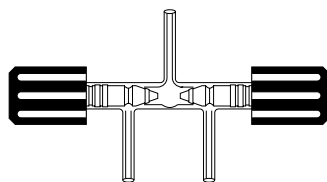
Size Orifice	Stem O.D., mm	Qty.	Plug Only Order Code	Each	Barrel Only Order Code	Each	Complete Order Code	Each
0-3	8	1	8189-43	39.27	8195-40	39.00	8190-13	82.26
0-4	8	1	8189-43	39.27	8195-41	39.00	8190-14	78.72
0-5	9.5	1	8189-45	54.64	8195-32	66.74	8190-15	121.28
0-8	11	1	8189-45	54.64	8195-33	66.74	8190-18	121.28
0-10	12.7	1	8189-50	64.26	8195-34	71.27	8190-20	139.42



*UHDPE-Ultra High Density Polyethylene, Maximum Temperature Limit 130°C

ACE THREADED STOPCOCKS

**Tef-Cap Seals —
PTFE-Covered
o-rings**

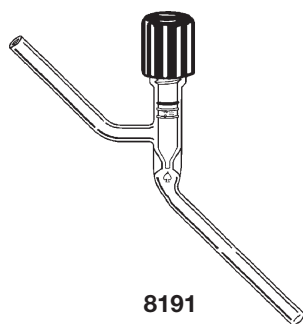


8190-203

8190 STOPCOCK *High Vacuum, Easy-Action Plug, Three-Way, with Tef-Cap O-Ring* ♠

High vacuum three-way stopcock for use in combining materials in proportion or as a common feed distributed in proportion. With **Tef-Cap o-ring seals** that eliminate exposure to corrosive materials. For use to 3.5 Kg/cm² internal pressure. With variable openings from 0–3mm to 0–5mm. An ultimate vacuum of 10⁻⁷ can be realized with the standard three seals. Smooth acting valve permits fine adjustment of opening. Front ring seal makes a positive closure against a precision-formed heavy glass seat. Hooded handle is permanently attached to PTFE plug and is therefore not bakeable. O-Rings are NOT replaceable. Each easy action plug acts independently of the other and is connected to a common tubulation through a variable opening.

Size Orifice, mm	Stem O.D., mm	Qty.	Plug Only		Barrel Only		Complete	
			Order Code	Each	Order Code	Each	Order Code	Each
0-3	8	1	8189-43	39.27	8196-56	113.00	8190-203	176.65
0-5	9.5	1	8189-45	54.64	8196-58	142.43	8190-205	249.15

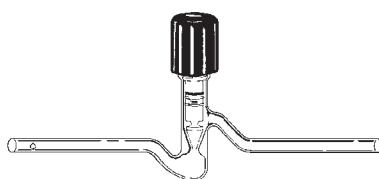


8191

8191 STOPCOCK *Vacuum, PTFE, Needle Valve, Low Hold-Up* ♠

Threaded vacuum stopcock with PTFE plug and new hooded handle that permits smooth needle valve adjustment down to 0.1cc/min. flow rate. In-line design of barrel offers less hold-up than with 8192 design. Double PTFE ring seals prevent exposure of FETFE backup o-ring to corrosive gases and liquids. Hooded handle can be removed from plug, making plug bakeable. For plug only, see 8192-261.

Size Orifice, mm	Qty.	Plug Only		Barrel Only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
0-3	1	8192-261	38.97	8191-24	58.22	8191-202	62.42

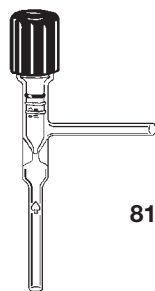


8192

8192 STOPCOCK *Vacuum, PTFE, Easy-Action Plug* ♠

Easy action PTFE plug with hooded handle, threaded into heavy wall glass barrel, permits smooth adjustment. Double PTFE ring seal prevents exposure of FETFE backup o-ring to corrosive gases and liquids. Plug, with hooded handle removed, is bakeable. For o-rings, see 8194-302, -303, or -304.

Size Orifice, mm	Stem O.D., mm	Qty.	Plug Only		Barrel Only		Complete	
			Order Code	Each	Order Code	Each	Order Code	Each
0-3	8	1	8192-261	38.97	8194-34	48.34	8192-204	87.49
0-5	9.5	1	8192-263	53.67	8194-25	73.09	8192-207	121.59
0-8	11	1	8192-263	53.67	8194-28	73.09	8192-209	121.59
0-10	12.7	1	8192-264	59.30	8194-26	77.63	8192-211	134.52



8193-214

8193 STOPCOCK *Vacuum, PTFE, Needle Valve* ♠

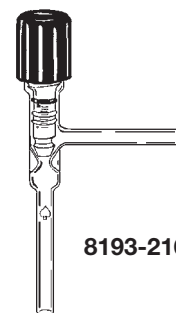
Threaded vacuum stopcock with PTFE plug and new hooded handle that permits smooth needle valve adjustment down to 0.1cc/min. flow rate. Double PTFE ring seals prevent exposure of FETFE backup o-ring to corrosive gases and liquids. Hooded handle can be removed from plug, making plug bakeable. Stem is at 90° angle. For barrels, see 8195-40. For plugs, see 8192-261. See 8194-302 for replacement o-rings.

Size Orifice, mm	Stem O.D., mm	Qty.	Order Code	Complete
0-3	8	1	8193-214	80.87

8193 STOPCOCK Vacuum, PTFE, Easy-Action Plug, 90° ♦

Easy action PTFE plug with hooded handle, threaded into heavy wall glass barrel, permits smooth adjustment. Arms are at 90° angle. Double PTFE ring seal prevents exposure of FETFE backup o-ring to corrosive gases and liquids. Plug, with hooded handle removed, is bakeable. For barrels, see 8195-32 or -34. For replacement plugs, see 8192-263 or -264. For o-rings, see 8194-303 or -304.

Size Orifice, mm	Stem O.D., mm	Qty.	Order Code	Complete
0-5	9.5	1	8193-216	117.33
0-10	12.7	1	8193-218	130.33



8193-216, -218

8192 PLUG Replacement, with Double PTFE Ring Seal ♦

Replacement plug with two PTFE ring seals and backup FETFE o-ring. UHDPE hooded handle can be threaded off plug, making plug bakeable. For replacement FETFE o-rings, see 8194-302, -303, or -304.

For Size	O-Ring Size	Qty.	Order Code	Each
0-3	-008	1	8192-261	38.97
0-5,0-8	-011	1	8192-263	53.67
0-10	-111	1	8192-264	59.30

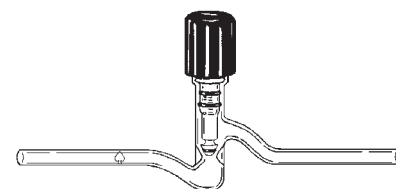


8192-261, -263, -264

8194 STOPCOCK High Vacuum, Easy-Action Plug ♦

High vacuum stopcock for use to at least 3.5 Kg/cm² internal pressure. With variable openings from 0–3mm to 0–15mm. An ultimate vacuum of 10⁻⁷ can be realized with the standard three o-rings. Smooth acting semi-needle valve permits fine adjustment of opening. Front o-ring makes a positive closure against a precision formed heavy glass seat. Hooded handle can be removed from PTFE plug, making plug bakeable. Reference marks on body aid in repetitive setting. Supplied with FETFE o-rings. For replacement o-rings, see 8194-86 through -88. For replacement plugs, see 8194-266, -268, -270 or -272.

Size Orifice, mm	Stem O.D., mm	Qty.	Barrel Only		Complete	
			Order Code	Each	Order Code	Each
0-3	8	1	8194-34	48.34	8194-224	79.38
0-4	8	1	8194-35	48.34	8194-226	81.47
0-5	9.5	1	8194-25	73.09	8194-228	118.63
0-8	11	1	8194-28	73.09	8194-230	118.63
0-10	12.7	1	8194-26	77.63	8194-232	134.67
0-15	19	1	8194-27	113.21	8194-234	238.79

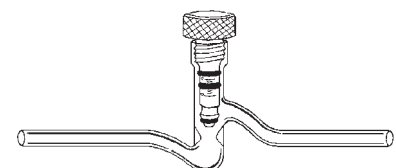


8194-224

8194 STOPCOCK High Vacuum, Easy-Action Plug, Bakeable ♦

Completely bakeable high vacuum stopcock. Plug has solid PTFE stem and glass filled PTFE threads and handle for dimensional stability and reduced expansion when heated. Barrel is borosilicate glass. An ultimate vacuum of 10⁻⁷ can be realized with the standard o-rings. An ultra high vacuum down to 10⁻⁹ can be attained by baking out the system and o-rings at 230°C for two hours or more. Smooth acting semi-needle valve permits the adjustment of opening. Reference marks on the body aid in repetitive setting. Supplied with FETFE o-rings. See 8194-85 thru -88 for replacement o-rings, below. For replacement barrels, see 8194.

Complete					Plug Only			
Size Orifice, mm	Stem O.D., mm	Qty.	Order Code	Each	Size Orifice, mm	Qty.	Order Code	Each
0-3	8	1	8194-90	92.13	0-3	1	8194-95	39.97
0-4	8	1	8194-83	87.13	0-4	1	8194-95	39.97
0-5	9.5	1	8194-91	126.87	0-5	1	8194-96	60.63
0-8	11	1	8194-84	127.35	0-8	1	8194-96	60.63
0-10	12.7	1	8194-92	145.86	0-10	1	8194-97	81.71
0-15	19	1	8194-93	267.46	0-15	1	8194-98	171.95



8194-90

8194 O-RING REPLACEMENT SETS

Replacement o-rings for 8194, 8195, 8196 stopcocks. Supplied in packs consisting of two large and one small o-ring for the plug size specified.



8194-85

For Stopcock Size:	Qty.	0-3, 0-4		0-5, 0-8		0-10		0-15	
		Order Code	Per Pack	Order Code	Per Pack	Order Code	Per Pack	Order Code	Per Pack
Buna N	3	8194-40 ♠	2.09	8194-42 ♠	2.42	8194-44 ♠	2.61	8194-46 ♠	2.87
Silicone	3	8194-48 ♠	4.87	8194-50 ♠	6.01	8194-52 ♠	6.27	8194-54 ♠	7.01
Ethylene-Propylene	3	8194-55 ♠	7.97	8194-56 ♠	8.42	8194-57 ♠	8.75	8194-58 ♠	10.64
FETFE*	3	8194-85 ♠	4.13	8194-86 ♠	4.96	8194-87 ♠	6.89	8194-88 ♠	8.96
Kalrez	3	8194-124 ★	129.27	8194-126 ★	154.74	8194-128 ★	193.29	8194-130 ★	269.32

*Fluoroelastomer with special TFE additive offers SUPERIOR COMPRESSION SET RESISTANCE with BUILT-IN LUBRICITY.



8194-310

8194 FETFE O-RING REPLACEMENT SETS ♠

FETFE replacement o-rings for 8194, 8195 and 8196 stopcocks. Supplied in plastic box of multiple sets. Each set consists of two large and one small o-ring.

For Stopcock Size	Sets Per Box	Qty.	Order Code	Per Box
0-3, 0-4	18	1 Box	8194-310	71.35
0-5, 0-8	18	1 Box	8194-313	80.44
0-10	12	1 Box	8194-315	78.33
0-15	6	1 Box	8194-317	52.92



7855

7855 O-RING KITS ♠

O-Ring kits in two of the more popular materials: Buna-N and Viton. The o-rings are packaged in a clear, plastic box with a re-sealable lid that lets you see the o-rings inside. Opens to thirty compartments, each clearly marked with rubber type, o-ring size, and quantity. The cardboard insert indicates the individual Ace codes for each size, so you can easily re-order the o-rings individually as they are depleted. The quantity of each o-ring varies by size and compartment. Sizes provided run from -006 up to -327. Each kit contains 500 total o-rings.

Material	Kit Qty.	Order Code	Per Kit
Viton	500	7855-99	251.96
Buna-N	500	7855-499	150.52



8194-302

8194 FETFE O-RING REPLACEMENT for 8192 or 8193 ♠

For Stopcock Size	Pkg. Qty.	Order Code	Per Dozen
0-3	12	8194-302	12.61
0-5, 0-8	12	8194-303	17.36
0-10	12	8194-304	24.58

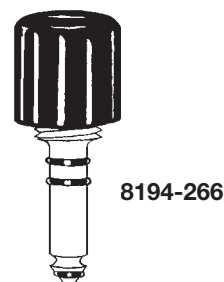
For Kalrez replacements, order 7855-604 for 0-3; 7855-606 for 0-5, 0-8; 7855-618 for 0-10. Sold as each.

**For a complete listing of o-rings,
see page 391 of this catalog.**

8194 PTFE PLUG REPLACEMENT ♠

PTFE replacement plug with three FETFE o-ring seals and UHDPE Hooded handle. Handle can be removed from plug, making plug bakeable. See 8194 o-ring replacement sets listed below.

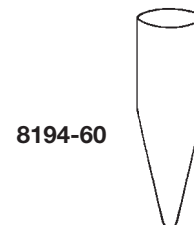
For Size	O-Ring Sizes	Qty.	Order Code	Each
0-3, 0-4	(1) -007, (2) -008	1	8194-266	34.06
0-5, 0-8	(1) -008, (2) -011	1	8194-268	51.55
0-10	(1) -011, (2) -111	1	8194-270	64.33
0-15	(1) -114, (2) -116	1	8194-272	140.41



8194 APPLICATOR *Plastic O-Ring* ♠

A tapered plastic sleeve for use in fitting o-rings on 8194, 8195, 8196 stopcock plugs.

For Size	Qty.	Order Code	Each	For Size	Qty.	Order Code	Each
0-3, 0-4	1	8194-60	23.82	0-10	1	8194-64	40.08
0-5, 0-8	1	8194-62	30.94	0-15	1	8194-66	42.87



8194 PLUG PULLER ♠

Used to remove PTFE plug from threaded barrel in old style (i.e., 8195-45), threaded stopcocks, **NOT** hooded style as supplied in 8195-236, below. Flat nylon disc has matching thread in center, slit on one side and spring steel wire in groove on outside edge. Simply spread disc over thread on plug, effectively increasing the thread length, and turn plug until o-rings release.

For Size	Qty.	Order Code	Each	For Size	Qty.	Order Code	Each
0-3	1	8194-103	53.33	0-10	1	8194-110	53.45
0-5	1	8194-105	53.48	0-15	1	8194-115	53.43

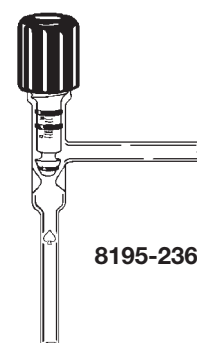


8194-103

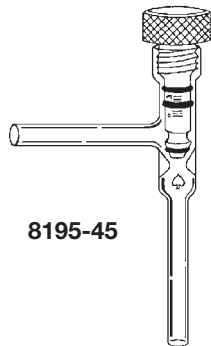
8195 STOPCOCK *High Vacuum, Easy-Action Plug, 90°* ♠

High vacuum stopcock with arms at 90° for use to at least 3.5 Kg/cm². internal pressure. With variable openings from 0–3mm to 0–15mm. An ultimate vacuum of 10⁻⁷ can be realized with the standard three o-rings. Smooth acting semi-needle valve permits fine adjustment of opening. Front o-ring makes a positive closure against a precision formed heavy glass seat. Hooded handle can be removed from PTFE plug making plug bakeable. Reference marks on body aid in repetitive setting. Supplied with FETFE o-rings. For replacement o-rings, see 8194-85 thru -88. For replacement plugs, see 8194-266, -268, -270 or -272.

Size Orifice, mm	Stem O.D., mm	Qty.	<i>Barrel Only</i>		<i>Complete</i>	
			Order Code	Each	Order Code	Each
0-3	8	1	8195-40	39.00	8195-236	74.90
0-4	8	1	8195-41	39.00	8195-238	74.90
0-5	9.5	1	8195-32	66.74	8195-240	113.10
0-8	11	1	8195-33	66.74	8195-242	113.10
0-10	12.7	1	8195-34	71.27	8195-244	122.80
0-15	19	1	8195-36	105.44	8195-246	231.59



8195-236

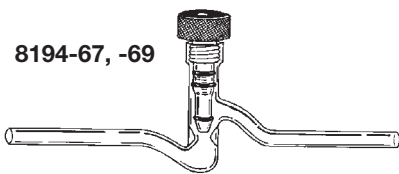


8195-45

8195 STOPCOCK High Vacuum, Easy Action Plug, 90°, Bakeable ♠

Completely bakeable high vacuum stopcock. Plug has solid PTFE stem and glass-filled PTFE threads and handle for dimensional stability and reduced expansion when heated. Barrel is borosilicate glass. Arms are at 90°. An ultimate vacuum of 10^{-7} can be realized with the standard o-rings. An ultra high vacuum down to 10^{-9} can be attained by baking out the system and o-rings at 230°C for two hours or more. Smooth acting semi-needle valve permits the adjustment of opening. Reference marks on the body aid in repetitive setting. Supplied with FETFE o-rings. See 8194-85 through -88 for replacement o-rings. For plug only, see 8194-95, -96, 97, -98.

Size Orifice, mm	Stem O.D., mm	Qty.	Barrel Only		Complete	
			Order Code	Each	Order Code	Each
0-3	8	1	8195-30	46.72	8195-45	82.47
0-4	8	1	8195-31	46.72	8195-43	82.47
0-5	9.5	1	8195-32	66.74	8195-46	121.23
0-8	11	1	8195-33	66.74	8195-44	121.23
0-10	12.7	1	8195-34	71.27	8195-47	140.13
0-15	19	1	8195-36	105.44	8195-48	259.97

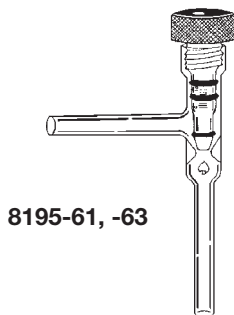


8194-67, -69

8194 STOPCOCK Vacuum, Easy-Action, Glass Plug ♠

All-glass straight-thru stopcock including plug, handle is nylon. Supplied with FETFE o-rings. Pressures to 10^{-5} Torr attainable after baking. For barrels only, see 8194-25 or -26.

Size Orifice	Stem O.D., mm	Qty.	Plug Only		Complete	
			Order Code	Each	Order Code	Each
0-5	9.5	1	8194-74	48.05	8194-67	106.15
0-10	12.7	1	8194-76	59.14	8194-69	133.54

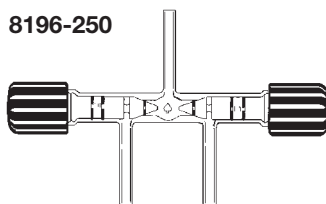


8195-61, -63

8195 STOPCOCK Vacuum, Easy-Action, Glass Plug ♠

All-glass 90° stopcock including plug, handle is nylon. Supplied with FETFE o-rings. Pressures to 10^{-5} Torr attainable after baking. For barrels only, see 8195-32 or -34.

Size Orifice	Stem O.D., mm	Qty.	Plug Only		Complete	
			Order Code	Each	Order Code	Each
0-5	9.5	1	8194-74	48.05	8195-61	99.77
0-10	12.7	1	8194-76	59.14	8195-63	127.42



8196-250

8196 STOPCOCK High Vacuum, Three-Way ♠

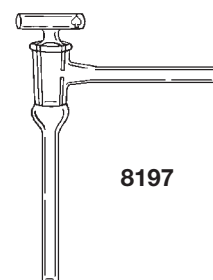
Three-way high vacuum stopcock for use in combining materials in proportion or as a common feed distributed in proportion. Easy action plugs act independently of each other and are connected to a common tubulation through a variable opening. Supplied with FETFE o-rings. Stem O.D. 0-3, 8mm; 0-5, 9.5mm.

Size Orifice, mm	Qty.	Barrel Only		Plug, Only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
0-3	1	8196-56	113.00	8194-266	34.06	8196-250	172.15
0-5	1	8196-58	142.43	8194-268	51.55	8196-253	236.77

8197 STOPCOCK *High Vacuum, Hollow Plug* ♠

With hollow glass plug for right angle connection.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8197-04	103.48
4	10	1	8197-06	137.96

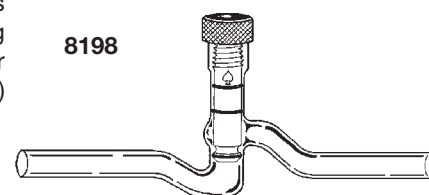


8197

8198 STOPCOCK *High Vacuum, Easy-Action Plug, Quick Open* ♠

High vacuum stopcock with easy action plug that has blunt, flat end instead of the tapered end supplied with 8194 or 8195. This modification means stopcock is a quick opening model versus the variable opening 8194 and 8195. Vacuums of 10^{-7} can be realized with standard o-rings. Plug is NOT bakeable. Stem O.D., 0-14 is 19mm; 0-20 is 25.4mm. Supplied with FETFE o-rings. For replacement o-rings, see 7855; sizes -013 (1) and -111 (2) for 0-14; sizes -114 (1) and -116 (2) for 0-20.

Size Orifice, mm	Qty.	<i>Barrel Only</i>		<i>Plug Only</i>		<i>Complete</i>	
		Order Code	Each	Order Code	Each	Order Code	Each
0-14	1	8198-32	120.48	8198-52	114.20	8198-14	226.33
0-20	1	8198-38	127.17	8198-58	178.12	8198-20	282.98

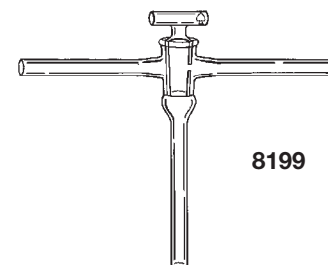


8198

8199 STOPCOCK *High Vacuum, Hollow Plug* ♠

With hollow plug, for connecting either the right or left outlet with the bottom outlet.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
4	10	1	8199-06	131.52
6	12.7	1	8199-08	165.36
8	16	1	8199-10	235.62
10	16	1	8199-12	273.79
15	22	1	8199-14	485.89



8199

8200 VALVE *"Flickit"* ♠

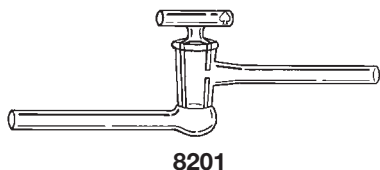
Quick-open, valve-type stopcock with glass barrel, PTFE plug, and FETFE o-rings. Unique design allows introduction of particulates or capsules into a system using a rod or plunger. Because the barrel is angled with respect to the side arms and the plug has a corresponding angled end, a 180° turn not only changes the angle of the plug with respect to the pathway, but this rotation in the threaded barrel provides a "lifting" action that nearly retracts the plug from the pathway; additional turn removes it completely. Resulting unobstructed, quick-open pathway offers many advantages not found in conventional PTFE or glass stopcocks. Size of stopcock refers to I.D. of side arms. Plugs and barrels are NOT interchangeable. O-Ring replacements are offered in sets of three rings, three sets per package. Not recommended for high vacuum.

Size, mm	Qty.	Order Code	Complete	Replacement O-Rings			
				For Size	Qty.	Order Code	Per Package
5	1	8200-05	178.71	5	1	8200-30	19.28
10	1	8200-10	207.02	10	1	8200-35	21.91
20	1	8200-20	333.29	20	1	8200-40	42.93



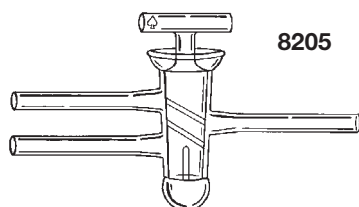
8200




8201 STOPCOCK *High Vacuum, Hollow Plug* ♠

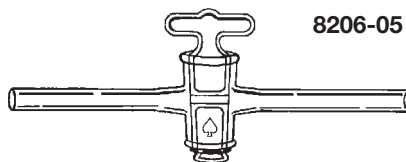
With hollow glass plug, for horizontal connections.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8201-04	99.45
4	10	1	8201-06	117.87
10	16	1	8201-12	225.71


8205 STOPCOCK *High Vacuum, Solid Plug* ♠

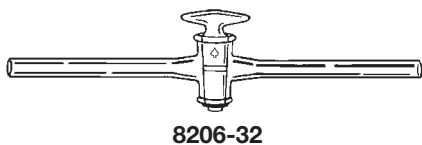
Three-way oblique bore, with liquid seal. The solid glass plug is bored to permit evacuation of the lower chamber and prevents leakage through the bottom.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8205-04	188.60
3	10	1	8205-05	211.24
4	10	1	8205-06	255.28


8206 STOPCOCK *High Vacuum, Hollow Plug* ♠

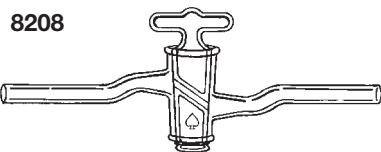
Precision grade, hollow glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8206-05	101.06
4	10	1	8206-09	133.06
10	19	1	8206-17	243.18
15	19	1	8206-19	400.99


8206 STOPCOCK *High Vacuum, Solid Plug* ♠

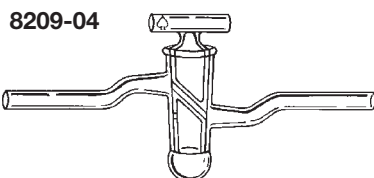
Precision grade, solid glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8206-32	71.87
4	10	1	8206-36	84.76


8208 STOPCOCK *High Vacuum, Oblique Hollow Plug* ♠

Precision grade, with oblique bore hollow glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8208-04	123.20
4	10	1	8208-08	102.98


8209 STOPCOCK *High Vacuum, Oblique Hollow Plug* ♠

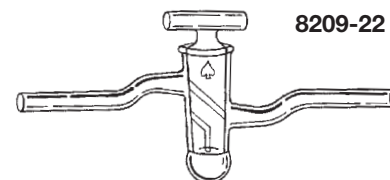
Oblique bore with vacuum cup at bottom and hollow glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8209-04	120.52
4	10	1	8209-06	89.04
6	12.7	1	8209-08	185.17
8	16	1	8209-10	220.55

8209 STOPCOCK *High Vacuum, Oblique Solid Plug* ♠

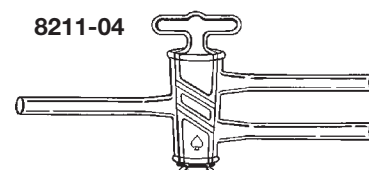
Oblique bore with vacuum cup at bottom and solid glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8209-22	111.44
4	10	1	8209-24	129.95


8211 STOPCOCK *High Vacuum, 3-Way Hollow Plug* ♠

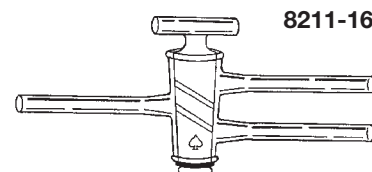
Precision grade, with three-way oblique bore hollow glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8211-04	221.53
4	10	1	8211-06	231.72


8211 STOPCOCK *High Vacuum, 3-Way Solid Plug* ♠

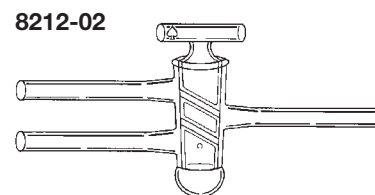
Precision grade, with three-way oblique bore solid glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8211-16	147.24
4	10	1	8211-18	166.05


8212 STOPCOCK *High Vacuum, 3-Way Hollow Plug* ♠

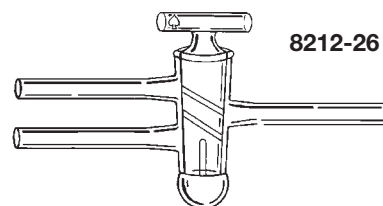
Precision grade, with three-way oblique bore hollow glass plug. Plug has hole to permit evacuation of the lower chamber and prevents leakage through the bottom. Code -06 is the same stopcock supplied on the Ace-Burlitch inert atmosphere manifold, 7818.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8212-02	169.59
4	10	1	8212-06	209.50


8212 STOPCOCK *High Vacuum, 3-Way Solid Plug* ♠

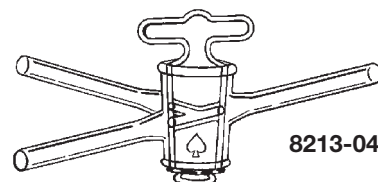
Precision grade, with three-way oblique bore solid glass plug. Plug has hole to permit evacuation of the lower chamber and prevents leakage through the bottom.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8212-26	181.57
4	10	1	8212-28	186.89


8213 STOPCOCK *High Vacuum, T-Bore Hollow Plug* ♠

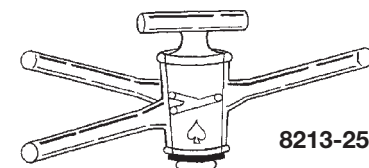
 Precision grade with T-Bore **hollow** glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8213-04	102.83
4	10	1	8213-06	105.74
6	12.7	1	8213-08	111.76

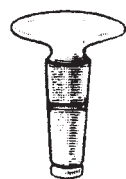
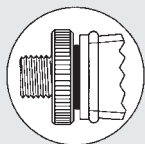

8213 STOPCOCK *High Vacuum, T-Bore Solid Plug* ♠

 Precision grade with T-Bore **solid** glass plug.

Size-Bore of Plug, mm	Stem O.D., mm	Qty.	Order Code	Each
2	8	1	8213-25	103.71
4	10	1	8213-27	123.00



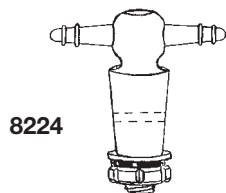
Bores with asterisk (*) have threaded ends. 8 and 10 bores as per insert; 2 and 4 bores have a three-part retaining device.



8223-01

8223 STOPCOCK PLUGS † Straight Bore, Borosilicate Glass ♠

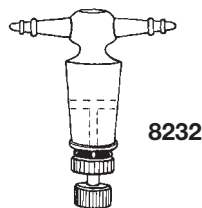
Size-Bore of Plug, mm	Plug Size, mm	Qty.	Order Code	Each
1	12/30	1	8223-01	24.12
2	12/30	1	8223-02	24.12
2*	12/30	1	8223-03	24.53
3	17/40	1	8223-04	25.65
4	17/40	1	8223-06	25.65
4*	17/40	1	8223-07	29.24
6	20/44	1	8223-08	39.05
8*	25/52	1	8223-10	55.56
10*	35/56	1	8223-12	64.02



8224

8224 STOPCOCK PLUGS Straight Bore, 1:5 PTFE ♠

Size-Bore of Plug, mm	Plug Size, mm	Retainer O-Ring Size	Qty.	Order Code	Each
2	11/25	-011	1	8224-04	16.20
3	15.2/30	-111	1	8224-08	18.53
4	15.2/30	-111	1	8224-12	18.53
6	16/35	-111	1	8224-16	27.24
8	24/40	-208	1	8224-18	71.40

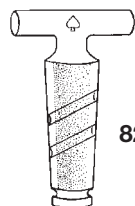


8232

8232 STOPCOCK PLUGS 1:5 PTFE, Metering Valve ♠

Size-Bore of Plug, mm	Plug Size, mm	Retainer O-Ring Size	Qty.	Order Code	Each
2	11/25	-011	1	8232-14	58.91
4	15.2/30	-111	1	8232-16	64.58

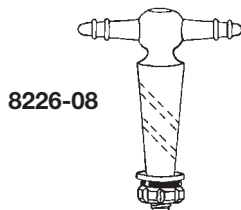
Valve Stem O-Rings		Size	Qty.	Order Code	Per Dozen
		2 mm	12	8232-32	18.54
		4 mm	12	8232-36	26.49



8226-05

8226 STOPCOCK PLUGS Double Oblique Bore, Borosilicate Glass ♠

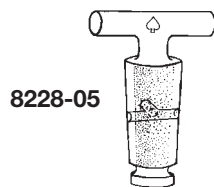
Size-Bore of Plug, mm	Plug Size, mm	Qty.	Order Code	Each
2	14.5/50	1	8226-05	25.59
3	16/56	1	8226-07	30.82
4	16/56	1	8226-09	30.98



8226-08

8226 STOPCOCK PLUGS Double Oblique Bore, 1:5 PTFE ♠

Size-Bore of Plug, mm	Plug Size, mm	Retainer O-Ring Size	Qty.	Order Code	Each
2	12.9/44	-011	1	8226-08	38.92
4	14.4/44	-011	1	8226-10	46.18



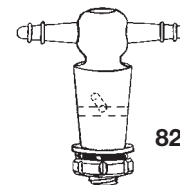
8228-05

8228 STOPCOCK PLUGS T-Bore, Borosilicate Glass ♠

Size-Bore of Plug, mm	Plug Size, mm	Qty.	Order Code	Each
1	17/40	1	8228-05	25.84
2	12/30	1	8228-07	22.15
2	17/40	1	8228-09	25.84
3	20/44	1	8228-13	32.98
4	20/44	1	8228-17	31.50
4	17/40	1	8228-19	26.17
6	20/44	1	8228-21	30.72
6	25/52	1	8228-23	Call

8228 STOPCOCK PLUGS *T-Bore, 1:5 PTFE ♠*

Size-Bore of Plug, mm	Plug Size, mm	Retainer O-Ring Size	Qty.	Order Code	Each
2	15.2/30	-111	1	8228-32	41.14
4	16/35	-111	1	8228-36	49.24



8228-32

8229 GREASE *Stopcock ★*

A halofluorocarbon lubricant especially suited for lubrication when using strong acids, oxygen, ozone, oxidants, halogens, and other corrosive or reactive chemicals. Has good metal-on-metal lubricating properties and thermal stability up to 260°C. Solid up to 177°C vapor pressure at 25°C... less than 10⁻³mm Hg. Complete removal is easily accomplished with organic solvents. 28 gram tube.



8229

Qty.	Order Code	Each
1	8229-10	57.72

8230 GREASE *High Vacuum ★*

Dow Corning High Vacuum Grease. A silicone lubricant that effectively seals and lubricates glass stopcocks, joints and glass-rubber connections. Resistant to most chemicals, heat stable and inert. Supplied in tube, 5.3 oz. (150g).



8230

Qty.	Order Code	Each
1	8230-06	33.96

8115 KRYTOX® GPL *Fluorinated Grease ★*

Superior performance, non-contaminating, nonflammable, general purpose grease. Excellent as a super-inert grease for stopcocks and joints, as a high-temperature grease in “baked-out” vacuum systems, or on distillation column joints because it is insoluble in almost all solvents except Freon® 113. Easy removal with fluorinated solvents. Turn to page 528 for technical specifications.

Size	Qty.	Order Code	Each
2 oz.	1	8115-08	61.18



8115
8116

8116 KRYTOX® LVP *High Vacuum Grease ★*

Very low vapor pressure, highly inert, nonflammable grease. The grease for high-vacuum systems. Superior performance in laboratory and pilot plant equipment, as a lubricant and sealant for stopcocks, valves, fittings and o-rings operating at high vacuum or in hostile environments. Turn to page 528 for technical specifications.

Size	Qty.	Order Code	Each
2 oz.	1	8116-10	108.14



8250

8250 STOPPERS S Full Length \spadesuit

Sizes S 7/25 and S 10/30 are solid, all others are hollow.

S Size	Qty.	Order Code	Each	S Size	Qty.	Order Code	Each
7/25	1	8250-02	14.82	24/40	1	8250-12	20.36
10/30	1	8250-04	15.72	29/42	1	8250-14	25.78
12/30	1	8250-06	15.85	34/45	1	8250-16	32.73
14/35	1	8250-08	19.07	45/50	1	8250-20	45.98
19/38	1	8250-10	20.01	55/50	1	8250-24	58.30



8251

8251 STOPPERS Spherical Joint \spadesuit

Sizes 12 and 18 are solid, all others are hollow.

S Size	Qty.	Order Code	Each	S Size	Qty.	Order Code	Each
12	1	8251-02	24.55	35	1	8251-12	31.06
18	1	8251-06	27.75	65	1	8251-16	90.05
28	1	8251-08	28.61				



8255

8255 STOPPERS S Medium Length \spadesuit

Sizes S 7/15, S 10/18 and S 12/18 are solid, all others are hollow.

S Size	Qty.	Order Code	Each	S Size	Qty.	Order Code	Each
7/15	1	8255-04	16.46	24/25	1	8255-14	21.95
10/18	1	8255-06	16.79	29/26	1	8255-16	25.57
12/18	1	8255-08	16.79	34/28	1	8255-18	30.95
14/20	1	8255-10	17.18	40/35	1	8255-20	47.15
19/22	1	8255-12	20.33				



9543

9543 STOPPERS S Hollow, Penny Head \spadesuit

Hollow, "penny" head.

S Joint	Qty.	Order Code	Each
7/10	1	9543-02	14.43
14/20	1	9543-04	14.71
19/22	1	9543-06	17.03



8260

8260 STOPPERS Flask Length \spadesuit

Size 9 is solid, all others are hollow.

Size	Qty.	Order Code	Each	Size	Qty.	Order Code	Each
9	1	8260-04	7.67	22	1	8260-12	11.73
13	1	8260-06	8.02	27	1	8260-14	14.84
16	1	8260-08	9.54	32	1	8260-16	20.12
19	1	8260-10	10.98	38	1	8260-18	24.29

8267



8267 STOPPERS S PTFE, Full Length \spadesuit

S 24/40 size is solid; S 45/50 is hollowed from top, bottom closed.

S Size	Qty.	Order Code	Each
24/40	1	8267-19	44.28
45/50	1	8267-29	92.21

8270 STOPPERS ‡ Full Length, with Hook ♠

Stopper is hollow with internal hook for hanging reactants in flasks.

‡ Size	Qty.	Order Code	Each
24/40	1	8270-10	32.45

8270

8274 STOPPERS Cap, Spherical Joint ♠

Cap-type stoppers have ‡ joint and are used to seal unused ports on Air Sampling Manifolds. Use 7670 pinch clamp to secure caps to ports.

‡ Joint Size	Qty.	Order Code	Each
12/5	1	8274-06	22.65
28/15	1	8274-96	24.57


8274
8277 STOPPERS Firestone Hy-n-Dry ♠

Hy-n-Dry stopper makes any ‡ vessel into an inexpensive desiccator. Allows sample storage for long periods, free from atmospheric moisture, even during overnight temperature changes or when refrigerating.

Bottom of stopper has a Porosity B (70-100 micron) sintered glass disc sealed in. Fill stopper with drying agent, 10-20 mesh, cover with plastic cap, insert into any joint vessel, i.e. boiling flask, volumetric flask, cylinder, etc., and you have an inexpensive desiccator. A pinhole in plastic cap allows assembled unit to "breathe" with temperature fluctuations through, not around, the desiccant. A warming trend or trace solvent evaporation does not produce pressure buildup that often causes stoppers to pop out.

Filled with Drierite, ‡ 24/40 Hy-n-Dry stopper will absorb up to one gram of water. Supplied with plastic cap. NOT supplied with drying agent.

‡ Joint	Hght. Above Joint, mm	Top O.D., mm	Approx. Vol., mL	Qty.	Order Code	Each
14/10	35	17	6	1	8277-12	38.21
14/20	35	17	6	1	8277-14	38.21
24/40	40	28	22	1	8277-19	45.67
29/42	45	32	30	1	8277-23	59.14

Designed by Dr. Raymond Firestone.


8277
12014 PLURO STOPPER ★

Neoprene stopper for use with filter flasks to support funnels securely. Individual sizes listed.

O.D. Top x Bottom, mm	I.D. Top x Bottom, mm	Height, mm	Qty.	Order Code	Per Package
21 x 11	17 x 7	21	12	12014-40	54.09
27 x 16	22 x 11	21	12	12014-44	56.05
37 x 22	31 x 16	25	12	12014-46	60.83
46 x 29	39 x 22	29	12	12014-48	64.36
58 x 38	50 x 30	35	12	12014-50	70.79
69 x 45	60 x 36	40	12	12014-52	75.28
86 x 57	75 x 46	45	12	12014-54	81.69

12014

12014 PLURO STOPPER SET ★

A versatile silicone stopper that equals 17 standard stoppers. All the rings are cut from the same stopper, each ring nesting perfectly into the next. Whether making up a small or large stopper, a vacuum-tight fit is assured. Sold as a set.

O.D. Range, mm	Qty.	Order Code	Per Package
18-70	1 Set	12014-14	139.27
18-114	1 Set	12014-16	241.75

12014

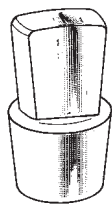

12629



12629 STOPPERS Polyethylene , Hollow ♠

Hollow stoppers made of conventional polyethylene. Fits snugly — easily removed. May be used as containers for micro work. All sizes are 25mm high.

Size No.	Top, mm	Bottom, mm	Capacity mL	Pkg. Qty.	Case Qty.	Order Code	Per Pkg.	Case Price
1	17	11	4.6	24	144	12629-07	34.94	209.61
2	20	14	5.2	24	144	12629-09	34.94	209.61
6	32	26	15.1	24	144	12629-17	34.94	209.62
8	38	32	24.1	24	144	12629-21	34.93	209.59



12630

12630 STOPPERS PTFE, Flask Length ★

Standard taper stoppers made of solid PTFE.

Size No.	Qty.	Order Code	Each
8	1	12630-04	8.95
9	1	12630-06	10.22
13	1	12630-12	11.72
16	1	12630-16	13.12
19	1	12630-22	13.68
22	1	12630-24	12.57
27	1	12630-28	19.13
32	1	12630-34	23.14
38	1	12630-38	40.16

12631



12631 STOPPERS PTFE, § ★

Standard taper stoppers made of solid PTFE.

§ Size	Qty.	Order Code	Each
7/10	1	12631-02	11.83
7/25	1	12631-03	11.88
10/10	1	12631-04	11.84
14/10	1	12631-06	11.87
14/20	1	12631-07	15.58
19/22	1	12631-09	17.47
24/25	1	12631-15	21.63
29/26	1	12631-17	30.10

12632 STOPPERS PTFE, ⌘, Flask Length ★

Standard taper, flask-length PTFE stoppers with easy-to-grip handle. Codes -13 and -16 are solid, others are hollow.

Size No.	Approx. Dia. Large End, mm	Length, mm	Qty.	Order Code	Each
13	13.4	14.0	1	12632-13	5.62
16	16.5	15.0	1	12632-16	9.35
22	22.05	20.5	1	12632-22	10.93
27	27.15	21.5	1	12632-27	12.70
38	38.0	30.0	1	12632-38	29.24


12633 STOPPERS PTFE, ⌘ ★

Standard taper, PTFE stoppers with easy-to-grip handle. Codes -05 and -09 are solid, all others are hollow.

⌘ Size	Qty.	Order Code	Each
14/20	1	12633-05	14.19
19/22	1	12633-09	14.99
24/25	1	12633-12	22.20
24/40	1	12633-15	22.35
29/42	1	12633-17	23.07
45/50	1	12633-23	73.13

12634 STOPPERS PTFE ★

Virgin TFE/PTFE stoppers with built-in black Delrin stopper extractor ring. Eliminates the hazard of removing a frozen stopper from glass vessel. You need only turn red nut clockwise to exert a gentle force against the vessel's lip and the non-stick stopper is extracted.

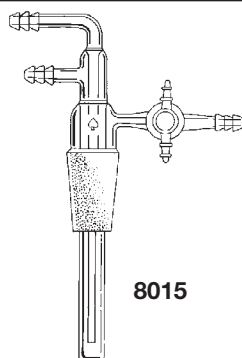
Stopper Size	Qty.	Order Code	Per Pkg.	Stopper Size	Qty.	Order Code	Per Pkg.
#8	3	12634-04	58.30	⌘19/22	3	12634-16	108.13
#13	3	12634-08	69.98	#22	3	12634-18	109.03
⌘14/20	3	12634-10	100.07	⌘24/40	2	12634-20	111.92
#16	3	12634-12	102.63	⌘29/42	2	12634-24	126.23
#19	3	12634-14	108.10				


12635 STOPPERS Polyethylene ★

Standard taper, hollow polyethylene stoppers with flat top.

Size No.	Qty.	Order Code	Per Pkg.	Size No.	Qty.	Order Code	Per Pkg.
7	6	12635-07	14.88	24	6	12635-24	34.90
10	6	12635-10	20.33	29	6	12635-29	41.13
14	6	12635-14	27.42	34	6	12635-34	6.10
19	6	12635-19	31.15	45	6	12635-45	8.81





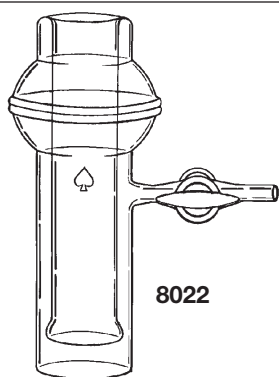
8015

8015 SUBLIMATION ADAPTER* ♠

Unique device for carrying out sublimation directly in round bottom reaction flask; simply remove condenser, stirrer, etc. from flask joint, insert sublimation adapter and begin. Coolant connection at top and side vacuum connection are 9.5mm (3/8-inch) O.D. Vacuum connection is controlled by 1:5 PTFE 2mm bore stopcock. Adapter supplied with F 24/40 joint for use with 250mL or 500mL flasks. Other joint sizes or capacities are available.

For Flask Cap., mL	Qty.	Order Code	Each
250	1	8015-15	167.26
500	1	8015-20	172.72

*Suggested by Dr. William H. Myers, Univ. of Richmond, Dept. of Chemistry, Richmond, VA.



8022

8022 SUBLIMATION APPARATUS ♠

A 50mm size for samples of approximately 25mL. With a #50 o-ring joint, unit measures 200mm high x 50mm diameter. The stopcock is positioned so that the bottom can be firmly clamped to the top. Use clamp 7669-22. For replacement o-ring, see 7855-748.

Size	Qty.	Outer Body only		Inner Top only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
50	1	8022-08	119.95	8022-06	193.63	8022-10	311.31

**With quick release clamp
for rapid removal**
**CAPFE o-ring provides
leak-tight seal**



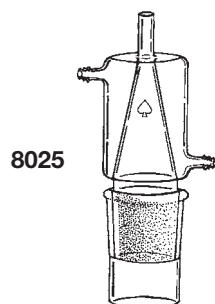
8023

8023 SUBLIMATION APPARATUS *Vacuum, Improved*

Two sizes, both featuring an o-ring sealed, greaseless flange with 6517 quick release clamp. Top flange is ground flat, bottom mating flange has an o-ring groove for a CAPFE o-ring (PTFE encapsulated silicone), held tightly together via a quick release clamp. Size 60 is 200mm high x 60mm I.D.; uses 6517-22 clamp and 7588-878 CAPFE o-ring. Size 152 is 250mm high x 152mm I.D.; uses 6517-27 clamp and 7855-881 CAPFE o-ring. Complete item consists of outer body, inner top, CAPFE o-ring and quick release clamp.

Size	Qty.	Outer Body, only		Inner Top, only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
60	1	8023-20	♠ 139.73	8023-25	♠ 220.41	8023-40	♠ 477.32
152	1	8023-33	♠ 592.37	8023-36	♠ 630.49	8023-55	♠ 1404.39

Replacement CAPFE O-Ring				Replacement Clamp			
For Size	Qty.	Order Code	Each	For Size	Qty.	Order Code	Each
60	1	7855-878	♠ 28.38	60	1	6517-22	★ 88.80
152	1	7855-881	♠ 61.44	152	1	6517-27	★ 120.09



8025

8025 SUBLIMATION APPARATUS *Vacuum* ♠

Economical small-scale sublimation apparatus. Crystals form in the cone and are easily removed through the vacuum connection at the top. The unique design allows the user to submerge the flask in an oil bath almost to the bottom seal on the cooling jacket, thereby avoiding premature condensation. 25mL size has a F 34/45 joint; 50mL size has a F 45/50 joint. Vacuum tube on both sizes will accommodate 10mm I.D. tubing.

Size	Qty.	Outer Body only		Inner Top only		Complete	
		Order Code	Each	Order Code	Each	Order Code	Each
25	1	8025-03	34.50	8025-13	158.77	8025-23	193.27
50	1	8025-05	34.50	8025-15	172.03	8025-25	206.53

9546 SUBLIMATION APPARATUS Vacuum ♦

A semi-micro sublimer used by a number of synthesis laboratories. The proportions have been found to be optimum for handling a variety of crystal types. The circulatory stem may be removed and collecting tube filled with dry ice, acetone, etc. Complete unit consists of body, head and circulatory stem. Large joint is 3/29 , body length approximately 50mm. Side take-off is 1/14 inner joint. Outlet tube on 9546-04 is 8mm O.D.; outlet tube on 9546-06 is 9mm O.D.

	Qty.	Order Code	Each
Circulatory Stem	1	9546-04	54.84
Head	1	9546-06	80.70
Body	1	9546-08	43.40
Complete	1	9546-10	178.94

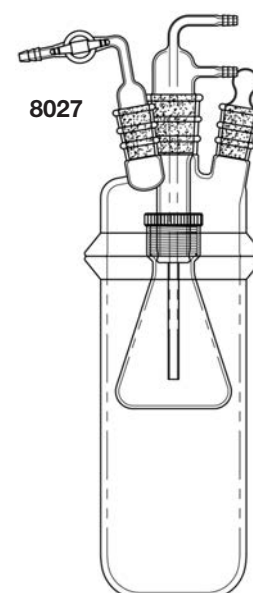

9546
8027 SUBLIMATION APPARATUS Vacuum ♦

Large scale (2L), sublimation apparatus constructed of heavy wall glass. Unit will sublime approximately 100gms of solid sample. Unique design offers both a sublimation apparatus as well as a two-liter reaction kettle. Cold finger tube has a 3/34 joint which positions in the center neck and is held by means of a plastic bushing to a 300mL condensate flask. The wide flange opening of the kettle allows for easy removal and access to the condenser flask. Side joints are 2/24 . Kettle flange has an o-ring groove for a CAPFE o-ring, (supplied) for easy grease free seal. Head and kettle are joined with a quick release clamp. Complete system has all the components listed below. 8027-14 stopcock adapter uses size "C" (3/8-inch) hose connections. 8027-07 condenser tube uses size A (5/16-inch) hose connections. See page 7 for more detailed hose connection information.

APPARATUS COMPLETE	Order Code	Complete
With 300mL Condenser Flask	8027-25	1364.11

COMPONENTS

Qty.	Order Code	Each	Qty.	Order Code	Each		
2L Reaction Kettle Bottom	1	8027-09	214.25	Stopper (two required)	1	8250-12	20.36
Reaction Kettle Top	1	8027-02	404.93	Clamp, Flange	1	6517-25	100.27
Condenser Flask, 300 mL	1	8027-05	94.80	CAPFE o-ring	1	7855-880	29.49
Stopcock Adapter	1	8027-14	168.61	3/24 Sleeve	3	7642-11	11.01
Condenser Tube	1	8027-07	263.75	3/34 Sleeve	3	7642-19	15.11
Bushing, Nylon	1	7506-10	21.17				


8027

**ALUMINUM
LABJAWS®
LAB FRAMES**

Set No.	2-In. /51mm rods	12-In. /305mm rods	18-In. /457mm rods	24-In. /610mm rods	36-In. /914mm rods	48-In. /1219mm rods	72-In. /1829mm rods	"S" Connectors	Rod End Connectors	Feet
11160	8	—	2	8	—	—	—	18	4	4
11162	8	—	2	7	—	4	—	35	4	4
11163	10	—	3	—	2	10	—	38	4	6
11165	6	6	—	2	—	7	5	45	4	8

SUPPORTS

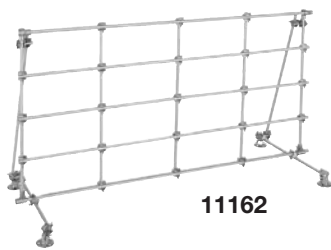


11160

11160 SET *Frames 61 x 61cm, Small ★*

This Lab Frame Set can be assembled into a support 61cm wide and 61cm high with 46cm base. It is convenient for small laboratory setups and provides a strong support to which glassware, heaters, etc., may be attached with Castaloy clamps.

Qty.	Order Code	Per Set
1	11160-04	407.23

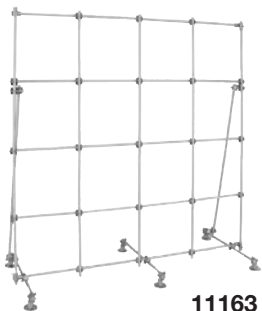


11162

11162 SET *Frames 61 x 122cm, Medium ★*

This set can be assembled into a support 61 x 122cm in either a horizontal or vertical position. The base rods are 46cm long.

Qty.	Order Code	Per Set
1	11162-08	513.32

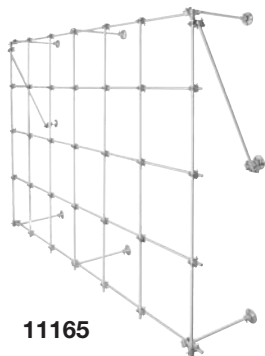


11163

11163 SET *Frames 122 x 122cm, Large ★*

Elaborate apparatus setups are possible with this set, which is similar to 11162, above. It can be assembled into a support as large as 122cm square with a 46 cm base.

Qty.	Order Code	Per Set
1	11163-07	794.07



11165

11165 SET *Frames 122 x 183cm, Extra Large ★*

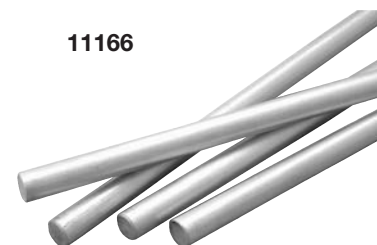
This wall-type Lab Frame Set can be built into assemblies as large as 1.2 x 1.8 meters. Can be used vertically or horizontally. Includes six 31cm rods and feet for securing frame to a wall. Apparatus is mountable on either side of frame.

Qty.	Order Code	Per Set
1	11165-05	1101.67

11166 SUPPORT RODS *Aluminum* ★

Lab frame rods are made of hard aluminum alloy and are centerless ground to exactly a 13mm (1/2-inch) diameter with a tolerance of 0.013mm to insure a near sliding fit with the connectors. These rods are supplied with the standard sets or can be obtained separately for building special stands for particular requirements. These centerless ground rods should not be confused with the cheaper irregular aluminum rods sometimes offered for supports.

Length, cm (In.)	Qty.	Order Code	Each
4.1 (1-5/8)	1	11166-21	4.30
15 (6)	1	11166-22	8.60
5.1 (2)	1	11166-23	6.45
46 (18)	1	11166-25	14.97
61 (24)	1	11166-27	18.25
91 (36)	1	11166-29	20.40
122 (48)	1	11166-31	32.18
183 (72)	1	11166-33	41.82
31 (12)	1	11166-37	13.93
244 (96)	1	11166-39	52.48


11167 SUPPORT RODS *Fiberglass* ★

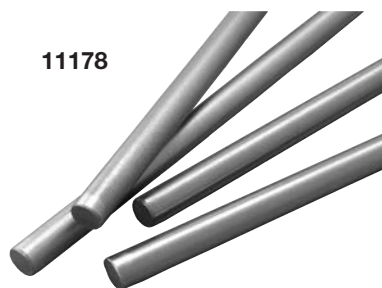
Fiberglass support rods, 13mm (1/2-inch) O.D., for use in place of aluminum rods that pit or become unsightly when used in corrosive atmosphere. Off-white or black color of these rods lends a more attractive appearance to lab setups. For use with all standard laboratory connectors.

Length, cm (In.)	Qty.	<i>Off-White</i>		<i>Black</i>	
		Order Code	Each	Order Code	Each
31 (12)	1	11167-03	10.77	11167-32	6.45
46 (18)	1	11167-05	13.93	11167-36	7.72
61 (24)	1	11167-07	17.12	11167-38	9.11
91 (36)	1	11167-09	19.27	11167-40	12.52
122 (48)	1	11167-11	28.90	11167-42	19.85
183 (72)	1	11167-13	35.37	11167-44	19.18
244 (96)	1	11167-15	49.30	11167-46	18.98


11178 SUPPORT RODS *Stainless Steel* ★

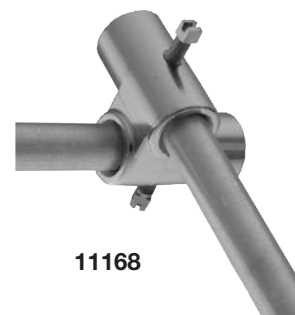
303 stainless steel support rods, 13mm (1/2-inch) O.D. for use in place of aluminum or fiberglass. For use with all standard laboratory connectors.

Length, cm (In.)	Qty.	Order Code	Each
31 (12)	1	11178-04	11.20
46 (18)	1	11178-06	15.59
61 (24)	1	11178-08	22.20
91 (36)	1	11178-10	45.00
122 (48)	1	11178-12	56.78
183 (72)	1	11178-14	79.33
244 (96)	1	11178-16	103.93


11168 LAB FRAME CONNECTORS ★

Holds rods firmly at 90° angle. Adjust by tightening square-headed screws. Use wrench or a screwdriver. Holes carefully sized to eliminate play.

Qty.	Order Code	Each
1	11168-19	12.82





11169 HOOK CONNECTORS ★

Lock two Flexaframe rods at a 90° angle. Does not slip. Install without disassembling frame. Supplied with Flexaframe sets.

Qty.	Order Code	Each
1	11169-24	10.77



11171 OPEN RING SUPPORT ★

The Flexaframe Open Ring Support can be held by conventional laboratory clamp holders to support equipment such as leveling bulbs and separatory funnels from Flexaframe. There are three different sizes, all made from aluminum.

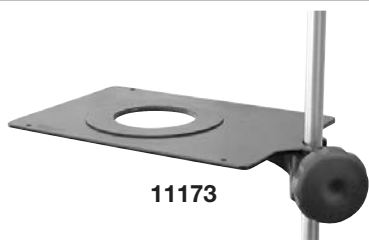
Size, mm (In.)	Qty.	Order Code	Each
76 (3)	1	11171-12	26.75
102 (4)	1	11171-17	34.33
127 (5)	1	11171-22	48.18



11172 PLATE SUPPORT ★

Aluminum plate supports apparatus with flat base on Flexaframe lattice. Support is 15cm (six inches) in diameter.

Qty.	Order Code	Each
1	11172-17	67.55



11173 PLATE SUPPORT SHELF ★

Adjustable cast alloy, black epoxy coated support shelf. With knob, measures 7x10 inches. Fits up to 5/8-inch O.D. rod. Plain or with 102mm (4-inch) diameter hole and with 1-inch rubber around perimeter.

Style/Size	Qty.	Order Code	Each
Solid, No Hole	1	11173-08	114.85
102mm (4-inch) Center Hole	1	11173-17	114.61



11174 FOOTPLATE ★

Mount lattice permanently. Footplate holds Flexaframe poles. Secures them to floors, walls, tables, with screws.

Qty.	Order Code	Each
1	11174-13	21.42



11175 END-TO-END ROD CONNECTORS ★

Strong alloy connector permits end-to-end joining of rods. Precision boring of connector ensures perfect aligning of rods. Corrosion resistant. 51mm long, 22mm outside diameter, provided with two set screws.

Qty.	Order Code	Each
1	11175-23	20.40

11176 OPEN RING SUPPORT *Vinyl Coated* ★

Two-inch split ring support with vinyl coating. Ideal for small vessels and funnels.

Qty.	Order Code	Each
1	11176-12	78.62



11176

11177 OPEN RING SUPPORT *PVC Coated* ★

Open ring supports with long extension arms for supporting glassware from the bottom, such as separatory funnels and powder funnels. PVC coated ring also protects glass from scratching. Long extension arms allow for easier connection to labframes or stands.

Size	Ring Size (in.)	Arm Length (in.)	Qty.	Order Code	Each
Small	3	10	1	11177-13	57.92
Medium	4	12	1	11177-17	65.40
Large	5	12	1	11177-19	86.82

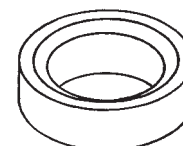


11177

11752 SUPPORT RING *Solid PTFE* ★

Useful for supporting column, flasks, dishes, etc. Shaped with internal bevel.

O.D., mm	I.D., mm	Qty.	Order Code	Each
220	175	1	11752-04	96.47
180	140	1	11752-06	77.11
170	130	1	11752-08	71.66
135	90	1	11752-10	67.54



11752

12094 EXTENSION SUPPORT

Provide convenient supports for flasks up to five-liter capacity. Generally used with flasks having aluminum housing.

Flask Cap., mL	Qty.	Order Code	Each	Flask Cap., mL	Qty.	Order Code	Each
50-200	1	12094-02	82.16	2000/3000	1	12094-08	93.60
250-500	1	12094-04	86.32	5000	1	12094-12	93.60
1000	1	12094-06	89.44				



12094

12095 EXTENSION SUPPORT

For heating mantles up to 5,000mL capacity. Used on heating mantles with soft outer covering instead of spun aluminum shell.

Flask Cap., mL	Qty.	Order Code	Each	Flask Cap., mL	Qty.	Order Code	Each
100-200	1	12095-02	80.08	2000	1	12095-10	94.64
250-300	1	12095-04	80.08	3000	1	12095-12	97.76
500	1	12095-06	82.16	5000	1	12095-14	101.92
1000	1	12095-08	89.44				



12095



12097 TRIPOD SUPPORT

For 3,000mL- 72,000mL Glas-Col Mantles.

Flask Capacity, mL	Qty.	Order Code	Each
3,000	1	12097-04	111.28
5,000	1	12097-06	115.44
12,000	1	12097-08	144.56
22,000	1	12097-10	193.44
50,000	1	12097-12	210.85
72,000	1	12097-14	244.42



7837 STAND Photochemical Reactor ★

Sturdy aluminum, powder coated stand for use with cylindrical reactors such as those listed under 7840, 7841, 7844, 7861, 7863, 7864 or 7865. Design allows vessel to be operated in a cold bath in the event the reactant material needs cooling. Also can be used stand-alone.

	Qty.	Order Code	Each
Stand, only	1	7837-75	239.92

PTFE Stand Inserts

Vessel Size, mL	Vessel Style	Qty.	Order Code	Each
250	Plain	1	7837-02	184.47
500	Plain	1	7837-05	183.79
1,000	Plain	1	7837-10	184.99
250	Jacketed	1	7837-25	184.99
500	Jacketed	1	7837-60	189.08
1,000	Jacketed	1	7837-100	184.80

Stand is universal for all sizes. User must select the appropriate PTFE insert to accommodate desired vessel size.



12099 SUPPORT STAND ★

Tripod support for bottom of Ion-exchange columns. Metal support has hole large enough for end fitting to pass through so that shoulder of column rests on plate. Column should also be stabilized with a clamp such as 11079. For use only with 100mm and 150mm diameter columns. Height, 14 inches.

Qty.	Order Code	Each
1	12099-20	179.82



11210 LABORATORY SUPPORT Aluminum ★

Max. load at middle pos.	Plate Size, Inches.	Vertical Range, in.	Color	Qty.	Order Code	Each
66 lbs.	3 x 3	1.9 – 5.7	Blue	1	11210-08	175.92
110 lbs.	3.7 x 5.5	2.4 – 9.6	Rose	1	11210-10	182.92
176 lbs.	4.8 x 5.9	3 – 11	Brass-yellow	1	11210-12	212.74
176 lbs.	8 x 8	3 – 11	Brass-yellow	1	11210-15	280.21
198 lbs.	9.5 x 12.6	4.8 – 19.6	Gray	1	11210-18	912.07

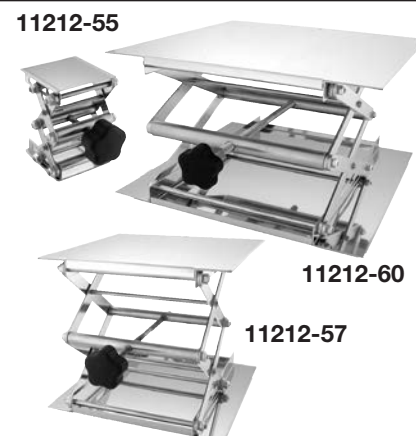
Supplementary Equipment

	Qty.	Order Code	Each
Supplementary plate 8 x 8 in. for codes -10 & -12	1	11210-28	39.02
Supplementary plate 7 x 10 in for codes -10 & -12	1	11210-32	53.98
Supplementary plate 16 x 19.5 in for codes -18	1	11210-34	213.30
Support plate 8 x 8 in with clamp	1	11210-36	110.25
Support rod, 650mm (25.5 inches) in length	1	11210-38	25.72
Support mount for codes -08, -10 & -12	1	11210-11	157.71

11212 LABORATORY SUPPORT *Heavy Duty, Stainless Steel* ★

Heavy duty, all stainless construction Lab-Lifts are extremely stable lifting platforms with exceptional strength and durability. Corrosion resistant and autoclavable these lifts feature an extra large height adjustment knob for extra leverage under heavy load conditions. Seven sizes available.

Plate Size, Inches	Maximum Load, Lbs.	Qty.	Order Code	Each
3 x 3	20	1	11212-54	165.03
4 x 4	30	1	11212-55	200.38
6 x 6	35	1	11212-56	206.85
8 x 8	55	1	11212-57	278.60
10 x 10	80	1	11212-58	302.17
12 x 12	150	1	11212-59	796.22
16 x 16	180	1	11212-60	1417.78


11214 LABORATORY SUPPORT *Poly-Jaque* ★

Fabricated from corrosion- and chemical-resistant glass-reinforced polypropylene and PTFE filled polyetherimide, this lightweight support is non-magnetic and non-conducting. Poly-Jaque utilizes the scissor jack principle for quick, easy and accurate height adjustment. PTFE nuts provide smooth, non-freezing operation. Platform measures: 6-1/2 x 61/4 inches. Height adjustment from 3-1/2 to 12 inches. Weight capacity, 15 lbs.

Qty.	Order Code	Each
1	11214-20	237.57


11700 FLASK SUPPORT *Round Bottom, Polypropylene* ★

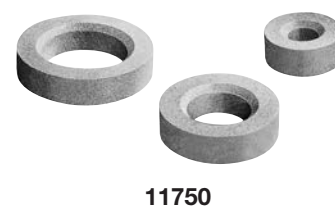
Round-bottom flasks of any size up to 10,000mL are cradled securely in the stepped concentric rings of this support. Supports are stackable, affording the ability to create a stable base at various heights. Polypropylene construction is not affected by spilled acids, alkalis or other corrosive liquids. Steam autoclavable at 121°C (250°F). Dimensions: 171mm (6-3/4 inches) in diameter x 51mm (2 inches) high.

Qty.	Order Code	Each
1	11700-02	26.69


11750 CORK RINGS ★

Fine-composition cork rings ideally suited for general laboratory use to support flasks, beakers, dishes, etc. Rings are 30mm (1-3/16-inch) thick. Available in the following sizes.

Size	For Flask, mL	Outside Diameter, cm	Inside Diameter, cm	Qty.	Order Code	Each
1	10-100	7.6	3.0	1	11750-02	6.58
2	200-500	11.1	6.0	1	11750-04	8.63
3	1000-3000	14.0	8.9	1	11750-06	10.09
4	5000	17.1	12.1	1	11750-08	13.90
5	12000	20.9	15.2	1	11750-10	18.19
6	22000-50000	24.1	18.6	1	11750-12	22.80





5925-03

5928-02

5925 SYRINGE *Chromatography, LC Injection* ★

With epoxy cemented 304 stainless steel needle permanently attached. All sizes have 22 gauge needle. Needles are 50mm long with 20° bevel tip.

Capacity, microliter	Qty.	Order Code	Each
10	1	5925-03	38.46
25	1	5925-05	41.03
50	1	5925-07	45.50
100	1	5925-09	44.51
250	1	5925-11	59.23

5928 SYRINGE *Chromatography, LC Injection* ★

With epoxy cemented 304 stainless steel needle permanently attached. The 10 microliter size has 26 gauge needles, all others have 25 gauge needles. Needles are 50mm long with 20° bevel tip.

Capacity, microliter	Qty.	Order Code	Each
10	1	5928-02	25.23
25	1	5928-04	38.81
50	1	5928-06	47.57
100	1	5928-08	45.01
250	1	5928-10	56.15
500	1	5928-12	59.17



5928-118

5928 SYRINGE *Chromatography, LC Injection, with Guide* ★

Same as 5928 LC injection syringe, except fitted with adapter guide for repetitive deliveries.

Capacity, microliter	Qty.	Order Code	Each
10	1	5928-118	75.03



5928-302

5928 SYRINGE *Chromatography, LC Injection, Economy Six-Pack* ★

Basic 10 microliter LC injection syringe with epoxy cemented 304 stainless steel needle permanently attached or removable needle, supplied in convenient package of six. In addition to an approximate 7–12% savings in cost, you get a convenient storage container. Needles are 26 gauge.

Needle Type	Qty.	Order Code	Per Pack
Fixed	6	5928-302	136.29
Removable	6	5928-330	300.19

5929 SYRINGE *Chromatography*

For delivering liquid samples to a gas chromatograph with the very highest reproducibility and accuracy. The needle holds the entire sample. A tungsten wire plunger is individually fitted to the 0.152mm bore of the stainless steel needle and bottoms at the tip of the needle to discharge the entire sample. A PTFE ferrule contained in the needle hub makes a final seal around the plunger at the base of the needle and is easily tightened to compensate for wear. Needle and plunger may be disassembled for cleaning or replacement.

Capacity, microliter	Needle Length	Needle Gauge	Qty.	Order Code	Each
1.0	7 cm	25	1	5929-02	78.32
1.0	7 cm	23	1	5929-05	86.19
5.0	7 cm	23	1	5929-12	95.37


5929
5931 SYRINGE *Chromatography, Gas Tight*

Designed for highest performance in such applications as liquid or gas chromatography, handling of corrosive gases and liquids, radioactive materials, and sterile solutions. PTFE-coated plungers with precision PTFE tips for leak-tight seal. Accuracy and reproducibility of $\pm 1\%$. With fixed needle.

Capacity, microliter	Qty.	Order Code	Each
10	1	5931-01	35.64
25	1	5931-03	50.23
50	1	5931-02	52.77
100	1	5931-04	56.15
250	1	5931-06	57.39


5931

Several sizes of this model syringe are available with Luer-Lok tip and Luer-Lok – contact Ace for more information.



5933
5934

5933 SYRINGE *Chromatography, Gas Tight*

Gas tight syringes with removable needle type (RN) and a 3/4-inch length, bevel point style #2 needle; needle gauge is given.

Capacity, microliter	Qty.	Order Code	Each
10	1	5933-03	59.79
25	1	5933-05	59.17
50	1	5933-07	59.79
100	1	5933-09	66.95
250	1	5933-11	66.88
500	1	5933-13	66.88

5934 SYRINGE *Chromatography, Removable Needle*

Basic microliter syringe with removable needle for precise liquid delivery. The 10 microliter size has a 26-gauge needle, all others have 25-gauge needles, Needle length, 50mm.

Capacity, microliter	Qty.	Order Code	Each
10	1	5934-12	50.43
25	1	5934-14	58.25
50	1	5934-18	56.78
100	1	5934-24	58.70
250	1	5934-28	84.70
500	1	5934-32	88.77



9560
13675

9560 SYRINGE *Chromatography, Sample Retrieval, Glass Tip ♠*

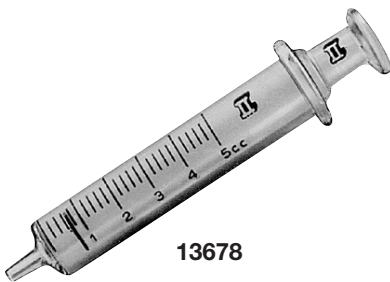
1mL glass syringe with glass plunger for sample retrieval. For use with solvents without contamination. Barrel has glass Luer-Lok tip for needle connection. Supplied WITHOUT needle. For needles, see 5936 or 13682.

Qty.	Order Code	Each
1	9560-54	29.17

13675 SYRINGE *Chromatography, Sample Retrieval, All Plastic ♠*

1mL all-plastic syringe intended for use in Microscale sample retrieval applications. Features built-in dead-space tip plug, safety stop, Luer-Lok tip for needle connection, and blue colored plunger, and is smooth drawing. Needles NOT included. For needles, see 5936 or 13682.

Pkg. Qty.	Case Qty.	Order Code	Pkg/25	Box/100
25	100	13675-09	8.78	31.59



13678

13678 SYRINGE *Chromatography, Interchangeable, Glass Tip ♠*

Interchangeable borosilicate glass syringe with permanently fused graduations. Colored plunger end facilitates dosage measurement. Reinforced flanges are flat on two sides to avoid rolling. Supplied with glass tip.

Capacity, mL	Qty.	Order Code	Each	Capacity, mL	Qty.	Order Code	Each
2	1	13678-03	23.79	20	1	13678-21	32.02
5	1	13678-06	25.36	30	1	13678-31	55.27
10	1	13678-11	31.87	50	1	13678-51	86.75

13680 SYRINGE *Chromatography, Interchangeable* ♦

Interchangeable borosilicate glass syringe with permanently fused graduations. Colored plunger end facilitates dosage measurement. Reinforced flanges are flat on two sides to avoid rolling. Supplied with luer lock tip.

Capacity, mL	Qty.	Order Code	Each	Capacity, mL	Qty.	Order Code	Each
2	1	13680-02	22.62	50	1	13680-28	112.67
5	1	13680-05	24.32	100*	1	13680-30	374.26
10	1	13680-10	35.41	150*	1	13680-34	605.43
20	1	13680-20	37.94	250*	1	13680-36	770.62
30	1	13680-25	72.76				

*Not interchangeable


13680
13682 NEEDLES *Chromatography, Stainless Steel* ★

Sterile, stainless steel syringe needles with inert plastic Luer-Lok hub and regular 12° medical point. Can be sterilized. Supplied 25 needles per package.

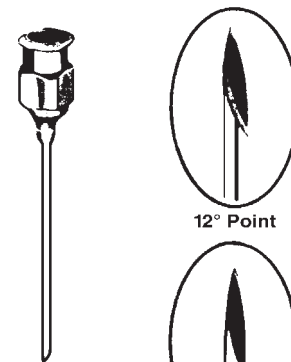
Gauge	O.D., in.	I.D., in.	Length (In.)	Qty.	Order Code	Per Pkg.
20	.035	.023	1-1/2	25	13682-12	15.68
22	.028	.016	1-1/2	25	13682-15	15.12

Note: 20-gauge needle fits ACE Cat. No. 12684-23, 0.8mm I.D. PTFE Tubing


13682
13683 NEEDLES *Chromatography, 304 Stainless Steel, Standard* ★

Hypodermic stainless steel needles with 12° regular medical point tip and female Luer-Lok hub. Packed 12 needles on card — cellophane wrapped. Each card individually boxed.

Gauge	Length, mm (In.)	Qty.	Order Code	Per Dozen
20	51 (2)	12	13683-23	101.33
18	51 (2)	12	13683-29	101.00
15	89 (3-1/2)	12	13683-32	134.66


12° Point

Deflected Point*
**13683
13684**
13684 NEEDLES *Chromatography, 304 Stainless Steel, Special* ★

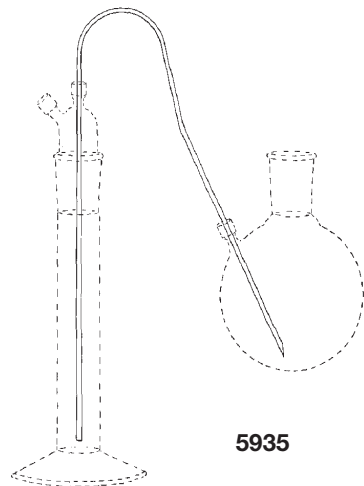
Special length stainless steel needles with deflected septum point* and standard female hub. Packed six per package, two packages per case (specify desired quantity).

Gauge	Length, mm (In.)	Pkg. Qty.	Case Qty.	Order Code	Per Package	Per Case
20	152 (6)	6	12	13684-07	86.41	155.54
20	305 (12)	6	12	13684-11	94.65	170.37
18	152 (6)	6	12	13684-15	101.68	183.03
18	305 (12)	6	12	13684-19	110.06	198.11
18	610 (24)	6	12	13684-23	379.32	682.77
15	305 (12)	6	12	13684-27	379.32	682.77
15	610 (24)	6	12	13684-31	379.32	682.77

*Deflected septum point is equivalent to B-D Huber or Hamilton Style 1 & 2.

Easy, convenient transfer of materials — liquid or gas

• For sampling or aeration



5935

5935 CANNULA Chromatography, Stainless Steel ★

Available with deflected point at one end and other end blunt or with deflected point on both ends for septum penetration with a minimum of coring. These long cannula can be bent to avoid tipping reagent bottles which would cause liquid to come in contact with rubber septa.

Gauge	Length, cm (in)	Package Qty.	Ends Deflected-Blunt		Ends Deflected-Deflected	
			Order Code	Per Pkg.	Order Code	Per Pkg.
22	46 (18)	5	5935-18	45.75	5935-19	57.00
22	76 (30)	5	5935-22	65.77	5935-23	76.69
22	122 (48)	3	5935-26	57.79	5935-27	65.01
18	46 (18)	5	5935-32	47.34	5935-33	56.68
18	76 (30)	5	5935-36	67.26	5935-37	81.38
18	122 (48)	3	5935-40	58.65	5935-41	65.49
15	46 (18)	5	5935-44	52.95	5935-45	63.78
15	76 (30)	5	5935-48	71.57	5935-49	85.27
15	122 (48)	3	5935-52	62.30	5935-53	69.77

Note: Deflected septum point is equivalent to B-D Huber or Hamilton Style 1 & 2.



5936

5936 NEEDLE Chromatography, Syringe ★

Standard hypodermic type needles made from 304 full hard Stainless Steel tubing with chrome-plated brass American standard Luer-Lok taper short hubs. Supplied 50mm (2 inches) long with point style #2 (20° bevel) for septum penetration. Supplied 5 needles per package.

Gauge	O.D., mm	I.D., mm	Pkg. Qty.	Order Code	Per Pkg.
23	0.63	0.32	5	5936-32	39.57
19	1.07	0.65	5	5936-39	52.60
18	1.27	0.80	5	5936-40	52.60
14	2.10	1.60	5	5936-44	91.70

NON-MERCURIAL THERMOMETERS

(Spirit Filled)

8293 THERMOMETER *Low Temperature, Organic Liquid Filled* ♠

Organic liquid filled for use in testing procedures that normally fall below the freezing point of mercury. White back glass supplied in Total or 76mm immersion. Overall length, approximately 30cm, or 12 inches. Meets ANSI/SAMA Z236.1 standard.

Range	Subdivision	Accuracy	Immersion	Qty.	Order Code	Each
-50° to 50°C	1°C	±2°C	76 mm	1	8293-03	23.01
-50° to 50°C	1°C	±2°C	Total	1	8293-04	23.98
-20° to 150°C	1°C	±1°C	76 mm	1	8293-05	24.05
-100° to 50°C	1°C	±2°C	76 mm	1	8293-06	25.74
-100° to 50°C	1°C	±2°C	Total	1	8293-07	25.04
-200° to 30°C	1°C	±2°C	Total	1	8293-09	97.02
-20° to 150°C	1°C	±1°C	76 mm	1	8293-11	20.94



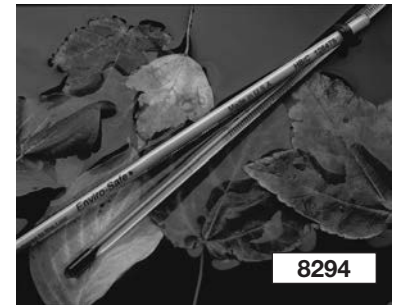
8293

THERMOMETERS

8294 THERMOMETER *Organic Liquid Filled, Yellow Back* ♠

Enviro-Safe® lab-grade thermometers, filled with organic green liquid. Liquid is safer since it avoids the potential hazards of mercury thermometers. Made from lead-free glass. Comes with N.I.S.T.-traceable statement of accuracy.

Range	Subdivision	Accuracy	Length (In.)	Immersion	Qty.	Order Code	Each
-10° to 110°C	1°C	±1°C	8	50 mm	1	8294-01	14.14
-20° to 110°C	1°C	±1°C	12	76 mm	1	8294-04	15.90
-20° to 110°C	1°C	±1°C	12	Total	1	8294-05	15.90
-10° to 150°C	1°C	±1°C	8	50 mm	1	8294-06	25.43
-20° to 150°C	1°C	±1°C	12	76 mm	1	8294-10	17.11
-20° to 150°C	1°C	±1°C	12	Total	1	8294-11	17.11
-10° to 200°C	1°C	±1°C	14	76mm	1	8294-14	25.78
-10° to 200°C	1°C	±1°C	14	Total	1	8294-15	25.49
20° to 300°F	2°F	±2°F	8	50 mm	1	8294-16	13.94
0° to 230°F	2°F	±2°F	12	76mm	1	8294-33	15.90
0° to 230°F	2°F	±2°F	12	Total	1	8294-34	15.90
0° to 300°F	2°F	±2°F	12	Total	1	8294-38	17.11



8294

8314 THERMOMETER F , *Organic Liquid Filled, White Back* ♠

Organic (red) liquid filled, partial immersion thermometers that avoid the potential hazards of mercury thermometers. Accurate to N.I.S.T. tolerances. Individually serialized. With F 10/30 joint and top suspension ring. 12-inch length.

Range: (°C) -10 to +150				Range: (°C) -10 to +250			
Immersion, mm	Qty.	Order Code	Each	Immersion, mm	Qty.	Order Code	Each
25	1	8314-14	53.58	25	1	8314-28	67.41
50	1	8314-15	53.58	50	1	8314-29	55.40
75	1	8314-16	59.46	75	1	8314-30	64.70
150	1	8314-19	67.41	100	1	8314-31	66.27
				125	1	8314-32	66.59



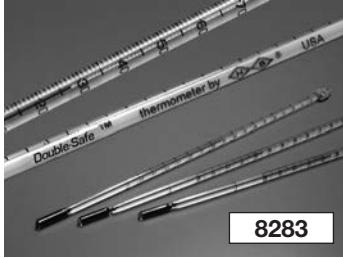
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NON-MERCURIAL THERMOMETERS

(Spirit Filled)

8283 THERMOMETERS *Safety-PTFE-coated ♠*

Double-safe, thermometers are the same as our Enviro-safe thermometers except with PTFE coating. Black liquid filled, yellow back lead free glass. In the event of breakage, the material is contained by the PTFE until it can be safely disposed of. Individually serialized and N.I.S.T. traceable.

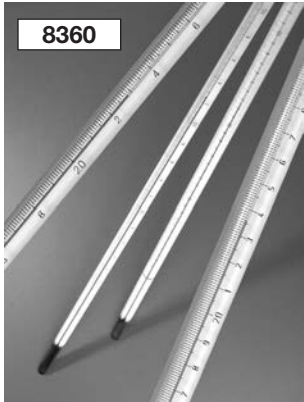


8283

Range	Division	Accuracy	Immersion	L (In.)	Qty.	Order Code	Each
-10° to 150°C	1°C	±1°C	50mm	8	1	8283-03	25.76
-10° to 150°C	1°C	±1°C	Total	8	1	8283-04	25.76
-20° to 150°C	1°C	±1°C	76mm	12	1	8283-10	37.17
-20° to 150°C	1°C	±1°C	Total	12	1	8283-11	36.57
0° to 230°C	2°C	±2°C	76 mm	12	1	8283-15	33.10
0° to 230°C	2°C	±2°C	Total	12	1	8283-16	32.98

8360 THERMOMETERS *ANSI/SAMA Fractional Degree ♠*

These thermometers feature fractional degree divisions. They are red spirit filled with White backed glass and permanent fused markings. Meet ANSI/SAMA Z236.1 – 1983 standards.



8360

Range	Division	Accuracy	Immersion	L (In.)	Qty.	Order Code	Each
-1°C to 51°C	0.1	+/- full scale	76mm	18	1	8360-01	85.69
-1°C to 101°C	0.1	+/- full scale	76mm	24	1	8360-04	108.33
-1°C to 201°C	0.2	+/- 0.4°C	Total	24	1	8360-06	109.23

9548 THERMOMETERS ♠

Replacement spirit-filled thermometers for kits. Thermometers only. Eight inches in length.

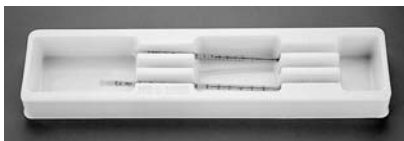


9548

Range	Div	Accuracy	Immersion	Qty.	Order Code	Each
-10°C to 150°C	1°C	1°C	50mm	1	9548-13	17.47
20°F to 300°F	2°F	2°F	50mm	1	9548-16	17.47

13708 THERMOMETER STORAGE TRAY ★

A tidy and practical way to keep thermometers handy and organized. Features an inclined angle that helps prevent separation of thermometer liquid, especially useful with red liquid thermometers. Made of Polystyrene with numbered slots. Sold in sets of six.



13708

Size	Dimensions, in	Number of Sets	Order Code	Per Set
Three Slots	4 x 17 x 1.25	6	13708-12	71.82

8299 ADAPTER Thermometer, $\text{\$}10/20$ ♠

Made of PTFE with nylon knurled nut to adapt standard chemical thermometers up to 6mm O.D. For use in $\text{\$} 10/18$ or $\text{\$} 10/30$ joints. Simple to use: insert thermometer to desired depth, tighten nut.

Qty.	Order Code	Each
1	8299-10	17.58

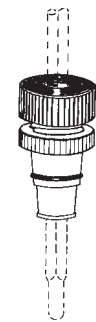


8299

8300 ADAPTER Thermometer, PTFE ♠

PTFE adapter with FETFE o-ring for use with plain stem thermometers, gas inlet tubes, etc. O-Ring compression seal allows adjustable depth positioning. $\text{\$} 10/18$ size will accommodate tubes up to 6.5mm, all other sizes up to 7mm. All sizes have one internal o-ring size -108 (7855-11); except for $\text{\$} 10/18$ size, all other sizes have one external o-ring seal.

$\text{\$}$ Joint	External O-Ring Size	Qty.	Order Code	Each	$\text{\$}$ Joint	External O-Ring Size	Qty.	Order Code	Each
10/18	—	1	8300-05	26.67	24/25	-018	1	8300-16	33.60
14/20	-013	1	8300-07	21.71	29/26	-022	1	8300-21	44.31
19/22	-015	1	8300-09	28.90					

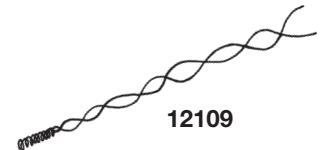


8300

12109 THERMOCOUPLE ♠

Type "J" 24-gauge iron constantan thermocouple wire with PTFE insulation. Supplied in 1.8 meter lengths.

Qty.	Order Code	Each
1.8 meter length	12109-07	25.31



12109

8319 THERMOMETER Digital, Pocket ★

Economical type "J" thermocouple pocket thermometer with digital readout. Supplied with three-foot, double PTFE insulated, free-beaded thermocouple sensor and ON-OFF switch. Back of case has magnet for mounting. Optional sheathed thermocouples, listed below, are available.

Features:

- Accuracy: $\pm 0.3\%$ of span ± 1 Digit
- Range: -40 to 700°C
- Resolution: 1°C
- Cold junction compensation: $\pm 0.05^\circ\text{C}/^\circ\text{C}$
- Ambient temperature: $0-40^\circ\text{C}$
- Battery: (1) 9V approx. 100 hr. alkaline
- Measures: 3 W x 2-3/8 H x 1-1/8 D (Inches)
- Weight: 5.1ozs.

Order Code	Each
8319-21	162.77



8319

OPTIONAL:

	Qty.	Order Code	Each
Sensor, Type "J" Thermocouple, 12.5 in. long x 1/4 in. O.D. Stainless Steel Sheath, 6-ft. lead to plug	1	12110-15	106.72
Sensor, Type "J" Thermocouple 4 in. long x 3/16 in. O.D. Stainless Steel Sheath, 6-ft. lead to plug	1	12110-17	92.34
Sensor, Type "J" Thermocouple without sheath, double PTFE insulated, 10-ft. long with plug	1	12110-25	52.36
Glass sheath only, 12.5 in. long x 7mm O.D. (5mm I.D.)	1	12103-22	18.08

13700 THERMOMETER *Economy Digital* ★



13700

All-in-one thermometer combines probe and meter. Probe is an NTC Thermister, housed in a stainless steel sheath with a pointed tip; measures 105mm x 3mm O.D. Provides highly accurate temperature measurement in a very short period of time, 20 seconds max. Features a calibration test device whereby at the touch of a button this unit displays 0.0°C ±0.3 (32.0°F ±0.5) to assure readings are reliable and accurate. Durable ABS housing measures 66mm x 50mm x 25mm (2.6x2.0x1 inches); weighs 50g (1.8 oz.). Battery is 1.4V/3000 hours continuous use.

Specifications

Type Measurement	C	F
Range:	-50° to +150°C	-58° to +302°F
Resolution:	0.1°C	0.1°F (-58° to 199.9°F) 1°F (200° to 302°F)
Accuracy:	±0.3°C (-20° to +90°C) ±0.5°C (-50° to -20° & +91° to 150°C)	±0.5°F (-4° to 194°F) ±1°F (-58° to -4° & +195° to 302°F)

Type	Qty.	Order Code	Each
°C	1	13700-08	50.88
°F	1	13700-20	50.79

8320 THERMOMETER *Digital*

8320



Microprocessor-based, battery-operated digital thermometer. Can be hand held or placed at convenient viewing angle on bench by using built-in flip-down stand. Four-digit, 1/2-inch high LCD display. Sealed membrane keypad allows simple, reliable operation. Change display from Celsius to Fahrenheit with one keypad touch; avoids manual conversions. Comprehensive display indicates temperature in °C or °F, thermocouple type, battery condition, and open thermocouple condition. Hold function locks temperature reading on display until released by keypad touch; convenient for later reference or use in restricted space. Voltage protected input accepts standard mini-connector. Thermocouples can be interchanged in seconds. Supplied in light gray, chemically resistant ABS case; measures 6x3x1 inches.

Features:

- Accuracy: .25% of reading, ±1°C (+1°C below -150°C)
- Resolution: .1° from 0° to 999.9°; 1° after 1000°
- Input protection: +10 volt without damage
- Probe: Type "J" thermocouple, 1/8-inch diameter x 6 inches long Stainless Steel with 48-inch long, fiberglass insulated duplex lead with S-S overbraid
- Range: -190° to 1000°C, -130° to 1832°F
- Battery: 9 volt, 200 hours, alkaline type
- Temperature limits: ambient operating range +5°C to +45°C; storage limits -40°C to +60°C.

Qty.	Order Code	Each
1	8320-40	355.68

Temperature Controller Quick Guide

Model	Order Code	Temp Range (C°)	Resolution (C°)	Voltage	Amps	Watts	Thermocouple/ Included	Timer	Number of Outlets / Voltage	
ACE Econo	12125-14	0 to 800	0.1	120	15	1800	J / No	N	1 / 120	
	12125-16	-200 to 250	0.1	120	15	1800	T / No	N	1 / 120	
	12125-18	-50 to 1200	0.1	120	15	1800	K / No	N	1 / 120	
	12125-32	0 to 800	0.1	120	15	1800	J / Yes	N	1 / 120	
ACE	12111-15	0 to 800	0.1	120	15	1800	J / No	N	2 / 120	
	12111-33	0 to 800	0.1	120	15	1800	J / Yes	N	2 / 120	
ACE	12127-30	0 to 800	0.1	120	15	1800	J / No	N	3 / 20,40,120	
	12127-40	0 to 800	0.1	120	15	1800	J / Yes	N	3 / 20,40,120	
J-Kem 150	12322-04	-200 to 250	0.1	120	10	1200	T / No	N	1 / 120	
	12322-06	0 to 800	0.1	120	10	1200	J / No	N	1 / 120	
	12322-08	-50 to 1200	0.1	120	10	1200	K / No	N	1 / 120	
	12322-21	-200 to 250	0.1	120	10	1200	T / Yes	N	1 / 120	
	12322-23	0 to 800	0.1	120	10	1200	J / Yes	N	1 / 120	
	12322-25	-50 to 1200	0.1	120	10	1200	K / Yes	N	1 / 120	
J-Kem 150/T	12321-05	-200 to 250	0.1	120	10	1200	T / No	Y-100HR	1 / 120	
	12321-07	0 to 800	0.1	120	10	1200	J / No	Y	1 / 120	
	12321-09	-50 to 1200	0.1	120	10	1200	K / No	Y	1 / 120	
	12321-25	-200 to 250	0.1	120	10	1200	T / Yes	Y	1 / 120	
	12321-27	0 to 800	0.1	120	10	1200	J / Yes	Y	1 / 120	
	12321-29	-50 to 1200	0.1	120	10	1200	K / Yes	Y	1 / 120	
J-Kem 210	12325-02	-200 to 250	0.1	120	10	1200	T / No	N	1 / 120	
	12325-04	0 to 800	0.1	120	10	1200	J / No	N	1 / 120	
	12325-06	-50 to 1200	0.1	120	10	1200	K / No	N	1 / 120	
	12325-08	-200 to 400	0.1	120	10	1200	RTD / No	N	1 / 120	
	12325-22	-200 to 250	0.1	120	10	1200	T / Yes	N	1 / 120	
	12325-24	0 to 800	0.1	120	10	1200	J / Yes	N	1 / 120	
	12325-26	-50 to 1200	0.1	120	10	1200	K / Yes	N	1 / 120	
	12325-28	-200 to 400	0.1	120	10	1200	RTD / Yes	N	1 / 120	
	12325-33	-200 to 250	0.1	230-CE	10	1200	T / Yes	N	1 / 230	
	12325-35	0 to 800	0.1	230-CE	10	1200	J / Yes	N	1 / 230	
J-Kem 210/T	12326-01	-200 to 250	0.1	120	10	1200	T / No	Y-100HR	1 / 120	
	12326-03	0 to 800	0.1	120	10	1200	J / No	Y	1 / 120	
	12326-05	-50 to 1200	0.1	120	10	1200	K / No	Y	1 / 120	
	12326-07	-200 to 400	0.1	120	10	1200	RTD / No	Y	1 / 120	
J-Kem 250	12319-01	-200 to 250	0.1	120	15	1800	T / No	N	3 / 120	
	12319-03	0 to 800	0.1	120	15	1800	J / No	N	3 / 120	
	12319-05	-50 to 1200	0.1	120	15	1800	K / No	N	3 / 120	
	12319-07	-200 to 400	0.1	120	15	1800	RTD / No	N	3 / 120	
	12319-25	-200 to 250	0.1	120	15	1800	T / Yes	N	3 / 120	
	12319-27	0 to 800	0.1	120	15	1800	J / Yes	N	3 / 120	
	12319-29	-50 to 1200	0.1	120	15	1800	K / Yes	N	3 / 120	
	12319-31	-200 to 400	0.1	120	15	1800	RTD / Yes	N	3 / 120	
	J-Kem 260T	12318-01	0 to 800	0.1	120	15	1800	J / No	Y-100Hr	2 / 120
		12318-03	-50 to 1200	0.1	120	15	1800	K / No	Y	2 / 120
12318-05		-200 to 250	0.1	120	15	1800	T / No	Y	2 / 120	
12318-07		-200 to 400	0.1	120	15	1800	RTD / No	Y	2 / 120	
12318-21		0 to 800	0.1	120	15	1800	J / Yes	Y	2 / 120	
12318-23		-50 to 1200	0.1	120	15	1800	K / Yes	Y	2 / 120	
12318-25		-200 to 250	0.1	120	15	1800	T / Yes	Y	2 / 120	
12318-27		-200 to 400	0.1	120	15	1800	RTD / Yes	Y	2 / 120	
J-Kem 360T	12318-33	0 to 800	0.1	230-CE	15	1800	J / Yes	Y-100Hr	2 / 230	
	12318-35	-50 to 1200	0.1	230-CE	15	1800	K / Yes	Y	2 / 230	
	12318-37	-200 to 250	0.1	230-CE	15	1800	T / Yes	Y	2 / 230	
	12318-39	-200 to 400	0.1	230-CE	15	1800	RTD / Yes	Y	2 / 230	

Temperature Controller Quick Guide

Model	Order Code	Temp Range (C°)	Resolution (C°)	Voltage	Amps	Watts	Thermo-Couple/ Included	Timer	Number of Outlets / Voltage
J-Kem 270	12316-04	-200 to 250	0.1	120	15	1800	T / No	N	2 / 120
	12316-06	0 to 800	0.1	120	15	1800	J / No	N	2 / 120
	12316-08	-50 to 1200	0.1	120	15	1800	K / No	N	2 / 120
	12316-24	-200 to 250	0.1	120	15	1800	T / Yes (2)	N	2 / 120
	12316-26	0 to 800	0.1	120	15	1800	J / Yes (2)	N	2 / 120
	12316-28	-50 to 1200	0.1	120	15	1800	K / Yes (2)	N	2 / 120
J-Kem Apollo	12312-03	-200 to 250	0.1	120	15	1800	T / No	Y-100Hr	2 / 120
	12312-05	0 to 800	0.1	120	15	1800	J / No	Y	2 / 120
	12312-07	-50 to 1200	0.1	120	15	1800	K / No	Y	2 / 120
	12312-09	-200 to 400	0.1	120	15	1800	RTD / No	Y	2 / 120
	12312-23	-200 to 250	0.1	120	15	1800	T / Yes (2)	Y	2 / 120
	12312-25	0 to 800	0.1	120	15	1800	J / Yes (2)	Y	2 / 120
	12312-27	-50 to 1200	0.1	120	15	1800	K / Yes (2)	Y	2 / 120
J-Kem Quad	12312-29	-200 to 400	0.1	120	15	1800	RTD / Yes (2)	Y	2 / 120
	12314-05	-200 to 250	0.1	120	15	1800	T / No	N	4 / 120
	12314-07	0 to 800	0.1	120	15	1800	J / No	N	4 / 120
	12314-09	-50 to 1200	0.1	120	15	1800	K / No	N	4 / 120
	12314-11	-200 to 400	0.1	120	15	1800	RTD / No	N	4 / 120
	12314-20	-200 to 250	0.1	120	15	1800	T / Yes (4)	N	4 / 120
	12314-22	0 to 800	0.1	120	15	1800	J / Yes (4)	N	4 / 120
J-Kem HCC	12314-24	-50 to 1200	0.1	120	15	1800	K / Yes (4)	N	4 / 120
	12314-26	-200 to 400	0.1	120	15	1800	RTD / Yes (4)	N	4 / 120
	12317-30	-200 to 250	0.1	110-120	130	3600	T / No	Y-100Hr	4 / 120
	12317-34	0 to 800	0.1	110-120	130	3600	J / No	Y	4 / 120
J-Kem 410	12317-38	-50 to 1200	0.1	110-120	130	3600	K / No	Y	4 / 120
	12324-08	-200 to 250	0.1	120	10	1200	T / No	N	1 / 120
	12324-10	0 to 800	0.1	120	10	1200	J / No	N	1 / 120
	12324-12	-50 to 1200	0.1	120	10	1200	K / No	N	1 / 120
	12324-14	-200 to 400	0.1	120	10	1200	RTD / No	N	1 / 120
	12324-23	-200 to 250	0.1	120	10	1200	T / Yes	N	1 / 120
	12324-25	0 to 800	0.1	120	10	1200	J / Yes	N	1 / 120
	12324-27	-50 to 1200	0.1	120	10	1200	K / Yes	N	1 / 120
12324-29	-200 to 400	0.1	120	10	1200	RTD / Yes	N	1 / 120	

New

12322 TEMPERATURE CONTROLLER *J-Kem Model 150, Economy*

An ideal controller for applications that don't require the precise regulation of 200 Series controllers. This compact unit features 1200 watts of power, sufficient for heating 5L mantles, many ovens, and other devices. Ramp-to-Set Point feature standard. USB port and data logging and control software optional.

2.5 x 3.75 x 5.25 (Inches, HxWxD) / 120vac, 10 amps, 1200 watts

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
150-T	No	-200 to 250	T	1	12322-04	523.80
150-J	No	0 to 800	J	1	12322-06	523.80
150-K	No	-50 to 1200	K	1	12322-08	523.80
150-T-S	Yes	-200 to 250	T	1	12322-21	606.25
150-J-S	Yes	0 to 800	J	1	12322-23	606.25
150-K-S	Yes	-50 to 1200	K	1	12322-25	606.25



12322



12321 TEMPERATURE CONTROLLER *J-Kem Model 150/Timer, Economy*

Same power and versatility as the Model 150, but with a 100-hour digital timer to turn heating ON or OFF at a user-specified time.

2.5 x 4.75 x 5.5 (Inches, HxWxD) / 120vac, 10 amps, 1200 watts

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
150/Timer-T	No	-200 to 250	T	1	12321-05	640.20
150/Timer-J	No	0 to 800	J	1	12321-07	640.20
150/Timer-K	No	-50 to 1200	K	1	12321-09	640.20
150/Timer-T-S	Yes	-200 to 250	T	1	12321-25	732.35
150/Timer-J-S	Yes	0 to 800	J	1	12321-27	732.35
150/Timer-K-S	Yes	-50 to 1200	K	1	12321-29	732.35



12321

12325 TEMPERATURE CONTROLLER *J-Kem Model 210, Single Channel*

The Model 210 is our most compact research grade controller, yet packed with 1200 watts of power. Sufficient for heating mantles up to 5L in size, and most laboratory ovens, hot plates, reaction blocks and other heaters. Comes complete with USB port and data logging and control software. Power control computer provides 0.1°C regulation of anything.

3.25 x 5.25 x 7.25 (Inches, HxWxD) / 10 amps, 1200 watts, 110 VAC

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
210-T	No	-200 to 250	T	1	12325-02	814.80
210-J	No	0 to 800	J	1	12325-04	814.80
210-K	No	-50 to 1200	K	1	12325-06	814.80
210-T-S	Yes	-200 to 250	T	1	12325-22	906.95
210-J-S	Yes	0 to 800	J	1	12325-24	906.95
210-K-S	Yes	-50 to 1200	K	1	12325-26	906.95

12325



12325 TEMPERATURE CONTROLLER *J-Kem Model 310, Single Channel*

230VAC, CE-marked version of Model 210, above.

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
310-T-S	Yes	-200 to 250	T	1	12325-33	960.30
310-J-S	Yes	0 to 800	J	1	12325-35	960.30
310-K-S	Yes	-50 to 1200	K	1	12325-37	960.30

TEMPERATURE CONTROLLERS


New


12326

12326 TEMPERATURE CONTROLLER *J-Kem Model 210/Timer, Single Channel*

Same power and versatility as the Model 210, above, but also contains a 100-hour digital timer to turn heating OFF or ON at a user-specified time. A new safety feature automatically disconnects power from the heater following recovery from a power failure. Comes complete with USB port and data logging and control software. Power control computer provides 0.1°C regulation of anything. 3.5 x 6.75 x 6 (Inches, HxWxD) / 120vac, 10 amps, 1200 watts.

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
210/Timer-T	No	-200 to 250	T	1	12326-01	906.95
210/Timer-J	No	0 to 800	J	1	12326-03	906.95
210/Timer-K	No	-50 to 1200	K	1	12326-05	906.95
210/Timer-T-S	Yes	-200 to 250	T	1	12326-23	999.10
210/Timer-J-S	Yes	0 to 800	J	1	12326-25	999.10
210/Timer-K-S	Yes	-50 to 1200	K	1	12326-26	999.10

12319


12319 TEMPERATURE CONTROLLER *J-Kem Model 250, Single Channel*

The Model 250 has both heating and cooling outlets for maximum versatility. Two heating outlets supply 1800 watts of power for large equipment and heating mantles up to 22L. The third outlet, also 1800 watts and normally used for cooling, is programmable to provide power above, below, or at the set point. Comes complete with USB port and data logging and control software. Power control computer provides 0.1°C regulation of anything. 3.5 x 7.75 x 9.25 (Inches, HxWxD) / 120vac, 15 amps, 1800 watts.

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
250-T	No	-200 to 250	T	1	12319-01	906.95
250-J	No	0 to 800	J	1	12319-03	906.95
250-K	No	-50 to 1200	K	1	12319-05	906.95
250-T-S	Yes	-200 to 250	T	1	12319-25	999.10
250-J-S	Yes	0 to 800	J	1	12319-27	999.10
250-K-S	Yes	-50 to 1200	K	1	12319-29	999.10

12318 TEMPERATURE CONTROLLER *J-Kem Model 260/Timer, Single Channel*

The Model 260/Timer disconnects output power if the process temp exceeds the setpoint by a user specified amount or following a recovery from a power failure. Overtemp is signaled by both a lamp and an audible alarm. Features a 100 hour timer, two power outlets and 0.1°C regulation of anything. NIST traceable, USB port and free data logging and control software. 3.5 x 7.75 x 9.25 (Inches, HxWxD) / 15 amps, 1800 watts, 120 VAC.


Value


12318

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
260/Timer-J	No	0 to 800	J	1	12318-01	1139.75
260/Timer-K	No	-50 to 1200	K	1	12318-03	1139.75
260/Timer-T	No	-200 to 250	T	1	12318-05	1139.75
260/Timer-J-S	Yes	0 to 800	J	1	12318-21	1231.90
260/Timer-K-S	Yes	-50 to 1200	K	1	12318-23	1231.90
260/Timer-T-S	Yes	-200 to 250	T	1	12318-25	1231.90

12318 TEMPERATURE CONTROLLER *J-Kem Model 360/Timer, Single Channel*

230VAC, CE-marked version of Model 260, above.

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
360/Timer-J-S	Yes	0 to 800	J	1	12318-33	1290.10
360/Timer-K-S	Yes	-50 to 1200	K	1	12318-35	1290.10
360/Timer-T-S	Yes	-200 to 250	T	1	12318-37	1290.10

New

12312 TEMPERATURE CONTROLLER *J-Kem Apollo Series, Dual Channel*

Has all the features of the Gemini series, above, but also has an independent 100-hour digital timer on each controller channel.

4 x 8 x 9 (Inches, HxWxD) / 120vac, 15 amps, 1800 watts total / 1200 watts max. per channel

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
Apollo-T	No	-200 to 250	T	1	12312-03	1469.55
Apollo-J	No	0 to 800	J	1	12312-05	1469.55
Apollo-K	No	-50 to 1200	K	1	12312-07	1469.55
Apollo-T-S	Two of each	-200 to 250	T	1	12312-23	1653.85
Apollo-J-S	Two of each	0 to 800	J	1	12312-25	1653.85
Apollo-K-S	Two of each	-50 to 1200	K	1	12312-27	1653.85

The Apollo Series units noted above each come with two thermocouple sensors, two cords and two adapters.



12312

12314 TEMPERATURE CONTROLLER *J-Kem Quad Series, Four Channel*

The Quad is your solution when bench space is at a premium — the Quad packs four independent temperature controllers into a single unit! Each of the four controller channels has 1200 watts of power, an independent display, and an over-temperature protection circuit.

5.25 x 7 x 7.5 (Inches, HxWxD) / 120vac, 15 amps, 1800 watts total / 1200 watts max. per channel

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
Quad-T	No	-200 to 250	T	1	12314-05	2420.15
Quad-J	No	0 to 800	J	1	12314-07	2420.15
Quad-K	No	-50 to 1200	K	1	12314-09	2420.15
Quad-T-S	Four of each	-200 to 250	T	1	12314-20	2788.75
Quad-J-S	Four of each	0 to 800	J	1	12314-22	2788.75
Quad-K-S	Four of each	-50 to 1200	K	1	12314-24	2788.75

The Quad Series units noted above each come with four thermocouple sensors, four cords and four adapters.



12314

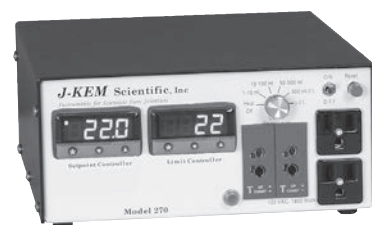
12316 TEMPERATURE CONTROLLER *J-Kem Model 270, High Safety*

Designed for processes requiring uncompromising safety. The only temperature controller available with a built-in, independent backup controller to guard against heating accidents resulting from equipment failure. The desired temperature is entered into the main temperature controller, which regulates heating, and then a high-temperature cut-off is entered into the backup limit controller. If the reaction reaches the high-temperature limit, or if a thermocouple should break, power is turned off to the heater until the controller is manually reset. Both meters independently monitor the reaction temperature. In the event that one meter fails, the other takes over to prevent a heating accident. Provides 100% redundant control.

3.75 x 7.75 x 9.25 (Inches, HxWxD) / 120vac, 15 amps, 1800W total, 1200W max. per channel

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
270-T	No	-200 to 250	T	1	12316-04	1484.10
270-J	No	0 to 800	J	1	12316-06	1484.10
270-K	No	-50 to 1200	K	1	12316-08	1484.10
270-T-S	Two of each	-200 to 250	T	1	12316-24	1629.60
270-J-S	Two of each	0 to 800	J	1	12316-26	1629.60
270-K-S	Two of each	-50 to 1200	K	1	12316-28	1629.60

The Model 270 Series units noted above each come with two thermocouple sensors, two cords and two adapters.



12316

New

12317



12317 TEMPERATURE CONTROLLER *J-Kem Model HCC, High Power*

The HCC line of controllers are designed to power large-scale equipment with volumes up to 100 liters. Built with the same commitment to safety as our 12316 controller, the HCC Series features a built-in, independent backup controller to guard against heating accidents resulting from equipment failure. The desired temperature is entered into the main temperature controller, which regulates heating, and then a high-temperature cut-off is entered into the backup limit controller. If the reaction reaches the high-temperature limit, or if a thermocouple should break, power is turned off to the heater until the controller is manually reset. Both meters independently monitor the reaction temperature. In the event that one meter fails, the other takes over to prevent a heating accident. Provides 100% redundant control. These high-power controllers also incorporate a 100-hour timer to turn heating ON or OFF at a user-specified time. Comes complete with USB port and data logging and control software. Power control computer provides 0.1°C regulation of anything. Requires 12184 sensor (not included) for operation. A 230VAC, CE-approved model is also available via special order.

5.5 x 12 x 12.5 (Inches, HxWxD) / 110-120vac, 30 amps, 3600 watts

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
HCC-130-T	No	-200 to 250	T	1	12317-30	1809.05
HCC-130-J	No	0 to 800	J	1	12317-34	1809.05
HCC-130-K	No	-50 to 1200	K	1	12317-38	1809.05

12324 TEMPERATURE CONTROLLER *J-Kem Model 410, For Instatherm*

The Model 410 is designed for heaters that cannot be operated at 120VAC. This makes the unit perfect for use with many of our Ace Instatherm® oil baths. Maximum output voltage of the Model 410 is selected using the power output knob on the front of the controller. Selectable output voltage limit provides precise power and temperature control while protecting low voltage heaters. Comes complete with USB port and data logging and control software. Power control computer provides 0.1°C regulation of anything. 3.25 x 5.25 x 7.25 (Inches, HxWxD) / 10, 20, 40, 60, 120 vac, 10 amps, 1200 watts



12324

J-Kem Model	With Sensor, Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
410-T	No	-200 to 250	T	1	12324-08	800.25
410-J	No	0 to 800	J	1	12324-10	800.25
410-K	No	-50 to 1200	K	1	12324-12	800.25
410-T-S	Yes	-200 to 250	T	1	12324-23	868.15
410-J-S	Yes	0 to 800	J	1	12324-25	868.15
410-K-S	Yes	-50 to 1200	K	1	12324-27	868.15

12167 LAB SAFETY CONTROLLER *J-Kem Model LS-120*

Lab safety controller by J-Kem combines all the features of the digital temperature monitor and the water-flow monitor into a single versatile instrument. Plug any piece of equipment into the monitor, then if the water flow rate falls below the set level, or if the reaction temperature goes above or below the user set limits, the outlet power turns off automatically. The unit will also cut off power if the main power is interrupted. The controller then has to be reset. See Ace 12168 product family for flow sensors.



12167

J-Kem Model	With Sensor Cord and Adapter	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
LS-120-T	No	-200 to 250	T	1	12167-01	814.80
LS-120-J	No	0 to 800	J	1	12167-03	814.80
LS-120-K	No	-50 to 1200	K	1	12167-05	814.80

J-Kem Model	Description	Flow Rate, LPM	Qty.	Order Code	Each
WFM-01	Flow Sensor	0.1 to 2.5	1	12168-01	252.63
WFM-02	Flow Sensor	1 to 10	1	12168-02	252.63
WFM-03	Flow Sensor	2 to 30	1	12168-03	252.63
—	Shut-Off Valve	—	1	12168-10	181.58

New

12168 WATER FLOW MONITOR *J-Kem Model WFM-120*

J-Kem monitor precisely measures the flow of water through a condenser, bath or a photochemical reactor. Upon interruption or if the flow drops below an operator set rate, power to the monitored equipment is cutoff. Manual power reset. Inclusion of a 12168-10 shut-off valve and either a 12169-01 audible alarm or a 12169-05 digital alarm is recommended.

J-Kem Model	Description	Flow Rate, LPM	Qty.	Order Code	Each
WFM-01	Flow Sensor	0.1 to 2.5	1	12168-01	252.63
WFM-02	Flow Sensor	1 to 10	1	12168-02	252.63
WFM-03	Flow Sensor	2 to 30	1	12168-03	252.63
—	Shut-Off Valve	—	1	12168-10	181.58
WFM-120	Water Flow Monitor	—	1	12168-120	373.45



12169 ALARM *J-Kem*

Digital alarm outlet and audible alarm accessories for J-Kem safety controller and water-flow monitors. Allows 12167 and 12168 units to be set up for alarm warnings when in unsafe conditions. The audible alarm sounds during low or no water conditions for the 12168 monitor and the digital alarm activates on either the water flow monitor or the safety controller when conditions are out of set ranges.

J-Kem Model	Alarm Type	For Controllers	Qty.	Order Code	Each
WFM-AA	Digital	12167 & 12168	1	12169-01	68.42
WFM-OC	Audible	12168	1	12169-05	36.84

9601 INSTATHERM BATH KIT *Ace/J-Kem*

Consists of one each 9601-14 and 9601-16 bath, plus one 12324-25 digital temperature controller with one "J" Type temperature sensor and controller cord. 120V.

Qty.	Order Code	Each
1	9601-355	1915.08

9601



12111 TEMPERATURE CONTROLLER *Time Proportional, Digital Set & Readout* ★

Microprocessor based, compact, temperature controller, with bright LED digital display. Temperature range is -70° to 870° C with 0.1° C resolution. Temperature readout in Fahrenheit or Centigrade is field selectable. Designed to use Type “J” thermocouple sensors. The controller has two, 120V front outlets and 16 segment ramp and soak selectable profile. This model has an over-temp cutoff and alarm output for added safety. Output circuitry utilizes zero-crossing fired solid state relay for proportional control that provides interference free power, (RFI) to electric heater type resistive loads. 120volt, 15Amp, 50/60Hz input. Unit is 6H x 6.5D x 5.5W inches; weight (12111-15) = 4 lbs. Three-year conditional warranty. Complete unit comes with Type “J” thermocouple.



12111

With Two Front 120v Outlets & One Rear Alarm Outlet

	Qty.	Order Code	Each
Controller, only	1	12111-15	1465.51
Sensor, Type J Thermocouple, 318mm, 1/4-inch O.D.	1	12110-15	106.72
Complete (above two components)	1	12111-33	1572.23

Custom temperature controllers for virtually every application are available from ACE – call or email for a quotation!

12327 DIGITAL TEMPERATURE MONITOR *J-Kem*

Monitors and displays the temperature of an attached piece of equipment on a bright LED display. Built-in USB port and free data logging software allows remote temperature monitoring, and provides a GMP, GLP compliant temperature history. Audible digital alarm available as an option. 230vac versions are CE marked.

New



12327

2.5 x 4.75 x 5.5 (Inches, HxWxD) / 50 watts, 120VAC, USB 2.0

J-Kem Model	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
DM120-T	-200 to 250	T	1	12327-03	431.65
DM120-J	0 to 800	J	1	12327-05	431.65
DM120-K	-50 to 1200	K	1	12327-07	431.65

12327 DIGITAL TEMPERATURE MONITOR *J-Kem*

230VAC, CE-marked version of digital temperature monitor, above.

J-Kem Model	Temperature Range (°C)	Thermocouple Type	Qty.	Order Code	Each
DM230-T	-200 to 250	T	1	12327-33	431.65
DM230-J	0 to 800	J	1	12327-35	431.65
DM230-K	-50 to 1200	K	1	12327-37	431.65

6671 TIMER/CONTROL *Repeat Cycle, Electronic* ★

Repeat cycle timer control, bench top or rack mountable (has clamp for up to 3/4-inch rod), for regulating reflux ratio on distillation heads. Maximum ON/OFF time setting is 0.1 to 6000 seconds. Solid state relay and micro-processor-based timer control with back lite LCD display. Red output indicator LED. Output: 120v, 10A max., 50/60 Hz or 220v, 10A max., 50/60 Hz. Features include: Front toggle main power switch, Rear mounted, fast acting, solid state 10A fuse, Input/Output Power Rating: 120V, 10A Max., 50/60 Hz., Rear-mounted power outlet, Front, Run/Standby-Set switch, Four-digit adjust buttons. Comes with conditional 24-month warranty.

Supplied with side bar (removable) for mounting to 1/2-inch rod, 6' grounded neoprene line cord with NEMA plug and operating instructions on case. Light grey case with black front panel measures 114.3mm (4-1/2 inches) wide x 158.7mm (6-1/4 inches) deep x 63.5mm (2-1/2 inches) high. Weight: 1 lbs. 10 oz.


6671

Time Max. Scale	Min.On or Off Setting	Voltage	Qty.	Order Code	Each
0.1-6000 sec.	0.1 sec.	120v	1	6671-14	1236.02

Digital interface available. Call for details.

Improved Ace Temperature Controller for General Laboratory Use...

- **Two front-mounted 120v outlets**
 - **Compact (3.5 inches high)**
 - **New digital technology**
- **16 segment ramp and soak function**
 - **Fuzzy logic auto tune PID**



**For use in
controlling all
Glas-Col Mantles
rated at 115 volts**

Including mantles up to 22 Liters

Features & Specifications:

- Two front-mounted outlets.
- Bar mountable or benchtop operation.
- Single loop type, downsized and lightweight.
- Temperature range: -70 to 870°C, adjustable.
- 0.1°C/0.1°F temperature resolution, field selectable.
- Absolute accuracy: $\pm 0.25\%$ of range, max. $\pm 2^\circ\text{C}$.
- Control accuracy: $\pm 0.1^\circ\text{C}$ typical.
- Microprocessor-based 1/32 DIN model for digital accuracy and reliability.
- Dual four-digit LED display for instant recognition of process temperature and setpoint 1 value.
- Auto tune PID control can maintain $\pm 0.1^\circ$ under normal conditions.
- Ramp and soak, field selectable, 16 segment with hold or shut-off.
- Field selectable output % power limit when heating smaller vessels or when using very low setpoints. (factory set at 60% for safety). See OEM Manual (S10H) secure menu.
- Output circuitry utilizes zero crossing fired solid state relay proportional control that provides interference free power (RFI) to electrical heater type resistive loads.
- Heater outlets provide time proportional control, meaning overshoot is minimized. Percent output decreases as set temperature is approached.
- Universal TC input jack for "mini" or "standard" plugs.
- Input power: 120 volts, 50/60 Hz, 15 amps maximum, fused.
- Unit measures: 3.5 inches high x 6-3/16 inches wide x 6-5/16 inches deep; weight: 2.5 lbs.
- Operating instruction label on top for quick reference

12126 TEMPERATURE CONTROLLER *Improved Model* ★

	Qty.	Order Code	Each
Controller, only	1	12126-24	900.09
Sensor, Type J Thermocouple, 318mm, 1/4 in.	1	12110-15	106.72
Complete	1	12126-45	1006.81

Digital interface available. Call for details.

Ace Economy Model Temperature Controller for general laboratory use

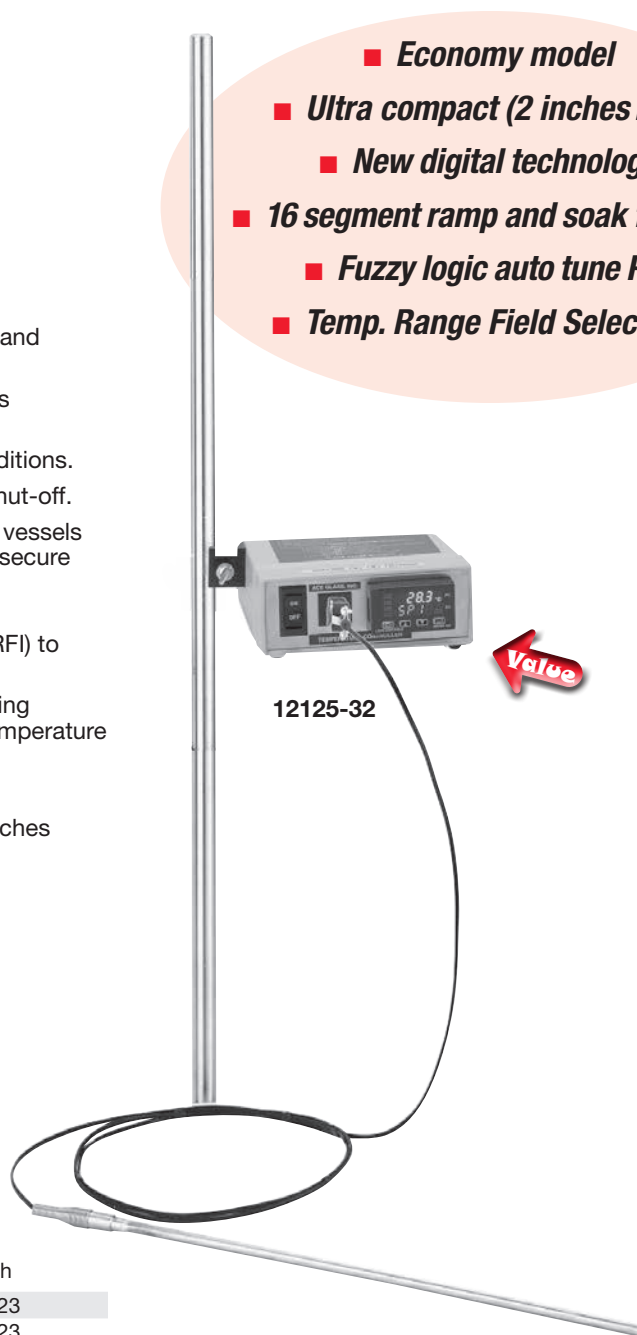
Features & Specifications

- Bar mountable or benchtop operation.
- Single loop type, downsized and lightweight.
- Temperature range: -50 to 800°C, adjustable.
- 0.1°C* or 0.1°F temperature resolution, selectable.
- Absolute accuracy: ±0.25% of range, max. ±2°C.
- Control accuracy: ±0.1°C typical.
- Microprocessor-based 1/32 DIN model for digital accuracy and reliability.
- Dual four-digit LED display for instant recognition of process temperature and setpoint 1 value.
- Auto tune PID control can maintain ±0.1° under normal conditions.
- Ramp and soak, field selectable, 16 segment with hold or shut-off.
- Field selectable output % power limit when heating smaller vessels or when using very low setpoints. See OEM manual (SIOH) secure menu, affects all heaters.
- Output circuitry utilizes zero crossing fired solid state relay proportional control that provides interference free power (RFI) to electrical heater type resistive loads.
- Rear heater outlet provides time proportional control, meaning overshoot is minimized. Percent output decreases as set temperature is approached.
- Input power: 120 volts, 50/60 Hz, 15 amps maximum
- Unit measures: 2 inches high x 5-1/4 inches wide x 5-1/4 inches deep; weight: 2 lbs, 2 oz.
- Operating instruction label on top for quick reference.
- Three-year warranty

12125 TEMPERATURE CONTROLLER

Economy Model ★

	Qty.	Order Code	Each
Controller, only ("J" type)	1	12125-14	820.23
Controller, only ("T" type)	1	12125-16	820.23
Controller, only ("K" type)	1	12125-18	820.23
Sensor, Type J Thermocouple, 318mm, 1/4 inch	1	12110-15	106.72
Complete ("J" Type only)	1	12125-32	926.95



■ **Economy model**

■ **Ultra compact (2 inches high)**

■ **New digital technology**

■ **16 segment ramp and soak function**

■ **Fuzzy logic auto tune PID**

■ **Temp. Range Field Selectable**

Value

12125-32

**For use in
controlling all
Glas-Col Mantles
rated at 115 volts**

Ace General Laboratory/Instatherm[®] Temperature Controller

Designed specifically for INSTATHERM[®]

Can also control **ALL** laboratory heaters as well, up to 120 volts and maximum of 15 amp rating; including all Glas-Col mantles.

- **Compact (3.5 inches high)**
- **New digital technology**
- **Multiple 20, 40, 120v outputs**
- **16 segment ramp and soak function**
- **Fuzzy logic auto tune PID**



For use in controlling all Glas-Col Mantles

Features & Specifications

- Bar mountable or benchtop operation.
- Single loop type, downsized and lightweight.
- Temperature range: -70 to 870°C, field settable to °F.
- 0.1°C/0.1°F temperature resolution, field selectable.
- Absolute accuracy: ±0.25% of range, max. ±2°C.
- Control accuracy: ±0.1°C typical.
- 1 ■ Supplied with two 120v controlled rear outlets for up to 22L mantles or 120v ACE oil baths.
- 1 ■ Supplied with single 20v or 40v controlled limit front outlet for low voltage Instatherm or small mantles.
- Ramp and soak, field selectable, 16 segment with hold or shut-off.
- Field adjustable rear sensitivity control to “tweak” the speed of response to setpoint, if necessary, this eliminates overshoot.
- Universal TC input jack for “mini” or “standard” plugs.
- Input power: 120 volts, 50/60 Hz, 15 amps maximum, fused.
- Unit measures: 3.5 high x 6-3/8 wide x 8 deep inches; weight: 3.4 lbs.
- Operating instruction label on top for quick reference.
- Three-year warranty

12127 TEMPERATURE CONTROLLER

Instatherm Model ★

	Qty.	Order Code	Each
Controller, only	1	12127-30	Call
Sensor, Type J Thermocouple, 318 mm, 1/4-inch OD	1	12110-15	106.72
Controller, only	1	12127-30	Call
Sensor, Type J Thermocouple, 102 mm, 3/16-inch OD	1	12110-17	92.34

Digital interface available. Call for details.

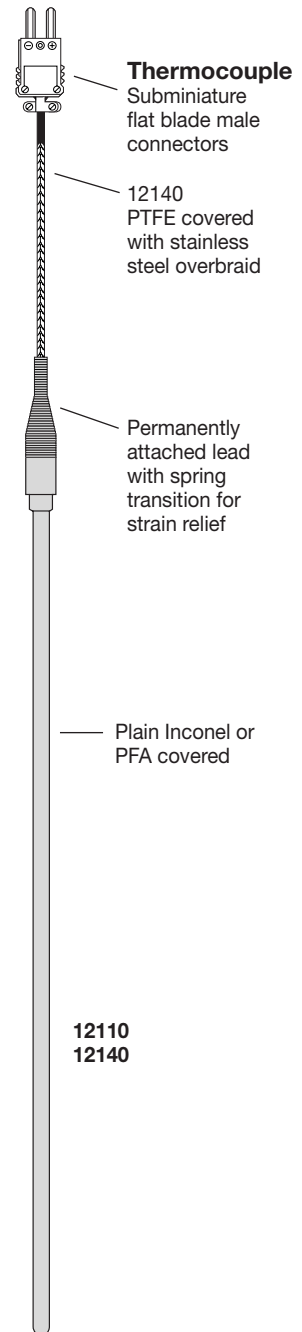
The “Original” ACE design —
Dedicated two type output voltage limit power outlets;

- 1 Front outlet, specific for ACE Instatherm heaters of voltages less than 120v.
This feature helps avoid inadvertently plugging or switching high voltage on lower voltage heaters.

Two 120 volt outlets in rear for mantles, up to 22L and 120 volt Instatherm.

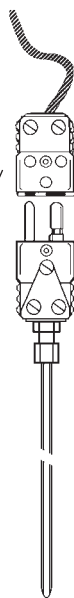
TYPE: Thermocouple Sensor Probes ★

Type	Length of Inconel Sheath, mm (In.)	Sheath O.D. mm/In.	Sheath Coating	Max. Sheath Temp.	Lead Lgth., Ft.	Lead Attachment	Qty.	Order Code	Each
"J"	102 (4)	4.76/0.19	Plain	550°C	6	Permanent	1	12110-17	92.34
"J"	305 (12)	1.59/0.06	Plain	550°C	12	Permanent	1	12140-04	185.97
"J"	305 (12)	3.17/0.12	Plain	550°C	12	Permanent	1	12140-05	183.68
"J"	305 (12)	6.35/0.25	Plain	550°C	6	Permanent	1	12110-15	106.72
"J"	305 (12)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-06	184.85
"J"	600 (24)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-10	193.93
"J"	900 (36)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-14	219.84
"J"	1200 (48)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-16	274.63
"J"	1800 (72)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-18	292.96
"J"	305 (12)	1.59/0.06	PFA	260°C	12	Permanent	1	12140-17	235.29
"J"	305 (12)	3.17/0.12	PFA	260°C	12	Permanent	1	12140-19	237.57
"J"	305 (12)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-20	239.65
"J"	600 (24)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-21	244.09
"J"	900 (36)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-25	275.44
"J"	1200 (48)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-26	311.32
"J"	1800 (72)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-28	345.21
"J"	305 (12)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-11	79.34
"J"	600 (24)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-12	97.38
"J"	900 (36)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-17	101.64
"J"	1200 (48)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-18	129.96
"J"	1800 (72)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-20	164.86
"J"	305 (12)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-25	122.29
"J"	600 (24)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-26	176.55
"J"	900 (36)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-28	205.89
"J"	1200 (48)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-29	259.48
"J"	1800 (72)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-30	288.86
"K"	102 (4)	4.76/0.19	Plain	550°C	6	Permanent	1	12113-22	90.70
"K"	305 (12)	1.59/0.06	Plain	550°C	12	Permanent	1	12140-36	183.28
"K"	305 (12)	3.17/0.12	Plain	550°C	12	Permanent	1	12140-61	183.60
"K"	305 (12)	6.35/0.25	Plain	550°C	6	Permanent	1	12113-20	102.68
"K"	305 (12)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-39	182.21
"K"	600 (24)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-41	197.03
"K"	900 (36)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-45	223.18
"K"	1200 (48)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-46	253.59
"K"	1800 (72)	6.35/0.25	Plain	550°C	12	Permanent	1	12140-48	292.96
"K"	305 (12)	1.59/0.06	PFA	260°C	12	Permanent	1	12140-37	235.52
"K"	305 (12)	3.17/0.12	PFA	260°C	12	Permanent	1	12140-62	235.68
"K"	305 (12)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-51	233.32
"K"	600 (24)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-53	243.25
"K"	900 (36)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-57	278.47
"K"	1200 (48)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-58	311.32
"K"	1800 (72)	6.35/0.25	PFA	260°C	12	Permanent	1	12140-59	345.21



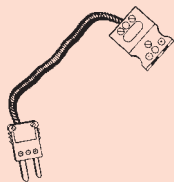
TYPE: Thermocouple Sensor Probes (continued) ★

Type	Length of Inconel Sheath, mm (In.)	Sheath O.D. mm/In.	Sheath Coating	Max. Sheath Temp.	Lead Lgth., Ft.	Lead Attachment	Qty.	Order Code	Each
"K"	305 (12)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-43	78.56
"K"	600 (24)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-44	93.38
"K"	900 (36)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-47	108.15
"K"	1200 (48)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-48	176.95
"K"	1800 (72)	6.35/0.25	Plain	550°C	3-15	Detachable*	1	12141-50	159.29
"K"	305 (12)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-52	129.17
"K"	600 (24)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-53	176.33
"K"	900 (36)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-58	202.55
"K"	1200 (48)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-59	256.12
"K"	1800 (72)	6.35/0.25	PFA	260°C	3-15	Detachable*	1	12141-60	296.03
*Lead only, for TYPE "J" Sensor (Black)							1	12141-80	71.75
*Lead only, for TYPE "K" Sensor (Yellow)							1	12141-83	80.03



12141

12141-80, -83



3' coiled PVC patch cord stretchable to 15'; detachable from sheath via color-coded universal connectors with mini-male plug

PFA: (Tetrafluoroethylene-perfluoro(propyl vinyl ether) copolymer), colored black, less permeable than either FEP or TFE. Maximum temperature 260°C.

Thermocouple Sensors for J-Kem Temperature Controllers

12180 T-TYPE SENSORS

Type "T" thermocouple temperature sensors for use with all J-Kem "T" Type model temperature controllers. Either 1/4- or 1/8-inch O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See Ace 12190 series extension cords.

O.D. (in.)	Lgth. (in.)	PTFE Coated?	Qty.	Order Code	Each
1/8	6	No	1	12180-03	35.79
1/8	12	No	1	12180-05	35.79
1/8	18	No	1	12180-07	47.37
1/8	24	No	1	12180-09	51.58
1/8	36	No	1	12180-11	65.26
1/8	6	Yes	1	12180-20	67.37
1/8	12	Yes	1	12180-22	67.37
1/8	18	Yes	1	12180-24	78.95
1/8	24	Yes	1	12180-26	83.16
1/8	36	Yes	1	12180-28	96.84
1/4	6	No	1	12180-31	40.00
1/4	12	No	1	12180-33	40.00
1/4	18	No	1	12180-35	51.58
1/4	24	No	1	12180-37	55.79
1/4	36	No	1	12180-39	69.47
1/4	6	Yes	1	12180-40	71.58
1/4	12	Yes	1	12180-42	71.58
1/4	18	Yes	1	12180-44	83.16
1/4	24	Yes	1	12180-46	87.37
1/4	36	Yes	1	12180-48	101.05

12181 J-TYPE SENSORS

Type "J" thermocouple temperature sensors for use with all J-Kem "J" Type model temperature controllers. Either 1/4- or 1/8-inch O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See Ace 12190 series extension cords.

O.D. (in.)	Lgth. (in.)	PTFE Coated?	Qty.	Order Code	Each
1/8	6	No	1	12181-02	35.79
1/8	12	No	1	12181-04	35.79
1/8	18	No	1	12181-06	47.37
1/8	24	No	1	12181-08	51.58
1/8	6	Yes	1	12181-21	67.37
1/8	12	Yes	1	12181-23	67.37
1/8	18	Yes	1	12181-25	78.95
1/8	24	Yes	1	12181-27	83.16
1/8	36	Yes	1	12181-29	96.84
1/4	6	No	1	12181-32	40.00
1/4	12	No	1	12181-34	40.00
1/4	18	No	1	12181-36	51.58
1/4	24	No	1	12181-38	55.79
1/4	36	No	1	12181-39	69.47
1/4	6	Yes	1	12181-41	71.58
1/4	12	Yes	1	12181-43	71.58
1/4	18	Yes	1	12181-45	83.16
1/4	24	Yes	1	12181-47	87.37
1/4	36	Yes	1	12181-49	101.05

12182 K-TYPE SENSORS

Type "K" thermocouple temperature sensors for use with all J-Kem "K" Type model temperature controllers. Either 1/4- or 1/8-inch O.D. Available in 304 stainless steel or PTFE coated stainless steel sheaths of various lengths. See Ace 12190 series extension cords.

O.D. (in.)	Lgth. (in.)	PTFE Coated?	Qty.	Order Code	Each
1/8	6	No	1	12182-01	35.79
1/8	12	No	1	12182-03	35.79
1/8	18	No	1	12182-05	47.37
1/8	24	No	1	12182-07	51.58
1/8	36	No	1	12182-09	65.26
1/8	6	Yes	1	12182-20	67.37
1/8	12	Yes	1	12182-22	67.37
1/8	18	Yes	1	12182-24	78.95
1/8	24	Yes	1	12182-26	83.16
1/8	36	Yes	1	12182-28	96.84
1/4	6	No	1	12182-32	40.00
1/4	12	No	1	12182-34	40.00
1/4	18	No	1	12182-36	51.58
1/4	24	No	1	12182-38	55.79
1/4	36	No	1	12182-40	69.47
1/4	6	Yes	1	12182-41	71.58
1/4	12	Yes	1	12182-43	71.58
1/4	18	Yes	1	12182-45	83.16
1/4	24	Yes	1	12182-47	87.37
1/4	36	Yes	1	12182-49	101.05



For extension cords, see Ace 12190 straight and coiled cords, on the following page.



SMP



OST

Sensor extension cords for use with all J-Kem thermocouple probes. Cords match color of probe type: blue, black, yellow or white. Available in either 10- or 20-foot coiled or straight styles. Select length, type, and connector, SMP (flat plug) or OST (round plug).



12190 (Coiled) 12190 (Straight)

12190 SENSOR CORDS *Coiled*

Probe Style	Lgth. (ft.)	Connector Type	Qty.	Order Code	Each
J	10	SMP	1	12190-01	35.58
K	10	SMP	1	12190-02	35.58
T	10	SMP	1	12190-03	35.58
RTD	10	SMP	1	12190-04	59.16
J	10	OST	1	12190-08	41.89
K	10	OST	1	12190-10	41.89
T	10	OST	1	12190-11	41.89
J	20	SMP	1	12190-20	70.53
K	20	SMP	1	12190-21	70.53
T	20	SMP	1	12190-22	70.53
J	20	OST	1	12190-26	70.53
K	20	OST	1	12190-27	70.53
T	20	OST	1	12190-28	70.53

12190 SENSOR CORDS *Straight*

12184 DUAL SENSORS *PTFE Coated*

Dual coupling temperature thermocouple sensors for use with Model HCC and 270 J-Kem temperature controllers. Available in "J", "T" or "K" types. Probes are PTFE coated stainless steel in various lengths and O.D. Probes require 12191 extension cords.

O.D. (in.)	Lgth. (in.)	Sensor Type	Qty.	Order Code	Each
1/8	12	T	1	12184-02	108.42
1/4	12	T	1	12184-04	121.05
1/4	24	T	1	12184-06	144.21
1/4	36	T	1	12184-08	158.95
1/8	12	J	1	12184-12	108.42
1/4	12	J	1	12184-14	121.05
1/4	24	J	1	12184-16	144.21
1/4	36	J	1	12184-18	158.95
1/8	12	K	1	12184-20	108.42
1/4	12	K	1	12184-22	121.05
1/4	24	K	1	12184-24	144.21
1/4	36	K	1	12184-26	158.95

12191 DUAL SENSOR CORDS

Dual element extension cords for use with dual element 12184 sensors for J-Kem models HCC and 270 temperature controllers. Available in "T", "K", and "J" types in 10- or 25-ft. lengths.

Probe Style	Lgth. (ft.)	Qty.	Order Code	Each
T	10	1	12191-02	62.63
J	10	1	12191-06	62.63
K	10	1	12191-08	62.63
T	25	1	12191-20	99.21
J	25	1	12191-22	99.21
K	25	1	12191-24	99.21

Probe Style	Lgth. (ft.)	Connector Type	Qty.	Order Code	Each
J	10	SMP	1	12190-40	27.63
K	10	SMP	1	12190-41	27.63
T	10	SMP	1	12190-42	27.63
J	10	OST	1	12190-44	27.63
K	10	OST	1	12190-45	27.63
T	10	OST	1	12190-46	27.63
J	20	SMP	1	12190-50	38.21
K	20	SMP	1	12190-51	38.21
T	20	SMP	1	12190-52	38.21
J	20	OST	1	12190-56	38.21
K	20	OST	1	12190-57	38.21
T	20	OST	1	12190-58	38.21

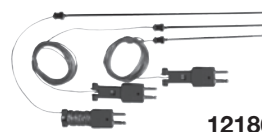
12185 WIRE SENSORS

Flexible 30-gauge thin wire thermocouple. Ideal for small volumes and hard-to-reach spots. Can be used with heating mantles, hotplates, inside of heating equipment and for small surface measurement. Can be inserted through rubber septum for an airtight seal. Available in standard connections, and in 36- and 72-inch lengths.



12185

Lgth. (in.)	Sensor Type	PTFE Coated?	Qty.	Order Code	Each
36	T	Yes	1	12185-01	118.42
36	K	Yes	1	12185-03	118.42
72	T	No	1	12185-04	37.89
72	K	No	1	12185-06	37.89
72	J	No	1	12185-08	37.89



12186

12186 NEEDLE-TIP SENSORS

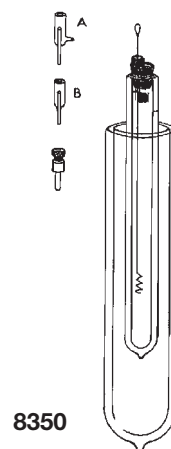
Needle-tip, 17-gauge thermocouple sensor for measurement and control of very small volumes and in small systems. Sensors come coated and uncoated in 3.5- or 7-in. lengths. Actual temperature measure is at first 2mm of the probe and must have liquid contact for accurate readings. May be inserted through rubber septa 9107 or 9106 for air-tight seal. Comes with 72-in. PTFE wire extension. Available in "T", "K", or "J" type connections.

Lgth. (in.)	Sensor Type	PTFE Coated?	Qty.	Order Code	Each
3.5	T	Yes	1	12186-01	100.00
7.0	T	Yes	1	12186-02	103.16
3.5	K	Yes	1	12186-03	100.00
7.0	K	Yes	1	12186-04	103.16
3.5	J	Yes	1	12186-05	100.00
7.0	J	Yes	1	12186-06	103.16
3.5	T	No	1	12186-10	78.95
7.0	T	No	1	12186-11	82.11
3.5	K	No	1	12186-12	78.95
7.0	K	No	1	12186-13	82.11
3.5	J	No	1	12186-14	78.95
7.0	J	No	1	12186-15	82.11

8350 TUBE *Aviation Freeze Point* ♠

For determining the freezing point of separated solids in aviation fuels. ASTM D 2386-67. Thermometer not supplied.

	Qty.	Order Code	Each
Jacketed Sample Tube	1	8350-02	151.32
Brass Packing Gland	1	8350-04	88.50
Collar (A) with side tube	1	8350-06	53.21
Collar (B) without side tube	1	8350-08	50.07
Stirring Rod	1	8350-10	36.25
Vacuum Flask (unsilvered)	1	8350-12	300.38
Complete	1	8350-20	692.51



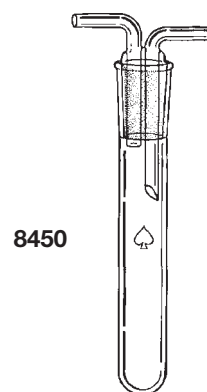
8350

TUBES

8450 COLOR STABILITY TUBE ♠

Used in tentative AOCS Method L-15A-58 for measuring the processing color stability of fatty acids.

	Qty.	Order Code	Each
Stopper	1	8450-02	83.89
Tube	1	8450-04	26.86
Complete	1	8450-10	110.75



8450

D120677 TUBE *15mL, for ROBO Apparatus* ♠

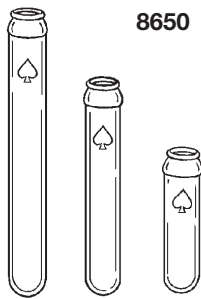
For ASTM D7528-09 ROBO Apparatus, this 15mL V-bottom tube has a glass side tube and a PTFE plug.

Qty.	Order Code	Each
1	D120677	Call



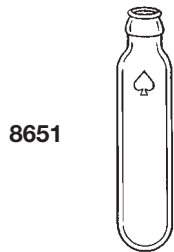
D120677

NEW

**8650 TUBE** *Pressure, Diehls-Adler* ♠

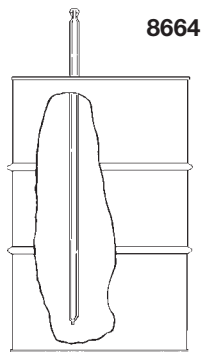
Heavy wall with lip for crown cap closure. Used for polymerization and analysis of halogens by thermal decomposition in the presence of lime. O.D., all sizes, 25.4mm.

Length, cm (In.)	Qty.	Order Code	Each
10.2 (4)	1	8650-03	18.82
15.2 (6)	1	8650-05	19.78
20.3 (8)	1	8650-07	20.22

**8651 TUBE** *Pressure, Diehls-Adler* ♠

Heavy wall with lip for crown cap closure. Approximately 100mL capacity, 38mm O.D. x 17.8 cm long.

Qty.	Order Code	Each
1	8651-10	40.54

**8664 TUBE** *Thief, Sampling* ♠

Used to take samples from large vessels such as 55 gallon drums. Measures 40 inches long x 1-inch O.D. with tooled tip at bottom and bulb handle at top for secure grip; open at both ends. Supplied six per case.

Qty.	Order Code	Case Price
6	8664-05	202.67

**8683 TEST TUBE** *Quartz (without Lip)* ★

Made from quartz. Used as reaction or sample tube in 7891 turntable reactor.

Approx. O.D., mm	Approx. Length, mm	Qty.	Order Code	Per Dozen
13	100	12	8683-08	145.93

For a complete listing of tubes and other reusable glass products, contact ACE for our current catalog.

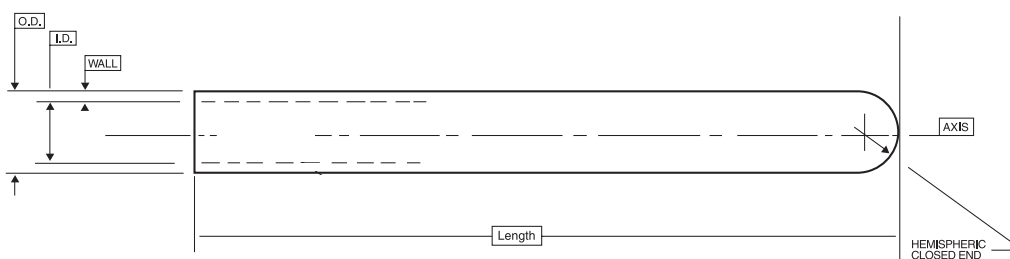
Ultra-Precision NMR Sample Tubes

Accurate • Precise

NMR SAMPLE TUBES Ultra-Precision, 5mm O.D. ★



7-inch LENGTH			8-inch LENGTH		
Qty.	Order Code	Per Pkg.	Qty.	Order Code	Per Pkg.
Pkg./5	2528-07	76.48	Pkg./5	2528-08	91.01
Pkg./5	2526-07	53.97	Pkg./5	2526-08	66.31
Pkg./5	2507-07	54.33	Pkg./5	2507-08	64.43
Pkg./5	2506-07	37.11	Pkg./5	2506-08	37.70
Pkg./5	2505-07	28.60	Pkg./5	2505-08	30.03



ACE Cat. No.	(MHz) Inst Freq.	O.D. Inches	O.D. Tolerance (in.)	I.D. (in.)	I.D. Tolerance (in.)	Concentricity I.D. to O.D. (in.)	Camber (Overall, in.)
2528-07,-08	400	.1955	+0.0000/-0.0005	.1655	+0.0005/-0.0000	≤.0010	≤.0005
2526-07,-08	200	.1955	+0.0000/-0.0005	.1655	+0.0005/-0.0000	≤.0020	≤.0005
2507-07,-08	150	.1955	+0.0000/-0.0005	.1655	+0.0005/-0.0000	≤.0020	≤.0020
2506-07,-08	100	.1955	+0.0000/-0.0005	.1655	+0.0005/-0.0000	≤.0025	≤.0020
2505-07,-08	100	.1955	+0.0000/-0.0005	.1655	+0.0005/-0.0000	≤.0030	≤.0020

NMR TUBES

9096 SEPTUM Stopper, Sleeve Type, for NMR Tubes ★

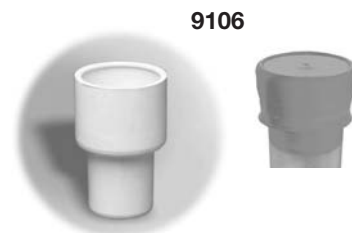
With hollow plug, used for closing NMR tubes and small tubing. Top is flanged with sleeve-like extension that folds down over the neck of vessel. The diaphragm can be punctured readily with a syringe needle. Puncture seals automatically after the needle is withdrawn.



Color	Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
Red	Pkg/12	9096-25	15.50	72	9096-125	51.22	144	9096-225	86.22
White	Pkg/12	9096-26	15.50	72	9096-126	51.22	144	9096-226	86.22

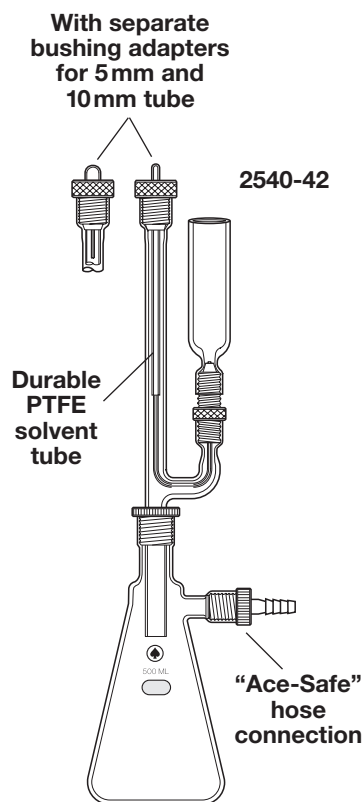
9106 PRECISION SEAL™ SEPTA White or Red Rubber, for NMR Tubes ★

Engineered for a precision fit (80% glass to rubber contact) for 5mm NMR tubes. Precision Seals are manufactured under "white room" conditions, from one certified raw material formulation for absolute consistency in all sizes, from lot-to-lot.



Color	Qty.	Order Code	Per Pack	Qty.	Order Code	Per Pack
White	100	9106-119	38.55	10	9106-19	11.54
Red	100	9106-120	38.55	10	9106-20	11.55

All-threaded connections for easy assembly



2540 NMR TUBE WASHER ♠

Rugged NMR tube washer designed with either Ace-Threds for ease and convenience or Ace-Thred and $\text{\textcircled{R}}$ joints. Accepts a single 5mm or 10mm O.D. NMR Tube. Features 1/8-inch O.D. PTFE tubing instead of glass to carry solvent from side reservoir to NMR tube in washing chamber. Tube to be washed is held in place in a #11 Ace-Thred with a PTFE bushing adapter; separate adapters for 5mm and 10mm tube. Solvent reservoir capacity is 55mL and is connected to main chamber via #7 Ace-Threds and PTFE coupling.

All-threaded version has a filter flask with a #15 Ace-Thred at top for securing tube washer with a bushing and o-ring and #11 Ace-Thred side port with a removable "Ace-Safe" hose connection for connecting to suction.

Threaded/jointed version has a filter flask with a $\text{\textcircled{R}}$ 24/40 joint at top for connecting to $\text{\textcircled{R}}$ inner joint at bottom of tube washer and a serrated hose connection on side for connecting to suction.

Complete item consists of: tube washer body, solvent reservoir, PTFE coupling, 5mm and 10mm tube bushing, filter flask, and 1/8-inch PTFE tubing.

	Qty.	All Ace-Thred Design		Thread/Joint Design	
		Order Code	Each	Order Code	Each
Tube Washer Body, only, Plain Stem	1	2540-12	62.99	—	—
Tube Washer Body, only, $\text{\textcircled{R}}$ 24/40	1	—	—	2540-13	71.22
Solvent Reservoir, only	1	2540-15	23.28	2540-15	23.28
Coupling, PTFE, #7-#7, with Ferrule	1	2540-19	55.75	2540-19	55.75
5mm NMR Tube Bushing Adapter, PTFE, #11	1	2540-23	39.13	2540-23	39.13
10mm NMR Tube Bushing Adapter, PTFE, #11	1	2540-25	39.13	2540-25	39.13
Filter Flask, 500mL, #11 & #15	1	2540-29	76.62	—	—
Filter Flask, 500mL, $\text{\textcircled{R}}$ 24/40, Hose Conn.	1	—	—	6979-10	95.41
PTFE Tubing, 1/8-inch O.D. x 312mm long	1	2540-31	3.26	2540-31	3.26
Tubing Connector, "Ace-Safe," for #11	1	5853-10	10.85	—	—
Bushing, Nylon, #11, w/o-ring	1	7506-01	10.83	—	—
Bushing, Nylon, #15, w/o-ring	1	7506-06	12.35	—	—
Complete	1	2540-42	334.19	2540-54	327.18
Optional:					
PTFE Tubing, 1/8-inch O.D., 10 feet	1	12687-04	23.00	12687-04	23.00
PTFE Ferrules, Size 3	12	11710-03	24.81	11710-03	24.81
O-Ring, FETFE, for #7-#7 Coupling	12	7855-712	16.10	7855-712	16.10

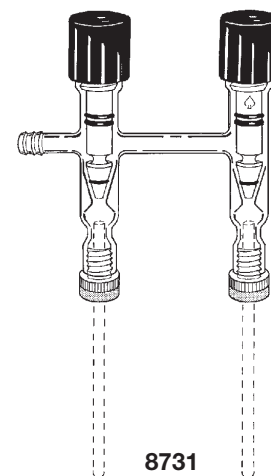
Need Something Special? Choose ACE.

Whether you're simply changing a joint size or designing an entire custom unit, our technical staff is at your service!

Give us a call at 1-800-223-4524.

8731 NMR MANIFOLD TIP-OFF ♠

Use to tip-off NMR tubes. How it works: NMR Tube is inserted in lower Ace-Thred port and tightened via bushing for vacuum-thaw work. Vacuum line is connected to side hose connection. Use with 3/8-inch or 7/16-inch I.D. tubing, size E hose connection. See page 7 for more detailed hose connection information. Tube can then be tipped-off with flame. Aluminum shield bonded to nylon bushing helps retard heat transfer. Each port is individually controlled by smooth-acting, semi-needle, threaded PTFE plug to allow removal of one tube while others are still under vacuum; vacuum of 10⁻⁶ is common. PTFE plug and tip-off port o-rings are FETFE or Viton. Tip-off ports can be supplied for 5mm, 8mm and 10mm NMR tubes. Manifolds can be supplied with single port or multiple ports of the same size or different sizes. Quotations will be supplied for manifolds differing from those listed. **Complete item consists of glass manifold, PTFE plug(s), bushing(s) with fire shield and o-rings.**



No. of Ports	Manifold for Tube Size	Qty.	Order Code	Complete
2	5mm, 5mm	1	8731-34	368.47
2	8mm, 8mm	1	8731-38	358.29
1	10mm	1	8731-44	199.93
4	5mm, 5mm, 8mm, 10mm	1	8731-56	754.49

No. of Ports	Manifold for Tube Size	Glass only		Tip-Off Bushing		Tip-Off Port O-Rings				
		Qty.	Order Code	Each	Qty.	Order Code	Each	Qty.	Order Code	Each
2	5mm, 5mm	1	8731-12	180.33	1	8731-75	42.52			
2	8mm, 8mm	1	8731-15	183.07	1	8731-78	36.06	12	7855-704	14.09
1	10mm	1	8731-19	106.23	1	8731-80	42.15	12	7855-716	20.37
4	(2) 5mm, 8mm, 10mm	1	8731-22	385.04	See Above		See Above			

	Qty.	Order Code	Each
Replacement PTFE Plug, only	1	8194-268	51.55
Replacement Plug o-rings, set	1	8194-86	4.96

ACE GLASS Filter Reactors

- Standard, Pressure and Jacketed Models
- 150mL up to 6 liter capacities
- PTFE bottom adapters and valves
- Easy to collect solids, cells or supernatant
- Can be "completely contained" reactor system
- One-piece or two-piece versions



Contact ACE today to get a copy of our "Reactors" catalog!

Trubore® Precision Glass Tubing – Chosen for uniform quality and closely held tolerances

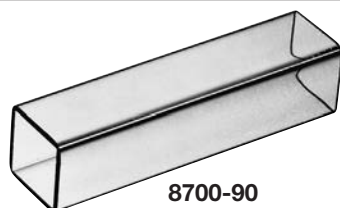
Inside diameter tolerance of ± 0.0004 inches is standard. Trubore®, a trademark of Ace Glass Incorporated, stands for precision bore tubing of the highest quality. The process to precisely control the bore of glass tubing was pioneered and developed by ACE over 60 years ago. Our reputation for the highest quality precision bore tubing is maintained by production techniques, the careful selection of raw materials, and step by step quality control.

8700 TRUBORE® Precision Glass Tubing ♦

Stock sizes, unless otherwise specified, are fabricated on capillary tubing up to 2.946 mm I.D.; standard wall tubing on all other sizes.

TRUBORE® PRECISION GLASS TUBING

Size I.D. (In.)	Approx. I.D., mm	Approx. O.D., mm	Length, cm	Qty.	Order Code	Price Per Pkg	Size I.D. (In.)	Approx. I.D., mm	Approx. O.D., mm	Length, cm	Qty.	Order Code	Price Per Pkg
0.006	0.152	6.5	61	3	8700-101	321.80	0.185	4.699	6.5	61	3	8700-39	190.49
0.007	0.178	6.5	61	3	8700-102	321.80	0.197	5.029	7.0	61	3	8700-40	190.49
0.008	0.203	6.5	61	3	8700-01	321.80	0.227	5.766	8.0	61	3	8700-41	190.49
0.009	0.229	6.5	61	3	8700-103	321.80	0.234	5.944	8.0	61	3	8700-42	190.49
0.010	0.254	6.5	61	3	8700-02	321.80	0.240	6.096	8.5	61	3	8700-43	190.49
0.011	0.279	6.5	61	3	8700-104	282.18	0.250	6.350	8.0	61	3	8700-143	190.49
0.012	0.305	6.5	61	3	8700-03	282.18	0.274	6.960	9.0	61	3	8700-44	190.49
0.013	0.330	6.5	61	3	8700-04	213.94	0.286	7.264	9.0	61	3	8700-45	190.49
0.015	0.381	6.5	61	3	8700-05	213.94	0.313	7.950	10.0	61	3	8700-46	190.49
0.016	0.406	6.5	61	3	8700-06	213.94	0.319	8.103	10.0	61	3	8700-47	190.49
0.018	0.457	6.5	61	3	8700-07	213.94	0.324	8.230	10.5	61	3	8700-48	190.49
0.020	0.508	6.5	61	3	8700-08	213.94	0.350	8.890	11.0	61	3	8700-49	190.49
0.022	0.559	6.5	61	3	8700-09	213.94	0.396	10.058	12.5	61	3	8700-50	190.49
0.024	0.610	6.5	61	3	8700-10	213.94	0.419	10.643	13.0	61	3	8700-51	190.49
0.027	0.686	6.5	61	3	8700-11	213.94	0.441	11.201	13.5	61	3	8700-52	190.49
0.029	0.737	6.5	61	3	8700-12	213.94	0.454	11.532	14.0	61	3	8700-53	190.49
0.030	0.762	6.5	61	3	8700-13	213.94	0.460	11.684	14.0	61	3	8700-54	190.49
0.031	0.787	6.5	61	3	8700-14	213.94	0.479	12.167	15.0	61	3	8700-55	190.49
0.035	0.889	6.5	61	3	8700-15	190.49	0.484	12.294	15.0	61	3	8700-56	190.49
0.039	0.991	6.5	61	3	8700-16	190.49	0.500	12.700	15.0	61	3	8700-156	190.49
0.040	1.016	6.5	61	3	8700-17	190.49	0.515	13.081	15.5	61	3	8700-57	190.49
0.047	1.194	6.5	61	3	8700-18	190.49	0.536	13.614	16.0	61	3	8700-59	190.49
0.050	1.270	7.5	61	3	8700-19	190.49	0.553	14.046	16.5	61	3	8700-60	190.49
0.059	1.499	7.5	61	3	8700-20	190.49	0.585	14.859	17.0	61	3	8700-61	190.49
0.063	1.600	7.0	61	3	8700-21	190.49	0.610	15.484	18.0	61	2	8700-62	120.22
0.066	1.676	7.5	61	3	8700-22	190.49	0.625	15.875	18.0	61	2	8700-63	125.72
0.070	1.778	7.5	61	3	8700-23	190.49	0.724	18.390	21.5	61	2	8700-65	139.40
0.072	1.829	7.5	61	3	8700-123	190.49	0.781	19.837	23.0	61	2	8700-66	139.40
0.076	1.930	7.0	61	3	8700-24	190.49	0.789	20.041	23.0	61	2	8700-67	139.40
0.079	2.006	8.5	61	3	8700-25	190.49	0.829	21.057	24.0	61	2	8700-69	145.19
0.082	2.083	8.5	61	3	8700-124	190.49	0.879	22.225	25.0	61	2	8700-70	151.30
0.085	2.159	9.0	61	3	8700-125	190.49	1.000	25.400	28.0	61	2	8700-170	169.12
0.089	2.261	9.0	61	3	8700-26	190.49	1.010	25.654	29.0	61	2	8700-72	187.48
0.095	2.413	9.0	61	3	8700-27	190.49	1.070	27.178	31.0	61	2	8700-73	187.48
0.096	2.438	9.0	61	3	8700-28	190.49	1.119	28.423	32.0	61	2	8700-74	187.48
0.099	2.515	9.0	61	3	8700-29	190.49	1.184	30.074	34.0	61	2	8700-75	187.48
0.108	2.743	7.5	61	3	8700-30	190.49	1.197	30.404	35.0	61	2	8700-76	187.48
0.116	2.946	7.5	61	3	8700-31	190.49	1.223	31.064	36.0	61	2	8700-77	187.48
0.125	3.175	8.5	61	3	8700-32	190.49	1.295	32.893	37.0	61	2	8700-78	253.81
0.134	3.404	7.5	61	3	8700-33	190.49	1.465	37.211	41.5	61	2	8700-80	253.81
0.143	3.632	7.5	61	3	8700-34	190.49	1.576	40.030	44.0	61	1	8700-81	187.48
0.153	3.886	8.0	61	3	8700-35	190.49	1.643	41.732	46.0	61	1	8700-82	218.10
0.164	4.166	6.5	61	3	8700-36	190.49	1.892	48.057	53.0	61	1	8700-83	242.38
0.168	4.267	6.0	61	3	8700-37	190.49	1.971	50.063	55.0	61	1	8700-84	242.38
0.177	4.496	6.5	61	3	8700-38	190.49							



8700 TRUBORE® Square Precision ♦

Inside Dimensions, in	Inside Dim., mm	Outside Dim., mm	Length, mm	Qty.	Order Code	Price Per Pkg.
0.236	6	8	125	4	8700-90	151.30
0.393	10	14	225	4	8700-91	202.49
0.512	13	16	250	3	8700-92	139.60
0.748	19	24	250	2	8700-94	151.59
1.000	25.4	30	250	2	8700-96	172.13
2.000	50.8	57	200	1	8700-97	309.19

8801 STANDARD WALL TUBING *Borosilicate Glass* ★

Duran

In lengths of 1.5 meters.

O.D., mm	Wall, mm	Lengths Per Case	Avg. Lbs. Per Case	Order Code	Per Case
11	1.0	86	19.8	8801-21	238.44
14	1.0	110	33.1	8801-27	401.42
17	1.2	76	33.1	8801-33	400.05
24	1.2	38	24.3	8801-41	321.23
26	1.4	33	26.5	8801-44	311.60
34	1.4	25	26.7	8801-49	345.13
36	1.4	25	27.8	8801-53	359.05
40	1.6	16	22.5	8801-57	291.22
42	1.6	16	24.0	8801-61	309.71
44	1.6	16	25.1	8801-67	324.69
46	1.6	16	26.2	8801-71	337.68
48	1.6	16	27.3	8801-75	351.81
50	1.8	9	18.1	8801-79	268.38
52	1.8	9	18.7	8801-83	277.37
54	1.8	9	19.6	8801-87	290.21
56	1.8	9	20.3	8801-91	300.96
58	1.8	9	21.2	8801-95	314.08
65	2.2	8	25.8	8801-111	384.15
85	2.5	4	19.2	8801-129	285.05
100	3.5	3	23.6	8801-137	371.53
105	3.0	3	21.2	8801-143	334.94
115	3.0	4	31.1	8801-155	489.97
125	5.0	2	27.8	8801-167	437.30

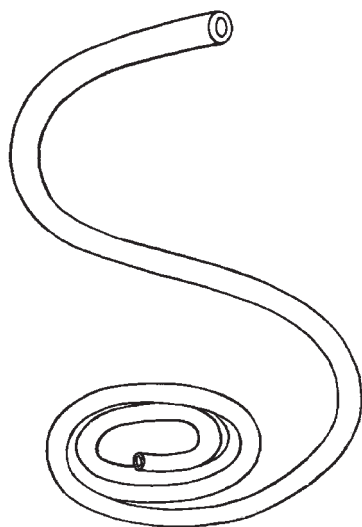
O.D., mm	Wall, mm	Lengths Per Case	Avg. Lbs. Per Case	Order Code	Per Case
130	3.0	4	35.3	8801-171	558.21
135	5.0	2	30.2	8801-181	477.04
140	3.0	4	38.1	8801-193	600.60
145	5.0	2	32.4	8801-209	511.91
150	3.0	2	20.6	8801-219	368.43
155	5.0	2	34.8	8801-223	624.44
160	5.0	2	35.9	8801-231	643.00
165	5.0	2	37.0	8801-239	663.68
170	5.0	2	38.1	8801-245	681.60
180	5.0	1	20.3	8801-251	363.40
190	5.0	1	21.4	8801-261	384.07
200	5.0	1	22.5	8801-269	516.60
215	7.0	1	33.7	8801-277	776.63
225	7.0	1	35.3	8801-281	813.90
240	9.0	1	48.1	8801-297	1108.16
250	5.0	1	28.4	8801-303	852.47
270	5.0	1	30.7	8801-321	921.86
300	5.0	1	34.2	8801-343	1026.43
300	7.0	1	47.5	8801-345	1427.15
300	9.0	1	60.6	8801-347	1820.55
315	7.0	1	49.9	8801-355	1500.80
315	9.0	1	63.8	8801-357	1913.73

8697 TUBING *Selected, Quartz* ★

Available in four-foot lengths, maximum.

I.D. mm	Tolerance, mm	Wall, mm	Lengths Per Case	Order Code	Per 4' Lgth.
2	±0.5	1.0	1	8697-02	15.78
3	±0.5	1.0	1	8697-04	17.37
5	±0.5	1.0	1	8697-06	26.56
6	±0.5	1.0	1	8697-08	27.87
8	±0.5	1.0	1	8697-10	27.87
9	±0.5	1.0	1	8697-12	41.49
13	±0.8	1.0	1	8697-14	48.50

Contact Ace to get a copy of our reusable glassware & tubing catalog!



12679

12679 VINYL PLASTIC TUBING ★

Non-toxic, food grade, polyvinyl chloride tubing. Easily cleaned and resistant to fruit acids, lye, alcohol, greases and oils. Usable from -37°C to 100°C (-35°F to 212°F) at low pressure. Does not contain any loading ingredient such as clays, whittings and carbon black. All sizes packed 15 meters (50 feet) per box, except codes 04,10,12, 22, 24, 32, 34, 42, 44, and 80.

I.D., mm (In.)	Wall Thickness, mm (In.)	O.D., mm (In.)	Box Qty. (Feet)	Order Code	Per Box
3.2 (1/8)	1.6 (1/16)	6.4	50	12679-06	13.05
4.8 (3/16)	2.4 (3/32)	9.5	100	12679-10	41.78
4.8 (3/16)	3.2	11.1	100	12679-12	64.70
6.4 (1/4)	1.6 (1/16)	9.5	50	12679-14	34.27
6.4 (1/4)	2.4 (3/32)	11.1	50	12679-16	35.36
6.4 (1/4)	3.2	12.7	50	12679-18	37.51
7.9 (5/16)	1.6 (1/16)	11.1	50	12679-20	53.56
9.5 (3/8)	1.6 (1/16)	12.7	50	12679-26	26.80
9.5 (3/8)	2.4 (3/32)	14.3	50	12679-28	38.56
9.5 (3/8)	3.2	15.9	50	12679-30	54.10
19.1 (3/4)	3.2	25.4	50	12679-70	92.17
25.4 (1)	3.2	31.8 (1-1/4)	50	12679-78	119.51



12690

12690 TUBING *Vacuum, Heavy Wall* ★

Hand made, red rubber tubing for high vacuum applications. Heavy wall and low vapor pressure. 50 feet per case.

I.D., in. (mm)	Wall, in.	Length Per Case	Order Code	Per Foot	Per Case
1/4 (6.4)	3/16	50 feet	12690-05	11.57	520.86
3/8 (10)	3/8	50 feet	12690-10	21.35	960.81
1/2 (12.5)	3/8	50 feet	12690-12	23.97	1078.56
3/4 (19)	3/8	50 feet	12690-20	30.71	1382.17
1 (25)	3/8	50 feet	12690-25	34.93	1571.93



12681

12681 TUBING *Polypropylene* ★

Polypropylene tubing used to make connection between pressure source and 12517 quick disconnect on side of pressure manifold and between other side of manifold the pressure reactor.

Size (Inches)	Quantity	Order Code	Each
1/4 O.D. x 0.170 I.D.	100-foot box	12681-10	46.57
1/4 O.D. x 0.170 I.D.	10-foot length	12681-110	13.60
3/8 O.D. x 75mm length	Pkg. of 12 lengths	12681-812	29.20

Ace Glass offers a variety of Ultrasonic Processing products and systems that cover a wide range of applications, including: life sciences, nanotechnology, emulsions, soil testing, environmental sample processing, cell culture, cell disruption, sonochemistry, and drug development. They can also be used for general super-mixing applications in liquid processing where a very small sample is needed, or where the sample is hard to mix or insert into a solution or dispersion. Ace takes the application one step further, as we add our glass expertise and our Ace-Threds to make glass vessels to match the horn selection. Add a power supply for a complete system, or a reactor for sample ultra-mixing and liquid processing.

About Ultrasonics

The Ultrasonic power supply converts 50/60Hz voltage to high frequency electrical energy. This alternating current voltage is applied to disc-shaped, ceramic, piezoelectric crystals within

the converter head, causing them to expand and contract with each change of polarity. These longitudinal vibrations are amplified by the horn and transmitted into the liquid mixture as alternating high and low pressure ultrasonic waves. The pressure fluctuations pull the liquid molecules apart, creating millions of micro-bubbles (cavities), which expand during the low pressure phases and implode violently during the high pressure phases. As the bubbles collapse, millions of shock waves, micro-streams, eddies, and extremes in pressure and temperature are generated at the implosion sites. This phenomenon, known as cavitation, lasts but a few microseconds, and while the amount of energy released by each bubble is minimal, the cumulative amount of energy generated is extremely high. This process is self-stimulating because the imploding bubbles create new sites for bubbles to form. The high shear energy delivered is maximized near the tip of the horn, and also decreases the farther the tip is from the solution. The Vibra-Cell power supplies carry a three-year warranty and are CE approved.

Helpful Hints for Ultrasonics

- As tip size decreases, intensity increases, at a given power setting.
- Almost all activity takes place immediately below the tip.
- Tips **MUST** be kept submerged during operation.
- Horns (probes) or extenders **MUST** be held **ONLY** at the node (nodal point).
- Tips 1/4 inch and smaller **CANNOT** be operated at full power output. Follow directions provided with power supply.
- Side of horn, extender or tip of probe should **NEVER** touch vessel walls.
- Most reactions work better when solution is kept cool.
- In many reactions the probe itself may provide enough turbulence and additional stirring usually is not necessary unless very viscous materials or heavy metal catalysts are used.
- For large-volume reactions, consider multi-neck vessels since mechanical stirring might be necessary.
- Removable tips have been sometimes problematic as liquid may seep into gaps between probe and tip. Many scientists have no problem with this and find the economy of the removable tip important. However, it is important to remove, clean and polish the tip regularly to avoid cross-contamination and excessive wear.



9810 POWER SUPPLY *Ultrasonics Vibra-Cell*

Ultrasonic power supply, 750W, for superior mixing with automatic amplitude and frequency control circuitry that eliminates the need for constant adjustments, assuring optimum cavitation at any power level. New space-saving design with auto tuning that matches the power supply to the converter/probe assembly and does not have to be manually tuned each time the probe is changed or the unit is turned on, exclusive energy (Joule) setpoint circuit, nonvolatile memory function for storing up to ten preset operating programs, tactile keypad with user friendly menu-driven LCD display, elapsed time/run time timer, and power (watts) readout, integral temperature controller. Three-year unconditional warranty on power supply and converter. Supplied with detailed operating instructions. NOT supplied with horn or glass reactors (order separately).

CE approved.

9810-24



	Qty.	Order Code	Each
750 Watt Power Supply and Converter	1	9810-24	5494.74

750W Model for smaller volumes and continuous flow volumes up to five gallons/19 liters per hour. Also features ON/OFF 1 to 59 seconds pulser, a one-second to 10-hour timer, and integral temperature controller to prevent overheating of sample. Power input is 117v, 5.5amps, 50/60Hz. Not supplied with temperature probe. Weighs 15 lbs. (6.8 k.g.) and measures 7-1/2 x 13-1/2 x 8-1/2 inches (19 x 34 x 26.6cm).

9811 ULTRASONIC PROCESSOR *Ultrasonics, For Low-Volume Applications*

- Exclusive wattmeter and energy (Joules) Monitor
- Process samples from 150 microliter to 150 ml
- Ideal for cell disruption, sample preparation, or homogenization
- Automatic tuning circuitry eliminates the need for constant adjustments



9811

This ultrasonic power supply is microprocessor controlled, and features automatic tuning to eliminate the need for constant adjustment; a digital wattmeter that displays the amount of power delivered to the probe; an elapsed-time indicator that displays the duration the ultrasonics has been on; and an energy monitor that displays the amount of Joules transmitted to the probe. The variable power output control allows the ultrasonic vibrations at the probe tip to be set to any desired amplitude. All units include a tool kit, converter, footswitch connector, and 6-ft cord with grounded plug.

CE approved.

Features a timer that controls the processing time from one second to 10 hours and a pulser to enable safe treatment of temperature sensitive samples at high intensity. Both ON and OFF cycles are independently controlled from one second to 59 seconds. Includes a 6 mm (1/4-inch) titanium probe.

Qty.	Order Code	Each
1	9811-05	3332.15

9814 HORN *Ultrasonics*



9814

Basic ultrasonic horns (probes) that focus the ultrasonic energy into the liquid. For use with 9810 power supplies. Fabricated from high grade titanium, these horns are autoclavable and have an o-ring groove at nodal point that allows a tight fit in #36 Ace-Thred without affecting sonic output. Available with solid end (fixed length) or threaded end to accept replaceable tips, microtips or extenders. Supplied with 1/2-inch-20 stud for connection to converter on power supply.

Tip Diameter (Inches)	End Type	Length Below Groove* (In.)	Intensity	Volume (Batch)	Amplitude (micro meter**)	Qty.	Order Code	Each
1/2	Solid	2-1/2	High	10-250mL	120	1	9814-06	696.41
1/2	Threaded	2-1/2	High	10-250mL	120	1	9814-25	696.41
3/4	Solid	2-3/8	Medium	25-500mL	60	1	9814-08	696.41
3/4	Threaded	2-3/8	Medium	25-500mL	60	1	9814-27	696.41
1	Solid	2	Low	50-1000mL	30	1	9814-11	696.41
1	Threaded	2	Low	50-1000mL	30	1	9814-30	696.41

*Length below groove for threaded horn is with removable tip.

**With output control set at 10.

9816 EXTENDER *Ultrasonics*



9816

Titanium extender screws into threaded end of ultrasonic horn. This accessory lengthens the horn (probe) by 5 inches or 10 inches for more versatility. Extenders have solid ends. 1/2-inch extender has single groove on 5-inch size and two grooves on 10-inch size for use with #15 Ace-Thred. 3/4-inch and 1-inch extenders do NOT have grooves. Order extender diameter to match horn diameter.

Extender Diameter (In.)	Length (In.)	Qty.	Order Code	Each
1/2	5	1	9816-06	381.77
1/2	10	1	9816-21	471.89
3/4	5	1	9816-08	394.75
1	5	1	9816-10	407.25
1	10	1	9816-27	484.80

Amplitude and other specs match 9814 items.

9818 MICROTIP *Ultrasonics*

1/4-inch stepped microtip fabricated from titanium for processing samples as small as 3mL. This solid end microtip threads ONLY into 1/2-inch threaded horn. Overall length, approximately 4-1/4-inch or 9-3/4-inch. 9818-23 microtip has groove 2-1/2-inch from bottom that accommodates a #7 Ace-Thred.

IMPORTANT: When using microtips, do not exceed "Microtip Limit" on power supply.

Length (In.)	Intensity	Volume (Batch)	Amplitude*	Qty.	Order Code	Each
4-1/4	High	3-10mL	120	1	9818-17	350.57
9-3/4	High	2-10mL	120	1	9818-23	1145.39

*In micro meters with output control on power supply set at five.



9820 TIP *Replaceable, Titanium, Ultrasonics*

Tips showing signs of wear should be polished with fine emery cloth. This procedure can be repeated until difficulties are encountered when tuning the power supply, then tips should be replaced. For use with threaded horns only. Supplied in box of five tips.

For Horn Size (In.)	Qty.	Order Code	Per Box
1/2	5	9820-12	326.04
3/4	5	9820-14	326.76
1	5	9820-18	326.76



9820
Do not use probes with replaceable tips when processing samples containing solvents or low surface tension liquids.

9822 BOOSTER *Ultrasonics*

When connected between the converter and 9814 horn, the booster increases the amplitude of vibration at the horn tip by a factor of two. Use to process very difficult applications. Not for use with 9818 microtip.

Qty.	Order Code	Each
1	9822-20	572.70



9822

9825 CLAMP *Heavy Duty*

For supporting 2-1/2-inch diameter converter securely in place. Fabricated from 3/4-inch thick aluminum, anodized black, this clamp fits 1/2-inch or 5/8-inch diameter rod and is secured by an Allen head screw to (750W) converter.

Qty.	Order Code	Each
1	9825-21	339.56



9825

Applications for Ultrasonic Processing:

- Cell Culture
- Soil Sample Prep
- Nanotechnology
- Drug Development
- Agriculture
- Sonochemistry
- Super Mixing
- Colloids, Dispersions
- Emulsions
- Homogenization
- Tissue or Cell Disruption
- Photochemistry

9830 REACTION ASSEMBLY *Ultrasonics, Small Volume, Complete* ★

Complete reaction assembly with parts necessary to perform mixing and reactions from 3mL to 200mL. Includes three borosilicate glass vessels, power supply with converter, 1/2-inch horn, 1/2-inch extender, 1/4-inch microtip, slide adapter and clamp. For details of each item, see individual listings.

CE approved.



9830

Includes:

9810-24	9816-06	9825-21	9833-05	9844-07
9814-25	9818-17	9852-21	9843-04	(4) 7506-10

Qty.	Order Code	Each
1	9830-25	7975.03

9831 REACTION ASSEMBLY *Ultrasonics, Large Volume, Complete* ★

Complete reaction assembly with parts necessary to perform ultrasonic reactions and mixing from 250mL to 1800mL. Includes three borosilicate reactors, power supply with converter, 3/4-inch horn, 3/4-inch extender, slide adapter and clamp. For details of each item, see individual listings.

CE approved.



9831

Includes:

9810-24	9816-08	9833-12	9837-20
9814-27	9825-21	9833-16	(3) 7506-12

Qty.	Order Code	Each
1	9831-40	7750.76

9833 REACTION VESSEL *Ultrasonics, Tapered, 4-Neck* ♦

Fabricated from borosilicate glass with walls tapered inward toward bottom to allow operation with smaller volumes. 250mL size supplied with #25 Ace-Thred center neck and three 14/20 side necks. All other capacities supplied with #36 Ace-Thred center neck and three 24/40 side necks. Use 7506-10 bushing and o-ring in #25 Ace-Thred, 7506-12 bushing and o-ring in #36 Ace-Thred to form a leak-tight compression seal with all 9814 Horns with groove and 9852-41 or 9852-45 slide adapter. Stated capacity is WITHOUT horn. See horn selection chart, below, for proper horn size. Vessel NOT supplied with bushing or o-ring, order separately.

Cap., mL	Qty.	Order Code	Each		Qty.	Order Code	Each
250	1	9833-05	203.45	#25 Nylon Bushing			
500	1	9833-12	225.47	w/FETFE o-ring, only	1	7506-10	21.17
1000	1	9833-16	246.49	#36 Nylon Bushing			
2000	1	9833-21	274.02	w/FETFE o-ring, only	1	7506-12	50.46

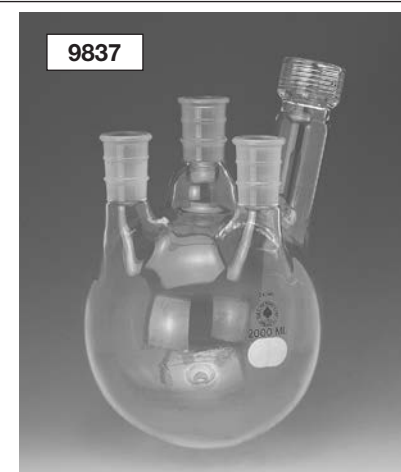


9833

9837 REACTION VESSEL *Ultrasonics, Round Bottom, 4-Neck* ♦

Borosilicate glass, round-bottom vessel. Supplied with 24/40 center neck and two 24/40 side necks. Fourth neck is #25 Ace-Thred on 500mL for use with 7506-10 bushing and o-ring; #36 Ace-Thred on 1000mL and 2000mL sizes for use with 7506-12 bushing and o-ring to make a leak-tight compression seal with all 9814 horns and 9852-41 or 9852-45 slide adapter. Center neck can be used for mechanical stirring if needed. Stated capacity is WITHOUT horn. See horn selection chart, below, for proper horn size. Vessel NOT supplied with bushing or o-ring, order separately.

Cap., mL	Qty.	Order Code	Each		Qty.	Order Code	Each
500	1	9837-09	204.25	#25 Nylon Bushing			
1000	1	9837-14	232.55	w/FETFE o-ring, only	1	7506-10	21.17
2000	1	9837-20	293.66	#36 Nylon Bushing			
				w/FETFE o-ring, only	1	7506-12	50.46



9837

A— Horn is ADJUSTABLE, must be used with slide adapter

F— Horn used at FIXED length only

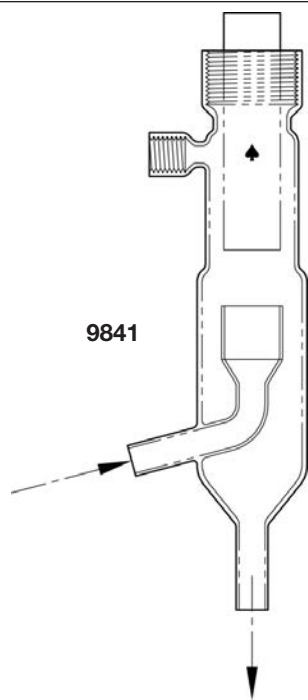
Table #1 for Ultrasonic section HORNS & EXTENDERS – VESSEL SIZE

Horn OD (inches) / ACE Code	Vessel Family: Vessel Order Code / Size (mL): Extender size (inches / ACE code)	9833 Series				9837 Series		
		-05/ 250	-12/ 500	-16/ 1000	-21/ 2000	-09/ 500	-14/ 1000	-20/ 2000
		1/2-in/9814-25	1/4-in x 4-1/4-in/9818-17	A	F	F	F	A
1/2-in/9814-25	1/2-in x 5-in/9816-06	A	F	F	F	A	F	F
1/2-in/9814-25	1/4-in x 9-3/4-in/9818-23	N/A	A	A	A	N/A	A	A
1/2-in/9814-25	1/2-in x 10-in/9816-21	N/A	A	A	A	N/A	A	A
3/4-in/9814-27	3/4-in x 5-in/9816-08	N/A	F	F	F	N/A	F	F
1-in/9814-30	1-in x 5-in/9816-10	N/A	F	F	F	N/A	F	F

F — Horn is used as is “fixed” length only

A — Horn is adjustable and must be used w/9852 slide adapter

NA — Either don't need or doesn't fit vessel



9841 FLO-THRU REACTOR *Ultrasonics* ♠

Continuous-flow borosilicate glass vessel provides uniform treatment by forcing reactant to pass in front of horn tip. The degree of processing is controlled by varying the power level and flow rate, max. 1.5L/Min. Reactants are pumped through side port, overflowing inner cup and out through bottom port. Treated material drains completely (no hang-up). Use of 9852-41 slide adapter in #25 Ace-Thred at top allows probe position to be varied within the inlet cup area, thereby maximizing use of ultrasonic energy.

Must be used with 1/2-inch O.D. (9814-25) horn and either 1/2-inch-5 extender (9816-06) or 1/4-inch-5 (9818-17) microtip. Inlet and outlet tubes are 1/2-inch O.D. (13mm). #7 Ace-Thred located below top thread is for bleed or vacuum connection. For latter use, bushing with hole needs to be ordered for tubulature connection. Operated in vertical position only.

Complete item consists of reactor, #7 PTFE plug and #25 nylon bushing. Slide adapter and horn must be ordered separately.

	Qty.	Order Code	Each
Reactor Body, only	1	9841-18	245.09
#7 PTFE Plug, only	1	5803-05	53.54
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9841-30	319.80



9843 REACTION VESSEL *Ultrasonics, Small Volume, 3-10mL* ♠

Tapered walls and proper size horn allow volumes as little as 3mL to be mixed. Fabricated of borosilicate glass with #25 Ace-Thred center neck and two #14/20 side necks. With 7506-10 bushing, center neck will accept 9852-41 slide adapter with 9814 horn and extender (see chart below). Vessel measures 123mm (4-7/8 inches) high. Not supplied with bushing.

	Qty.	Order Code	Each
Reactor Body, only	1	9843-04	188.18
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9843-25	209.35

Horn Selection 9843

Horn OD (inches)	Ace Code	Extender Size (inches)	Ace Code	Connection Type	Min. Vessel Volume
1/2-IN	9814-25	1/4-in X 4-1/4-in	9818-17	ADJUSTABLE	3mL
1/2-IN	9814-25	1/2-in X 5-in	9816-06	ADJUSTABLE	6-10mL



9844 REACTION VESSEL *Ultrasonics, Small Volume, 10-50mL* ♠

For small-scale reactions and mixing, 10mL in bottom well and up to 50mL in main body. With #25 Ace-Thred center neck and two #14/20 side necks. With 7506-10 Bushing, center neck will accept 9852-41 Slide Adapter with 9814 Horn and Extender (see chart below). Vessel measures 120mm (4-3/4-inch) high (including thread). Not supplied with bushing.

	Qty.	Order Code	Each
Reactor Body, only	1	9844-07	213.89
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9844-19	235.06

Horn Selection 9844

Horn OD (inches)	Ace Code	Extender Size (inches)	Ace Code	Connection Type
1/2-IN	9814-25	1/4-in X 4-1/4-in	9818-17	ADJUSTABLE
1/2-IN	9814-25	1/2-in X 5-in	9816-06	ADJUSTABLE

9848 REACTION VESSEL *Jacketed, Ultrasonics* ★

Similar to 9833-05 vessel except jacketed to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and three $\frac{1}{4}$ " 14/20 side necks. Use 7506-10 bushing with o-ring in center neck to secure 9852-41 slide adapter for connecting converter. Capacity 250mL. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Vessel, only	1	9848-07	496.65
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9848-35	517.82


9848
9850 REACTION VESSEL *Jacketed, Ultrasonics* ★

Similar to 9844-07 vessel except jacketed to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and two $\frac{1}{4}$ " 14/20 side necks. Use 7506-10 bushing with o-ring in center neck to secure 9852-41 slide adapter for connecting converter. Capacity 10–50mL. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Vessel, only	1	9850-12	490.37
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9850-30	511.54


9850
9851 REACTION VESSEL *Jacketed, Ultrasonics* ★

Similar to 9843-04 vessel except jacketed to provide active cooling from tap water or mechanical cooler. Jacket is cylindrical with flat bottom for greater stability. With #25 Ace-Thred center neck and two $\frac{1}{4}$ " 14/20 side necks. Use 7506-10 bushing with o-ring in center neck to secure 9852-41 slide adapter for connecting converter. Capacity 3-10mL. Use with 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information.

	Qty.	Order Code	Each
Vessel, only	1	9851-05	444.98
#25 Nylon Bushing w/FETFE o-ring	1	7506-10	21.17
Complete	1	9851-27	466.15


9851
9852 ADAPTER *Slide, Ultrasonics* ♦

For use with 1/2-inch ultrasonic horn, 9814-25, and 1/4-inch or 1/2-inch extenders, only. Both slide adapters have a #36 Ace-Thred at top with a 6-inch extension, either 25mm O.D. for insertion into a #25 Ace-Thred, or 35mm O.D. for use in a #36 Ace-Thred. Secure 1/2-inch horn in adapter with 7506 bushing and o-ring, then slide adapter extension into thread on reaction vessel, again securing with 7506 bushing. Now you have a variable depth adjustment of horn to achieve greater efficiency. Complete item consists of adapter, one nylon bushing with one FETFE o-ring.

Ace-Thred Size	Extender O.D., mm	Qty.	<i>Glass Adapter</i>		<i>Bushing w/O-Ring</i>		<i>Complete</i>	
			Order Code	Each	Order Code	Each	Order Code	Each
36	25	1	9852-21	71.60	7506-12	50.46	9852-41	122.06
36	35	1	9852-25	71.60			9852-45	122.06


9852

9860 ULTRASONIC SOUND ABATEMENT CABINET ★

Although ultrasonic vibrations are above the human audible range, in ultrasonic processing, high-pitched noise is produced from harmonics emanating from the vessel walls and the fluid surface. The sound abatement cabinet permits extended processing without discomfort by greatly reducing that noise.

Cabinet is fabricated from steel, painted chemically resistant blue, with clear plastic door. Inside of cabinet is lined with sound-abating foam.

One hole supplied at top for lead from power supply, two holes at bottom for water inlet/outlet, etc. All holes are covered with slit rubber. 1/2-inch vertical mounting rod located toward rear to left is for mounting sonochemical reactor.

Supplied with side handles for carrying and locking casters on bottom. Measures 46-1/2 inches high x 24 inches wide x 19 inches deep.



9860

Qty.	Order Code	Each
1	9860-24	1628.16

ACCESSORIES

For Additional Items:

Pump see 13268	Clamps see 11065, 11082, 11084	Support Stand see 13586	Glass Adapters see 5028, 5030, 5261
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12450




12450 POLYSCIENCE BENCHTOP MINI-CHILLER

High Performance at a Reasonable Price ★

Benchtop mini-chiller by PolyScience. Compact size for bench applications such as photochemistry, chromatography, ultrasonics or jacketed bench reactors. Features include:

- 130 watts of cooling @ 5°C
- Top-mounted fill port with spill protection cup
- Lighted fluid level indicator on front panel
- Easy access front panel and air filter
- Low flow rate and energy consumption
- High and low liquid level alarms
- Low flow alarm
- Temperature range -5 to 50° C at 0.1° stability
- Maximum pump flow 7.9LPM
- Pump type: centrifugal
- Reservoir capacity 2.65L
- 120V, 60Hz, 130W, 12 amp
- Also available in 240V, 50hz, CE-approved version

Qty.	Order Code	Each
1	12450-07	2559.55

14063 PRECISION VACUUM REGULATOR *J-Kem Model DVR-1000*

Perfect for vacuum distillation, unit automatically compensates for leaks in the equipment under test and maintains precise pressure, even in systems with a continuous gas purge. This computer (built-in) controlled vacuum regulator maintains pressure in the range of 0.1 to 760 Torr (atm pressure) in test instruments with volumes as small as 1 mL. Standard features include 16-step programmable pressure ramp and serial communications for PC control and data logging. **Specifications:** Transducer — diaphragm is stainless steel, accuracy to 0.1%, proof pressure 200%. Controller — regulation 0.015% of range; Resolution 0.1 Torr of 0.01 psi; Vapor path materials are stainless steel and PTFE; Ramp Rates are 100 Torr/sec to 0.1 Torr/hr.; Serial communications, RS232 (RS485 or USB upon request).



14063

Qty.	Order Code	Each
1	14063-10	2890.60

14066 PROPORTIONING VALVES *J-Kem, Stainless Steel*

Select one for use with digital vacuum regulator 14063-10, above.

J-Kem Model	For Reactor Volumes	Cv	Orifice Size	Qty.	Order Code	Each
PSV-2	1 mL to 2 L	0.033	0.040 in.	1	14066-01	510.53
PSV-3	25 mL to 4 L	0.055	0.055 in.	1	14066-02	510.53
PSV-4	100 mL to 22 L	0.068	0.063 in.	1	14066-03	510.53
PSV-5	1 L to 50 L	0.12	0.093 in.	1	14066-04	510.53
PSV-6	Large Capacity	0.37	0.147 in.	1	14066-05	1154.74
PSV-7	Large Capacity	0.7	0.234 in.	1	14066-06	1154.74
PSV-8	Large Capacity	1.3	0.316 in.	1	14066-07	1154.74
PSV-9	Large Capacity	2.0	0.375 in.	1	14066-08	1154.74
DVR-PNV	Stainless Steel Needle Valve, improves regulation			1	14066-20	145.47



14066

14061 VACUUM REGULATOR *J-Kem, No Mercury*

Connect to any vacuum pump or vacuum source, and then to any piece of equipment, to regulate pressure, in most cases to ± 1 Torr. A standard pressure ramp feature evacuates equipment at a user-defined rate to eliminate bumping due to solvent degassing or over-evacuation. Ideally suited for large volume distillations, rotary evaporators and vacuum chambers. Not recommended for small volume distillations or applications which involve a continuous purge with gas. Designed for vacuum systems that run continuously, such as oil-filled vacuum pumps, aspirators, or with systems that are "always on," like in-house vacuum systems. The unit regulates pressure by opening and closing a valve that separates the vacuum source from the system being evacuated.



14061

J-Kem Model	VAC	Qty.	Order Code	Each
DVR-200	120	1	14061-08	1188.25
DVR-300	230	1	14061-20	1197.95

14062 VACUUM REGULATOR *J-Kem, No Mercury*

Designed for use with diaphragm vacuum pumps. In some systems, pressure is regulated by turning the vacuum pump itself on and off. This unit extends the life of diaphragm pumps by never forcing the pump to start against an established vacuum, which can increase pump life by 100%. Not pictured.

J-Kem Model	VAC	Qty.	Order Code	Each
DVR-280	120	1	14062-10	1256.15
DVR-380	230	1	14062-20	1256.15

Recovers >99% of solvent from rotary evaporators

Solvent	DVR Pressure (mm Hg)	Solvent Volume	Time To Dryness	Percent Recovery
Ether	475 Torr	340 mL	14.6 min.	99.6%
CH ₂ Cl ₂	300 Torr	360 mL	21.9 min.	99.8%
CH ₂ Cl ₂	100 Torr	255 mL	5.9 min.	99.5%
EtOAc	90 Torr	316 mL	17.0 min.	99.9%
Toluene	50 Torr	273 mL	15.7 Min.	99.4%

14065 DIGITAL VACUUM MONITOR *J-Kem*

Continuous, no regulation.

J-Kem Model	VAC	Qty.	Order Code	Each
DVM-100	120	1	14065-05	892.40
DVW-140	230	1	14065-20	911.80

VACUUM APPARATUS

8725 VACUUM GAUGE *McLeod, Auto-Zero* ♦

A tilting gauge with a constant zero overflow which eliminates the capillary-depression error from an expanding meniscus. Once the zero line of the scale is aligned with the tip of the closed capillary, it is only necessary to bring the gauge to an upright position and read the scale behind the closed leg. Mercury overflows to maintain a constant head.

Bulbs are enlarged for easier pumping — longer mercury flow.

The mercury trap is incorporated into the female joint instead of the gauge, which allows unobstructed access in cleaning.

Gauges are fabricated from calibrated ACE Trubore® glass tubing, to assure uniform and reproducible reading between the gauges. This feature is also important when broken scales must be replaced, since it enables us to supply new scales without recalibrating the instrument. The McLeod gauge is useful for measuring pressures of true gases only. Water vapors and other condensable vapors should not be permitted to enter the gauge, since they can cause erroneous readings. Metal locking device has positive holding action — eliminates need for glass hooks and springs. Gauge will hold at any operating position to which it is rotated. Tapped hole is provided in the rear of the stand to accommodate the 6-inch threaded mounting rod for frame mounting, optional. Joint is \$20/65. *Requires approximately 20mL of mercury, which is **NOT** supplied.*



8725

Complete

Type	Pressure Range mm, Hg.	Lowest Reading mm, Hg.	Qty.	Order Code	Complete
A	0– 1.0	0.001	1	8725-47	590.39
B	0– 5.0	0.005	1	8725-49	590.39
C	0–10.0	0.010	1	8725-51	572.98

Glass Body only
Stand with Joint, only
Joint For Stand, only
Scale only

Type	Qty.	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
A	1	8725-07	488.29	8726-22	102.10	8726-24	72.72	8726-30	15.77
B	1	8725-09	488.29	8726-22	102.10	8726-24	72.72	8726-32	15.77
C	1	8725-11	470.88	8726-22	102.10	8726-24	72.72	8726-34	15.77

Qty.

Order Code

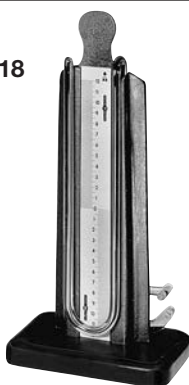
Each

6-inch Mounting Rod, only	1	8726-803	20.19
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8718 VACUUM GAUGE *Mercury Manometer* ★

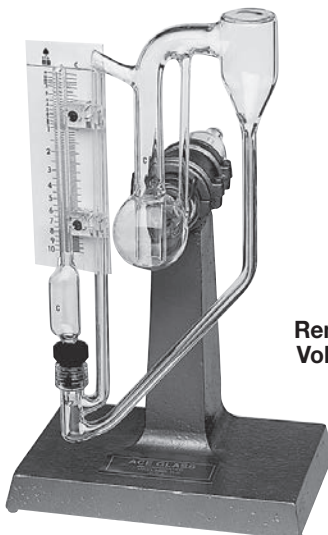
Mounted on a metal stand with adjustable porcelain scale. Graduated 1mm from central zero point. Side arm is provided with 1/2 12/30 joint to simplify filling procedure and also for ease in dismantling for cleaning purposes. Mercury **NOT** supplied.

8718



	Qty.	Order Code	Each
Stand	1	8718-04	206.95
Stopcock Adapter	1	8718-06	147.45
U-Tube	1	8718-08	164.55
Complete	1	8718-10	518.95

8728

Removable
Volumetric
Leg
8728 VACUUM GAUGE *McLeod, with Interchangeable Measuring Tube* ♠

Eliminates capillary depression error common to other designs. Easily cleaned. Accuracy $\pm 3\%$. A tilting McLeod gauge which maintains a constant overflow head of mercury and maintains capillary depression of the meniscus. Readings do not "bounce." The measuring tube is a completely removable and interchangeable unit, permitting accurate determination of V1 values; the capillary stem is Trubore glass. Minute adjustment of zero line scale position is also possible for increased accuracy. Scales are replaceable without recalibration. The measuring tube bulb is flattened on one side to increase drainage speed without causing hold-up; the lower stem is securely fastened with compressed FETFE o-ring and threaded coupling. The mercury reservoir system has been redesigned for easier pumping and increased mercury storage, if desired, to prolong overflow time. Inlet trap allows mercury to be dumped out when changing is necessary. For mounting rod, see 8726-803. *Requires approximately 20mL of mercury, which is **NOT** supplied.*

Complete

Type	Pressure Range mm, Hg.	Lowest Reading mm, Hg.	Qty.	Order Code	Complete
B	0- 5.0	0.005	1	8728-05	698.63
C	0-10.0	0.010	1	8728-07	698.63
D	0-15.0	0.050	1	8728-09	698.63

Type	Qty.	<i>Glass Body, only</i>		<i>Stand w/Joint, only</i>		<i>Joint For Stand, only</i>		<i>Scale, only</i>		<i>Volumetric Legs</i>	
		Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
B	1	8728-13	596.53	8726-22	102.10	8726-24	72.72	8726-32	15.77	8728-41	140.40
C	1	8728-15	596.53	8726-22	102.10	8726-24	72.72	8726-34	15.77	8728-43	140.40
D	1	8728-17	596.53	8726-22	102.10	8726-24	72.72	8726-36	15.77	8728-45	140.40

Ace Products for Nanotechnology Applications:

- ▶ **Pages 617-624** Ultrasonic Products
- ▶ **Pages 401-424** Photochemistry/Photobiology
- ▶ **Pages 283-295** Fritted Ware
- ▶ **Pages 555-556** Homogenizers
- ▶ **Pages 534-557** Stirring/Mixing
- ▶ **Pages 639-665** Vacuum Products
- ▶ **Pages 449-451** Filter Reactors

**Also contact Ace to get a copy
of our reactors catalog!**

8729 MANIFOLD *Double Tube, with Threaded Stopcocks* ♦

Greaseless vacuum/gas manifold with 0-4mm high vacuum, Easy-Action PTFE, three-way stopcocks for takeoffs. One end of bottom and top manifold tube has a #7 Ace-Thred for easy cleaning. Ends are supplied with 5846-04 nylon stopper/plugs with FETFE o-rings. Port connections are 8mm O.D.; vacuum and gas connections are 1/2-inch O.D. Distance between takeoffs is 100mm. For replacement plugs, see 8194-266.

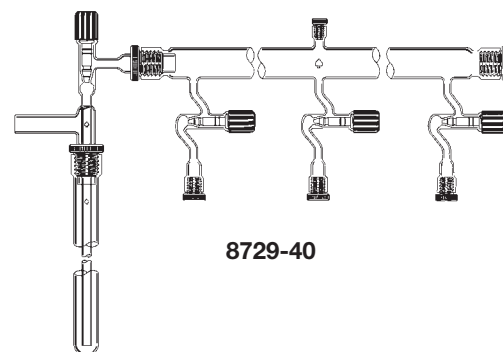

8729-54

No. of Ports	Approx. overall Distance, mm	Qty.	Order Code	Complete
3	300	1	8729-50	617.51
5	500	1	8729-54	836.53

8729 MANIFOLD *Vacuum, Walters* ♦

Greaseless vacuum line fabricated from Ace-Threds and Easy-Action PTFE stopcocks. Three ports are 0-5mm high vacuum PTFE stopcocks with #11 Ace-Thred bushing connection to working vessel. Stopcocks are positioned parallel to main body to allow operation from front or back. Main body can be reversed for convenience of left-handed operation.

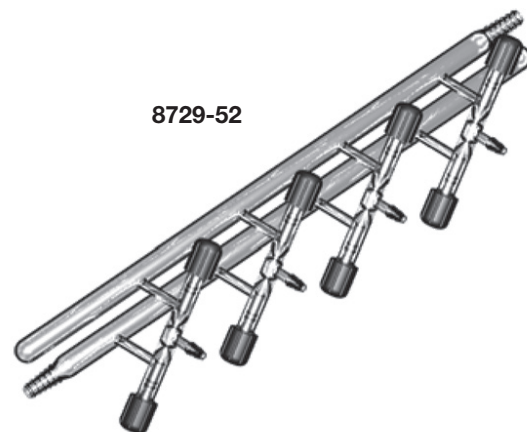
On top of main body is a #7 Ace-Thred with a 1/8-inch NPT nylon adapter for connection to thermocouple vacuum gauge. Each end of main body has a #25 Ace-Thred for easier cleaning. One end stoppered with nylon plug. Other end has a bushing connection to a vacuum trap. The vacuum trap features an Easy-Action, 0-10mm, high vacuum stopcock with removable trap. This permits cleaning of trap without removing vacuum line tubing. Vacuum tubing connection on trap is 25mm O.D. Length of main body is approximately 24 inches. Vacuum trap is approximately 16 inches.


8729-40

	Qty.	Order Code	Each
Main Body, only, w/Stopcocks	1	8729-03	693.31
Vacuum Trap Inner Tube, w/Stopcock	1	8729-25	271.07
Vacuum Trap Body, only	1	8729-26	49.84
Bushing, Nylon, #25 (2)	1	7506-10	21.17
Bushing, Nylon, #11 (3)	1	7506-02	11.39
Stopper, Nylon, #25	1	5846-16	37.19
Stopper, Nylon, #7	1	5846-04	9.48
Adapter, Swagelok, #7 to 1/8-inch	1	5844-16	37.97
Complete	1	8729-40	1175.37

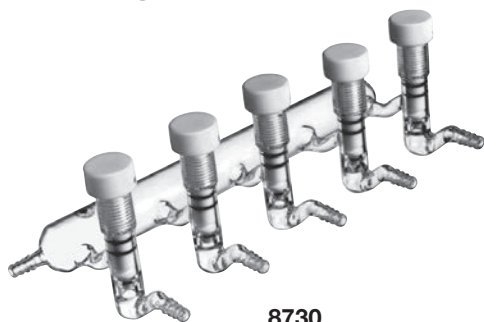
8729 MANIFOLD *Double tube, Vacuum or Inert Gas, with Threaded Stopcocks* ♦

Double tube, greaseless vacuum/gas manifold with four take-off ports. Each port has two 0-4 Easy-Action, PTFE stopcocks connected to main tube bodies at a 45° angle. Overall length is 500mm. Distance between ports is 100mm to center. Hose barb connections at ends and on take-off ports are all size C for 3/8-inch I.D. tubing. See page x for more information on hose connections.


8729-52

No. of Ports	Approx. overall Distance, mm	Qty.	Order Code	Complete
4	500	1	8729-52	827.62

**Complete system
bakeable
when ordered
with PTFE
plug handles**



8730
Left Side
Connection

8730 MANIFOLD Vacuum ♠

All-glass-and-PTFE vacuum manifold with three, four or five stopcock ports. Each port is a variable opening, 0–10mm, high vacuum threaded stopcock. Plugs are PTFE with polyethylene or UHDPE handles and FETFE o-rings. Ultimate vacuum of 10⁻⁷ can be realized with o-rings as supplied. In the event you need to bake the entire system, order bakeable plugs with PTFE handles. Hose connections on stopcocks and vacuum line are size E for 13-15mm O.D. vacuum tubing. See page 7 for more detailed hose connection information. For replacement plugs, see 8194-270 or 8194-97. Available left side connection (illustration) or right side connection.

Left Side Connection						Right Side Connection					
Plug Handle Material	No. of Ports	Approx. End to End Lgth, mm	Qty.	Order Code	Each	Plug Handle Material	No. of Ports	Approx. End to End Lgth, mm	Qty.	Order Code	Each
UHDPE*	3	235	1	8730-12	668.92	UHDPE	3	235	1	8730-27	668.92
PTFE**	3	235	1	8730-14	748.21	PTFE	3	235	1	8730-29	748.21
UHDPE	4	320	1	8730-16	734.55	UHDPE	4	320	1	8730-31	734.55
PTFE	4	320	1	8730-18	831.20	PTFE	4	320	1	8730-33	831.20
UHDPE	5	375	1	8730-20	772.92	UHDPE	5	375	1	8730-35	772.92
PTFE	5	375	1	8730-22	921.27	PTFE	5	375	1	8730-37	921.27

*UHDPE— Ultra High Density Polyethylene, maximum temperature limit, 130°C.

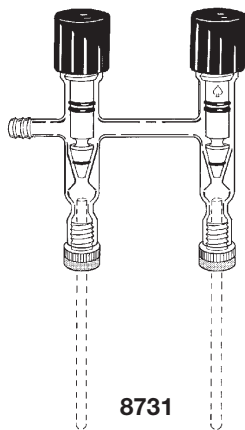
**PTFE — Polytetrafluoroethylene, maximum temperature limit, 200°C.

8730 Manifold can be altered to your special needs, i.e. joint or thread on takeoff, more or fewer takeoffs, etc. Ask for quotation.

To order special multiple manifolds, starting on the left, i.e. #1 port, state size of tip-off port. Then #2, etc.

8731 MANIFOLD Tip-Off ♠

Used to tip-off NMR tubes. How It Works: NMR tube is inserted in lower Ace-Thred port and tightened via bushing for vacuum-thaw work. Vacuum line is connected to side hose connection, size E. See page 7 for more detailed hose connection information. Tube can then be tipped-off with flame. Aluminum shield bonded to nylon bushing helps retard heat transfer. Each port is individually controlled by smooth-acting, semi-needle, threaded PTFE plug to allow removal of one tube while others are still under vacuum; vacuum of 10⁻⁶ is common. PTFE plug and tip-off port o-rings are FETFE or Viton. Tip-off ports can be supplied for 5mm, 8mm and 10mm NMR tubes. Manifolds can be supplied with single port or multiple ports of the same size or different size. Quotations will be supplied for manifolds differing from those listed. Complete item consists of glass manifold, PTFE plug(s), bushing(s) with fire shield and o-rings.



8731

**For NMR tubes,
turn to page 667.**

Complete

No. of Ports	Manifold for Tube Size	Qty.	Order Code	Complete
2	5mm, 5mm	1	8731-34	368.47
2	8mm, 8mm	1	8731-38	358.29
1	10mm	1	8731-44	199.93
4	5mm, 5mm, 8mm, 10mm	1	8731-56	754.49

No. of Ports	Manifold for Tube Size	Qty.	Glass Only		Tip-Off Bushing		Tip-Off Port O-Rings		
			Order Code	Each	Order Code	Each	Order Code	Each	
2	5mm, 5mm	1	8731-12	180.33	1	8731-75	42.52		
2	8mm, 8mm	1	8731-15	183.07	1	8731-78	36.06	12	7855-704 14.09
1	10mm	1	8731-19	106.23	1	8731-80	42.15	12	7855-716 20.37
4	(2) 5mm, 8mm, 10mm	1	8731-22	385.04	See Above		See Above		
					Qty.	Order Code	Each		
					1	8194-268	51.55		
					1	8194-86	4.96		

8734 MANIFOLD *Vacuum, Dual*

Glass Manifold with #15 Ace-Thred at either end to allow switching 5853 vacuum connection to left or right side. Supplied with three or five 0-4mm high vacuum, Easy-Action stopcocks for sample ports (additional ports can be ordered). Plugs are PTFE with nylon hooded handles and FETFE o-rings. Ultimate vacuum of 10^{-7} can be realized with standard three o-rings. Overall length of glass manifold is: 9-1/8 inches (232mm) for three ports; 13-5/8 inches (346mm) for five ports. Supplied with "Ace-Safe" serrated connector for one end to connect vacuum line. Complete item consists of 8734 glass manifold, 5846-48 end plug with FETFE o-ring, and 5853 Ace-Safe connectors with bushing for 1/4-inch or 1/2-inch tubing connection.


8734-10

8734-20

Three Ports

	Qty.	Order Code	Each
Glass Manifold, only	1	8734-07	★ 313.40
End Plug, PTFE with o-ring	1	5846-48	♠ 39.52
Connector, with o-ring, for 1/4 in.	1	5853-18	♠ 11.76
Connector, with o-ring, for 1/2 in.	1	5853-21	♠ 12.68
Connector Bushing	1	7506-05	♠ 12.20
Complete	1	8734-10	★ 389.56

Five Ports

	Qty.	Order Code	Each
Glass Manifold, only	1	8734-14	★ 519.27
End Plug, PTFE with o-ring	1	5846-48	♠ 39.52
Connector, with o-ring, for 1/4 in.	1	5853-18	♠ 11.76
Connector, with o-ring, for 1/4 in.	1	5853-21	♠ 12.68
Connector Bushing	1	7506-05	♠ 12.20
Complete	1	8734-20	★ 595.43

Replacement O-Rings:

For 5853, use **7855-210**; for 5846, use **7855-716**

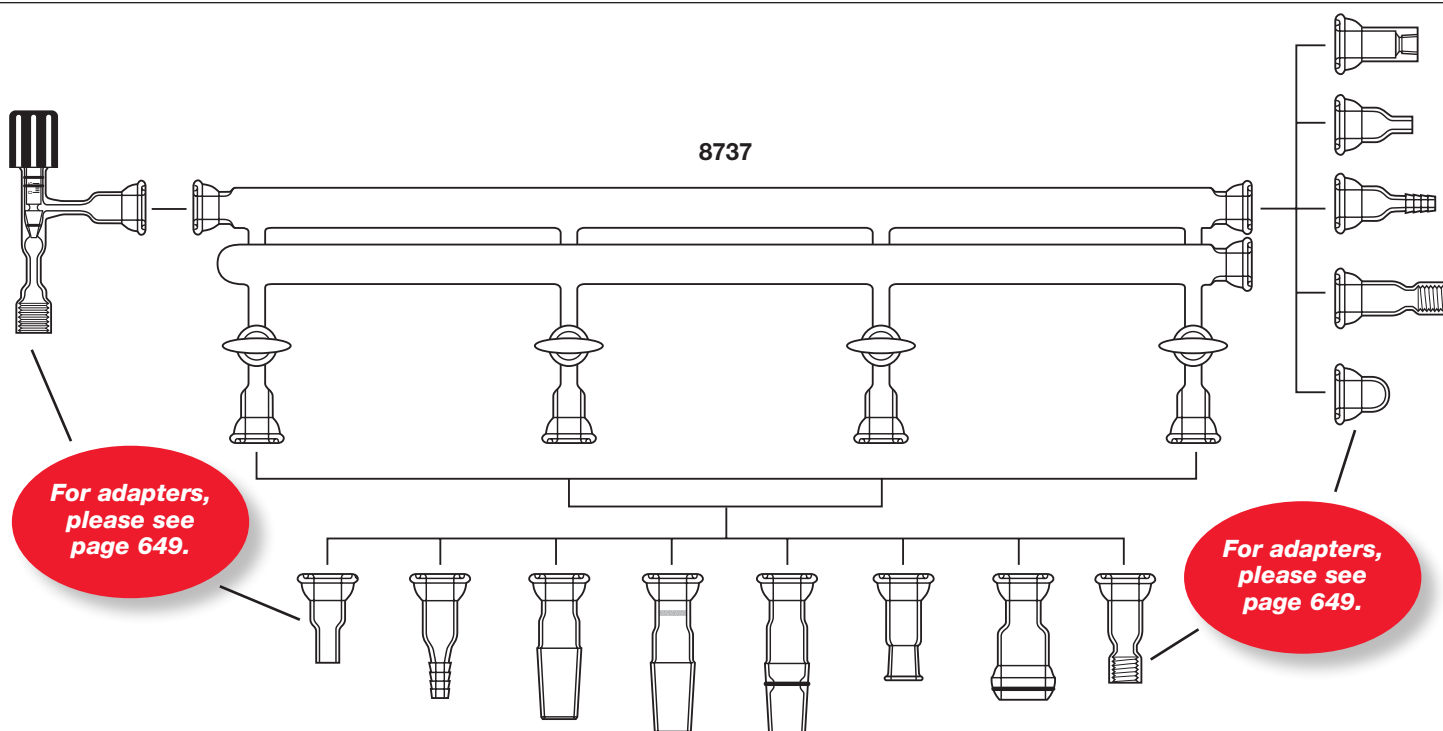
ACE Custom Glass Design Service

www.aceglass.com

ACE Scientific Glass Repair Service

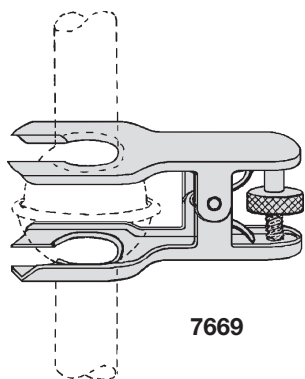
www.aceglass.com

1-800-223-4524



8737 MANIFOLD *Double Tube, O-Ring Joint Connections* ♦

No. 15 o-ring joint connections at each end. Three or four ports with 4mm bore glass double oblique stopcocks and standard taper joints or No. 15 o-ring joint connections off each port. The distance between ports is 210mm, which will accept 3L flasks or smaller. Requires all-stainless-steel pinch-type screw locking clamp 7669-12 (for No. 15 o-ring joint), listed below.

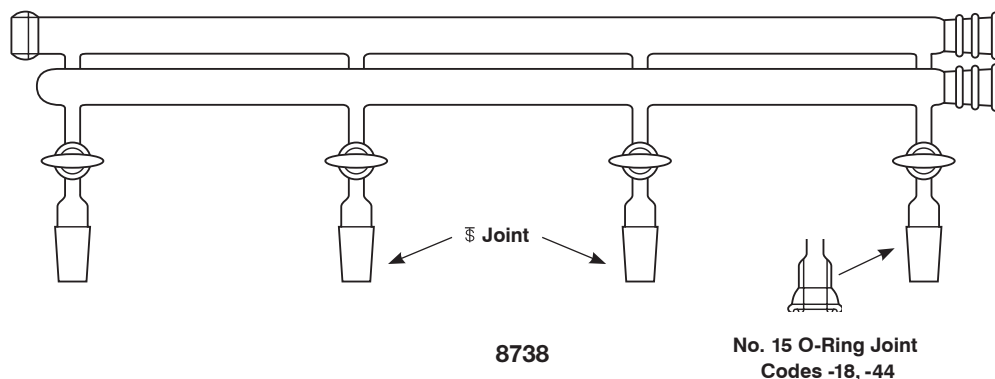


7669

Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	3/14/20	500	1	8737-02	996.01
3	3/24/40	500	1	8737-04	996.01
3	15 o-ring	500	1	8737-06	996.01
4	3/14/20	710	1	8737-20	1047.80
4	3/24/40	710	1	8737-22	1047.80
4	No. 15 o-ring	710	1	8737-24	1047.80

Clamps and O-Rings for Manifold

Clamp Size #	Joint Size	Qty.	Order Code	Each
28	No. 15 o-ring	1	7669-12	16.57
	Replacement FETFE o-ring for No. 15 Joint	1	7855-726	26.84



8738 MANIFOLD *Double Tube, Ground Joint Connections* ♠

With $\text{§} 35/20$ ball joint at one end, $\text{§} 24/40$ outer standard taper joints at opposite end. Three or four ports with 4mm bore glass double oblique stopcocks and standard taper joints or 15 o-ring joint connections off each port. The distance between ports is 210mm, which will accept 3L flasks or smaller. Requires all stainless steel, pinch type screw locking clamp 7669-12 (for No. 15 o-ring joint), listed below.

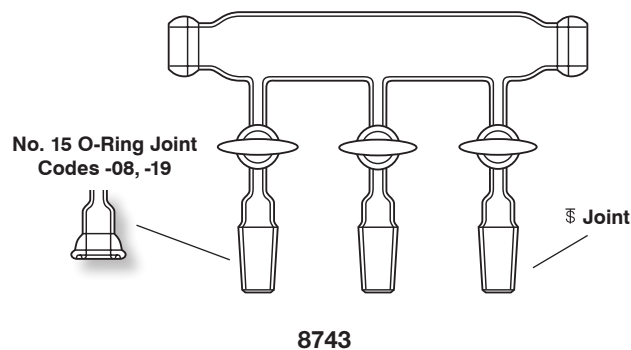
Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	$\text{§}14/20$	520	1	8738-14	994.67
3	$\text{§}24/40$	520	1	8738-16	994.67
3	No. 15 o-ring	520	1	8738-18	994.67
4	$\text{§}14/20$	730	1	8738-40	1035.84
4	$\text{§}24/40$	730	1	8738-42	1035.84
4	No. 15 o-ring	730	1	8738-44	1035.84

Clamps and O-Rings for Manifold

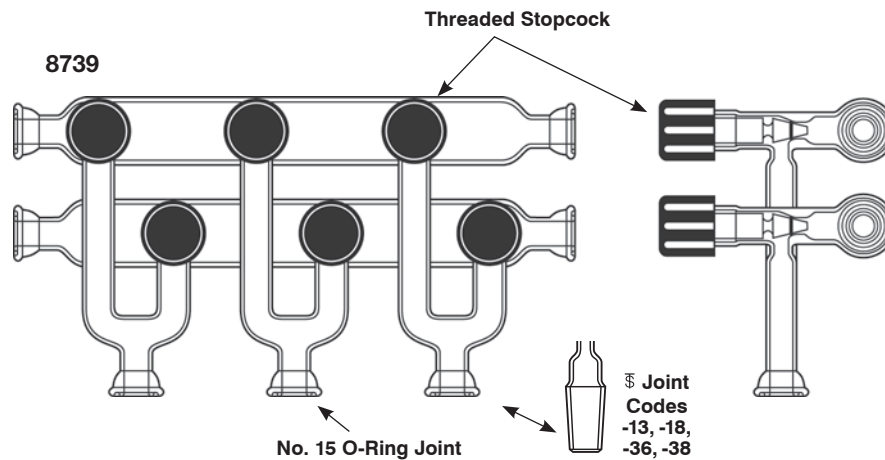
Clamp Size #	Joint Size	Qty.	Order Code	Each
28	No. 15 o-ring	1	7669-12	16.57
	Replacement FETFE o-ring for No. 15 Joint	1	7855-726	26.84

8743 MANIFOLD *Single Tube, Ground Joint Connections* ♠

With $\text{§}35/20$ ball joint connections at each end. Three or four ports with 4mm bore glass high-vacuum stopcocks and standard taper joints or No. 15 o-ring joint connections off each port. The distance between ports is 95mm, which will accept 250mL flasks or smaller. Requires all stainless steel, pinch type screw locking clamp 7669-12 (for No. 15 o-ring joint), listed above.



Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	$\text{§}14/20$	310	1	8743-04	375.82
3	$\text{§}24/40$	310	1	8743-06	375.82
3	No. 15 o-ring	310	1	8743-08	375.82
4	$\text{§}14/20$	405	1	8743-15	478.08
4	$\text{§}24/40$	405	1	8743-17	478.08
4	No. 15 o-ring	405	1	8743-19	478.08



8739 MANIFOLD *Double Tube, O-Ring Joint Connections* ♠

15 o-ring joint connections at each end. Three or four ports with Easy Action 0-10mm threaded stopcocks and standard taper joints or 15 o-ring joint connections off each port. The distance between ports is 100mm, which will accept 250mL flasks or smaller. Requires all stainless steel, pinch type screw locking clamp 7669-12 (for 15 o-ring joint), listed below.

Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	§14/20	355	1	8739-13	1296.00
3	§24/40	355	1	8739-18	1296.00
3	No. 15 o-ring	355	1	8739-21	1296.00
4	§14/20	455	1	8739-36	1595.00
4	§24/40	455	1	8739-38	1595.00
4	No. 15 o-ring	455	1	8739-40	1595.00

Clamps and O-Rings for Manifold

Clamp Size #	Joint Size	Qty.	Order Code	Each
28	No. 15 o-ring	1	7669-12	16.57
	Replacement FETFE o-ring for No. 15 Joint	1	7855-726	26.84

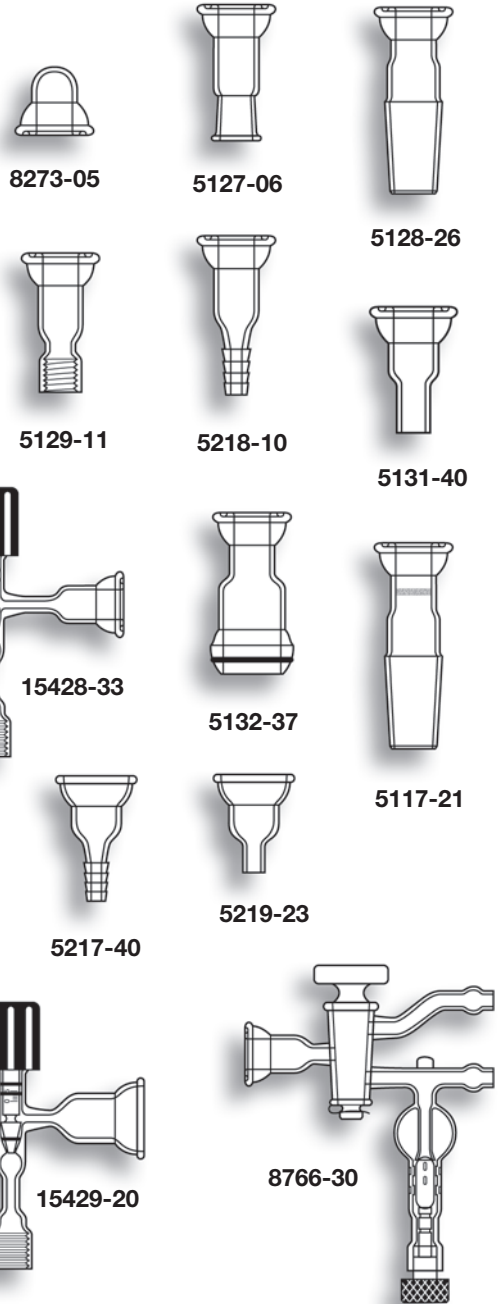
Contact Ace to get a copy of our vacuum brochure.

Manifold Adapters

Description	Qty.	Order Code	Each
No. 15 o-ring Joint to Cap (Stopper)	1	8273-05	♣ 17.01
No. 15 o-ring Joint to 14/20 Outer Joint	1	5127-04	♣ 36.07
No. 15 o-ring Joint to 19/22 Outer Joint	1	5127-06	♣ 36.42
No. 15 o-ring Joint to 24/40 Outer Joint	1	5127-20	♣ 37.78
No. 15 o-ring Joint to 14/20 Inner Joint	1	5128-07	♣ 35.99
No. 15 o-ring Joint to 19/22 Inner Joint	1	5128-11	♣ 36.20
No. 15 o-ring Joint to 24/40 Inner Joint	1	5128-26	♣ 37.57
No. 15 o-ring Joint to #7 Ace-Thred	1	5129-07	♣ 55.09
No. 15 o-ring Joint to #11 Ace-Thred	1	5129-11	♣ 59.02
No. 15 o-ring Joint to #15 Ace-Thred	1	5129-15	♣ 59.02
No. 15 o-ring Joint to #25 Ace-Thred	1	5129-25	♣ 64.27
No. 15 o-ring Joint to Size F Hose Conn. (1/2-inch Tube)	1	5218-10	♣ 21.26
No. 15 o-ring Joint to Straight 3/8-inch Tube ¹	1	5131-30	♣ 23.74
No. 15 o-ring Joint to Straight 1/2-inch Tube ¹	1	5131-40	♣ 23.74
No. 15 o-ring Joint to 0-5mm Valve with #7 Ace-Thred	1	15428-28	♣ 106.57
No. 15 o-ring Joint to 0-5mm Valve with #11 Ace-Thred	1	15428-33	♣ 106.57
No. 15 o-ring Joint to 0-15mm Valve with #15 Ace-Thred	1	15428-35	♣ 106.57
No. 15 o-ring Joint to 0-10mm Valve with #15 Ace-Thred	1	15428-37	♣ 106.57
No. 15 o-ring Joint to 14/20 o-ring Joint	1	5132-06	♣ 45.83
No. 15 o-ring Joint to 24/40 o-ring Joint	1	5132-09	♣ 46.55
No. 15 o-ring Joint to 35/25 Ball Joint	1	5132-37	♣ 84.38
No. 15 o-ring Joint to 14/20 Outer Joint w/Por B Frit	1	5117-18	♣ 55.98
No. 15 o-ring Joint to 19/22 Outer Joint w/Por B Frit	1	5117-21	♣ 56.27
No. 15 o-ring Joint to 24/40 Outer Joint w/Por B Frit	1	5117-24	♣ 53.00
35/25 Socket Joint to Size F Hose Conn. (1/2-inch Tube)	1	5217-40	♣ 26.64
35/25 Socket Joint to Straight 3/8-inch Tube	1	5219-23	♣ 29.33
35/25 Socket Joint to Straight 1/2-inch Tube	1	5219-26	♣ 29.33
35/25 Socket Joint to 0-5mm Valve with #7 Ace-Thred	1	15429-17	♣ 112.03
35/25 Socket Joint to 0-5mm Valve with #11 Ace-Thred	1	15429-20	♣ 112.03
No. 15 o-ring Joint to 1/8-inch Female NPT, 316 Stainless Steel	1	8877-14	★ 137.72
Firestone Purge Valve with No. 15 o-ring Joint ²	1	8766-30	♣ 273.03
FETFE Replacement o-ring for No. 15 o-ring Joint	1	7855-726	♣ 26.84

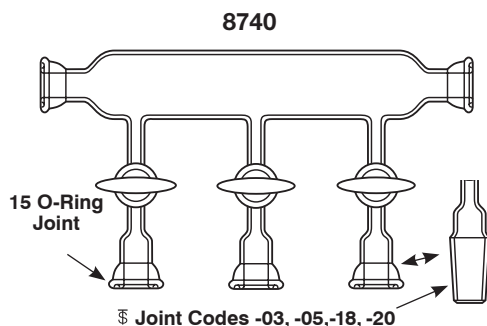
¹Sized for use with Cajon® or Swagelok® Compression Fittings
²Use with Vacuum Gauge Sensing Head

Special adapters available — call or email for quote!



8740 MANIFOLD *Single Tube, O-Ring Joint Connections* ♠

No. 15 o-ring joint connections at each end. Three or four ports with 4mm bore glass high-vacuum stopcocks and standard taper joints or No. 15 o-ring joint connections off each port. The distance between ports is 95mm, which will accept 250mL flasks or smaller. Requires all stainless steel, pinch type screw locking clamp 7669-12 (for No. 15 o-ring joint), listed below.



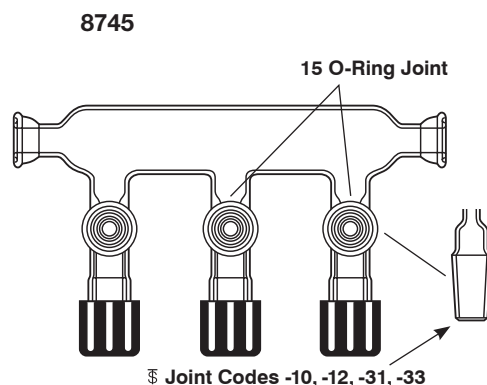
Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	§14/20	310	1	8740-03	371.84
3	§24/40	310	1	8740-05	371.84
3	No. 15 o-ring	310	1	8740-07	371.84
4	§14/20	405	1	8740-18	474.08
4	§24/40	405	1	8740-20	474.08
4	No. 15 o-ring	405	1	8740-22	474.08

Clamps and O-Rings for Manifold

Clamp Size #	Joint Size	Qty.	Order Code	Each
28	No. 15 o-ring	1	7669-12	16.57
	Replacement FETFE o-ring for No. 15 Joint	1	7855-726	26.84

8745 MANIFOLD *Single Tube, O-Ring Joint Connections* ♠

No. 15 o-ring joint connections at each end. Three or four ports with Easy-Action 0-10mm threaded stopcocks and standard taper joints or No. 15 o-ring joint connections off each port. The distance between ports is 95mm, which will accept 250mL flasks or smaller. Requires all stainless steel, pinch type screw locking clamp 7669-12 (for No. 15 o-ring joint), listed below.



Number of Ports	Port Joints	Overall Length, mm	Qty.	Order Code	Each
3	§14/20	310	1	8745-10	471.43
3	§24/40	310	1	8745-12	471.43
3	No. 15 o-ring	310	1	8745-14	471.43
4	§14/20	405	1	8745-31	630.80
4	§24/40	405	1	8745-33	630.80
4	No. 15 o-ring	405	1	8745-35	630.80

Clamps and O-Rings for Manifold

Clamp Size #	Joint Size	Qty.	Order Code	Each
28	No. 15 o-ring	1	7669-12	16.57
	Replacement FETFE o-ring for No. 15 Joint	1	7855-726	26.84

8763 MANIFOLD *Vacuum, Dual*

Glass manifold with #15 Ace-Thred at either end to allow switching 5853 vacuum connection to left or right side. Supplied with three or five 4mm straight bore PTFE stopcock sampling ports. (Additional ports can be ordered.) Overall length of glass manifold is 230mm.

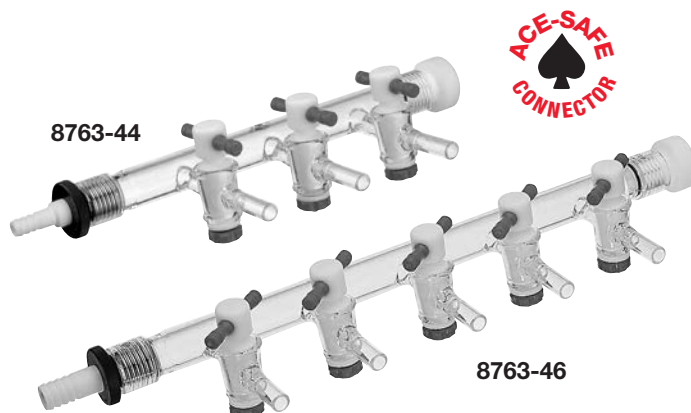
Complete item consists of 8763 glass manifold, 5846-48 end plug with FETFE o-ring, and 5853-18 and 5853-21 Ace-Safe connector with bushing for 1/4-inch or 1/2-inch tubing connection.

Three Ports

	Qty.	Order Code	Each
Glass Manifold, only	1	8763-14 ★	360.05
End Plug, PTFE with o-ring	1	5846-48 ♠	39.52
Connector, with o-ring, for 1/4-in.	1	5853-18 ♠	11.76
Connector, with o-ring, for 1/2-in.	1	5853-21 ♠	12.68
Connector Bushing	1	7506-05 ♠	12.20
Complete	1	8763-44 ★	436.21

Five Ports

	Qty.	Order Code	Each
Glass Manifold, only	1	8763-16 ★	570.49
End Plug, PTFE with o-ring	1	5846-48 ♠	39.52
Connector, with o-ring, for 1/4-in.	1	5853-18 ♠	11.76
Connector, with o-ring, for 1/2-in.	1	5853-21 ♠	12.68
Connector Bushing	1	7506-05 ♠	12.20
Complete	1	8763-46 ★	646.65



7818 MANIFOLD *Double Tube* ♠

Double tube manifold, same as item supplied on the ACE-Burlitch Inert Atmosphere System. With four double-oblique high-vacuum glass stopcocks, 4mm bore. Takeoff ports are 10mm O.D. Two 3/4 24/40 joints on right end for easy cleaning. Upper manifold tube has a 3/4 35/25 ball joint for connection to trap, supplemental vacuum manifold with McLeod gauge (available from ACE) or vacuum.

Lower tube has a #11 Ace-Thred extending toward the rear and bent 90° to the vertical for connecting a 10mm O.D. gas line using 7506-02 bushing with o-ring. Manifold NOT supplied with bushing or o-ring or 3/4 24/40 stoppers and clamps. For bushing and o-ring, see 7506-02; for stoppers, see 8250-12; for stopper clamps, see 7600-25. Distance between ports is 200mm; overall length is approximately 670mm.

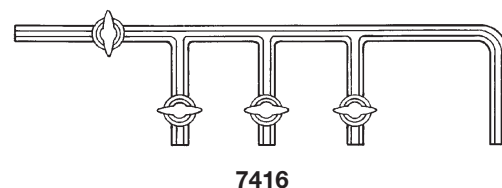
Qty.	Order Code	Manifold Only
1	7818-24	1268.29



7416 GAS MANIFOLD ♠

For portable gas analysis apparatus. Three or four straight 2mm bore glass stopcocks and one three-way stopcock with back port, fabricated on capillary tubing. We can fabricate special gas manifolds of all kinds. Contact ACE for quotation.

No. Straight Bore Stopcocks	Qty.	Order Code	Each
3	1	7416-10	353.16
4	1	7416-14	409.93



8765 MANIFOLD Vacuum, Firestone¹ ★

Vacuum/gas manifold with a Firestone rapid purge valve at one end and 0–5mm high vacuum, Easy-Action PTFE stopcock ports with 3/8-inch O.D. Swagelok tubing connections. Each connection has an o-ring groove (o-rings supplied) for use with #11 Ace-Thred. Valve eliminates the need for a second tube. Simply connect one 10mm O.D. arm to vacuum, other to gas source, and by half turn of the stopcock plug you can alternate between vacuum and gas. Shut-off float on gas side of valve prevents pressure buildup when system is purged. Plugs are PTFE with UHDPE* or PTFE handles with FETFE o-rings. For replacement plugs, see 8194-268 (UHDPE) or 8194-96 (PTFE).



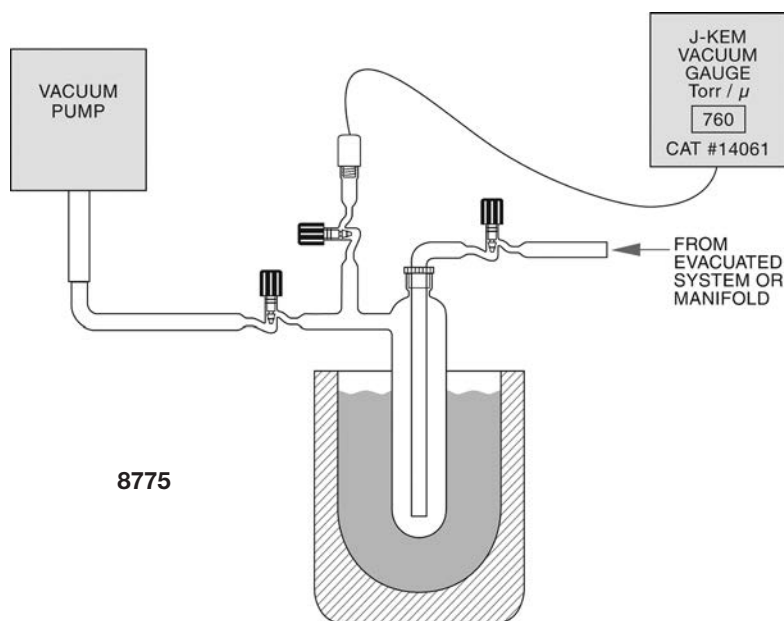
Plug Handle Material	No. of Ports	Qty.	Order Code	Each
UHDPE	3	1	8765-13	750.47
PTFE	3	1	8765-15	787.74
UHDPE	4	1	8765-27	822.75
PTFE	4	1	8765-29	872.41
UHDPE	5	1	8765-34	913.76
PTFE	5	1	8765-36	989.58

*UHDPE — Ultra High Density Polyethylene

¹Valve designed by Dr. Raymond Firestone

8775 HIGH VACUUM SYSTEM ♠

Protect your 14065 vacuum gauge or other gauge heads from corrosive vapors or particles that might foul the sensing head. Fabricated from borosilicate glass, this system consists of a Dewar flask and a cold trap with connections to pump, system, and to gauge, each with high-vacuum stopcocks. Connections to system and vacuum pump are #25 o-ring joints. Vacuum gauge head threads into a 5844-62 PTFE adapter, then into an Ace-Thred on the arm of the trap. Trap body is 38mm O.D. x 250mm long.

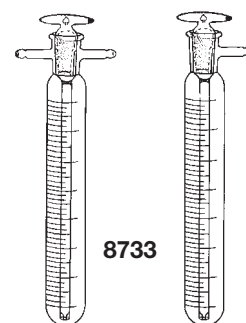


Item	Qty.	Order Code	Each
Trap Body with two stopcocks, o-ring joint and #15 Ace-Thred	1	8775-16	268.74
Trap Inlet Arm with stopcock and o-ring joint	1	8775-18	82.58
Adapter, #15-1/8-inch NPT	1	5844-62	69.71
Dewar Flask, 6.8cm I.D. x 30.2cm high	1	7075-15	128.75
Complete	1	8775-50	622.50

8733 MANOMETER *Mercury* ♠

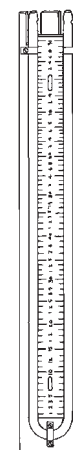
Compact manometer with graduated, round-bottom jacket enclosing the manometer tube which is sealed to a stopcock plug. Tube is vented through one or two side tubulations in the neck. Scale range is from 0–160mm. Joint is $\$ 14/35$. **Mercury NOT supplied.**

	Qty.	Order Code	Each
Complete with one Tubulation	1	8733-07	148.33
Complete with two Tubulations	1	8733-17	163.80


8733
8735 GAUGE *Vacuum or Pressure* ♠

With standard “U” shape gauge made of heavy barometer tubing and mounted on a wooden panel for vertical suspension. The scale is adjustable and accurately calibrated. Supplied with scale and tubes. **Mercury NOT supplied.**

Scale Length, cm	Qty.	Order Code	Each
30	1	8735-05	150.66
60	1	8735-10	159.80
100	1	8735-15	175.92

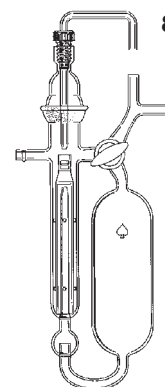

8735
8741 VACUUM REGULATOR *Improved Cartesian Type* ♠

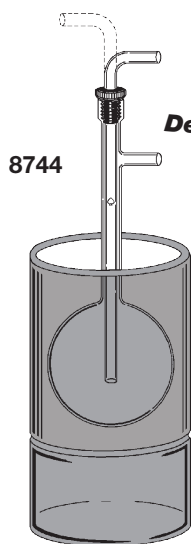
Sensitivity and versatility are increased over other models, and mercury requirement is reduced to 20–30mL. A control point within 1mm Hg. can be fine-tuned by adjusting the height of the pump-out tubulation.

The “Cartesian Diver” float drops away from the pump-out orifice on increasing system pressure and reseals it when the reference pressure set within the large bulb is re-attained. The reference pressure is easily set.

By means of the spherical joint, the attitude of the orifice can be adjusted to accommodate a small continuous leak (i.e. inert gas) without hunting of the float. Flash flushing is easily accomplished by changing the stopcock setting. For clamp, see 7666-20. Mercury **not** supplied.

Qty.	Order Code	Each
1	8741-08	559.99


8741



Designed to fit into Dewar Flasks.

For 500 mL, use Dewar 7075-20 or 12540-07.
For 1000 mL, use Dewar 7075-25 or 12540-09.
For 2000 mL, use Dewar 12540-11.
For 3000 mL, use Dewar 12540-11

8744 VACUUM TRAPS Threaded ♠

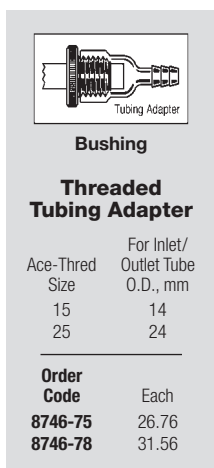
Round bottom with adjustable inner tube and nylon bushing with FETFE o-ring. Optional threaded adapters (8746-75 and -78) will allow safe and easy tubing connect-disconnect. Simply attach tubing to serrated end of adapter, then connect adapter via 7506 bushing to inlet and outlet of trap. Serrated end of adapter has six rings; smallest 14mm O.D., largest 16mm O.D. Adapter not supplied with complete unit. **Order same 7506 bushing as supplied with trap for use with adapter.**

Cap., mL	Body Dia., mm	Length, Bottom to Side Arm, mm	Inner Tube O.D., mm	Qty.	Flask		Inner Tube		Nylon Bushing		Complete	
					Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
500	100	235	14	1	8744-06	88.20	8744-09	21.62	7506-06	12.35	8744-11	122.17
1000	125	315	14	1	8744-08	90.94	8744-09	21.62	7506-06	12.35	8744-13	124.91
2000	160	410	24	1	8744-10	118.26	8744-20	38.72	7506-10	21.17	8744-23	178.15
3000	180	410	24	1	8744-14	160.26	8744-20	38.72	7506-10	21.17	8744-25	220.15

Depth of inner tube is adjustable

8746 VACUUM TRAPS Threaded Body ♠

Consists of body with Ace-Thred, adjustable inner tube and nylon bushing with FETFE o-ring. Optional threaded tubing adapters (-75, -78) allow safe, easy tubing connect-disconnect. Simply attach tubing to serrated end of adapter, then connect adapter via 7506 bushing to inlet and outlet of trap. Serrated end has six rings; smallest is 14mm O.D., largest is 16mm O.D. Adapter NOT supplied with complete item. **Order same 7506 bushing as supplied with trap for use with adapter.**

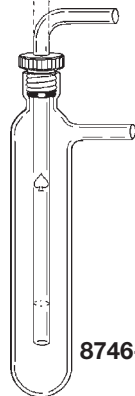


Bushing

Threaded Tubing Adapter

Ace-Thred Size	For Inlet/Outlet Tube O.D., mm
15	14
25	24

Order Code	Each
8746-75	26.76
8746-78	31.56



8746-12

Body Dia., mm	Body Lgth., mm	O.D. of inner Tube, mm	Qty.	Body, only		Inner Tube		Nylon Bushing		Complete	
				Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
32	250	14	1	8746-08	61.10	8746-10	17.13	7506-06	12.35	8746-12	90.58
38	250	14	1	8746-20	62.38	8746-10	17.13	7506-06	12.35	8746-24	91.86
51	250	14	1	8746-32	82.04	8746-10	17.13	7506-06	12.35	8746-36	111.52
60	250	14	1	8746-38	104.78	8746-10	17.13	7506-06	12.35	8746-42	134.26
90	350	24	1	8746-50	166.85	8746-52	33.38	7506-10	21.17	8746-54	221.40

8746 VACUUM TRAPS *Threaded Body, with Ace-Threds on Inlet/Outlet ♠*

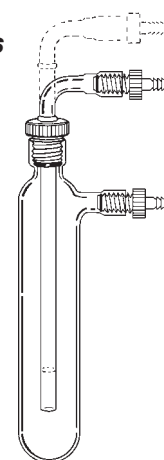
Consists of body with Ace-Thred that accepts an adjustable inner tube secured by a nylon Bushing and FETFE o-ring. Unit has been modified with the addition of #15 Ace-Threds on the inlet and outlet for use with PTFE Ace-Safe tubing connectors, 5853, to make an easy, safe connect/disconnect of tubing. Simply attach tubing to the connector and tighten connector in Ace-Thred with 7506-05 bushing to compress silicone o-ring, supplied with connector, to make a leak-tight seal. Use 7506-06 bushing to secure inner tube in codes -11 thru -44; use 7506-10 in code -60. Complete item consists of body, inner tube, (2) 7506-05, (2) 5853-21, and one 7506-06 or 7506-10.

Body Dia., mm	Body Lgth., mm	O.D. of inner Tube, mm	Qty.	Body, only		Inner Tube		Nylon Bushing		Complete	
				Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
32	250	14	1	8746-11	70.21	8746-13	27.55	7506-06	12.35	8746-15	159.87
38	250	14	1	8746-23	73.83	8746-13	27.55	7506-06	12.35	8746-27	163.49
51	250	14	1	8746-35	92.60	8746-13	27.55	7506-06	12.35	8746-39	182.26
60	250	14	1	8746-44	115.37	8746-13	27.55	7506-06	12.35	8746-47	205.03
90	350	24	1	8746-60	177.44	8746-56	43.13	7506-10	21.17	8746-68	291.50

Depth of inner tube is adjustable



8746-15


Replacement Items

	Qty.	Order Code	Each
Tubing Connector, 9.5mm I.D., for 1/2-inch Tubing	1	5853-21	12.68
Tubing Connector, 6.4mm I.D., for 1/4-inch Tubing (Code -18 is optional, needs to be order separately)	1	5853-18	11.76
Silicone o-rings	12	7855-210	16.79

8747 VACUUM TRAPS *Threaded, with Serrated Hose Connections ♠*

Same as 8746 except adjustable inlet and outlet tubes have six ring hose connections. O.D. of smallest ring is 14mm; largest is 16mm.

Body Dia., mm	Body Lgth., mm	O.D. of inner Tube, mm	Qty.	Body, only		Inner Tube		Nylon Bushing		Complete	
				Order Code	Each	Order Code	Each	Order Code	Each	Order Code	Each
51	250	14	1	8747-33	92.38	8747-11	38.02	7506-06	12.35	8747-37	142.75
60	250	14	1	8747-39	118.34	8747-11	38.02	7506-06	12.35	8747-43	168.71



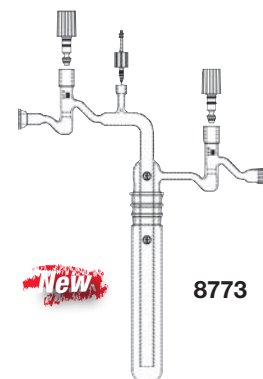
Depth of inner tube is adjustable

8747

8773 VACUUM APPARATUS *Trap/Manifold ♠*

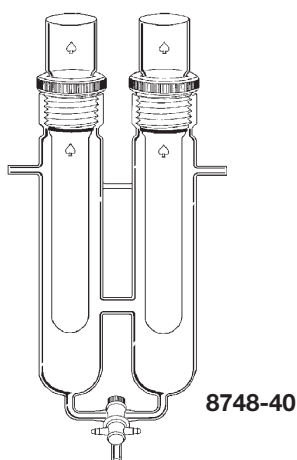
Special vacuum apparatus that can be used as a complex trap with the bottom tube or as a small manifold by itself. Can be joined to ACE 8737, 8738 or 8739 manifolds or as a stand alone manifold. The code -23 consists of the -03 manifold and our 8753-21 tube, making a trap unit. It has a 15mm o-ring joint with a 0-10mm PTFE stopcock on one end and a #15 Ace-Thred with a 0-10mm PTFE stopcock on the other end. In the center, we have an air-inlet needle valve. Bottom tube length is 220mm.

Qty.	Manifold, only		Tube, only		Complete	
	Order Code	Each	Order Code	Each	Order Code	Each
1	8773-03	589.23	8753-21	53.89	8773-23	643.12



8773

Thanks to Dr. Simon Humphrey, Chemistry Department, University of Texas, Austin, for this design.



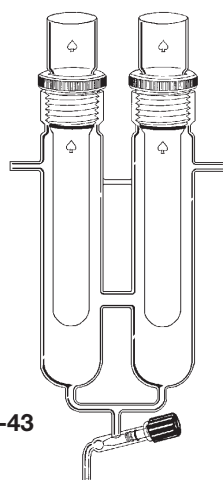
8748-40

8748 VACUUM TRAP *Ace-Thred Top* ♠

Twin chambered dry ice vacuum trap for use with rotary evaporators, including ACE 6714, or any other large solvent evaporation applications. Squatty design is 18 inches high, using two chambers offers increased condensing capacity that would be attained only with a much taller single chambered condenser.

Vacuum traps are secured in main body chambers via #50 Ace-Thred using bushings and o-rings. This type connection allows for easy removal for cleaning. Two ports located on sides of chambers; one for connecting to evaporator, the other to vacuum source, are 10mm O.D. for 3/8-inch I.D. tubing. Stopcock at bottom is 4mm PTFE 90° bore, for draining condensate one chamber at a time. Normally, condensate will collect in chamber connected nearest to evaporator until filled to crossover between chamber, then second chamber will fill. Capacity of vacuum traps is 450mL each. Capacity of chambers with finger inserted is approximately 600mL each. Overall height of unit is 18 inches. Complete item includes twin chamber, two vacuum traps, and two #50 nylon bushings with silicone o-rings.

	Qty.	Order Code	Each
Vacuum Trap, only (2)	1	8748-04	79.79
Twin Chamber, only	1	8748-12	600.38
Bushing, Nylon, #50, w/o-ring (2)	1	7506-15	73.46
Complete	1	8748-40	906.88



8748-43

8748 VACUUM TRAP *Ace-Thred Top* ♠

Similar to 8748-40 except stopcock at bottom is 0–5mm Easy-Action threaded style with double PTFE ring seals on plug for draining both chambers simultaneously. Overall height, approximately 20 inches.

	Qty.	Order Code	Each
Vacuum Trap, only (2)	1	8748-04	79.79
Twin Chamber, only	1	8748-10	629.30
Bushing, Nylon, #50 with o-ring (2)	1	7506-15	73.46
Complete	1	8748-43	935.80



D127507

D127507 CONDENSER/TRAP *ROBO* ★

For ASTM D7528. Twin-chamber trap/condenser with bottom 0-5 Easy-Action outlet valve. Comes complete with two 7855-844 size -225 and two 7855-816 size -110 CAPFE (PTFE-encapsulated) o-rings; two 7506-14 (50mm) top nylon bushings; two 7506-06 (15mm) side nylon bushings; and a 12-pack of #15 (1/2-inch I.D.) 11710-15 PTFE ferrules. Use with #D127590 inner condensers (two).

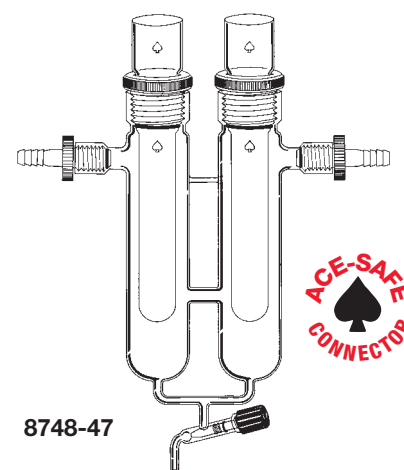
Qty.	Order Code	Each
1	D127507	Call




8748 VACUUM TRAP with Ace-Threds on Inlet/Outlet ♠

Twin chambered dry ice vacuum trap for use with rotary evaporators, including ACE 6714, or any other large solvent evaporation applications. Squatty design is 18 inches high, using two chambers offers increased condensing capacity. Dry ice vacuum traps are secured in main body chambers via #50 Ace-Thred using bushings and silicone o-rings. This type connection allows easy removal for cleaning. Inlet and outlet ports have been modified with #15 Ace-Threds for use with PTFE Ace-Safe tubing connectors, 5853, to make an easy, safe connect/disconnect of tubing; one to evaporator, other to vacuum source. Simply attach 1/2-inch I.D. tubing to the connector and tighten connector in Ace-Thred with 7506-05 bushing to compress silicone o-ring, supplied with connector, to make a leak-tight seal. Stopcock at bottom is 0–5mm Easy-Action threaded style with double PTFE ring seals to drain both chambers simultaneously. Overall height is approximately 20 inches. Complete item includes chamber, (2) 7506-15, (2) 7506-05 and (2) 5853-21.

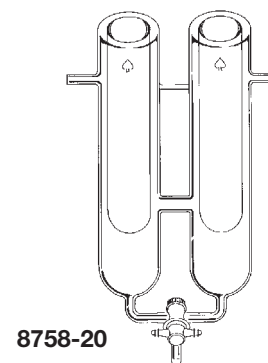
	Qty.	Order Code	Each
Vacuum trap, only (2)	1	8748-04	79.79
Twin Chamber, only	1	8748-08	633.30
Bushing, Nylon, #50, w/o-ring (2)	1	7506-15	73.46
Tubing Connector, w/Silicone o-ring (2)	1	5853-21	12.68
Bushing, Nylon, #15, only (2)	1	7506-05	12.20
Complete	1	8748-47	989.56



8758 DRY ICE TRAP Twin ★

Twin chambered dry ice condenser-trap similar to 8748 except dry ice finger condensers in this unit are NOT removable. Tubing outlets on sides of chambers, for connecting to rotary evaporator and vacuum source, are 10mm O.D. for 3/8-inch I.D. tubing. Condensate stopcock at bottom is 4mm PTFE, 90° bore, that allows draining each chamber individually. Overall height is approximately 13-1/2 inches. Capacity of dry ice finger condensers is 200mL each. Capacity of chambers is approximately 500mL each.

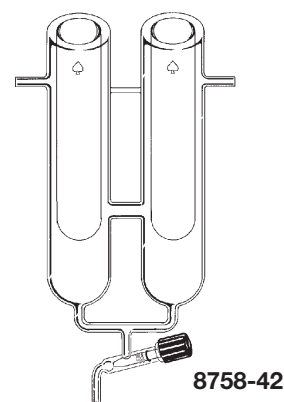
Qty.	Order Code	Each
1	8758-20	737.30



8758 DRY ICE TRAP Twin ★

Same as 8758 except stopcock at bottom is 0–5mm Easy-Action threaded style with double PTFE ring seals on plug for draining both chambers simultaneously. Overall height is approximately 15-1/2 inches.

Qty.	Order Code	Each
1	8758-42	737.30





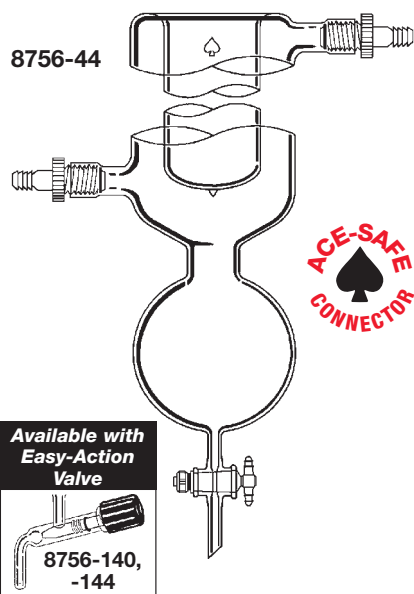
8756-12

8756 VACUUM TRAP with Reservoir ♠

Dry ice vacuum trap that features a 1000mL reservoir flask with 3mm bore, 1:5 PTFE stopcock off bottom for easy draining. Chamber body is 125mm O.D. with 25mm annular space. Dry ice chamber is 250mm deep with 9.5mm (3/8-inch) inlet and outlet connections, 3/8-inch I.D. tubing, size D hose connection. See page 7 for more detailed hose connection information. Overall height, approximately 54.6cm (21.5 inches). Code -212 comes complete with lid and is plastic coated for safety.

Qty.	Order Code	Each
1	8756-12	571.02
1	8756-212	542.65

8756-212



8756-44

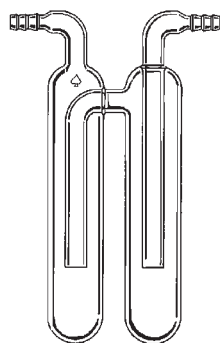
8756 VACUUM TRAP with Reservoir & Ace-Thred Inlet/Outlet ♠

Dry ice vacuum trap that features a 1000mL reservoir flask with 3mm bore, 1:5 PTFE stopcock or 0-5 PTFE "Easy-Action" valve off bottom for easy draining. Unit has been modified with the addition of #15 Ace-Threds on the inlet and outlet for use with "Ace-Safe" Tubing Connectors, 5853, to make an easy, safe connect/disconnect of tubing. Simply attach 1/2-inch I.D. tubing to the connector and tighten connector in Ace-Thred with 7506-05 Bushing to compress silicone o-ring, supplied with connector, to make a leak-tight seal. Chamber body is 125 mm O.D. with 25 mm annular space. Dry ice chamber is 250 mm deep. Overall height, approximately 54.6cm (21.5 inches). Complete item consists of body only, (2) 5853 Tubing Connectors, and (2) 7506-05 Bushings.

	Qty.	Order Code	Each
Body only, with stopcock off bottom	1	8756-32	580.86
Body only, with 0-5 PTFE valve off bottom	1	8756-140	607.31
Tubing Connector, w/Silicone o-ring (2)	1	5853-21	12.68
Bushing, Nylon, #15, without o-ring (2)	1	7506-05	12.20
Complete , with stopcock off bottom	1	8756-44	630.62
Complete , with 0-5 PTFE valve off bottom	1	8756-144	657.07

8749 VACUUM TRAP Twin Chamber ♠

Twin chamber vacuum trap for double protection against undesired vapors in a vacuum system. Trap can be used in a two liter Dewar flask such as 12540-07. Distance from outside of one body to outside of other is approximately 97mm; height is 250mm. Inlet and outlet have serrated fittings; O.D. of smallest ring is 14mm, largest is 16mm.



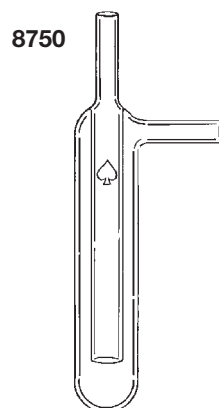
8749

Qty.	Order Code	Each
1	8749-20	292.52

8750 VACUUM TRAP ♠

Used for freezing out undesired vapors in the vacuum system and also for use in conjunction with Dewar flasks.

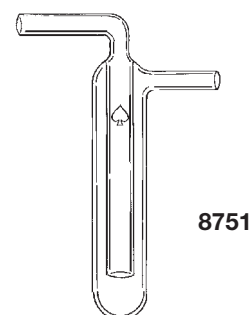
Body Diameter, mm	Body Length, mm	O.D. of Inner & Side Tube, mm	Qty.	Order Code	Each
25	200	10	1	8750-04	54.04
32	250	13	1	8750-08	59.07
35	250	16	1	8750-12	63.10
38	250	18	1	8750-16	71.65
45	350	25	1	8750-20	86.50



8751 VACUUM TRAP ♠

Same as 8750 except top is bent in line with side tube.

Body Diameter, mm	Body Length, mm	O.D. of Inner & Side Tube, mm	Qty.	Order Code	Each
25	200	10	1	8751-04	53.19
32	250	13	1	8751-08	62.91
35	250	16	1	8751-12	65.10
38	250	18	1	8751-16	74.05
45	350	25	1	8751-20	86.51



D127590 INNER TRAP/CONDENSER ROBO ★

For ASTM D7578. inner trap/condenser for ROBO reactor. Two are required for use with dual trap D127507.

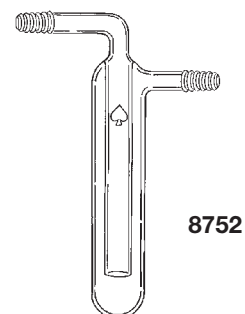
Qty.	Order Code	Each
1	D127590	Call

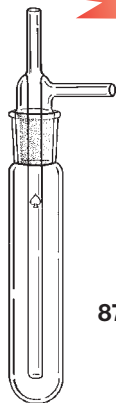


8752 VACUUM TRAP with Serrated Hose Connections ♠

Same as 8751 except with six-ring hose connections on inlet and outlet tubes. O.D. of smallest ring is 14mm; largest is 16mm.

Body Diameter, mm	Body Length, mm	O.D. of Inner & Side Tube, mm	Qty.	Order Code	Each
25	200	10	1	8752-05	79.82
38	250	18	1	8752-17	99.71




New Sizes!


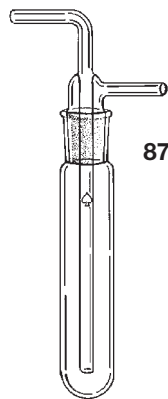
8753-06

8753 VACUUM TRAP ♠

With ⌘ joint to facilitate cleaning.

⌘ Joint	O.D. of Inner & Side Tube, mm	O.D. of Outer Body, mm	Lgth. of Outer Body Below Joint	Qty.	Outer Body		Inner Tube		Complete	
					Order Code	Each	Order Code	Each	Order Code	Each
24/40	10	28	200	1	8753-02	34.73	8753-04	56.45	8753-06	91.18
29/42	13	32	250	1	8753-08	35.51	8753-10	58.21	8753-12	93.72
34/45	16	38	250	1	8753-14	44.54	8753-16	63.03	8753-18	107.57
40/50	19	45	250	1	8753-20	52.68	8753-22	71.92	8753-24	124.60
45/50	22	51	250	1	8753-21	53.89	8753-23	67.14	8753-25	121.03
55/50	25	60	140	1	8753-60	84.93	8753-62	138.34	8753-64	223.27
50/50	30	54	110	1	8753-70	74.49	8753-72	109.62	8753-74	184.11

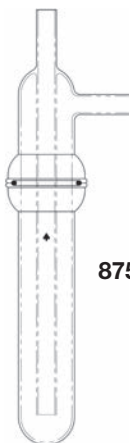
8753-37


8753 VACUUM TRAP Modified ♠

Same as 8753-06 except top tube is bent in line with side tube, but in opposite direction.

⌘ Joint	O.D. of Inner & Side Tube, mm	O.D. of Outer Body, mm	Lgth. of Outer Body Below Joint	Qty.	Outer Body		Inner Tube		Complete	
					Order Code	Each	Order Code	Each	Order Code	Each
24/40	10	28	200	1	8753-02	34.73	8753-35	47.61	8753-37	82.34
29/32	13	32	250	1	8753-07	36.76	8753-09	48.82	8753-11	115.84
29/42	13	32	250	1	8753-08	35.51	8753-39	61.41	8753-40	96.92
34/45	16	38	250	1	8753-14	44.54	8753-42	67.29	8753-43	111.83
40/50	19	45	250	1	8753-20	52.68	8753-47	75.12	8753-49	127.80
45/50	22	51	250	1	8753-21	53.89	8753-52	69.03	8753-54	122.92

8755


8755 VACUUM TRAP O-Ring Flange Connection ♠

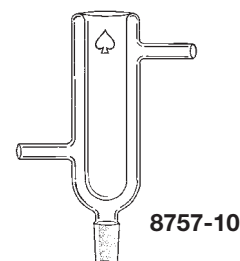
Vacuum trap assembly similar to 7853 series except with a Viton o-ring flange connection. This style has flexibility and ease of assembly and dis-assembly for cleaning. Utilizes a stainless steel, locking pinch clamp. For replacement o-rings, see 7855.

O.D. of Inner & Side Tube, mm	O.D. of Outer Body, mm	Lgth. of Outer Body Below Joint	Clamp #	O-Ring Size	Qty.	Order Code	Each
						Order Code	Each
10	28	215	7669-14	-217	1	8755-05	166.79
16	25	280	7669-18	-223	1	8755-10	177.12
19	45	280	7669-20	-226	1	8755-13	193.94
22	57	280	7669-22	-229	1	8755-17	226.26

8757 VACUUM TRAP Dewar Type ♠

With a 24/40 joint at the bottom. Inside diameter of coolant section is 50mm and length is approximately 250mm O.D. of inlet and outlet is 22mm.

Joint	Qty.	Order Code	Each
24/40	1	8757-10	220.13

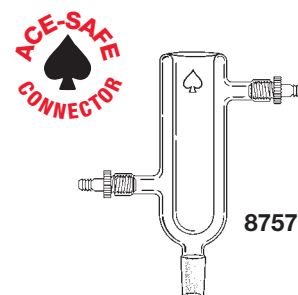


8757-10

8757 VACUUM TRAP Dewar Type, with Ace-Thred Inlet/Outlet ♠

With a 24/40 joint at the bottom. Inside diameter of coolant section is 50mm and length is approximately 250mm. Unit has been fitted with #15 Ace-Threds on the inlet and outlet for use with Ace-Safe tubing connectors, 5853, to make an easy, safe connect/disconnect of tubing. Simply attach 1/2-inch I.D. tubing to the connector and tighten connector in Ace-Thred with 7506-05 bushing to compress silicone o-ring, supplied with connector, to make a leak-tight seal. Complete item consists of body only, (2) 5853 tubing connectors, and (2) 7506-05 bushings.

	Qty.	Order Code	Each
Body, only	1	8757-22	251.98
Tubing Connector, w/Silicone o-ring (2)	1	5853-21	12.68
Bushing, Nylon, #15, without o-ring (2)	1	7506-05	12.20
Complete	1	8757-35	301.74

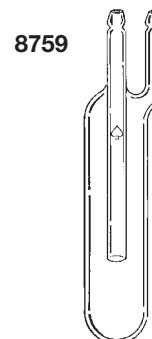


8757-35

8759 VACUUM TRAP ♠

With both arms in vertical position. 60mm O.D. x 250mm long. Side arms are 12mm O.D. Available with or without serrated connections on arms. Serrated connectors have six rings: the smallest, 14mm O.D.; largest, 16mm O.D.

	Qty.	Order Code	Each
Without Serrated Connectors	1	8759-04	119.53
With Serrated Connectors	1	8759-26	146.75



8759

8760 VACUUM TRAP ♠

Two piece vacuum trap design facilitates easy cleaning. Stopper features hose connection ends and a bent vertical tube. Use with 3/8-inch or 5/16-inch I.D. tubing, size C. See page 7 for more detailed hose connection information. See Ace 8753 family for the outer trap bodies only.

Joint	O.D. of Inner & Side Tube, mm	O.D. of Outer Body, mm	Lgth. of Outer Body Below Joint, mm	Qty.	Inner Tube		Complete	
					Order Code	Each	Order Code	Each
29/42	13	32	250	1	8760-10	78.88	8760-12	114.39
34/45	16	38	250	1	8760-16	84.54	8760-18	129.08
40/50	19	45	250	1	8760-22	95.04	8760-24	147.72
55/50	25	60	140	1	8760-62	142.97	8760-64	227.90
50/50	30	54	110	1	8760-72	118.30	8760-74	192.79



8760

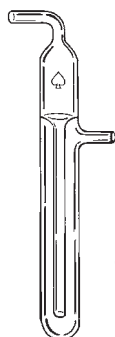


8764


8764 VACUUM TRAP *Vertical Side Arm* ♠

Modified version of 8750 series of vacuum traps, with side arm bent 90 degrees upward for easier attachment of vacuum tubing. For use with vacuum systems to capture undesirable vapors. Fits easily into Dewar flasks.

Body Diameter, mm	Body Length, mm	O.D. of Inner & Side Tube, mm	Qty.	Order Code	Each
25	200	10	1	8764-04	53.95
32	250	13	1	8764-08	59.83
35	250	16	1	8764-12	64.50
38	250	18	1	8764-16	72.71
45	350	25	1	8764-20	87.97

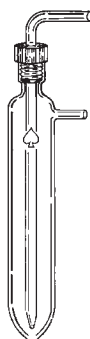


8761

8761 BUBBLER *Mineral Oil* ♠

Used to make a vent to the atmosphere. May also be used with mercury when adequate ventilation is available. Reservoir head prevents oil from being sucked back into the system. With 8mm O.D. tubing connections. Volume approximately 40mL below side arm.

Qty.	Order Code	Each
1	8761-10	48.41

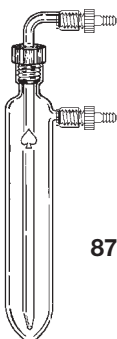


8762-14

8762 BUBBLER *Mineral Oil, Adjustable* ♠

With completely adjustable 7mm inner tube. Tube has a pulled tip and is secured by a #7 Ace-Thred. Volume approximately 40mL. Tapered bottom of vessel allows for use with small volumes. Nylon bushing supplied with FETFE o-ring.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Vessel Only	1	8762-03	44.70	Bushing Only	1	5029-10	2.85
Inner Tube	1	8762-07	11.55	Complete	1	8762-14	59.10



8762-20


8762 BUBBLER *Mineral Oil, Adjustable with "Ace-Safe"* ♠

Same item as listed above, except with the addition of #7 Ace-Threds on the inlet and outlet for use with Ace-Safe tubing connectors, 5853, to make an easy, safe connect/disconnect of tubing. Simply attach 1/4-inch I.D. tubing to the connector and tighten connector in Ace-Thred with bushing to compress silicone o-ring, supplied with connector, to make a leak-tight seal. With completely adjustable 7mm inner tube. Tube has a pulled tip and is secured by a #7 Ace-Thred. Volume approximately 40mL. Tapered bottom of vessel allows for use with small volumes. Nylon bushing supplied with FETFE o-ring.

	Qty.	Order Code	Each		Qty.	Order Code	Each
Vessel Only	1	8762-05	56.78	Connector, only (2)	1	5853-03	11.38
Inner Tube	1	8762-08	23.37	Bushing, Nylon (2)	1	5029-05	2.57
Bushing Only	1	5029-10	2.85	Complete	1	8762-20	110.90

Optional Item:

Inner Tube with check valve (Fits either 8762-03 or 8762-05)	1	8762-35	66.52
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14112-07 DIAPHRAGM VACUUM PUMP ILMVAC ★

Two-stage, chemically resistant diaphragm type pump. Ultimate pressure 6 torr (8 mBar), 18L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115v, 50/60 Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.

Qty.	Order Code	Each
1	14112-07	1998.35

MPC101Z


14112-07
14112-09 DIAPHRAGM VACUUM PUMP ILMVAC ★

Three-stage, chemically resistant diaphragm type pump. Ultimate pressure 1.5 torr (2 mBar), 16L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115v, 50/60 Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.

Qty.	Order Code	Each
1	14112-09	2487.14

MPC104T


14112-09
Vacuum Pumps
14112-11 DIAPHRAGM VACUUM PUMP ILMVAC ★

Two-stage, chemically resistant diaphragm type pump. Ultimate pressure 6 torr (8 mBar), 43L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115v, 50/60 Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.

Qty.	Order Code	Each
1	14112-11	2481.35

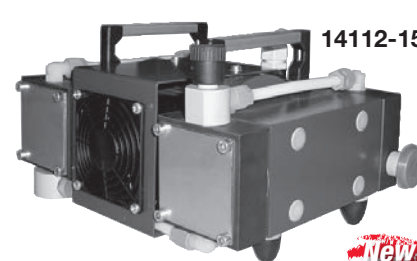
MPC301Z


14112-11
14112-15 DIAPHRAGM VACUUM PUMP ILMVAC ★

Three-stage, chemically resistant diaphragm type pump. Ultimate pressure 1.5 torr (2 mBar), 36L/minute flow rate. Connections are for 8mm I.D. vacuum hose. 115v, 50/60 Hz. Pump is compact and extremely quiet — great for all laboratory applications. Low maintenance thanks to beltless, oil-free operation. All wetted parts are PTFE or PTFE-type compounds. Two-year manufacturer's warranty is included.

Qty.	Order Code	Each
1	14112-15	3675.85

MPC201T


14112-15

14125 VACUUM PUMP *Mini, ILMVAC* ★

These compact new models are designed with a small, twin-head, diaphragm pump, enclosed in robust housing and a wide voltage range power adapter. They are extremely quiet with low vibration for lab bench use. The small footprint also takes up very little bench space. The Model MP is standard duty for most applications in water and wastewater sampling and testing and for biological testing and sampling. The match very well to the ACE filtration apparatus units 3700 and 3702. The MPR series is chemical resistant for solvent or vapor applications such as low-pressure chromatography or for small rotary evaporators. Both pumps utilize PTFE diaphragms and PEEK valves for wear resistance and minimal maintenance. Selectable voltage from 90-240 volt. 60mBar maximum vacuum, 10L/min. flow rate



General Features:

- Low priced vacuum pumps for filtration, drying and degassing
- Standard and chemically resistant models
- Extremely quiet – low noise and low vibration twin head design
- Plug and play wide range power adapter

Head Material	ILMVAC Model	Qty.	Order Code	
Aluminum	MP060E	1	14125-01	1783.61
PPS	MPR060E	1	14125-03	2125.92

WAT-VAC Water Vacuum Aspirator Pump

Easy to use • Fast, quiet operation • Stable vacuum

14030 VACUUM PUMP *Water Aspirator* ★

Portable water aspirator vacuum pump featuring a 10 liter polypropylene tank and circulating pump. This mechanical water aspirator eliminates tap hookups, recycles water previously poured down the drain when using conventional aspirators. Built-in feedwater drain hose makes it easy to change water. Vacuum ports are 3/8-inch O.D. hose barbs.



SPECIFICATIONS

Pump	150w, output 40 liters/min.
Pump Body.....	Corrosion resistant polypropylene
Suction Nozzles.....	Two independent built-in sources
Displacement.....	30L/min @ 50hz; 19L/min @ 60hz
Temperature Range	5° to 35°C
Ultimate Vacuum	28.5 inches Hg each tube
Reservoir Bath	Polypropylene
Capacity	10 liter tank
Power Source.....	115v AC, 50 hz or 230v AC, 60hz
Weight	13.5 lbs. (6 Kg)
Dimensions.....	10W x 14.2D x 15.9H Inches (255mm x 361mm x 406mm)

Qty.	Order Code	Each
1	14030-25	945.00

14036 PUMP OIL, VACUUM Krytox® ★

A perfluoro ether mechanical pump oil superior in all comparisons to either hydrocarbon or silicone oils. Krytox oil provides closely controlled viscosity and vapor pressure for systems that require clean, premium-quality fluids. Service costs are reduced because of less frequent down time. Krytox exhibits an extraordinary combination of properties which include:

- Excellent oxidative and thermal stability
- Exceptionally high degree of chemical inertness (contains only carbon, oxygen, fluorine)
- Radiation resistant, no sludge formation
- Low vapor pressure (10^{-7} @ 20°C)
- Wide liquid viscosity range
- Excellent lubricity at temperatures to 200°C
- Compatibility with metals, plastics and elastomers
- Meets or exceeds the warranty requirements of all major pump manufacturers



14036

Available in 1/2 pint and pint containers. One pint is approximately two lbs.

Qty.	Order Code	Each
1 Pint	14036-20	302.65

® Reg. U.S. Pat. & TM Off. and made only by DuPont Co.

14115 BATH OIL ★

An extremely stable, medium viscosity silicone oil. Available in two temperature ranges:
 Low Temp — maximum 180°C; or HighTemp — maximum 230°C.

Type	Qty.	Order Code	Each
Low Temp (180°C)	.9L (1 Qt.)	14115-05	56.58
High Temp (230°C)	.9L (1 Qt.)	14115-12	78.82
Type	Qty.	Order Code	Each
Low Temp (180°C)	1.8L (½ Gal.)	14115-10	92.05
High Temp (230°C)	1.8L (½ Gal.)	14115-14	140.08

Low temp oil color is CLEAR. High temp oil color is AMBER.

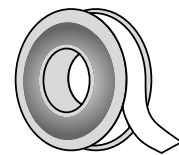
14115



14120 PTFE TAPE Sealing ★

99% pure PTFE tape used to effect a leak-tight seal when connecting items such as 6445 pressure gauge to 5844 adapter, etc. Wrap tape around male thread before threading into female. Thickness is .0035 inches. Supplied in rolls of 520 inches.

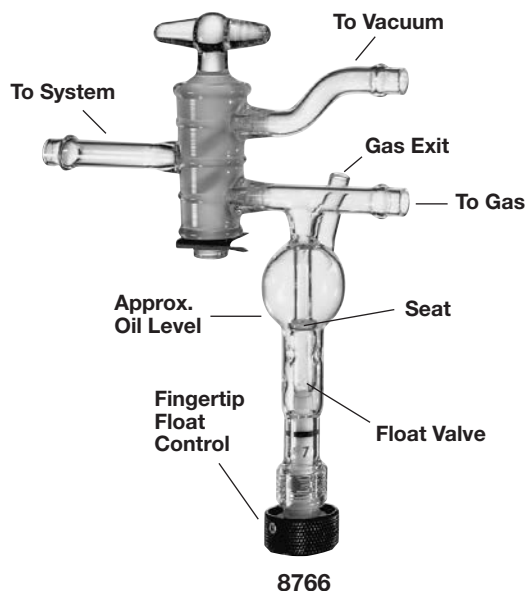
Width (In.)	Qty.	Order Code	Per Roll
1/4	1 roll	14120-14	12.26
1/2	1 roll	14120-18	12.21



14120

Firestone Valve

A rapid purge valve for controlled atmosphere work



8766 VALVE Rapid Purge, Firestone* ♠

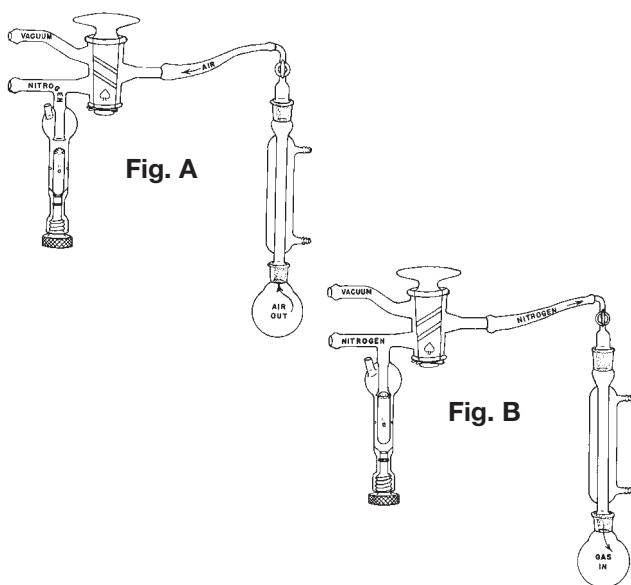
A rapid, efficient and foolproof purge valve for 100% replacement of air in reaction vessels with any desired gas (N_2 , H_2 , Ar, Cl_2 , etc.). No mercury used, no reducing valve needed on gas source, no high vacuum source necessary. No need to watch manometers, hand control gas flow, or install warning systems to prevent accidents. Expensive gases are conserved because once purging is complete, the flow can be cut almost to zero. This valve is so inexpensive, it is possible to run all reactions under nitrogen as easily as not. For manifold using 8766 valve, see 8765.

Qty.	Order Code	Each
1	8766-12	264.61

How It Works:

Connect reaction vessel, house vacuum, and purge gas to valve via 10mm O.D. connections. On vacuum cycle, **Fig. A**, air is removed from the reaction vessel while the stop valve is closing. When filling is complete, **Fig. B**, the stop valve reopens to prevent pressure buildup. Thus, a simple half turn of the stopcock alternates the reaction system from vacuum to gas flow as fast as desired. In small systems, a complete cycle takes as little as one to two seconds. With only 1/2 atmosphere house vacuum, ten cycles removes all but .510 atmospheres of air. About 70 cycles gets you down to the last molecule of oxygen.

After purging, the system is kept under slight positive pressure indefinitely, with a slow bubbling of the gas to prevent diffusion of air past the joints. If the reaction evolves a gas, no pressure builds up, and it may even be collected and measured while maintaining a controlled atmosphere. Proper selection of the liquid for the seal allows purging with any gas that does not react with glass. Liquid not supplied.



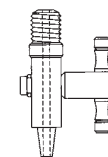
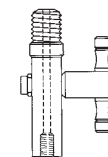
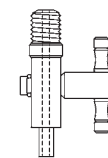
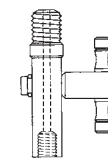
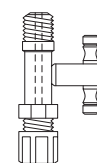
*Designed by Dr. Raymond Firestone

For ultra dry gas, The Firestone Valve can be used in conjunction with the 7818 ACE-Burlitch drying column. Call or email for details.

5839 VALVE PTFE

Shut-off valve for use with 5802, 5838 or 5857 bottom adapters or any other ACE fitting with threads to allow flow regulation. Codes -04,-08,-10,-14 and -42 supplied with 1/4-inch male NPT at one end for threading into bottom adapters, other end with either a male Luer-Lok, 1/4-inch-28 female, 1/8-inch female NPT, 1/4-inch straight tube or 1/4-inch tubing connector; codes -47 and -55 have female NPT threads on both ends, for connecting to 5844 adapter using 12770 nipple. Must use 5844-120 adapter (3/8-inch male NPT – 1/4-inch female NPT) when connecting 5839-42; 12770-54 (3/8-inch male NPT – 3/8-inch male NPT) when connecting 5839-47.

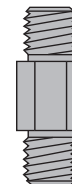
Style (Inches)	Bore, mm	Qty.	Order Code	Each
1/4 Male NPT – Male Luer-Lok	1.5	1	5839-04	♠ 51.36
1/4 Male NPT – 1/4-28 UNF	3.0	1	5839-08	♠ 57.16
1/4 Male NPT – 1/4 Straight Tube	3.0	1	5839-10	♠ 53.89
1/4 Male NPT – 1/8 Female NPT	3.0	1	5839-14	♠ 57.16
1/4 Male NPT – 1/4 Tubing Connector		1	5839-42	★ 113.46
3/8 Female NPT – 3/8 Female NPT		1	5839-47	★ 520.22
1/2 Female NPT – 1/2 Female NPT		1	5839-55	★ 548.41


5839-04

5839-08

5839-10

5839-14

5839-42

5839-47, 55
8767 VALVE Pressure Relief, Adjustable ★

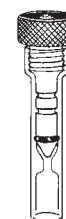
The primary protection to personnel and equipment involved with static and dynamic pressured systems. This one-piece pressure relief valve is adjustable from 3 to 50 psig (for use with ACE pressure reactors) or 50 to 150 psig by simply adjusting set screws to desired cracking pressure. When pressure exceeds set cracking pressure, valve bleeds; when a safe lower pressure is realized, valve will reseal. Fabricated from 316 stainless steel with a Viton o-ring. Ends are 1/4-inch npt for connecting into Ace-Thred with a 5844 adapter. Combining the code -20 valve with the 6445 rupture disc in the same pressure manifold offers fail-safe protection against runaway pressure situations.

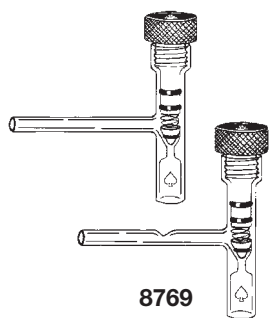
Cracking Pressure	Qty.	Order Code	Each
3 to 50 psig	1	8767-20	88.58
50 to 150 psig	1	8767-55	88.78


8767
8768 VALVE Vacuum Release ♠

Threaded vacuum release valve with fingertip control for opening systems to the atmosphere. Plunger stem made of PTFE with single o-ring of FETFE.

Qty.	Order Code	Each
1	8768-10	66.15


8768-10

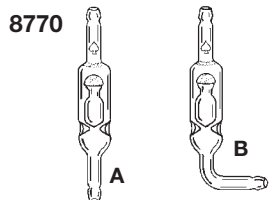


8769

8769 VALVE *Pressure Release, Automatic* ♠

Automatic, adjustable pressure release valve for safer operation of pilot plant or other assemblies where the pressure is of great concern. The tension on the stainless steel spring determines the amount of pressure needed to force the lower piece open. With the spring supplied, the range is 15–50 psi. Available with or without warning whistle. Plunger made of PTFE with FETFE o-rings.

	Qty.	Order Code	Each
Without whistle	1	8769-10	103.75
With whistle	1	8769-20	151.91

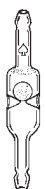


8770

8770 CHECK VALVE ♠

An all-glass check valve with ground seat for liquid seal. Available in style A — for vertical use, and style B — for right angle connection. Connections are 8mm O.D.

Style	Qty.	Order Code	Each
A – straight	1	8770-05	77.02
B – angled	1	8770-10	78.41



8774

8774 CHECK VALVE ♠

All-glass check valve with ground seat and precision ground solid ball. Suitable with mercury in the vertical position, more sensitive to other fluids in the horizontal position. Connections are 8mm O.D.

Qty.	Order Code	Each
1	8774-09	62.15

15424


15424 INLET VALVE ♠

Inlet valve, used primarily with No-Air Reactors to allow evacuation and gas inlet. With 4mm O.D. serrated fitting, 2mm bore.

Qty.	Order Code	Each
1	15424-20	55.09



12582

12582 PUMP *Aspirator* ♠

Operates on water pressures above 11 psi. Integral polypropylene check valve resists corrosive filtrates and fumes. The quick-disconnect hose fitting accepts 1/4-inch to 3/8-inch I.D. tubing. Male thread faucet connection is 3/8-inch I.P. Maximum attainable vacuum is 27.4 inches (696mm) with flow rate of 1.5 gallons (6 liters) per minute. Supplied 12 per case.

Qty.	Order Code	Each	Case Price
One or case of 12	12582-08	16.94	203.33

5707 VIALS *Headspace, Flat Bottom ♠*

Standard headspace vials with 20mm finish neck for crimp seals. Manufactured from clear, USP Type 1 borosilicate, glass. This vial has an even flat bottom for better stirring and heating. These vials fit into Agilent or Shimadzu autosamplers. Come in pack sizes of 100. See 5708 for 20mm lined aluminum seals.

Description	O.D. x H, mm	Pkg. Qty.	Order Code	Per Pack
6.0 mL Clear Vial, Standard Finish Top	22 x 38	100	5707-05	Call
10.0 mL Clear Vial, Standard Finish Top	23 x 48	100	5707-06	Call
20.0 mL Clear Vial, Standard Finish Top	23 x 75	100	5707-07	Call
6.0 mL Clear Vial, Tapered Finish Top	22 x 38	100	5707-10	Call
10.0 mL Clear Vial, Tapered Finish Top	23 x 48	100	5707-11	Call
20.0 mL Clear Vial, Tapered Finish Top	23 x 75	100	5707-12	Call


5707 VIALS *Headspace, Round Bottom ♠*

Standard headspace vials with 20mm finish neck for crimp seals. Manufactured from clear, USP Type 1 borosilicate, glass. This vial has an even flat bottom for better stirring and heating. These vials fit into Agilent or Shimadzu autosamplers. Come in pack sizes of 100. See 5708 for 20mm lined aluminum seals.

Description	O.D. x H, mm	Pkg. Qty.	Order Code	Per Pack
6.0 mL Clear Vial, Tapered Finish Top	22 x 38	100	5707-25	Call
10.0 mL Clear Vial, Tapered Finish Top	23 x 48	100	5707-26	Call
20.0 mL Clear Vial, Tapered Finish Top	23 x 75	100	5707-27	Call


VIALS
5708 SEALS *Aluminum, with Liner ♠*

20mm lined, natural aluminum crimp style seals for headspace, serum and other styles of vials with 20mm crimp finish tops. Available in natural aluminum with various PTFE/rubber linings. Colored aluminum available via special order. A magnetic crimp seal version is available for use with robotics and a pressure release version designed to release at 3 Bar (43 psi) pressure.

Description	Pkg. Qty.	Order Code	Per Pack
PTFE/Silicone	100	5708-04	Call
PTFE/Butyl Rubber	100	5708-05	Call
PTFE/Molded Butyl Rubber	100	5708-06	Call
PTFE/Silicone, Pressure Release	100	5708-10	Call
PTFE/Butyl Rubber, Pressure Release	100	5708-11	Call
PTFE/Molded Butyl Rubber, Pressure Release	100	5708-12	Call
PTFE/Silicone, Magnetic	100	5708-18	Call
PTFE/Butyl Rubber, Magnetic	100	5708-19	Call
PTFE/Molded Butyl Rubber, Magnetic	100	5708-20	Call





5708

5698 VIALS Shell ♠

1.0mL, 8x40mm, clear and amber USP Type I borosilicate, glass, shell vials with 8mm natural, polyethylene snap plug. Come in shelf packs of 200.

Color	O.D. x H, mm	Pkg. Qty.	Order Code	Per Pack
Clear	8 x 40	200	5698-20	Call
Amber	8 x 40	200	5698-24	Call



5533 CRIMPER ★

For attaching aluminum seals. This crimper features a new, ergonomic design cushioned handle that aids in reducing hand fatigue and provides a higher degree of comfort for the user. Each crimper is labeled for quick identification for seal size. Can be autoclaved.

Fits Seal Size, mm	Qty.	Order Code	Each
11	1	5533-03	290.06
20	1	5533-05	305.07



5534 PLIERS/DECAPPER ★

Pliers/decapper for 11mm and 20mm aluminum seals.

Fits Seal Size, mm	Qty.	Order Code	Each
11	1	5534-11	82.08
20	1	5534-24	82.08



5535 DECAPPER ★

Decrimper features a new, ergonomic design cushioned handle that aids in reducing hand fatigue and provides a higher degree of comfort for the user. Each decrimper is labeled for quick identification for seal size. Removes seals quickly and efficiently. Can be autoclaved.

Fits Seal Size, mm	Qty.	Order Code	Each
11	1	5535-03	312.36
20	1	5535-07	312.20

5532 SEALS Aluminum ♦

Natural color Aluminum seals for use with any 20mm OD flat septa or 5531 flange style stoppers. Aluminum crimp-seals are for serum vials and bottles, headspace vials and any other crimp finish vials. For use with auto or hand crimping tools. Colored or color coded are available on special order as are other sizes.



<i>Type: One-piece, center disc tears out</i>			<i>Type: One-piece, tears completely off</i>			<i>Type: Open top</i>		
Case Qty.	Order Code	Case Price	Case Qty.	Order Code	Case Price	Case Qty.	Order Code	Case Price
1000	5532-07	80.42	1000	5532-27	72.62	1000	5532-37	69.54

8779 VIALS Poly-Seal Screw Cap ♦

USP Type 1 borosilicate glass vials with Poly-Seal cone lined closures which are molded in a premium grade, natural low density polyethylene to help prevent deforming and stress cracking. Inverted cone liner is designed to provide an excellent seal and exceptional torque retention, even at low application torque. Caps are not attached, but are packed with vials in sturdy hand-out shelf boxes of 100 pieces.



Capacity, Drams	Approx. Cap., mL	O.D. x H, mm	GPI Thread Finish	Pkg. Qty.	Order Code	Per Pack
1	4	15 x 45	13-425	100	8779-10	70.14
1.5	6	16 x 50	13-425	100	8779-15	73.72
2	8	17 x 60	15-425	100	8779-20	74.47
3	11	19 x 65	15-425	100	8779-30	89.19
4	16	21 x 70	18-400	100	8779-40	126.19
6	22	23 x 85	20-400	100	8779-60	76.66
8	30	25 x 95	22-400	100	8779-80	127.05

8779 MICRO SAMPLE VIAL Metal-Foil Lined Cap ★

Manufactured from borosilicate glass. The small size of the vial reduces sample-to-surface contact when used as a micro package. Economical when used as scintillation vial.



Cap., Drams	Cap., mL	O.D. x Hgt., mm	Screw Cap Size	Case Qty.	Order Code	Case Price
1/2	2	12 x 38	8-425	288	8779-02	179.92

8782 VIAL Reaction, with Cap ♦

Clear borosilicate Type 1 glass vial with V bottom, with open-top black phenolic caps with PTFE-faced silicone liners. Packed 12 or 6 per case.

Vial Type	Size	O.D. x H, mm	Case Qty.	Order Code	Case Price
Reaction	1mL	13 x 44	12	8782-01	105.48
Reaction	5mL	20 x 65	12	8782-05	145.25
Reaction	10mL	24 x 72	6	8782-10	125.80




8780 VIALS *Sample, Clear Glass with Cap* ♠

USP Type I, class A, clear, borosilicate glass, sample vials complete with solid, black, phenolic, caps. Caps have PTFE faced 14B rubber liners for purity and chemical resistance. Available in packs of 100.

Description	O.D. x H, mm	Cap Size	Pkg. Qty.	Order Code	Per Pack
0.5 dram/2mL	12 x 32	8-425	100	8780-01	Call
1 dram/4mL	15 x 45	13-425	100	8780-02	Call
2 dram/8mL	17 x 60	15-425	100	8780-04	Call
4 dram/16mL	21 x 70	18-400	100	8780-08	Call
30mL	28 x 70	24-414	100	8780-10	Call
60mL	28 x 140	24-400	100	8780-20	Call


8781 VIALS *Sample, Amber Glass with Cap* ♠

General screw thread sample vials made from USP Type I, Class B, amber glass. Actual amber glass made from amber tubing, not amber coated. Sample vials complete with solid, black, phenolic, caps. Caps have PTFE faced 14B rubber liners for both purity and chemical resistance. Available in packs of 100.

Description	O.D. x H, mm	Cap Size	Pkg. Qty.	Order Code	Per Pack
0.5 dram/2mL	12 x 32	8-425	100	8781-02	Call
1 dram/4mL	15 x 45	13-425	100	8781-06	Call
2 dram/8mL	17 x 60	15-425	100	8781-08	Call
30mL	28 x 70	24-414	100	8781-10	Call
60mL	28 x 140	24-400	100	8781-30	Call


8780/8781 VIALS *Scintillation, Digestion, with Cap* ♠

20mL Scintillation type vials, USP type I Class A clear and Class B amber borosilicate glass. These are also referred to as digestion or plain sample vials. Vials have 24-414 solid top black phenolic caps with a PTFE faced/silicone rubber liner for added protection and chemical resistance or white open-top caps with bonded PTFE/silicone liners. Available in packs of 100.

Color	Cap Style	O.D. x H, mm	Pkg. Qty.	Order Code	Per Pack
Clear	Solid Black	28 x 57	100	8780-29	Call
Amber	Solid Black	28 x 57	100	8781-12	Call
Clear	Open-Top White	28 x 57	100	8780-33	Call
Amber	Open-Top White	28 x 57	100	8781-24	Call

For septa and closures, see page 485.

8780/8781 VIALS *EPA, TOC with caps* ♠

40mL vials fabricated in either USP Type I Class A or B clear or amber borosilicate glass. Vials are available with either solid 24-414 black phenolic caps with PTFE faced silicone rubber liners or with white open top caps with a PTFE faced silicone septa type lining. The 40mL vials with the open top caps are for EPA protocol 40CFR136 guidelines. These vials are not pre-cleaned or certified.

Description	O.D. x H, mm	Pkg. Qty.	Order Code	Per Pack
Clear with solid cap	28 x 95	72	8780-30	86.80
Amber with solid cap	28 x 95	72	8781-35	170.00
Clear with open-top cap	28 x 95	72	8781-20	183.02
Amber with open-top cap	28 x 95	72	8781-25	197.75
Accessories		Pkg. Qty.	Order Code	Per Pack
Replacement 24-414 open top caps		200	8781-40	69.47
Replacement PTFE/Silicone Septa		100	8781-45	200.67


8785 VIALS *Mini* ♠

Multipurpose, borosilicate glass vial designed for storage and shipment of small volumes. Cone-shaped interior allows maximum retrieval of contents by syringe or micro-pipette. Ideal for iodine¹³¹, iodine¹²⁵ and other isotopes. Packed in convenient, reusable plastic transport or storage boxes with hinged lid and foam cells. For use with 5532-38 Aluminum Seals with PTFE-faced rubber septa.

Capacity, mL	Mouth I.D. x O.D., mm	Diameter x Height, mm	Case Qty.	Order Code	Case Price
0.3	7 x 13	13 x 32	12	8785-07	76.03
1.0	7 x 13	13 x 40	12	8785-14	86.91


5530 SERUM BOTTLE ♠

These borosilicate glass serum bottles meet the requirements of the Pharmacopeia of the United States (USP) for Type I glasses. Repeated sterilization does not affect Type I qualities. Offer maximum protection for delicate injectables and biological materials. With large mouth openings for ease in filling, emptying and cleaning.

Capacity, mL	Mouth I.D. x O.D., mm	Diameter x Height, mm	Case Quantity	Order Code	Case Price
5	13 x 20	23 x 47	288	5530-08	160.80
10	13 x 20	25 x 54	288	5530-10	225.09
20	13 x 20	32 x 58	288	5530-12	267.44
30	13 x 20	37 x 63	288	5530-14	338.56
50	13 x 20	43 x 73	288	5530-16	424.89
60	13 x 20	41 x 91	144	5530-18	237.09
100	13 x 20	52 x 95	144	5530-20	328.36
125	13 x 20	54 x 107	144	5530-22	459.58


5530



13290 ADAPTER Conversion ♠

Glass adapter with ㉔ 24/40 or ㉔ 29/42 joint to #15 or #25. #15 is used with 13290-11 through -22 or 13290-121 through -134; #25 is used with 13290-26 or 13290-136 connecting adapter to connect vials or flasks to rotary evaporators. Suitable for vacuum work. Order each item separately.

㉔ Joint	Ace-Thred	Qty.	Order Code	Each
24/40	#15	1	13290-34	22.78
24/40	#25	1	13290-37	79.26
29/42	#15	1	13290-44	24.05
29/42	#25	1	13290-47	80.98

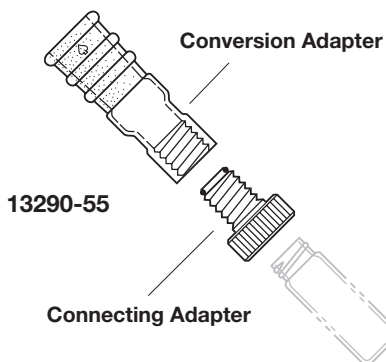


13290 ADAPTER Connecting, PTFE ★

PTFE adapter with #15 or #25 Ace-Thred and GPI thread to connect 13290-34, -37, -44 or -47 conversion adapter to mating vial for use in rotary evaporators. Suitable for vacuum work. Order separately.

Note: FETFE not suitable for use with methylene chloride or acetone, use Chemraz instead.

GPI Thread	Ace-Thred	Qty.	With FETFE O-Ring		With Chemraz O-Ring	
			Order Code	Each	Order Code	Each
8-425	#15	1	13290-11	20.23	13290-121	65.14
13-425	#15	1	13290-13	20.23	13290-123	65.14
15-425	#15	1	13290-15	20.23	13290-125	65.14
18-400	#15	1	13290-18	20.23	13290-128	65.14
20-400	#15	1	13290-20	20.23	13290-130	65.14
22-400	#15	1	13290-22	20.23	13290-132	65.14
24-410	#15	1	13290-24	20.80	13290-134	65.14
24-410	#25	1	13290-26	58.18	13290-136	151.98



13290 MULTIPACK CONNECTING ADAPTER KIT ★

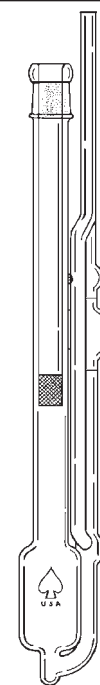
Convenience kit with several PTFE Ace-Thred to GPI thread adapters to fit various vial sizes. 13290-55 version includes the -11 through -24 PTFE adapters listed above. 13290-59 version includes the -121 through -134 PTFE adapters listed above. The kit also includes one 13290-34 #15 glass conversion adapter.

Qty.	Order Code	Per Kit
1	13290-55	164.96
1	13290-59	478.76

7987 VISCOMETER *Modified Ubbelohde* ★

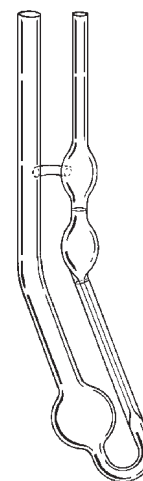
Used in ASTM Method D 1601. A test for dilute solution viscosity of ethylene polymers at 130°C. It is applicable to a reasonably wide spectrum of ethylene polymers having densities from 0.913 to 0.970g/cc. Available in capillary sizes 0.6, 0.7 and 0.8mm.

Size, mm	Qty.	Order Code	Each
0.6	1	7987-05	540.84
0.7	1	7987-10	540.84
0.8	1	7987-15	524.56


7987
VISCOMETERS
7988 VISCOMETER *Cannon-Fenske* ★

For use in obtaining kinematic viscosities. Directions for use are published in *ASTM Standards on Petroleum Products and Lubricants*, D 445. Viscosities can be measured with a precision of ±0.2% quickly and easily. A sample of approximately 7mL is necessary. Offered calibrated with certificate or uncalibrated.

Size	Approx. Constant Centi-stokes/Sec.	Range Centistokes	Qty	<i>Uncalibrated</i>		<i>Calibrated</i>	
				Order Code	Each	Order Code	Each
25	0.002	0.5 to 2	1	7988-03	106.97	7988-33	137.10
50	0.004	0.8 to 4	1	7988-05	106.97	7988-35	137.10
75	0.008	1.6 to 8	1	7988-07	106.97	7988-37	137.10
100	0.015	3 to 15	1	7988-09	106.97	7988-39	137.10
150	0.035	7 to 35	1	7988-11	106.97	7988-41	137.10
200	0.1	20 to 100	1	7988-13	106.97	7988-43	137.10
300	0.25	50 to 250	1	7988-15	106.97	7988-45	137.10
350	0.5	100 to 500	1	7988-17	106.97	7988-47	137.10
400	1.2	240 to 1200	1	7988-19	106.97	7988-49	135.76
450	2.5	500 to 2500	1	7988-21	106.97	7988-51	137.10
500	8	1600 to 8000	1	7988-23	106.97	7988-53	137.10
600	20	4000 to 20000	1	7988-25	106.97	7988-55	137.10
650	45	9000 to 45000	1	7988-27	106.97	7988-57	135.76
700	100	20000 to 100000	1	7988-29	106.97	7988-59	135.76


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