



Designed as efficient, easy-to-use, low-cost alternatives, Brandel's PHD™ (Punch, Harvest and Deposit) Harvesters are suited to labs that wish to add some level of automation, but don't routinely process enough samples to justify one of our larger Harvesting Systems. Capable of harvesting 24 samples at a time, punching paper and depositing discs, a PHD™ Harvester can process a fully populated 96-well plate in 5 minutes. PHD™ Harvesters can deposit filter discs into any type of miniature scintillation vial, test tube or gamma tube. The geometry of the test plate or standard test tube rack is preserved throughout the operating sequence.

VERSATILE AND COST EFFECTIVE HARVESTING

VERSATILE SAMPLE HANDLING AND DEPOSIT CAPABILITIES

PHD™ Harvesters are compatible with any 96-well microtitration plate, all types of 24- and 48-well plates, test tubes in standard racks, and macro-well tubes. Standard quick-disconnect systems make it possible to change from one harvest head type to another in seconds.

These machines can deposit filter discs into any type of miniature scintillation vial, test tube or gamma tube. Geometry of the test plate or standard test tube rack is preserved throughout the entire operating sequence.

TEST SUITABILITY

Models 200A and 290 are suitable for a wide range of tests from MLC's to many RBA's. Up to 1.3 million lymphocytes or 2.5 mg of homogenized tissue can be harvested per sample. PHD™ Harvesters are compatible with a wide range of wash fluids and buffers, including saline, methanol, and 5% to 10% TCA.

ACCESSORIES ADD CAPABILITIES

Accessories and options are available for nearly every application. Adding a Dispenser, for example can significantly speed results by filling 96 wells with cocktail in less than a minute. See our full complement of accessories (at right) for various wash options, filtrate handling options, harvesting heads, vacuum pump and vial plates.

MODIFICATIONS, OVERHAULS, UPDATES & CUSTOM EQUIPMENT

Modifications to existing products and development of completely new products can often be performed for modest engineering charges. An older PHD™ Harvester can be overhauled or sometimes modified to reflect the latest technology or additional requirements at low cost.



Model 290

MODELS

MODEL 200A

Aspirates and deposits at the time of harvesting. Features a specially designed diaphragm wash valve which allows all wash needles to be turned on and off instantly, provides an equal flow to each needle and eliminates well-to-well flooding.

MODEL 290

Offers the choice of aspirating and depositing at the time of harvesting or later. This feature is useful if samples need to be absolutely dry before adding cocktail or when drying samples on the filter strip is preferable to drying in vials. Model 290 also minimizes the number of vial trays needed.

In the non-punching mode, filter strips can easily be removed after harvesting and stored. Small indexing holes are made in the filter mat during harvesting for precise alignment when returned to the harvester for cutting and depositing. Indexing holes also preserve sample geometry.

Features a specially designed diaphragm wash valve which allows all wash needles to be turned on and off instantaneously, provides an equal flow to each needle and eliminates well-to-well flooding.

OPERATION

1. After the filter mat is placed in the instrument, a stainless steel punch and die set cuts 24 discs out of it in one easy motion and seals them into the collection mechanism. Cross-contamination of samples is impossible.
2. A 96-well plate is placed in the convenient workstation built into the base of the harvester. Samples are then harvested two rows at a time from the microtitration plate onto the discs. While the samples are sealed, they can be washed and dried.
3. After flipping a switch to reverse the vacuum direction, all 24 samples are elevated by raising the punch level.
4. The Vial tray slides under the elevated samples and is keyed into position. The samples can be dropped directly into the scintillation vials or test tubes and are kept in the same orientation as in the original 96-well plate. One instrument performs all operation; there is no additional filter transfer mechanism to purchase.

FEATURES

- Deposits 24 samples per operation directly into any type of small scintillation vials or test tubes.
- Completely harvests and deposits filtered samples from a 96-well plate in 5 minutes.
- PHD™ Accessories fill 96-vials with LS cocktail.
- Trays hold vials in the same orientation as original plate.
- Includes one vial tray of your choice; additional trays may be ordered separately.
- Easy operation saves labor and avoids handling of samples.
- Mix-ups are impossible.
- No possibility of well flooding.
- Accessories available for every application.
- Stainless steel and aluminum mechanism lasts a lifetime.

ACCESSORIES & OPTIONS

BASIC ACCESSORIES

VIAL TRAYS

For any 4 to 8ml scintillation vial, 12mm x 75mm test tubes and gamma tubes.

SET-UP KITS

These components simplify the process of getting your new PHD™ Harvester up and running. The basic kit includes a 4-liter wash reservoir, three 1-liter vacuum-rated collection flasks, tubing, all necessary connectors, stoppers and tubing clamps.

VACUUM PUMP

Supplies a flow rate of 19 CFM (54 lpm) and a vacuum level of 18 in. Hg. (minimum).

GLASS FIBER FILTER STRIPS

Pre-cut strips for use with all types of PHD™ Harvesters. Many grades are available.

ASPIRATION ACCESSORIES

HARVESTING HEADS

Available for all PHD™ Harvesters using 24- and 48-well plates, as well as any type of standard 96-well microtitration plates. Harvesting heads are easily interchangeable when used with the Quick-Disconnect System (below).

WASH ACCESSORIES

WASH PUMP

Available for receptor binding and other assays where buffers and wash fluids must be kept below ambient temperature or where gravity-fed wash systems are inconvenient.

WASH TIMER

Digital Wash Timer controls 2 modes of washing operation: Manual and Timed. Manual Mode delivers wash or buffer solutions while the switch on the harvest head is depressed. Timed Mode causes solutions to flow continuously for 0 to 99 seconds as defined by the user.

HARVESTING HEAD SUPPORT

Prevents aspiration and wash needles from touching well bottoms and dislodging cells or fragments. Support can be adjusted to accommodate any type of 96-well plate.

IN-LINE FILTER ASSEMBLY

Helps to remove contaminant from wash buffer solution.

SUPERNATANT (FILTRATE) AND WASTE FLUID OPTIONS

SUPERNATANT COLLECTION SYSTEMS

Allows retrieval of supernatant (filtrate) from samples after filtration. Supernatant is retained as separate quantities from the culture plate to the collection test tubes. Includes vacuum chamber, test tube rack and all necessary tubing.

FLOW CONTROL (HOT/COLD) VALVE

Supernatant and waste fluids are manually directed into separate collection flasks.

BRANDEL

POPULAR PHD™ ITEMS

GLASS FIBER FILTER STRIPS

240-1 Filter Paper for 200A/290

96-VIAL TRAYS

212-1 17.4mm Hole Size

212-2 16.25mm Hole Size

212-4 14.5mm Hole Size

212-5 For 12x75mm Test Tubes

HARVESTER HEADS (WITH VACUUM CHAMBERS)

220C-1 For 96-well plates (standard)

VACUUM PUMP

CH-728 Vacuum Pump for 200A/290

WASH & WASTE FLUID ACCESSORIES

200-4 In-line Filter Assembly

217 Wash Pump for all PHD™ Models

250 Flow Control (Hot/Cold) Valve

SETUP KITS

213 Basic Setup Kit

213-1 Deluxe Setup Kit

REPLACEMENT COMPONENTS

200-1 O-Ring Set for 200A/290 (Glue Included)

200-2 Screen Set for 200A/290

200-5 Pre-cut Tubing for Plates

200-3 Coiled Tubing (not pre-cut)

230A-1 Vacuum Chamber Gasket (set) for 200A/290

ALSO FROM BRANDEL

- Fully-Automated Harvesting Systems
- Semi-Automated Harvesters & Deposit/Dispensing Systems
- Micro Dispensing Systems
- Automatic Dispensers
- High-Capacity Plate Carousels
- CO₂ Incubators
- Automated Plate Sealers
- Suprafusion2500: Robotic Perfusion Systems
- Suprafusion1000: Semi-Automated Perfusion Systems
- Electrical Stimulators
- Microfractionator
- Gradient Fractionator
- Multi-Channel Fraction Collector
- Versaflow™ Multi-Channel Peristaltic Pumps
- Syringe Pump
- Filter Plates/Filter Paper

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