A Nidec Group Company

MINSTER®

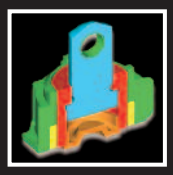
All for dreams

BULLETIN 163C

E2H

HEVISTAMPER

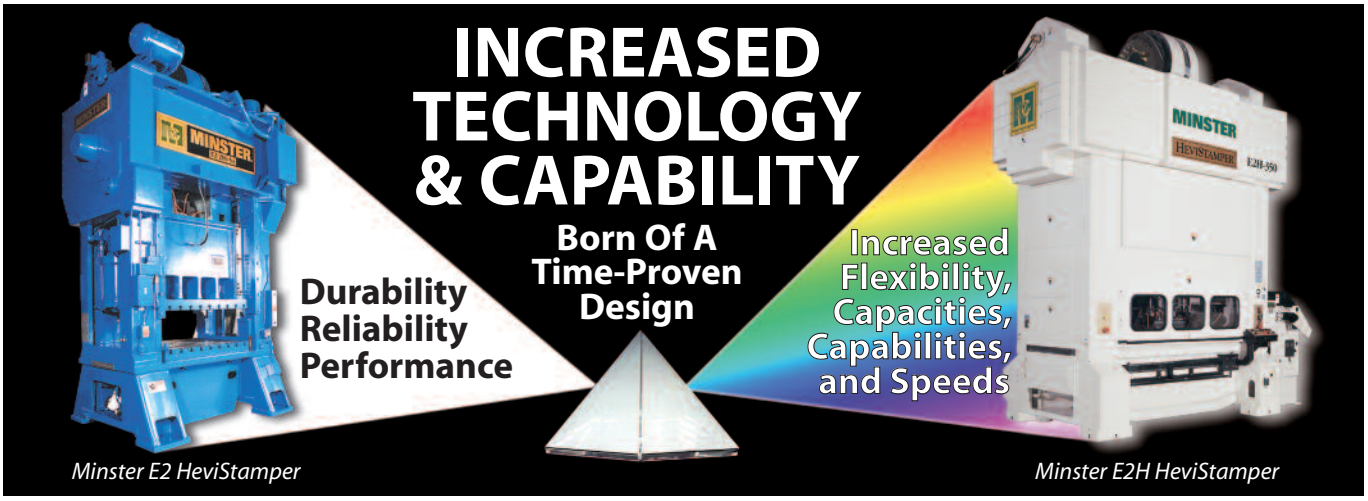
250-1000 TONS CAPACITY


E Series Presses

TECHNOLOGICALLY ADVANCED TO PROVIDE
GREATER FLEXIBILITY AND INCREASED PRODUCTION

INTRO



For years, Minster's E2 product line has set the standard that others still strive to match. Using the history and world-renown attributes of the E2, Minster has designed the E2H to provide additional flexibility and capabilities that our customer's have requested, and that the overall market now requires.

Run Both Large and Small Dies On The Same Press

To give the user increased flexibility, the E2H is designed to handle full tonnage dies that range from 25% to 100% of its die area. Refer to chart on page **3** for details. Dies even smaller than 50% of the die area can be run on the E2H if they require less than full tonnage.

Run Progressive and Transfer Dies With High Off-Center Loading

Hydrostatic gibbing is used to maintain the parallelism between the E2H slide and bolster. When subjected to an off-center load, the pressure in the hydrostatic pads automatically adjusts to resist the off-center force. Refer to page **7**.

Perform In-Die Sensing at Maximum Speed and Stop Prior To The Bottom Of The Stroke

The high performance, dry hydraulic clutch on the E2H stops it faster than any standard press. This provides the ability to run at higher speeds and, in the event of a die fault, the press is still capable of stopping prior to reaching the bottom of the stroke. Refer to page **4** for further details.

Blank High Strength Material At Higher Speeds With Greater Uptime and Increased Die Life

A few of the unique features that provide this benefit on the E2H include:

- A 40% reverse load rating (2-3 times that of a std. press).
- Reduced punch penetration as a result of the overall rigidity of the E2H.
- Zero clearance slide adjustment screws as a result of a hydraulic locking mechanism.
- Utilization of high tensile cast iron which has over 3 times the dampening capability of steel to reduce the vibration in the tooling and extend tool life.

Run High Speed Dies and Lower Speed Forming Dies In The Same Press

Due to its overall precision, the E2H is capable of running at higher speeds than standard presses. At the same time, the high energy inherent in the E2H gives it the flexibility to run a wide speed range with full press capability. Refer to the specifications page for more details on the E2H speed capabilities.

Inspect and Trouble-Shoot Dies and Release Jams Faster Without Adjusting Your Shutheight

The quick lift feature on the E2H provides the operator with an additional 3" (75 mm) to inspect and trouble-shoot the die. In addition, this feature provides a quick method of releasing die jams, eliminating the need for hydraulic tie rod nuts.

E2H HEVISTAMPER

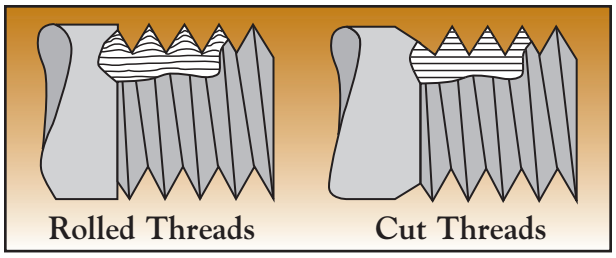
STANDARD FEATURES

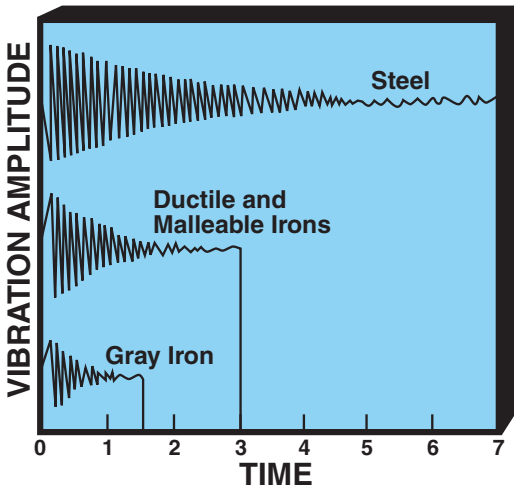
Massive Frame Construction

The E2H boasts a massive four-piece, pre-loaded frame utilizing high tensile cast iron for the ultimate in vibration and noise dampening. The ultra-low deflection cast bed includes two double walls which reduce front-to-back deflections by 33% over industry standards for general purpose presses. This gives the user the flexibility to run small, full tonnage dies on a large press while maintaining part quality and extending die life.

All E2H presses have large tie rod nuts with *rolled* threads. Rolled threads are capable of handling up to *three times the load* of standard cut threads. This added capability is essential in the event of an overload situation.

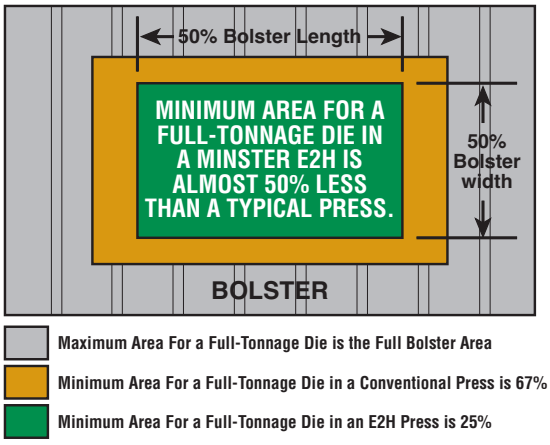
Iron has 2.5 to 4.5 times the dampening capability of steel. Therefore, the E2H utilizes castings where applicable in its beds, slides and uprights to dampen vibration and noise created in high vibration and snap-thru applications.





Lower Deflection & Greater Flexibility

Standard presses are designed to have a bed deflection of .001" to .002" per foot (,025 to ,167 mm/M) when full-rated tonnage is distributed over two-thirds of the bed. In addition, the slide deflection of a standard press will be approx. 1.5 times more than the bed deflection. As shown below, the E2H has been designed with extremely low deflection providing the ability to run tighter punch-to-die clearance, as well as the flexibility to run small, full tonnage dies on a large press while maintaining part quality and die life.

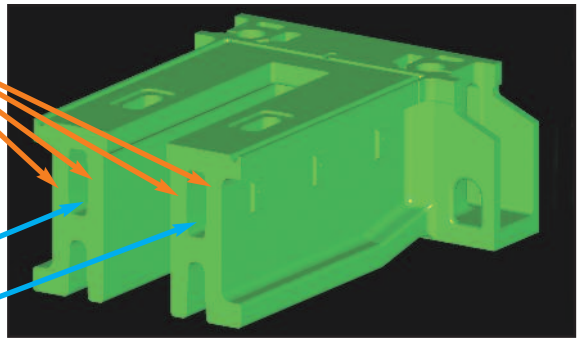


Four massive, vertical walls of the E2H bed provide low deflection and the ability to run smaller, full-tonnage dies.

Circulating oil through the bed assures consistent bed and slide temperatures, which maintain die alignment.

The E2H slide adjustment and quick access assembly are integral to the slide structure. This provides direct support across a wide area of evenly distributed loads, resulting in low deflection and greater resistance to off-center loading.

(See page 5)



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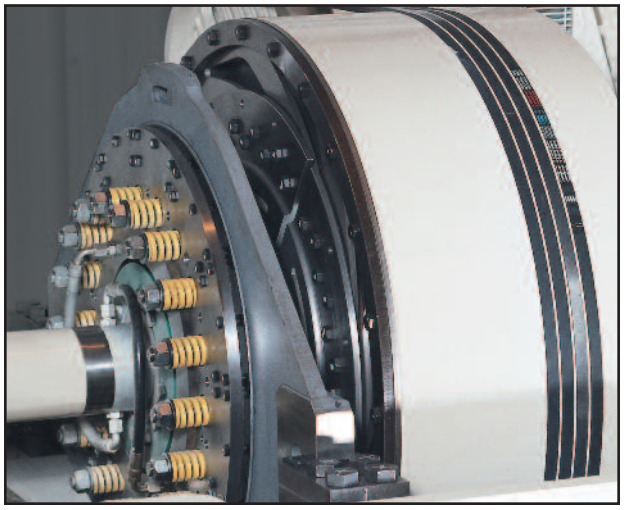
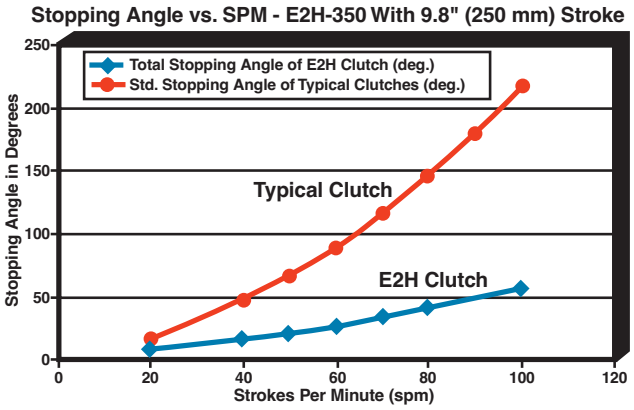
STANDARD FEATURES



Patented Minster Hydraulic Clutch and Brake Unit

Minster's combination hydraulic clutch and brake produces the maximum torque possible providing for faster starting and stopping, resulting in increased production. A patented segmented drive disc design provides safe and reliable operation, variable clutch torque and easy maintenance. In addition, Minster's clutch and brake unit requires no adjustment and years of maintenance-free operation, resulting in less downtime and higher production rates.

The Minster combination hydraulic clutch and brake provides the ability to single stroke at high rates while simultaneously providing unparalleled stopping time ability that is critical for high speed and in-die sensing applications.

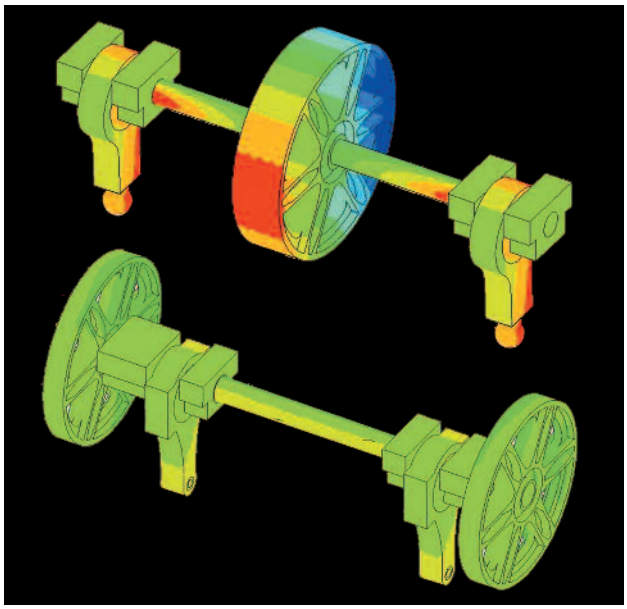


Drive Arrangement

The Minster E2H HeviStamper utilizes **twin helical gears** in both its single and double geared arrangements. The advantages of Minster's twin drive arrangement include:

- Improved slide parallelism through-out the working portion of the stroke.
- Virtual elimination of torsional deflection between connections and main bearing maintaining slide parallelism through the working portion of the stroke.
- Improved dynamic parallelism when subjected to off center loading.
- Decreased punch penetration in snap-thru conditions as a result of twin drive having only 1/2 of torsional wind up of a typical center drive press with the same size shaft.

In addition twin drives provide increased gear life and reduced noise compared to presses utilizing spur gears; and improved gear timing and serviceability as a result of mounting the gears to their shafts without keys.



Torsional Wind-Up Comparison

Finite Element Analysis proves that vertical deflection of a center drive is twice that of a twin drive when maximum rated torque and tonnage are applied evenly to each connection. This results in less stiffness and increased punch penetration in snap-thru applications on a center drive machine.

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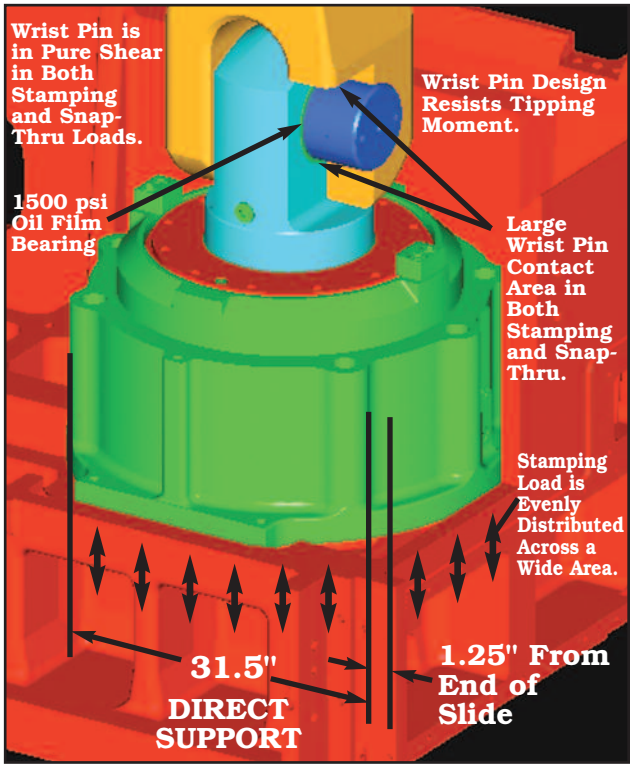
STANDARD FEATURES

Full Wrist Pins

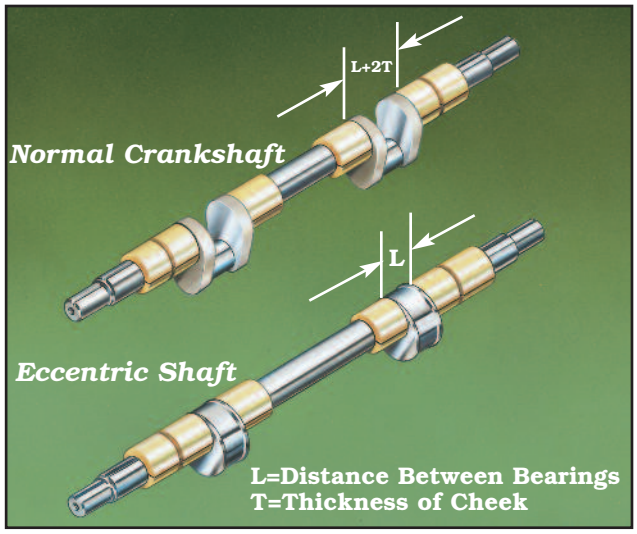
Full wrist pins, supplied with high-pressure oil, provide superior snap-thru ratings with reduced wear and deflection. The high tensile stiffness of this design results in improved bottom- dead-center repeatability along with reduced die punch penetration which are critical during high tensile blanking operations. In a snap-thru condition, a wrist pin is subjected to pure shear forces while the connection is only subjected to simple tension forces. Comparitively, when a ball and socket design is subjected to snap-thru, in addition to the shear and tension forces, the ball bushing and retainer are also subjected to bending moments which create a more severe stress situation.



Dimensions shown above are for E2H-350-87 model.

Eccentric Shaft

The throw-to-throw accuracy of Minster's one-piece forged eccentric shaft is within .0005" (,0127 mm) to provide superior dynamic parallelism that results in increased die life in close tolerance dies. Eccentric shafts provide more accuracy and higher rigidity than eccentric gears or crank-shafts, and they have approximately 33% more load bearing area and less deflection than a standard crank-shaft. This design significantly increases the press's ability to handle snap-thru forces as compared to a crankshaft or eccentric gear design.



40% Reverse Load Rating

The combination of the E2H's hydrodynamic drive bearings, forged eccentric shaft, heavy connections, full wrist pins, and slide adjustment screws with hydraulic locked buttress threads, provide the E2H with a 40% reverse load rating (2 to 4 times that of standard presses). This high rating minimizes punch penetration and provides increased capability for blanking and piercing applications.

Hydrodynamic Drive Bearings

Advantages of Hydrodynamic Bearings:

- Indefinitely long life with full film lubrication.
- High load capacity
- Load capacity and stiffness increase w/speed.
- Extreme overload capacity for shock loading.
- High vibration dampening.
- Replacement involves only limited disassembly.

Roller Bearing Weaknesses:

- Will compress 5-times more than hydrodynamic gibs when subjected to a high dynamic load.
- Shock load capacity no greater than static load capacity.
- Statistically predictable limited life.
- Severe overloads may produce brinelling.
- Replacement may involve extreme disassembly.

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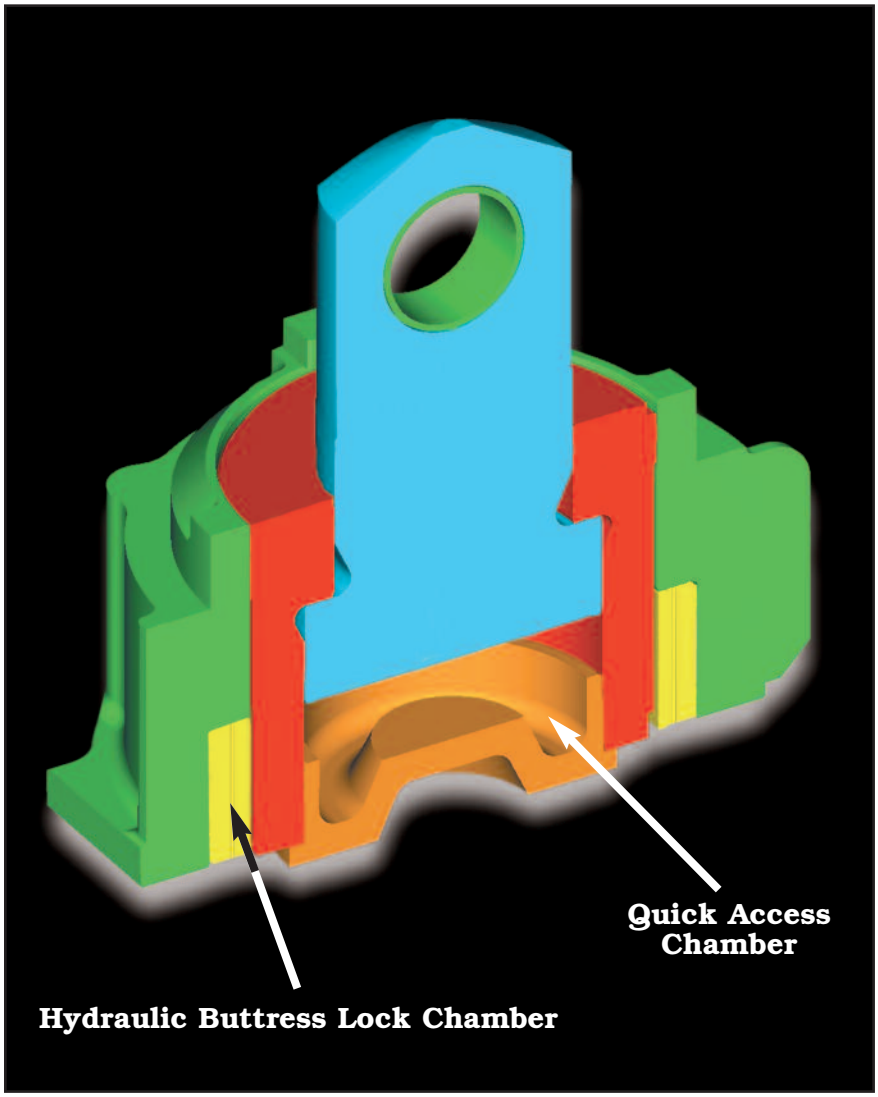
STANDARD FEATURES

Quick Access Feature

The Quick Access feature on Minster E2H presses enables easy access to the die. Advantages of this feature include:

- Allows the user to raise the slide 3" (75 mm) providing quick and easy access to thread material, inspect the die or release material.
- Eliminates the need for hydraulic tie rod nuts.
- After use, mechanical stops ensure the slide is is returned to the exact shutheight position and parallelism that it maintained prior to use. This is not possible with a screw-type mechanism.
- Allows the user to select a press with the minimum stroke length for the application without sacrificing the operator's ability to inspect or change tooling. Utilizing a shorter stroke length minimizes the slide velocity resulting in reduced impact loading, reduced tool vibration, increased tool life and increased production speeds.
- The pressurized quick lift chamber provides a preload exceeding the press tonnage.



Hydraulic Locking

Clearance in the slide adjustment screw and nut mechanism are eliminated by compression of the nut diameter with high pressure oil. This reduces vibrations resulting from snap-thru forces during blanking, improves die life, and eliminates the possibility of the slide adjustment "creeping" under load.

Motorized Slide Adjustment

The slide adjustment on the E2H is driven by a hydraulic motor connected to hardened worm shafts with zero backlash couplings and is supported on anti-friction bearings. The adjustment mechanism includes a shock mounted electronic resolver to display and adjust shutheight on the press console.

STANDARD FEATURES

Eight-Point Hydrostatic/ Hydrodynamic Gibbing For Precision Slide Guiding

The E2H slide guiding system incorporates both hydrostatic and hydrodynamic bearing technology. This combination of technologies provides:

- Greater resistance to off-center loading than either standard oil film or roller bearing guided gibs.
- Extreme overload capacity for shock loading.
- Centering of slide in a static condition.

Monitored Lubrication With Variable Frequency Regulation

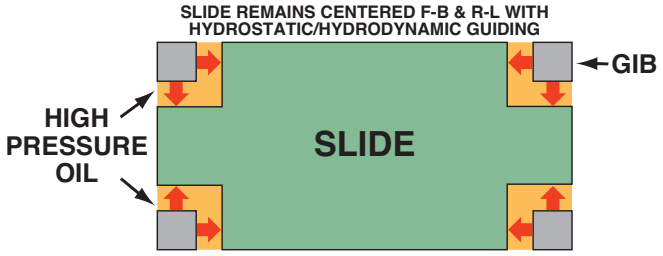
All main and connection bearings have full film lubrication with pressurized oil supplied to each bearing from within the crankshaft. This system is designed to stop the press in the event of reduced oil pressure thereby preventing damage to the machine. A variable speed lube pump motor with pressure transducer feedback maintains constant oil pressure through plant ambient and press temperature variations. The consistent oil film gives the ultimate dynamic bearing stiffness and longevity resulting in better bottom-dead-center repeatability and longer die life.

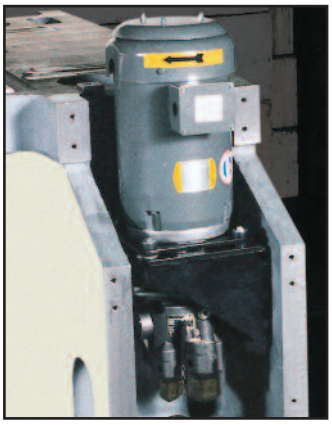
Variable Frequency Drive

As a standard, the E2H utilizes a variable frequency drive (VFD) that is integrated with the PMC control panel. As compared to an eddy current drive motor, a VFD is quieter and provides higher performance throughout the press's full speed range, resulting in lower energy cost for the user. Integrating the VFD with the operator podium reduces the floor space requirements that are typically associated with VFD drives.

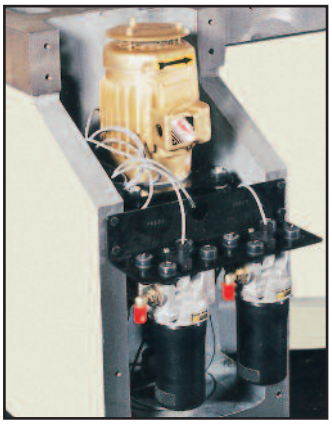
The Basics of Hydrostatic/Hydrodynamic Technology

Twelve, separate, hydrostatic pads are machined into the extra-wide gib surfaces of the E2H. When an off-center force attempts to tip the slide, the oil pressures at these pads change independently to offset the force and maintain exceptional slide parallelism.



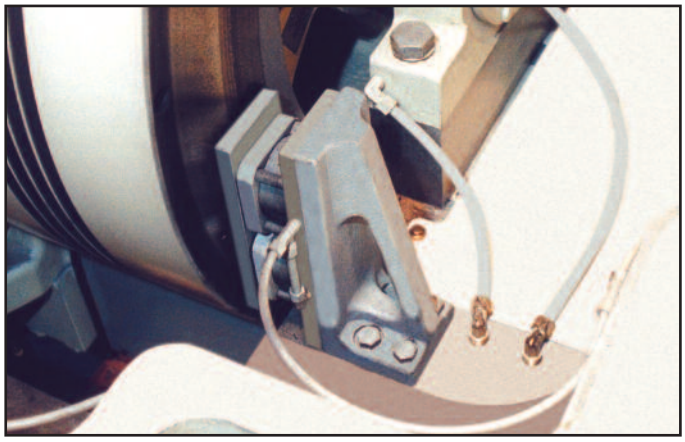


Hydraulic Pump



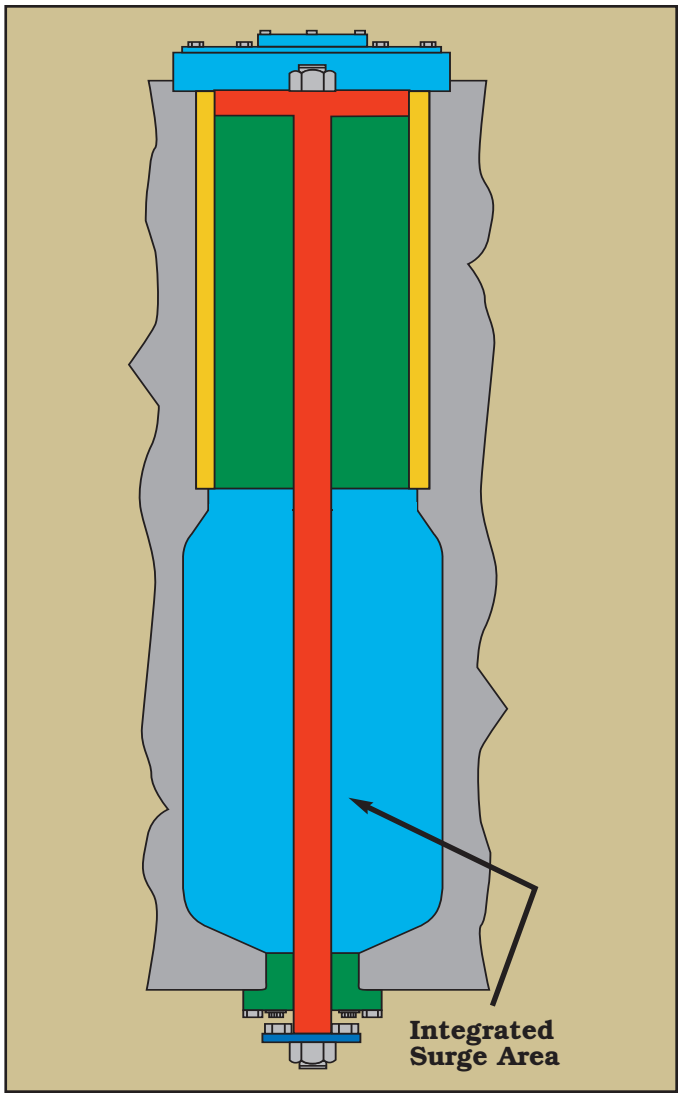
Lube Pump

STANDARD FEATURES



Flywheel Brake

The flywheel brake design on the Minster E2H gives the operator the ability to quickly slow the flywheel to a pre-set speed. The combination of an increased brake contact area, reduced surface contact pressure, and increased useable lining thickness provides 7 to 10 times the life of a normal brake lining.



E2H Counterbalance Arrangement

Slide Counterbalances

On E2H presses, four counterbalance units mounted in the crown lift at each corner of the slide to eliminate tipping or tweisting of the slide. Since each counterbalance rod is free to float in the clamp plate where it is attached to the slide, side forces to the counterbalance piston and the slide are elimintated.

Wide Upright Openings

Large upright openings allow feeding or wide material and use of transfer integration.

Isolation/Levelling Mounts are included as standard on Minster E2H presses.

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MINSTER

PRODUCTION MANAGEMENT CONTROL (PMC)

This full featured press control was designed and integrated by Minster and incorporates all press functions including:

- Full machine diagnostics detailing all press and feed line faults.
- Selectable supervisor lockout for each function.
- Automatic Counterbalance control.
- Inch Positioning to aid in die set up.
- Tool storage.
- Energy saver mode.
- Patented MonitorFlow Lubrication System.
- Preventative maintenance monitoring.
- Programmable Limit Switch.
- Counters.
- Stopping time indicator.
- Reason for recent stop.
- Crank position indicator including distance off bottom.

The PMC utilizes open architecture which allows for greater convenience in planning and maintenance. It incorporates a PLC and color touch screen technology; and, all press and feed line functions can be monitored for efficient diagnosis of production line faults.

PMCONNECT®

Flexible and expandable open-architecture based network system for connection of press controls to office-based PC's. Collects and stores real-time press room activities in a remote information systems database, providing powerful browser-based reporting of production for analysis and optimization. Also provides remote storage of machine parameters.

Available Popular Options:

- Additional tool storage.
- Die protection with Auto tune technology.
- Load Monitoring
- Automatic Shutheight control.
- Hydrostatic gib monitoring.
- Dual language capability.

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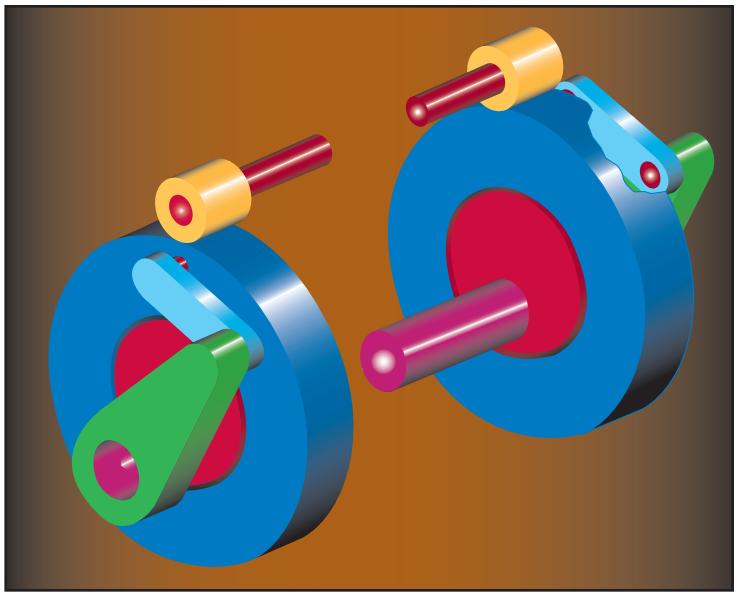
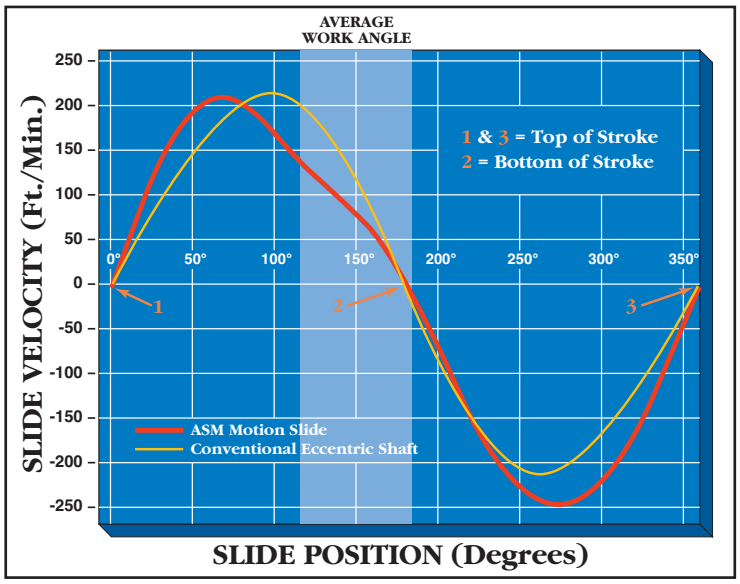
OPTIONAL FEATURES



Main Benefits of the ASM Drive include: Slower, more consistent slide velocity through the work angle; and reduced heat generation in the die.



Crankshaft Extension

Minster provides as standard, one crankshaft extension on the opposite drive side of E2H flywheel presses. This extension is available to drive the user's auxiliary equipment such as feeds, scrap cutters, transfers, etc. *Available as an option on geared drive machines.*

MINSTER ASM
Alternative Slide Motion

As shown below, the ASM option provides reduced slide velocity through the work portion of the stroke and faster slide velocity through the remaining portion of the stroke as compared to a conventional drive running at the same SPM.

If your production can be increased as a result of reduced slide velocity, Minster's ASM was designed to provide you this benefit without changing the overall repeatability, integrity or accuracy of the E2H. Features incorporated into the ASM design include:

- Twin-end drive to maintain performance, reliability, durability, accessibility & accuracy.
- Oil film bearings to assure long life.
- Rotary balanced system to assure press stability.
- Ability to modify ASM velocity curve.

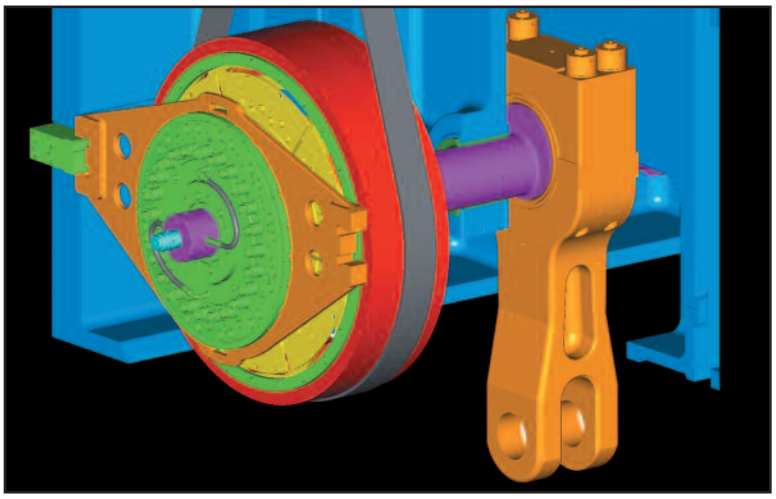
Double Geared Drive

The optional double geared twin drive arrangement is best when slower speeds are required for operations such as deep drawing or forming. In this arrangement, the combination hydraulic clutch and brake unit is mounted on the intermediate shaft (a Minster patented "first") which provides increased single stroke efficiency with less clutch wear. E2H double gear drives are equipped with the higher off bottom rating (see pg. 14) and maintain full flywheel energy at slower speeds which decrease the slide velocity and allow for deep drawing and forming applications. This option is available on wider 450 & 600 ton models, and has a speed range of 15-40 SPM.

OPTIONAL FEATURES

Flywheel Drive Assembly

Minster flywheel drive E2H presses are available to achieve higher speeds for applications such as blanking. The flywheel is mounted directly to one end of the crankshaft using anti-friction bearings and is driven with a flat belt to reduce vibration. The drive motor is shock mounted to increase its internal bearing life, while the motor shaft is coupled to the pulley shaft for increased motor life and reduced belt pull load on the motor shaft.



Note: *The optional ASM and high energy drive are not available on flywheel drive machines.*

Crankshaft Counterweights

Standard crankshaft counter-weights on Minster E2H flywheel presses eliminate any rotary out-of-balance forces. This provides less front-to-back motion, more accurate slide guiding and more accurate feed progressions. *Available as an option on geared drive machines.*

Minster Patented VibCoach®

Production Vibration Severity Monitoring System provides a continuous "real-time" identification of the long term die & press reliability level. The VibCoach is recommended for presses with normal operations above 200 SPM and can be used with any die operating within the press. VibCoach advises the press operator or production supervisor of any changes in production vibration severity caused by changes in production speed, material, and/or die setup. The VibCoach includes the StatusAlert™ console mounted light tower which provides a quick visual indication of the vibration reliability level during production.

Hydrostatic Gib Monitoring

The optional hydrostatic gib monitoring system is comprised of twelve pressure transducers positioned in the lubrication circuit to sense the gib clearance on both the main and auxiliary gibs. This system will top stop the press if the gibs' clearance is closed-in due to a set up problem or other issue.

Automatic Shutheight Adjustment

To further reduce set up time, this optional feature will automatically set the shutheight to the predetermined tool storage value. Manual shutheight adjustment can still be achieved via the operator's input on the control.

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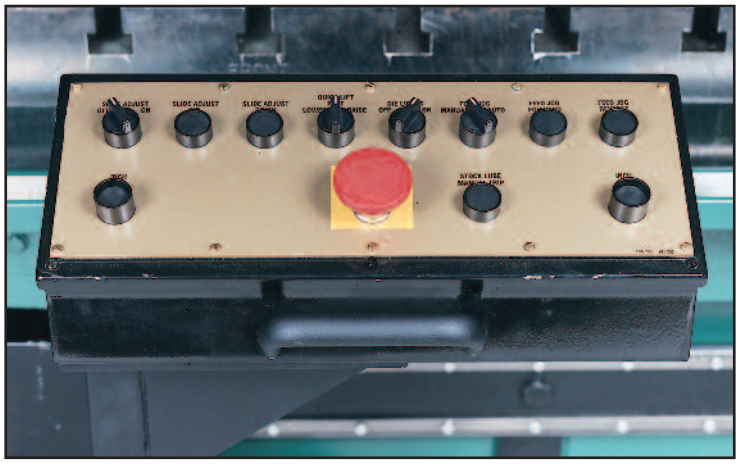
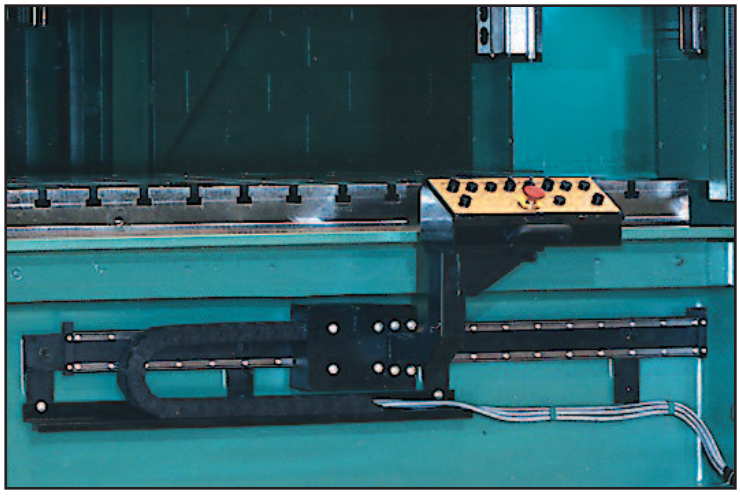
OPTIONAL FEATURES



Sliding Set-Up Station

To provide convenience to operators while threading dies, a sliding set-up station is available on E2H presses. The set-up station is capable of sliding across the entire front of the bolster area and can be secured in a home position when not in use.



Hydraulic Overload Protection

The E2H is configured for the addition of a mechanical hydraulic overload system. This quick acting mechanical release is integrated within the PMC Control for ease of use. When an overload condition is detected, the overload valve opens automatically to quickly top stop the press, and activate the quick access slide to protect the press from damage. In addition, unlike conventional overload protecting devices, the E2H slide will open a full 75mm (2.95") to allow quick and easy removal of die jams or other obstructions.

Increased Rating Higher in the Stroke

Greater distance off bottom provides the capability of carrying a higher load longer and doing work higher off the bottom of the stroke. Refer to page 14 for standard and optional ratings.

Eddy Current Drive Motor

As an option to the VFD drive, the E2H can be equipped with a totally enclosed, fan cooled, variable speed eddy current drive motor.

Eddy Current Drive Motor

As an option to the VFD drive, the E2H can be equipped with a totally enclosed, fan cooled, variable speed eddy current drive motor.

Coil Line Interconnects

Die Guarding

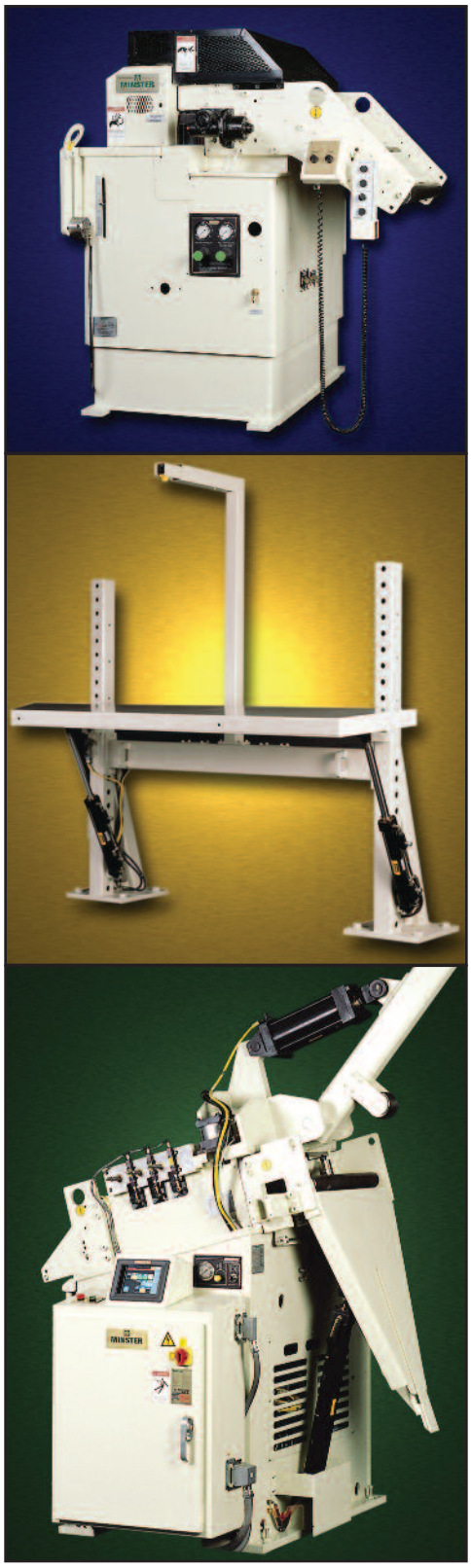
Additional Part Blow-Off Valve

Choice of Isolation Mounts

COMPLEMENT YOUR E2H PRESS WITH

MINSTER MATERIAL HANDLING EQUIPMENT

Minster offers the "Single-Source Advantage" for your entire coil line. Sales, Applications, Engineering, Manufacturing, and Service are all handled by one company, insuring your press and coil line equipment are properly matched, installed, and maintained.



Feeds

All Minster feeds are designed to accomplish three goals: protect your investment in tooling through accurate and reliable feeding; maximize coil line throughput; and minimize material waste. The result of Minster's approach is simple . . . you receive a maximum return on your investment dollars. And not just the money you invest in the feed, but in the entire coil line and press.

Thread Tables

Minster's Heavy-Duty Thread Table provides a safe, efficient, hands-off means of spanning the distance between the straightener and the feed during the threading operation. It is designed and built to be installed and ignored, requiring no further attention of any kind . . . a truly maintenance-free design.

Straighteners

The Minster Straightener, equipped with our Production Management Control (PMC) System, is the core of the stock preparation system. In its basic form, this multi-function machine provides precise straightening of the stock, and accurate control of the storage loop via Minster's *Speed Sync* system. When equipped with the optional hold-down arm and peeler table, it facilitates safe and efficient threading of the coil. When installed along with a complete Minster coil line, it controls and supplies hydraulic power to the thread table, reel, and coil car. It also communicates via its PMC with the press and feed PMC, providing complete coil line control and diagnostics.

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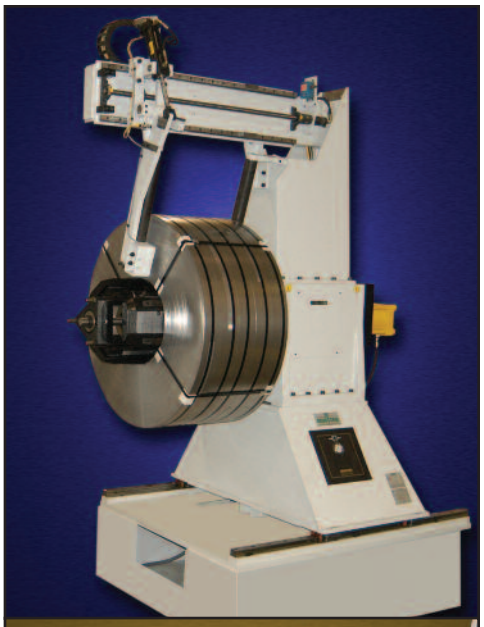
COMPLEMENT YOUR E2H PRESS WITH

MINSTER MATERIAL HANDLING EQUIPMENT



Reels

The MRH and MRM Reels combine Minster's considerable knowledge and experience with customer feedback and extensive market analysis. The result is a line of reels featuring carefully thought-out improvements and very competitive pricing that will increase your productivity and profits. For light duty applications, the MRM reel is manually-operated, offering a high-quality, low-cost alternative to our hydraulically-powered MRH reels for light duty applications.

Coil Cars

The Minster Coil Car is one of the best ways to improve coil line throughput. The advantages of using a coil car include: the ability to pre-stage coils while the reel is still in use; quick and easy reloading of the reel after completion of the previous coil; and elimination of damage to the reel that can result from direct loading.

Die Handling

Minster Die Handling Devices provide a highly-efficient means of staging, loading, and unloading your die sets, thereby maximizing press running time. Our track- mounted mobile units also facilitate the pre-staging of multiple die sets on auxiliary storage racks. Available in Stationary Carousel, Stationary In-Line, and Tracked (Mobile) In-Line models.

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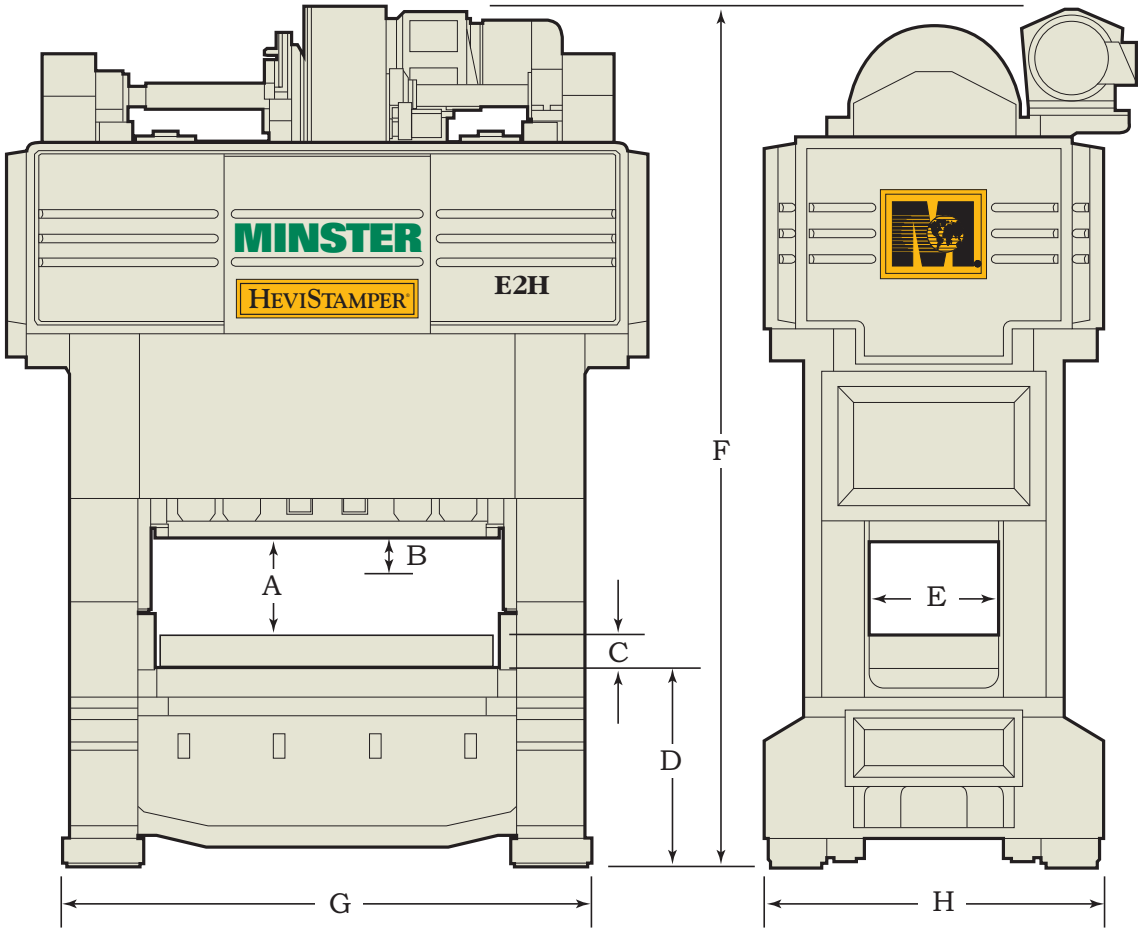
Press Size		E2H-250			E2H-350			E2H-450			E2H-600			E2H-1100		
Drive Type		Geared-Twin Drive			Geared-Twin Drive			Geared-Twin Drive			Geared-Twin Drive			Geared-Twin Drive		
Tons Capacity		250 @ .236" or .394"[1] Off Bot. *2200 kN @ 6 or 10mm Off Bot.*			350 @ .236" or .394"[1] Off Bot. *3100 kN @ 6 or 10mm Off Bot.*			450 @ .236" or .394"[1] Off Bot. *4000 kN @ 6 or 10mm Off Bot.*			600 @ .315" or .473"[1] Off Bot. *5400 kN @ 8 or 12mm Off Bot.*			1100 @ .315" or .512"[1] Off Bot. *9800 kN @ 8 or 13mm Off Bot.*		
Slide Stroke vs. Speed (SPM)	Stroke	Std. Speed Std. Drive	Maximum Speeds ASM Drive	Maximum Speeds Std. Drive	Std. Speed Std. Drive	Maximum Speeds ASM Drive	Maximum Speeds Std. Drive	Std. Speed Std. Drive	Maximum Speeds ASM Drive	Maximum Speeds Std. Drive	Std. Speed Std. Drive	Maximum Speeds ASM Drive	Maximum Speeds Std. Drive	SG Speed[6]	DG Speed	SG Max.
	2.95" *75 mm*	30-100	30-100	65-225	30-100	30-100	65-225	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3.94" *100 mm*	30-100	30-100	65-200	30-100	30-100	65-200	30-100	40-120	40-140	NA	NA	NA	NA	NA	NA
	5.91" *150 mm*	30-100	30-100	40-150	30-100	30-100	40-150	30-90	40-110	40-130	25-70	40-85	40-120	NA	NA	NA
	7.88" *200 mm*	30-100	30-100	40-130	30-100	30-100	40-130	30-80	35-95	40-110	25-70	40-85	40-110	NA	NA	NA
	9.84"[4] *250 mm*	30-70	30-100	30-100	30-70	30-100	30-100	30-70	35-80	30-100	25-70	40-80	40-100	NA	NA	NA
	11.81"[4,5] *300 mm*	30-70	30-90	30-90	30-70	30-90	30-90	30-60	35-75	30-90	25-60	30-75	25-75	22-65	15-40	22-75
	13.78"[4,5] *350 mm*	NA	NA	NA	NA	NA	NA	30-60	35-70	30-80	25-60	30-70	25-75	NA	NA	NA
	15.75"[4,5] *400 mm*	NA	NA	NA	NA	NA	NA	SEE NOTE 4			25-50	30-60	25-70	22-60	15-40	22-65
	17.72"[5] *450 mm*	NA	NA	NA	NA	NA	NA	NA	NA	NA	SEE NOTE 5			NA	NA	NA
	19.69"[4,5] *500 mm*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22-55	15-40	NA
	23.62"[5] *600 mm*	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22-50	15-40	NA
Quick Access Slide Travel		2.95" *75 mm*			2.95" *75 mm*			2.95" *75 mm*			2.95" *75 mm*			2.95" *75 mm*		
Upright Opening		33.50" *850 mm*			33.50" *850 mm*			47.50" *1205 mm*		64.0" *1625 mm*	53.50" *1360 mm*		77.0" *1955 mm*	77.0" *1955 mm*		
Area of Bolster & Slide (R-L x F-B)		86.6 x 47.5" *2200 x 1205 mm*	120.0 x 47.5" *3050 x 1205 mm*		86.6 x 47.5" *2200 x 1205 mm*	120.0 x 47.5" *3050 x 1205 mm*		100.4 x 55.1" *2550 x 1400 mm*	120.0 x 55.1"[2,3] *3050 x 1400 mm*	145.7" x 59.0"[2,3] *3700 x 1500 mm*	120.0 x 59.0" *3700 x 1500 mm*	145.7 x 59.0"[2,3] *3700 x 1500 mm*	169.0 x 75.0"[2,3] *4300 x 1900 mm*	169.0 x 75.0" *4300 x 1900 mm*	204.7" x 75.0" *5200 x 1900 mm*	240" x 75" *6100 x 1900 mm*
Opening in Bed (R-L x F-B)		76.8 x 15.0" *1950 x 380 mm*	110.2 x 15.0" *2800 x 380 mm*		76.8 x 15.0" *1950 x 380 mm*	110.2 x 15.0" *2800 x 380 mm*		90.5 x 20.5" *2300 x 520 mm*	110.2 x 20.5" *2800 x 520 mm*	135.75 x 22.5" *3450 x 570 mm*	110.2 x 22.5" *2800 x 570 mm*	135.8 x 22.5" *3450 x 570 mm*	136.0 x 30.0" *3455 x 760 mm*	164.0" x 26.0" *4160 x 660mm*	199.5" x 26.0" *5070 x 660mm*	235.0" x 26.0" *5970 x 660mm*
Approximate Weight		139,000 Lbs. *63.050 kg*	160,000 Lbs. *72.575 kg*		149,000 Lbs. *67.580 kg*	169,000 Lbs. *76.650 kg*		250,000 Lbs. *113.400 kg*	280,000 Lbs. *127.000 kg*	330,000 Lbs. *148.500 kg*	334,000 Lbs. *151.490 kg*	350,000 Lbs. *158.800 kg*	400,000 Lbs. *180.000 kg*	620,000 Lbs. *281.200 kg*	665,000 Lbs. *301.613 kg*	750,000 Lbs. *340.165 kg*

Press Size	E2HF-250		E2HF-350		E2HF-450		E2HF-600	
Drive Type	Flywheel		Flywheel		Flywheel		Flywheel	
Tons Capacity @.063" (1,6mm) Off Bottom	250 *2200 kN*		350 *3100 kN*		450 *4000 kN*		600 *5400 Kn*	
Slide Stroke vs. Speed (SPM)	Stroke	Speed	Stroke	Speed	Stroke	Speed	Stroke	Speed
	1.18" *30 mm*	100-335	1.18" *30 mm*	100-325	1.38" *35 mm*	100-300	1.18" *30 mm*	80-275
	1.57" *40 mm*	100-285	1.38" *35 mm*	100-300	1.97" *50 mm*	100-275	1.57" *40 mm*	80-225
	1.97" *50 mm*	100-260	1.57" *40 mm*	100-275	2.95" *75 mm*	100-250	1.97" *50 mm*	80-200
	2.36" *60 mm*	100-250	1.97" *50 mm*	100-250	3.94" *100 mm*	100-225	3.94" *100 mm*	80-150
Quick Access Slide Travel	2.95" *75 mm*		2.95" *75 mm*		2.95" *75 mm*		2.95" *75 mm*	
Upright Opening	27.50" *700 mm*		27.50" *700 mm*		41.50" *1055 mm*		47.20" *1200 mm*	
Area of Bolster & Slide (R-L x F-B)	86.6 x 43.3" *2200 x 1100 mm*		86.6 x 47.5" *2200 x 1205 mm*		100.4 x 55.1" *2550 x 1400 mm*		120.0 x 59.0" *3050 x 1500 mm*	
Opening in Bed (R-L x F-B)	76.8 x 15.0" *1950 x 380 mm*		76.8 x 15.0" *1950 x 380 mm*		90.5 x 20.5" *2300 x 520 mm*		110.2 x 22.5" *2800 x 570 mm*	
Approximate Weight	129,000 Lbs. *58.510 kg*		130,000 Lbs. *59.000 kg*		240,000 Lbs. *108.900 kg*		285,000 Lbs. *129.300 kg*	

NOTES:
[1] At higher distances above bottom, lower speeds increase by 5 SPM, with no maximum SPM option available on standard drive presses.
[2] Double gear option is available in bed sizes (marked [2]). Consult Minster for speed ranges. Speed range for all double geared presses is 15-40 SPM.
[3] Uses steel welded crown.
[4] Stroke lengths available on E2H-450-146 model. (Consult Minster for speed ranges.)
[5] Stroke lengths available on E2H-600-169 model. (Consult Minster for speed ranges.)
[6] Maximum SPM reduced by 5 SPM with the ASM option.

E2H HeviStamper®
Specifications & Dimensions



DIM	MODEL	E2H													E2HF			
	TONNAGE/kN	250/2200		350/3100		450/4000			600/5400			1100/9800			250/2200	350/3100	450/4000	600/5400
	WIDTH - "/mm	86/2200	120/3050	86/2200	120/3050	100/2550	120/3050	146/3700	120/3050	146/3700	169/4300	169/4300	205/5200	240/6100	79/2000	86/2200	100/2550	120/3050
A	Shutheight on Bolster (SDAU)	21.65" 550mm	21.65" 550mm	21.65" 550mm	21.65" 550mm	25.20" 640mm	25.20" 640mm		25.98" 660mm	25.98" 660mm		32.50" 825mm	32.50" 825mm	32.50" 825mm	17.91" 455mm	17.72" 450mm	18.70" 475mm	23.23" 590mm
		23.62" 600mm	23.62" 600mm	23.62" 600mm	23.62" 600mm	29.53" 750mm	29.53" 750mm	29.53" 750mm	31.89" 810mm	31.89" 810mm	31.89" 810mm	42.30" 1075mm	42.30" 1075mm	42.30 1075mm	22.44" 570mm	21.65" 550mm	22.64" 575mm	
		27.56" 700mm	27.56" 700mm	27.56" 700mm	27.56" 700mm	33.86" 860mm	33.86" 860mm	33.86" 860mm	37.80" 960mm	37.80" 960mm	37.80" 960mm	52.20" 1325mm	52.20" 1325mm	52.20" 1325mm			26.57" 675mm	
								43.70" 1110mm	43.70" 1110mm		43.70" 1110mm							
B	Shutheight Adjustment	6.88" 175mm	6.88" 175mm	6.88" 175mm	6.88" 175mm	7.87" 200mm	7.87" 200mm	7.87" 200mm	10.24" 260mm	10.24" 260mm	10.24" 260mm	15.75" 400mm	15.75" 400mm	15.75" 400mm	5.91" 150mm	6.88" 175mm	7.87" 200mm	10.24" 260mm
C	Bolster Thickness	6.00" - 8.00" 150-205mm		6.00" - 8.00" 150-205mm		7.00" - 9.00" 180-230mm		7.00"-10.24" 180-260mm	7.00" - 9.00" 180-230mm		7.00"-10.00" 180-255mm	8.86"-11.81" 225-300mm	8.86"-11.81" 225-300mm	8.86"-11.81" 225-300mm	7.09" 180mm	6.0"-8.0" 150-200mm	7.0"-9.0" 180-230mm	7.0"-9.0" 180-230mm
D	Floor To Top Of Bed	42.62" 1085mm	42.88" 1090mm	42.62" 1085mm	42.88" 1090mm	50.75" 1290mm	50.75" 1290mm	60.12" 1525mm	57.75" 1465mm	60.12" 1525mm	60.12" 1525mm	94.88" 2410mm	98.81" 2510mm	102.88" 2610mm	42.62" 1085mm	42.62" 1085mm	50.75" 1290mm	57.75" 1465mm
E	Upright Opening	33.50" 850mm	33.50" 850mm	33.50" 850mm	33.50" 850mm	47.50" 1205mm	47.50" 1205mm	64.00" 1625mm	53.50" 1360mm	53.50" 1360mm	76.00" 1930mm	77.00" 1955 mm	77.00" 1955 mm	77.00" 1955 mm	27.50" 700mm	27.50" 700mm	41.50" 1055mm	47.20" 1200mm
F	Overall Height (Maximum)	230" 5850mm	230" 5850mm	232" 5895mm	232" 5895mm	275" 6985mm	275" 6985mm	297" 7545mm	295" 7495mm	298" 7570mm	315" 8000mm	382" 9700mm	386" 9800mm	390" 9900mm	218.50" 5350mm	218.50" 5350mm	259" 6580mm	280" 7110mm
G	Floor Space (R-L)	133.25" 3385mm	166.75" 4235mm	133.25" 3385mm	166.75" 4235mm	160" 4065mm	180" 4575mm	206" 5235mm	180.25" 4580mm	206" 5235mm	230" 5840mm	233" 5920mm	269" 6820mm	304" 7720mm	133.25" 3385mm	133.25" 3385mm	160" 4065mm	180.25" 4580mm
H	Floor Space (F-B)	85.5" 2170mm	85.5" 2170mm	85.5" 2170mm	85.5" 2170mm	116" 2945mm	116" 2945mm	130" 3300mm	121" 3075mm	121" 3075mm	143.5" 3645mm	156" 3965mm	156" 3965mm	156" 3965mm	85.5" 2170mm	85.5" 2170mm	116" 2945mm	121" 3075mm


MINSTER
HEVISTAMPER
E2H-350

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