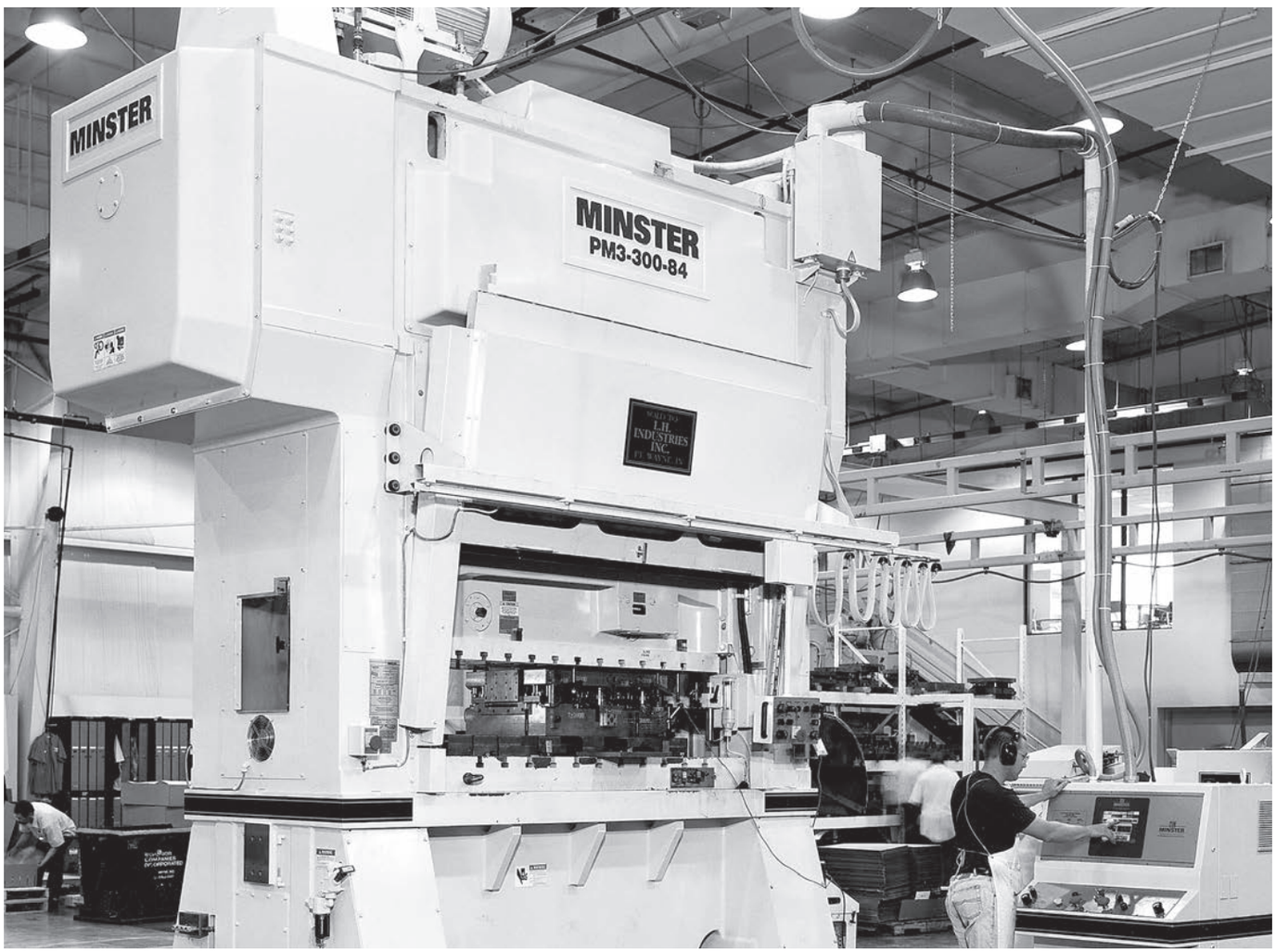
Nidec PRESS & AUTOMATION / MINSTER

PM3

PRECISION STRAIGHTSIDE PRESSES

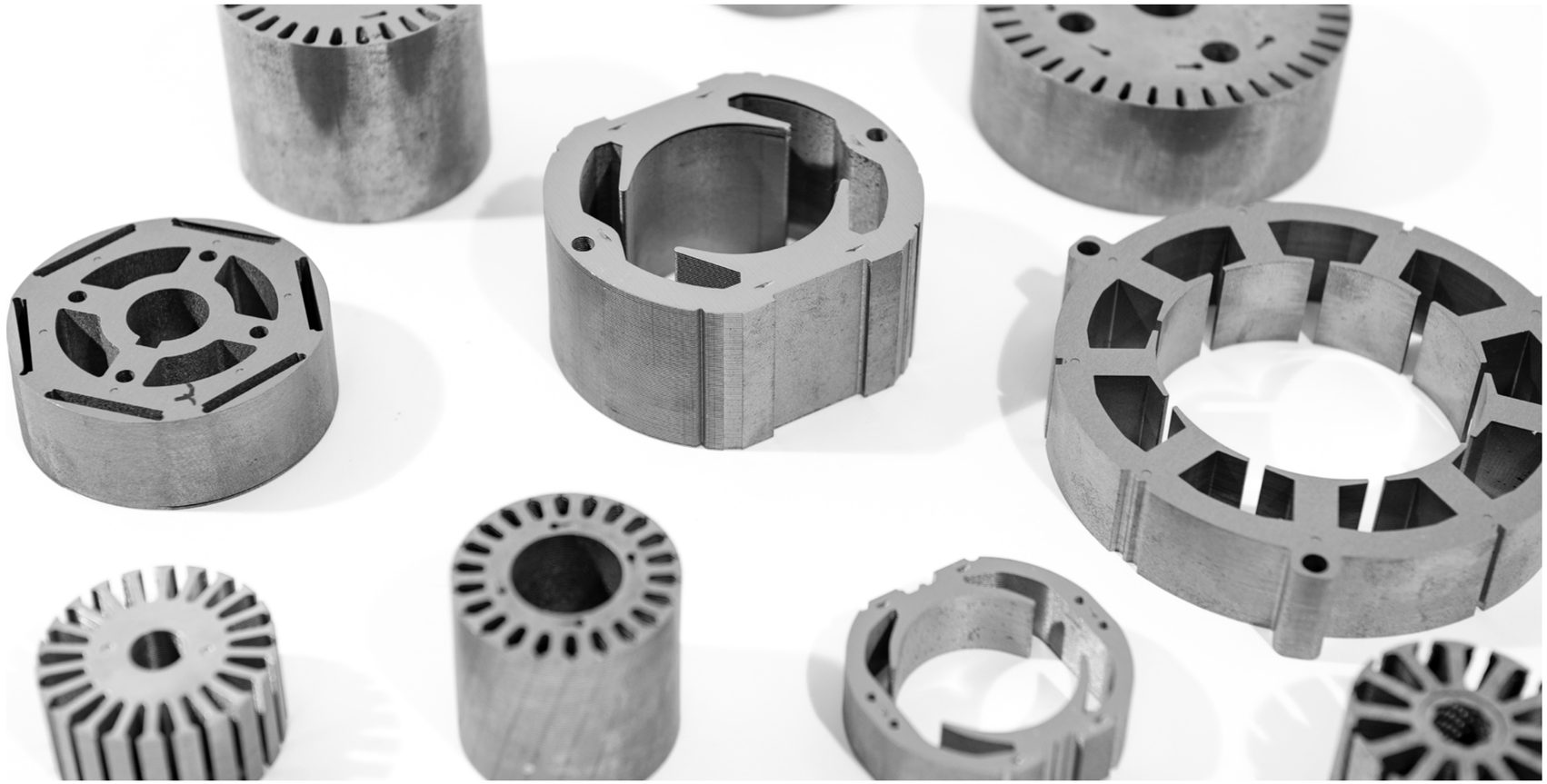
1,112 - 2,670 kN
125 - 300 US Tons Capacity



BULLETIN 132B

PRODUCT OVERVIEW

Minster Series PM3 presses provide the ultimate in consistent accuracy for automated high speed blanking operations in the 125 to 300 ton range. Because the PM3 was designed specifically for lamination work, many of the features help ensure that the machine will maintain its fine accuracies throughout years of operation.



1 The massive frame, full eccentric shaft with six main bearings, along with the heavy steel connections and wrist pins combine to provide a machine that is more stable at high lamination speeds.

2 PM3 presses feature hydrostatic and hydrodynamic slide guiding and main bearing support that accurately guide the punch into the die to increase die life.

3 A "hydraulic supported screw thread" system removes the clearances from slide shutheight adjustment parts, enhancing bottom-dead-center repeatability and part consistency.

4 Features such as shutheight stabilization, hydraulic supported screw threads, a deep slide with long gib guiding, hydraulic quick lift slide and consistent slide bottom-dead-center repeatability make the PM3 the ideal press for in-die staking operations.

STANDARD FEATURES

Massive Bed for Stability and Precision

The massive bed of the PM3 minimizes deflection, increasing die life and improving part quality. In addition, the bed design incorporates troughs to collect excess die lubrication. Large bed openings provide access for lamination stacking chutes.

Cast Construction Reduces Vibration

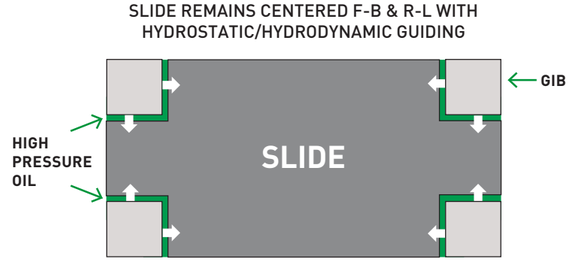
Minster PM3 Series dynamically-balanced presses feature four-piece tie rod cast construction in the 125 and 200-ton models, while the PM3-300 has a welded crown and bed. Minster's construction provides the compressive strength and vibration dampening that is essential in building a precision press for progressive die work. The PM3 gives the user less punch wear, better die life and greater part accuracy because the vibration is held to a minimum.

Rigid Slide and Connections

The PM3 slide is designed to minimize deflection under full loading. The heavy steel connections combined with the large wrist pins are made specifically for high speed blanking. This feature, designed to handle snap-through forces equal to 50% tonnage rating of the press, reduces punch penetration and promotes die life.

The Basis of Hydrostatic / Hydrodynamic Technology

Hydrostatic pressure applied from all gib surfaces keeps the slide centered when in a static condition and when slide is moving at a slow velocity such as near BDC. Hydrodynamic pressure also aids in centering the slide through the high velocity portion of its stroke. The result is extreme guiding accuracy and resistance to tipping moment at all points of the slide stroke.

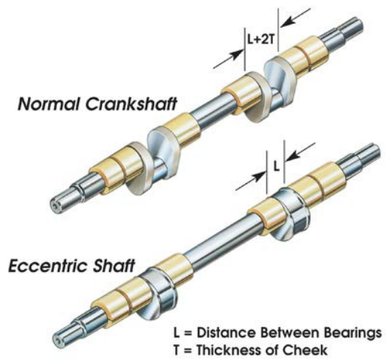


Crown and Eccentric Shaft Provide Strength and Resist Deflection

The massive crown of the Minster PM3 is engineered to withstand the severe stresses of lamination operation. A deep crown design backs up the eccentric shaft at any angle against forces created by the application, and load carrying members evenly distribute these forces into the crown structure.

In addition, the eccentric shaft provides these benefits:

- Resists deflection
- Bearings are closer to the connection where the stamping force is exerted
- Allows for connections to be moved farther apart
- Resists tipping forces associated with progressive die work
- It is a full torsional member



Eight Point Hydrostatic/ Hydrodynamic Gibbing for Precision Slide Guiding

The PM3 slide is guided by square gibbing at each corner, incorporating both hydrostatic and hydrodynamic bearing technology. The hydrostatic and hydrodynamic guiding design work in tandem to provide constant centering force throughout the press stroke, resisting the slide tipping movements caused by the high impact loading of lamination stamping. This guiding design promotes better part consistency and longer die life.

Minster MonitorFlow Continuous, Monitored Press Lubrication

The patented Minster MonitorFlow Pressurized Recirculating Oil Lubrication System supplies a continuous flow of filtered oil, under pressure, to all bearing surfaces. It also monitors the flow to these points as well as oil level and pressure in the entire system, and protects the bearings by stopping the press operation in the event of a lubrication fault. The PMC Control Screen instantly shows which flow switch signaled the fault, helping to pinpoint the problem area.

STANDARD FEATURES

Dynamic Balancer System

The Dynamic Balancing System on the PM3 greatly reduces the effect of the slide inertia forces caused by running at high speeds. This reciprocating balancer helps maintain precise slide bottom-dead-center repeatability resulting in less die wear and greater part accuracy. It also allows the press to run at higher speeds and reduces press vibration.

High Performance, Hydraulic Clutch and Brake Unit

The Minster PM3 delivers the maximum torque possible to provide fast starting and stopping through a hydraulically-actuated friction clutch and synchronized, spring-applied disc brake. The hydraulic pressure applied to engage the clutch also disengages the brake.

Precision-Fitted Support Block

A precision-fitted support block between the main bearing caps and the top of the uprights helps relieve the stresses placed on bearing cap screws by snap-thruforces and adds to the rigidity of the eccentric shaft.

Precise Shutheight Adjustment

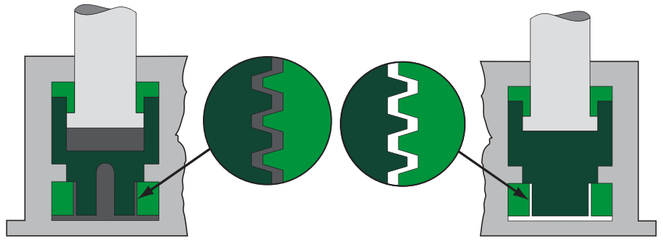
Shutheight changes on the PM3 are made through two large connection screws. An electro-hydraulically operated shutheight adjustment mechanism is standard.

Shutheight Indicator

A digital shutheight indicator gives the operator a constant read-out of the dimensional opening between the slide face and the bed or bolster, displaying to a thousandth of an inch. (Metric calibration is also available.)

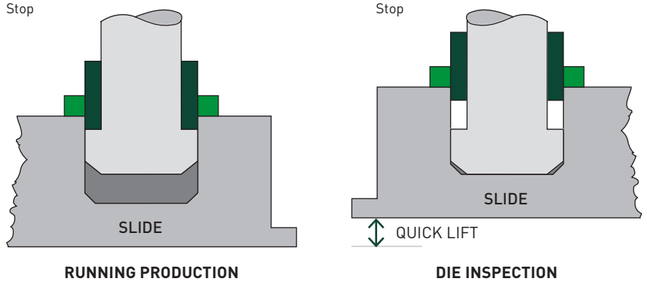
Hydraulically-Supported Screw Threads

PM3 presses incorporate hydraulically-supported screw threads, utilized as part of the Adjustable-In-Motion option. This feature eliminates the effects of vertical clearances by introducing an oil film between the threads, while still allowing rotation of the adjusting nut during stamping operation. The extreme stiffness of the system reduces snap-thru effects, resulting in reduced punch penetration contributing to increased die life.



Hydraulic Quick-Lift

Quick access to dies is provided by a hydraulic system which lifts the slide as much as three inches (76 mm). The hydraulic system returns the slide to the original shutheight position against a mechanical stop, maintaining tool settings. This feature enhances die accessibility and allows fast and easy unsticking from the bottom even with shorter strokes and higher production speeds associated with lamination stamping, thus contributing to greater production efficiency.



Flywheel Drive Arrangement for Maximum Press Efficiency

The Minster PM3 Series presses are flywheel type presses running at higher speeds for punching, notching, and blanking operations on lamination materials. The clutch and brake unit is mounted on the eccentric shaft and the flywheel rotates on anti-friction bearings.

STANDARD FEATURES

Production Management Control (PMC)

Incorporates all press functions including:

- Full machine diagnostics detailing all press and feed line faults
- Multiple selectable languages
- Open architecture which allows for greater convenience in planning and maintenance
- PLC and color touch screen technology; all press and feed line functions can be monitored for efficient diagnosis of production line faults

Available popular options include: die protection, load monitoring as well as automatic shutheight and counterbalance controls.

FieldHawk - Industry 4.0

FieldHawk is a cloud-based mobile application designed to communicate with your NP&A stamping press lines from your iOS or Android mobile devices. Cloud-based, secured communications allows all authorized users to check machinery status from anywhere you can get phone service and/or an internet connection, thus reducing downtime.

Optional Features

- Adjustment-In-Motion (A.I.M.)
- Feeds
- Die Space Enclosures
- Stock Lubrication
- Oil Cooler
- Material Handling Systems
- Quick-Die-Change Systems & Rollers
- Air Operated Flywheel Brake

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High Speed Gripper Feeds
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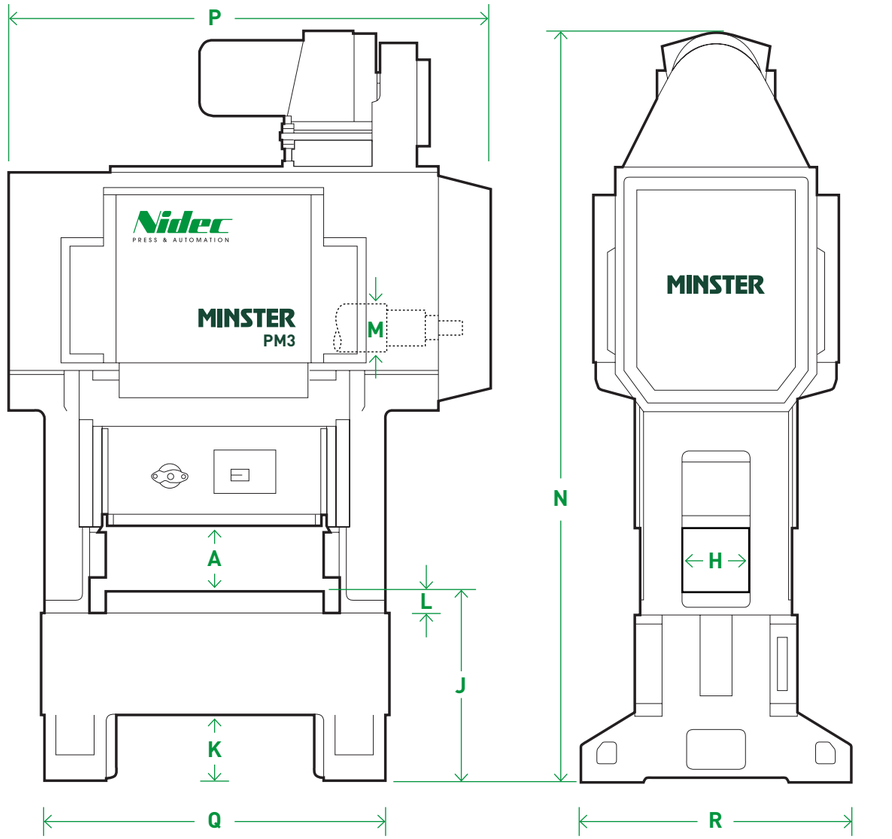
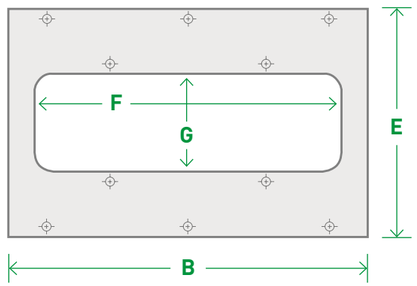
GLOBAL SERVICE NETWORK
Field Service
Remanufacturing
Spare Parts
Technical Service
Training
Planned Maintenance
Inspection & Audit
Relocation
Upgrade Services
Engineering Services

SPECIFICATIONS & DIMENSIONS





BOLSTER

SLIDE FACE

		PM3-125		PM3-200-60		PM3-200-75		PM3-300	
	Tons Capacity	1,112 kN 125 US tons		1,780 kN 200 US tons		1,780 kN 200 US tons		2,669 kN 300 US tons	
		STROKE	**MAX. SPEED**	**STROKE**	**MAX. SPEED**	**STROKE**	**MAX.SPEED**	**STROKE**	**MAX.SPEED**
	Slide Stroke vs. Speed	25 mm 1 in	800	25 mm 1 in	600	25 mm 1 in	600		
		32 mm 1.25 in	700	32 mm 1.25 in	600	32 mm 1.25 in	550	32 mm 1.25 in	550
		38 mm 1.50 in	650	38 mm 1.50 in	550	38 mm 1.50 in	500	38 mm 1.50 in	500
		50 mm 2 in	500	50 mm 2 in	500	50 mm 2 in	450	50 mm 2 in	400
		65 mm 2.50 in	400	65 mm 2.50 in	400	65 mm 2.50 in	400	65 mm 2.50 in	300
A	Shutheight on Bolster (SDAU) Standard	380 mm 15 in		375 mm 14.88 in		375 mm 14.88 in		430 mm 17 in	
	Slide Adjustment (Standard)	127 mm 5 in		127 mm 5 in		127 mm 5 in		127 mm 5 in	
B	Width of Bed, R-L	1,220 mm 48 in		1,525 mm 60 in		1,905 mm 75 in		2,134 mm 84 in	
CxD	Area of Slide, R-L x F-B	1,220 x 520 mm 48 x 20.5 in		1,525 x 635 mm 60 x 25 in		1,905 x 635 mm 75 x 25 in		2,135 x 815 mm 84 x 32 in	
BxE	Area of Bolster, R-L x F-B	1,220 x 815 mm 48 x 32 in		1,525 x 990 mm 60 x 39 in		1,905 x 990 mm 75 x 39 in		2,135 x 1.120 mm 84 x 44 in	
FxG	Maximum Opening Bed R-L x F-B	1,040 x 330 mm 41 x 13 in		1,220 x 380 mm 48 x 15 in		1,600 x 380 mm 63 x 15 in		1,830 x 380 mm 72 x 15 in	
H	Upright Opening, F-B	380 mm 15 in		485 mm 19 in		485 mm 19 in		610 mm 24 in	
J	Distance Bottom of Foot to Top of Bolster	1,090 mm 43 in		1,395 mm 55 in		1,395 mm 55 in		1,525 mm 60 in	
K	Distance Bottom of Foot to Bottom of Bed	380 mm 15 in		405 mm 16 in		405 mm 16 in		405 mm 16 in	
L	Bolster Thickness (Standard)	125 mm 5 in		180 mm 7 in		180 mm 7 in		205 mm 8 in	
M	Main Bearing Diameter	140 mm 5.5 in		180 mm 7 in		180 mm 7 in		230 mm 9 in	
N	Approximate Overall Height (Standard Stroke & Shutheight)	437 cm 172 in		536 cm 211 in		536 cm 211 in		544 cm 214 in	
P	Overall Width	320 cm 126 in		363 cm 143 in		401 cm 158 in		437 cm 172 in	
QxR	Area of Footprint, R-L x F-B	1,935 x 1,525 mm 76.25 x 60 in		2,394 x 1,725 mm 94.25 x 68 in		2,775 x 1,725 mm 109.25 x 68 in		3,175 x 1,830 mm 125 x 72 in	
	Standard Feed Direction	L-R		L-R		L-R		L-R	
	Upper Die Weight for Dynamic Balance (±50%)	227 kg 500 lbs		499 kg 1,100 lbs		816 kg 1,800 lbs		1,043 kg 2,300 lbs	
	Motor HP (For Maximum Speed)	30 Kw 40 Hp		37 Kw 50 Hp		37 Kw 50 Hp		45 Kw 60 Hp	
	Press Weight	24,040 kg 53,000 lbs		40,825 kg 90,000 lbs		44,550 kg 99,000 lbs		53,070 kg 117,000 lbs	
	Quick Lift Access	76 mm 3 in		76 mm 3 in		76 mm 3 in		76 mm 3 in	

STANDARD

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