240 WEST 5TH STREET
P.O. BOX 120
MINSTER OH 45865-0120

MINSTER®

THE MINSTER MACHINE COMPANY

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CUSTOMER ORDER NO. 1680

INVOICE NO. 1-73
INVOICE DATE 4/5/93

PROJECTED SHIPMENT **ORDER DATE** 5/28/92 **SHIPPED** 3/29/93
SOLD BY C.J. HARTER & SON MACHINERY
ORDER NO. **RELEASED** 7/14/92 **ROUTE** THE MINSTER MACHINE CO.

REVISED 4/06/93

DUNS NO. 00-807-8339 00-008-6678

SOLD TO INDUSTRIAL TOOL & DIE CO INC
2210 SANDMAN
HOUSTON TX 77007

SHIP TO INDUSTRIAL TOOL & DIE CO INC
5615 MITCHEL DALE
HOUSTON TX 77092

TERMS: SEE LAST PAGE F.O.B. MINSTER, OH DCW:DJH **OUR ORDER NO.** 27871

ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
1	1	MINSTER P2H-100 Precision Straight Side Press		

Tons Capacity ..... 112 U.S.
Stroke/SPM ..... 1.97/400 SPM & 3.94/250 SPM
Die Area ..... 48" x 31.5"
Slide to Bolster SDAU ..... 15"
Slide Adjustment ..... 3.94"
Slide Lift ..... .50" to 4.50"
Upright Opening ..... 15.1"
Bed Opening ..... 40" x 14.2"
Floor Space/Height ..... 113" R-L x 70" F-B/152" High
Weight ..... 41,000 lbs.
Paint ..... Birch White

Bolster and slide include (7) F-B size 1.00" T-slots on 6" centers starting on center.
Cast iron bolster is 3.94" thick with 39.4" x 7.5" opening.
Flywheel/clutch/brake located on L.H. end with R.H. crank extension.
T.E.F.C., eddy current drive motor, 25 HP, 1800 RPM, 220 Volts, 3 Phase, 60 Hertz.
Controls located in NEMA Type 12 enclosure built to Minster's interpretation of ANSI-B11.1-1988 and to NFPA #79 specifications.
Floor mounted vertical control enclosure 39"w x 79"h x 27"d high has operator set-up units and 8-digit electronic counter located in the door.
Press mounted operator's units include:
Inch/set-up cycle buttons, slide adjust buttons, with stop control button and barrier guard receptacle on front and rear, and (2) 24 volt DC stop control die receptacles mounted on front.

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
		Minster 16-Pole Programmable Limit Switch including the following features: Automatic Top Stop through full press speed range. Digital Stroke Position Actual Press Speed Press Stopping Time Motion Detection Programmable for (4) Complete Setups Minimum of 11 Auxiliary Poles		
		Price, Press, Control and Drive Motor.....		
		Press Serial No.: P2H-100-27871		
		OPTIONS:		
1	1	Press Leveling & Vibration Mounts. Mounts integral with press feet. Price.....		
8	8	MEE 25 Optima Die Clamps (3 Ton)		
2	2	Sytech TH22/18, 29" long, 3960 lbs. capacity, hydraulic actuated die lift rails with hand pump		
2	2	Vlier KPR-5, 21.9" long, 6600 lbs. capacity, removable die entry pre-rollers		
1	1	Die safety block - 14.5".....		
1	1	Helm Model TLG-2300 TREND LOADGARD System for "Two Point Press," with required transducers, mounted on uprights and calibrated. Unit mounted on pedestal top. Price, installed		
1	1	Helm part guard Model TPG-2200, less die mounted sensors.....		
1	1	(3/8") Air blow-off valve and wiring with limit switch pole		
1	1	Additional to add predetermined batch counter to 8 digit totalizer counter.....		
1	1	Additional for 220V-3-60 control arrangement.....		
1	1	(3) .503" dia. bored holes in bolster plate for die locators.....		

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
1	1	MEF4-14 MINSTER AUTOMATION Single Roll Electric Feed		

Standard mounting is bracket type on mounting pads on side of press. Bracket is heavy welded steel stress relieved construction. Feed line height is adjustable by a jack screw driven by manual ratchet. Include die feed line height over bed.

Press model/tonnage:	P2H-100
Minimum feed line over bed:	8"
Maximum feed line over bed:	12"
Feed roll diameter:	4.000"
Maximum stock width:	14.00"
Minimum stock thickness:	.006" (Special)
Maximum stock thickness:	.187"
Maximum thickness at full width:	.125"
Maximum width at full thickness:	9.00"
Roll opening for threading:	.30"
Electrical:	220-3-60
Line Direction:	Right to Left

The following <u>sample rates</u> are based on .125" thick x 14.00" wide mild steel strip with a 20" minimum, 60" maximum loop height and a 180" maximum loop length. Actual production rates will vary with any deviation from the above parameters and may be limited by other factors such as roll lifter rates and maximum line speed of ancillary equipment.

Feed Length	Press Speed at Feed Angle Degrees 120	150	180	210	240
1"	217	259	301	340	379
4"	127	150	173	195	216
8"	94	111	128	144	159
12"	78	93	107	120	133
18"	63	76	88	99	110
24"	53	64	74	84	94

The feed may be programmed for 0 to 99.99" feed lengths in increments of .001" with a feeding accuracy of plus/minus .002". A pre-set feed length is set to 25" as standard. Specify on order if a maximum length greater than 25" is required.

ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT

The feed angle is totally adjustable through a separately supplied programmable rotary limit switch, thus enabling feeding to begin relevant to when the die is open to permit stock entry. The position and total degrees of the feed angle with respect to press crankshaft rotation may be adjusted as necessary for production optimization of each part being stamped.

Low inertia feed rolls are .50" longer than maximum stock width. Standard feed roll finish is hardened and ground smooth. Feed rolls and shaft are one piece welded construction to assure positive feeding and concentricity during grinding. Both upper and lower rolls are mounted in anti-friction bearings and are driven through precision square anti-backlash gearing to maintain full tooth engagement during roll lift and varying material thicknesses for maximum roll grip and drive on the stock. Rolls are conveniently removable for maintenance.

Electro-pneumatic actuated automatic roll lifters raise the upper roll for die piloting for press speeds up to 180 SPM. Roll lift dwell and position is totally adjustable with respect to press crankshaft rotation through the press rotary limit switch. A selector switch control is provided to open the rolls for strip threading. The strip is automatically clamped by the rolls in the event of power loss. No set-up is required for change of strip thickness. 80 PSI minimum shop air required.

Standard lubrication is one grease fitting located in a convenient position for lubrication of the feed roll gearing. The feed rolls are mounted in sealed bearings and lubrication is not required.

The stock catenary supports incoming strip from the loop on a 3 position fixed radius. Handwheel operated double roller stock guides may be adjusted for offset or centerline positioning of the strip stock.

An AC Servo Motor drives the lower feed roll through a timing belt. The motor is sealed and cooled by air over the outside to eliminate contamination. The motor uses a permanent magnet rotor with no brushes for minimized maintenance and improved performance characteristics. The steel braided timing belt drive eliminates gear backlash, wear, noise, lubrication, and improves production rates.

ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
		All controls are packaged integral with press. The feed length and feed roll velocity are set by operator's SOT menu control and may be adjusted with the feed in motion. Control allows storage of up to 99 jobs. A microprocessor control manages the feed roll motion through a feedback (servo) system monitoring speed and position. A display indicates operating status and diagnostic messages.		
		Operator's controls include jog forward and jog reverse pushbuttons and a set-up selector switch. With the set-up switch on, the jog pushbuttons may be used to advance stock up to one feed progression prior to the press being cycled. This feature is for operator's convenience in die threading.		
		The standard mounting of these three set-up switches is on a hand held station with flexible coiled cable mounted on operator's side of feed.		
		Guarding is supplied per Minster's interpretation of OSHA safety codes and ANSI B11.18 safety standards.		
		Paint: Birch White		
		PRICE		
		Feed Serial No.: 18-50331		
		FEED OPTIONS:		
1	1	CLASS "A" LUBRICATION SYSTEM Fully automatic centralized grease lubrication system. Consists of interlocked progressive grease distribution circuit. Provides self-monitoring operation. A control panel energizes the pneumatic pump and provides fault detection and operation status. Includes 5 lb. reservoir with low level fault detection integral to the pump. Replaces standard class "D" lubrication. Price		
1	1	SMOOTH CHROME ROLL FINISH For polished aluminum, stainless steel or other high finished stock where strip surface protection is important. Also used to provide improved roll surface durability. Replaces standard smooth ground rolls. Price		

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
1	1	END OF STOCK DETECTOR A sensor is mounted on the entry side of the feed rolls to detect when material is present. When trailing end of strip uncovers the sensor, the press is signaled to top-stop. Price		

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
1	1	MS 20-14-7 MINSTER AUTOMATION STRAIGHTENER		

Capacity (Based on Mild Steel)

Maximum Strip Thickness:	.187"
Minimum Strip Thickness:	.006" (Special)
Maximum Strip Width:	14.00"
Maximum Width at Max. Thickness:	4.00"
Maximum Thickness at Full Width:	.120"
Line Speed:	120-1200 IPM

Electrical supply: 220 Volt-3 Phase-60 HZ
Pneumatic supply: 80 PSI shop air.
Feed direction: Right to Left.
Paint: Birch White
Furnished with seven (7) work rolls mounted in anti-friction bearings 2.00" diameter x 16.12" wide, hardened and ground finish.
Upper rolls adjustable individually by manual handwheel with indicator.
Two (2) sets of air actuated pinch rolls mounted in anti-friction bearings; 3.33" diameter x 16.12" wide, hardened ground finish.
Pinch rolls and work rolls (upper and lower) driven through a gear train by a 5 HP, variable speed, eddy current drive through a speed reducer. Also furnished is an eddy current proportional brake.
Overstock loop arm signals the drive control to maintain the stock loop between the straightener and feed.
All wiring to common terminal box.
Pushbutton station on operator's side.
Free standing NEMA 12 control panel with disconnect.
Interconnections for hydraulic, pneumatic and electric not supplied as standard.
Feed line height - 48" at exit end of 15 degree inclined head.
Includes stock catenary support on exit end and individually operated stock guides for centerline or offset positioning of strip on entry side.
Class D lubrication system. A minimum of 34 individual points plumbed to a common location for convenient manual grease lubrication of each point.

Price, each .....

Straightener Serial No.: 13-50151

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
		STRAIGHTENER OPTIONS:		
1	1	CLASS "A" LUBRICATION SYSTEM Fully automatic centralized grease lubrication system. Consists of interlocked progressive grease distribution circuit. Provides self-monitoring operation. A control panel energizes the pneumatic pump and provides fault detection and operation status. Includes 5 lb. reservoir with low level fault detection integral to the pump. Replaces standard class "D" lubrication. Price		
1	1	ULTRASONIC LOOP CONTROL Emits acoustical pulses which are reflected back from strip loop and are processed by the controller to develop a proportionate speed signal to control the straightener drive for non-contact loop sensing. Replaces the standard over arm loop control. Price.....		INCL.

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
1	1	MR6-14D MINSTER AUTOMATION DOUBLE REEL		

Coil Weight, Max. on Center: 6,000 lbs. Per Side
Coil Width, Maximum: 14"
Coil I.D. Range: 16" to 20"
Coil O.D., Maximum: 60"

Any combination of coil O.D., I.D., and width should not exceed the rated maximum capacity with coil on center.

Manual expansion of mandrel is through bearing mounted lead screw and handcrank at front of mandrel. Each mandrel consists of an SAE 4140 alloy steel shaft mounted in anti-friction bearings with a cast sleeve, three cast coil shoes, and expanding links. Manual grease fitting provided. Coil shoes are wide circumferential segments designed to minimize distortion of coils at small outside diameter.

Mandrel assemblies are mounted in a common turret head on a large diameter turntable bearing for 180 degree mandrel indexing. Turret is constructed of heavy cast construction. Base is a cast cylinder for maximum rigidity. Base must be securely anchored to floor for safe operation. Anchor bolt and leveling screw provision in feet. A pneumatically released locking pin secures turret in payoff position. Pin is released by manual valve.

Pneumatic brake is assembled to rear of mandrel shaft. The drag tension is adjustable through a precision pressure regulator with gauge. 80 PSI shop air supply required.

Adjustable back keeper arms are provided to guide the strip during unwinding. Three adjustable keeper arms per mandrel are included for the front of the coil. These keeper arms are clamped onto the coil shoes by quick release locks for fast coil removal and loading.

Guarding is to Minster's interpretation of ANSI B11.18 Safety Standards for coil processing equipment.

Payoff position: R-L; load side opposite operator side.
Paint: Birch White
Electrical: 220 Volt-3 Phase-60 HZ

PRICE .....

Reel Serial No.: 13-70204

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ORD.	SHIPPED	DESCRIPTION	UNIT	AMOUNT
		REEL OPTION:		
1	1	NON-POWERED ADJUSTABLE BASE Reel is mounted on guided plate with lateral manual ratchet adjustment mechanism. Allows coils to be centered on line, with fine adjustment, during operation.....		