

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

MINSTER®

THE MINSTER MACHINE COMPANY

PAGE- 1

TELEPHONE: 419-628-2331
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CUSTOMER
ORDER NO. B-10036

INVOICE NO. 1-45
INVOICE DATE 2/18/94

ORDER DATE 9/02/93

SHIPPED 2/15/94

PROJECTED SHIPMENT
SOLD BY DALCO MACHINERY INC.
ORDER NO.
MS CODE CAC

RELEASED 9/10/93 ROUTE THE MINSTER MACHINE CO.

REVISED 1/07/94

DUNS NO. 00-503-9235
SOLD TO REICHERT STAMPING CO
8200 W CENTRAL AVE
TOLEDO OH 43617

SHIP TO 00-503-9235
REICHERT STAMPING CO
8200 W CENTRAL AVE
TOLEDO OH 43617

TERMS: SEE LAST PAGE F.O.B. MINSTER, OHIO RFF:KEO OUR ORDER NO. 28183

| ORD. | SHIPPED | DESCRIPTION | UNIT | AMOUNT |
|------|---------|--|------|--------|
| 1 | | E2-200-84 MINSTER LIMITED EDITION "HeviStamper", Two Point, Eccentric Shaft, Progressive Die Press <u>SPECIFICATIONS:</u> Tonnage, heavy duty rating..... 200 Dia. of ecc. shaft @ mains and ecc..... 7.0-15.75 Stroke of slide..... 10.00 Adjustment of slide..... 6.00 Shutheight S.D.A.U. on bolster..... 22.00 Shutheight S.D.A.U. on bed..... 27.00 Thickness of bolster plate..... 5.00 Area of slide, R-L x F-B..... 84 X 42 Area of bolster, R-L x F-B..... 84 X 42 Area of bed, R-L x F-B..... 84 X 42 Bed opening, RLxFB with 1-2.5" rib..... 78 X 24 Distance between gib surfaces R-L..... 86 Distance floor to top of bed..... 36 Height under bed to floor..... .5 Upright opening F-B x as high as possible 25 Strokes per minute (F.E. @ 45)..... 0-90 Motor HP and speed..... 40-1800 Approximate weight, press only..... 76,000 lbs. <u>DRIVE</u> Single geared. Twin driving gears on main shaft, extensions on both ends. High tensile iron main drive gears and steel pinions, totally enclosed, running in oil. Equipped with MINSTER combination air operated multiple disc friction clutch and brake, exclusive of all clutch control equipment. Clutch located on driveshaft. Includes exhaust muffler. | | |

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| | | <p>Includes air operated flywheel brake, electrically interlocked so brake will engage when main motor is stopped.</p> <p><u>FRAME:</u></p> <p>Frame of four piece tie rod construction with crown and bed of welded steel, drilled for "Heatrex" heaters.</p> <p>Feed pads on right and on left hand side for mounting feed equipment, but exclusive of all feed equipment.</p> <p>Includes oil troughs on front and rear of bed.</p> <p><u>MAIN SHAFT:</u></p> <p>Two point eccentric shaft forged of alloy steel.</p> <p><u>BEARING ARRANGEMENT:</u></p> <p>Main shaft bearings made of special alloy bronze. Driveshaft mounted on anti-friction bearings. Support wedges between main bearing caps and uprights.</p> <p><u>GIBS:</u></p> <p>Eight adjustable bronze lined gibs, F and B adjusted by means of laminated shims, R and L adjusted and supported thru full length by tapered back-up strips.</p> <p><u>PNEUMATIC COUNTERBALANCE:</u></p> <p>Equipped with pneumatic counterbalance system on the slide completely piped, including air controls and certified surge tank when required. Note this system <u>statically</u> balances slide and die weight only, does not compensate for speed.</p> <p><u>SLIDE (RAM):</u></p> <p>Lower connection bearings in slide bushed with renewable bronze plug type saddle bushings, preloaded at assembly.</p> <p>Arranged for 3 crossbar knockouts, but exclusive of knockout parts.</p> <p>Slide face machined with general purpose T-slots on 6" centers starting on center.</p> | | |

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| | | <p><u>SLIDE ADJUSTMENT:</u></p> <p>Long barrel type motorized adjustment on slide, complete with limit switches, direct reading shutheight indicator reading in inches and brake motor, but exclusive of controls.</p> <p><u>BOLSTER:</u></p> <p>Steel bolster machined with F-B T-slots on 6" centers starting on center.</p> <p><u>LUBRICATION:</u></p> <p>MINSTER patented "Monitorflow" recirculating oil lubrication system with continuous flow to all main and connection bearings, driveshaft bearings, gears, gibs, and counterbalance cylinders. Flow to all the main and connection bearings is constantly monitored so that loss of flow caused by blockage between the sensor and the bearings is sensed and indicator lights signal the location of the clogged line. The "Monitorflow" system also signals faults due to broken lines throughout the system, clogged filter, low oil level in reservoir, inadequate flow, or faulty pump. Any fault signal turns off the clutch control stopping the slide. The "Monitorflow" system includes pump, motor and controls, sensors, indicator lights, and spin-on filter. Lube pump and motor are shock mounted.</p> <p>Lubrication unit located in left hand leg cavity.</p> <p>NOTE: Lube unit filter to be mounted perpendicular to the floor.</p> <p><u>GENERAL:</u></p> <p>Press painted: Vista Green</p> <p>Press Serial No.: LE2-200-28183</p> | | |

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| ORD. | SHIPPED | DESCRIPTION | UNIT | AMOUNT |
|------|---------|---|------|--------|
| 1 | | <p>MINSTER CENTRALIZED MOTOR AND CLUTCH CONTROL PANEL, NEMA Type 12 enclosure, built to MINSTER's interpretation of ANSI - B11.1 - 1988 and to NFPA #79 Specifications.</p> <p>Main panel contains the press clutch control circuit, plus a fused disconnect, reversing slide adjustment starter, and a Size No. 3 magnetic reversing drive starter for system voltage:</p> <p>480 Volts, 3 Phase, 60 Cycle</p> <p>Controls to be Allen Bradley where practical.</p> <p>Main control panel located in movable pedestal located off right hand front of press. Pedestal has stand-pipe and flexible overhead conduit to swivel box on front of crown.</p> <p>The setup units include the motor control units, motor on pilot light, lube fault light, and clutch selector switch to select Inching, <u>SETUP CYCLE</u>, or Continuous operation. Setup units located: ON PEDESTAL TOP</p> <p>Basic set of operator buttons, including two guarded Run buttons to operate press, continuous "Arm/Ready" red illuminated button, Top Stop button, and Stop Control button. This group of buttons located: ON PEDESTAL TOP</p> <p>Includes additional Stop button located: ON L.H. FRONT UPRIGHT ON R.H. REAR UPRIGHT</p> <p>Minster 16-Pole Programmable Limit Switch including the following features:</p> <p>Automatic Top Stop through full press speed range. Digital Stroke Position Actual Press Speed Press Stopping Time Motion Detection Programmable for (64) Complete Setups Minimum of 11 Auxiliary Poles</p> <p>Dual clutch valves with detector switches and monitor unit.</p> | | |

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|------|---------|--|------|--------|
| | | <p>Includes two die safety block receptacles only, less blocks.</p> <p>Includes 2 die check receptacles in press stop circuit.</p> <p>Barrier guard receptacle on front and rear of press.</p> <p>Clutch and motor control circuits, including pushbuttons operate on 110 VAC from control transformer which has a minimum of 350 VA extra capacity for machine lighting.</p> <p><u>DRIVE MOTOR:</u></p> <p>40 HP, 1800 RPM, 230/460 Volt, 60 cycle, eddy current drive. Clutch portion is open frame -- motor portion is TEFC, "T" type, complete with tachometer. Includes MINSTER excitation unit, remote speed control, remote speed indicator located in setup station. Includes torque limit control.</p> <p>Electronic zero speed switch for eddy current drive to prevent reversing drive while in motion.</p> <p><u>ELECTRICAL OPTIONS INCLUDED:</u></p> <p>8 digit totalizer counter with key lock reset.</p> <p>3/8" air blowoff with mode selector switch.</p> <p>Sliding pendant on front of press for press inch buttons, feed set-ups, and press slide adjust control buttons.</p> <p>(2) Fluorescent die area lights mounted and wired the same as E2-200-28059.</p> | | |

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| SOLD TO REICHERT STAMPING CO | | REVISED 11-1-68 | | UNIT | AMOUNT |
|---|---------|--|-----|------|--------|
| ORD. | SHIPPED | DESCRIPTION | | | |
| 1 | | MEF5-20 MINSTER AUTOMATION Single Roll Electric Feed | | | |
| Standard mounting is free standing cabinet. Cabinet is heavy welded steel stress relieved construction. Foot pads include anchor bolt holes and jack screws. Machined surfaces on press side for tie bar connections to press. A mechanical jack screw mounted in the cabinet positions the height of the feed rolls. The jack screw is driven by manual ratchet. Leveling and shock mounts are provided. | | | | | |
| Press model/tonnage: E2-200-28183 | | | | | |
| Minimum feed line over bed: 10.00" | | | | | |
| Maximum feed line over bed: 18.00" | | | | | |
| Floor to bed dimension: (with mounts) 41.5" | | | | | |
| Feed roll diameter: 5.392" | | | | | |
| Maximum stock width: 20.00" | | | | | |
| Minimum stock thickness: .020" | | | | | |
| Maximum stock thickness: .250" | | | | | |
| Maximum thickness at full width: .187" | | | | | |
| Maximum width at full thickness: 12.00" | | | | | |
| Roll opening for threading: .47" | | | | | |
| Electrical: 480-3-60 | | | | | |
| Line Direction: Right to Left | | | | | |
| Display Readout (Metric or Inch): Inch | | | | | |
| The following <u>sample rates</u> are based on .187" thick x 20.00" wide mild steel strip with a 31" minimum, 92" maximum loop height and a 276" 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 Press Speed at Feed Angle Degrees | | | | | |
| Length | 120 | 150 | 180 | 210 | 240 |
| 1" | 204 | 245 | 284 | 321 | 357 |
| 4" | 121 | 144 | 166 | 186 | 206 |
| 8" | 90 | 107 | 123 | 138 | 153 |
| 12" | 76 | 90 | 103 | 115 | 127 |
| 18" | 62 | 74 | 85 | 96 | 106 |
| 24" | 53 | 64 | 74 | 83 | 92 |
| 30" | 46 | 56 | 65 | 73 | 81 |
| 36" | 41 | 49 | 58 | 65 | 73 |

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| | | <p>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.</p> <p>The feed angle is totally adjustable through a <u>separately</u> 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.</p> <p>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.</p> <p>Electro-pneumatic actuated automatic roll lifters raise the upper roll for die piloting. 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.</p> <p>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.</p> <p>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 centerline or plus/minus 1.25" offset positioning of the strip stock.</p> | | |

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| | | <p>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.</p> <p>The feed controls are mounted in a pedestal (console) located adjacent to the feed. 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.</p> <p>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.</p> <p>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.</p> <p>All components for the interconnection of hydraulic, pneumatic, and electricals, between pieces of equipment are furnished by the user.</p> <p>Guarding is supplied per Minster's interpretation of ANSI B11.18 safety standards.</p> <p>Paint: Vista Green</p> <p>Feed Serial No.: 18-50448</p> <p>Line No.: 27-50448</p> | | |

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| | | <u>FEED OPTIONS:</u> | | |
| 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. | | |
| 1 | | FEED SET-UPS ON SLIDING PENDANT ON PRESS | | |

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| ORD. | SHIPPED | DESCRIPTION | UNIT | AMOUNT |
|------|---------|---|------|--------|
| 1 | | <p>MS 20-20-7 MINSTER AUTOMATION STRAIGHTENER</p> <p>Capacity (Based on Mild Steel)</p> <p>Maximum Strip Thickness: .200"</p> <p>Minimum Strip Thickness: .020"</p> <p>Maximum Strip Width: 20.00"</p> <p>Maximum Width at Max. Thickness: 5.00"</p> <p>Maximum Thickness at Full Width: .110"</p> <p>Line Speed: 80-800 IPM</p> <p>Electrical supply: 480 Volt-3 Phase-60 HZ</p> <p>Pneumatic supply: 80 PSI shop air.</p> <p>Feed direction: Right to Left.</p> <p>Paint: Vista Green</p> <p>Furnished with seven (7) work rolls mounted in anti-friction bearings 2.00" diameter x 22.12" wide, hardened and ground finish.</p> <p>Upper rolls adjustable individually by manual handwheel with indicator.</p> <p>Two (2) sets of air actuated pinch rolls mounted in anti-friction bearings; 3.33" diameter x 22.12" wide, hardened ground finish.</p> <p>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.</p> <p>Also furnished is an eddy current proportional brake.</p> <p>Overstock loop arm signals the drive control to maintain the stock loop between the straightener and feed.</p> <p>All wiring to common terminal box.</p> <p>Pushbutton station on operator's side.</p> <p>Free standing NEMA 12 control panel with disconnect.</p> <p>Feed line height - 48" at exit end of 15 degree inclined head.</p> <p>Includes stock catenary support on exit end and individually operated stock guides for centerline or offset positioning of strip on entry side.</p> <p>Class D lubrication system. A minimum of 34 individual points plumbed to a common location for convenient manual grease lubrication of each point.</p> <p>All components for the interconnection of hydraulic, pneumatic, and electricals, between pieces of equipment are furnished by the user.</p> <p>Guarding is supplied per Minster's interpretation of ANSI B11.18 safety standards.</p> <p>Straightener Serial No.: 13-50236</p> | | |

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| | | <u>STRAIGHTENER OPTIONS:</u> | | |
| 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 standard over arm loop control. | | |
| 1 | | CLASS "C" LUBRICATION SYSTEM Centralized grease lubrication system plumbed to a single grease connection fitting. Consists of interlocked progressive grease distribution circuit with visual indicator when cycle is complete. Replaces standard class "D" lubrication. | | |

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|------|---------|--|------|--------|
| 1 | | <p>MR10-20S MINSTER AUTOMATION SINGLE REEL</p> <p>Coil Weight, Max. on Center: 10,000 lbs. Coil Width, Maximum: 20" Coil I.D. Range: 20" to 24" Coil O.D., Maximum: 60"</p> <p>Any combination of coil O.D., I.D., and width should not exceed the rated maximum capacity with coil on center.</p> <p>Hydraulic power expansion of mandrel through rotating hydraulic cylinder. The mandrel consists of an SAE 4140 alloy steel shaft mounted in anti-friction bearings, three cast coil shoes, and cast bronze expanding wedges. Manual grease fitting provided. Coil shoes are wide circumferential segments designed to minimize distortion of coils at small outside diameter.</p> <p>Machine base is heavy welded construction with common bearing housing for maximum rigidity and precision. Anchor bolt and leveling screw provision in feet. Base must be securely anchored to floor for safe operation.</p> <p>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.</p> <p>Adjustable back keeper arms are provided to guide the strip during unwinding. Three adjustable keeper arms 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.</p> <p>Hydraulic power is supplied from a self-contained power unit. Valves are manifold mounted on the power unit.</p> <p>Operator's controls are located near straightener for convenience.</p> | | |

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| | | <p>All components for the interconnection of hydraulic, pneumatic, and electricals, between pieces of equipment are furnished by the user.</p> <p>Guarding is supplied per Minster's interpretation of ANSI B11.18 safety standards.</p> <p>Payoff position: R-L; mandrel towards operator side. Position "A"</p> <p>Paint: Vista Green</p> <p>Electrical: 480 Volt-3 Phase-60 HZ</p> <p>Reel Serial No.: 13-70275</p> <p><u>REEL OPTIONS:</u></p> <p>1 JOG DRIVE For pull-off reel applications for rotating mandrel by pushbutton control in forward and reverse direction for threading. Included when powered payoff drive is ordered.</p> <p>1 SPECIAL OPTION 72" coil outside diameter capability. 50" floor to centerline of mandrel shaft.</p> | | |