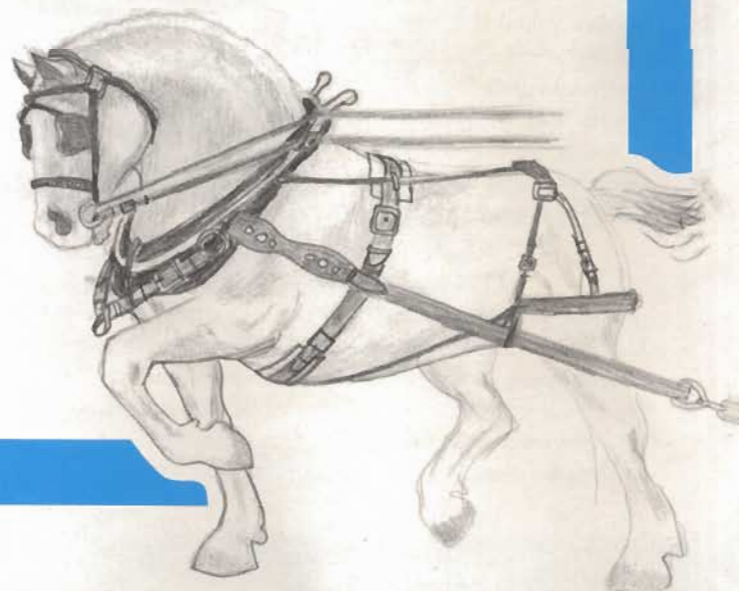




3 Roll Pinch Pyramid Hydraulic Plate Bending Machines



are
**Real
Work
Horses**



from Kentucky

20 Reasons to Buy the W

1 Frame Construction: The main frame is constructed of steel plates and sections and welded to form one integral unit. This frame includes the base, bearing support housings, and drive units.



Movable Console Type Control

2 Rolls: The rolls are accurately machined from 1045-1050 forgings or bars. The rolls are crowned to compensate for deflection occurring during normal forming operations. The working surface is machined to an RMS 125 finish as standard. Roll hardening and polishing to RMS 32 finish is available as an option.



Typical Controls. Shown w/optional Foot Pedal and L.E.D. Roll Position Indicators

3 Bearings: Spherical roller, tapered roller, and ball bearings are used throughout the machine. This greatly reduces the friction; and, therefore, reduces the horsepower required to drive the machine. They are provided with shields and seals and with provision for re-lubrication for a long, trouble-free life.

4 Roll Support System: The lower rolls are supported on pivoting bearing cases, actuated by two special hydraulic cylinders, connected in series which provides parallel movement throughout the entire travel range and which can be angled to roll cones. The hydraulic circuit is provided with special check valves to maintain position.

5 Motor and Electrical System: Main drive motor is a totally enclosed fan-cooled type and is directly coupled to the main hydraulic pump. Standard voltage is 230/460 volts, 3 phase, 60 hertz. The fused control circuit is 120 volts, and all electrical conductors, enclosures, and practices meet NFPA 79 specifications.



Drop End Lowered for Work-Piece Removal

6 Hydraulic System: The machine's hydraulic system is designed for maximum efficiency, economy, and simplicity, using state-of-the-art technology where justified. On units with roll diameter 13" and less, manual control valves are provided for excellent economy and feel. As an option on these machines and as standard on larger machines, we offer electrically controlled directional valves.



Roving Pendant Type Control



Manual Valve Type Control

7 Controls: The directional and speed controls are conveniently located on the main housing, or the movable control console, or on the roving pendant control, depending on machine size and control option chosen.

8 Roll Position Indicators: The lower roll position is accurately identified by our standard dial pointer type indicator. As an option, deluxe L.E.D. indicators can be installed for one or both sides of the forming rolls.



Dial Type Roll Position Indicator

9 Roll Drive System: All three rolls are driven on WDM 100 Series rolls. On 8-inch diameter and larger roll models, each roll is driven by a hydraulic motor through planetary type speed reducer with very high mechanical efficiency. On the smaller machines, the rolls are driven by a single hydraulic motor through spur gear, torque limiter, and roller chain type drive. Roll speed is infinitely variable from 0 to 22 FPM via speed control knob on main housing.



L.E.D. Type Roll Position Indicator

10 Cone Forming: Cones can be readily formed using the standard roll tilt feature and the optional cone attachment, which is a sleeve that slides over the top roll and is locked in position by the drop end unit.

11 Rolling Structural Sections: Because of the large opening between the top and bottom rolls, it is possible to roll symmetrical structural sections, such as channels, leg in and leg out, square and rectangular tubes, and flat bars the easy way, without any additional attachments.

12 Capacity: A nomograph is provided with each machine to show each machine's capacity at various diameters, thicknesses, and widths.

Typical Nomograph

Nomograph is based on:

Cold forming procedure

64,000 psi material

Material being formed to radius $\geq 1.4 \times$ material thickness (3.5% elongation)

Elongation of more than 5% is seldom practical for cold forming

Elongation formula

$$E = \left(\frac{1}{2.5 + t} \right) i D O$$

where E is % of elongation in outer surface of cylinder

t is plate thickness

d is inside diameter of cylinder

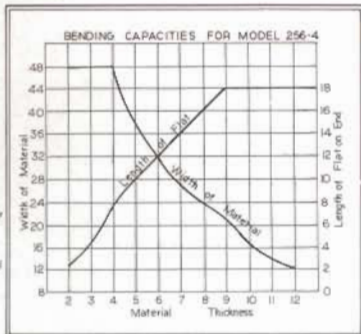
Rounding the edges on the outside diameter of material

$\geq 1/8$ inch thick will reduce susceptibility to cracking

during cold forming

Warm or hot rolling will increase capacity and reduce rolling radii

Several passes may be required to roll smaller diameters.



13 Safety Features: All WDM rolling machines have a safety cable around the perimeter of the machine which stops the main drive motor when actuated. If the cable is actuated, it is necessary to reset the switch in order to restart the machine. As an added safety feature, all controls and buttons are momentary contact (dead man) type.

14 Bar and Angle Attachment: This attachment goes in-board of the bearings and enables the user to roll flat bar the hard way and angles and T-sections leg in and leg out. Angles, however, must be tacked together and rolled in pairs.

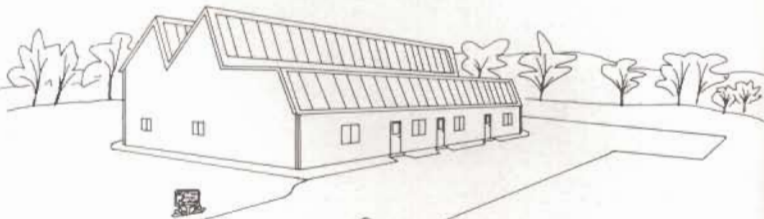
15 Circular Grooves: Round circumferential grooves can be provided as an option to roll rods, tubes, or sheets with wired edges. Standard sizes are $3/8$ ", $1/2$ ", and $5/8$ ".

16 Horizontal Grooves: Horizontal grooves can be provided to facilitate square entry of the plate/ workpiece into the machine.



Model 100-12-8 w/optional L.E.D. Roll Position Indicators

17 Location and Service: Our plant in Liberty, Kentucky houses our sales, engineering, manufacturing, R&D, parts, and accounting departments. We are represented in the USA, Canada, Central and South America by independent sales representatives and dealers.



Our location in east central United States puts us in close proximity to all major industrial areas in the eastern United States. Our machines are designed to use many standard off the shelf components that are readily available from industrial supply houses or from our stock.

18 Made in U.S.A. using materials made in America. Typical component manufacturers are Fairfield, Auburn Gear, Lynn Gear, Browning, SKF, Torrington, Char-Lynn, Continental, Vickers, Parker, Prince, Sheffer, Weatherhead, Red Lion, Hoffman, and Carol.

19 Installation: All of our machines, 55,000 pounds and less, are test run in our plant and shipped ready to run after unpackaging and connection to power. Because of their low profile design, many of the machines do not require a pit or sub floor.

20 Warranty: WDM Machine Tools guarantees for a period of one (1) year from date of original purchase all necessary repairs or parts replacement to the machine occasioned by defective workmanship and/or material. All repairs and replacement parts F.O.B. factory.



Model 100-6-4 w/optional Foot Control and L.E.D. Roll Position Indicators

Capacity Ratings & Specifications

For WDM 100 Series Pinch Pyramid Plate Rolls

Model	Rated Capacity	Capacity 12 x Top Roll Dia.	Nominal Roll Dia.	HP	Size L X W X H	Weight	Optional Capacity	
							Bar on Edge	Angle
100-6-6	1/4 x 6	5/16 x 6	6	5	116 x 36 x 39	5,200	1-1/2 x 3/4	1-1/4 x 1-1/4 x 3/16
100-7-6	5/16 x 6	3/8 x 6	7	5	116 x 36 x 39	7,100	2 x 3/4	1-1/2 x 1-1/2 x 1/4
100-8-6	3/8 x 6	7/16 x 6	8	7.5	135 x 47 x 44	9,250	2-1/2 x 1	2 x 2 x 1/4
100-9-6	1/2 x 6	5/8 x 6	9	10	135 x 47 x 44	10,400	2-1/2 x 1	2-1/2 x 2-1/2 x 3/8
100-10-6	5/8 x 6	11/16 x 6	10	10	138 x 55 x 54	12,800	3 x 1	3 x 3 x 3/8
100-11-6	3/4 x 6	13/16 x 6	11	15	138 x 55 x 54	15,500	3 x 1-1/4	3-1/2 x 3-1/2 x 1/2
100-12-6	7/8 x 6	1 x 6	12	20	142 x 59 x 63	18,400	3-1/2 x 1-1/2	4 x 4 x 1/2
100-13-6	1 x 6	1-1/8 x 6	13	25	142 x 59 x 63	21,600	4 x 1-1/2	4 x 4 x 1/2
100-14-6	1-1/8 x 6	1-3/16 x 6	14	40	163 x 80 x 72	25,100	4-1/2 x 1-3/4	4 x 4 x 1/2
100-15-6	1-3/16 x 6	1-5/16 x 6	15	50	163 x 80 x 72	28,900	5 x 2-1/2	4 x 4 x 1/2
100-16-6	1-1/4 x 6	1-1/2 x 6	16	50	168 x 85 x 84	33,000	5 x 2-1/2	5 x 5 x 1/2*
100-17-6	1-1/2 x 6	1-3/4 x 6	17	60	168 x 85 x 84	37,000	5 x 3	5 x 5 x 1/2*
100-18-6	1-3/4 x 6	2 x 6	18	60	196 x 100 x 95	49,600	6 x 2-1/2	6 x 6 x 3/4*
100-19-6	2 x 6	2-1/8 x 6	19	75	196 x 100 x 95	56,800	6 x 3	6 x 6 x 3/4*
100-6-8	3/16 x 8	1/4 x 8	6	5	140 x 36 x 39	6,900	1-1/2 x 3/4	1-1/4 x 1-1/4 x 3/16
100-7-8	1/4 x 8	5/16 x 8	7	5	140 x 36 x 39	9,400	2 x 3/4	1-1/2 x 1-1/2 x 1/4
100-8-8	5/16 x 8	3/8 x 8	8	7.5	159 x 47 x 44	12,300	2-1/2 x 1	2 x 2 x 1/4
100-9-8	3/8 x 8	7/16 x 8	9	10	159 x 47 x 44	13,800	2-1/2 x 1	2-1/2 x 2-1/2 x 3/8
100-10-8	1/2 x 8	9/16 x 8	10	10	162 x 55 x 54	17,100	3 x 1	3 x 3 x 3/8
100-11-8	5/8 x 8	3/4 x 8	11	15	162 x 55 x 54	19,380	3 x 1-1/4	3-1/2 x 3-1/2 x 1/2
100-12-8	3/4 x 8	7/8 x 8	12	20	166 x 59 x 63	23,000	3-1/2 x 1-1/2	4 x 4 x 1/2
100-13-8	7/8 x 8	1 x 8	13	25	166 x 59 x 63	27,000	4 x 1-1/2	4 x 4 x 1/2
100-14-8	1 x 8	1-1/8 x 8	14	40	187 x 80 x 72	31,500	4-1/2 x 1-3/4	4 x 4 x 1/2
100-15-8	1-1/8 x 8	1-1/4 x 8	15	50	187 x 80 x 72	36,100	5 x 2-1/2	4 x 4 x 1/2
100-16-8	1-1/2 x 8	1-3/8 x 8	16	50	192 x 85 x 84	41,100	5 x 2-1/2	5 x 5 x 1/2*
100-17-8	1-3/8 x 8	1-1/2 x 8	17	60	192 x 85 x 84	46,300	5 x 3	5 x 5 x 1/2*
100-18-8	1-1/2 x 8	1-5/8 x 8	18	60	220 x 100 x 95	62,000	6 x 2-1/2	6 x 6 x 3/4*
100-19-8	1-3/4 x 8	1-7/8 x 8	19	75	220 x 100 x 95	71,000	6 x 3	6 x 6 x 3/4*
100-6-10	.134 x 10	3/16 x 10	6	5	164 x 36 x 39	8,600	1-1/2 x 3/4	1-1/4 x 1-1/4 x 3/16
100-7-10	3/16 x 10	1/4 x 10	7	5	164 x 36 x 39	11,800	2 x 3/4	1-1/2 x 1-1/2 x 1/4
100-8-10	1/4 x 10	5/16 x 10	8	7.5	183 x 47 x 44	15,400	2-1/2 x 1	2 x 2 x 1/4
100-9-10	5/16 x 10	3/8 x 10	9	10	183 x 47 x 44	17,280	2-1/2 x 1	2-1/2 x 2-1/2 x 3/8
100-10-10	3/8 x 10	1/2 x 10	10	10	186 x 55 x 54	21,300	3 x 1	3 x 3 x 3/8
100-11-10	1/2 x 10	5/8 x 10	11	15	186 x 55 x 54	23,000	3 x 1-1/4	3-1/2 x 3-1/2 x 1/2
100-12-10	5/8 x 10	3/4 x 10	12	20	190 x 59 x 63	27,400	3-1/2 x 1-1/2	4 x 4 x 1/2
100-13-10	3/4 x 10	7/8 x 10	13	25	190 x 59 x 63	32,000	4 x 1-1/2	4 x 4 x 1/2
100-14-10	7/8 x 10	1 x 10	14	40	211 x 80 x 72	37,400	4-1/2 x 1-3/4	4 x 4 x 1/2
100-15-10	1 x 10	1-1/8 x 10	15	50	211 x 80 x 72	42,900	5 x 2-1/2	4 x 4 x 1/2
100-16-10	1-1/8 x 10	1-1/4 x 10	16	50	216 x 85 x 84	48,900	5 x 2-1/2	5 x 5 x 1/2*
100-17-10	1-1/4 x 10	1-3/8 x 10	17	60	216 x 85 x 84	55,000	5 x 3	5 x 5 x 1/2*
100-18-10	1-3/8 x 10	1-1/2 x 10	18	60	244 x 100 x 95	73,700	6 x 2-1/2	6 x 6 x 3/4*
100-19-10	1-1/2 x 10	1-5/8 x 10	19	75	244 x 100 x 95	84,800	6 x 3	6 x 6 x 3/4*
100-6-12	.105 x 12	.134 x 12	6	5	176 x 36 x 39	10,400	1-1/2 x 3/4	1-1/4 x 1-1/4 x 3/16
100-7-12	.134 x 12	3/16 x 12	7	5	176 x 36 x 39	14,200	2 x 3/4	1-1/2 x 1-1/2 x 1/4
100-8-12	1/4 x 12	5/16 x 12	8	7.5	207 x 47 x 44	18,500	2-1/2 x 1	2 x 2 x 1/4
100-9-12	5/8 x 12	3/8 x 12	9	10	207 x 47 x 44	19,900	2-1/2 x 1	2-1/2 x 2-1/2 x 3/8
100-10-12	3/8 x 12	7/16 x 12	10	10	210 x 55 x 54	24,300	3 x 1	3 x 3 x 3/8
100-11-12	7/16 x 12	1/2 x 12	11	15	210 x 55 x 54	26,500	3 x 1-1/4	3-1/2 x 3-1/2 x 1/2
100-12-12	1/2 x 12	9/16 x 12	12	20	214 x 59 x 63	31,500	3-1/2 x 1-1/2	4 x 4 x 1/2
100-13-12	9/16 x 12	5/8 x 12	13	25	214 x 59 x 63	37,000	4 x 1-1/2	4 x 4 x 1/2
100-14-12	5/8 x 12	3/4 x 12	14	40	235 x 80 x 72	43,000	4-1/2 x 1-3/4	4 x 4 x 1/2
100-15-12	3/4 x 12	1 x 12	15	50	235 x 80 x 72	49,300	5 x 2-1/2	4 x 4 x 1/2
100-16-12	7/8 x 12	1-3/16 x 12	16	50	240 x 80 x 84	56,200	5 x 2-1/2	5 x 5 x 1/2*
100-17-12	1 x 12	1-5/16 x 12	17	60	240 x 85 x 84	63,300	5 x 3	5 x 5 x 1/2*
100-18-12	1-1/8 x 12	1-3/8 x 12	18	60	268 x 100 x 95	84,900	6 x 2-1/2	6 x 6 x 3/4*
100-19-12	1-3/8 x 12	1-5/8 x 12	19	75	268 x 100 x 95	96,000	6 x 3	6 x 6 x 3/4*

*This capacity "leg out only." Leg in capacity is less.

- Capacity is based on 40,000 p.s.i. yield strength steel.
- We reserve the right to make changes in design and specifications without obligation.
- These machines available in 2, 3, 4, 5, 14, 16, 18, and 20 feet lengths.
- Also available with special options and/or rolling systems.

Let us know your requirements.

The Advantages and Operation of a Pinch Pyramid Plate Bending Roll

Because of the design and arrangement of the rolls, the pinch pyramid bending roll is very versatile and could possibly be called the universal plate roll.

At approximately 75% of the rated capacity, these machines will prebend as well as an initial pinch type plate roll. With the rolls in a pyramid position and bending large diameters, the machine is capable of forming approximately 125% of its rated capacity.

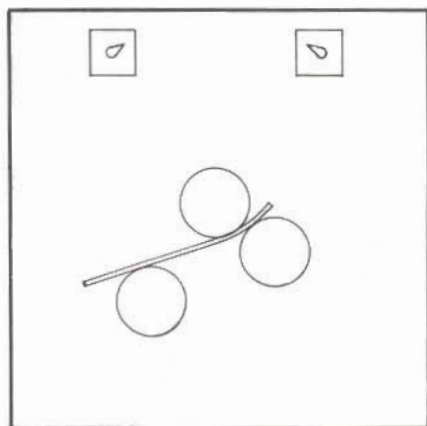
Because of the large openings between the rolls, symmetrical structural sections can be rolled without additional at-

tachments. With additional attachments it is possible to form flat bar on edge and structural tees, and also, angles if they are tacked together back to back to form a tee for rolling. They are then separated after rolling.

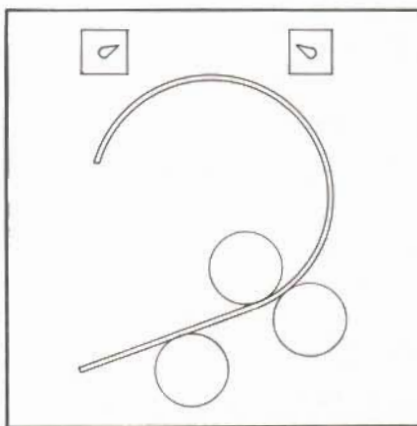
In the forming operation both the leading and trailing edges can be preformed with one entry of the workpiece into the machine. This eliminates the necessity of manipulating and turning the workpiece for a double entry as is required on an initial pinch type machine.

Forming Procedure

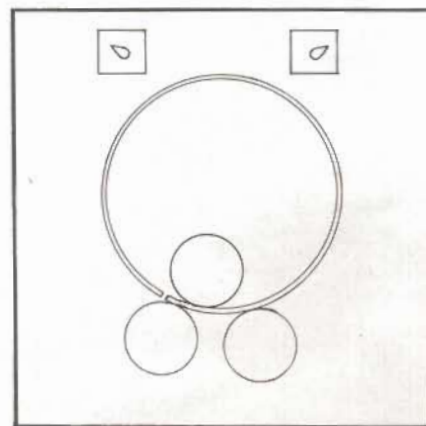
The normal procedure for forming a workpiece on a pinch pyramid roll is illustrated below.



Workpiece is entered and the leading edge is preformed to the proper radius using the roll position indicators and a template or radius gauge as a guide.



Workpiece then continues on through the machine until the trailing edge nears the center of the bending roll.



The rolls are then rearranged so that the opposite roll becomes the pinch roll. Using the roll position indicators as guides to position the rolls, the workpiece is then rolled to completion.

The above procedure produces the least amount of flat on the leading and trailing edges. However, to obtain maximum machine capacity, the rolls must be operated in the true pyramid configuration producing a flat on the leading and trailing edges of the workpiece.



Initial Pinch Rolls



Angle Rolls



Hydraulic Initial Pinch Rolls



Special Rolls For Square & Rectangle Tubing



4 Roll Machines



Special Rolls For Optical Industry



C-Frame Presses



Low Tonnage Hydraulic Press Brakes