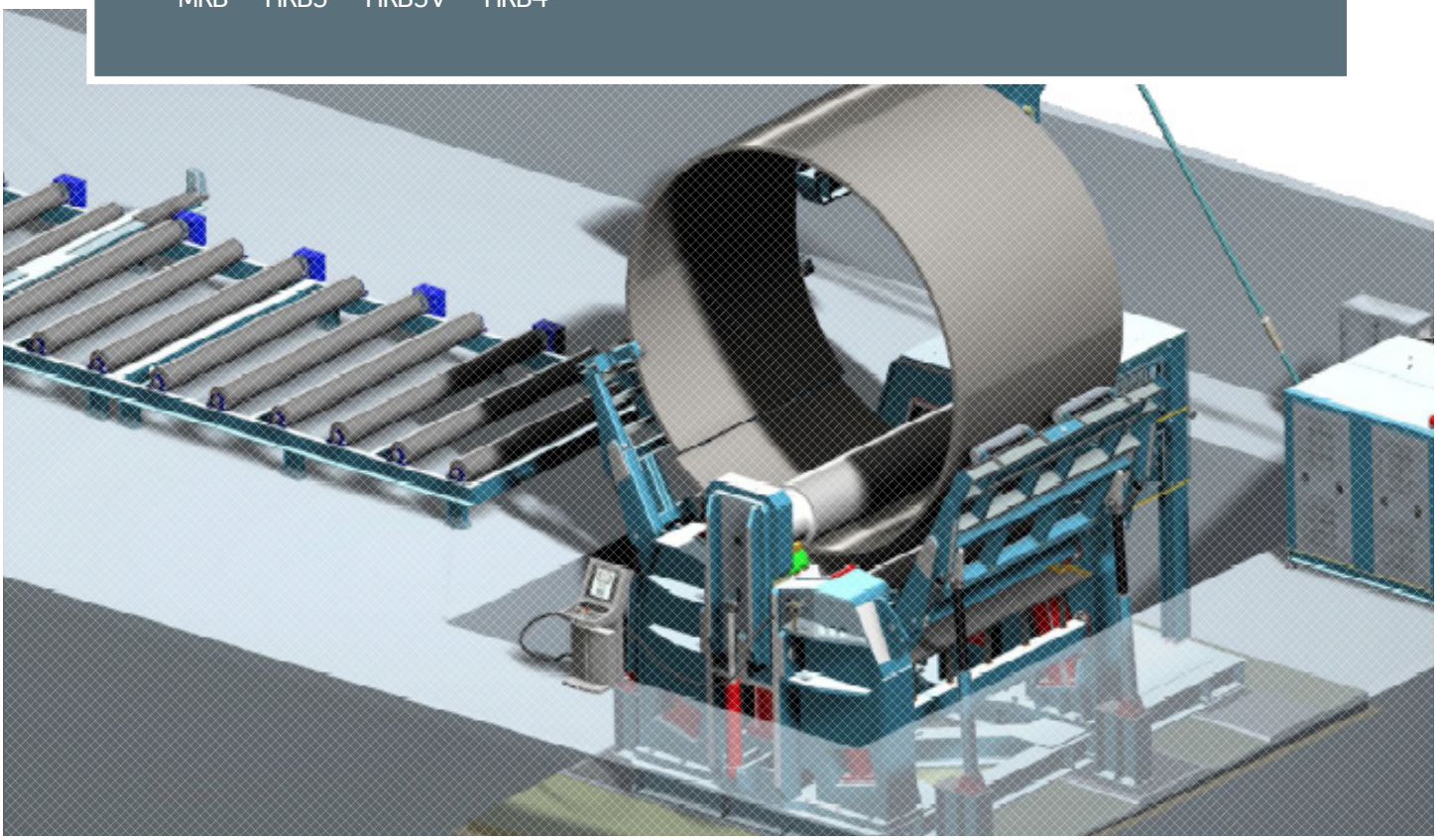
DURMA

PLATE ROLLS

MRB HRB3 HRB3V HRB4



BETTER PARTS >>> BETTER PROFITS

THE COMPANY

As a total supplier for sheet metal manufacturing with almost 60 years of experience, Durma understands and recognizes the challenges, requirements and expectations of the industry.

We strive to satisfy the ever higher demands of our customers by continuously improving our products and processes while researching and implementing the latest of technologies.

HEADQUARTERS I BURSA TURKEY

In our three production plants with a total of 1.5 million square feet, we dedicate 1,000 employees to delivering high quality manufacturing solutions at the best performance-to-price ratio in the market.

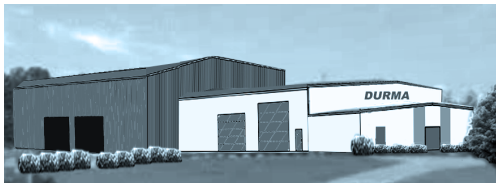
From the innovations developed at the Research & Development Center to the technical support given by our worldwide distributors, we all have one common mission: to be your preferred partner.

DURMAZLAR HOLDİNG

R&D CENTER

BASKÖY FACTORY

usa DURMA



CHARLOTTE NC

MRB & HRB SERIES

PLATE ROLLS

MRB	HRB3	HRB4	HRB3V
.040 to 1/4" Thickness Range 120" Maximum Length	1/4" to 1 1/4" Thickness Range 20' Maximum Length	1/4" to 6" Thickness Range 20' Maximum Length	1/4" to 6" Thickness Range 20' Maximum Length

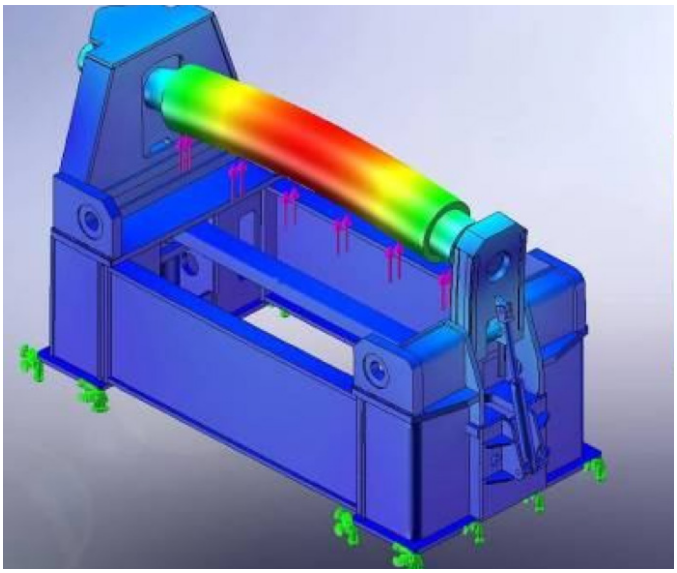
	MRB	HRB3	HRB4	HRB3V
Power System	Mechanical	Hydraulic	Hydraulic	Hydraulic
Cone Bending	s	s	s	s
NC Control	-	o	o	o
CNC Control	-	o	o	o
Hydraulic Vertical Supports	-	o	o	o
Hydraulic Side Supports	-	o	o	o
Lateral Adjustment of Lower Rolls	-	-	-	s

(S) STANDARD (O) OPTIONAL (-) NOT AVAILABLE

ALL CAPACITIES BASED ON 34,800 YIELD & REDUCE 50% FOR CONICAL BENDING
LARGE SIZES UPON REQUEST

STANDARD

FEATURES

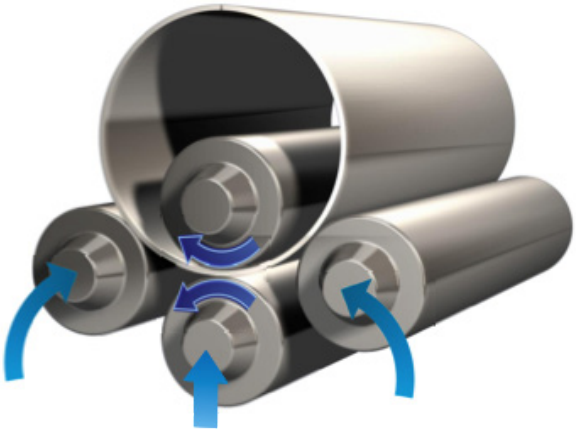


Engineering & Production Advantage

The mechanical and hydraulic systems on HRB-4 machines are designed by experienced Durma engineers. These engineers utilize parametric 3D engineering technology (Pro/Engineer) as well as static and mechanism analysis. All mechanical, hydraulic, and electronic systems are designed and tested by Durma electrical and mechanical engineers. Only following lengthy tests and evaluations are the machines authorized to be manufactured in serial production.

Stress Relieved Frame

The machine frame and connections are stress relieved after the welding process. The completed frame is machined in a single pass with one position on the five axis CNC machining center. In this way parallelism of all axis and surfaces is precisely machined assuring long-term durability and the ability to produce accurate parts.



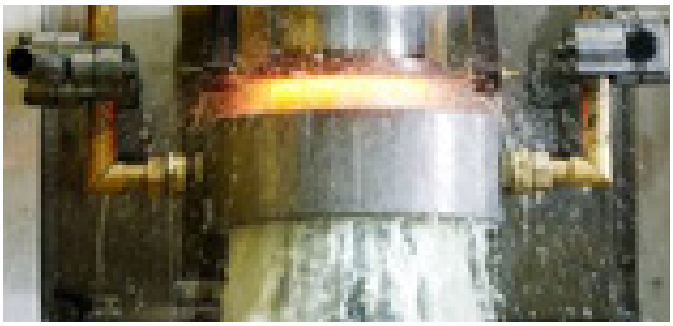
Planetary Guiding

The side rolls are guided by swing beds which allow them to act as two independent axes moving in a planetary plane. Machines with top roll diameter larger than 17" have a dual planetary guide system. The system allows bending of diameters as small as 1.2 times the top roll diameter. minimum work piece diameter as small 1.2 times the top roll diameter. Side rolls position in a planetary approach to the top roll allowing better pre-bending as well minimizing spring of the material that occurs during the bending process.

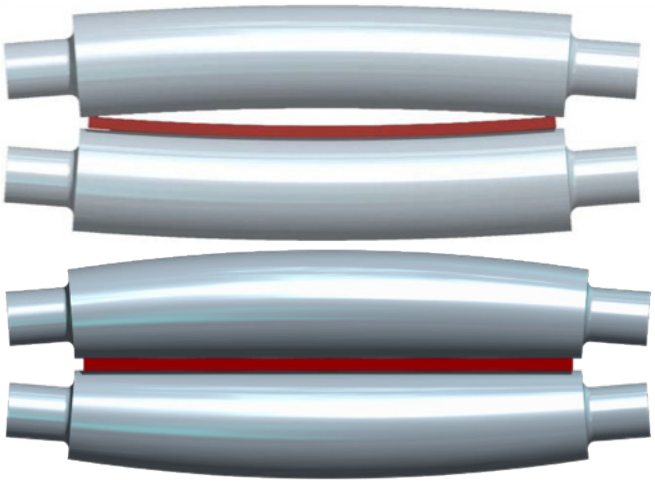
STANDARD FEATURES

Hydraulic Drop End

For easy part removal the end frame assembly is hydraulically lowered to facilitate part removal.



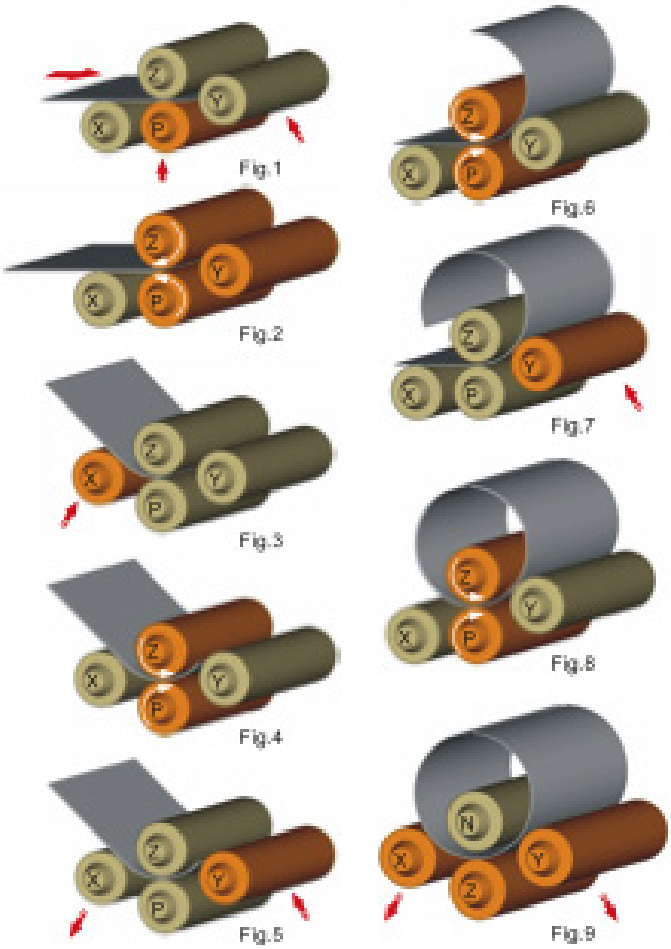
Induction Hardened Rolls



Durable Rolls & Crowning

The most important element of plate roll bending machines are the rolls themselves. In some cases builders can use weaker rolls allowing bending diameters to five times the material thickness. Durma machines can achieve diameters to 1.5 diameter of the top roll. Highly durable carbon steel (C45) rolls are machined by CNC Lathes with high precision without creating a notching effect. Work surfaces of the rolls are induction hardened to HRC 54±2 and hardness tests are done from different points. A crowning shape is machined in the rolls to compensate for deflection that can occur during the rolling process. Special crowning for different materials can be applied free of charge.

STANDARD FEATURES

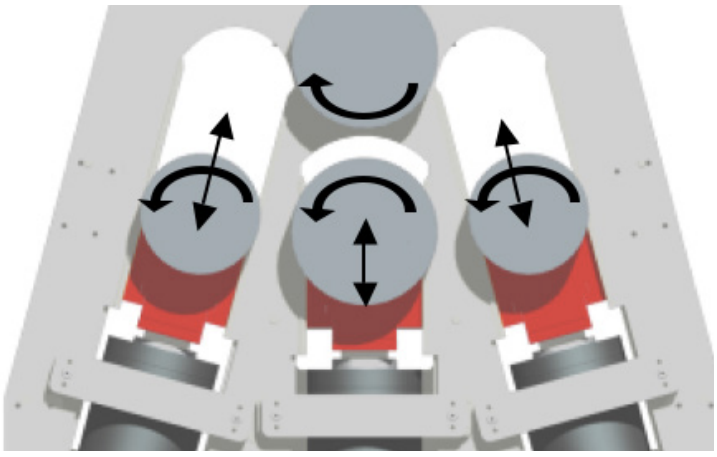


Simple Operation

Four roll bending machines by design are safer, faster, as well as more productive and user friendly than three roll machines. The bottom roll which is positioned on the same Y axis as the top roll secures the sheet edge for accurate pre-bending and minimized “flat” zones at the sheets edge. The two side rolls are controlled independently.Parallelism is assured by the support of the two side rolls during the bending process. Forming is achieved by securing it between the top and bottom roll. CNC bending of polycentric and elliptical shapes is easily achieved with this design.

Precise Roll Positioning

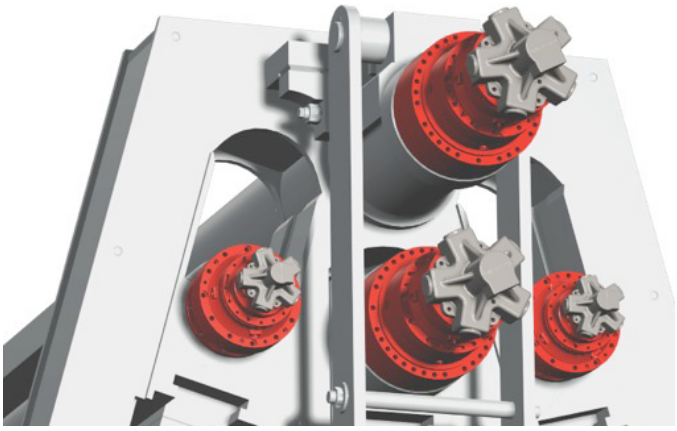
Side rolls are triggered by four independent and oversized hydraulic cylinders. Synchronization between the rolls is realized by combination of magnetic rule measurement and PLC’s achieving response within milliseconds. High precision load-holding valves working with a torsion bar system is used for roll parallelism. Sheets of different thicknesses are secured without part deformation.



Durma Rectilinear Rolls

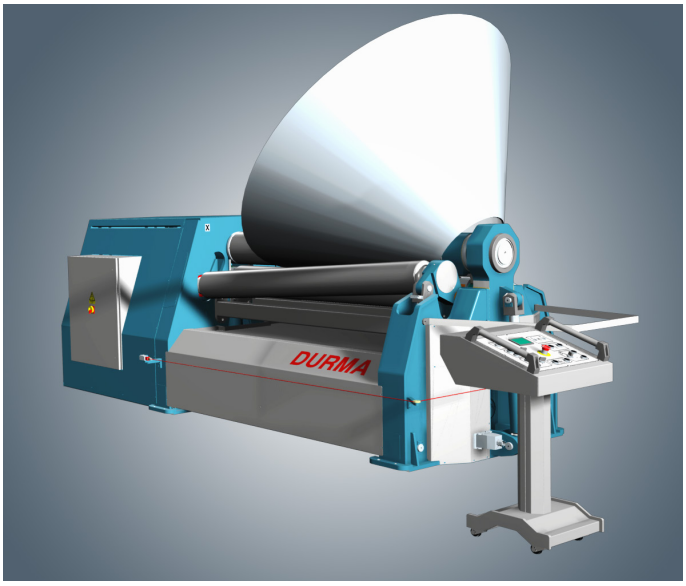
On machines with roll diameter larger than 17” a rectilinear guide system is used. This system moves in a straight line, not a curve as in the planetary system. This results in a better, more stable system for pre-bending and rolling heavier plates. All four rolls are also driven in this system.

STANDARD FEATURES



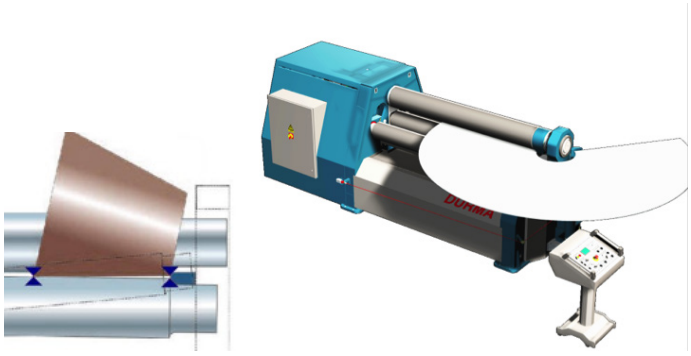
High Torque Roll Triggering

Because of its high torque, the HRB bends parts with fewer steps. All rolls are activated by independent high torque hydraulic motors and planetary gear boxes. The activation system is positioned on the same axis as the roll, so high torque is transferred to the sheet without any power loss.

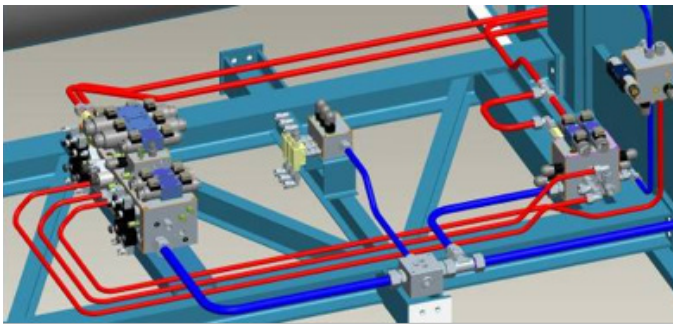


Conical Bending

With Durma's strong frame and angular bottom and side rolls, wide angles and small diameter conical parts are easily bent. While some machines on the market allow minimum conical bending of three times the top roll diameter, Durma HRB-4 machines can bend to a diameter of 1.5 times that of the top roll.

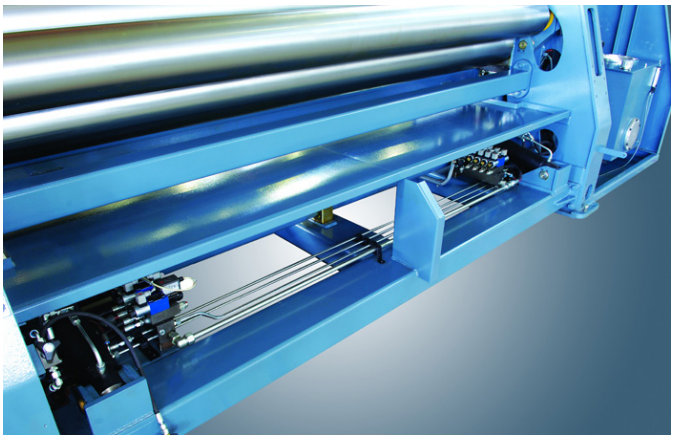


STANDARD FEATURES



Hydraulic & Electrical System

Machine movements are triggered by hydraulic components.The system consists of well-known electrical components, such as Siemens, Schneider, Phoenix and Opkon. The system is protected by current overloadings for its components, power supplies, electronics and motors. Bosch Rexroth valves provide quick and accurate response time. Overload pressure valves are used to withstand peak pressures and eliminate system overload damage.

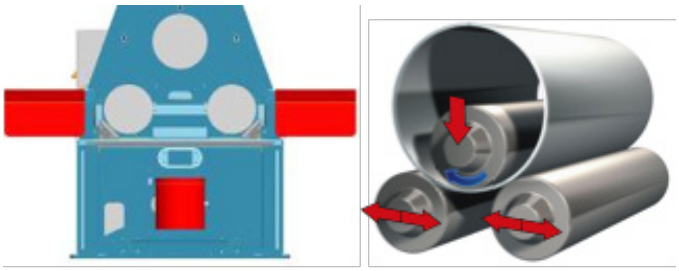


Planetary Swing Rolls

Spherical Roller Bearings

Top rolls are guided with spherical roller bearings. The bottom and side rolls are seated in bronze bushings.

HRB-3V FEATURES



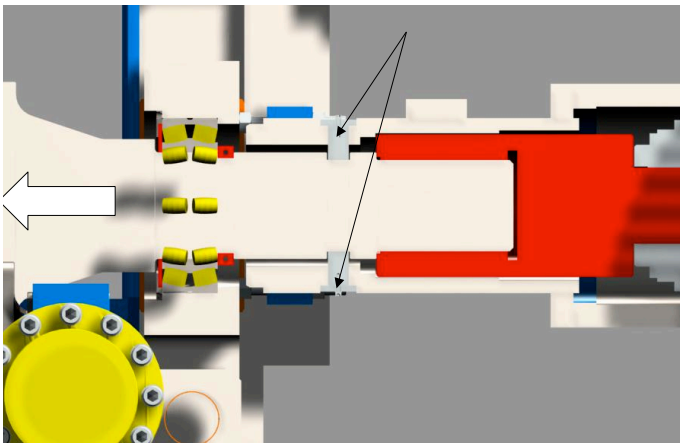
Variable Geometry

Rolls and their positions are selected after extensive engineering, tests and evaluation periods. Side rolls are guided by strong housing which allows them to act as two independent axes moving on linear shape.

Dual Cone-Rolling Device

Due to Durma's strong body and angular upper and side rolls, wide angle and small diameter conical parts can be easily produced.

Other machines on the market achieve conical bendings of 3 times of top roll, Durma HRB-3V machines can achieve conical bending of 1.5 times the top roll diameter easily.

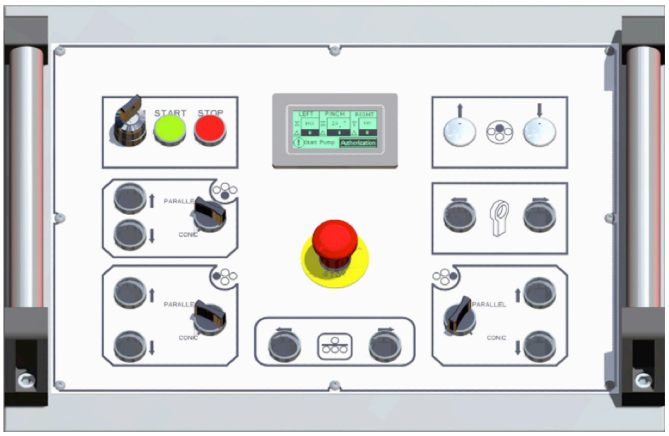


Quick Changeable Top Roll

Save time with an easily changeable top roll. Simply remove two locking mechanisms to disengage the top roll.

HRB SERIES

CONTROLS



PLC Control System

A PLC control system ensures the machine's bottom and side rolls operate synchronously. Up to five steps can be programmed with the touch screen. The PLC controls six different axes, therefore reducing setup times.

NC Control System

- Dedicated scratch-proof, oil-proof, acid-resistant IP65 sealed membrane push buttons with 51 keys and fiberoptic communication lines.
- AMD GeodeTM LX800 500MHz
- Memory: 256 Mbyte DRAM for CPU 1 Mbyte SRAM for parameters
- Color TFT-LCD 7" WVGA (16:9) Resolution (800 x 480, (R.G.B)) 262,144 colors
- 1 Ethernet Port;1 CAN interface;1 RS232C Serial Port 2 USB Port; 1 VGA Out
- Software:
  - Manual, teach-in and automatic working modes
  - Standard 7 axes (X1, X2, Y1, Y2, P, P1, Z)
  - Conic and parallelism control adjustable speeds
  - 100 step, 2500 program memory
  - User friendly program editor
  - USB port for programs backup
  - Part pcs programing
  - Working hours counter, mm / inch system
  - Automatic turn-off programming
  - Turkish, English, German, French, Spanish, Italian, Russian, and Polish languages
  - Alarm list

OPTIONAL CONTROL

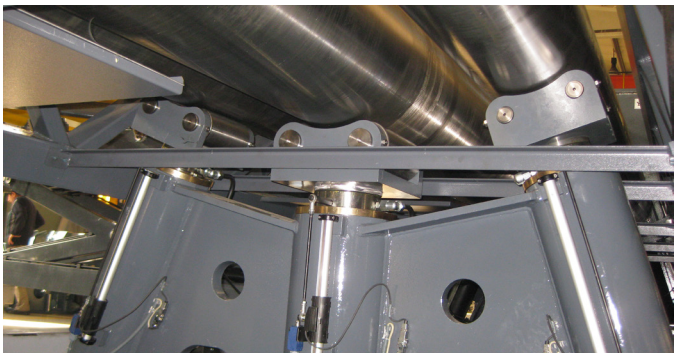
CNC Control (S500)

The CNC control system, with its graphical control system, allows bending either step-by-step or, once the material library is developed, automatically calculating the bending steps. Difficult bending parts can be bent easily with bending shapes. This user-friendly CNC features:

- Dedicated scratch-proof, oil-proof, acid-resistant IP65 sealed membrane push buttons with 28 keys
- External industrial QWERTY keyboard with 88 keys
- Fiberoptic communication lines
- Intel Celeron M 600MHz
- 256 Mbyte DRAM for CPU
- 1 Mbyte SRAM for parameters
- Color TFT-LCD 15” XVGA (4:3) with 1024x768 RGB
- Communication Ports: 2 Ethernet; CAN interface; 2 RS232C Serial Port; 2 USB Port; 1 VGA out; 1 PS2 Port
- Temperature: -25° / 70°C
- Software:
    - Manual, teach-in and automatic working modes
    - Standard 7 axes (X1, X2, Y1, Y2, P, P1, Z)
    - Conic and parallelism control
    - Adjustable turning speed by hand wheel
    - X-Z / Y-Z axes interpolation available
    - User friendly program editor
    - Automatic bending sequence calculation
    - Cylindrical, polycentric, oval, oval parallel sides, rectangular, arc
    - Material database entry available
    - USB port for programs backup
    - 100 step, 2,500 program memory
    - Program editing and part pieces programming
    - Working hours counter
    - Millimeter / inch system
    - Automatic turn-off programming
    - Turkish, English, German, French, Spanish, İtalian, Russian and Polish languages
    - Alarm list

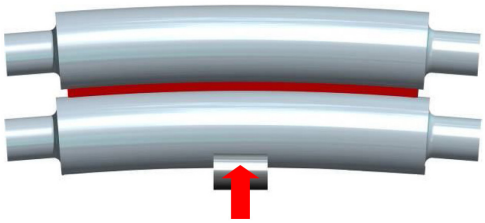
OPTIONAL

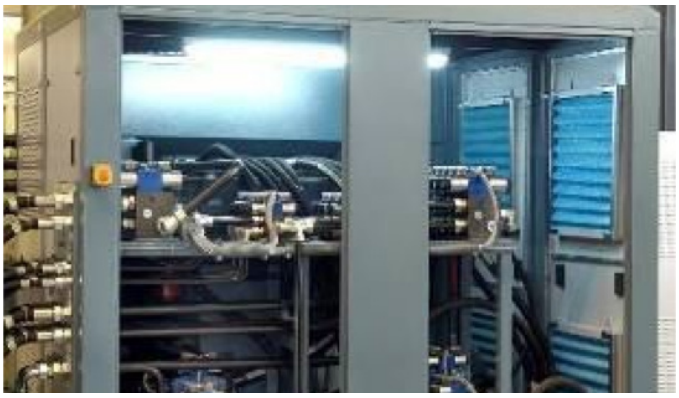
FEATURES



Dynamic Crowning

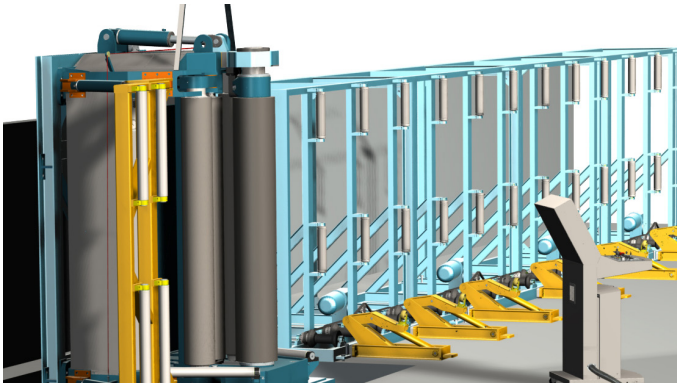
Durma's "Dynamic Crowning" system assures accurate parts across a full range of thicknesses. After programming the part data in the CNC control, the appropriate crown is set accordingly to the part information (available for ¾" and smaller machines).





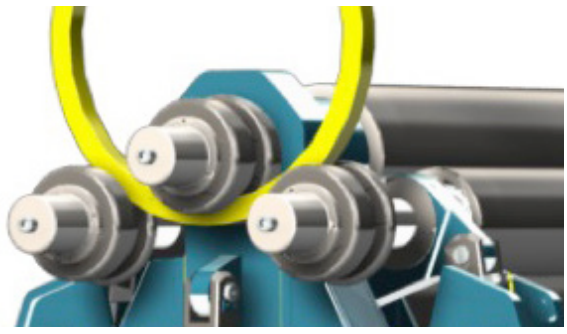
Separate Power Cabin

If working area is dirty, a separate hydraulic and electrical system is preferable as it extends the life of the machine and enables easy maintenance and handling.



Vertical Working Feature

When performing large scale bending the horizontal floor space required can be substantial. Providing there is vertical clearance, vertical positioning and bending can reduce the required floor space considerably. Vertical format bending also eliminates the need for side and vertical material supports that are required to reduce distortion and stretching that occurs when horizontally bending. When desired, the machine can also be used horizontally.

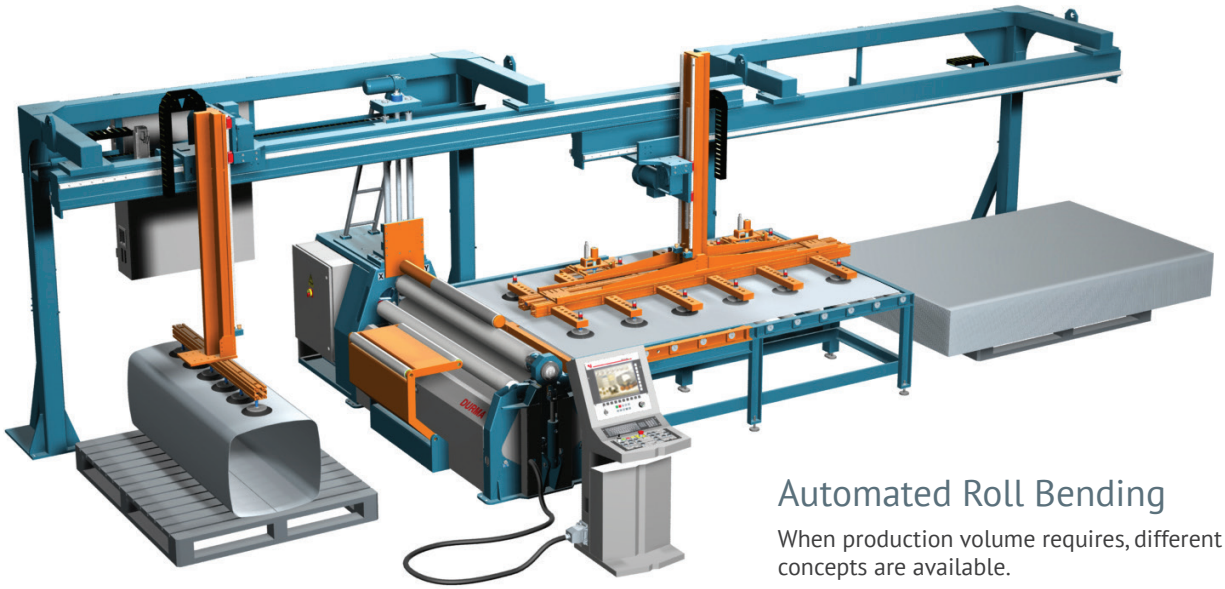


Extended Rolls

Extended shafts can be ordered for the bending of profiles such as tube, square and round profiles.

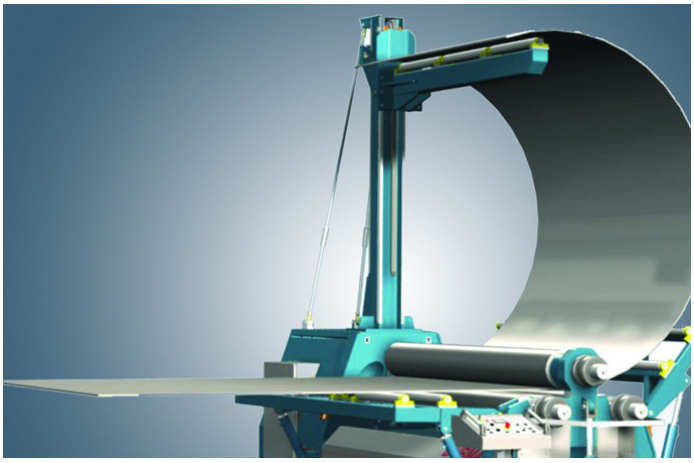
OPTIONAL

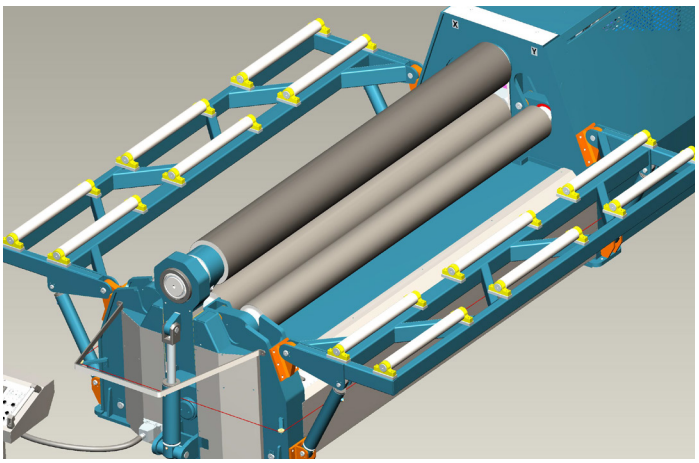
AUTOMATION



Automated Roll Bending

When production volume requires, different automation concepts are available.



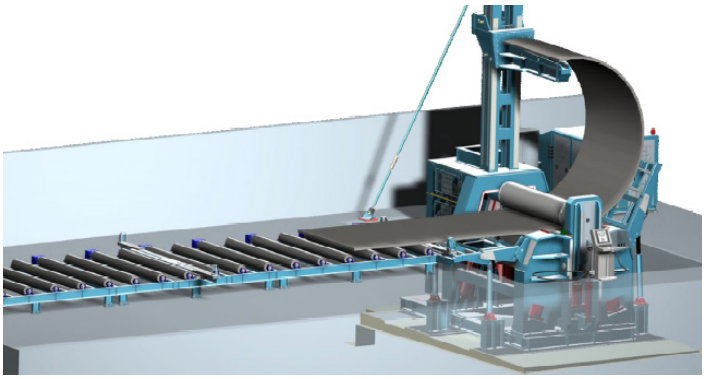


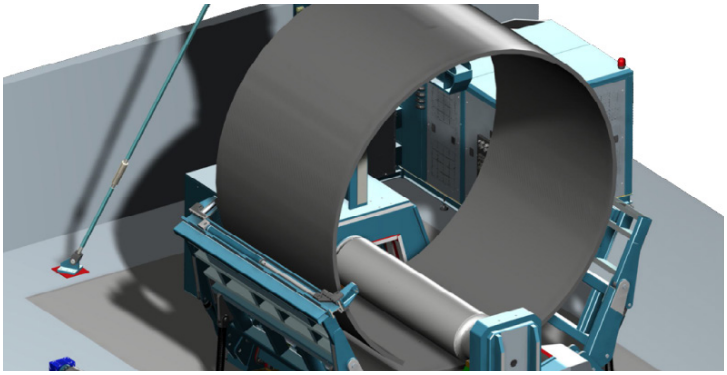
Special Sheet Support Systems

Optional hydraulic side or vertical support devices are available to reduce sheet stretching and deterioration during bending of large sheets. Moveable gauges with hydraulic double cylinders are produced from st52 steel construction. It can be supplied according to different tonnage and height.

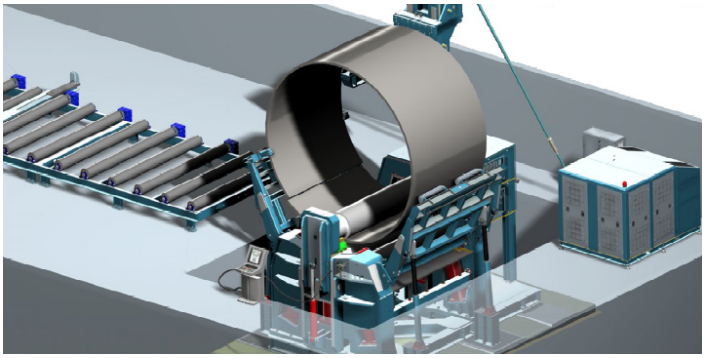
HORIZONTAL

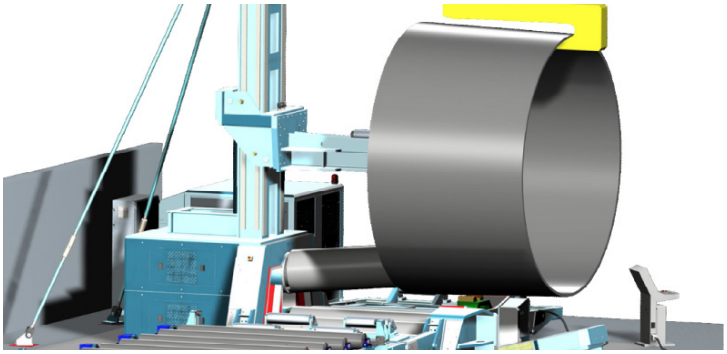
AUTOMATION





Rolling & Supporting





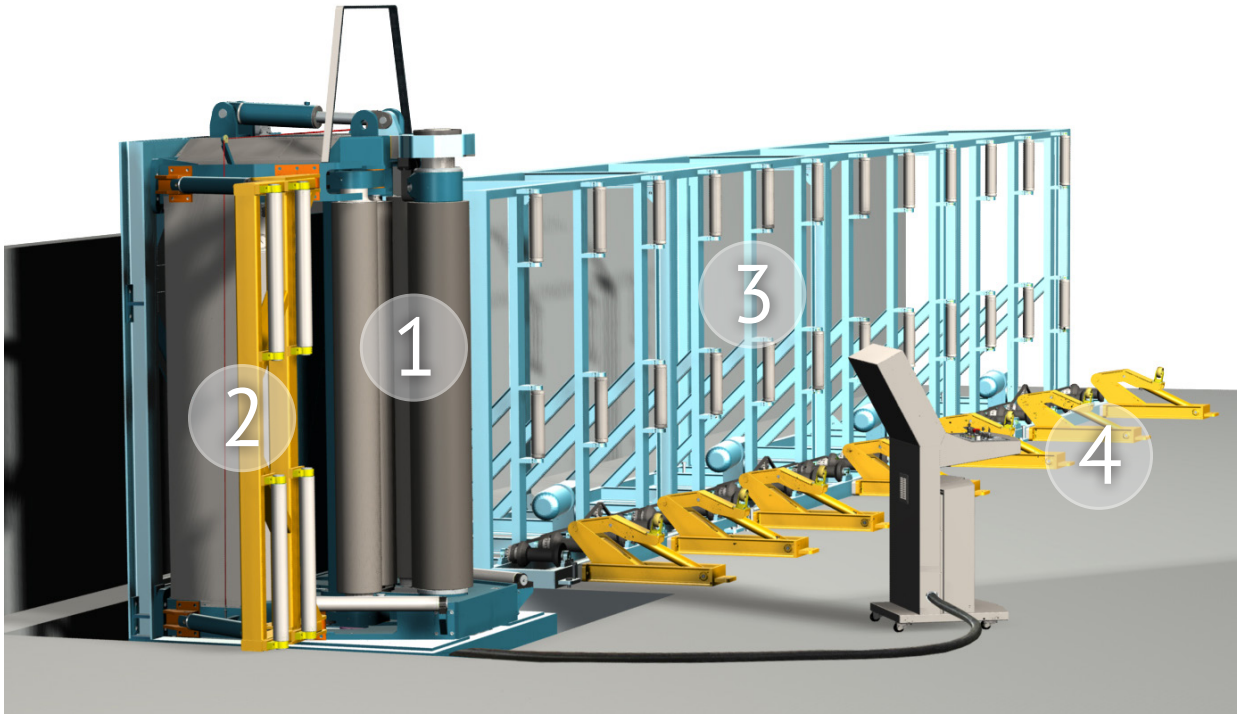
Edge Alignment & Ejecting

HRB4 3065 (10’ x 2 1/2”)

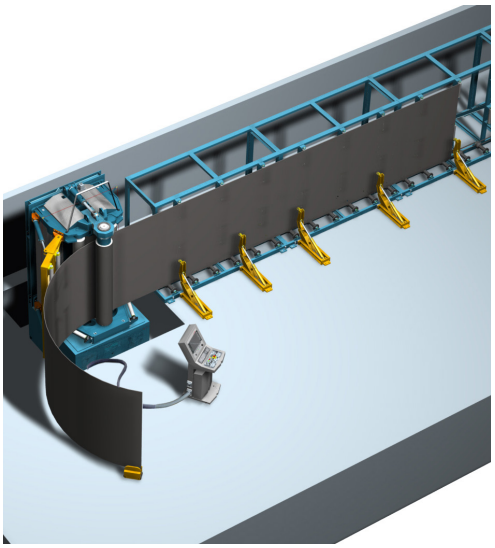
HRB4 3085 (10’ x 3 3/8”)

VERTICAL

AUTOMATION



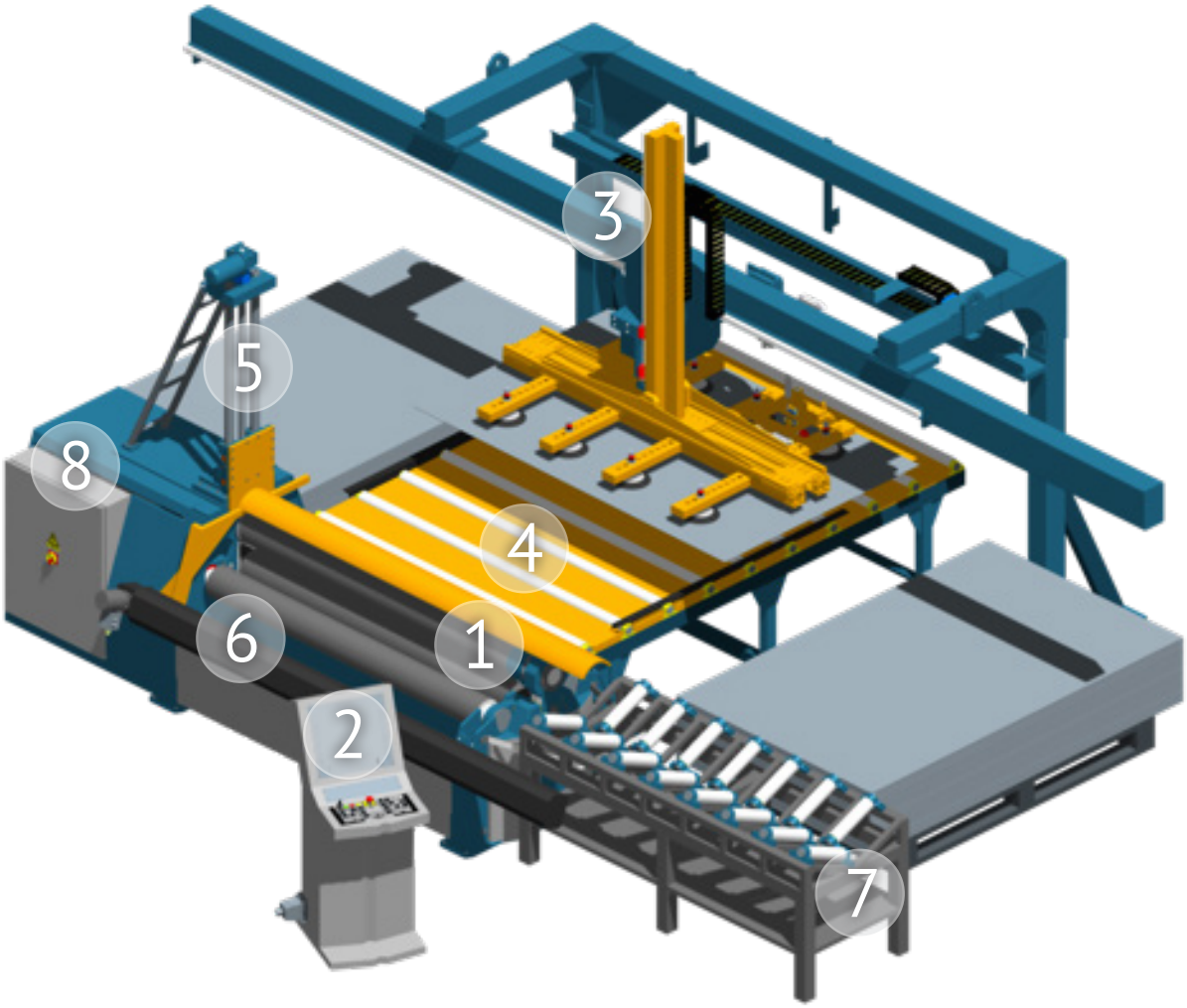
The HRB4 Series offers vertical or horizontal (below right) automation capabilities.



1. HRB 4-Roll Vertical Plate Bending Machine
2. Hydraulic Side Supports (one side)
3. Motorized Vertical Plate Feeding System
4. Hydraulic Plate Support

TANK + VESSEL PRODUCTION

AUTOMATION



1. HRB 4 2016 Fully Hydraulic 4 Rolls Plate Bending Machine
2. CNC Control System
3. Loading System (5kN)
4. Motorized Plate Feeding Platform
   - 2x9.8'
   - Pneumatic Plate Alignment System (min 7.9" max 78.7")
5. Hydraulic Vertical Support
   - 78.7" x 2.2 Ton
   - TY Axis
6. Pneumatic Part Ejector (2kN)
7. Hydraulic Angle Adjusted Unloading Platform
   - 23.6" x 78.7"
8. Oil Coolant System

PLATE ROLLS

HRB4 SERIES

Constructed from single-pass machining, the HRB4's stress relieved frame offers long-term durability and accurate parts production. The HRB4 Series features four induction-hardened rolls capable of conical bending.

		ødx1.5	ødx3	ødx5						
	Bending Length	**Pre-Bending Capacity**	**Bending Capacity**	**Bending Capacity**	**Top Roll**	**Length**	**Width**	**Height**	**Weight**	**Main Motor**
Unit	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
1504	61	0.12	0.16	0.20	5.5	120	35	45	5,225	5
1505	61	0.16	0.20	0.24	5.9	120	35	45	5,357	7.5
1507	61	0.20	0.28	0.31	6.7	120	35	45	5,732	7.5
2003	81	0.08	0.12	0.16	5.5	139	35	45	6,019	4
2004	81	0.12	0.16	0.20	5.9	139	35	45	6,217	7
2006	81	0.16	0.24	0.28	6.7	139	35	45	6,680	7.5
2008	81	0.24	0.31	0.39	7.9	151	46	46	10,428	10
2010	81	0.31	0.39	0.47	8.3	151	46	46	10,891	10
2013	81	0.39	0.51	0.59	9.1	151	46	46	11,640	15
2016	81	0.51	0.63	0.71	10.6	168	65	63	21,164	20
2020	81	0.63	0.79	0.87	11.8	168	65	63	22,046	25
2025	81	0.79	0.98	1.10	13	168	65	63	23,810	30
2030	81	0.98	1.18	1.30	14.2	178	81	81	34,613	40
2035	81	1.18	1.38	1.50	15.7	178	81	81	37,038	50
2040	81	1.38	1.57	1.73	16.9	178	81	81	39,463	60
2050	81	1.57	1.97	2.17	18.1	203	91	100	63,934	70
2065	81	1.97	2.56	2.76	19.3	207	91	102	66,139	80
2506	100	0.16	0.24	0.28	7.9	170	46	46	11,552	10
2508	100	0.24	0.31	0.39	8.3	170	46	46	12,125	10
2510	100	0.31	0.39	0.47	9.1	170	46	46	13,051	15
2513	100	0.39	0.51	0.59	10.6	187	65	63	23,369	20
2516	100	0.51	0.63	0.71	11.8	187	65	63	24,471	25
2520	100	0.63	0.79	0.87	13	187	65	63	26,676	30
2525	100	0.79	0.98	1.10	14.2	197	81	81	38,581	30
2530	100	0.98	1.18	1.30	15.7	197	81	81	41,447	40
2535	100	1.18	1.38	1.50	16.9	197	81	81	44,754	50
2540	100	1.38	1.57	1.73	18.1	222	91	100	68,343	60
2550	100	1.57	1.97	2.17	19.3	226	91	102	77,162	70
2565 *	100	1.97	2.56	2.76	19.7	230	93	104	85,980	80

PLATE ROLLS

HRB4 SERIES

Constructed from single-pass machining, the HRB4's stress relieved frame offers long-term durability and accurate parts production. The HRB4 Series features four induction-hardened rolls capable of conical bending.

		ødx1.5	ødx3	ødx5						
	Bending Leight	Pre-Bending Capacities	Bending Capacities	Bending Capacities	Top Roll	Length	Width	Height	Weight	Motor Power
Unit	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
3010	122	0.31	0.39	0.47	10.6	209	65	63	26,015	15
3013	122	0.39	0.51	0.59	11.8	209	65	63	27,117	20
3016	122	0.51	0.63	0.71	13	209	65	63	29,542	25
3020	122	0.63	0.79	0.87	14.2	219	81	81	41,888	30
3025	122	0.79	0.98	1.10	15.7	219	81	81	45,856	40
3030	122	0.98	1.18	1.30	16.9	219	81	81	49,824	50
3035	122	1.18	1.38	1.50	18.1	244	91	100	74,957	60
3040	122	1.38	1.57	1.73	19.3	248	91	102	88,185	70
3050 *	122	1.57	1.97	2.17	19.7	252	93	104	99,208	80
3065 *	122	1.97	2.56	2.76	25.6	250	128	144	154,324	100
3085 *	122	2.76	3.35	3.54	29.9	295	142	156	198,416	150
3105 *	122	3.54	4.13	4.33	32.3	295	157	169	308,647	200
3120 *	122	3.94	4.72	4.96	34.3	295	169	189	352,740	250
3140 *	122	4.72	5.51	5.79	38.2	303	185	205	418,878	300
3160 *	122	5.51	6.30	6.61	42.1	335	209	217	507,063	300
4006	161	0.16	0.24	0.28	10.6	248	65	63	30,424	15
4008	161	0.24	0.31	0.39	11.8	248	65	63	32,187	20
4010	161	0.31	0.39	0.47	13	248	65	63	35,715	20
4013	161	0.39	0.51	0.59	14.2	258	81	81	49,384	25
4016	161	0.51	0.63	0.71	15.7	258	81	81	54,234	30
4020	161	0.63	0.79	0.87	16.9	258	81	81	59,525	40
4025	161	0.79	0.98	1.10	18.1	283	91	100	83,776	50
4030	161	0.98	1.18	1.30	19.3	287	91	102	99,208	60
4035 *	161	1.18	1.38	1.50	19.7	291	93	104	119,050	70

PLATE ROLLS

HRB3-V SERIES

Constructed from single-pass machining, the HRB-3V's stress relieved frame offers long-term durability and accurate parts production. The HRB-3V Series features variable geometry for a variety of bending applications.

		ødx1.5	ødx5	ødx1.5	ødx5								
	Bend Length	**Pre-Bend**	**Pre-bend**	**Bend**	**Bend**	**Top Roll Diameter**	**Side Roll Diameter**	**Top Roll Bend Force**	**Length**	**Width**	**Height**	**Weight**	**Motor Power**
	inch	inch	inch	inch	inch	inch	inch	tons	inch	inch	inch	pounds	hp
3016	122"	0.350	0.375	0.500	0.6	11.8	11	70	206	49	58	33,000	30.0
3025	122"	0.500	0.590	0.787	1.0	13.4	12	120	220	60	65	27,500	30.0
3060	122	1.500	1.730	2.000	2.4	22.0	20	450	260	89	105	92,400	60 + 25
3080	122	2.360	2.600	2.670	3.1	25.5	22	700	294	93	132	147,400	75 + 40

PLATE ROLLS

HRB3 SERIES

Constructed from single-pass machining, the HRB3's stress relieved frame offers long-term durability and accurate parts production. The HRB3 Series features three induction-hardened rolls capable of conical bending.

		ødx1.5	ødx3	ødx5						
	Bending Leight	Pre-Bending Capacities	Bending Capacities	Bending Capacities	Top Roll	Length	Width	Height	Weight	Motor Power
	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
2006	81	0.157	0.236	0.276	7.3	152	51	45	5,512	5.5
2010	81	0.315	0.394	0.472	8.3	151	46	46	8,818	7.5
2013	81	0.394	0.512	0.591	9.1	151	46	46	10,582	11
2508	100	0.236	0.315	0.394	8.3	170	46	46	9,921	7.5
2513	100	0.394	0.512	0.591	10.6	187	65	63	14,771	15
2520	100	0.630	0.787	0.866	13	187	65	63	22,928	22
3006	122	0.157	0.236	0.276	8.3	192	46	46	11,023	7.5
3010	122	0.315	0.394	0.472	10.6	209	65	63	16,535	11
3013	122	0.394	0.512	0.591	11.8	209	65	63	19,842	15
3016	122	0.512	0.63	0.709	13	209	65	63	26,015	18.5
3020	122	0.63	0.787	0.866	14.2	219	81	81	27,558	22
3025	122	0.787	0.984	1.102	15.7	219	81	81	37,479	30