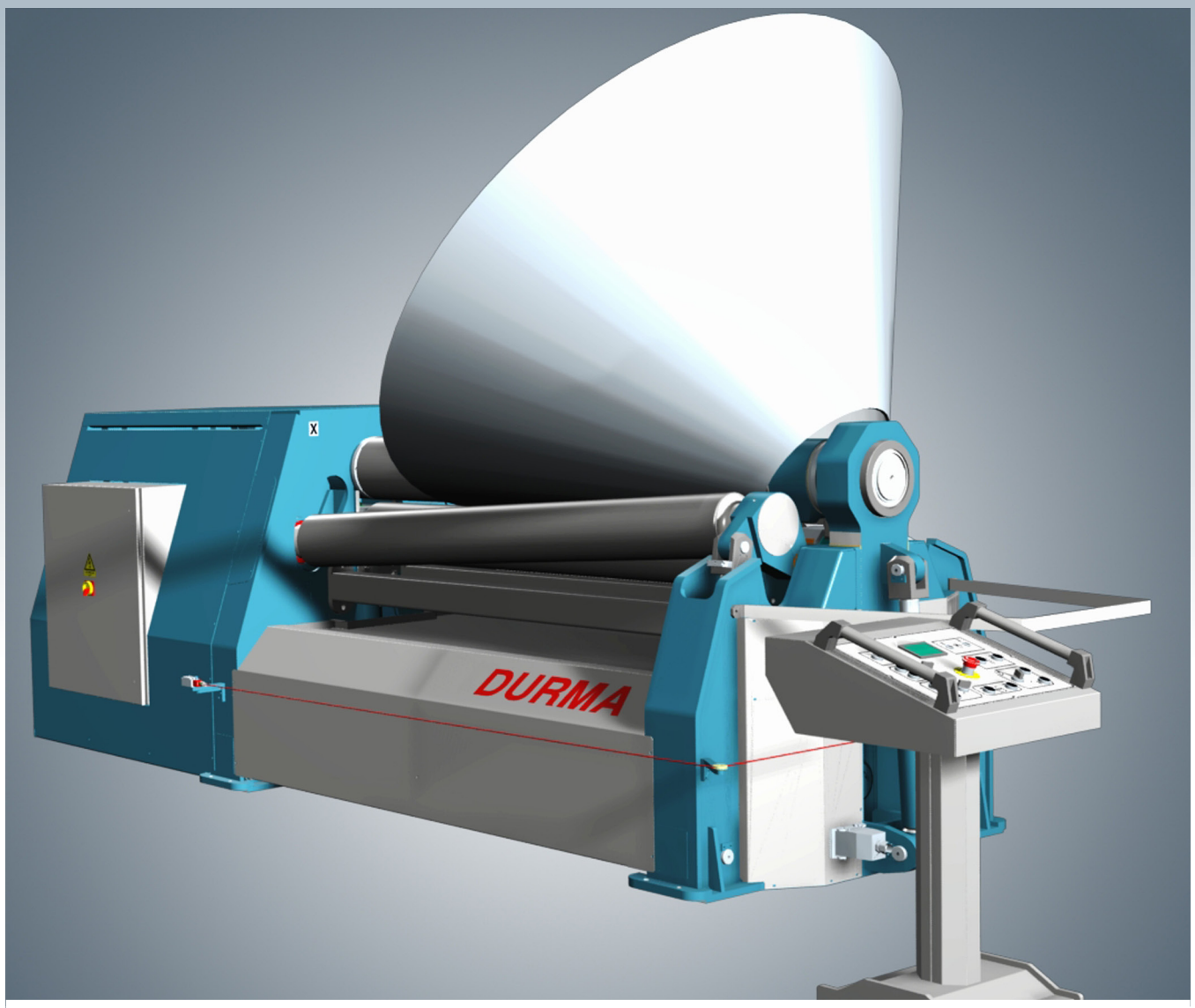

HRB SERIES PLATE ROLLS

BETTER PARTS >>> BETTER PROFITS

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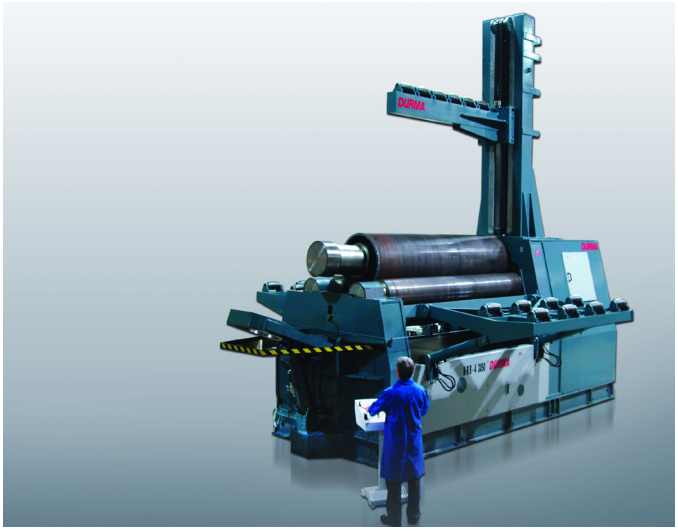
HRB SERIES PLATE ROLLS

HRB4 SERIES

Standard Equipment

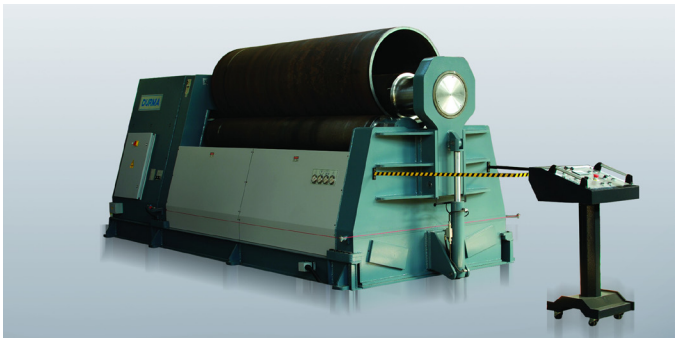
- Control Unit with DROs
- Conical Bending
- Bearing Seated Rolls
- Stress Relieved Frame
- Induction Hardened Rolls
- PLC Synchronized Side Rolls
- Hyd. Top Roll Opening
- Pressure Adj. Bottom Rolls



HRB3 SERIES

Standard Equipment

- Control Unit with DROs
- Conical Bending
- Bearing Seated Rolls
- Stress Relieved Frame
- Induction Hardened Rolls
- PLC Synchronized Side Rolls
- Hud. Drop End w/Easy Remove
- Pressure Adj. Bottom Rolls



MRB SERIES

Standard Equipment

- Conical Bending
- Motorized Back Roll
- SAE 1050 Steel Rolls
- Stress Relieved Frame
- Brake for Precise Control
- Top & Bottom Rolls Gear Driven
- Pendant Control
- Induction Hardened Rolls
- Material Support (8' & 10')

MRB-E SERIES

Standard Equipment

- Conical Bending
- Portable Control
- SAE 1050 Steel Rolls
- Grooves on Bottom & Back Roll
- Bottom & Back Rolls Man. Driven
- Top & Bottom Rolls Gear Driven Chain
- Cast Iron Frame

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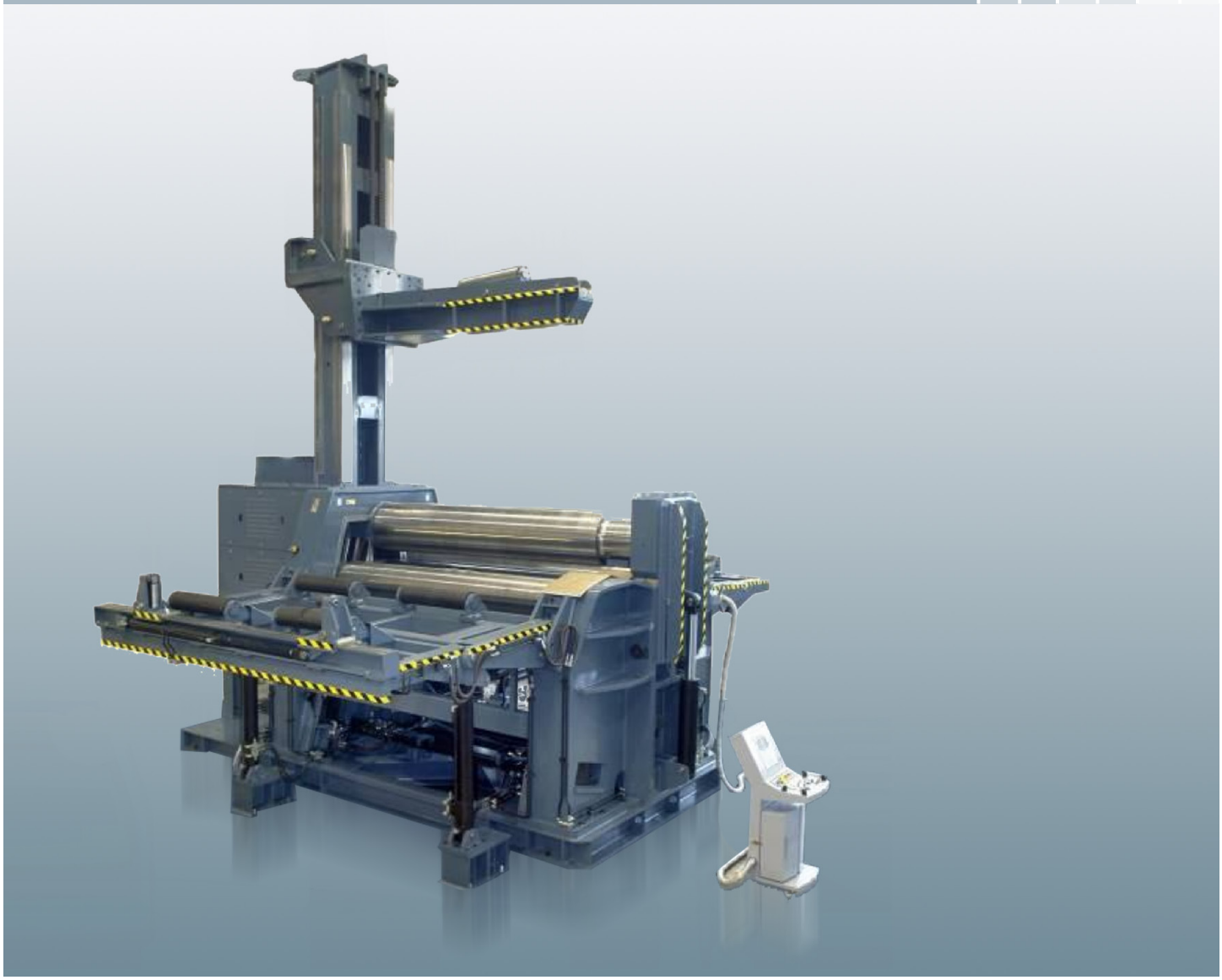
HRB4 SERIES PLATE ROLLS



STANDARD EQUIPMENT

- Control Unit with DROs
- Conical Bending
- Bearing Seated Rolls
- Stress Relieved Frame
- Induction Hardened Rolls
- PLC Synchronized Side Rolls
- Hyd. Top Roll Opening
- Pressure Adj. Bottom Rolls

OPTIONAL EQUIPMENT

- NC Control
- Polished Rolls
- Side Supports
- Profile Bending Rolls
- Welding at Machine
- Material Feed Table
- CNC Control w/Color Graphics
- Oil Cooler
- Vertical Support Crane
- Changeable Top Roll (for smaller dia.)
- Special Wind Tower Application

CAPACITIES

- Bend Length 5 - 20’
- Bend Thickness 1/4” - 6”

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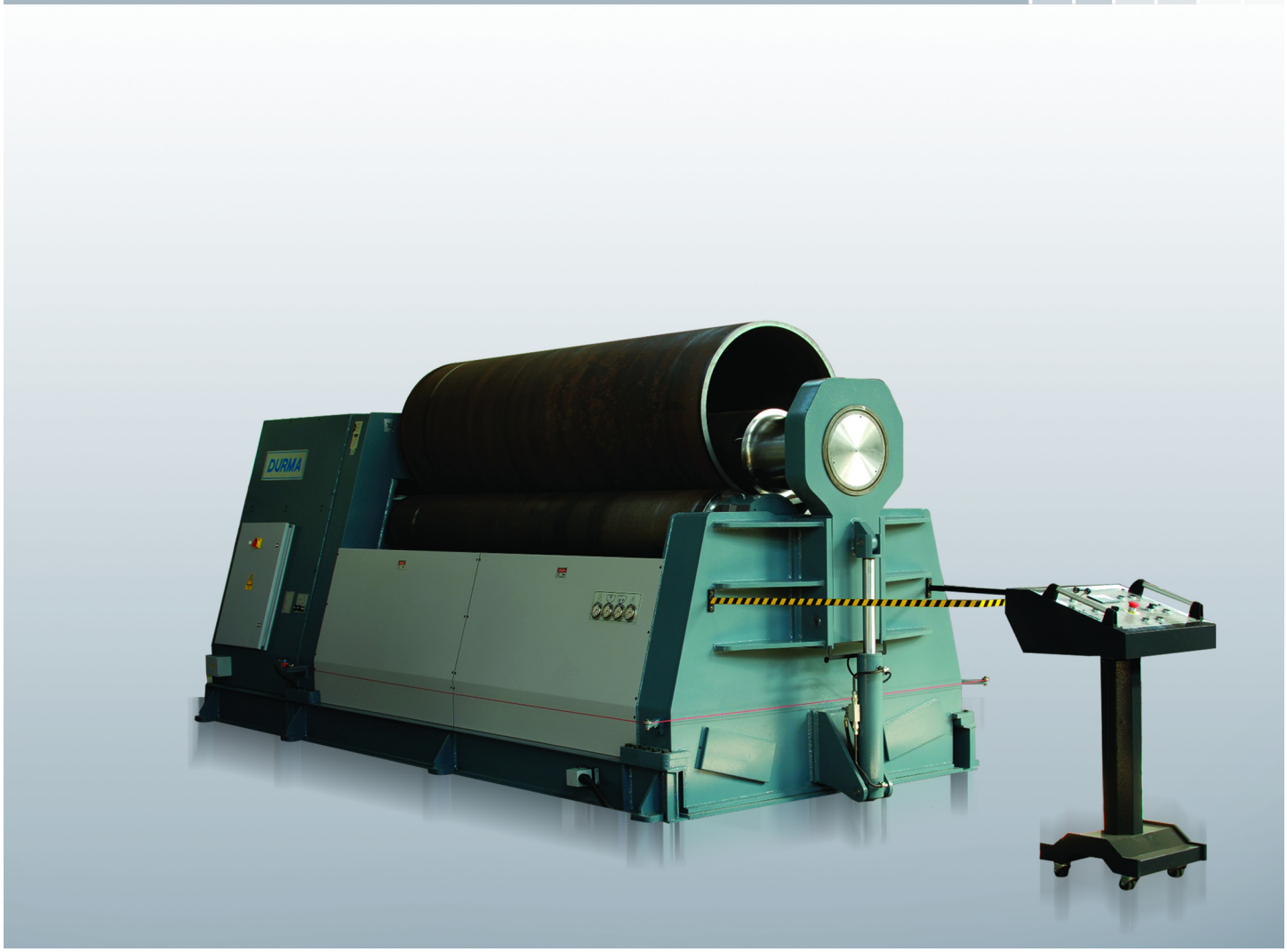
HRB3 SERIES PLATE ROLLS



STANDARD EQUIPMENT

- Control Unit with DROs
- Conical Bending
- Bearing Seated Rolls
- Stress Relieved Frame
- Induction Hardened Rolls
- PLC Synchronized Side Rolls
- Hyd. Drop End w/Easy Remove
- Pressure Adj. Bottom Rolls

OPTIONAL EQUIPMENT

- Variable Speed Control
- Oil Cooler
- Vertical Supports
- Welding at Machine
- Special Wind Tower Application
- Changeable Top Roll (for smaller dia.)
- Polished Rolls
- Side Supports
- Profile Bending Rolls
- Material Feed Table

CAPACITIES

- Bend Length 8 - 13'
- Bend Thickness 1/4" - 1"

Special Wind Tower Application

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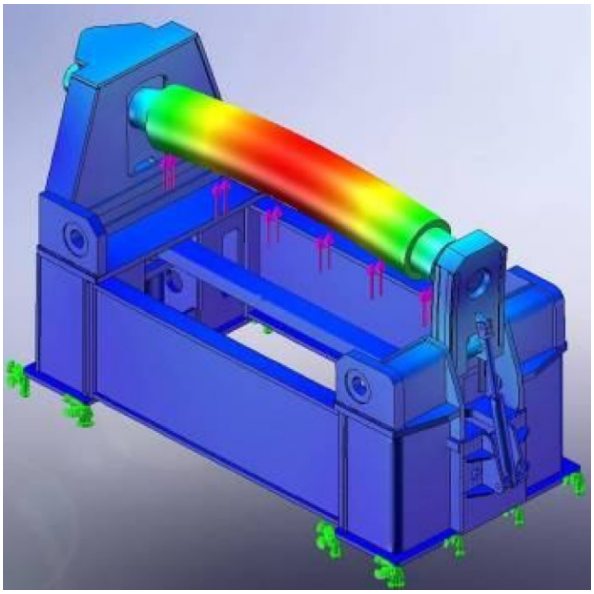
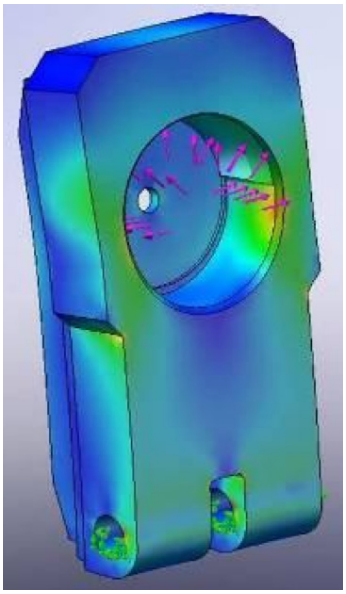
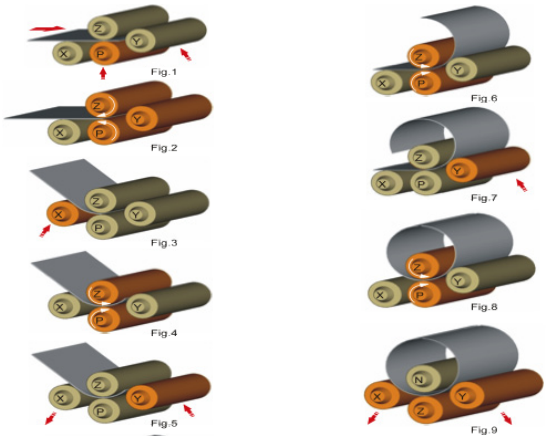
ENGINEERING & PRODUCTION ADVANTAGE

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.







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.

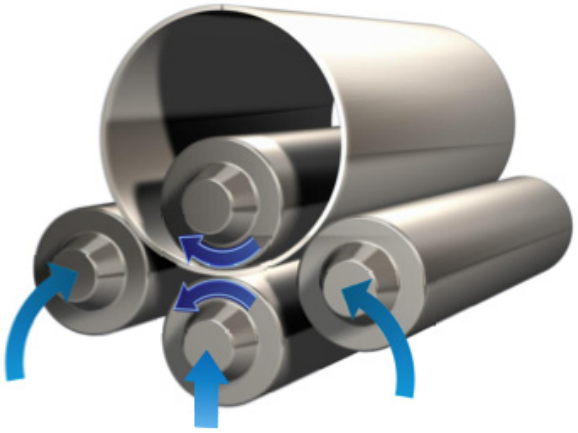
The two side rolls are controlled independently.

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.

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.



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.

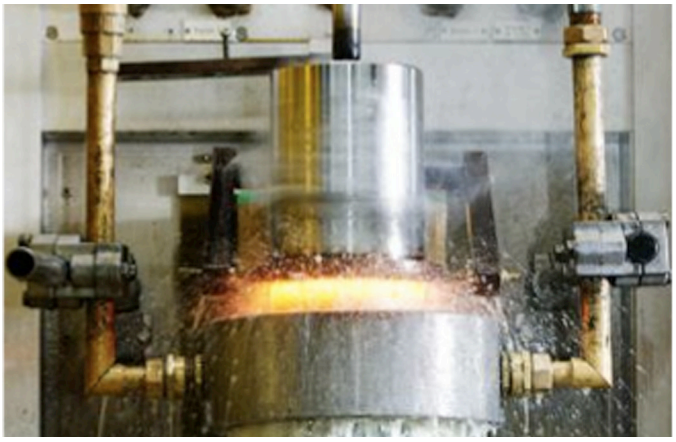
PLANETARY GUIDING

The side rolls are guided by swing beds which allow them to act as two independent axes moving in a planetary plane. Machines 1 3/8” have a dual planetary gear 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.

HYDRAULIC DROP END

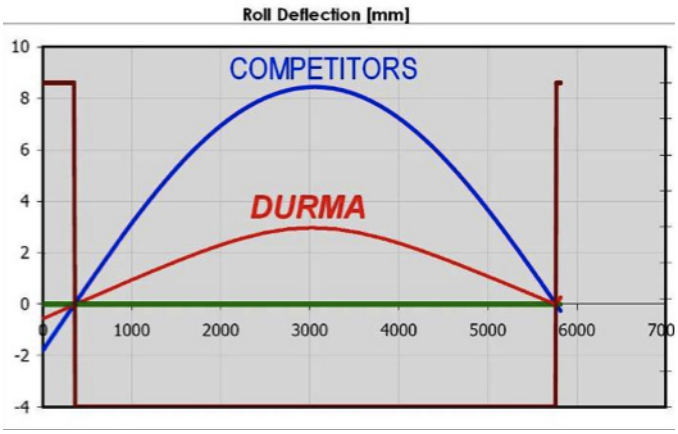
For easy part removal the end frame assembly is hydraulically lowered to facilitate part removal.



INDUCTION HARDENED ROLLS

STRONG GUIDING SYSTEMS

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

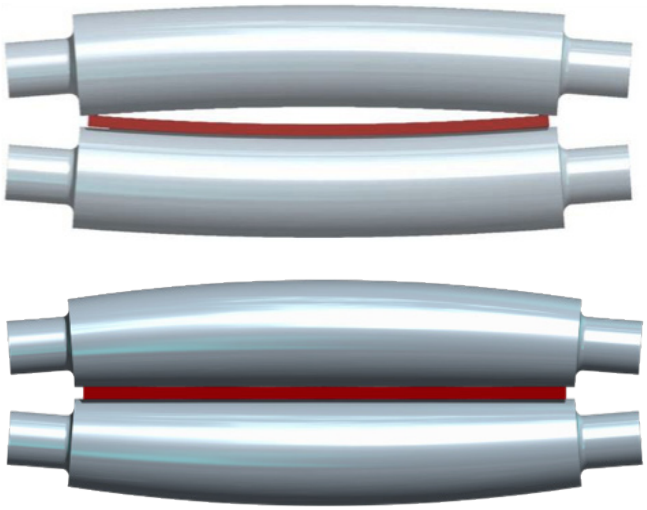


DURABLE ROLLS & CROWNING

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 1.2 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.



Durma rolls

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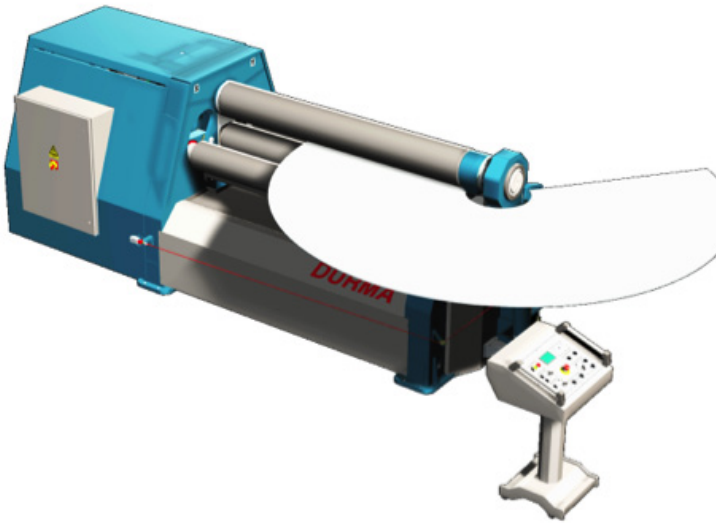
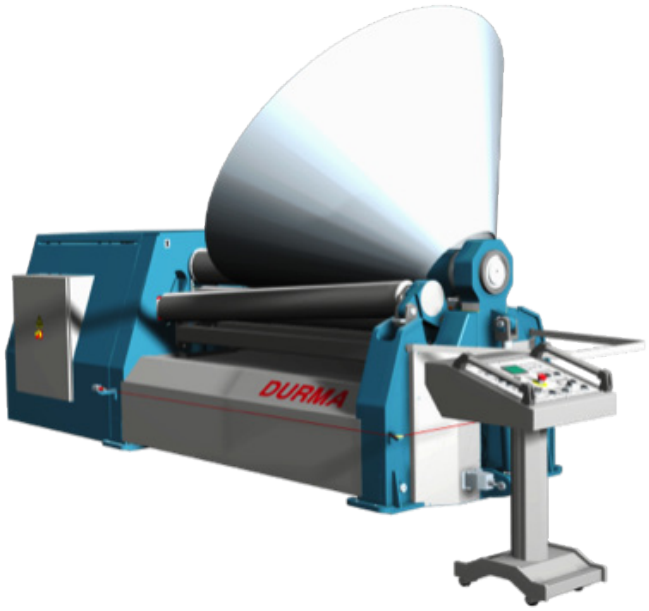
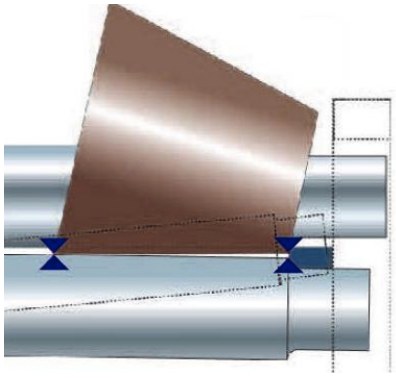


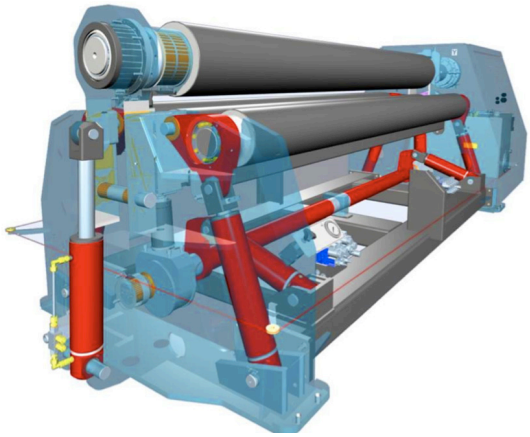


CONICAL BENDING

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.

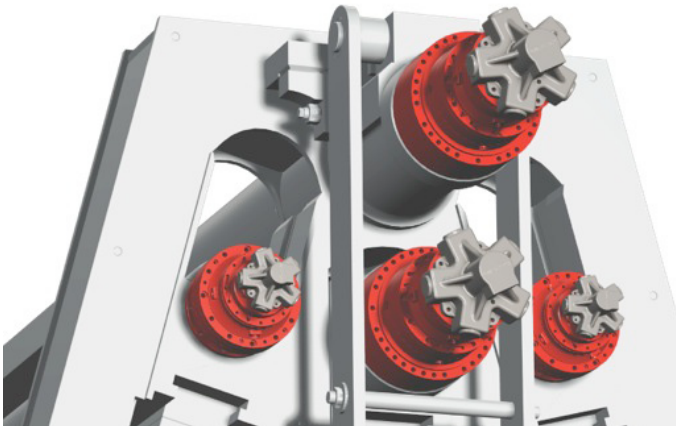




PLANETARY GUIDES

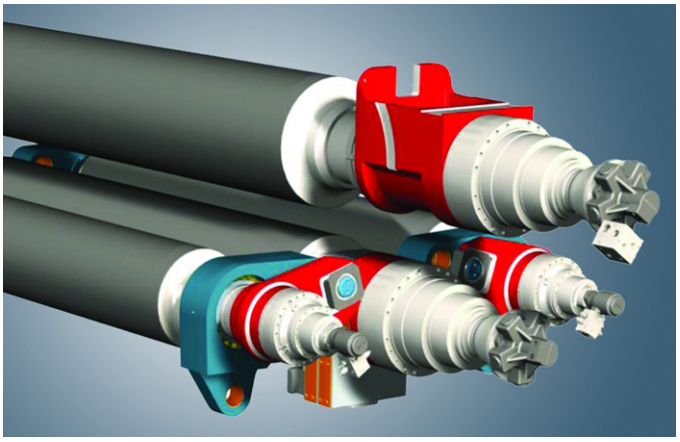
All rolls with 17” or smaller diameter are equipped as standard with a planetary guide system. In this system swing arms are used for guiding the rolls allowing them to function as two independent axes moving along an arc. Material spring back is also minimized. Two rolls are driven as standard with an option to have all four driven.

A 1.1” minimum diameter of the top roll can be achieved.



HIGH TORQUE ROLL TRIGGERING

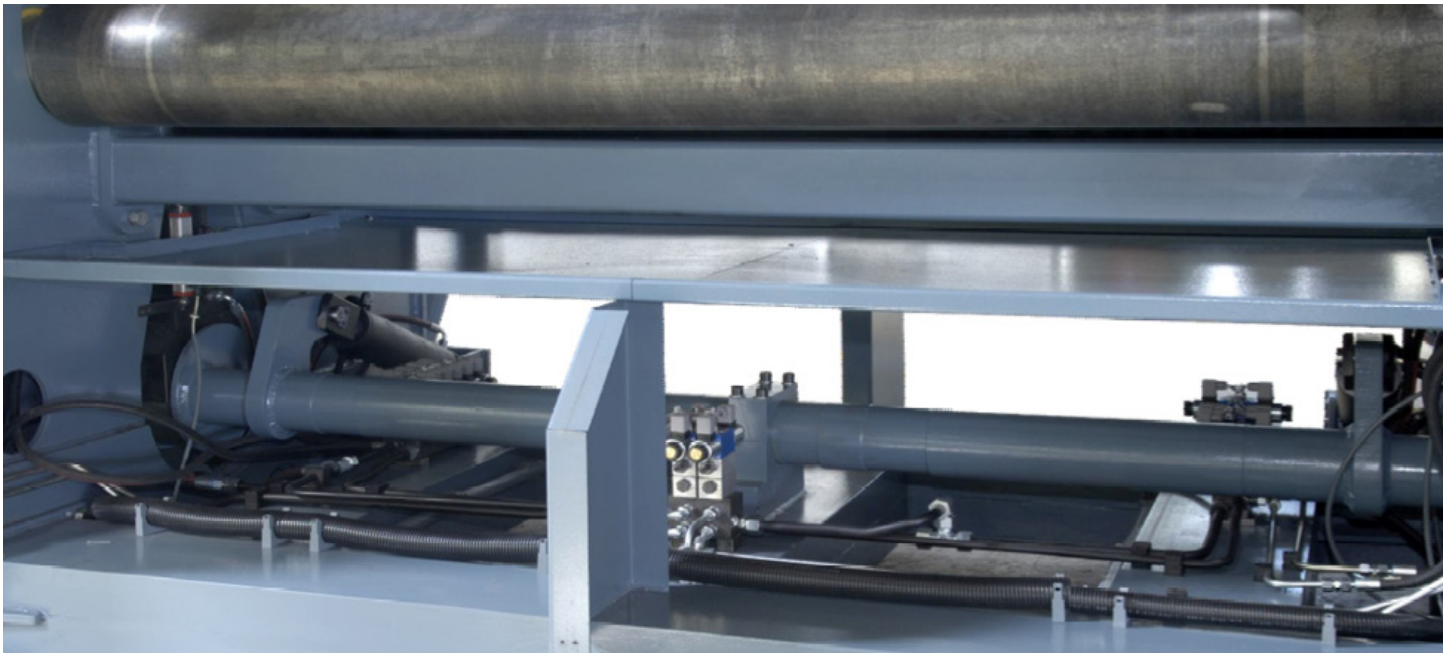
Because of its high torque, the HRB bends parts with fewer steps. All rolls are activated by independent high torque hydraulic motors and planetary gear boxes. The activation system is positioned on the same axis as the roll, so high torque is transferred to the sheet without any power loss.



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.

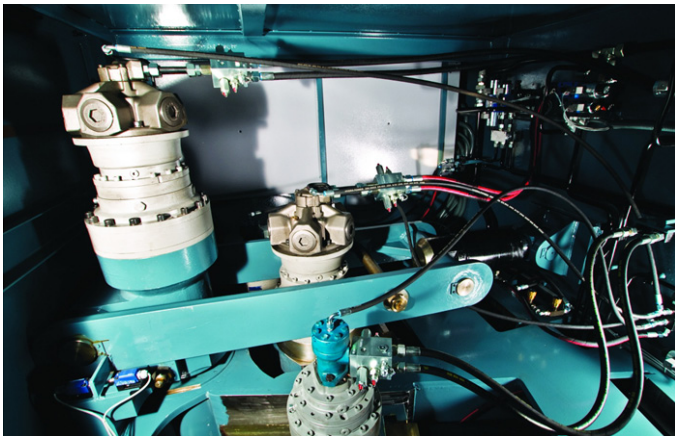
FOUR ROLLS DRIVE SYSTEM



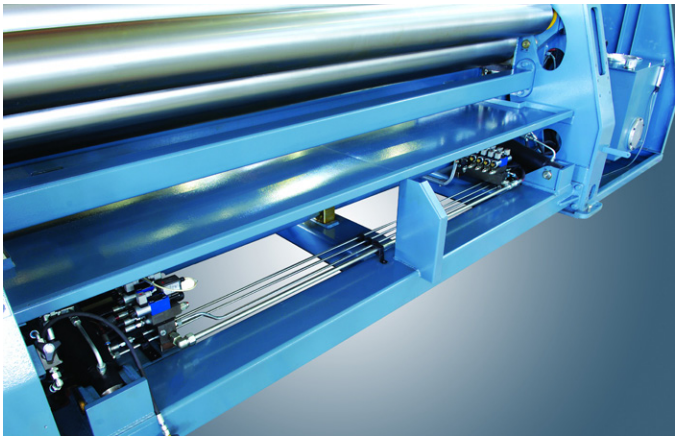
HYDRAULIC & ELECTRICAL SYSTEM

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.

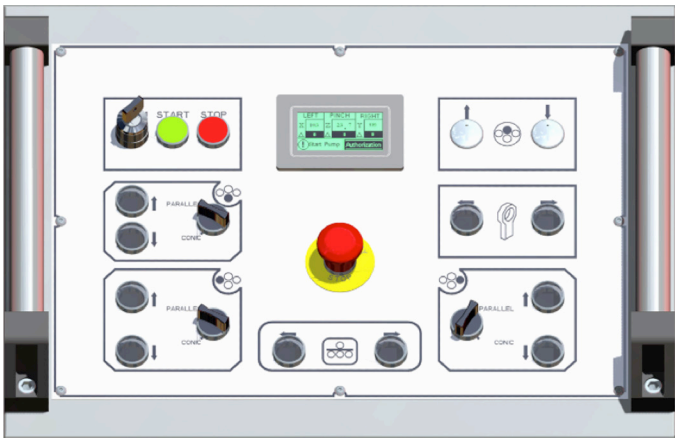
Bosch Rexroth valves provide quick and accurate response time. Overload pressure valves are used to withstand peak pressures and eliminate system overload damage.



HIGH TORQUE DRIVE

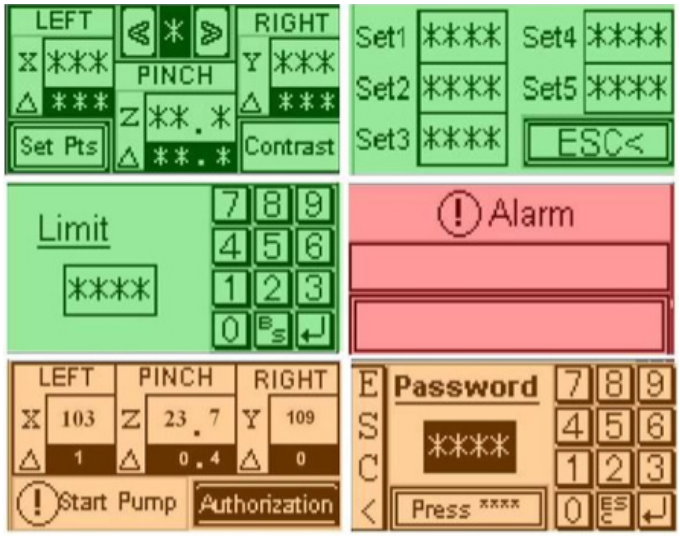


PLANETARY SWING ROLLS



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.



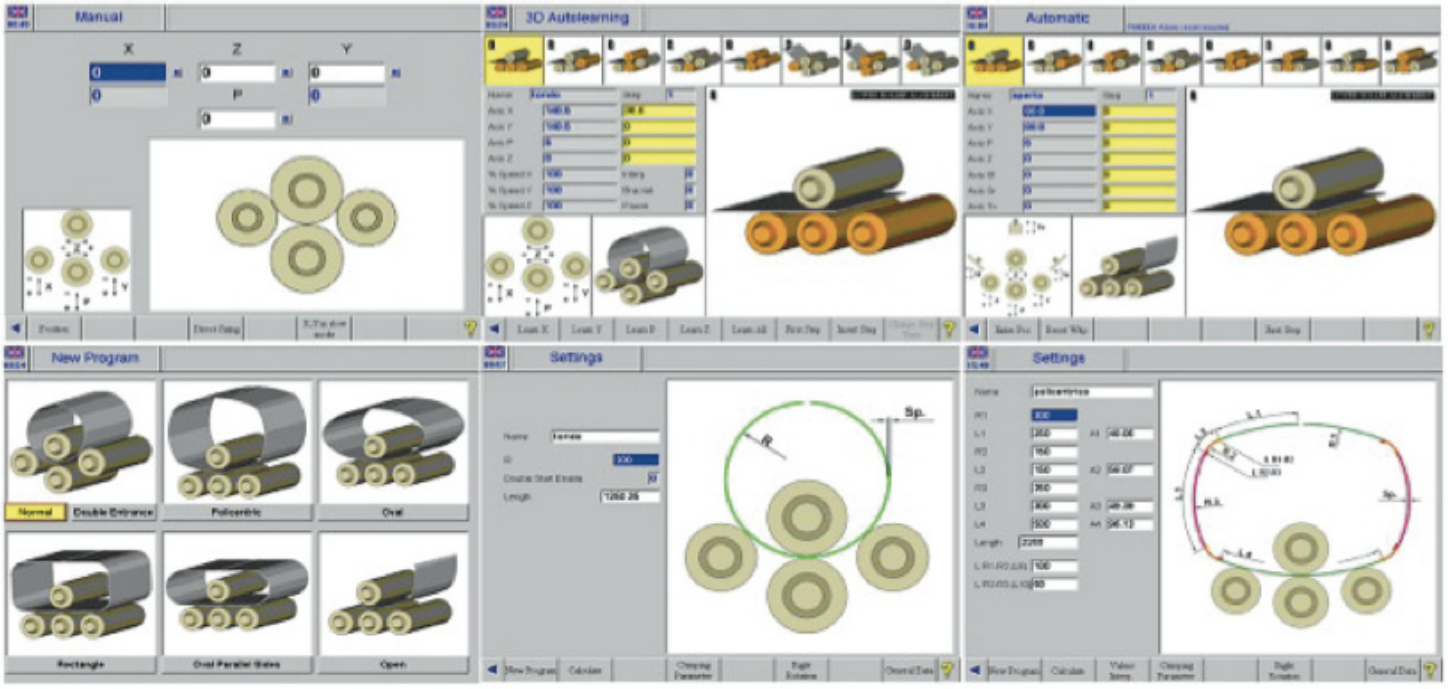
NC CONTROL SYSTEM

- Dedicated scratch-proof, oil-proof, acid-resistant IP65 sealed membrane push buttons with 51 keys and fiber-optic 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

CNC CONTROL

The CNC control system, in addition to the NC control system with its graphical control system, allows the bending to be done step-by-step or can automatically calculate the bending steps without the need for operator skill. This user-friendly CNC features:

- 12” TFT S VGA color display with anti-glare screen
- Ergonomic molded plastic cabinet
- Dedicated scratch-proof, oil-proof, acid-resistant IP65
- sealed membrane push button keyboard with 53 keys
- Interactive graphic editor for work piece and tool data entry
- Automatic identification of the best bending sequence(s)
- Programming of the axes positions in tabular mode with automatic syntactical checks
- Multi-channel ISO interpreter
- Internal memory for 10,000 programs
- CPU Intel486 or Pentium, FPGA integrated logics, surface mounting, fiber optic, solid state display
- 1 serial port RS-232, 1 parallel port
- Standard 32 inputs and 32 outputs
- Remote I/O system, connected through optic fiber link.



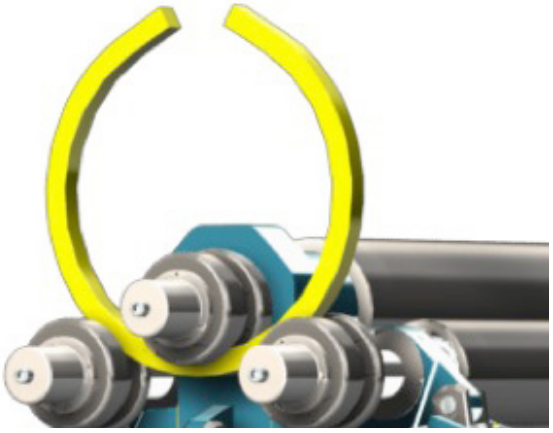
SEPARATE POWER CABIN

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

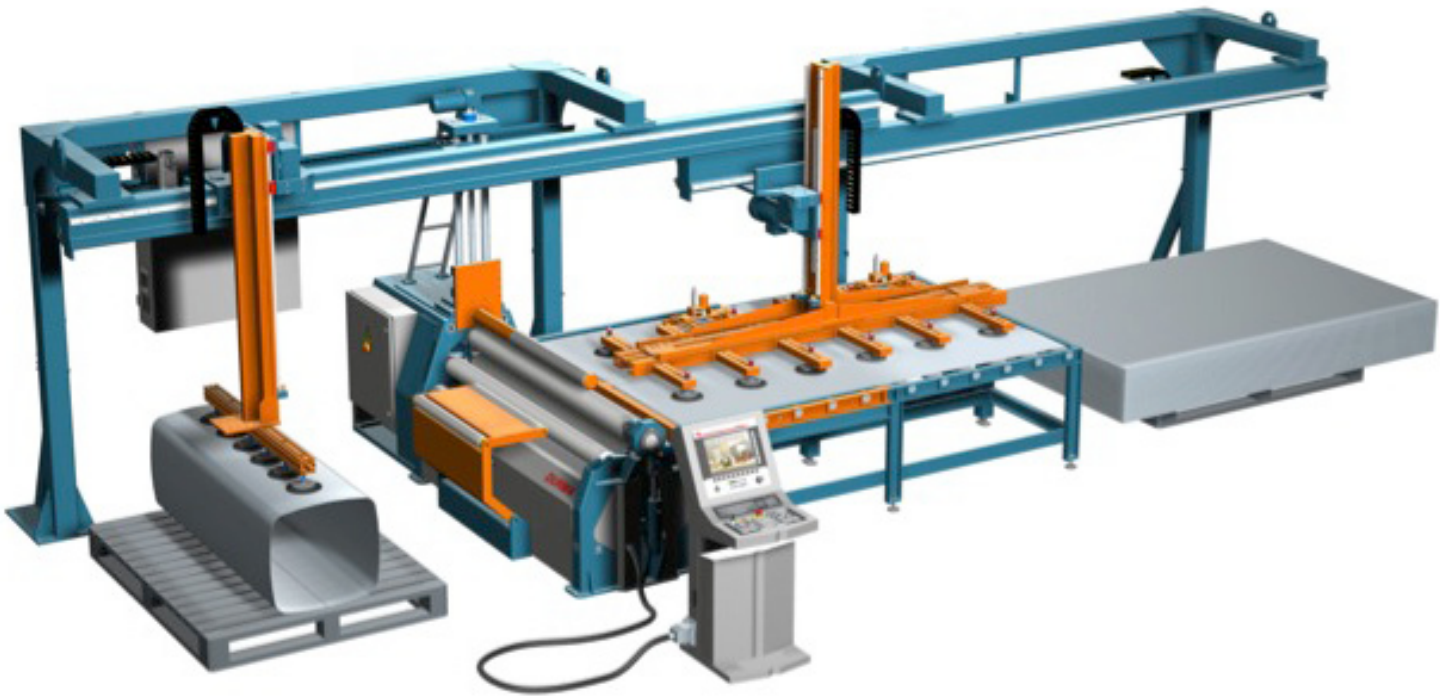
When performing large scale bending the horizontal floor space required can be substantial. Providing there is vertical clearance, vertical positioning and bending can reduce the required floor space considerably.

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.



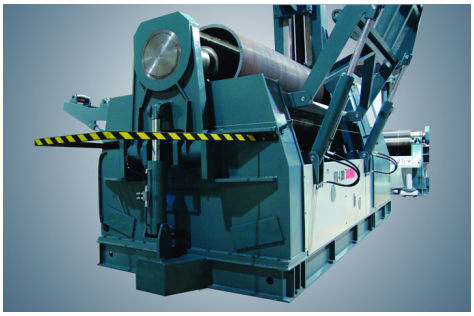
EXTENDED ROLLS

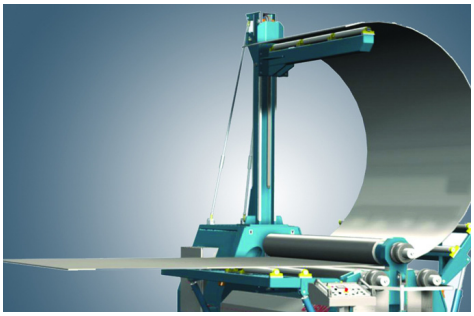
Extended shafts can be ordered for the bending of profiles such as tube, square and round profiles.



AUTOMATED ROLL BENDING

When production volume requires, different automated concepts are available.





VERTICAL OR 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.

		ødx1.5	ødx3	ødx5										
HRB 4 Series	Bending Leight	Pre-Bending Capacities	Bending Capacities	Bending Capacities	Top Roll	Bottom Roll	Side Rolls	Max. Pass Through	Length	Width	Height	Working Height	Weight	Motor Power
Unit	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
1504	61	0.12	0.16	0.20	5.5	5.1	5.1	0.5	120	35	45	35	5225	5
1505	61	0.16	0.20	0.24	5.9	5.5	5.1	0.5	120	35	45	34	5357	7.5
1507	61	0.20	0.28	0.31	6.7	5.9	5.5	0.5	120	35	45	34	5732	7.5
2003	81	0.08	0.12	0.16	5.5	5.1	5.1	0.5	139	35	45	35	6019	4
2004	81	0.12	0.16	0.20	5.9	5.5	5.1	0.5	139	35	45	34	6217	7
2006	81	0.16	0.24	0.28	6.7	5.9	5.5	0.6	139	35	45	34	6680	7.5
2008	81	0.24	0.31	0.39	7.9	7.5	6.7	1.2	151	46	46	33	10428	10
2010	81	0.31	0.39	0.47	8.3	7.5	7.1	1.2	151	46	46	33	10891	10
2013	81	0.39	0.51	0.59	9.1	8.3	7.5	1.2	151	46	46	32	11640	15
2016	81	0.51	0.63	0.71	10.6	9.8	8.7	2	168	65	63	45	21164	20
2020	81	0.63	0.79	0.87	11.8	10.6	8.7	2	168	65	63	45	22046	25
2025	81	0.79	0.98	1.10	13	11.8	9.4	2	168	65	63	44	23810	30
2030	81	0.98	1.18	1.30	14.2	13	10.6	2.4	178	81	81	59	34613	40
2035	81	1.18	1.38	1.50	15.7	14.6	11.4	2.6	178	81	81	59	37038	50
2040	81	1.38	1.57	1.73	16.9	15.7	12.6	2.8	178	81	81	58	39463	60
2050	81	1.57	1.97	2.17	18.1	18.1	14.6	3.5	203	91	100	74	63934	70
2065	81	1.97	2.56	2.76	19.3	19.3	15.4	3.9	207	91	102	73	66139	80
2506	100	0.16	0.24	0.28	7.9	7.5	6.7	1.2	170	46	46	33	11552	10
2508	100	0.24	0.31	0.39	8.3	7.5	7.1	1.2	170	46	46	33	12125	10
2510	100	0.31	0.39	0.47	9.1	8.3	7.5	1.2	170	46	46	32	13051	15
2513	100	0.39	0.51	0.59	10.6	9.8	8.7	2	187	65	63	45	23369	20
2516	100	0.51	0.63	0.71	11.8	10.6	8.7	2	187	65	63	45	24471	25
2520	100	0.63	0.79	0.87	13	11.8	9.4	2	187	65	63	44	26676	30
2525	100	0.79	0.98	1.10	14.2	13	10.6	2.4	197	81	81	59	38581	30
2530	100	0.98	1.18	1.30	15.7	14.6	11.4	2.6	197	81	81	59	41447	40
2535	100	1.18	1.38	1.50	16.9	15.7	12.6	2.8	197	81	81	58	44754	50
2540	100	1.38	1.57	1.73	18.1	18.1	14.6	3.5	222	91	100	74	68343	60
2550	100	1.57	1.97	2.17	19.3	19.3	14.6	3.9	226	91	102	73	77162	70
2565 *	100	1.97	2.56	2.76	19.7	19.7	16.1	3.9	230	93	104	72	85980	80

Specifications are approximate and subject to change without notice.

		ødx1.5	ødx3	ødx5										
HRB 4 Series	**Bending Leight**	**Pre-Bending Capacities**	**Bending Capacities**	**Bending Capacities**	**Top Roll**	**Bottom Roll**	**Side Rolls**	**Max. Pass Through**	**Length**	**Width**	**Height**	**Working Height**	**Weight**	**Motor Power**
Unit	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
3010	122	0.31	0.39	0.47	10.6	9.8	8.7	2	209	65	63	45	26015	15
3013	122	0.39	0.51	0.59	11.8	10.6	8.7	2	209	65	63	45	27117	20
3016	122	0.51	0.63	0.71	13	11.8	9.4	2	209	65	63	44	29542	25
3020	122	0.63	0.79	0.87	14.2	13	10.6	2.4	219	81	81	59	41888	30
3025	122	0.79	0.98	1.10	15.7	14.6	11.4	2.6	219	81	81	59	45856	40
3030	122	0.98	1.18	1.30	16.9	15.7	12.6	2.8	219	81	81	58	49824	50
3035	122	1.18	1.38	1.50	18.1	18.1	14.6	3.5	244	91	100	74	74957	60
3040	122	1.38	1.57	1.73	19.3	19.3	14.6	3.9	248	91	102	73	88185	70
3050 *	122	1.57	1.97	2.17	19.7	19.7	16.1	3.9	252	93	104	72	99208	80
3065 *	122	1.97	2.56	2.76	25.6	24	19.7	4.9	250	128	144	111	154324	100
3085 *	122	2.76	3.35	3.54	29.9	28.3	23.6	6.3	295	142	156	118	198416	150
3105 *	122	3.54	4.13	4.33	32.3	30.7	25.2	7.9	295	157	169	129	308647	200
3120 *	122	3.94	4.72	4.96	34.3	32.3	27.2	8.7	295	169	189	145	352740	250
3140 *	122	4.72	5.51	5.79	38.2	36.2	30.3	9.8	303	185	205	157	418878	300
3160 *	122	5.51	6.30	6.61	42.1	40.2	34.3	11	335	209	217	165	507063	300
4006	161	0.16	0.24	0.28	10.6	9.8	8.7	2	248	65	63	45	30424	15
4008	161	0.24	0.31	0.39	11.8	10.6	8.7	2	248	65	63	45	32187	20
4010	161	0.31	0.39	0.47	13	11.8	9.4	2	248	65	63	44	35715	20
4013	161	0.39	0.51	0.59	14.2	13	10.6	2.4	258	81	81	59	49384	25
4016	161	0.51	0.63	0.71	15.7	14.6	11.4	2.6	258	81	81	59	54234	30
4020	161	0.63	0.79	0.87	16.9	15.7	12.6	2.8	258	81	81	58	59525	40
4025	161	0.79	0.98	1.10	18.1	18.1	14.6	3.5	283	91	100	74	83776	50
4030	161	0.98	1.18	1.30	19.3	19.3	14.6	3.9	287	91	102	73	99208	60
4035 *	161	1.18	1.38	1.50	19.7	19.7	16.1	3.9	291	93	104	72	119050	70

		ødx1.5	ødx3	ødx5									
HRB 3 Series	**Bending Leight**	**Pre-Bending Capacities**	**Bending Capacities**	**Bending Capacities**	**Top Roll**	**Side Rolls**	**Max. Pass Through**	**Length**	**Width**	**Height**	**Working Height**	**Weight**	**Motor Power**
Unit	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	inch	pound	hp
2006	81	0.157	0.236	0.276	7.3	6.5	2.8	152	51	45	32	5512	5.5
2010	81	0.315	0.394	0.472	8.3	7.5	3	151	46	46	33	8818	7.5
2013	81	0.394	0.512	0.591	9.1	7.9	3	151	46	46	32	10582	11
2508	100	0.236	0.315	0.394	8.3	7.5	3	170	46	46	33	9921	7.5
2513	100	0.394	0.512	0.591	10.6	9.8	3.9	187	65	63	45	14771	15
2520	100	0.630	0.787	0.866	13	11.4	3.9	187	65	63	44	22928	22
3006	122	0.157	0.236	0.276	8.3	7.5	3	192	46	46	33	11023	7.5
3010	122	0.315	0.394	0.472	10.6	9.8	3.9	209	65	63	45	16535	11
3013	122	0.394	0.512	0.591	11.8	10.6	3.9	209	65	63	45	19842	15
3016	122	0.512	0.63	0.709	13	11.4	3.9	209	65	63	44	26015	18.5
3020	122	0.63	0.787	0.866	14.2	13	4.9	219	81	81	59	27558	22
3025	122	0.787	0.984	1.102	15.7	13.8	4.9	219	81	81	59	37479	30

Specifications are approximate and subject to change without notice.

DURMA AIMS FOR CONTINUOUS DEVELOPMENT

DURMA's large investment in machining centers and production equipment, as well as its ISO-certified factories totaling 1,350,000 square feet and 1,000 employees, make one of the world's largest, efficient and most contemporary facilities in the world.

In order to offer customer solutions and further develop patents, the Durma Research and Development center opened in 2010. Fifty engineers were added over the last two years.

Designed and engineered with modern technology, Durma products are equipped with high quality and proven readily available components.

Established in 1956, Durma has vast experience in building and supplying quality products. With over 60,000 machines delivered worldwide, Durma has earned a reputation as a supplier of innovative "value oriented" solutions.

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