



Rectilinear Guides (Bertsch Design)— built for rolling heavy plate

Concept

The Rectilinear Guide concept consists of forming rolls that are guided in place by a machined surface, and bearing blocks mounted directly above the hydraulic cylinder. The position of the rolls is controlled by the hydraulic cylinder with no additional moving parts.

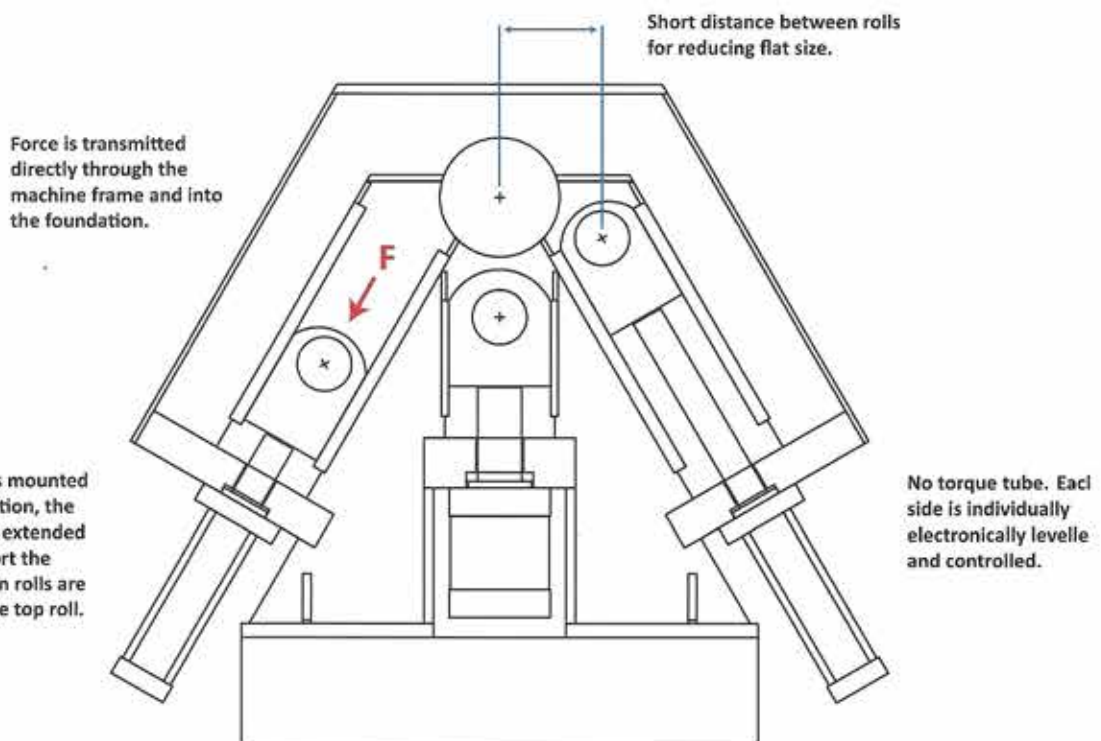
Advantages

Bertsch's Rectilinear Guide system transmits the forming roll forces directly to the hydraulic cylinder, into the machine frame, and into the foundation. There are no load-bearing wear points or torsional stresses affecting roll parallelism and accuracy.

This leads to a long service life, consistent parts, and low maintenance.

The centerline of the forming roll is close to that of the pinch roll. This allows the flat areas associated with pre-bending to be small and consistent. In addition, Bertsch sizes the direct-acting hydraulic cylinders to pre-bend to the maximum rolling capacity of each machine.

Each side of every forming roll is individually controlled, allowing fine roll adjustments, making cone rolling easy to set up. There are no torque tube stresses to account for.



With the cylinders mounted low to the foundation, the bearing boxes are extended in length to support the rolling forces when rolls are positioned near the top roll.

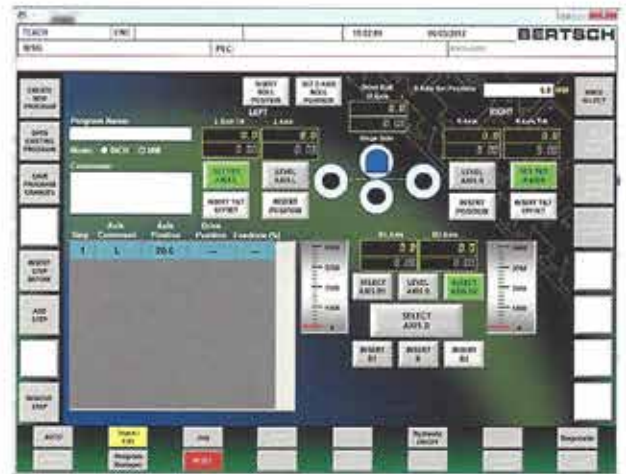
Bertsch B-Series Controls and Options



Controls

- Bertsch NC Control
- 15" color touch screen display
- Network connectivity
- Proportional control of rotation and all roll movements
- Moveable console
- Designed, developed and supported by the MegaFab engineering and service group
- Programs can be created by editing individual blocks or by inserting actual roll positions by using the teach functionality as you roll.
- A blended radius can be programmed by programming two axes in one block
- A comments section is displayed so that the operator can make notes about the job to help verify the program at a later date
- Remote service and diagnostics available via network connection
- Virtually unlimited job storage via internal memory, usb or network connection

Note: The NC Control is designed to manage the machines axes. How material reacts to these positions can vary greatly with changes in the materials dimensions and mechanical properties. Therefore, modifications to program positions are often required to adjust for these variables.



Optional Equipment and Enhancements



Overhead & Side Supports

Recommended when rolling larger diameters. Hydraulically adjustable and used to maintain cylinder shape during rolling.



Cone Rolling Attachment

The attachment is a removable snubber device, designed to retard the small end of the cone, allowing the large end to travel at a greater surface speed

Bertsch B-Series Plate Roll Specifications

MODEL	Width	Rolling Thickness to 5 times Top Roll Diameter	Prebending Thickness to 5 times Top Roll Diameter	Prebending Thickness to 1.5 times Top Roll Diameter	Top and Bottom Roll Diameter	Side Roll Diameter	Horsepower	Rotation Speed (R/min)	Machine Dimensions (LxWxH)	Approx. Weight			
#7-08	96"	.375"	45"	.3125"	45"	.265"	13.5"	9"	6.5"	10	14	180 x 78 x 61	13,500
#8-08	96"	.547"	52.5"	.455"	52.5"	.385"	15.75"	10.5"	10"	15	14	178 x 82 x 70	17,900
#9-08	96"	.719"	60"	.610"	60"	.515"	18"	12"	10"	20	14	178 x 84 x 70	22,200
#11-08	96"	1.078"	75"	.875"	75"	.750"	22.5"	15"	12"	30	14	227 x 89 x 72	36,450
#14-08	96"	1.438"	85"	1.180"	85"	1.000"	25.5"	17"	14"	40	14	247 x 98 x 89	41,800
#18-08	96"	1.844"	95"	1.500"	95"	1.250"	28.5"	19"	15.5"	60	14	247 x 124 x 115	68,500
#20-08	96"	2.219"	110"	1.750"	110"	1.500"	33"	22"	18"	75	14	278 x 121 x 117	101,000
#24-08	96"	2.766"	125"	2.250"	125"	1.875"	37.5"	25"	20"	120	14	301 x 143 x 137	140,000
#7-10	120"	.328"	45"	.285"	45"	.250"	13.5"	9"	6.5"	10	14	204 x 78 x 61	14,850
#8-10	120"	.484"	52.5"	.400"	52.5"	.345"	15.75"	10.5"	10"	15	14	202 x 82 x 70	20,100
#9-10	120"	.641"	60"	.545"	60"	.460"	18"	12"	10"	20	14	202 x 84 x 70	24,800
#11-10	120"	.953"	75"	.790"	75"	.675"	22.5"	15"	12"	30	14	251 x 89 x 72	40,450
#14-10	120"	1.281"	85"	1.000"	85"	.900"	25.5"	17"	14"	40	14	271 x 98 x 89	47,000
#18-10	120"	1.641"	95"	1.250"	95"	1.0625"	28.5"	19"	15.5"	60	14	271 x 124 x 115	75,000
#20-10	120"	1.984"	110"	1.6875"	110"	1.4375"	33"	22"	18"	75	14	302 x 121 x 117	110,000
#24-10	120"	2.469"	125"	2.000"	125"	1.750"	37.5"	25"	20"	120	14	325 x 143 x 137	151,000
#7-12	144"	.297"	45"	.250"	45"	.1875"	13.5"	9"	6.5"	10	14	228 x 78 x 61	16,200
#8-12	144"	.406"	52.5"	.330"	52.5"	.300"	15.75"	10.5"	10"	15	14	226 x 82 x 70	22,300
#9-12	144"	.547"	60"	.460"	60"	.400"	18"	12"	10"	20	14	226 x 84 x 70	27,400
#11-12	144"	.859"	75"	.690"	75"	.5625"	22.5"	15"	12"	30	14	275 x 89 x 72	44,450
#14-12	144"	1.109"	85"	.960"	85"	.750"	25.5"	17"	14"	40	14	295 x 98 x 89	52,200
#18-12	144"	1.375"	95"	1.0625"	95"	.9375"	28.5"	19"	15.5"	60	14	295 x 124 x 115	81,500
#20-12	144"	1.813"	110"	1.4375"	110"	1.1875"	33"	22"	18"	75	14	326 x 121 x 117	120,000
#24-12	144"	2.250"	125"	1.8125"	125"	1.500"	37.5"	25"	20"	120	14	349 x 143 x 137	162,000

All Capacities are calculated based on a material yield point of 49,000 PSI.
Without prebending flat ends may remain depending on diameter.

Additional widths and thickness are available. Please consult the Bertsch application group to discuss your rolling needs.

Bertsch M-Series Plate Rolls



TECHNICAL SPECIFICATIONS AND STANDARD ACCESSORIES

- Machine is suitable for rolling sheet metal to plates of aluminum, carbon or stainless steel
- Full circles or varying radiuses can be easily formed
- Bottom and side rolls move in rectilinear guides and positioned by hydraulic cylinders
- Protected from overload
- Top and bottom roll rotation is powered via an electric motor and gearbox connected to top roll and torque distributed to bottom roll via a cardan shaft
- Three digital readouts for side rolls and bottom roll position
- Hydraulic drop end for easy part removal
- Easy operation via mobile operations console
- Welded steel frame design
- Standard induction hardened forged rolls
- Standard cone bending attachment
- Hydraulic leveling system

Bertsch M-Series Models

Without Pre-Bending, flat plate ends may remain depending on diameter.

MODEL	Useful Length	Rolling 5x Top Roll	Rolling 1.5x Top Roll	Prebending 5x Top Roll	Prebending 1.5x Top Roll	1.5x Top Roll	5x Top Roll	Top/Bottom Roll Dia.	Side Roll Dia.	Total Motor Power HP	Rotation Speed (ft./min)	Machine Dimensions (LxWxH)	Weight
4R M3-24	26	0.138	0.118	0.118	0.098	4.7	15.7	3.15	3.15	2.5	16	76.8 x 37.4 x 37.8	2,094
4R M3-40	41	0.098	0.079	0.079	0.059	4.7	15.7	3.15	3.15	2.5	16	92.5 x 37.4 x 37.8	2,535
4R M3-50	50	0.079	0.059	0.059	0.039	4.7	15.7	3.15	3.15	2.5	16	101.2 x 37.4 x 37.8	2,756
4R M4-50	50	0.118	0.079	0.079	0.059	5.9	19.7	3.54	3.54	2.5	21	101.2 x 37.4 x 37.8	2,976
4R M5-50	50	0.197	0.157	0.157	0.118	7.7	25.6	5.12	5.12	3.0	16	118.9 x 45.3 x 43.7	4,740
4R M6-50	50	0.276	0.197	0.197	0.157	8.9	29.5	5.91	5.12	4.4	20	118.9 x 45.3 x 43.7	4,751
4R M7-50	50	0.394	0.295	0.295	0.217	10.6	35.4	7.09	5.91	5.5	16	120.9 x 53.1 x 50.8	5,952
4R M8-50	50	0.472	0.394	0.394	0.315	11.8	39.4	7.87	7.09	7.4	20	120.9 x 53.1 x 50.8	6,614
4R M3-60	61	0.059	0.039	0.039	0.020	4.7	15.7	3.15	3.15	2.5	16	112.2 x 37.4 x 37.8	2,976
4R M4-60	61	0.079	0.059	0.059	0.039	5.9	19.7	3.94	3.54	2.5	21	112.2 x 37.4 x 37.8	3,307
4R M5-60	61	0.177	0.138	0.138	0.098	7.7	25.6	5.12	5.12	3.0	16	129.9 x 45.3 x 43.7	4,960
4R M6-60	61	0.256	0.177	0.177	0.138	8.9	29.5	5.91	5.12	4.4	20	129.9 x 45.3 x 43.7	5,225
4R M7-60	61	0.354	0.276	0.276	0.197	10.6	35.4	7.09	5.91	5.5	16	131.9 x 53.1 x 50.8	6,393
4R M8-60	61	0.433	0.354	0.354	0.276	11.8	39.4	7.87	7.09	7.4	20	131.9 x 53.1 x 50.8	7,165
4R M9-60	61	0.472	0.394	0.394	0.315	13.0	43.3	8.66	7.09	9.4	16	137.8 x 59.1 x 53.9	9,370
4R M10-60	61	0.591	0.472	0.472	0.394	14.8	49.2	9.84	7.87	12.1	16	137.8 x 59.1 x 53.9	3,638
4R M5-80	81	0.157	0.118	0.118	0.079	7.7	25.6	5.12	5.12	3.0	16	149.6 x 45.3 x 43.7	5,401
4R M6-80	81	0.236	0.157	0.157	0.118	8.9	29.5	5.91	5.12	4.4	20	149.6 x 45.3 x 43.7	6,173
4R M7-80	81	0.315	0.236	0.236	0.157	10.6	35.4	7.09	5.91	5.5	16	151.6 x 53.1 x 50.8	7,275
4R M8-80	81	0.394	0.315	0.315	0.236	11.8	39.4	7.87	7.09	7.4	20	151.6 x 53.1 x 50.8	8,267
4R M9-80	81	0.433	0.354	0.354	0.276	13.0	43.3	8.66	7.09	9.4	16	157.5 x 59.1 x 53.9	10,582
4R M10-80	81	0.472	0.394	0.394	0.315	14.8	49.2	9.84	7.87	12.1	16	157.5 x 59.1 x 53.9	11,795
4R M11-80	81	0.630	0.591	0.591	0.472	16.2	54.1	10.83	8.66	14.8	16	173.2 x 63.0 x 70.9	13,117
4R M12-80	81	0.866	0.709	0.709	0.591	17.7	59.1	11.81	9.84	14.8	16	173.2 x 70.9 x 76.8	14,330
4R M6-100	100	0.157	0.118	0.188	0.079	8.9	29.5	5.91	5.12	4.4	20	169.3 x 45.3 x 43.7	7,121
4R M7-100	100	0.236	0.157	0.157	0.188	10.6	35.4	7.09	5.91	5.5	16	171.3 x 53.1 x 50.8	8,157
4R M8-100	100	0.315	0.236	0.236	0.157	11.8	39.4	7.87	7.09	7.4	20	171.3 x 53.1 x 50.8	9,370
4R M9-100	100	0.354	0.276	0.276	0.197	13.0	43.3	8.66	7.09	9.4	16	177.2 x 59.1 x 53.9	11,905
4R M10-100	100	0.394	0.315	0.315	0.236	14.8	49.2	9.84	7.87	12.1	16	177.2 x 59.1 x 53.9	13,448
4R M11-100	100	0.591	0.472	0.472	0.394	16.2	54.1	10.83	8.66	14.8	16	192.9 x 63.0 x 70.9	14,991
4R M12-100	100	0.709	0.591	0.591	0.472	17.7	59.1	11.81	9.84	14.8	16	192.9 x 70.9 x 76.8	16,535
4R M7-120	120	0.157	0.118	0.118	0.079	10.6	35.4	7.09	5.91	5.5	16	190.0 x 53.1 x 50.8	9,039
4R M8-120	120	0.236	0.157	0.157	0.118	11.8	39.4	7.87	7.09	7.4	20	190.9 x 53.1 x 50.8	10,472
4R M9-120	120	0.315	0.236	0.236	0.157	13.0	43.3	8.66	7.09	9.4	16	196.9 x 59.1 x 53.9	13,228
4R M10-120	120	0.354	0.276	0.276	0.197	14.8	49.2	9.84	7.87	12.1	16	196.9 x 59.1 x 53.9	14,991
4R M11-120	120	0.472	0.394	0.394	0.315	16.2	54.1	10.83	8.66	14.8	16	212.6 x 63.0 x 70.9	16,535
4R M12-120	120	0.591	0.472	0.472	0.394	17.7	59.1	11.81	9.84	14.8	16	212.6 x 70.9 x 76.8	18,739
4R M10-159	159	0.236	0.157	0.157	0.188	14.8	49.2	9.84	7.87	12.1	16	236.2 x 59.1 x 53.9	18,298
4R M11-159	159	0.315	0.236	0.236	0.157	16.2	54.1	10.83	8.66	14.8	16	252.0 x 63.0 x 70.9	19,842



Machine capacities are based on a material yield point of 37,000 PSI.

BERTSCH
M-Series

Bertsch M-Series 4-Roll Profile Bending Machines



Shorter flat on edges. More accurate results for pipes and aluminum profiles. Wide distance of side rolls and consequently more capacity on bigger diameter bending.

TECHNICAL SPECIFICATIONS AND STANDARD ACCESSORIES

- Three rolls hydraulically driven
- Steel construction and welded frame
- Special hardened and ground shafts
- Standard hardened dies
- Mobile operators console
- Horizontal or vertical working positions
- Three digital readouts for both sides and bottom roll position
- 2-speed rotation
- 2-axis movable hydraulic lateral guide rollers
- Standard 3 + 3 manual side supports
- Dies are moved via direct acting hydraulic cylinders in rectilinear machined guides
- Adjustable pressure for thinner and precision materials



• Horizontal Working Position

MODEL	4AR-1.5	4AR-2	4AR-3	4AR-4
Shaft Diameter	1.6	2.4	3.1	3.9
Rolls Diameter	6.3	7.9	10.2	12.6
Shaft Length	4.7	5.9	6.3	7.9
Bending Speed (ft/min)	33	26	21	16
Number of Motorized Rolls	2	2	2	2
Number of Guide Roll Axes	1	1	1	1
Motor power	2.0	4.0	7.4	10.1
Machine weight	1,323	2,205	4,409	6,614
Machine Dimensions(LxWxH)	35.4 x 31.5 x 31.5	47.2 x 43.3 x 31.5	66.9 x 57.1 x 47.2	78.7 x 65.9 x 49.2



CAPACITY CHART

No.	Profile Type	4AR-1.5		4AR-2		4AR-3		4AR-4		Notes
		Size	Min Dia.	Size	Min Dia.	Size	Min Dia.	Size	Min Dia.	
1		2.375 x 0.375	19.7	2.375 x 0.375	19.7	4.000 x 0.750	78.7	4.000 x 0.750	31.5	Standard Rolls
		1.500 x 0.375	15.7	0.750 x 0.197	9.8	3.125 x 0.750 1.188 x 0.375	31.5 11.8	1.188 x 0.375	15.7	
2		4.000 x .0625	17.7	3.125 x 0.750	19.7	5.000 x 1.000	23.6	8.000 x 1.188	47.2	Standard Rolls
		2.375 x 0.375	13.8	2.000 x 0.197	9.8	2.375 x 0.197	11.8	6.250 x 1.375 3.125 x 0.197	31.5 15.7	
3		1.375 x 1.375	35.4	1.250 x 1.250	15.7	1.750 x 1.750	19.7	2.375 x 2.375	29.5	Standard Rolls
		0.750 x 0.750	11.8	0.500 x 0.500	9.8	0.625 x 0.625	15.0	0.625 x 0.625	15.7	
4		1.375	23.6	1.375	13.8	2.000	19.7	3.000	31.5	Optional Rolls
		1.188	15.7	0.375	9.8	0.625	15.0	0.625	17.7	
5		2.750 x 0.079	39.4	2.750 x 0.079	23.6	4.000 x 0.098	47.2	5.000 x 0.098	55.1	Optional Rolls
		1.188 x 0.079	19.7	0.625 x 0.059	8.0	0.625 x 0.039	15.0	0.625 x 0.039	17.7	
6		2.000 x 0.114	39.4	2.000 x 0.154	15.7	3.000 x 0.216	31.5	4.000 x 0.237	39.4	Optional Rolls
		1.000 x 0.090	13.8	0.500 x 0.109	8.0	0.500 x 0.109	15.0	0.500 x 0.109	17.7	
7		2.750 x 1.188 x 0.079	47.2	2.000 x 1.000 x 0.118	17.7	3.125 x 1.000 x 0.118	31.5	4.000 x 1.500 x 0.188	51.2	Optional Rolls
		2.000 x 1.500 x 0.118	47.2	0.750 x 0.625 x 0.079	9.8	1.000 x 0.625 x 0.079	13.8	1.000 x 0.625 x 0.079	17.7	
8		2.000 x 0.118	66.9	1.500 x 0.118	23.6	2.750 x 0.118	51.2	3.125 x 0.197	51.2	Optional Rolls
		1.500 x 0.118	23.6	0.750 x 0.079	11.8	1.000 x 0.079	15.7	1.000 x 0.079	17.7	
9		2.000 x 2.000 x 0.197	31.5	2.375 x 2.375 x 0.236	25.6	3.125 x 3.125 x 0.313	31.5	4.000 x 4.000 x 0.500	59.1	Optional Rolls
		1.500 x 1.500 x 0.197	23.6	1.188 x 1.188 x 0.188	13.8	1.188 x 1.188 x 0.118	17.7	1.500 x 1.500 x 0.118	17.7	
10		2.000 x 2.000 x 0.236	39.4	2.000 x 2.00 x 0.197	21.7	2.750 x 2.750 x 0.276	27.6	4.000 x 4.000 x 0.375	39.4	Optional Rolls
		1.188 x 1.188 x 0.118	19.7	1.188 x 1.188 x 0.188	13.8	1.188 x 1.188 x 0.118	17.7	1.500 x 1.500 x 0.188	27.6	
11		2.375 x 0.276	27.6	2.375 x 0.276	21.7	3.125 x 0.375	31.5	4.000 x 0.433	39.4	Standard Rolls
		2.000 x 0.236	19.7	0.750 x 0.118	9.8	1.000 x 0.125	11.0	1.188 x 0.188	21.7	
12		2.375 x 0.276	27.6	2.000 x 0.236	19.7	2.750 x 0.313	31.5	3.500 x 0.375	39.4	Standard Rolls
		2.000 x 0.236	19.7	0.750 x 0.118	9.8	1.000 x 0.125	11.0	1.188 x 0.188	15.7	
13		2.375 x 0.276	27.6	2.375 x 0.276	19.7	3.125 x 0.375	31.5	4.000 x 0.433	39.4	Optional Rolls
		2.000 x 0.236	19.7	0.750 x 0.118	9.8	1.188 x 0.188	11.8	1.188 x 0.188	15.7	
14		3.125	39.4	3.125	23.6	5.500	63.0	7.000	35.4	Standard Rolls
		2.375	27.6	1.188	9.8	4.750 4.000	35.4 23.6	1.188	15.7	
15		3.125	47.2	2.500	23.6	5.500	63.0	7.000	39.4	Standard Rolls
		1.188	31.5	1.188	9.8	4.750 4.000	39.4 31.5	1.188	15.7	
16				3.125	23.6	4.750 3.125	23.6 15.7	7.000 3.125	39.4 15.7	Optional Rolls

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