OPERATIONS MANUAL

BERRIDGE
MODEL SS-1421
PORTABLE ROLL FORMER

INSTRUCTIONS FOR CURVING PANELS

BERRIDGE MANUFACTURING COMPANY

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SS-1421 CURVING PANELS

OVERVIEW – In these curving instructions, leg dimensions are referenced by their actual height; that is, nominal 1" high panels are referenced as 5/8-inch legs and 1-1/2" high panels are referenced as 1-3/8-inch legs. In installation, the nominal heights are achieved with the addition of the seam strip.

The Berridge SS-1421 portable rollformer is capable of producing both convex and concave panels with a 5/8" leg, but can only curve convex with a 1-3/8" leg. Minimum radii with 5/8" legs are approximately (5 feet) convex and (8 feet) concave. Minimum radii with 1 3/8" legs are approximately (8 feet) convex.

Convex and concave curving of 5/8" leg panels is quite straightforward and is done without direct mechanical stretching or shrinking of the panel leg. The offset of the final pair of rolls determines the bend radius.

1-3/8" leg panels do require use of the stretching or shrinking rollers as well as offsetting the final pair of rolls. Charts for machine settings are provided as a guide to initial settings for your curving job.

Matching seam strips are curved in the same manner. No special stretching or shrinking rollers are used.

Berridge Mfg. Co. policy is to set up and test a leased machine before shipping, for the first radius specified by the lessee. Subsequent radius changes, if required, must be performed by a mechanically competent person trained by Berridge. If the customer does not have anyone trained in this procedure, the machine must be returned to Berridge for adjustment.

MACHINE SETUP

5/8" LEG

CONVEX AND CONCAVE CURVING

ADJUSTMENTS

Convex panels require offsetting the final pass of the machine away from the operator. The Curving adjustment knob is turned clockwise to decrease (tighten) the convex radius.

Concave panels require offsetting the final pass of the machine toward the operator. The curving adjustment knob is turned counter-clockwise to decrease (tighten) the concave radius.

RANGE OF ADJUSTMENTS

The effective limit of the adjustment is approximately 7/8 inches from center on the bending scale for convex and 5/8 inches for concave curving. More offset may produce erratic results.

1 3/8" LEG

CONVEX CURVING

The stretching rollers must be fitted. They must be adjusted with a 29/64" round gage to assure performance as specified on the CONVEX CURVING PERFORMANCE CHART. This is a factory setting, but should be checked if performance does not correspond to the Chart.

ADJUSTMENTS-

For 1-3/8 inch leg panels, two settings are required: OFFSET SETTING of the final pass and STRETCH SETTING of the stretching rollers. A radius chart is provided to allow lookup of the initial settings to match project requirements.

DETERMINING SETTINGS

Refer to the CONVEX CURVING PERFORMANCE chart to determine settings. This chart provides initial values for settings. Some fine tuning may be necessary due to variations in steel coils, ambient temperature, etc.

Begin by following the numbers down the Radius (left) column to find the listed radius that is nearest to your required radius. Follow horizontally to the right to the to the number listed. It will be between 3-7/8 and 4-7/16 inches. This is the STRETCH SETTING for the stretcher rollers.

Following the column upward from the STRETCH SETTING to the top of the column, the OFFSET SETTING will be found. This is the offset of the final pass.

EXAMPLE: For a 25-foot radius, the nearest radius listed is 25.80 feet. The STRETCH SETTING is 4.25 inches. Following the column upward, the OFFSET SETTING of .188 (3/16”) inches is found.

Back at the machine, the STRETCH SETTING is dialed in with two knobs provided between the sixth and seventh passes. Scales and pointers are provided. Adjustments for the each side of the panel are separate to

CONVEX CURVING PERFORMANCE OF THE BERRIDGE SS-1421 PORTABLE ROLLFORMER

RADIUS (FT)	OFFSET SETTING							
	0	0.125	0.188	0.25	0.375	0.5	0.75	0.875
	STRETCH SETTING							
322	4.4375							
263	4.34375							
214	4.375							
191	4.313							
175	4.281							
161	4.250							
129	4.219							
107	4.188							
92	4.153							
80	4.125							
71	4.094							
59	4.063							
54	4.031							
46	4.000	4.375						
38	3.875	4.250						
31			4.000					
28		4.125						
26			4.250					
23		4.000						
22		3.875						
22				4.250				
19			4.125					
17			3.875	4.125				
15				4.000				
15				3.875				
13					4.250			
12						4.250		
11					4.125			
11					4.000			
8.4						4.125		
8.2						4.000		
8.2						3.875		
6.4							4.250	
5.9							4.125	
5.8							4.000	
5.6								3.813
5.1								4.125
5.1								3.875
5.1								4.000

allow correction in the event that the radii are not equal on both sides of the panel.

The OFFSET SETTING is applied in by turning the offset knob clockwise moving the final pass toward the operator. The maximum effective setting is .875 (7/8) inches.

CHECKING THE PANEL

Roll a panel with a chord length of at least eight (8) feet. Placing the panel on edge (its side) on a flat surface, measure the height of the arch from the center of an eight-foot straight edge. Compare this height with the "H" dimension given for your desired radius in the CURVING CHART BASED ON 96" CHORD LENGTH.

Turn the panel over and measure the height along the opposite side of the panel. Look for equality with the first side.

EXAMPLE: Looking at the CURVING CHART BASED ON 96” CHORD LENGTH, for a 25.34-foot radius (nearest to our 25 foot radius), the arch height will be 3.8125 or 3-13/16 inches at the center of the eight-foot straight edge. Should the measured height be more, the radius is smaller and conversely. Adjust the OFFSET SETTING to correct inequality. Normal variations between lots of steel coil, ambient temperatures, and other factors will cause these differences.

Should the radii of the opposite sides not be equal, adjust the STRETCH SETTING of the side that is out of dimension. Increasing the STRETCH SETTING will increase (flatten) the radius and the decrease arch height. Decreasing will decrease (tighten) the radius.

EXAMPLE: Moving the STRETCH SETTING from 4.000 inches to 4.125 inches will flatten the curve. The arch height (Dim “H”) will be less.

EXAMPLE: For a 16.25 foot radius the arch height is 6.00 inches.

CURVING CHART BASED ON 96" CHORD LENGTH

DIMENSION "H" IS THE HEIGHT IN INCHES AT CENTER OF 96" CHORD

RADIUS	DIM "H"	RADIUS	DIM "H"	RADIUS	DIM "H"
384.01	0.25	32.13	3	16.94	5.75
307.21	0.3125	31.47	3.0625	16.76	5.8125
256.02	0.375	30.85	3.125	16.59	5.875
219.45	0.4375	30.25	3.1875	16.42	5.9375
192.02	0.5	29.67	3.25	16.25	6
170.69	0.5625	29.12	3.3125	16.09	6.0625
153.63	0.625	28.59	3.375	15.93	6.125
139.67	0.6875	28.07	3.4375	15.77	6.1875
128.03	0.75	27.57	3.5	15.62	6.25
118.19	0.8125	27.10	3.5625	15.47	6.3125
109.75	0.875	26.63	3.625	15.32	6.375
102.44	0.9375	25.76	3.75	15.18	6.4375
96.04	1	26.19	3.6875	15.04	6.5
90.40	1.0625	25.76	3.75	14.90	6.5625
85.38	1.125	25.34	3.8125	14.77	6.625
80.89	1.1875	24.55	3.9375	14.63	6.6875
76.85	1.25	24.17	4	14.50	6.75
73.20	1.3125	23.80	4.0625	14.38	6.8125
69.88	1.375	23.44	4.125	14.25	6.875
66.84	1.4375	23.10	4.1875	14.13	6.9375
64.06	1.5	22.77	4.25	14.01	7
61.51	1.5625	22.44	4.3125	13.89	7.0625
59.14	1.625	22.13	4.375	13.77	7.125
56.96	1.6875	21.82	4.4375	13.66	7.1875
54.93	1.75	21.52	4.5	13.54	7.25
53.04	1.8125	21.23	4.5625	13.43	7.3125
51.28	1.875	20.95	4.625	13.32	7.375
49.63	1.9375	20.68	4.6875	13.22	7.4375
48.08	2	20.41	4.75	13.11	7.5
46.63	2.0625	20.15	4.8125	13.01	7.5625
45.27	2.125	19.90	4.875	12.91	7.625
43.98	2.1875	19.65	4.9375	12.81	7.6875
42.76	2.25	19.41	5	12.71	7.75
41.61	2.3125	19.17	5.0625	12.61	7.8125
40.52	2.375	18.95	5.125	12.52	7.875
39.49	2.4375	18.72	5.1875	12.43	7.9375
38.50	2.5	18.50	5.25	12.33	8
37.57	2.5625	18.29	5.3125	12.24	8.0625
36.68	2.625	18.04	5.375	12.15	8.125
35.83	2.6875	17.88	5.4375	12.07	8.1875
35.02	2.75	17.68	5.5	11.98	8.25
34.25	2.8125	17.49	5.5625	11.90	8.3125
33.51	2.875	17.30	5.625	11.81	8.375
32.80	2.9375	17.12	5.6875	11.73	8.4375

CURVING CHART BASED ON 96" CHORD LENGTH

DIMENSION "H" IS THE HEIGHT IN INCHES AT CENTER OF 96" CHORD

RADIUS (FT)	DIM "H" (IN)	RADIUS (FT)	DIM "H" (IN)
11.65	8.5	8.96	11.3125
11.57	8.5625	8.91	11.375
11.49	8.625	8.87	11.4375
11.41	8.6875	8.83	11.5
11.34	8.75	8.78	11.5625
11.26	8.8125	8.74	11.625
11.19	8.875	8.70	11.6875
11.11	8.9375	8.66	11.75
11.04	9	8.62	11.8125
10.97	9.0625	8.54	11.9375
10.90	9.125	8.50	12
10.83	9.1875	8.46	12.0625
10.76	9.25	8.42	12.125
10.70	9.3125	8.38	12.1875
10.63	9.375	8.35	12.25
10.50	9.5	8.31	12.3125
10.44	9.5625	8.27	12.375
10.38	9.625	8.24	12.4375
10.31	9.6875	8.20	12.5
10.25	9.75	8.13	12.625
10.19	9.8125	8.06	12.75
10.13	9.875	7.99	12.875
10.07	9.9375	7.93	13
10.02	10	7.86	13.125
9.96	10.0625	7.80	13.25
9.90	10.125	7.73	13.375
9.85	10.1875	7.67	13.5
9.79	10.25	7.55	13.75
9.74	10.3125	7.44	14
9.69	10.375	7.33	14.25
9.63	10.4375	7.22	14.5
9.58	10.5	7.12	14.75
9.53	10.5625	7.03	15
9.48	10.625	6.93	15.25
9.43	10.6875	6.84	15.5
9.38	10.75	6.75	15.75
9.33	10.8125	6.67	16
9.28	10.875		
9.23	10.9375		
9.19	11		
9.14	11.0625		
9.09	11.125		
9.05	11.1875		
9.00	11.25		

1 3/8” LEG CONCAVE CURVING

The gear-like shrinking rollers must be installed in place of the stretching rollers.

ADJUSTMENTS-

For 1-3/8 inch leg panels, two adjustments are required: Offset of the final pass and SHRINK SETTING adjustment of the SHRINKING ROLLERS. A radius chart is provided to allow lookup of the initial settings to match project requirements.

DETERMINING SETTINGS

Refer to the CONCAVE CURVING PERFORMANCE CHART to determine settings. Begin by following the numbers down the Radius (left) column to find the listed radius that is nearest to your required radius. (Should your required radius fall between two given radii, interpolation is allowed. That is, if your radius requirement is midway between two radii that are listed, the settings will be midway between those listed). Follow horizontally to the right to the number listed. It will be between 3.125 (3-1/8) and 3.28125 (3- 9/32) inches. This is the SHRINK SETTING for the shrink rollers (gears).
Following the column upward from the SHRINK SETTING to the top of the column, the OFFSET SETTING will be found. This is the offset toward the operator, of the final pass.

CONCAVE CURVING PERFORMANCE OF THE BERRIDGE SS-1421 PORTABLE ROLLFORMER

RADIUS (FT)	OFFSET SETTING (IN)											
	0.0625	0.125	0.1875	0.25	0.3125	0.375	0.4375	0.5	0.5625	0.625	0.6875	0.75
	SHRINK SETTING (IN)											
100	3.125											
83		3.125										
43			3.125									
26				3.125								
23					3.125							
19						3.125						
14							3.125					
10								3.25				
9									3.25			
7.5										3.28125		
7											3.28125	
6.5												3.28125

EXAMPLE: For a 25-foot radius, the nearest radius listed is 26 feet. The SHRINK SETTING is 3.125 (3-1/8) inches. Following the column upward, the OFFSET SETTING of .25 (1/4) inches is found.

Back at the machine, the SHRINK SETTING is dialed in with two knobs provided between the sixth and seventh passes. Scales and pointers are provided, top and bottom. Adjustments for the each side of the panel are separate to allow correction in the case that the radii are not equal on both sides of the panel.

The OFFSET SETTING is dialed in by turning the offset knob clockwise moving the final pass toward the operator.

CHECKING YOUR WORK

Roll a panel with a chord length of at least eight (8) feet. Placing the panel on edge on a flat surface, measure the height of the arch from the center of an eight-foot straight edge. Compare this height with the ARCH dimension (Dim “H”) given for your radius in the CURVING CHART BASED ON 96” CHORD LENGTH. (This is the same chart used for convex curving).

Turn the panel over and measure the height along the opposite side. Look for equality with the first side.

EXAMPLE: Looking at the CURVING CHART BASED ON 96" CHORD LENGTH, for a 25.34-foot radius, the arch height will be 3.8125 (3-13/16) inches at the center of the eight-foot straight edge. Should the measured height be more, the radius is smaller and conversely. Adjust the OFFSET SETTING to correct. Normal variations between lots of steel coil, ambient temperature, and other factors will cause these differences.

Should the radii of the opposite sides not be equal, adjust the SHRINK SETTING of the side that is out of dimension. Increasing the SHRINK SETTING will increase (flatten) the radius and the decrease arch height. Decreasing will decrease (tighten) the radius. DO NOT ADJUST THE SHRINK SETTING TO MORE THAN 3 9/32". If you are set to the maximum, dial in more OFFSET and reduce the SHRINK SETTING of the side with the tighter (smaller) radius to equalize the two sides.

EXAMPLE: Changing the SHRINK SETTING from 3-9/32" to 3¼" inches will flatten the curve. The arch height will be less.

CHECKING YOUR WORK

Verify that your radius is correct. Refer to CHECKING YOUR WORK above, in the Convex Curving section of this instruction.

SPECIAL BENDS

TANGENT BENDS – ONE-PIECE, CURVED WITH STRAIGHT TANGENT

Tangent bends must be rolled radius section first, then, adjust OFFSET and SHRINK/STRETCH to straight settings to run the balance of the piece.

SEAM CURVING – CONVEX AND CONCAVE

Seams are curved to match curved panels by inserting a straight seam strip into the rectangular tube at the top of the machine. Insert the seam with the open side facing away from the operator side of the machine. Make certain that the end of the seam is not pinched or deformed. Lubricate the seams with WD-40 or similar lubricant to assure that the finish is smooth and unmarred.

OFFSET settings will be approximately the same as settings used for the panels. Run a sample and measure as outlined in CHECKING YOUR WORK above. Final judgment comes after fitting a seam to an installed panel.