



# HYDRAULIC BENDING ROLLS

Model: HBR-0425 HBR-05316

HBR-0525 HBR-0625

HBR-0808

## Operation & Parts Manual



# I MAIN SPECIFICATIONS

Model	HBR-0425	HBR-05316	HBR-0525	HBR-0625	HBR-0808
Mild steel capacity	4'X1/4" mild steel	5'x3/16" mild steel	5'x1/4" mild steel	6'x1/4" mild steel	8'x8Ga. Mild steel
Roll diameter	5-7/8"	5-7/8"	7"	7-1/2"	6-1/2"
	150mm	150mm	180mm	190mm	165mm
Hydraulic bending roll	standard	standard	standard	standard	standard
	standard	standard	standard	standard	standard
motor	3 HP,220V,3ph	5.5HP,220V,3ph	5.5HP,220V,3ph	7.5HP,220V,3ph	7.5HP,220V,3ph
	2.2 KW	4.0 KW	4.0 KW	5.5 KW	5.5 KW
Dimension	91"x40"x56"	102"x41"x56"	102"x41"x56"	125"x43"x57"	141"x40"x57"
	230x102x142cm	260x105x143cm	260x105x143cm	318x108x145cm	357x102x145cm
Package	METAL PALLET	METAL PALLET	METAL PALLET	METAL PALLET	METAL PALLET
Weight	4850 LBS	6650 LBS	6850 LBS	8350 LBS	8950 LBS

### III OPERATION INSTRUCTIONS

#### 1. HOW TO ROLL FORMING CIRCLE

- 1) Length of material –to make the correct size cylinder or circle needed,  
**Use the formula “ $C = \pi \times ID$ ”(C is Circumference;  $\pi$  is 3.1416; ID is Internal Diameter).**

Example: ID=200mm, the operator will need to prepare material length  
Approximate 630.32mm

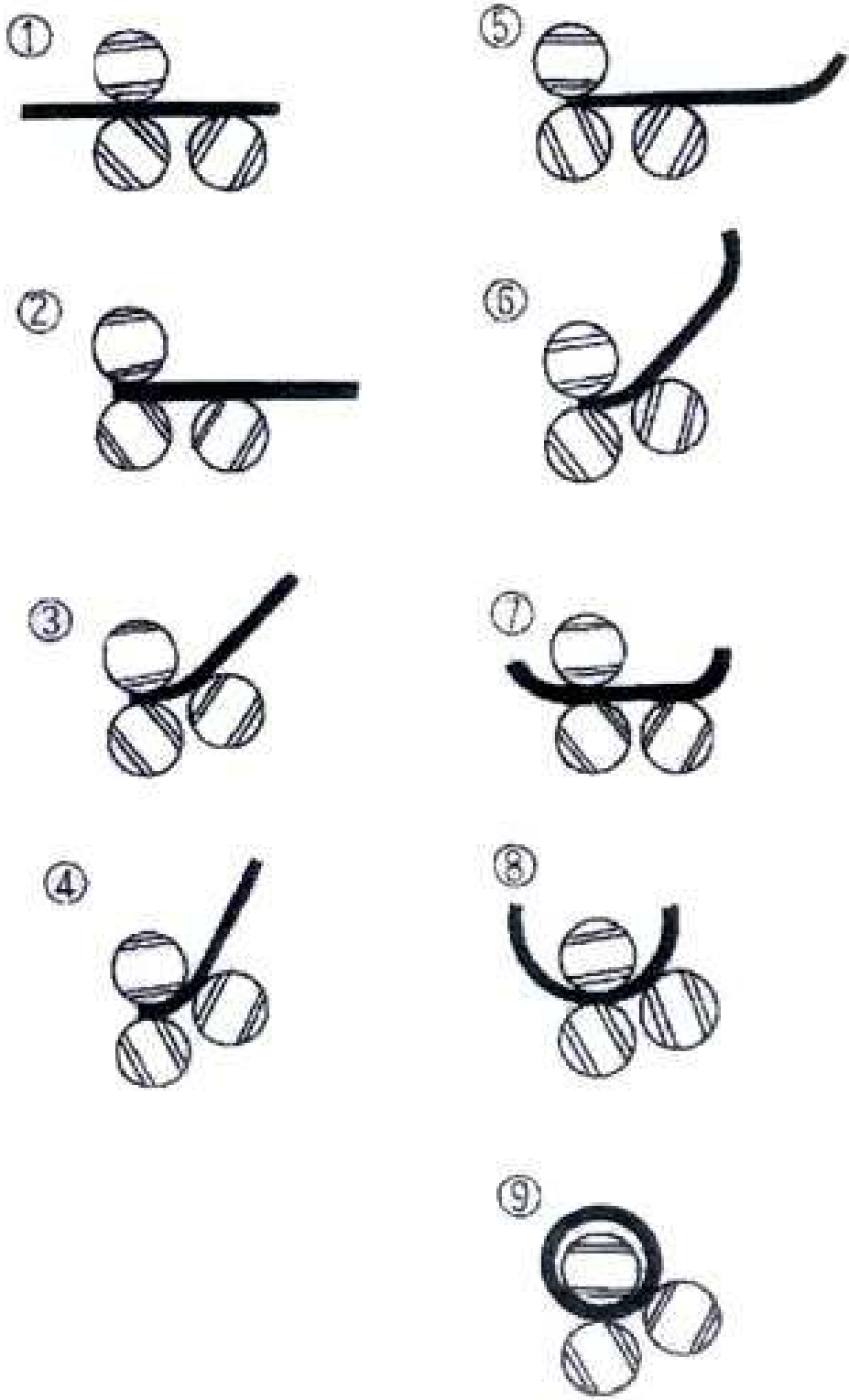
- 2) Cut a few pieces of material to the measured length for testing.  
The material might need to be lengthened or shortened depending upon the testing results.
- 3) Make a radius template of the desired diameter to use as a guide
- 4) Loosen the clamping screws to the right position which operator can insert the material between upper roll and bottom roller, then fasten the clamping screws to ensure upper roller and bottom roller clamp in the proper pressure.
- 5) Set the idle roller to the same height as bottom roller.
- 6) Power on the foot switch to move the material between upper roller and bottom roller forward to ensure the front-side of the steel plate will pass through the idle roller. **(Drawing No.01)**
- 7) Ensure the rear end-side of the plate steel does not leave the space between the upper roller and bottom roller. **(Drawing No.02)**
- 8) Raise the idle bending **(forming roll)** the end-side of the material to the desired angle to complete the pre-bending at the rear end-side of the measured length. **(Drawing No.03 &04).**
- 9) Remove the material which has completed the pre-bending at rear end-side to the expected diameter.
- 10) Repeat same step of No.3-7 **(Drawing No.5-6)** but pre-bend at the front end-side of the material.
- 11) Move Down the idle roller as soon as the material has been pre-bent at the end side of front and the rear plate to the expected diameter.**(Drawing No.7)**
- 12) Raise the idle roller step by step. The upper roller and bottom roller will form the material to the desired circle **.(Drawing No.8 & 9)**
- 13) If the finished sample is not long enough or if the formed part is not the proper diameter, additional samples will have to be made. Thousands of identical parts can be precisely duplicated when proper adjustments of the roller have been

made.

- 14) Save the correct modifying and forming test piece adjustments for your file your records.
- 15) The same diameter as the diameter of the rolls and slightly larger can be formed.

To make the adjustment for the material thickness and to determine the material length need to refer to step No.1~9.

2. PROCESS DRAWING OF ROLL FORMING



## IV ELECTRICAL SYSTEM

### 1. GENERAL DESCRIPTION

Hydraulic/ Electric Plate Rolls are controlled by the hydraulic system completely.

The foot pedal controls forward and reverse, on and off of the hydraulics, up and down of the rear axle tilt, are controlled by buttons on the faceplate.

### 2. OPERATION STEPS

1) Rotate the power supply switch on the electrical-box, then power on and the indicator light will be illuminated.



2) Press the START button on foot pedal controller, the motor starts up, hydraulic system is now ready to work. Press the emergency stop button down, the motor stops and hydraulic system also shuts off.



3) After power on, press the START button (on foot pedal) hydraulic pump runs, but if the upper roller isn't in the correct rolling place, all the actions of forward

rotation and reverse, up and down cannot move. When upper roller returns to correct starting point and presses the limited switch down, all the actions can be carried out. The up and down of rear axle is protected by a limit switch. When the rolls reaches the highest point, the rear axle presses the upper limit switch down, the UP button is inoperative right now, but the function of forward rotation and reverse, and the function of the down are still normal. In the same way, when reach the lowest point, the rear axle presses the lower limit switch down, the DOWN button is inoperative right now, but the function of forward rotation and reverse and the function of up are still normal. The buttons UP and DOWN control hydraulic cylinders at both sides (left and right) up and down at the same time. The left buttons UP and DOWN just control left hydraulic cylinders up and down.

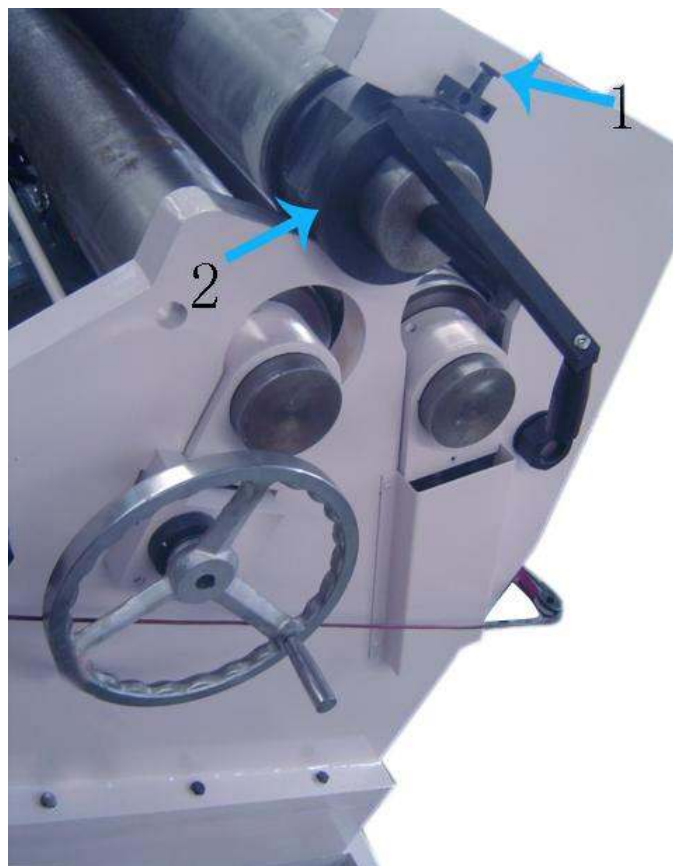
**Protection function:** If the operator touches the safety line while working normally, the indicator light for the RESET button is illuminated, it gives an alarm, and hydraulic pressure stops. At the moment hydraulic pressure is off, and you will need press the reset button down to eliminate alarm, the indicator light goes out, press the START button on foot pedal and the hydraulic system will restart

Before rolling, you need to adjust the rear axle and upper axle to be level.

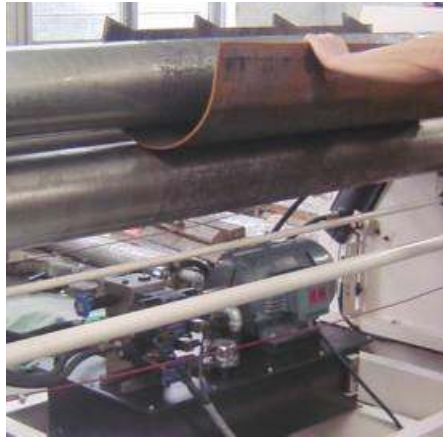
There 2 types of rolling: straight tube and cone rolling

1. Rolling straight tubes

Turn the handle to make the distance between the upper roller and front roller wide enough (depends on the thickness of the material.) to grab the material



Put the steel plate through upper roller and front lower roller



step on right foot pedal, steel plate moves backwards through the rolls; step on left foot pedal, steel plate moves forward

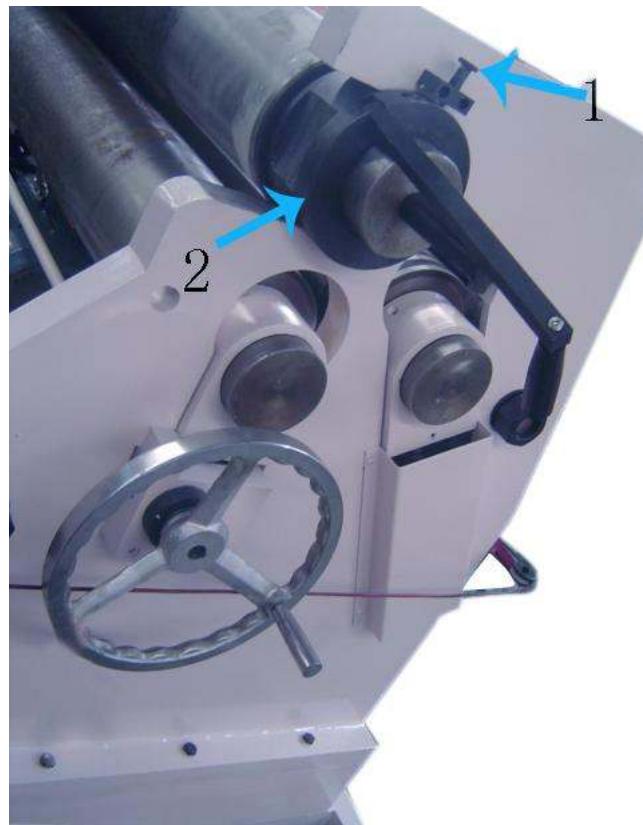


after one pass ,press the button which controls the rear axle up simultaneously, gradually increase the bending roll upwards on each pass until get the shape wanted.

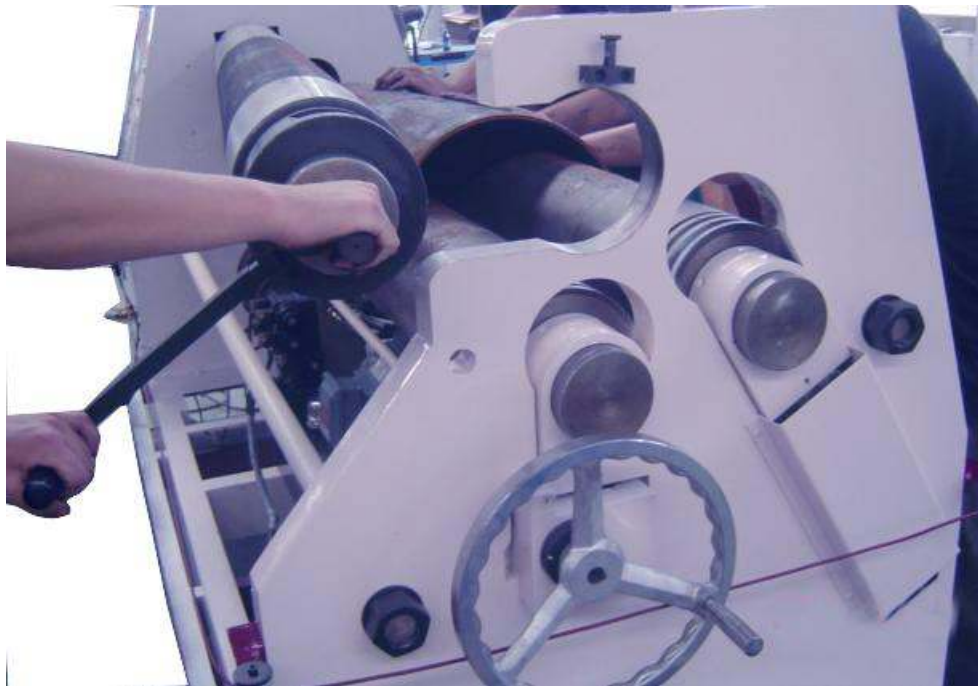




After you get the desired shape, please remove the part as shown in the next photos

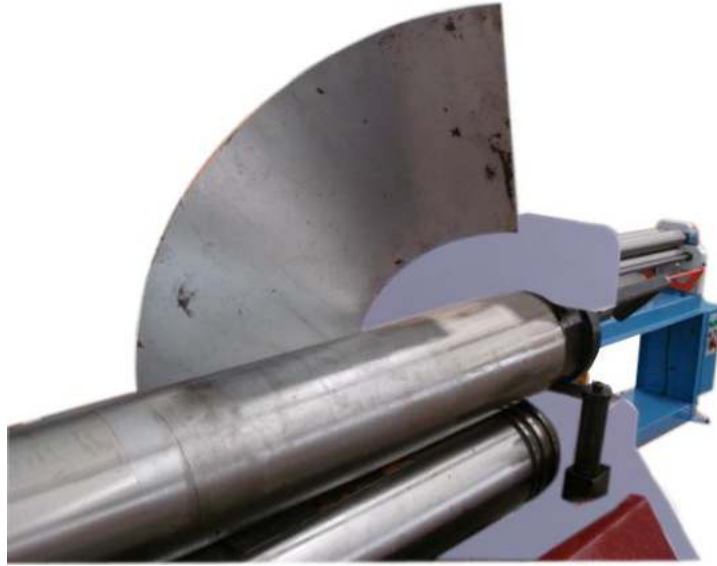


Then pull the upper roller to remove the formed part



## 2.Rolling cones

- 1) Prepare the material like a fan, please see the following process



- 2) Press the yellow button and black button to adjust the rear axle and upper roller level until the distance could clamp the material tightly at the shorter side.



After adjusting the rear axle and upper roller level, put the steel plate through upper roller, front lower roller and rear axle, step on right foot pedal, steel plate moves back through roller's drive; step on left foot pedal, steel plate moves forward, after one circulation, press the button which controls right rear axle up, then press the button which controls up simultaneously according to situation, make rear roller up a certain distance, the distance is displayed on the meter, until get the shape wanted.

**NOTICE:**

1. The right and left hydraulic cylinders work in step, this was adjusted when assemble, don't need adjust before work.

2. Need check the equalization of space before rolling, to insure the parallelism between upper roller and rear roller.

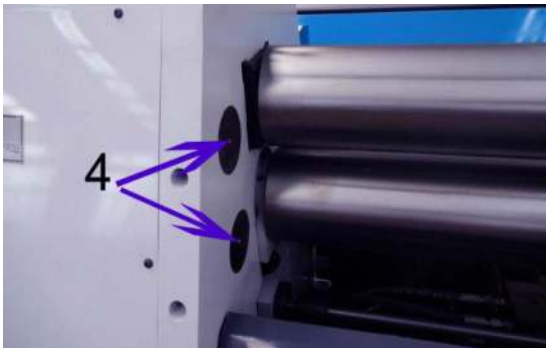
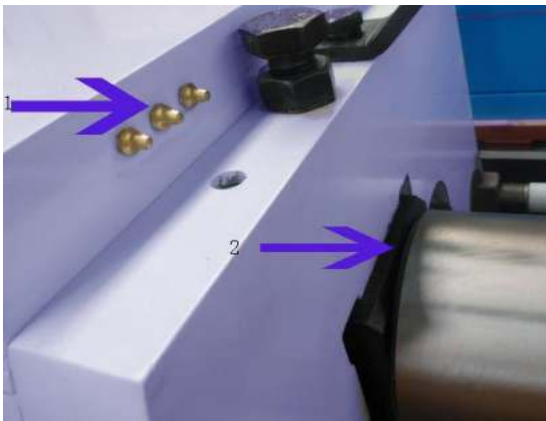
3. The counter was adjusted before delivery, just need check the parallelism between upper roller and rear roller before rolling, don't need set to ZERO every time.

4. While rolling, the rear axle's up and down is inoperative; while the rear axle up and down, the rolling is inoperative.

5. The right hydraulic cylinder's up and down drives the chain's moving up and down, then the chain drives encoder, the signal of encoder is displayed on counter, that's the figure displayed on counter. The encoder shouldn't be hit !!!

**V. LUBRICATION**

a. In this machine we have six parts have oil cups, please pay attention to the following pictures,you should lubricate three times a day, using lubrication oil Shell Tonna-33 or Mobile VACTRA-2

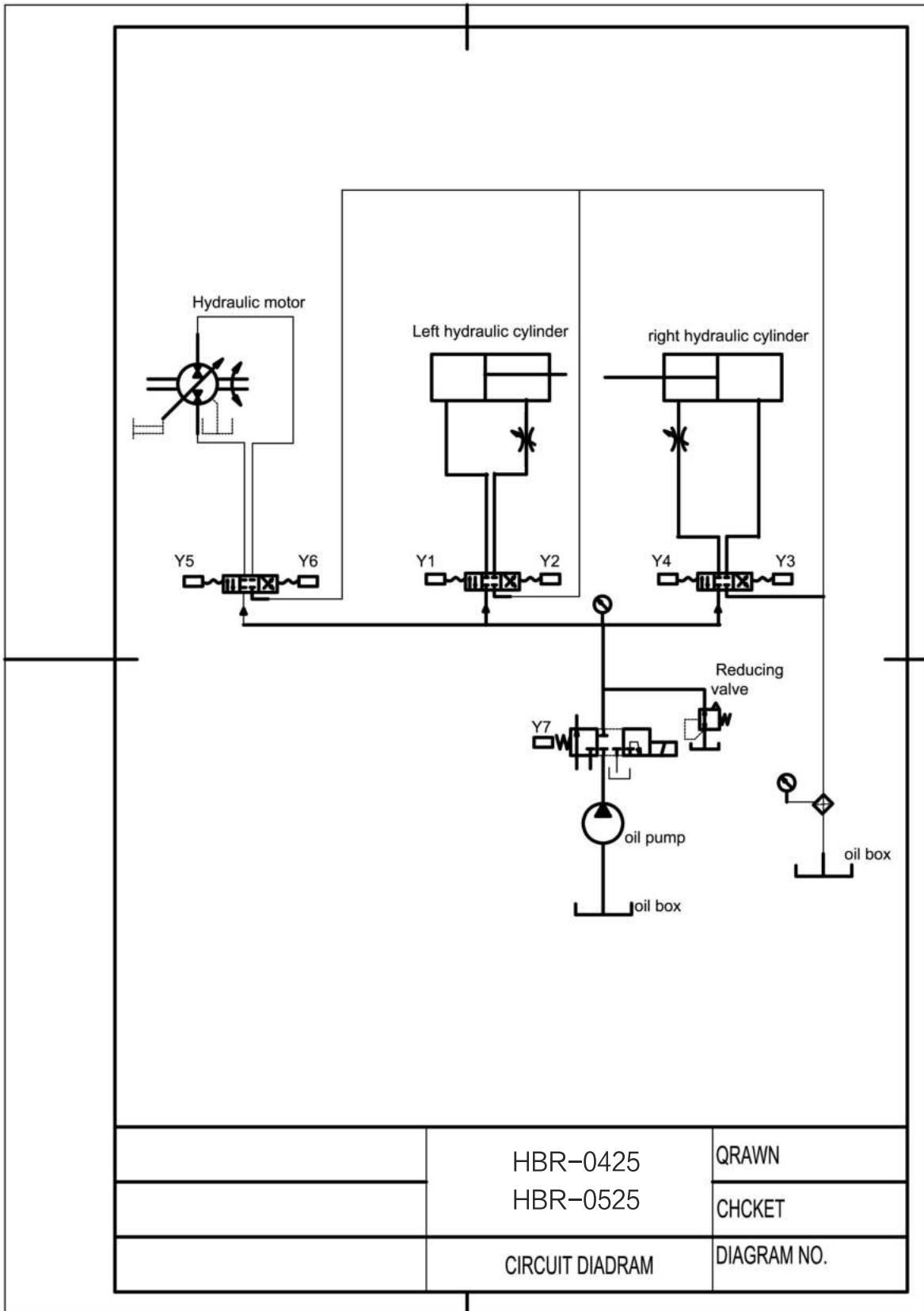


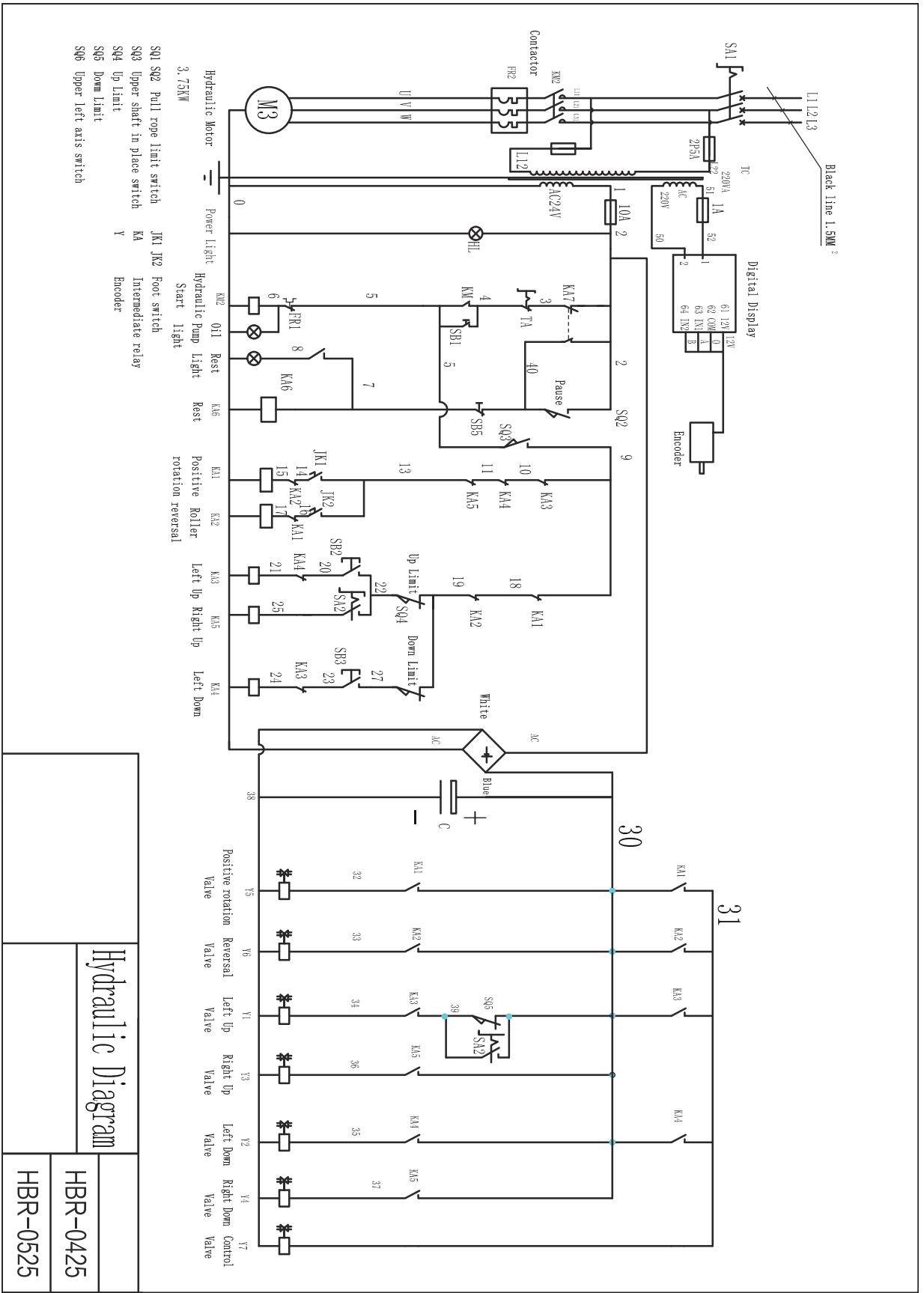
**TROUBLESHOOTING FOR GMC HBR-0525 SERIES HYDRAULIC ROLLS**

**Call GMC Service at 909-947-7787**

<b>PROBLEM</b>	<b>SOLUTION</b>
The motor runs and no function	Check and make sure the motor rotation is correct
	Check the power voltage, 220V or 440V, +- 10%
	Voltage can not be lower than 208V
The rolls do not turn	Check and make sure the motor rotation correct
	On the control foot pedal, if the reset push button lights on, push it off
	The safety limit switch for the top roller is off position, need to reset it back, located inside the left gear cover
Top roller can not push back	Need to jog the foot pedal to turn the rolls a little bit because the driven gears are not engaged well
Bending roll does not parallel move up/down	Make sure to shift the selection switch to bending roll parallel movement
	Move the bending roll all the way up and then all the way down a few times to make the roll parallel
Bending roll does not tilt	Check the selection switch for bending roll tilting
	Check the solenoid valve for bending roll titling
Bending roll tilt but does not come back up	Use screwdriver to push and hold the core shaft on Y2 solenoid valve, meanwhile press and hold the green button to let the bending roll come back to parallel, make sure the tilting switch is on the tilt mode
Push or pull the safety cable but do not shut down the machine	Check the limit switch for the safety cable to make sure the distance is correct
The digital display number does not change when the bending roll moves up or down	The chain for the encoder is out of place
	Display wires may be loose or display is bad
	The encoder is bad
How to make cone	Tilt the bending roll and use the cone attachment
How to limit the flat spot	Make sure the pinch roll can not touch the material, need a little gap
	Roll the material one pass, then slip over the material and roll second pass, and repeat to make a round part
How to change hydraulic oil	Drain the old hydraulic oil then clean the filter inside the tank
	Replace the outside fine filter
	Clean the oil tank
Material has cracking waves	Make sure the pinch roll isn't touching the material, needs a little gap

# VI. HYDRAULIC DRAWING AND ELECTRIC DRAWING





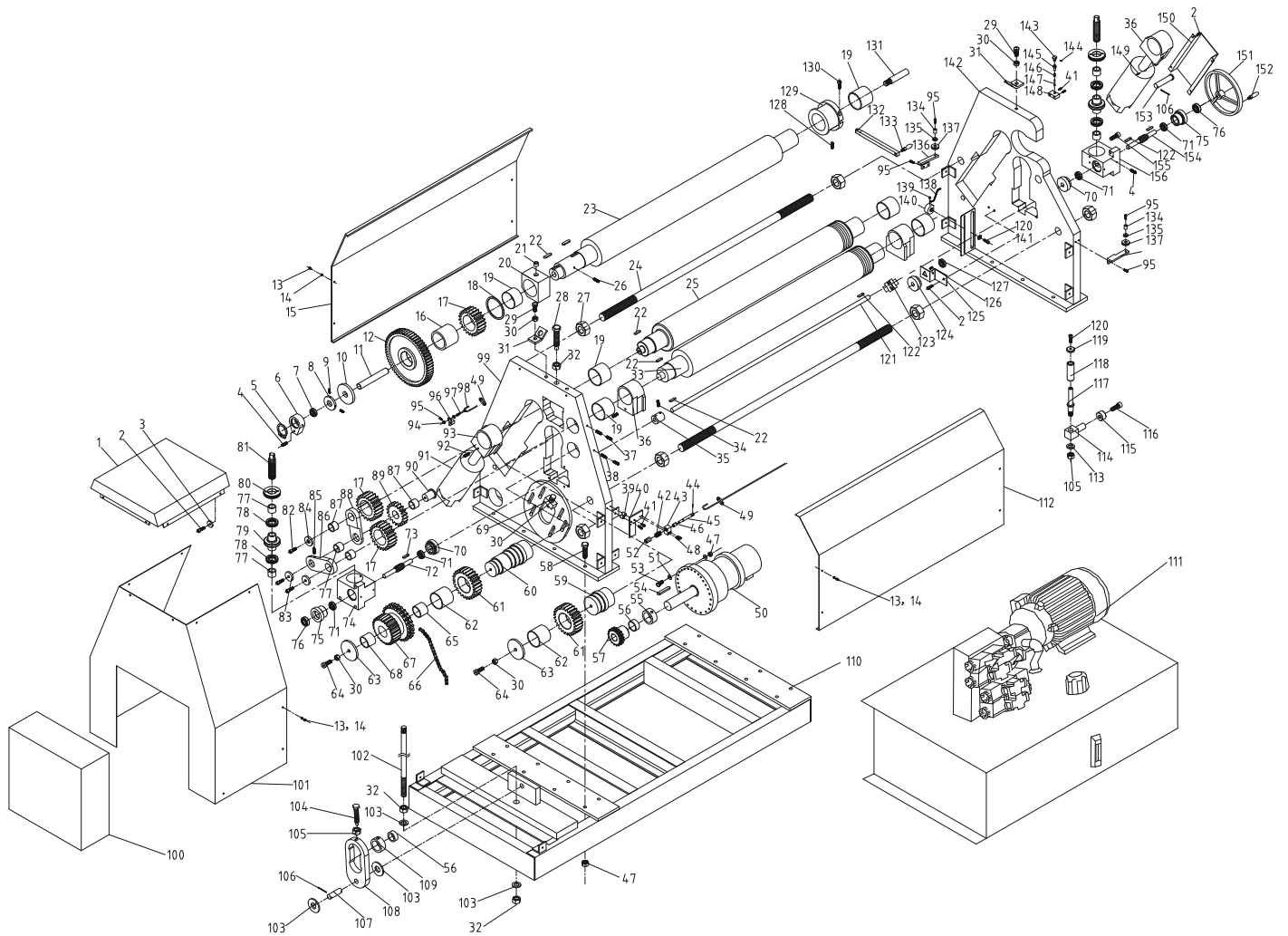
## VII PARTS LIST

Part #	Description	Size	Q'ty	Part #	Description		Q'ty
1	Upper Protecting Cover		1	39	Spacer Bush		2
2	Bolt	M6X16	8	40	Junction Plate	M6X35	1
3	Dishing Spring	A12.5-1	2	41	Screw		4
4	Holding screw	M8X8	7	42	Compression Spring		1
5	Spring Retainer ring	55	1	43	Block		1
6	Permanent seat		1	44	Spring Pin	3X16	1
7	Joint bearing		1	45	Small Shaft		1
8	End cover		1	46	Bush		1
9	Holding cover M8X20	M8X20	2	47	Nut	M12	22
10	End cover		1	48	Screw	M5X25	2
11	Spindle		1	49	Cable Clamp	M3	2
12	Gear (HER-1300X6.5)	5 M, 60 T	1	50	Decelerator		1
	Gear (HER-1550X6.5)	5M, 70T	1				
	Gear (HER-2070X6.5)	5M, 70T	1				
	Gear (HER-2500X4.0)	5 M, 70T	1				
13	Socket Head Screw	M6X10	21	51	Dishing Spring	A25	12
14	Internal-tooth Washer	6	21	52	Pressing Cover		1
15	Tailgate		1	53	Bolt	M12X50	6
16	Spacer Bush		1	54	Key	14X60	1
17	Gear (HER-1300X6.5)	6M,22T	3	55	Spacer Bush		1
	Gear (HER-1550X6.5)	6M,27T	3				
	Gear (HER-2070X6.5)	6M,27T	3				
	Gear (HER-2500X4.0)	6M,22T	3				
18	Mat		1	56	Bush		2
19	Bush		6	57	Small chain wheel	15T	1
20	Adjusting block		1	58	Bolt	M12X80	16
21	Bush		1	59	Spindle		1
22	Key	16X50	4	60	Spindle		1
23	Upper Spindle		1	61	Gear(HER-1300X6.5)	6M,25T	2
					Gear (HER-1550X6.5)	6M,30T	2
					Gear (HER-2070X6.5)	6M,30T	2
					Gear (HER-2500X4.0)	6M,25T	2
24	Spindle		2	62	Bush		2
25	Backshaft		1	63	End Cover		2
26	Holding Screw	M10X20	1	64	Bolt		2

27	Nut	M40X2	8	65	Bush		1
28	Bolt		1	66	Chain		1
29	Bolt	M16X35	2	67	Sprocket		1
30	Nut	M16	5	68	Bush		1
31	Lifting Plate		2	69	Bolt		1
32	Nut	M24	3	70	Adapter Sleeve		2
33	Lower Shaft		1	71	Bearing		4
34	Holding Screw	M8X10	2	72	Endless screw		1
35	Adapter Sleeve		1	73	Key	6X30	2
36	Adjusting Block		2	74	Worm Gear Box		1
37	Holding Screw	M10X25	2	75	Adapter Sleeve		2
38	Holding Screw	M10X35	2	76	Bearing		2
77	Bush		5	117	Spindle		1
78	Bearing		4	118	Bush		1
79	Worm Gear		2	119	End Cover		1
80	End Cover		2	120	Bolt	M10X20	2
81	Screw Rod		2	121	Connecting Shaft		1
82	Screw	M12X25	3	122	Key	6X25	2
83	Mat		1	123	Shaft Coupling		1
84	Mat		2	124	Encoder		1
85	Holding Screw	M10X16	1	125	Fixed Tray		1
86	Junction Plate		1	126	Bolt	M4X8	3
87	Bush		3	127	Small Chain Wheel		1
88	Connecting Plate		1	128	Toggle Screw	M10X17	1
89	Gear(HER-1300X6.5)	6M,20T	1	129	Lock Sleeve		1
	Gear (HER-1550X6.5)	6M,14T	1				
	Gear (HER-2070X6.5)	6M,20T	1				
	Gear (HER-2500X4.0)	6M,20T	1				
90	Small Shaft		1	130	Screw	M8X35	1
91	Hydraulic Cylinder		2	131	Handle Lever		1
92	Holding Screw	M10X50	4	132	Tie Rod		1
93	Adjusting Block		2	133	Handle		1
94	Nut	M5	2	134	Bush		2
95	Bolt	M6X20	7	135	Bearing		2
96	Stand		1	136	Stand		1
97	Eyelet Bolt	M6X60	1	137	Idler wheel		2
98	Cable Wire		1	138	Chain Wheel		1
99	Left Stand		1	139	Screw	M3X16	1



100	Electric Box		1	140	Slide Block		1
101	Shield		1	141	Washer	10	1
102	Tie Rod		1	142	Right Stand		
103	Washer	24	4	143	Handle		1
104	Bolt		1	144	Spring Pin	2X10	1
104	Bolt		1	144	Spring Pin	2X10	1
105	Nut	M20	2	145	Connecting Bolt		1
106	Split Pin	3X50	4	146	Compression Spring		1
107	Small Shaft		1	147	Small Spindle		1
108	Connecting Plate		1	148	Link Block		1
109	Bush		1	149	Screw	M3X20	1
110	Base		1	150	Shield of Hydraulic Cylinder		1
111	Hydraulic Station		1	151	Handle Wheel		1
112	Front Stop Plate		1	152	Handle		1
113	Washer	20	1	153	Fixed Axis of Hydraulic Cylinder		2
114	Link Block		1	154	Endless Screw		1
115	Adapter Sleeve		1	155	Screw	M10X50	6
116	Screw	M16X35	1	156	Worm Gear Box		1



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