

#GM-06262019



HYDRAULIC BOX & PAN BRAKES

Model: HBB-0412 / HBB-0410

HBB-0612 / HBB-0610

HBB-0812 / HBB-0810

HBB-1014 / HBB-1010

Operation & Parts Manual



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CAUTION

THIS IS VERY DANGEROUS MACHINE.

NEVER PLACE HANDS OR ANY PART OF BODY IN THE MACHINE. BODILY INJURY COULD OCCUR. NEVER OPERATE THE MACHINE WITHOUT PROPER EYES AND BODY PROTECTION.

WARNING

WEARING PROPER APPAREL. Do not wear clothing, apparel or jewelry that can become entangled in moving parts. Always tie back or cover long hair. Wear non-slip footwear to avoid accidental slips, which could cause loss of workpiece control.

HAZARDOUS DUST. Dust created while using machinery may cause cancer, birth defects, or long-term respiratory damage. Be aware of dust hazards associated with each workpiece material, and always wear a NIOSH-approved respirator to reduce your risk.

HEARING PROTECTION. Always wear hearing protection when operating or observing loud machinery. Extended exposure to this noise without hearing protection can cause permanent hearing loss.

REMOVE ADJUSTING TOOLS. Tools left on machinery can become dangerous projectiles upon startup. Never leave chuck keys, wrenches, or any other tools on machine. Always verify removal before starting!

USE CORRECT TOOL FOR THE JOB. Only use this tool for its intended purpose—do not force it or an attachment to do a job for which it was not designed. Never make unapproved modifications—modifying tool or using it differently than intended may result in malfunction or mechanical failure that can lead to personal injury or death!

AWKWARD POSITIONS. Keep proper footing and balance at all times when operating machine. Do not overreach! Avoid awkward hand positions that make workpiece control difficult or increase the risk of accidental injury.

CHILDREN & BYSTANDERS. Keep children and bystanders at a safe distance from the work area. Stop using machine if they become a distraction.

GUARDS & COVERS. Guards and covers reduce accidental contact with moving parts or flying debris. Make sure they are properly installed, undamaged, and working correctly.

FORCING MACHINERY. Do not force machine. It will do the job safer and better at the rate for which it was designed.

NEVER STAND ON MACHINE. Serious injury may occur if machine is tipped or if the cutting tool is unintentionally contacted.

STABLE MACHINE. Unexpected movement during operation greatly increases risk of injury or loss of control. Before starting, verify machine is stable and mobile base (if used) is locked.

USE RECOMMENDED ACCESSORIES. Consult this owner's manual or the manufacturer for recommended accessories. Using improper accessories will increase the risk of serious injury.

UNATTENDED OPERATION. To reduce the risk of accidental injury, turn machine **OFF** and ensure all moving parts completely stop before walking away. Never leave machine running while unattended.

MAINTAIN WITH CARE. Follow all maintenance instructions and lubrication schedules to keep machine in good working condition. A machine that is improperly maintained could malfunction, leading to serious personal injury or death.

CHECK DAMAGED PARTS. Regularly inspect machine for any condition that may affect safe operation. Immediately repair or replace damaged or mis-adjusted parts before operating machine.

MAINTAIN POWER CORDS. When disconnecting cord-connected machines from power, grab and pull the plug—NOT the cord. Pulling the cord may damage the wires inside. Do not handle cord/plug with wet hands. Avoid cord damage by keeping it away from heated surfaces, high traffic areas, harsh chemicals, and wet/damp locations.

EXPERIENCING DIFFICULTIES. If at any time you experience difficulties performing the intended operation, stop using the machine! Contact our Technical Support

I. Machine construction & Application

This machine is driven by hydraulic system, and all steel welded machine construction with high intensity, good appearance, compact, safe and reliable performance. This machine is suitable for the sheet metal processing plants, electrical protection, automobile manufacturing and other thin sheet metal bending processing, etc.

Need to fill up the oil tank with Shell #68HD hydraulic oil or equivalent. Please make sure $\frac{3}{4}$ full of the tank. Need to change hydraulic oil every 3 months or sooner subject to how many hours the machine in use every day.

II. Specifications

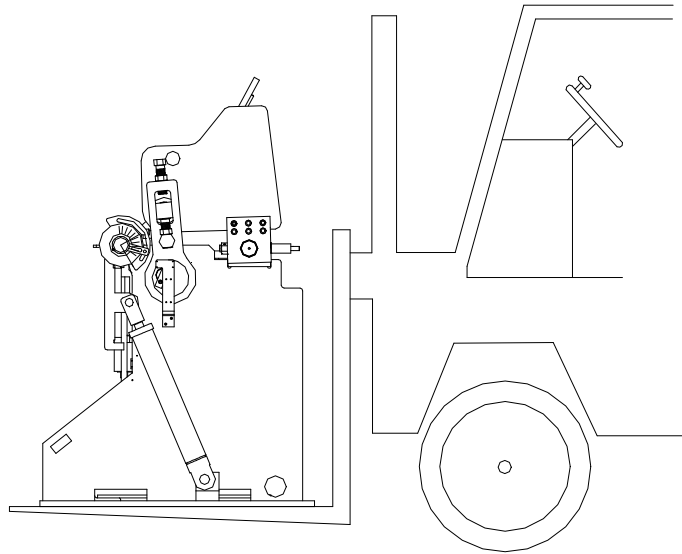
Model	HBB-0412 HBB-0410	HBB-0612 HBB-0610	HBB-0812 HBB-0810	HBB-1014 HBB-1010
Max.bending thickness	HBB-0412:12Ga. HBB-0410: 10Ga.	HBB-0612:12Ga HBB-0610:10Ga	HBB-0812: 12Ga HBB-0810: 10Ga	HBB-1014:14Ga HBB-1010:10Ga
Max.bending width	48" (1220mm)	72" (1830mm)	96" (2440mm)	120"(3050mm)
Angle(°),degree	0 ~135	0 ~135	0 ~135	0 ~135
Hydraulic cylinder stroke = clamp opening	3"	3"	3"	3"
Hydraulic cylinder pressure (MP)	15	15	15	15
Hydraulic cylinder speed(mm/s)	50-58	50-85	50-85	50-75
Motor working pressure (Mp)	12	12	9-13	16
Motor Speed range(rpm)	<30	<30	<30	<30
Motor power(HP)	5HP	5HP	7-1/2HP	10HP
N.W./G.W. LBS	4310 / 4630	5100/5300	6280 /6620	7510/37950
Packing size, inch	81x42x67	105x42x67	128x42x67	153x42x67

III. Transportation and Installation

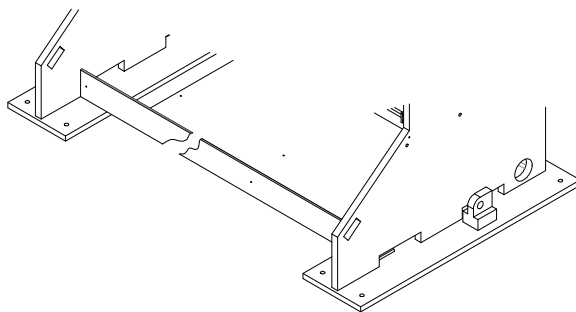
Crane or forklift is recommended

To move the machine, please move with forklift slowly and carefully, especially pay attention.

The machine is lifted by crane or moved by forklift after the removal of pallet.



2、 Installation : When installing machine should be installed in a horizontal on the bottom of foundation, level the machine very well, using leveling pads or foundation bolts.



IV. Safety inspection and Safety rules during and/or before operation

To ensure safety, it is necessary to do the following inspections for this machine after installation.

Check if the transportation procedure has influenced the accuracy and functions of the machine.

Check if the foundation of the machine is appropriate.

Check if the machine's main power switch should have earth wiring connected.

Use the multimeter to check the stability of the three-phase voltage, and the low voltage must be the range of 208V-240V or high voltage must be 440V-480V, can not use voltage higher than 480V.

Check if the control panel function and push button are functioning

Check emergency stop function.

Check if safety protection accessories are functioning well

Check if other accessories, including hydraulic and pneumatic ones, are connected well (including transformer etc.)

Check if the oil amount indicator and air pressure indicator are normal.

Make sure no obstacle is around machine and control system.

Make sure no personnel are in dangerous area.

Tools and any unnecessary items are not allowed on the machine, moving parts, or similar locations.

Before pressing/switching any button/switch always confirm that the button/switch is the correct one and never touch a switch accidentally. Malfunction and potential danger might result.

Do not operate when wearing gloves or loose clothing. Malfunction and potential danger might result.

Do not touch switches with wet hands, an electric shock could occur.

If a work requires two or more operators, the cooperation among each operator must be well organized, every step of each operator should be clarified to avoid potential danger.

Tools should be consisting with the machine's specifications, such as dimensions, weight and types. Grip workpieces carefully to minimize movement and vibration between workpieces. Too much movement/vibration might result in injuries of personnel, or damage the machine or workpiece.

Stop the machine before replacing workpiece, and reserve sufficient distance between workpiece and machine. Safety for the electrical connection/disconnection

Electrical connection:

A cable with four wires is supplied to connect your machine into the 3 phase power supply. The exact power source voltage, frequency, and number of phase shall be checked according to the installation diagram and circuit diagram. The correct direction of main motor should be checked after connecting.

Electrical disconnection:

Be sure to disconnect this machine from power source, when you want to stop the job for maintenance or adjustment.

Grounding

The grounding of this model is carried out by connecting the yellow/green terminal of supply cable to the grounding terminal of power source. Be sure to ground your machine before connecting machine to power source in any situation.

Warning!

Do not disconnect grounding terminal before disconnecting power source.

Description for the safety function of this machine

The following safety functions are equipped with this machine. Be sure to check and ensure the correct function before you start to operate your machine:

The emergency stop device:

The machine is designed to be immediately stopped under emergency situation. As soon as this device is actuated, any movement will be stopped in a short time after the actuation of emergency stop switch (E-stop).

Be sure to check that machine action will stop immediately after this button is pressed and will not cause any action when this button is disengaged.

V. Set-up and brief operation

1. Fill up oil tank to 2/3 full, using Hydraulic oil Shell # 68HD or equivalent in summer and Lighter hydraulic oil in winter.

Caution: Must remain the oil filter inside the tank input hole, do not remove it to avoid the oil dirty things to go into the oil tank.



2. Need to change hydraulic oil every 3-6 months. Watch the oil color on the oil sight gauge, when the oil color becomes dark, that is the time to change oil.
3. Make sure the machine voltage 220V or 440V, check the yellow tag on the machine. On the pick tail, (3) black wires for hot and yellow/green wire for ground.



4. when turn on the machine, check the motor rotation first, there is motor rotation arrow on the motor cover. If the rotation wrong, interchange any of two hot wires to change the motor rotation, otherwise the machine can not run.

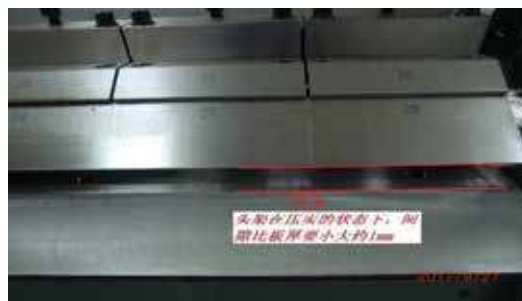


5. Set up clamping:

On below pic 1, shows the device for clamping clearance set up, loosen the nut and turn the top bolt and move the clamping beam up/down, and look at the scale, and make sure the both sides of the clamping are set up on the same scale lines. The clamping clearance is about 70% of the material thickness. There is a sticker on the clamping device, which shows roughly clamping clearance. For example, the material thickness is 10Ga., the clamping clearance is 12Ga.=0.1”

To double check the clamping clearance, press and hold the clamping foot pedal to let the clamping all the way down, and then measure the clamping clearance with feeler gauge to see if it is 0.1”

6. Set up the upper beam distance from the finger edge to the nose bar



This distance has a ratio 1.5-2.0 x material thickness, based on different material.

For example, if the material is 10Ga mild steel, this distance is 0.20"- 0.25"

There are two handwheels on the both sides, move the handwheels to set up the distance.

Please make sure the right & left sides have the same distance, do not need to measure the middle area.



7. Operation

a. Turn on the main power switch



b. The power indicator light on, press the Pump Start button , and let the pump run about 5 minutes, then operate the machine.



c. To set up the bending degree, loosen the black locking handle, and move the stopper to the degree you need and tighten down the locking handle. The degree is only roughly set up, which depends on the different material and thickness, the material has different bounce-back tension.

d. on the inch bending mode, turn the mode selection switch to inch, press and hold the unclamp foot pedal to raise the upper beam, insert the material, and press and hold the clamp foot pedal to clamp the material.





Pull up and hold the toggle switch (circled in red), the bending leaf lifts up, when release the toggle switch, the bending leaf stops. Push down the toggle switch, the bending leaf goes down.



- e. On the auto bending mode, turn the mode selection switch to inch, press and hold the unclamp foot pedal to raise the upper beam, insert the material, and press and hold the clamp foot pedal to clamp the material tightly. Then press and hold the BEND foot pedal, the bending leaf lifts up, bend the material, and return back down to the bottom position, make one cycle bend.

8. Troubleshooting

- a. If the bending degree is left side bigger than right side, need to move the left side of the beam back a little bit to get compensation
- b. If the bending degree is bigger in the middle of the material, need to adjust the tension nut on the bending leaf, see picture 1 on left, and if needed, adjust the tension nuts on the top of the beam , see picture 2



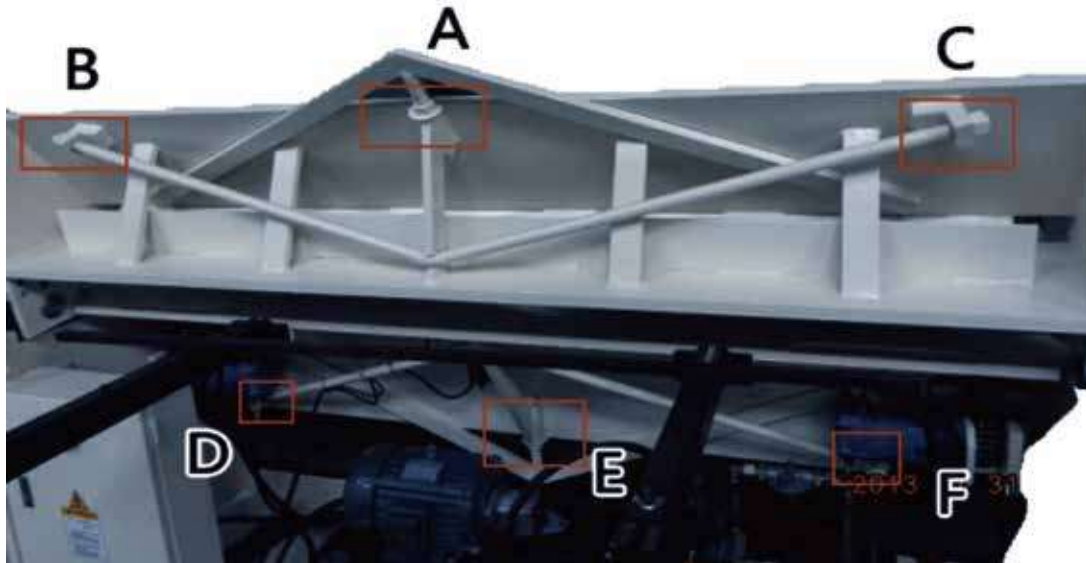
VI. Troubleshooting

<i>TROUBLESHOOTING FOR HBB-1010 SERIES</i>	
PROBLEM	SOLUTION
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 clamping does not clamp	Check the selection switch of auto and inch modes
	Press down the clamping foot pedal, and check the solenoid valve for the clamping to see if the light is on, if light is not on, check the wires between solenoid valve and relay KA3 & KA6
	If the solenoid light is on, please clean the solenoid valve
After clamping;the bending leaf does not lift up	Check the limit switch on the rear ring, located in the middle of the rod, to make sure the limit switch is completely pressed down
	The fingers clearance is too small, need to set up correctly
When bending leaf returns down, and no slow approaching speed and hit	Adjust the check valve and turn the valve knob clockwise a little
	Check the bottom limit switch for the bending leaf return position, make sure the limit switch is solidly pressed down, at this time, if the solenoid valve light is not on, check the solenoid valve and limit switch, and wires between
	If the solenoid valve light is on, please clean the solenoid valve
When material gets over bent in the middle, left or right side	If the overbend is on the left side of the material, it needs to be moved to the left side of the upper beam, backward the material a little bit
	If the overbend is on right side of the material, need to move the right side of the upper beam backward the material a little bit
	If the overbend is in middle of the material, need to tight down just a little the tension nut on top of upper beam, or tight down a little the tension nut on the bending leaf to get the angle compensation
When bending, the overload relay	Check the overload relay # FR1, and press reset button, and higher the Amp amount
When bending the material, the material moves	The clamping gap is too big, normal clamping gap is about 70% of the material thickness, i.e. 12Ga. Material needs clamping gap about 0.07”
	Check the clamping device to see if the camlock is on the locking position, i.e. the cam high point is on top, if the clamping device is not on the locking position, need to re position the middle ring on the long rear rod, to make sure that bolt on this ring solid touch the clamping limit switch
When bending the material, the material moves	Check the middle ring on the long rear rod, and make sure it is tightened on the rod, and make sure the locking bolts sit in the small dent of the long rod
When the bending leaf lifts up, but stays in the air	Check the solenoid valve for clamping to see if the lights on, if not on, check the relays KA5 & KA7 inside the electrical cabinet , make sure all relays lights are on and in good connection
	Check the solenoid valve for clamping to see if the lights on, if lights are on, that means the solenoid valve is jammed, and need to remove the clamping solenoid valve off, and air blow all the holes very well, do not lose the O rings on all holes, then put the solenoid valve back on the machine
For bending 10Ga. Mild steel material, how much the clamping gap needs to set up	The clamping gap is about 70% of the material thickness, i.e. 12Ga. Material needs clamping gap about 0.07”
For bending 10Ga. Mild steel, how far to move the fingers back	The distance to move the fingers back is about the ratio x 1.2 of the material thickness, i.e. bending 10Ga. Mild steel, The distance to move the fingers back is
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

VII. Table crowning compensation

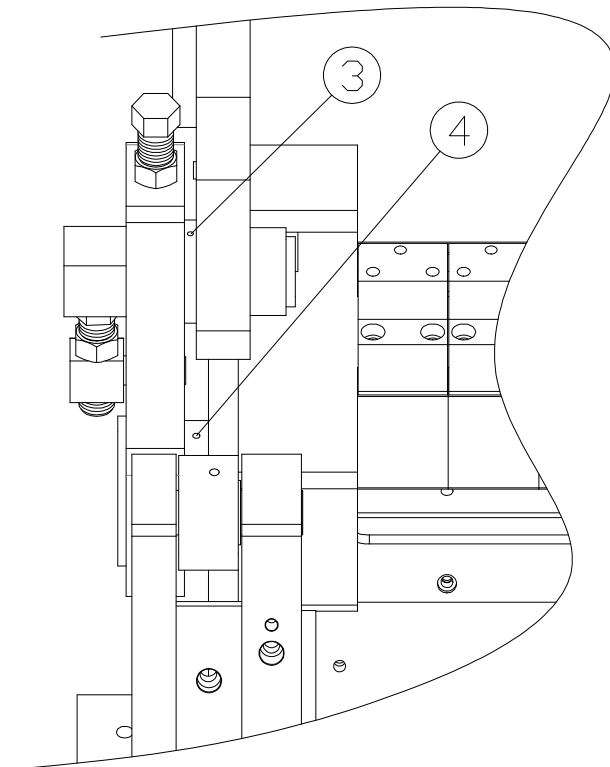
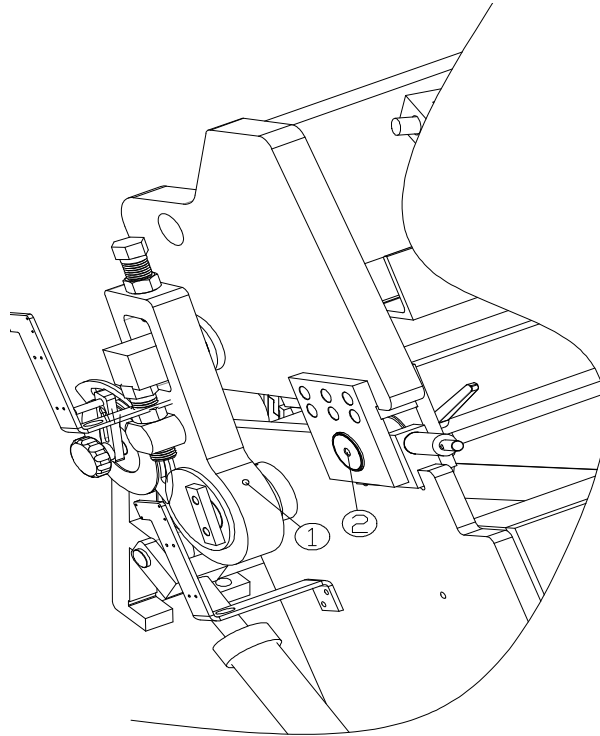
If the angles of work-piece two sides are both on 90 degree, but middle side only 89 degree, Micro adjusting screws at bending left and bottom beam for compensate the middle has the same angle.

- 1) Open the top beam, and then turn off the machine power
- 2) Tight screws A-G at upper beam and folding leaf, and make screw tight following different work-piece crowing situation.

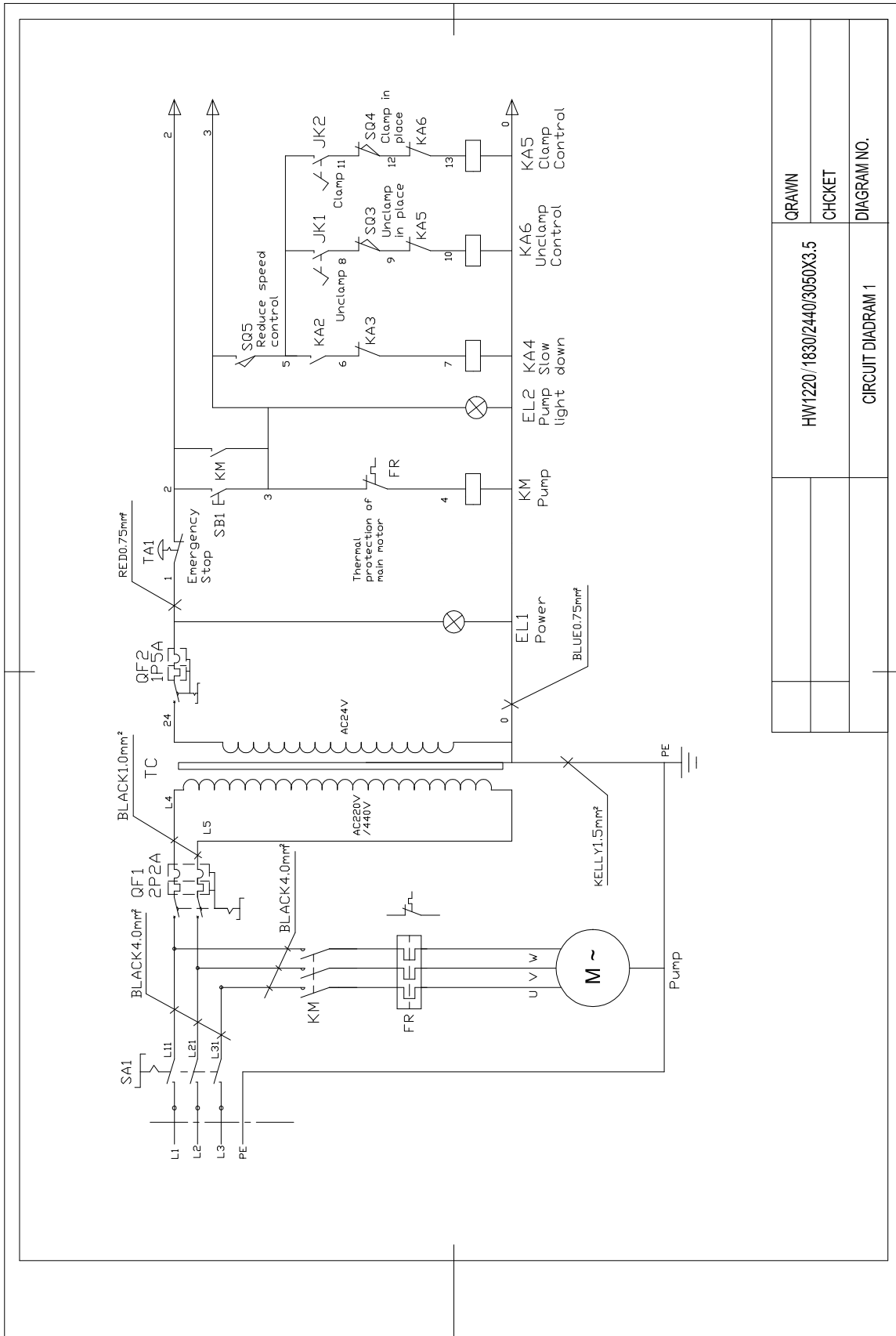


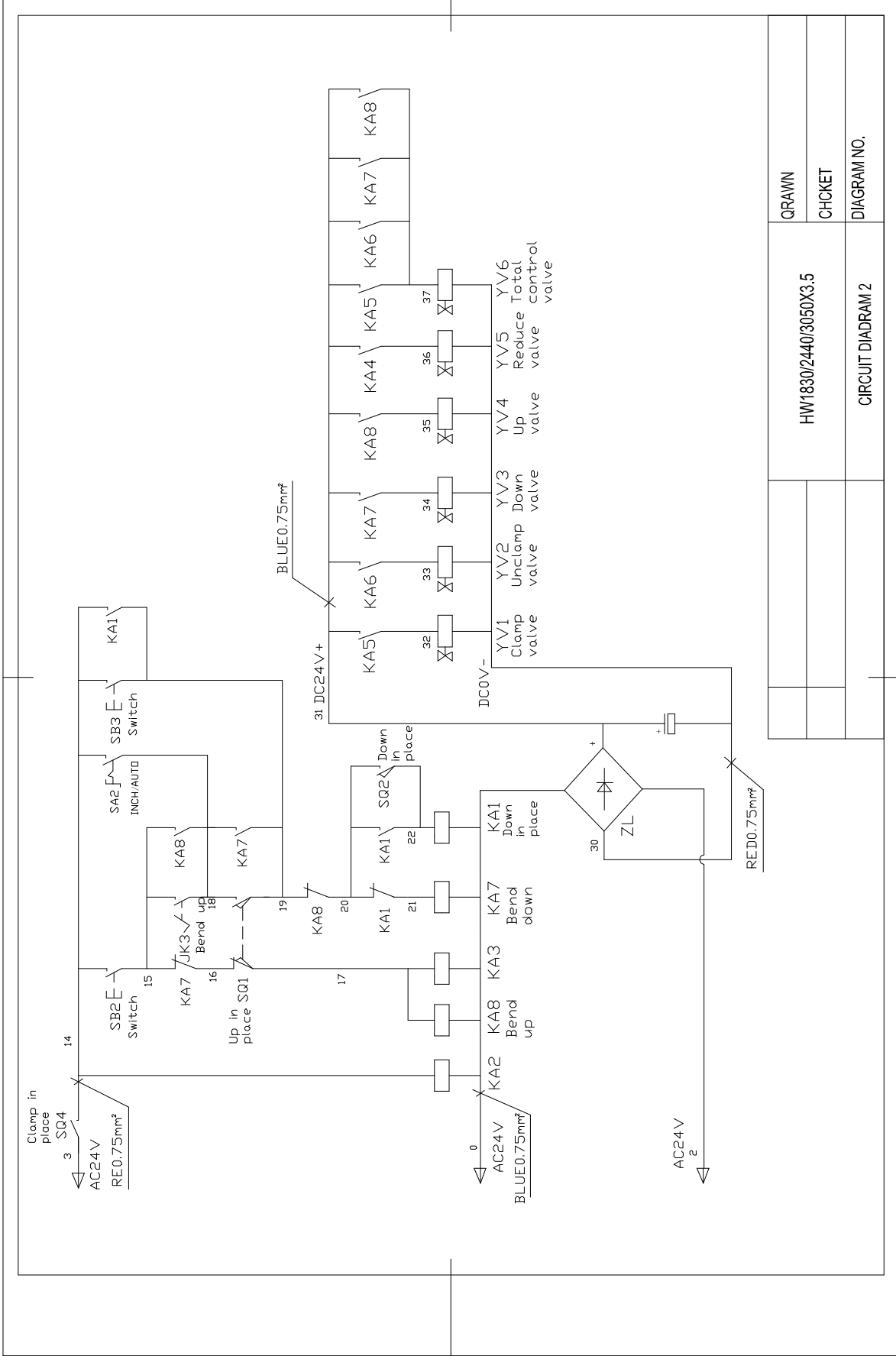
VIII. Lubrication

Please lubricate the following oil fittings ① ② ③ ④ four times a day, using lubrication oil # Shell Tonna-33



IX. Electrical Diagrams



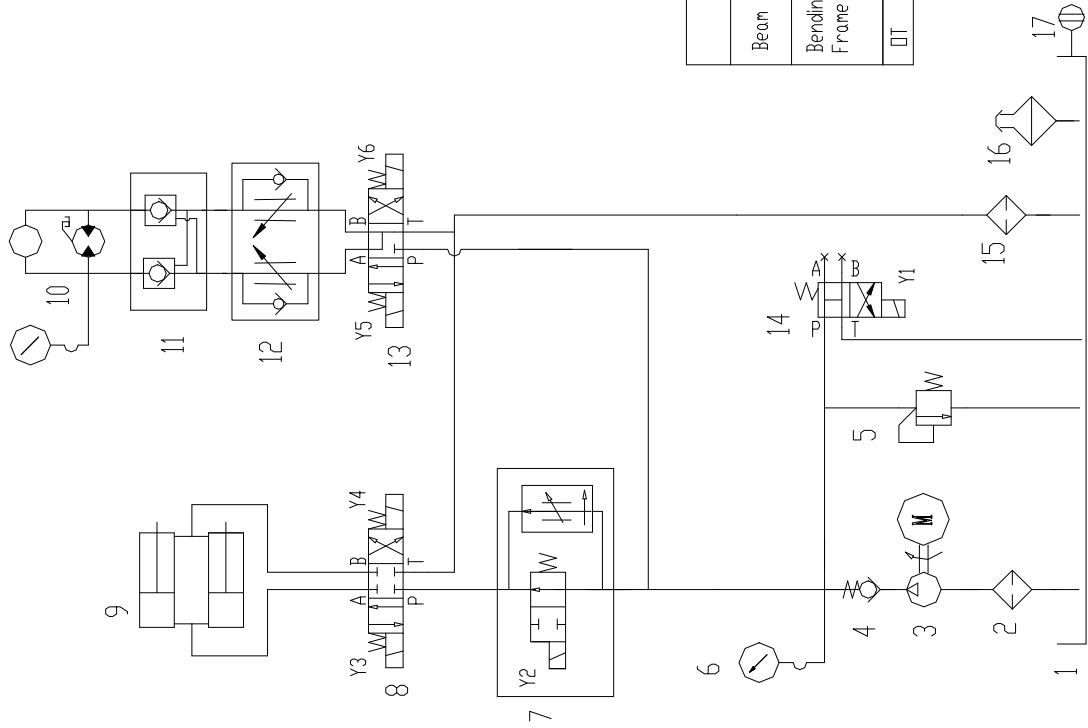


QRAWN	HW1830/2440/3050X3.5
CHKET	
DIAGRAM NO.	CIRCUIT DIADRAM 2

X. Hydraulic Diagram

Specification Request

- 1 Hydraulic Station Specification:
- 2 Voltage frequency requested by customer
- 3 Control Voltage for Reversing Valve: DC24V
- 4 Oil: Antiwear hydraulic Oil
- 5 System Temperature: 5-55°
- 6 Pressure: 8mpa



No.	Name	Qty	Remark
17	Content Gage	1	
16	Air Filter	1	
15	Filter	1	
14	Reversing Valve	1	
13	Reversing Valve	1	
12	One-Way Throttle Valve	1	
11	Hydraulic one-way Valve	1	
10	Motor For Hydraulic Station	2	
9	Oil Cylinder	2	
8	Reversing Valve	1	
7	Speed Regulation Valve	1	
6	Pressure Gage	1	
5	Overflow Valve	1	
4	One-Way Valve	1	
3	Pump	1	
2	Filter	1	
1	Hydraulic Station	1	

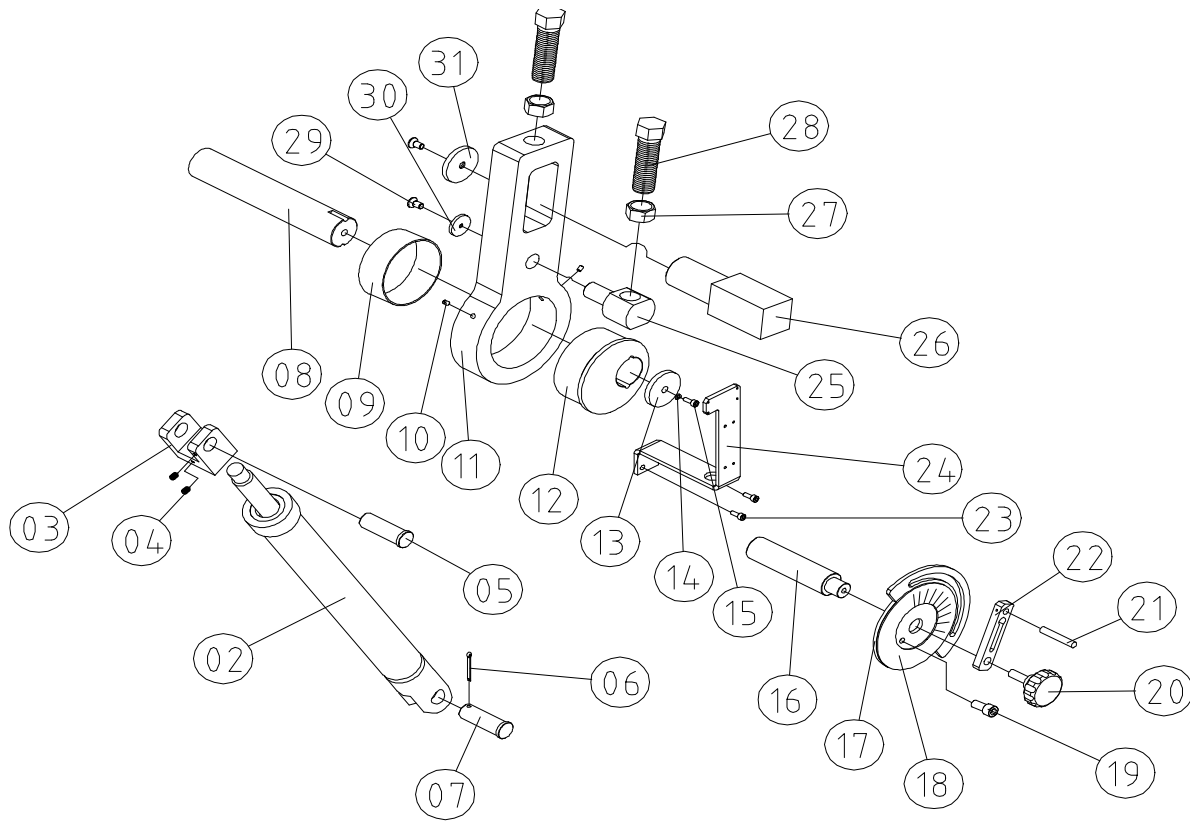
	Y1	Y2	Y3	Y4	Y5	Y6
Beam	+				+	
Beam Down	+					
Beam Up	+					+
Bending Frame	+		+			
Return	+			+		
Down Slowly	+			+		
DT						

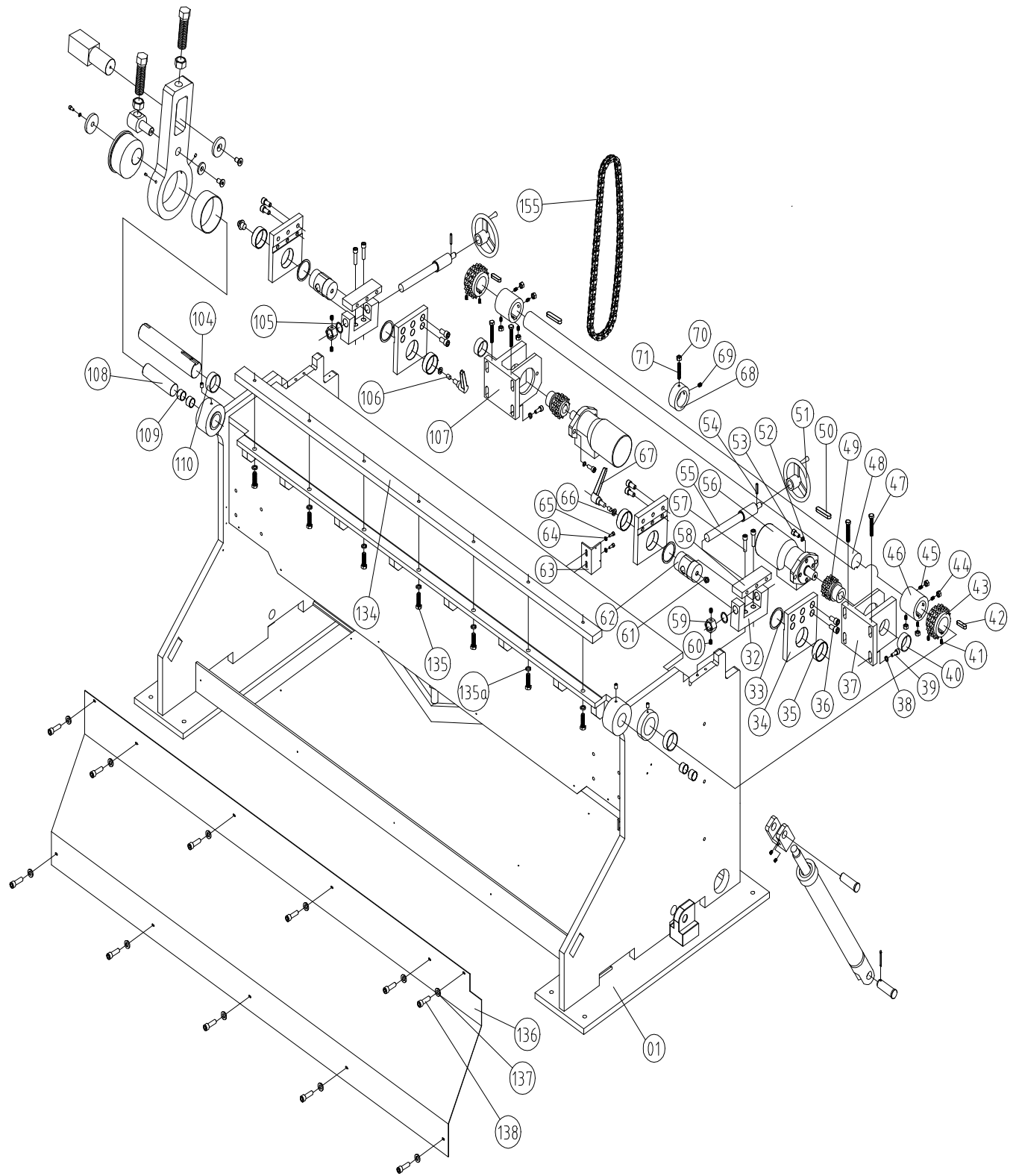
Hydraulic Diagram

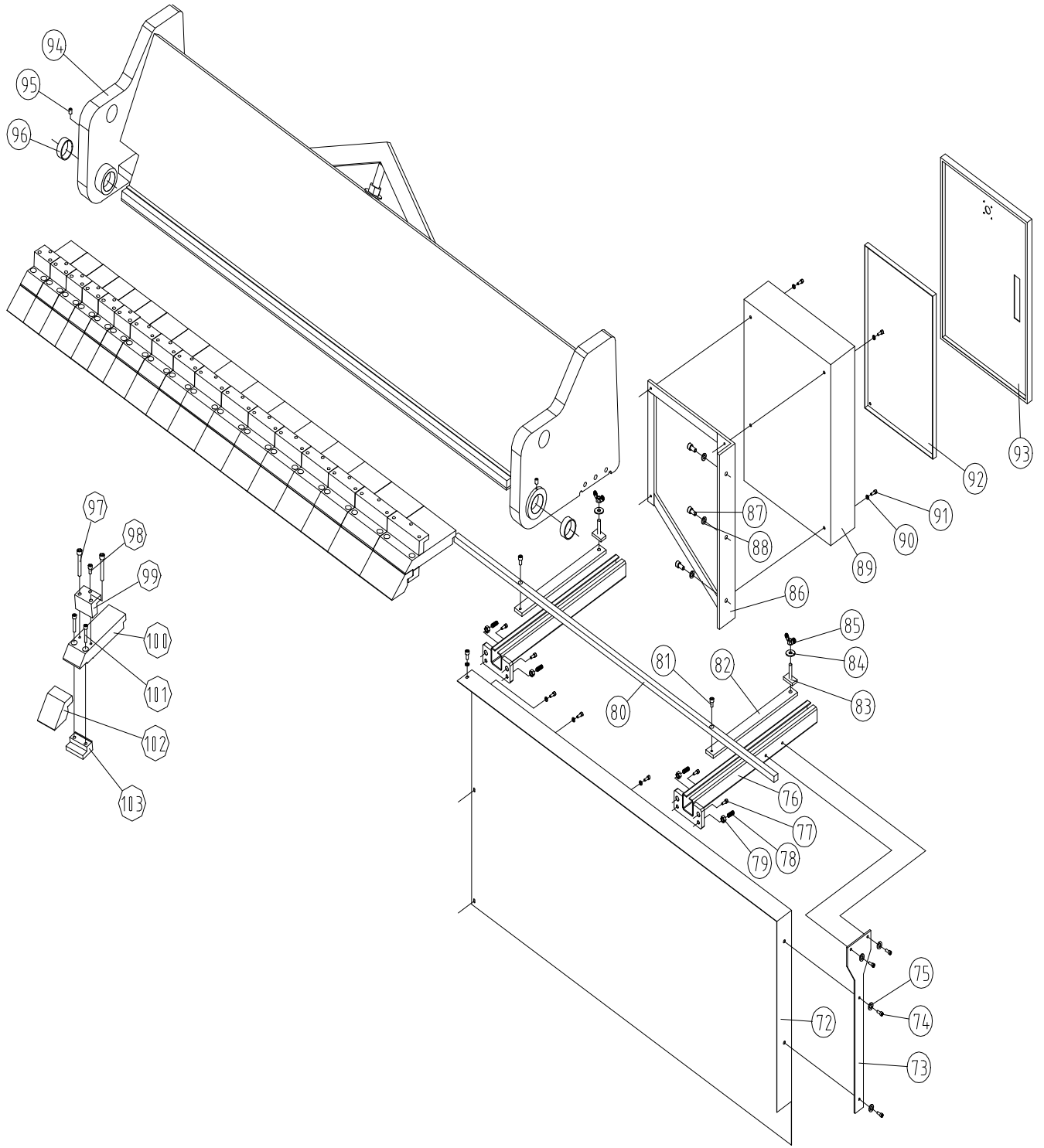
Hydraulic Bending Machine

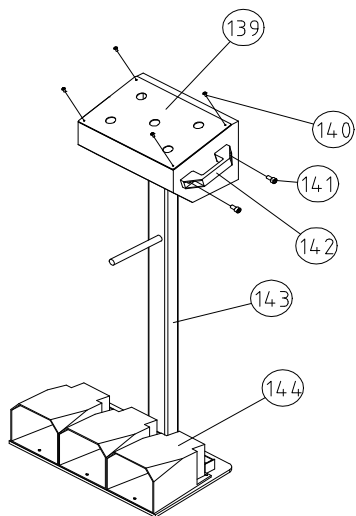
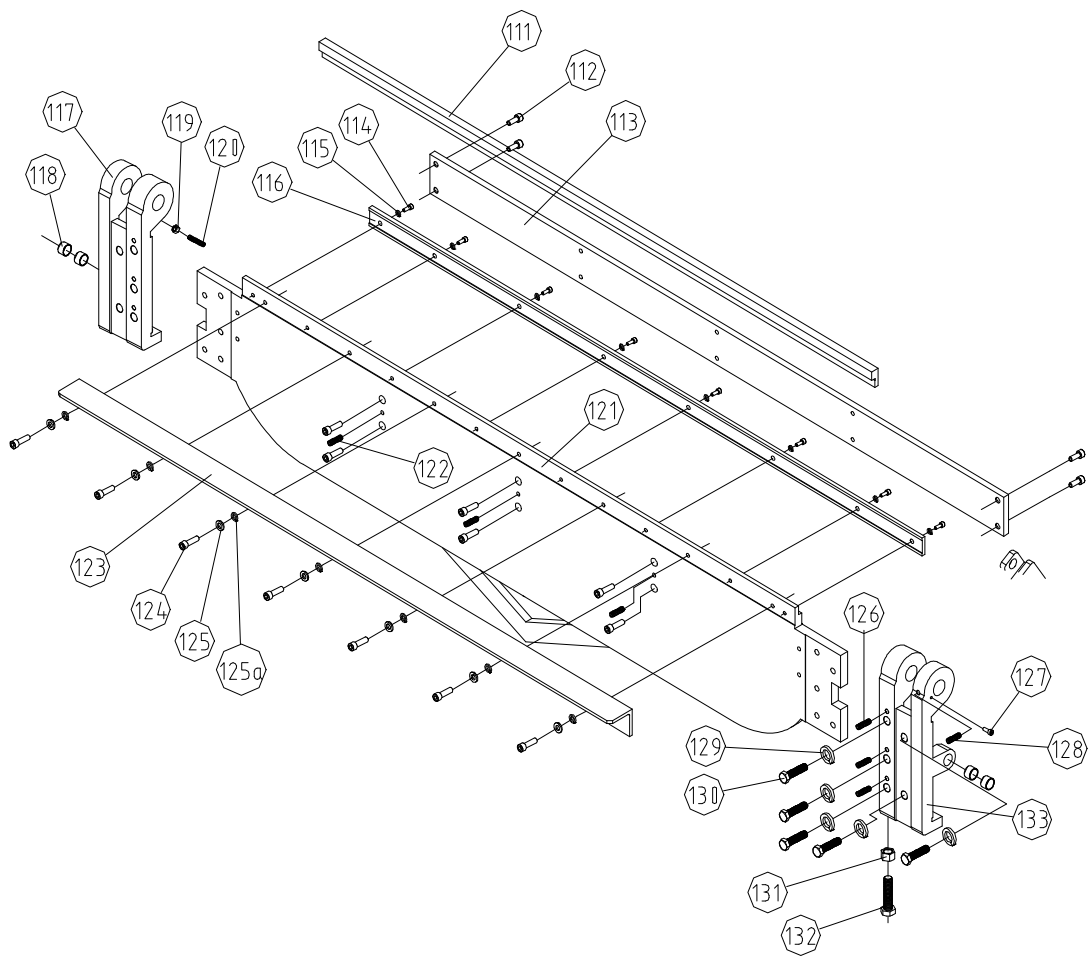
HW-Series

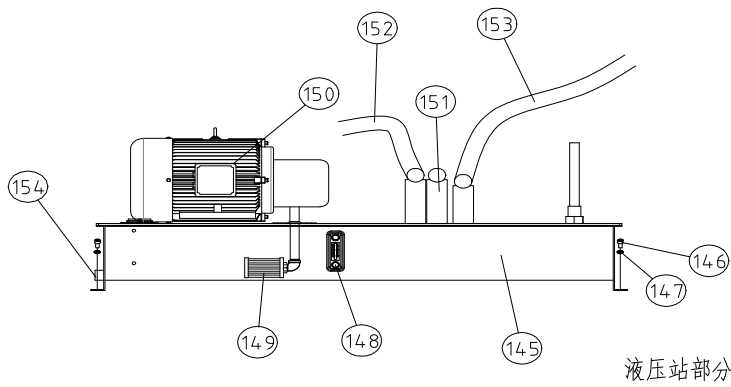
XI. Parts breakdown manual and parts list











No.	Desc.		Q'ty	Note
1	Body		1	
2	Hydraulic Cylinder		2	2pcs different
3	Connecting plate on hydraulic cylinder		2	
4	Six pyramid end screw set	M8X12	4	
5	Fixed upper pole on hydraulic cylinder		2	
6	cotter	4X40	2	
7	Fixed bottom pole on hydraulic cylinder		2	
8	eccentric disk shaft		2	
9	bush	12050	2	SF-1
10	oil cup	8	4	
11	Eccentric disc holder		2	
12	Eccentric disk		2	
13	Eccentric disk fixed plate		2	
14	Spring washer	12	2	
15	hexagon socket cap screws	M12X35	2	
16	Leaf beam right rotation shaft		1	
17	Angle plate		1	
18	Angle plate		1	
19	hexagon socket cap screws	M8X40	1	
20	handle	M10X30	1	
21	Round pin	10X60	1	
22	Angle rotation boards		1	
23	hexagon socket cap screws	M6X16	2	
24	Emergency stop stand		1	
25	Bolt seat		2	
26	Head frame shaft		2	

27	Hex nut		4	
28	Hex screw		4	
29	Hexagon socket countersunk head screws	M10X25	4	
30	cover		2	
31	cover		2	
32	U-block		2	
33	Spacer		4	
34	Side plate of U-block		4	
35	Bush	5520	4	SF-1
36	Hex cylinder head screw	M12X25	24	
37	Right motor seat		1	
38	Spring washer	12	8	
39	Hex cylinder head screw	M12X40	8	
40	Bush	4520	2	SF-1
41	Hexagon socket countersunk head screws	M8X12	4	
42	key	12X45	2	
43	Large chain wheel		2	
44	Screw	M10	8	
45	Inner hexagon socket set screw	M10X20	8	
46	Driven sleeve		2	
47	Hex bolt	M10X65	4	
48	Driven shaft		1	
49	Small chain wheel		2	
50	Key	14X70	2	
51	Handle wheel	Φ16X125	2	
52	Spring washer	12	4	
53	Hex cylinder head screw	M12X40	4	
54	Spring pin	6X32	2	
55	Lead screw		2	
56	motor		2	
57	Hex cylinder head screw	M10X40	4	
58	Plate		2	
59	Nut		2	
60	Inner hexagon socket set screw	M10X40	4	
61	Oil cup	M8X1	2	
62	shaft		2	
63	Emergency seat		2	
64	Flat washer	6	4	

65	Hex cylinder head screw	M6X16	4	
66	Flat washer	12	2	
67	Adjustable handle	M12X25	2	
68	Touch off cover		1	
69	Inner hexagon socket set screw	M10X12	1	
70	Nut	M10	1	
71	Hex.socker	M10X50	1	
72	Back liner insert		1	
73	tailgate stents		1	
74	hexagon socket cap screws	M6X16	8	
75	flat gasket	6	8	
76	Keep-off stents		2	
77	hexagon socket cap screws	M12X25	4	
78	Allen flat end set screws	M10X25	4	
79	nut	M10	4	
80	Keep-off square bar		1	
81	hexagon socket cap screws	M8X16	2	
82	striker plate		2	
83	Keep-off square bar fixing parts		2	
84	big washer	10	2	
85	butterfly nut	M10	2	
86	Electric box connection frame		1	
87	hexagon socket cap screws	M10X20	3	
88	flat washer	10	3	
89	Electrical box		1	
90	flat washer	6	4	
91	hexagon socket cap screws	M6X16	4	
92	Electric plate		1	
93	Electric box door		1	
94	Top rack		1	
95	Oil cup	M8X1	2	
96	bush	5020	4	SF-1
97	hexagon socket cap screws	M10X65	34	
98	hexagon socket cap screws	M12X25	17	
99	Upper blade pressure block		1set	
100	Lower blade		1set	
101	hexagon socket cap screws	M12X50	34	
102	Upper blade		1set	

103	Lower blade pressure block		1set	
104	Oil cup	M8X1	2	
105	Copper dash		4	
106	Nylon pressure block		2	
107	Left motor seat		1	
108	folding fan left shaft		1	
109	bush	3820	4	
110	bush	5020	2	SF-1
111	Bending plate banners		1	
112	hexagon socket cap screws	M12X40	10	
113	Bending boy reinforcing plate		1	
114	Hex bolt thread	M10X25	8	
115	standard spring washer	10	8	
116	Back bending plate		1	
117	Left connecting		1	
118	bush	3820	4	SF-1
119	nut	M10	1	
120	Hex bolt thread	M10X50	1	
121	Bending body		1	
122	Hex bolt thread	M12X40	3	
123	knife edge angle iron		1	
124	Hex bolt thread	M12X30	7	
125	Flat washer	12	7	
125a	standard spring washer	12	7	
126	flat end set screws	M12X40	6	
127	hexagon socket cap screws	M8X40	1	
128	Inner hexagon socket set screw	M12X35	2	
129	standard spring washer	16	10	
130	Hex bolt thread	M16X65	10	
131	nut	M20	2	
132	Hex bolt thread	M20X75	2	
133	Right connecting		1	
134	Press block		1	
135	Hex bolt thread	M12X40	7	
135a	standard spring washer	12	7	
136	Front guard		1	
137	Flat washer	6	11	
138	hexagon socket cap screws	M6X16	11	

139	plate		1	
140	cross recess pan head screw	M4X8	4	
141	hexagon socket cap screws	M8X16	4	
142	carrying handle		2	
143	Operations support		1	
144	foot pedal		3	
145	oil cylinder		1	
146	hexagon socket cap screws	M6X16	4	
147	Flat washer	6	4	
148	Oil temperature measure		1	
149	oil absorption filter oil meter		1	
150	motor		1	
151	Hydraulic cylinder		1	
152	Motor tube		2	进 2.4 出 1.6
153	Hydraulic cylinder tube		2	进 2.6 出 1.8
154	Drain mouth matching oil plug		1	
155	double row roller chain	10A	2	各 40 节