



OPERATOR'S MANUAL

Metal Working



Book 2 of 2

HYDRAULIC PRESS BRAKE MODEL: BP-14010/13CNC

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CHANGING AND ADJUSTING DIES

Replacing Upper Die



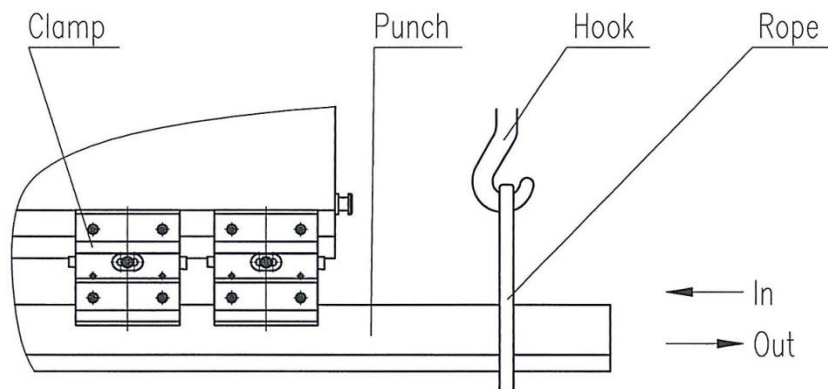
WARNING: Always keep hands and fingers from between the dies.

The dies supplied with the press are heavy. Have an assistant and a suitable lifting device available. DO NOT try and remove by yourself.



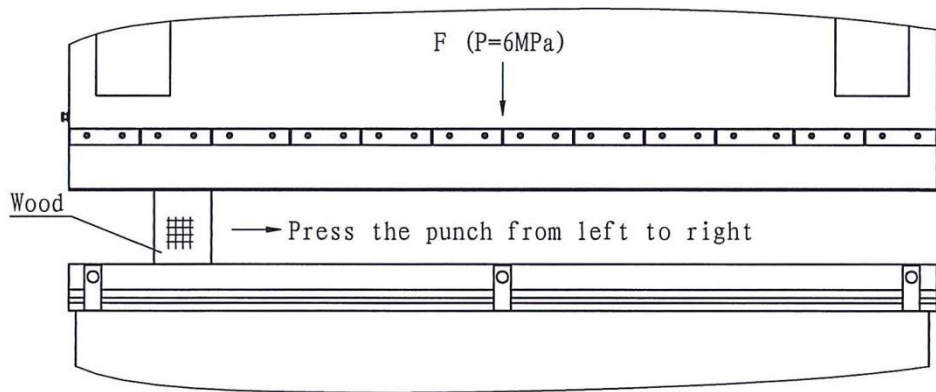
Note: *Never install or use dies that are cracked, chipped, or otherwise damaged. Make sure dies are the correct size and type to reduce the risk of overload.*

1. Safely start the machine and place the selector switch in INCH mode.
2. Slowly lower the ram until the top die is approximately 1/16" (1.5mm) from bottoming in the lower die.
3. Stop the machine and turn the main disconnect to OFF and LOCK OUT power.
4. Rotate each of the die clamp handles (ccw) half a turn for the half of the die being replaced.
5. Slide the die out. Make sure there is adequate clearance around the machine to safely remove and replace the die.
6. Carefully slide in the new die.
7. When positioned as needed, rotate the clamp handles (cw) to securely tighten and lock the die in position.
8. From the end of the die, check upper and lower die alignment. If the die alignment is not correct, follow the die rotation instructions to loosen the lower die and align the dies.





9. Switch the pressure gauge to 6Mpa.
10. Start the main machine.
11. Place a wood block between punch and die.
12. Press the punch from left to right to fully seat the connection between the punch and the ram.
13. Then final tighten the punch clamp screws.



14. From the end of the die, check upper and lower die alignment. If the die alignment is not correct, follow the die rotation instructions to loosen the lower die and align the dies.



Adjusting Upper Die

Each mounting block uses a wedge block to allow for upper die parallel to the lower die.



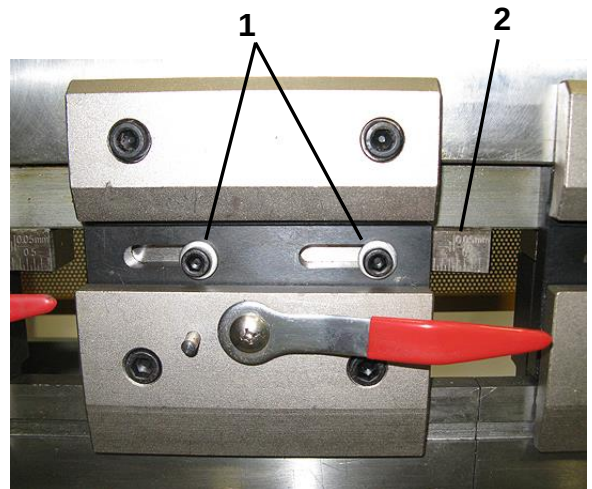
WARNING: Always keep hands and fingers from between the dies.

The dies supplied with the press are heavy. Have an assistant and a suitable lifting device available. DO NOT try and remove by yourself.



Note: *Never install or use dies that are cracked, chipped, or otherwise damaged. Make sure dies are the correct size and type to reduce the risk of overload.*

1. Use a straight edge to check that the lower edge of the upper die is on a straight line.
2. Measure from each end of the lower edge of the upper die to the top of the lower die. These measurements should be exactly the same to be parallel.
3. If either setting needs adjustment; safely start the machine and place the selector switch in INCH mode.
4. Slowly lower the ram until the top die just contacts the lower die.
5. Loosen the socket head cap screws (1) just enough to allow the wedge blocks (2) to slide.
6. Slide the wedge blocks right or left as needed until evenly snug in the slots to align the upper die evenly into the lower die.
7. Tighten the socket head cap screws (1) to secure the wedge blocks (2) in position.





Rotating Lower Die



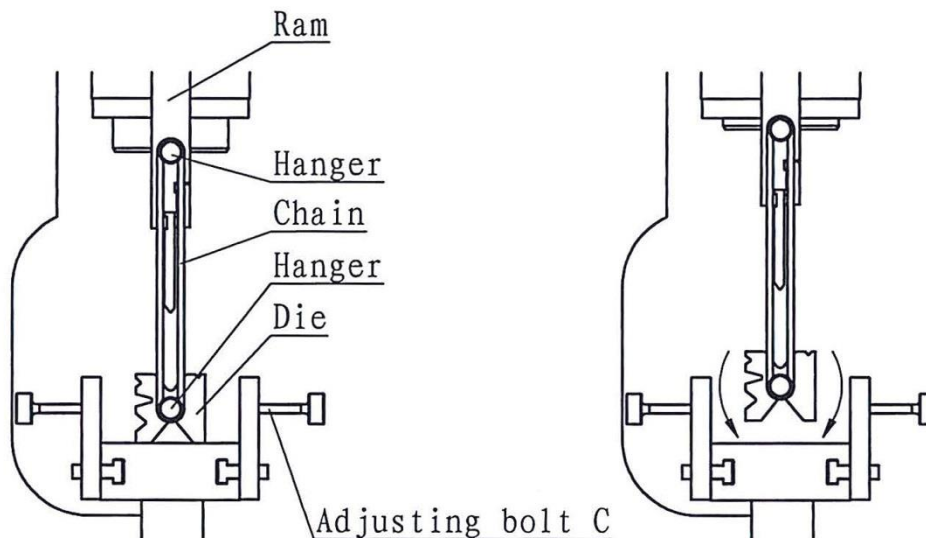
WARNING: Always keep hands and fingers from between the dies.

The dies supplied with the press are heavy. Have an assistant and a suitable lifting device available. DO NOT try and remove by yourself.

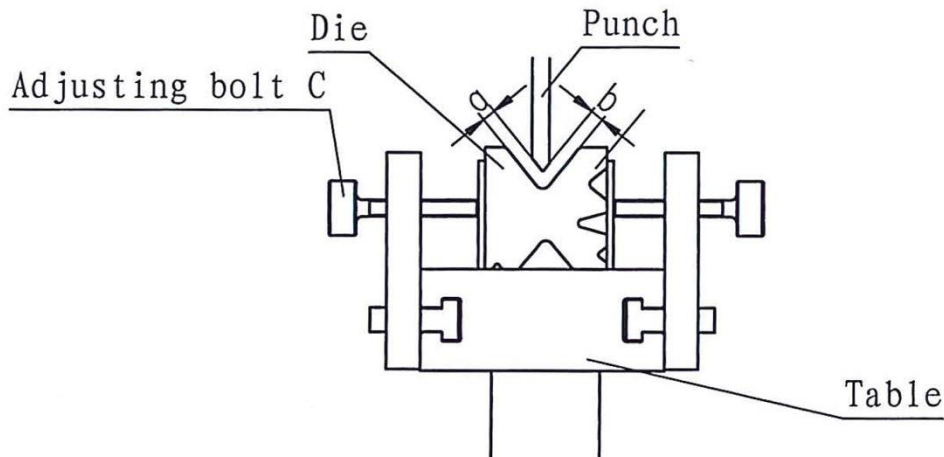


Note: *Never install or use dies that are cracked, chipped, or otherwise damaged. Make sure dies are the correct size and type to reduce the risk of overload.*

1. Start the machine and place in INCH mode.
2. Lower the ram to the bottom of the stroke.
3. Loosen the four adjusting bolts (C) which secure the die to the bolster.
4. Install the lift chains on both ends of the die and allow the ram to return to lift the lower die.
5. With the die elevated: Slowly rotate to the desired position and carefully lower the die down onto the bolster.
6. Slowly lower the top die gently into the selected V-groove of the bottom die to position it.



7. When the ram is near the lower die, check if the clearance "a" and "b" is equal within the whole length. If not, use the adjusting bolt (C) to adjust the lower die. Make the clearance "a" and "b" is equal within the whole length.
8. When aligned, tighten the clamps (C) **EVENLY** and securely.



Replacing Lower Die



WARNING: Always keep hands and fingers from between the dies.

The dies supplied with the press are heavy. Have an assistant and a suitable lifting device available. DO NOT try and remove by yourself.

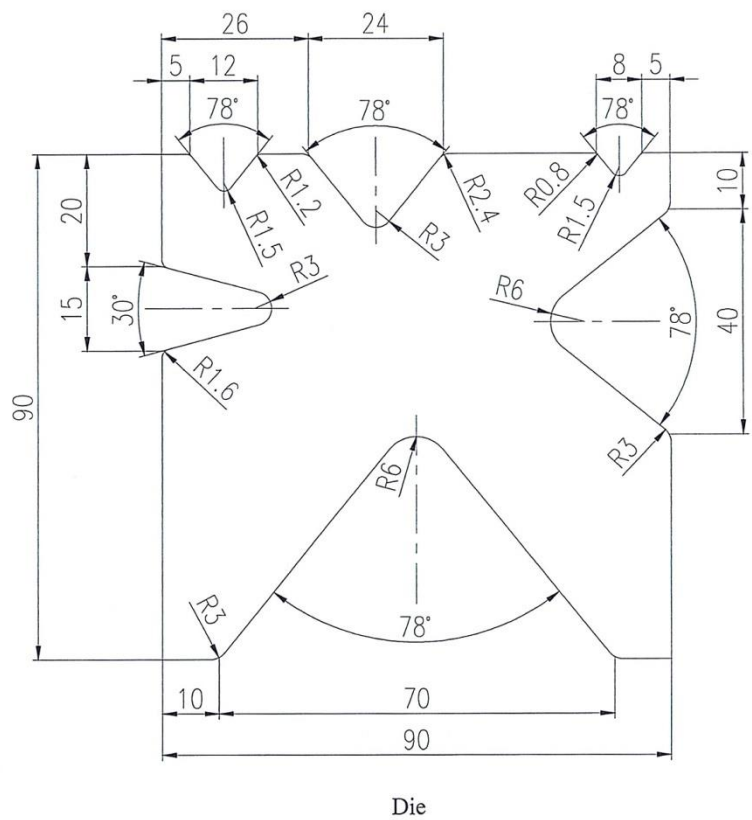
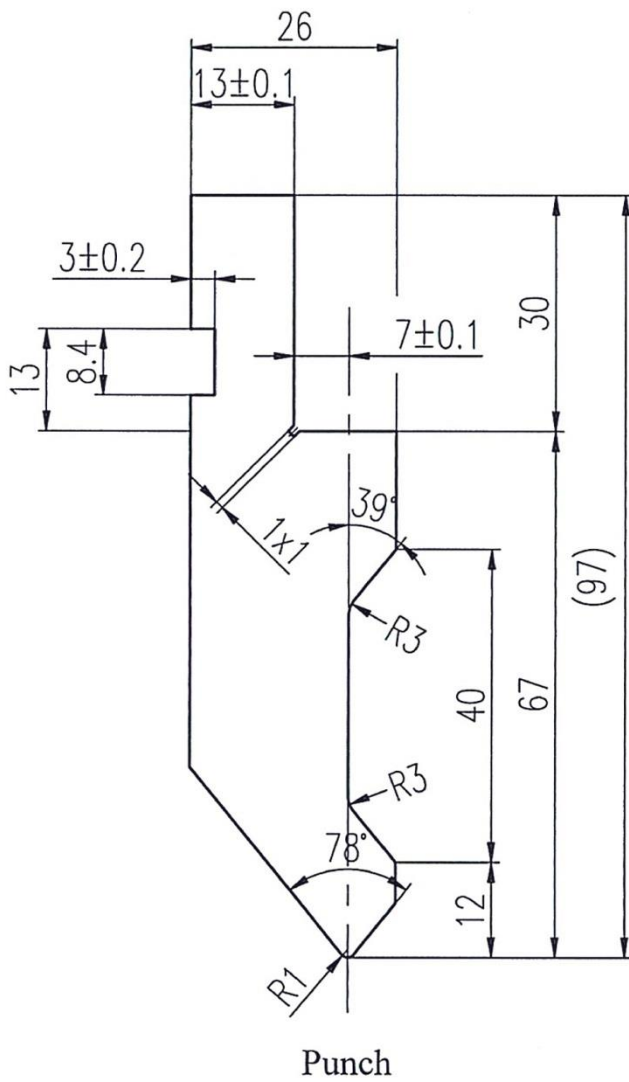


Note: *Never install or use dies that are cracked, chipped, or otherwise damaged. Make sure dies are the correct size and type to reduce the risk of overload.*

1. If the ram is not already in the full up position (TDP); start the machine and place in INCH mode and raise the ram.
2. Loosen the four adjusting bolts (C) which secure the die to the bolster.
3. Slide the die out. Make sure there is adequate clearance around the machine to safely remove and replace the die.
4. Carefully slide in the new die.
5. Start the machine in INCH mode and slowly lower the top die gently into the selected V-groove of the bottom die to position it.
6. When the ram is near the lower die, check if the clearance "a" and "b" is equal within the whole length. If not, use the adjusting bolt (C) to adjust the lower die. Make the clearance "a" and "b" is equal within the whole length.
7. When aligned, tighten the clamps (C) EVENLY and securely.
8. Check the adjusting bolts (C) regularly to ensure they are tight.



Upper and Lower Tooling





ADJUSTMENT OF STROKE

TDP Adjustment

The position of the TDP (Top Die Position) can be adjusted as needed to control the opening height as needed. Typically, the TDP is set to allow the ram to raise just high enough to allow the material to be loaded and unloaded easily.

1. On the left side of the machine, loosen the adjusting bolt (A) for the TDP block.
2. Move the block up or down as desired, and then tight the adjusting bolt. Raising the adjustment bolt (A) will shorten the ram raising travel.

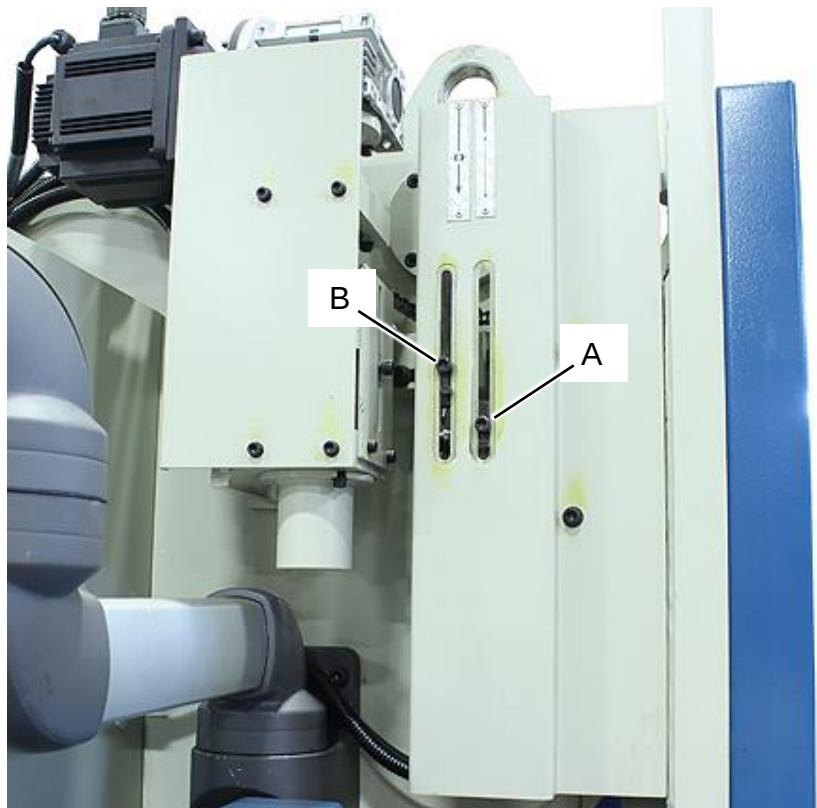
BSP Adjustment

The position of the BSP (Bend Shift Point) can be adjusted as needed to control the ram position that change approach speed into working speed. The BSP is typically set to have the speed changed from approach to work at the moment just before the punch contacts the material. This will allow for the actual bending to be completed at bending pressure and at a more controlled rate of speed. Lowering the adjusting bolt (B) will activate the shift point sooner.

1. On the left side of the machine, loosen the adjusting bolt (B) for the BSP block.
2. Move the block up or down as desired, and then tight the adjusting bolt.



Note: The BSP limit must be set to trigger the switch and shift to work speed to bend the material. The machine will not bend accurately if the Shift Point Limit switch is not activated.



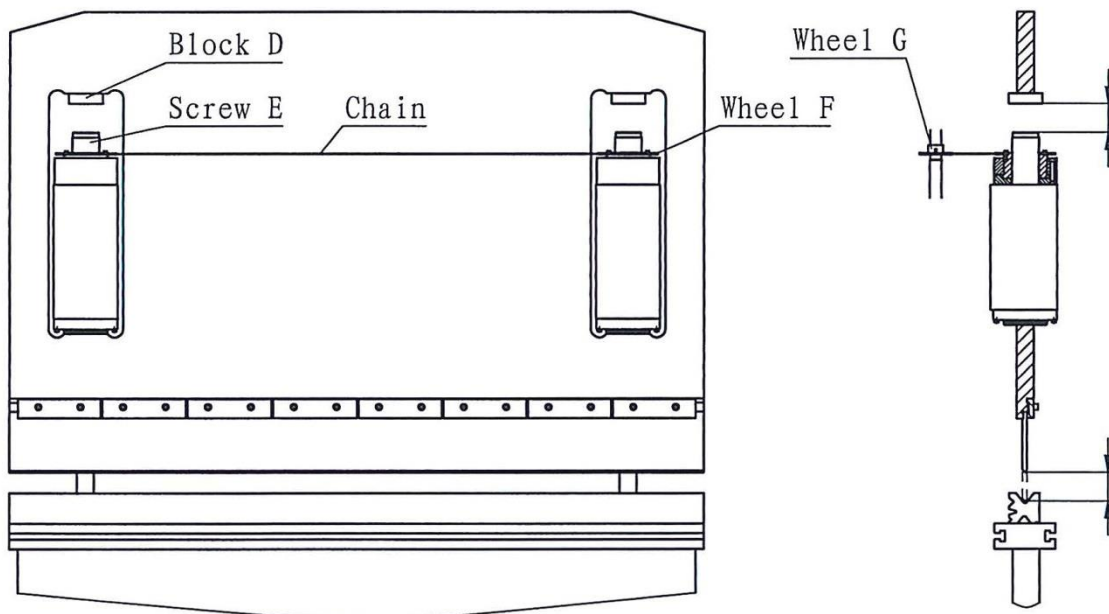
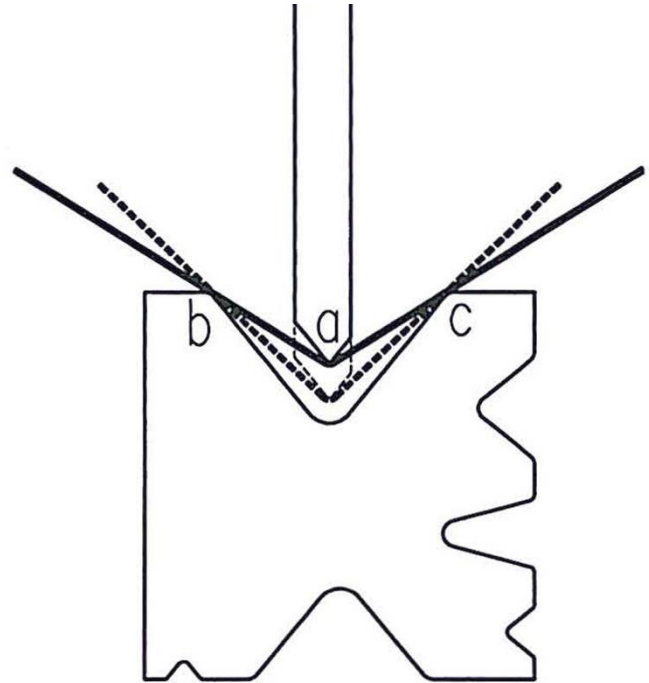


BDP Adjustment

The machine uses 3-point air bending. By adjusting the depth that the punch inserts into the V opening of the lower die, the bend angle is controlled. If the depth is deeper, the bending angle is smaller.

The mechanical block within the ram cylinders controls the depth. During the ram's downward movement, when the block (D) presses on the screw (E), the ram stops. This position is the BDP (Bottom Die Position).

The chain and chain drive assembly (F and G) are used to adjust the screw (E) height to set the BDP, thus changing the bend angle. Chain wheel (G) is driven by the adjustment motor and the digital display will show its position. This adjustment is controlled by setting the YP value in the YSD6000d controller.





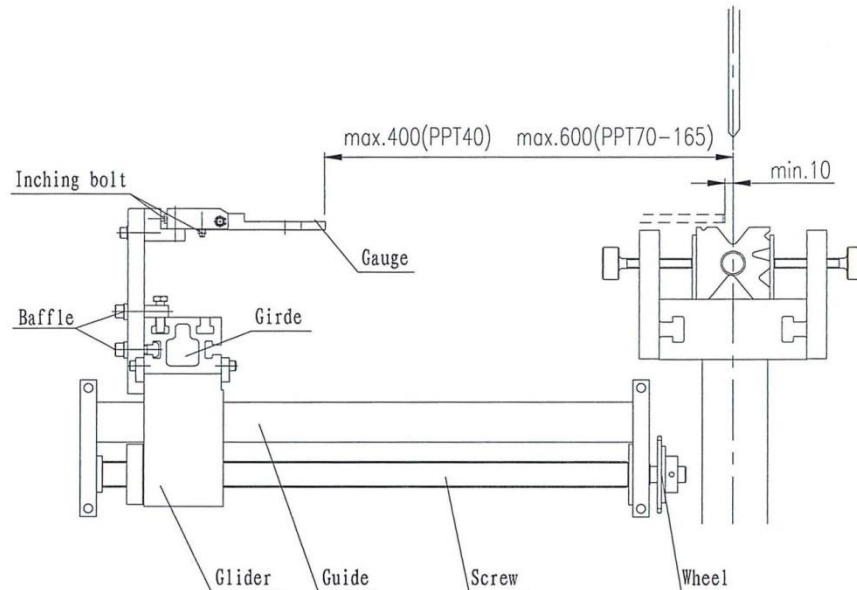
BACK GAUGE ADJUSTMENT

The back gauge is used to position the back depth positioning of sheet.

The chain drive and 2 screws synchronous rotate to adjust the back gauge closer or farther from the center line of the punch. You can change the distance between back gauge and center of punch from the control station with the digital display showing the XP value.

This adjustment is controlled by setting the XP value in the YSD6000d controller.

The height of gauge can be adjusted according to the operating condition, normally, a little higher than top surface of die.



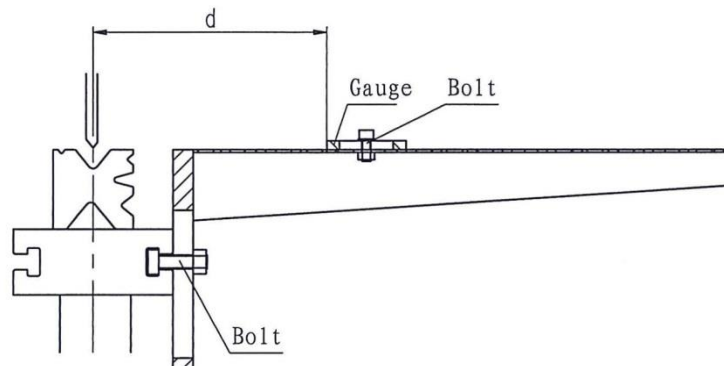
FRONT SUPPORT ARM ADJUSTMENT

Front extension arm is used to support the bending sheet and part, also can use to front positioning. The front support arms are mounted on the inside of the machine for shipping and can be mounted in the front of the machine after installation of the machine.

Adjust the height of front extension arm to make top surface of the support arms on the same plane as the top surface of the die.

Use the bolt to secure gauge on the front support arm.

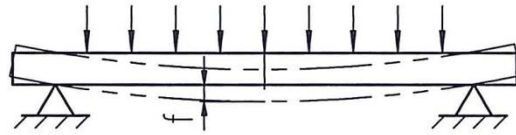
Loosen the bolt, adjusts the gauge to the proper position, tighten the bolt.





EFFECT OF THICKNESS

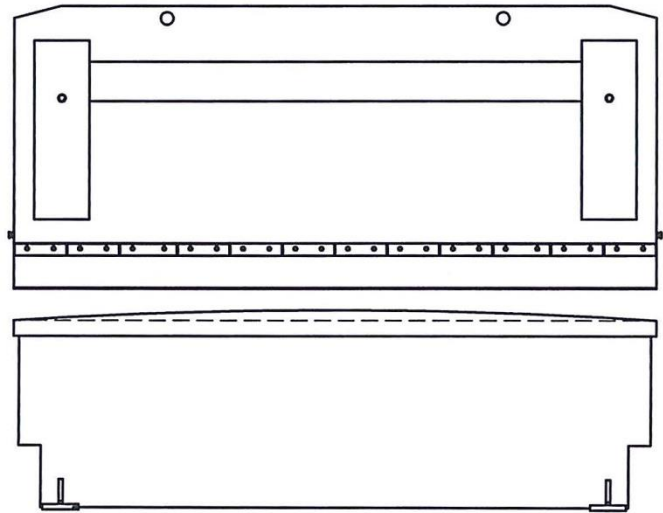
When a piece of plate with inhomogeneous thickness is used for bending an error of bending angle may occur. The angle clearance will be approximately 2° to 3° by a thickness difference of 0.1mm, for a small V-opening. For a larger V-opening, smaller than 2° to 3° .



CROWNING

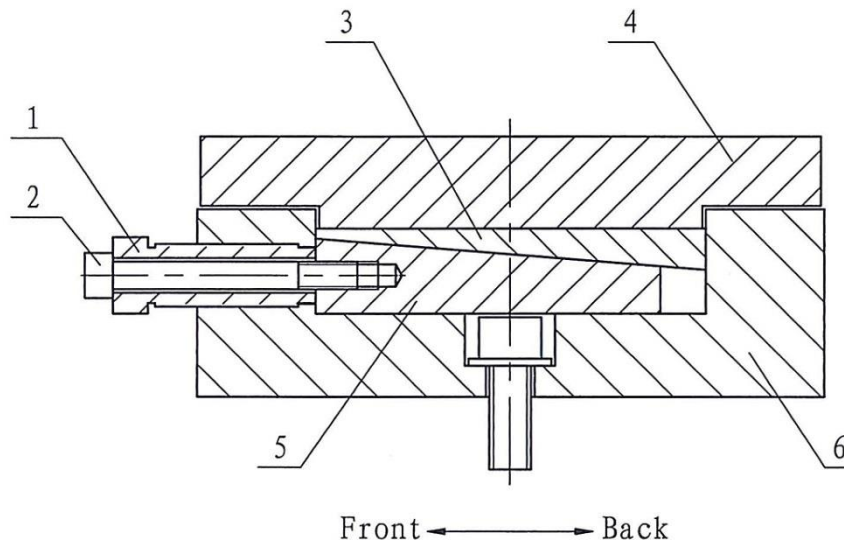
The ram and the table of the press rest on two points of the frame. Loading P force within the whole length, will cause deflection as shown.

The machine table is pre-crowned to counteract the deflection of table and ram.



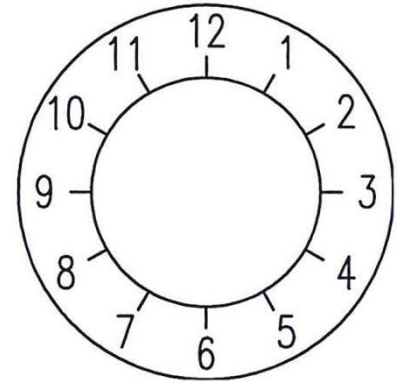
The adjustable crowning table is composing of several pairs of wedges with the same angle. The upper wedge is inserted in the slot of the base, it could not be moved. The lower wedge could be adjusted and make backward and forward movement through adjusting-bolt and L locking-bolt.

Since there are slop between two wedge, when the lower wedge move backwards, the vertical distance between cover board and base will enlarge, and the crowning of that point is enlarged. An ideal curve may be achieved through adjusting the crowning on each point, thus achieving a good consistency along the whole length.





When adjusting, loosen a little the locking-bolt first, then rotate the adjusting-bolt according to the scale indication, and then tighten the locking-bolt. The crowning will change 0.12mm upon one circle of rotation on the adjusting-bolt. On the indication scale, there are 12 graduations, so each mark is 0.01mm.

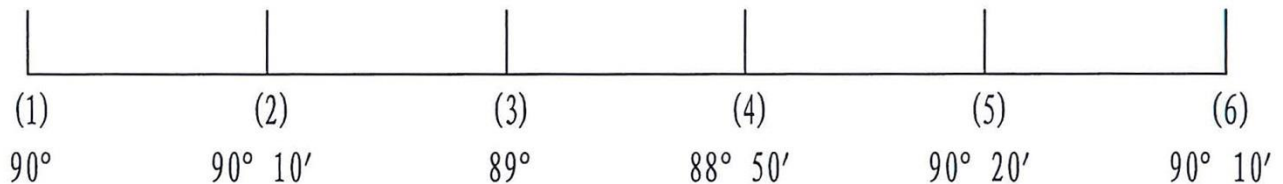


When the angle is a little bigger at some point of the fabrication product. The wedge at that point shall be adjusted. The crowning at that point shall be increased. Otherwise, decrease the crowing at that point.

When the linearity of the product is not ideal, the crowning shall be decreased if the product is bending upwards at some point. Otherwise, increase the crowing at that point.

Sometimes, you get some result by adjusting crowning according to product angle, while you get contrary result by adjusting crowning according to product linearity. So you shall take moderate scheme to meet the requirements on both angle and linearity.

For example: bending angle on the fabrication product is as follows:

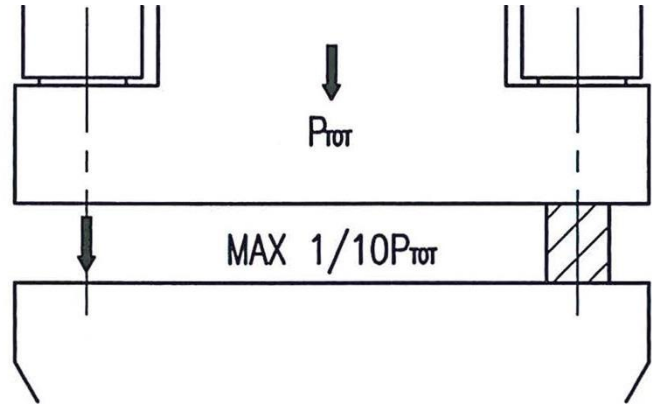


We could found that the angle at point 3 and point 4 is less than 90°, so the crowning on both point 3 and point 4 shall be decreased.



ECCENTRIC WORK

This means, working outside the middle of the ram (near the right or left end of the bed). Normally it forbids doing the eccentric work. This is because under the effect of eccentric, the slope will appear between table and ram, and torsion shaft will be damage. If tooling special part, the eccentric force must not exceed 10% of bending force.



BENDING FORCE ERROR CORRECTION

When the bending angle is smaller than 110°, you can correct according to the formula:

$$\Delta Y = 0.0055V \times \Delta a.$$

ΔY - Correction Value of B.D.P

V - Selected Opening

a - Error Value of Angle



Note: If the inspected piece angle is bigger than the drawing requests, down the B.D.P. position per the modify value ΔY . On the contrary, up it.



LUBRICATION AND MAINTENANCE



WARNING: Make sure the electrical disconnect is OFF before working on the machine.

Maintenance should be performed on a regular basis by qualified personnel.

Always follow proper safety precautions when working on or around any machinery.

- Check daily for any unsafe conditions and fix immediately.
- Check that all nuts and bolts are properly tightened.
- On a weekly basis clean the machine and the area around it.
- Lubricate threaded components and sliding devices.
- Apply rust inhibitive lubricant to all non-painted surfaces.

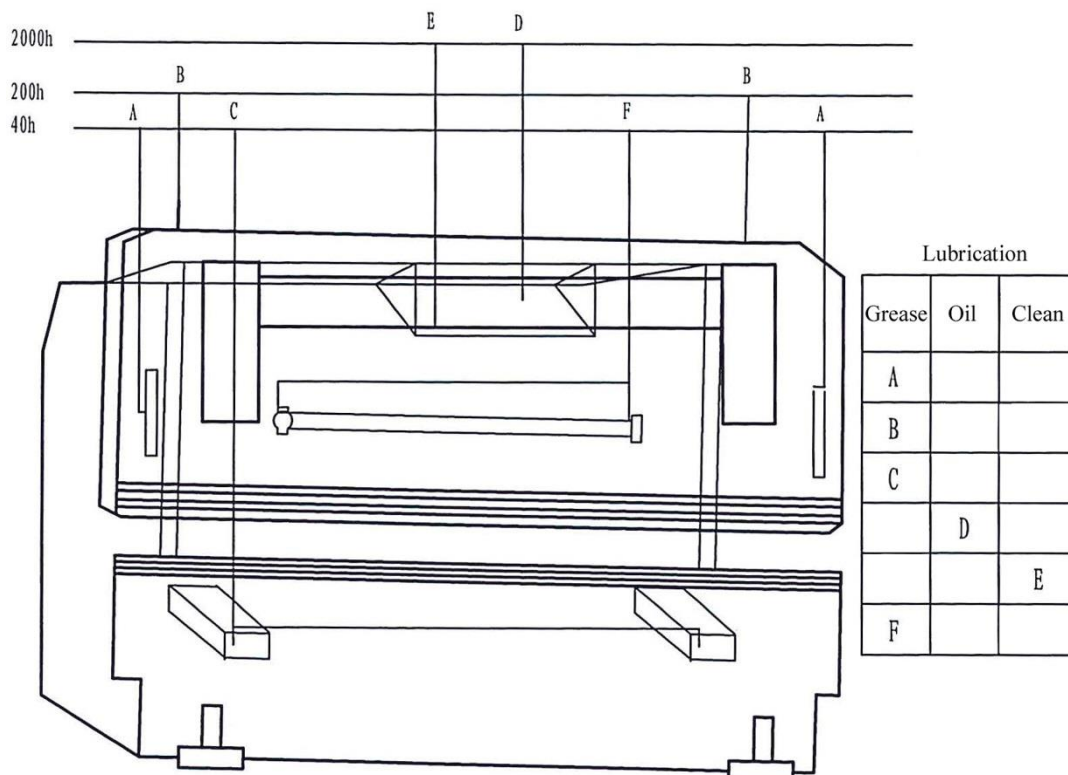


Note: Proper maintenance can increase the life expectancy of your machine.

Lubrication

Use the diagram for locate and time intervals for lubrication and cleaning. The lubrication should be done regularly.

The main lubrication points are located: guide bar, torsion shaft between rams, back gauge guide axis and lead screw. The parts exposed to wear, which are not fitted with lubrication point must be lubricated three times a week, such as: cylinders, mechanical blocks and nuts.





Hydraulic System

Hydraulic Oil

Check the oil level in the tank periodically.

Changing the oil after the first 500 working hours. Thereafter, changing the oil after ever 2,000 working hours.

Filter

Replace the filter with each oil change.

Air filter

The air filter is situated on the oil tank cover.

Clean the air filter after the first 2 months of operation by means of rinsing in petroleum based solvent. Thereafter clean every 4 months.

Hydraulic Connections

Check the entire hydraulic system for leaks daily. Repair any leaks found before placing the machine in operation. Replace any fitting that will not tighten to stop the leak.

Replace lines and hoses if they have been damaged in any way.

If the valve block is leaking, start by replacing the O-ring and compounding seal ring.

Mechanical Parts

Check all mechanical parts regularly, as well as the chain transmissions and the guides.

Relief Valve

The adjustment of the relief valve is very important for a durable operation of machine.

The value normally set for this adjustment equals the maximum allowed working pressure.

If our service engineer finds that a relief valve has been adjusted to a higher valve than allowed, our company will decline all responsibility regarding the guarantee.



Note: *Unless necessary, don't adjust the relief valve, it will affect the capability of the machine.*



Electrical System

Check and Maintain Regularly

Check the environment. If it reaches the requirements that limited in the first page before operate the machine.

- Tighten or replace if any bolts, nuts, connecting ends are loosen, or oxidized which caused by outside environment.
- Check if the cover of wire or cable has damage or insulation condition. Replace if exists.
- Touch the electrical parts that with wire loop. Check if it has over-hatted phenomenon.
- Check if any dirt is on the electrical parts. Connecting point must clean. For adjusting electrical parts, pay attention don't change the setting value during cleaning.
- The broken between different connectors. For instance, broken with plug and socket of encoder; broken between fixing base and wire loop of relay.
- Check if the relay in the cabinet or fuse is turnoff. If have, inspect the circuitry completely before repair.

Checking Electrically Energized Items (Only check the electrical parts by eyes or ears. Don't touch it.)

- Check with the multimeter if the voltage of input power, voltage of main circuit and control circuit is normal.
- Check if the connector or relay has any shocking noise during the operation. If the connecting point has damage
- Check if the motor has strange shock or noise, if it has strange smell. Check the insulation resistance between output end and grounding end with meter.

Troubleshooting Of Electrical System

• Turn on the power switch QS, the pilot lamp HL1 doesn't light, control circuit isn't electrified: Analyze and resilient: Power part almost has problem .Examine the breaker which connects electricity to machine in the workshop whether it is close ,and examine the fastness degree of power cable.

• The pilot lamp HL1 already lights, when push the motor starting button SB4,the main pump doesn't run, and the running pilot lamp HL2 doesn't light?

Analyze and resilient: Examine all emergency buttons, safety limit switch SQ1, thermal relay and breakers whether they are in a normal status.

• The main pump already runs, but when step the footswitch, the beam can't come down? Maybe the phases of main pump motor's power is wrong, motor is reversal, should replace any two of wires of power cable.

Examine the solenoid valve's plugs whether they are loose.

In order to distinguish that it is electrical fault or hydraulic fault.

You'd better push the core of solenoid valve first which controls the down of beam.

If it is electrical fault, examine the executive component one by one according to the principle diagram till eliminate the fault.



TROUBLESHOOTING



WARNING: Make sure the electrical disconnect is OFF before working on the machine.

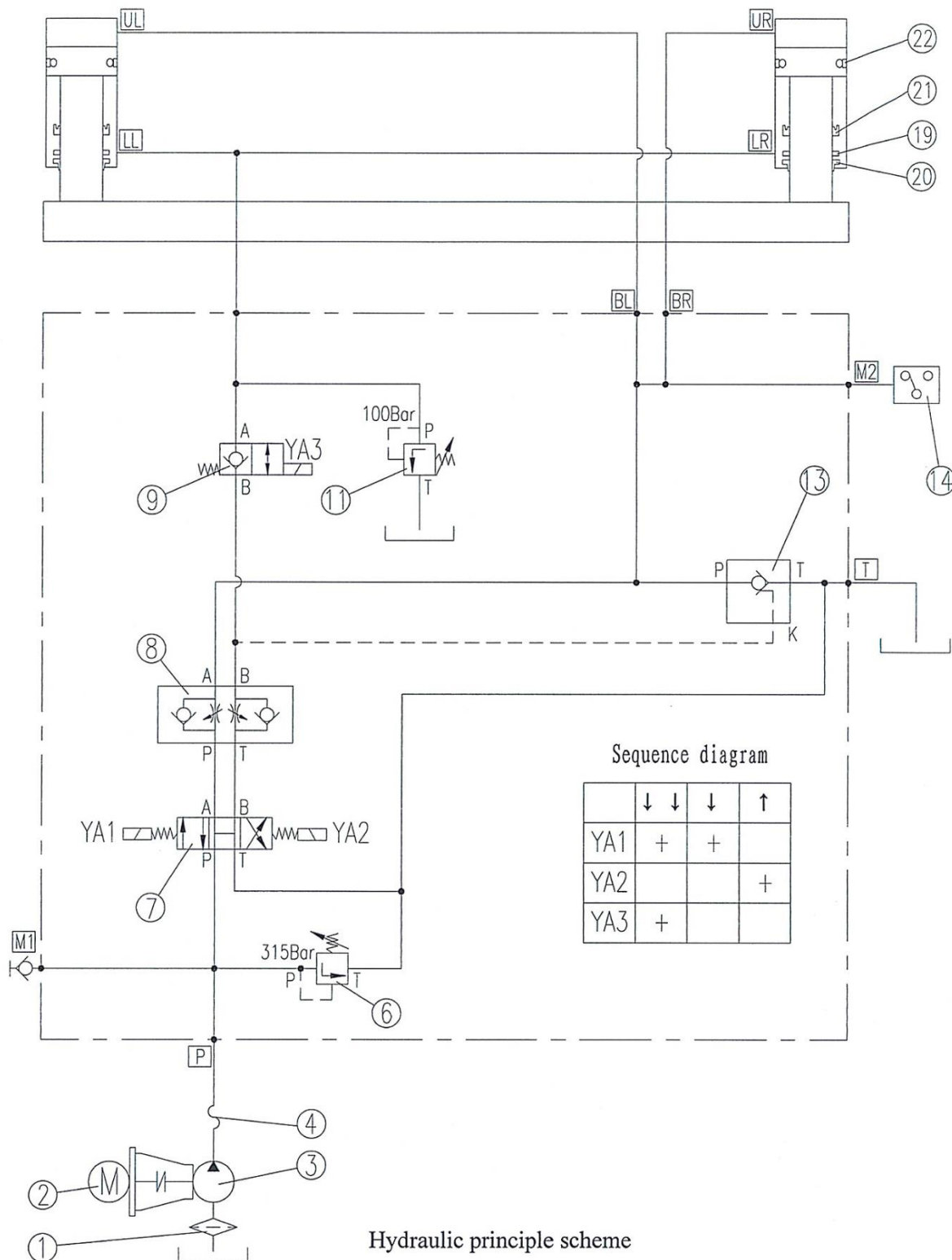
FAULT	PROBABLE CAUSE	REMEDY
Oil pump does not pump oil	Check if motor to pump coupler is broken or missing. Check if the rotating direction of motor is correct. Check if the oil level is too low. Check if the suction line is blocked. Check if the oil temperature is very cold.	Install coupler. Rewire to provide the correct rotation. Fill tank to 90% full. Repair or replace suction line. Warm oil to above 50°F.
No pressure in system	Check if the pressure of main overflowing valve (6) is switched to the determined value. Check if the oil pumps works.	Set the valve to the correct value. Repair or replace pump.
No approach speed	Check if the electromagnetic valve 9, are energized. Check if the set of single-double valve (8) is too small. Check if the guide rail is too tight. Check if the torsion shaft is blocked.	Check wiring and electromagnetic coil. Set single double valve correctly. Adjust gibs to allow for free movement without excess play. Clear or replace torsion shaft.
No working speed	Check if the electromagnetic changing valve (7) YA1 are energized. Check if the pressure of main overflowing valve (6) is in the limited value. Check if valve (13) has reset.	Check wiring and electromagnetic coil. Set the valve to the correct value. Reset valve (13).
No returning	Check if the electromagnetic changing valve (7) YA2 is energized. Checks if pressure of overflowing valve (11) adjusts too small. Check if the pressure of	Check wiring and electromagnetic coil. Set pressure to correct value. Set the valve to the correct



	overflowing valve (6) is in the limited value.	value.
Vibration, Crawling	Check if the air in cylinder is empty. Check if the oil pump inlets the air. Check if the guide rail is too tight. Check if the single-double valve (8) adjusts to the proper position. Check if the small ram of torsion shaft is too tight. Checks if the seal ring of cylinder is too tight.	Set machine to allow full extension and retraction of cylinders and cycle several times to bleed air. Check for leaks on the suction side of pump allowing air in. Adjust gibs to allow for free movement without excess play. Set single double valve correctly. Clear or replace torsion shaft. Replace seal rings
Slow changing from approach speed to working speed	Check if the oil pipe of filling valve is broken.	Replace filling valve



HYDRAULIC SCHEMATIC



Hydraulic principle scheme

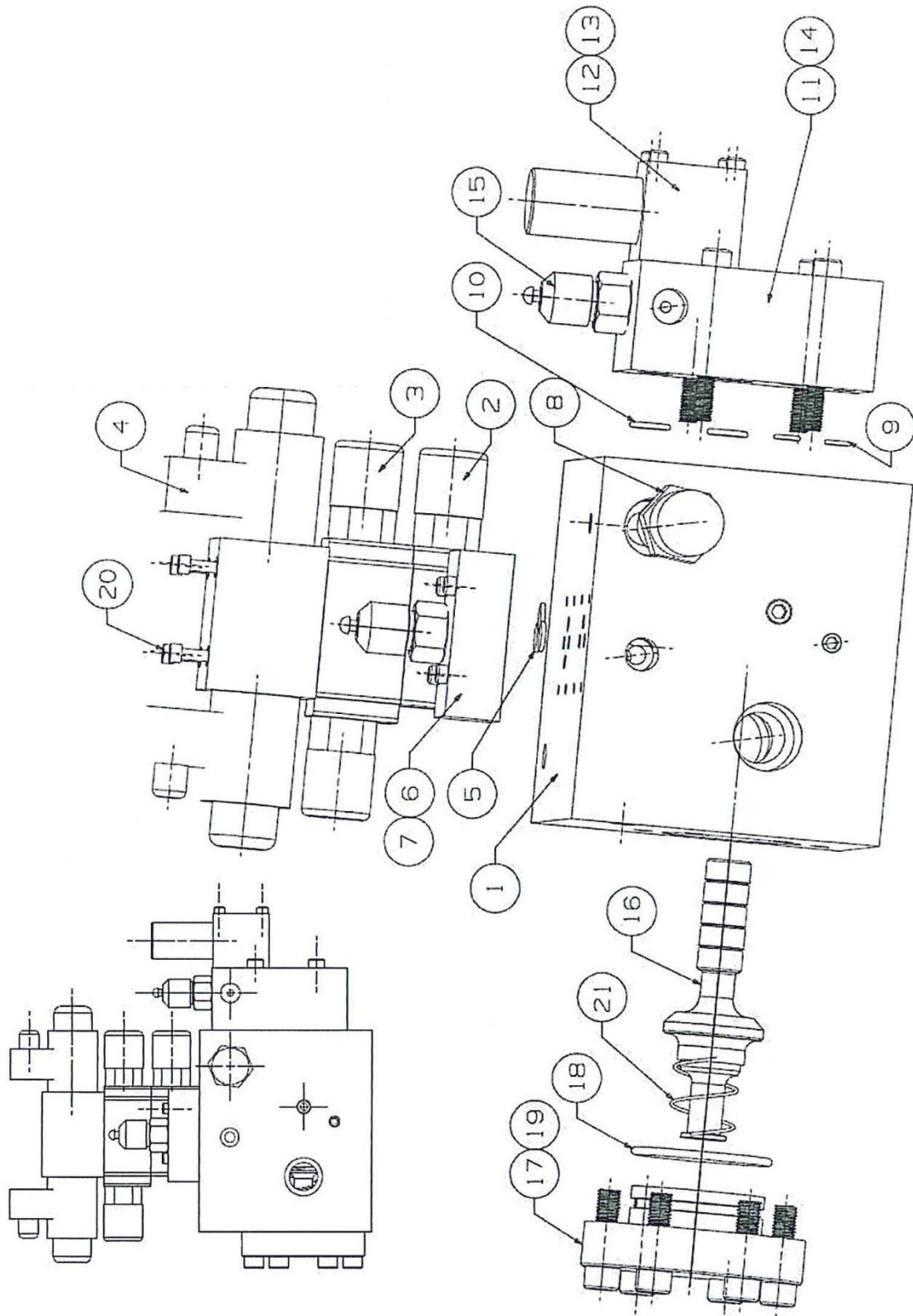


Hydraulic Components

Item	Description	Type	Qty.	Remark
1	Filter	WU-40x180-J	1	Kompass
2	Motor	Y112S-4-B35	1	
3	Oil Pump	IPH-2B-5	1	NACHI
4	Hose	F381-1CD2-1212-6-700	1	
6	Pressure Valve	DBDS6K-1X/200	1	Rexroth
7	4/3 Directional Control Valve	DG4V-3S-0C-M-U-H5-60	1	VICKERS
8	Two Way Check Valve	DGMFN-3-Y-A2W-B2W-41	1	VICKERS
9	2/2 Directional Control Valve	SVSPM22-DC-G24/KD35-HX	1	WANDFLUH
11	Pressure Valve	DGMC-3-PT-GW-41	1	VICKERS
13	Oil Filling Valve		1	YSD
14	Pressure Switch	DG1RF	1	Hawe
19	Slide Ring	RYT-20x2.5	1	
20	Dust Preventing Ring	LBH-115x125x6x8	2	NOK
21	Seal Ring	UPH-115x135x15	2	NOK
22	Seal Ring	GDSA-120x104.5x5.8	2	MERKEL



HYDRAULIC MANIFOLD BLOCK PARTS DIAGRAM



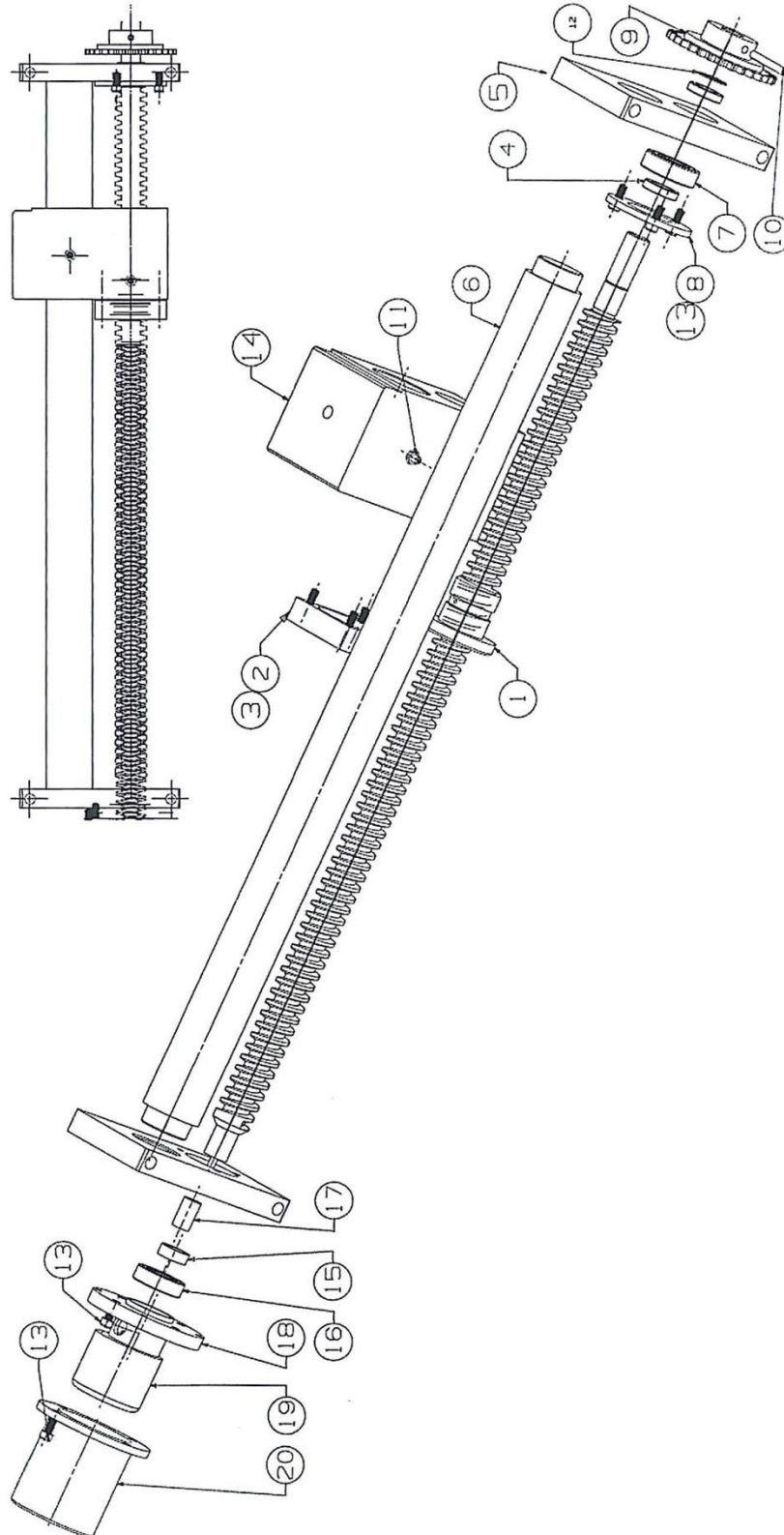


Hydraulic Manifold Block Parts List

Item	Specification	Description	Qty.
1	P301.38301	Manifold Block	1
2	DGMC-3-PT-GW-41	Relief Valve	1
3	DGMFN-3-Y-A2W-B2W-41	One Way Restrictor Valve	1
4	DG4V-35-0C-M-U-H5-60	Solenoid Operated Directional Valve	1
5	GB1235-12x2.4	O-Ring	3
6	P302.38304F	Cover Plate	1
7	GB70-M5x35	Bolt	4
8	DBDS6K-1X-200	Relief Valve	1
9	GB1235-10x1.9	O-Ring	2
10	GB1235-16x2.4	O-Ring	2
11	P301.38313-6	Block	1
12	VE1A206NC+MD25E031130Z4	Solenoid Operated Directional Valve	1
13	GB70-M6x55	Bolt	4
14	GB70-M8x70	Bolt	4
15	D1-3-G1-4	Coupling	2
16	W11.38302	Spindle	1
17	P301.38302	Cover Plate	1
18	GB1235-60x3.5	O-Ring	1
19	GB70-M10x35	Bolt	6
20	GB70-M5x110	Bolt	4
21	W11.38305A	Spring	1



BACK GAUGE PARTS DIAGRAM





Back Gauge Parts List

Item	Specification	Description	Qty.
1	P022.49200KA	Screw	1
2	W01.49322	Cover Plate	1
3	GB70-M6x25	Bolt	4
4	W01.49319	Washer	2
5	W01.49312	Base	2
6	P301.49316	Guide	1
7	GB281-1204	Bearing	1
8	W01.49318	Cover Plate	1
9	W01.49317	Sprocket Wheel	1
10	GB879-6x45	Dowel	1
11	GB152-M10x1	Oil Cup	2
12	GB894-20	Washer	1
13	GB70-M6x16	Bolt	11
14	W01.49101KB	Slip Block	1
15	P301.49301P	Washer	1
16	GB281-104	Bearing	1
17	G28-14A6	Coupler	1
18	P301.49303PA	Flange	1
19	E6B2-CWZ3E-100	Encoder	1
20	P301.49304P	Shield	1



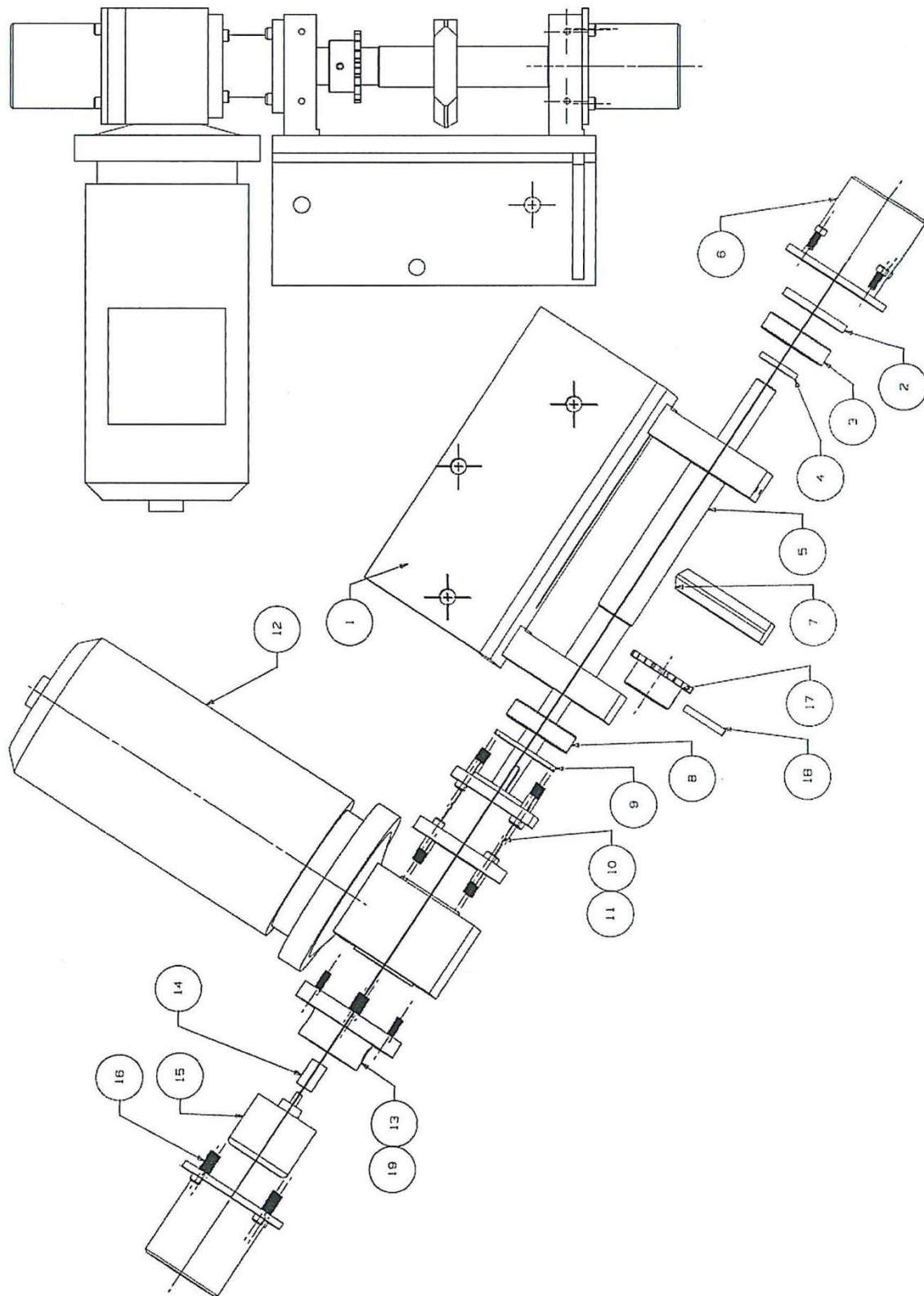


Cylinder Parts List

Item	Specification	Description	Qty.
1	P021.39301	Cylinder	1
2	W23.39303	Piston	1
3	GDSA-120x104x5.8	Seal Ring	1
4	UPH-115x135x15	Seal Ring	1
5	P021.39101A	Oriented Slipcover	1
6	GB97-B	Washer	8
7	GB70-M8x45	Bolt	8
8	W11.39311	Screw	1
9	W11.39304	Cover	1
10	W11.39306	Dowel	2
11	W11.39307YS	Nut	1
12	W11.39103YS	Slipcover	1
13	W11.39309YS	Sprocket Wheel	1
14	GB70-M8x75	Bolt	4
15	GB70-M5x16	Bolt	4
16	GB70-M8x20	Bolt	2
17	W11.39102	Slipcover	1
18	LBH-115x125x6x8	Dust Ring	1
19	P021.39302	Washer	1



DEPTH STOP PARTS DIAGRAM

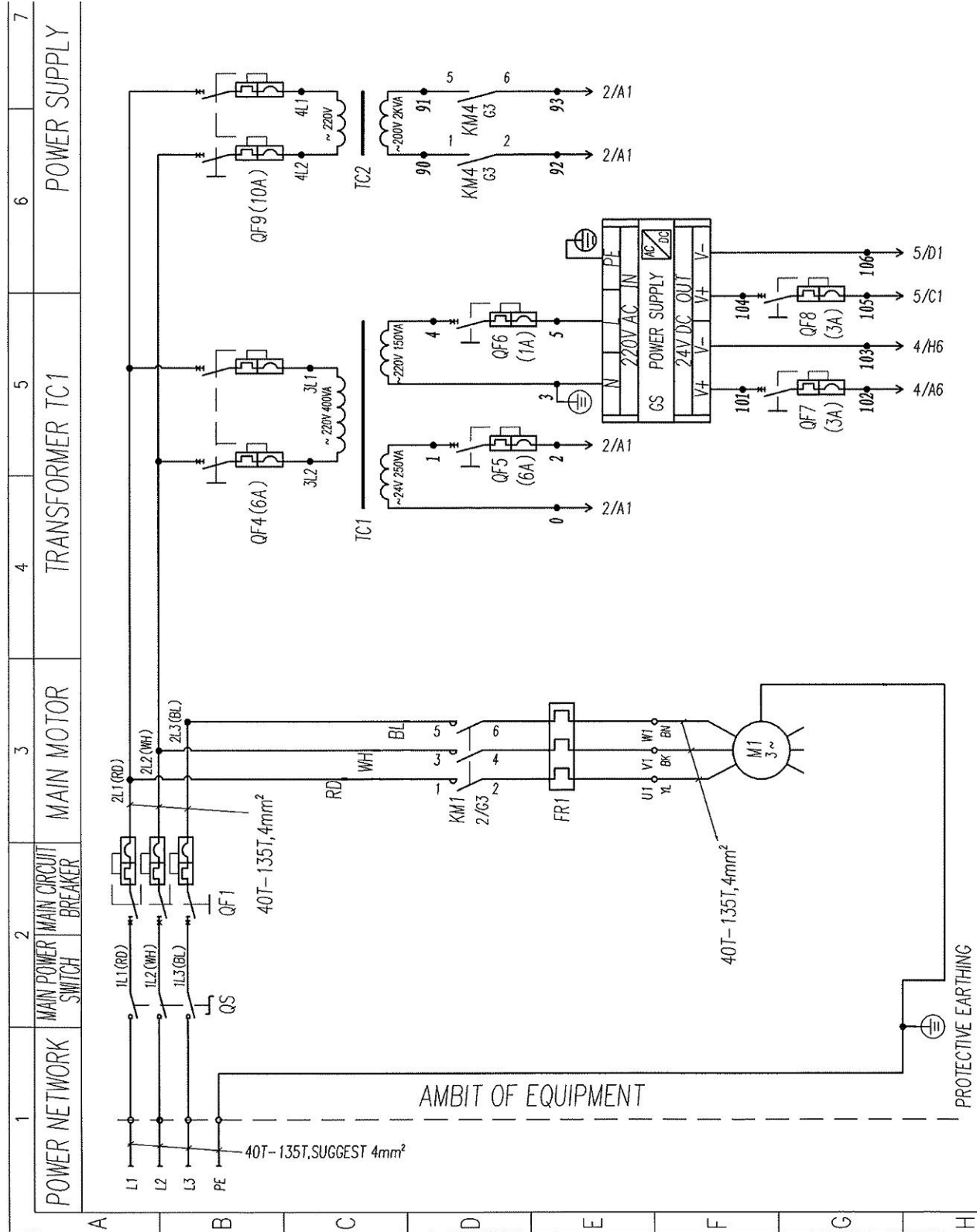




Depth Stop Parts List

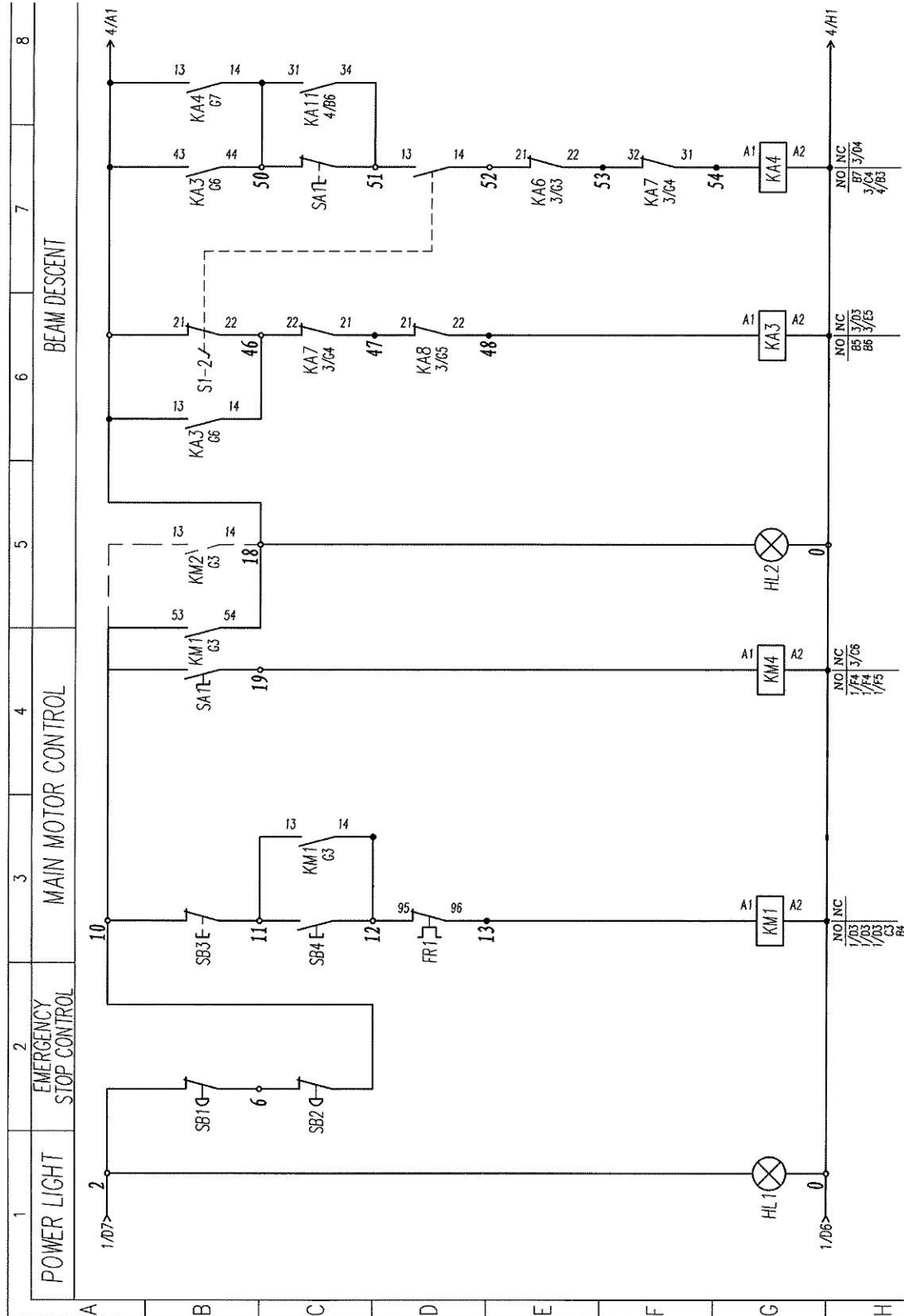
Item	Specification	Description	Qty.
1	P301.54321	Block	1
2	W11.54304	Washer	1
3	GB276-206	Bearing	1
4	W11.54314	Washer	1
5	P301.54323A	Screw	1
6	G007.49327	Shield	2
7	P302.54311	Nut	1
8	GB276-305	Bearing	1
9	P021.54304U	Washer	1
10	P301.54322	Flange	1
11	GB70-M6x35	Bolt	8
12	YSP712-4-B5-0.37	Motor	1
13	P301.49321	Flange	1
14	G28-14A6	Coupler	1
15	E6B2-CWZ3E-100	Encoder	1
16	GB70-M6x25	Bolt	8
17	W11.54305	Sprocket Wheel	1
18	GB879-6x40	Dowel	1
19	GB70-M6x16	Bolt	4

ELECTRICAL DIAGRAM (1)





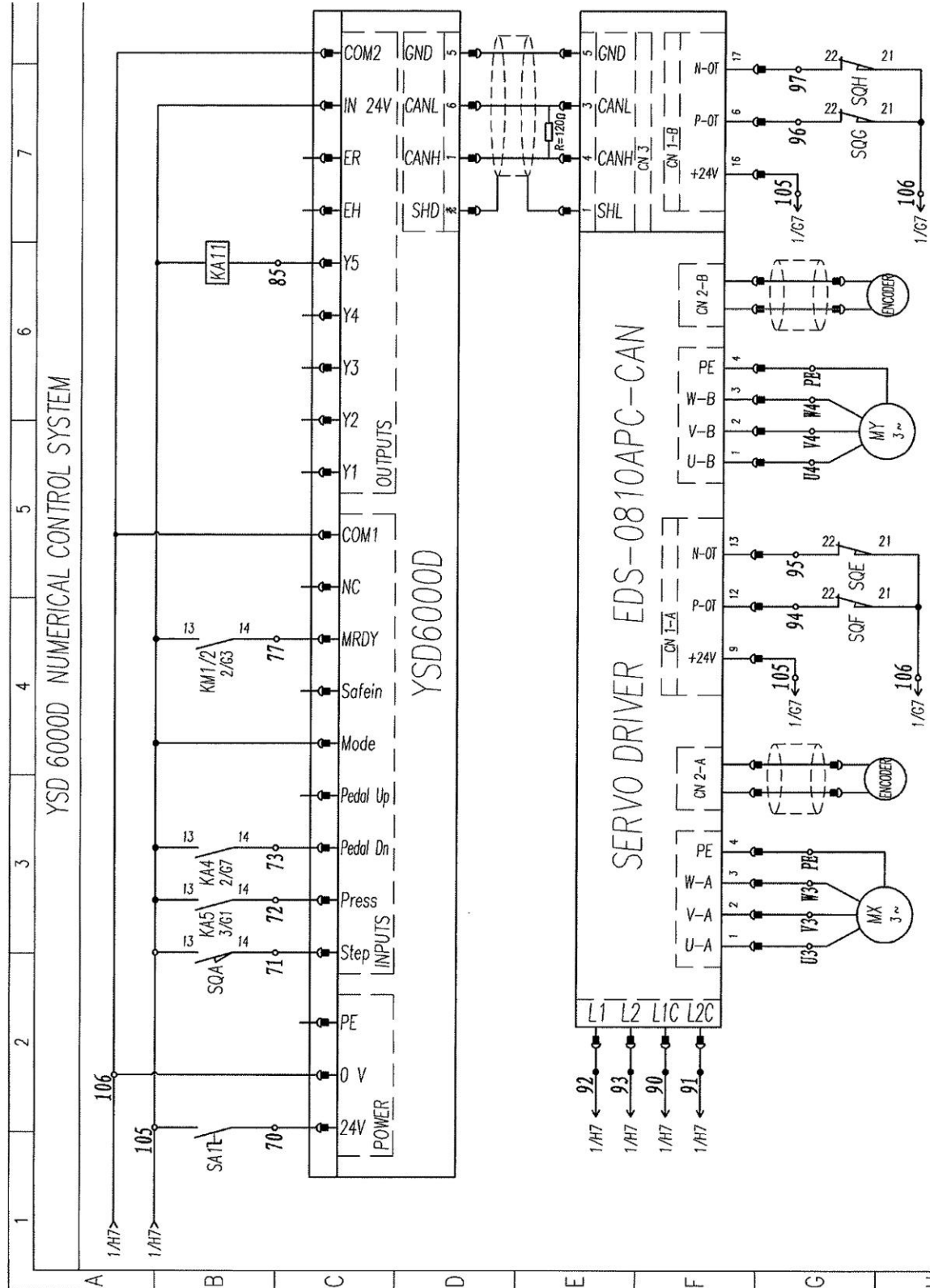
ELECTRICAL DIAGRAM (2)







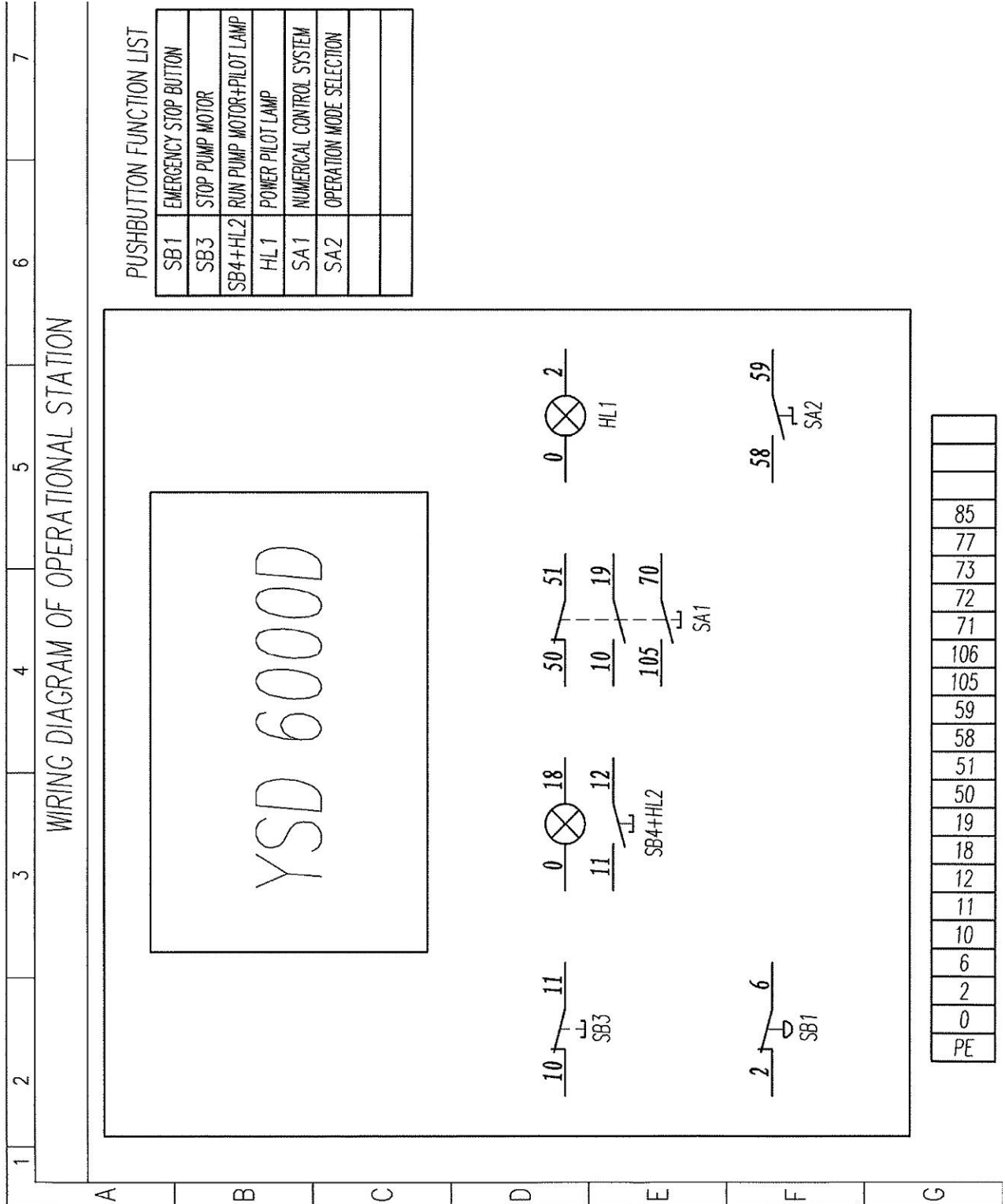
ELECTRICAL DIAGRAM (4)





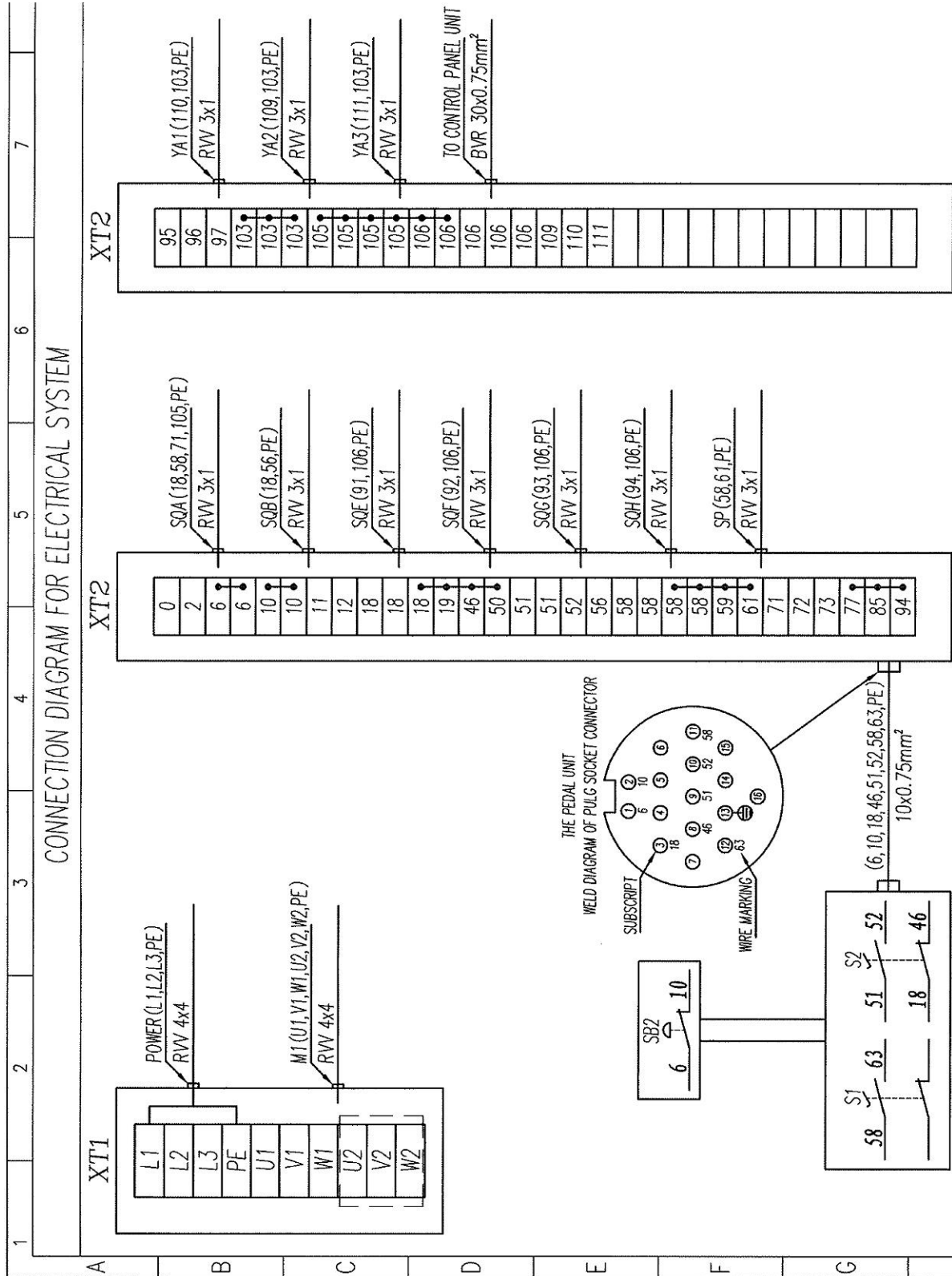


ELECTRICAL SWITCH DIAGRAM





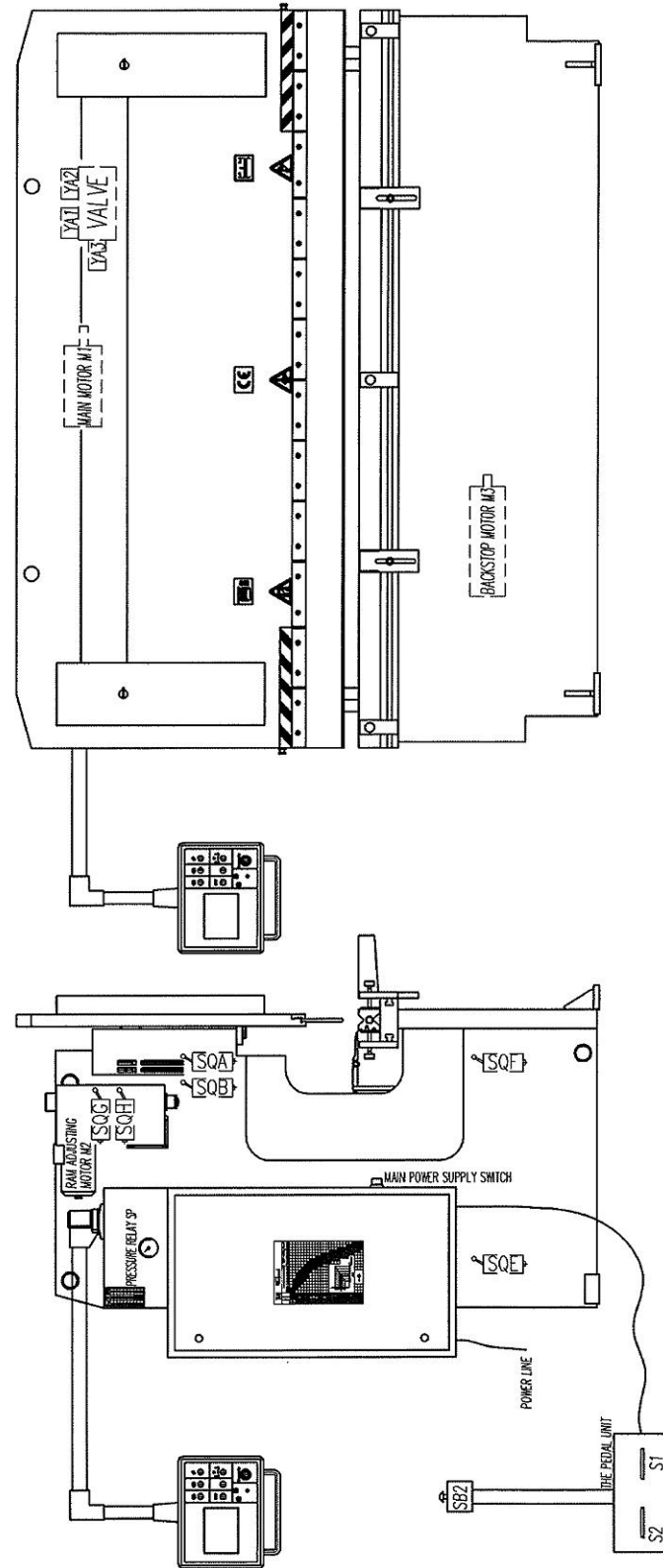
ELECTRICAL TERMINAL CONNECTIONS





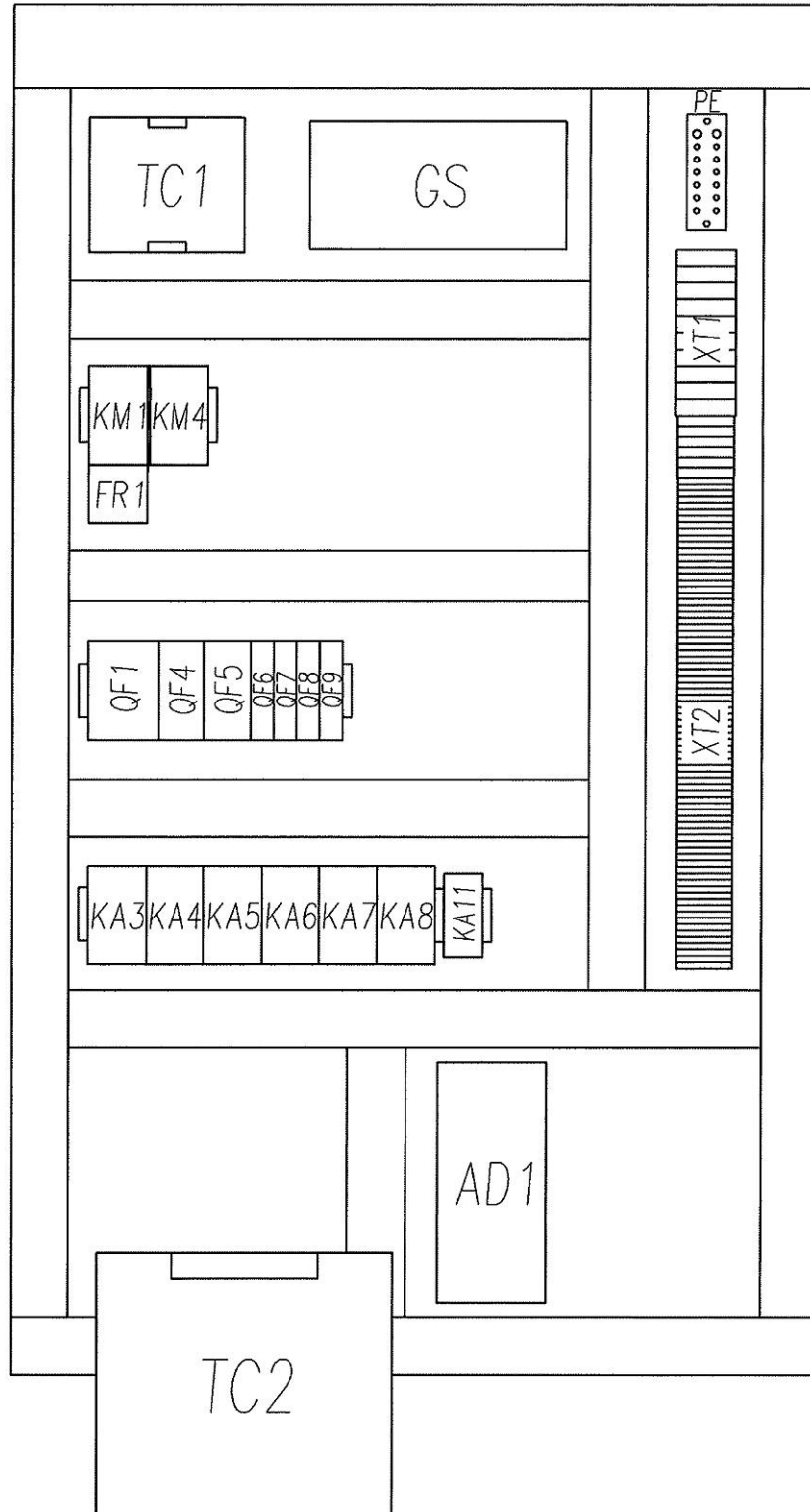
ELECTRICAL COMPONENT LOCATION

ELECTRICAL ELEMENTS MOUNTING DIAGRAM ON THE MACHINE





ELECTRICAL ENCLOSURE COMPONENTS





ELECTRICAL COMPONENTS LIST (1)

CODE	Type	Name	SPECIFICATION	Qty.
QS	VO/KCF 1PZ	Switch Disconnect	Iq=25A	1
QF1	GG45-016-3P	Circuit Breaker	Inq=16A	1
KM1	LC1-012B7C	Contactor	AC 24V, 50/60Hz	1
	LAD-N20C	Auxiliary Contact Block	For KM1	1
FR1	LRD-16C	Thermorelay	Range: 9~13A	1

CODE	TYPE	Name	SPECIFICATION	Qty.
ELECTRICAL ENCLOSURE				
TC1	JBK5-400	Transformer	380V,415V, 400VA/24V,250VA,220V,150VA	1
GS	NES-150-24	DC Power Supply	In=AC 220V, Out=DC 24V	1
QF3	GG45-D6-2P	Circuit Breaker	Inq=6A	1
QF4	GG45-D10-2P	Circuit Breaker	Inq=10A	1
QF5, 7, 8	GG45-D3-1P	Circuit Breaker	Inq=3A	1
QF6	GG45-D1-1P	Circuit Breaker	Inq=1A	2
KM4	LC1-D09B7C	Contactor	AC 24V, 50/60Hz	1
KA3~KA8	CAD-32B7C	Control Relay	AC 24V, 50/60Hz	5
KT7	LAD-T0	Time Delay Block	Range: 0~3, For KA6	1
	LAD-N02C	Auxiliary Contact Block	Front Mount KA5, 7	2
KA11	DRM570024LT	Intermediate Relay	DC 24V, 4C0	1
	FS-4C0	Intermediate Relay Base		1
SAFETY SWITCHES				
SQA, SQB	XCK-M121	Limit Switch	Top Die Position and Shift Point	2
SQE, SQF	XCK-M115	Limit Switch	X Axis travel limits	2
SQG, SQH	XCJ-102	Limit Switch	Y Axis travel limits	2
FOOT CONTROL PEDESTAL				
S1	YDT1-18	Foot Pedal		1
NUMERICAL CONTROLLER				
	YSD 6000D	Numerical Control System	POWER: DC 24V	1
	EMG-10APA22	Servo Motor	1.0kW, 2000f/min	2
	EDS-0810APC-CAN	Servo Drive	SUPPLY: 200~230V, 50~60Hz	1



PENDENT CONTROLS

HL1	XB2-BVB1LC	Pilot Light	White, Power Light	1
SB1 ,2	ZB2-BS54C/ZB2-EZ102C	Stop Button	Red. Panel/Pedal	2
SB3	XB5-AA42C	Push Button	Red, Main Motor Stop	1
SB4+HL2	ZB2-BW33C/ZB2-BWB31C	Push Button	Green, Pilot Light, Main Motor Start	1
SA2	ZB2-BG2C	Control Knob	Operation Mode	1
SA1	ZB2-BG2C	Control Knob	NC switch	1
	ZB2-BZ101C	Button Block		1

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