User's Manual

CONTENTS

Instructions

1、In order to keep the best condition of the machinery and maintain the highest efficiency and performance, the machine must be properly maintained and properly inspected.

2、The mold must be properly matched to the machine's specification and performance. The machine's service life will be shortened, if the mold is beyond the machine's specification and performance.

3、The oil label and specifications for the machine shall be recommended by the company and the oil adequacy shall be checked before work every day.

★ The parallelism of the mold must not exceed 0.03mm

4、Proper maintenance and proper operation of the machine is required in any working environment. We shall not be responsible for any damage to the machinery due to lack of proper maintenance and improper operation.

5、The main power must be turned off when the machine is not used after completion of work, which is to ensure safety and the service life of electrical parts.

6、When operating, no part of the operator's body shall be placed in an active machine body.

7、Safety devices must not be dismantled or modified without authorization.

8、The adjustment and inspection must be carried out daily according to our instructions.

9、The operator must be sure to know the correct position of safety device and emergency stop button, and carry out the test before operation.

10、In our operation manual, the operation methods and correct adjustment methods of the instrument are all detailed. The operator must read carefully. If the operator does not understand the manual, please contact us via 0574-86198845; our machine improves from time to time; in this case, the specification may differ from some parts. If so, please contact us for interpretation.

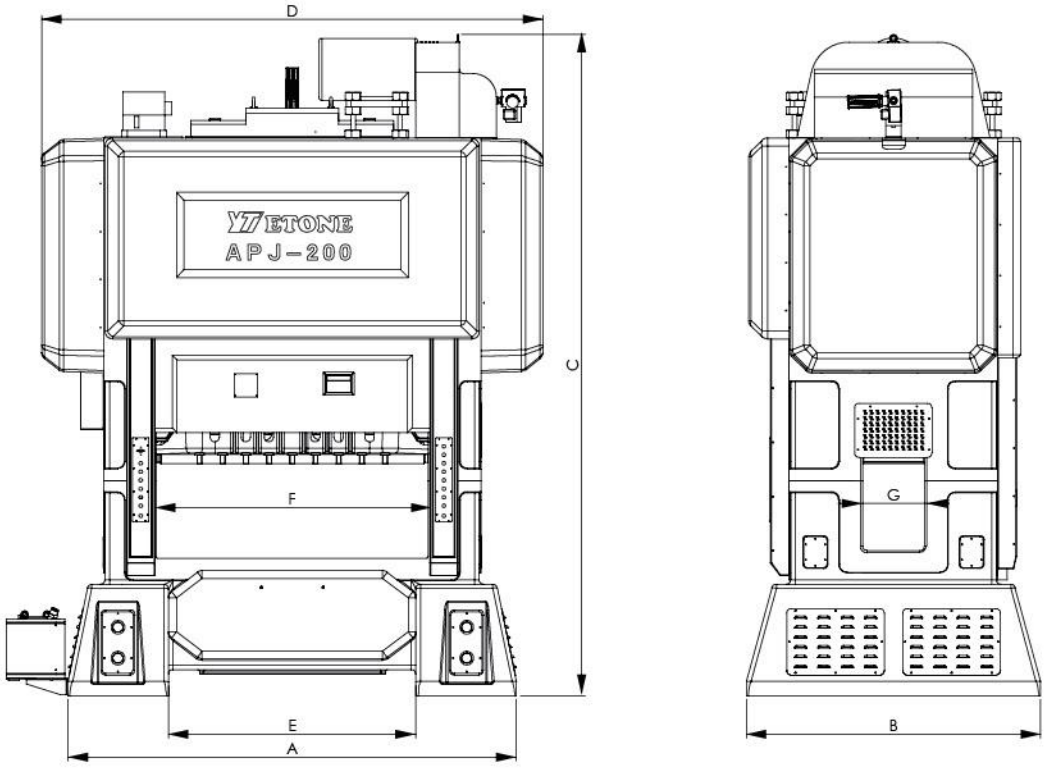
11、Operators must be offered sufficient training and learning to operate machine properly.

12、Any electrical control loop on the machine shall be provided with the safety of interlock. In any case, any modification and connection of the electrical control loop other than the modification performed by our technical staff shall be informed to us and shall not be modified until confirmed by our company.

13、When the parts of the safety device on the machine are damaged, such as the restricted closing of the safety door, please contact us for maintenance. No modification and replacement is allowed without our permission.

14、When any part needs to be repaired or replaced, the parts designed by the company must be used to ensure the proper performance and service life of the machine.

External Dimension

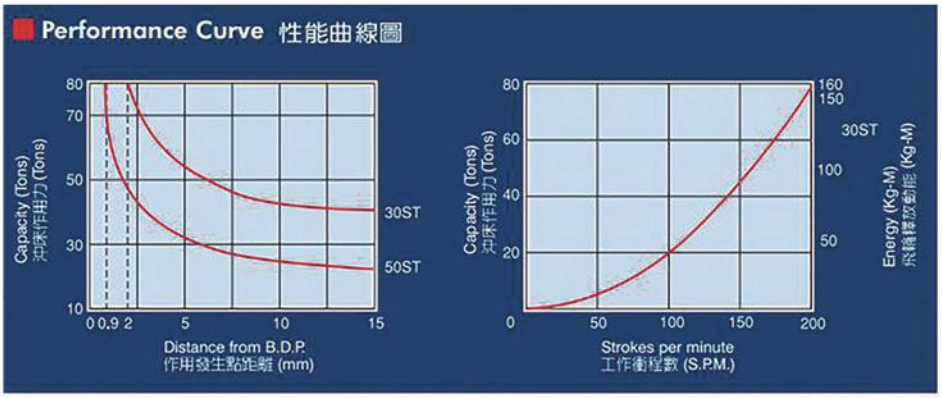


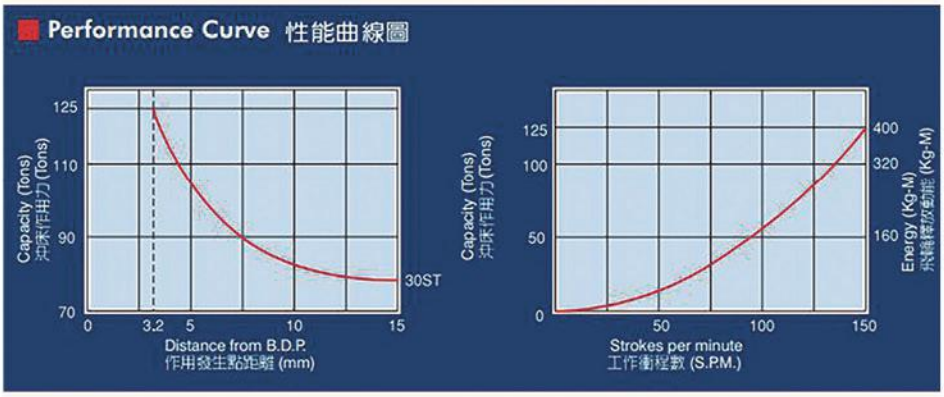
Size	APJ-60	APJ-80	APJ-125	APJ-150	APJ-200	APJ-220	APJ-300	APJ-350	APJ-400	APJ-450
A	2010	2180	2350	2480	2900	3100	3470	3670	4200	4400
B	1550	1600	1800	1800	2000	2000	2180	2250	2425	2495
C	3343	3638	3838	3850	4313	4508	5221	5250	5535	5565
D	2254	2444	2814	2950	3294	3564	4020	4220	4742	4950
E	900	1100	1200	1330	1600	1800	2040	2245	2700	2935
F	1040	1200	1280	1410	1760	1960	2200	2405	2840	3050
G	250	320	400	400	400	460	510	510	610	610

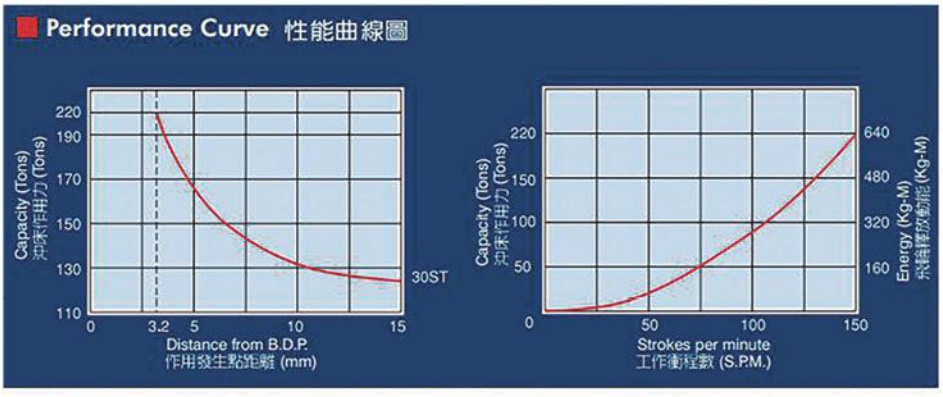
Machine Specification

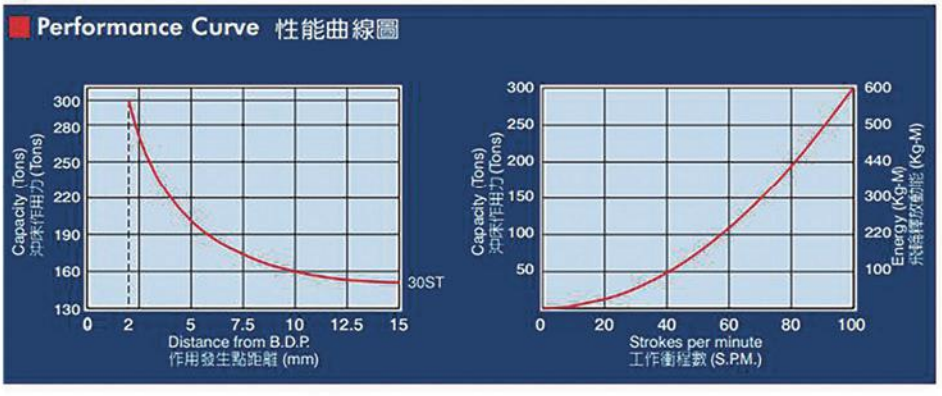
Model	Stroke(mm)	Stroke per minute(s.p.m)	Bolster area(mm)	Side area(mm)	Die height adjustment(mm)	Main motor(mm)
APJ-60	30	200-800	950X650	950X420	300-350	19KW
APJ-80	30	200-700	1100X750	1100X500	330-380	22KW
APJ-125	30	150-700	1200X850	1200X600	360-410	30KW
APJ-150	30	150-600	1400X850	1400X600	360-410	37KW
APJ-200	30	150-600	1700X950	1700X700	370-420	45KW
APJ-220	30	150-600	1900X1000	1900X750	370-420	45KW
APJ-300	30	150-400	2200X1000	2200X900	400-450	55KW
APJ-350	30	150-350	2400X1000	2400X900	400-450	55KW
APJ-400	30/40	150-350	2800X1200	2800X1100	420-480	75KW
APJ-450	30/50	150-300	3000X1200	3000X1100	450-500	75KW

Performance Curve









Instructions on Electricity, Gas, Oil Control

(List of materials required for installation and debugging (prepared by the customer)

Model	APJ-60	APJ-80	APJ-125/150	APJ-200	APJ-220	APJ-300/350	APJ-400/450
Main motor	19KW	22KW	30/37KW	45KW	45KW	55KW	75KW
Incoming power wire	16mm² Copper core	16mm² Copper core	25mm² Copper core	25mm² Copper core	25mm² Copper core	50mm² Copper core	70mm² Copper core
Compressed air pipe	3/4"inlet pipe urn into Φ12 PU ipe spigot	3/4"inlet pipe urn into Φ12 PU ipe spigo	3/4"inlet pipe urn into Φ12 PU ipe spigo	1"inlet pipe urn into Φ12 PU ipe spigo	1"inlet pipe urn into Φ12 PU ipe spigo	1"inlet pipe urn into Φ12 PU ipe spigo	1"inlet pipe urn into Φ12 PU ipe spigo
#32Antuwear hydraulic oil	130L	190L	230L	320L	350L	420L	580L
Compressed air pressure	6.0kg/cm²	6.0kg/cm²	6.0kg/cm²	6.0kg/cm²	6.0kg/cm²	6.0kg/cm²	6.0kg/cm²

Remarks：

1、The incoming power wire is three-phase five-system (A, B, C, N, PE). 5.5mm2 core can be chosen for N wire of machines of all models.

2、The actual power is below 80% of the motor because the equipment adopts frequency conversion to regulate speed.

Precautions on Machine Installation

1、Requirements for installation place

The machine shall be installed in a place with sufficient space around the machine; meanwhile, the mechanical lighting shall be kept in order to maintain and inspect the machine. And the space required for stamping materials, stamped finished products and peripheral equipment shall be more considered to ensure smooth production lines. The enough space shall be reserved, which is for the hanger of loading and release mold during the factory arrangement.

Workplace precautions are as follows：

① The height of the room space must be in accordance with the height required to install and disassemble the machine.

② Ventilation fans must be installed indoors.

③ Natural lighting and lighting device.

④ Natural ventilator and large electric fan.

⑤ All electrical, compressed air and other pipes should be buried under the concrete floor.

⑥ Mold lifting equipment must be able to load 5 tons.

⑦ Prepare in advance: Die oil, mechanical oil, hydraulic oil.

2、Requirements for foundation installation

The machine must be installed on the flat and high strength foundation. The foundation strength shall be more than 7kg/cm^2. Therefore, the foundation shall be constructed according to the foundation drawing designed by our company. It shall be added as foundation pile after construction and covered with concrete, if the foundation strength does not reach 7kg/cm^2. Please firstly check whether the reserved piping space such as power supply and compressed air is reserved or not, as well as pay much attention to the dimensions such as hole spacing depth of fixed screw piles reserved by the foundation conform with the drawings before mechanical was installed.

3、 Requirements for compressed air

Since the clutch brake of punching machine designed by our company is all aerodynamic, the quality of compressed air is closely related to their life. Please refer to the following for the matters during construction.

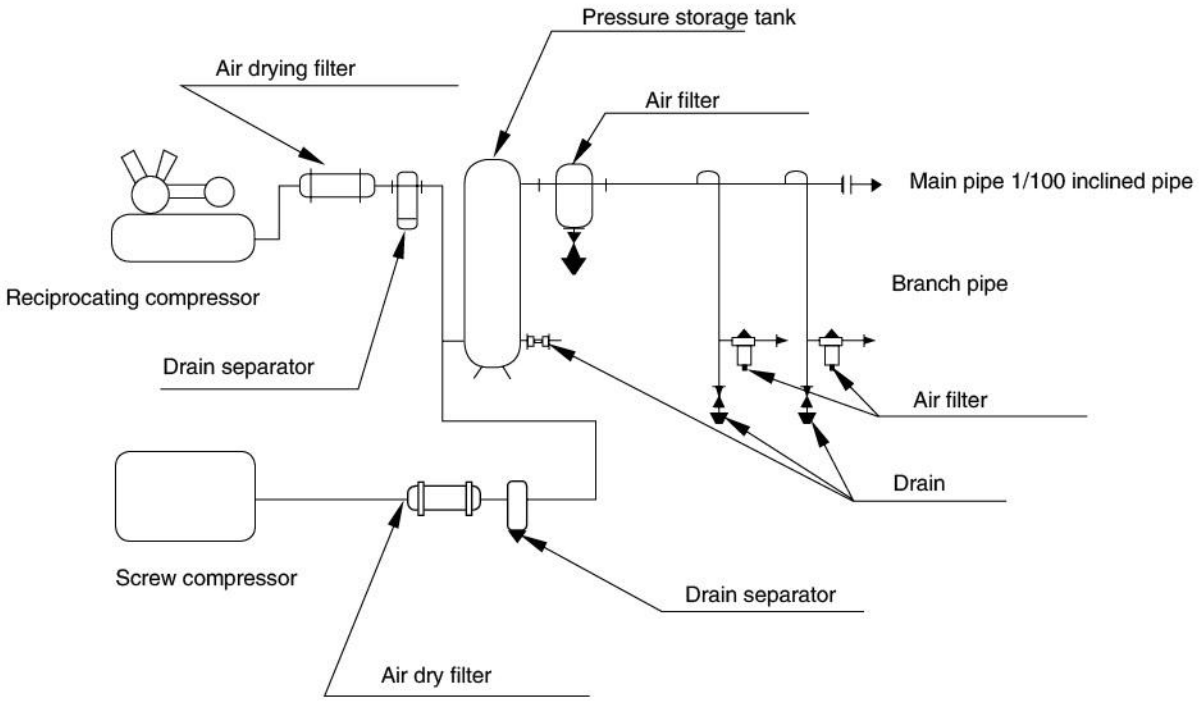
① The compressed air piping must be constructed at an angle of 1/100.(Be facilitated to discharge water)

② If the branch pipe shall be constructed, the connection shall be made above the main pipe.

③ All compressed air pipes shall be surface galvanized.

④ Pressure storage barrel must be equipped, if using screw air compressor. It will produce carbon, water vapor, dust and other sundries with any kind of compressor. Therefore, it is necessary to nstall air cooling, drying, water separation port and air filter at the main pipe outlet of the compressor.

As is shown in Figure 2-1:



Precautions Machine Installation

4、Requirements for hydraulic oil

The quality of hydraulic oil and the maintenance of the machine are closely related to the life of the machine, therefore, we specially regulate the oil in the machine.

A、Knowledge of hydraulic oil
Hydraulic oil is not only the driving power, but also the lubrication of hydraulic parts to reduce friction and prevent rust, and the viscosity and ph of hydraulic oil will affect the valve and oil seal anti-diarrhea function.

In order for customers to select the appropriate oil products, the company listed the following characteristics of the oil products, as a reference when customers choose oil products.

① Viscosity：

The stability of the hydraulic oil will change along with the rise of temperature which will affect the liquidity. The viscosity must be in the range of 20.8 CST to 74.8 CST, when the temperature of hydraulic oil in the machinery reaches at 40 ℃ .

② Viscosity classification：

In the classification column of viscosity of hydraulic oil, there are marked different temperatures to cause different viscosity. We suggest that the viscosity index of hydraulic oil is in the range of 32cst-68cst.

③ Pour point：

Pour point means that hydraulic oil can still flow at the lowest temperature, so it is a very important factor to be considered. If the machine is used in cold regions, the required hydraulic oil must be of high quality and have very good fluidity, and it should be better to maintain the viscosity below 75cst at the lowest temperature.

④ Wear resistance：

According to the testing of vane impeller by American material testing center, (ASTM D2882) the abrasion resistance of hydraulic oil must reach AW GRADE level, which can be applied to high pressure punch.

⑤ Others：

In addition to the above conditions, the oil must have anti-corrosion, low acidity, high wear resistance and other characteristics, customers can also consult oil manufacturers to find more suitable oil.

Precautions on Machine Installation

B、 Knowledge of hydraulic oil

Temperature has a great influence on the life of hydraulic oil, and it will cause oil leakage and oil seal function accelerated aging.

The hydraulic oil temperature is shown below：

	The maximum	The minimum
Temperature of hydraulic oil	55°C	15°C

C、 Quality requirement of hydraulic oil

Any brand oil can be used as long as it meets the above requirements. We also carefully recommend high pressure and wear - resistant hydraulic oil brands and models. Mineral oil and water soluble oil can be both used in our press. We use hydraulic OIL of MOBIL DTE OIL brand as the special test machine in our factory. The following brands &specifications of oil can be purchased on the market.

※ Mineral oil

CNPC	Circulating actuating oil	specifications
B.P	GP-XP68	B.P
ESSO	SPARTAN	68
ESSO	NUTOH	68
SHELL	SHELL TELLUS	#32
MOBIL	DTE OIL NAME SERIES	#32
BRAND	DESCRIPTION	LICHT
MOBIL	SHC 600 SERIES	626
MOBIL	DDET OIL	#32

D、Replacement of hydraulic oil

- The oil in the main tank should be replaced annually.
- The new machine should be replaced three months later, or after 2160 hours (after the grinding period).
- Clean oil tank and filter net when replacing hydraulic oil.
- The oil of the locking unit and the lifting unit should be replaced annually.

Methods of Mold Sticky and Release

If the die gets stuck for the operation error, the die can be separated in following methods, then the punching machine can resume normal operation.

Method A:

① Adjust the operation mode multi-segment selection switch to micro mode

② Turn off main power

③ Turn on the main power and turn the motor start switch to reverse mode

④ Press the start switch

Method B：

If Method A fails to solve the problem, it indicates that the mold is stuck tightly, which should be solved by the following procedure.

① Set the pressure on the lock pump to“0”

② Set the oil pressure on the lock pump to“0”

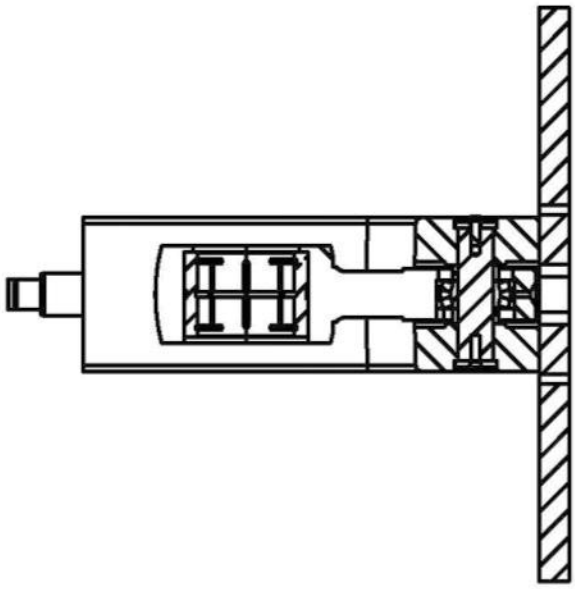
③ Loosen the oil pressure layer tubing and reduce the pressure in the tubing to “0”

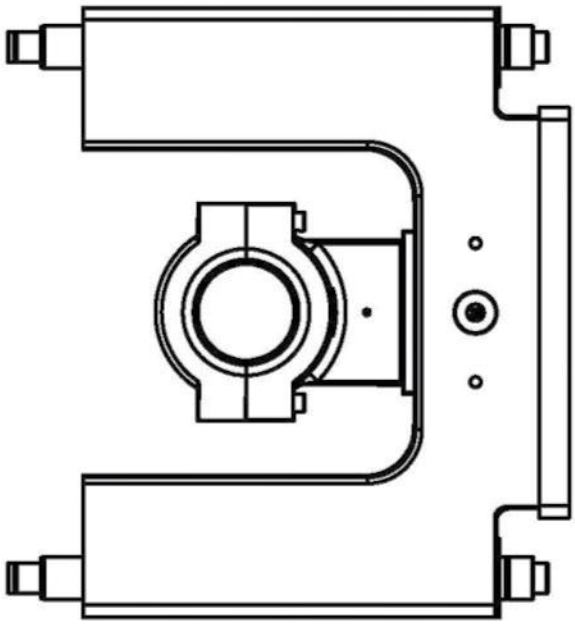
④ Loosen the 4 stud nuts at the same time

⑤ The punch holder can be raised and the die can be taken out at this moment

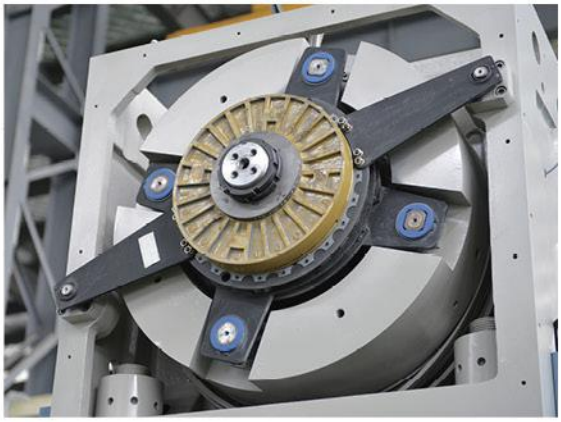
Basic Construction and Structure of press Machine

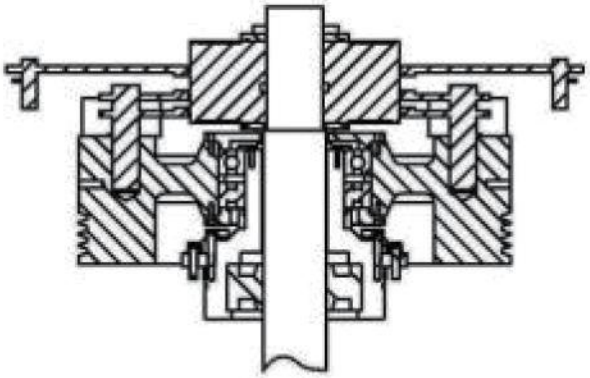
1、Dynamic balance system structure drawing

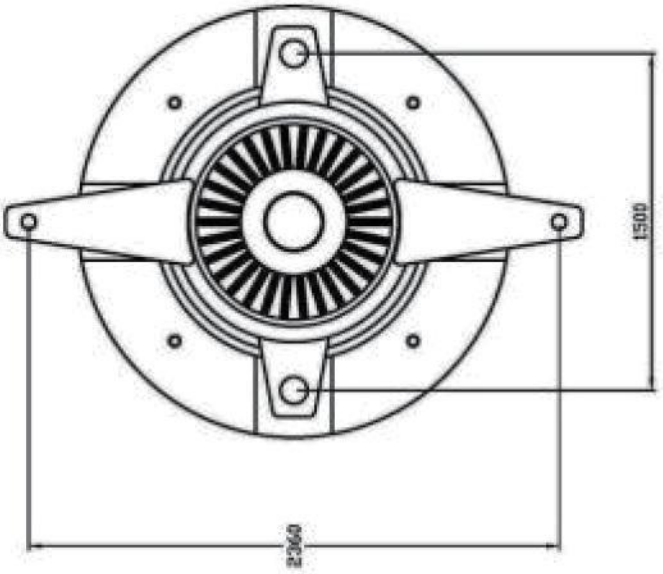




2、The flywheel and clutch of the punching machine



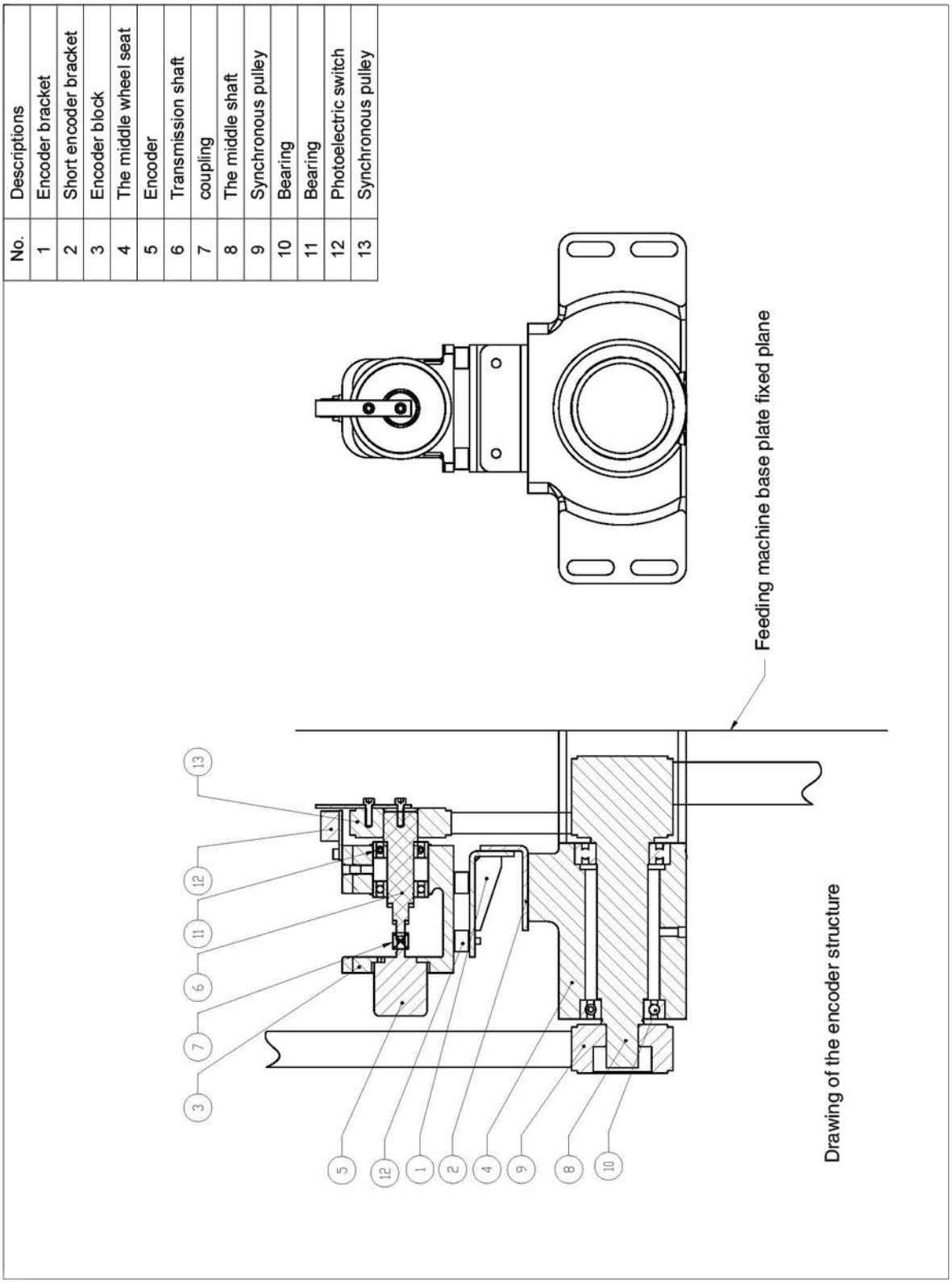




Drawing of flywheel-set structure

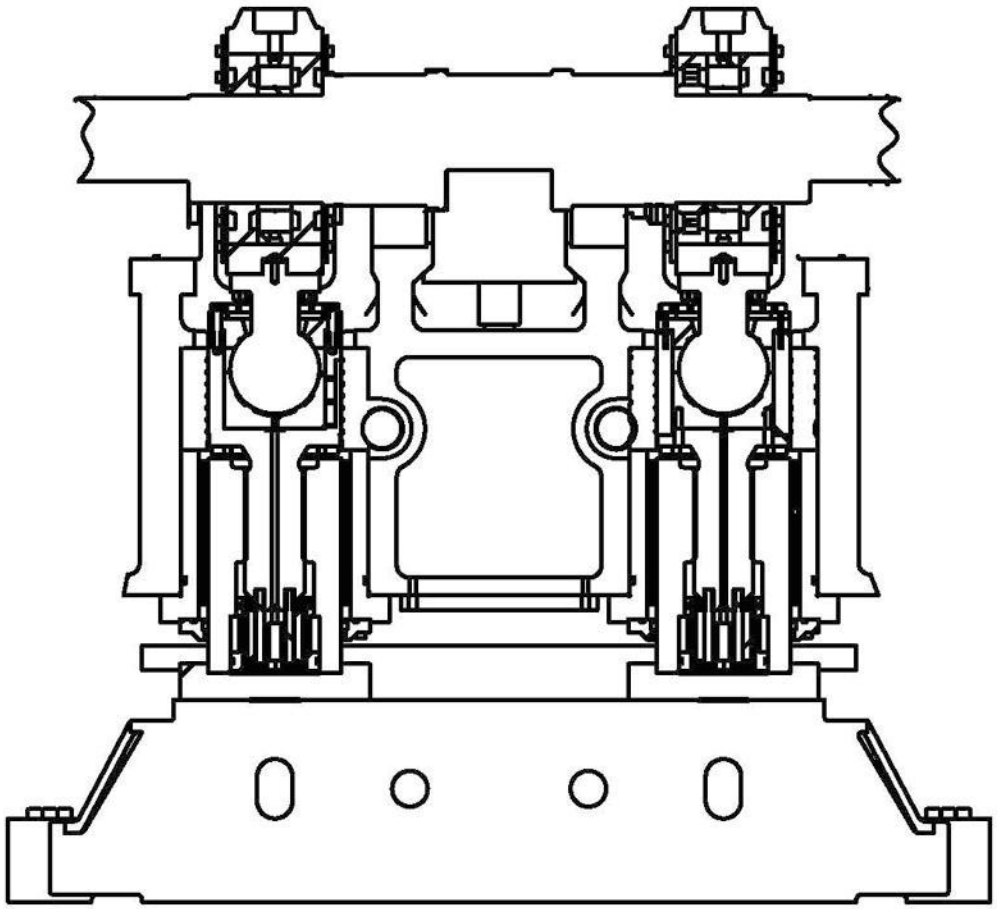
3、The encoder structure of the press machine

No.	Descriptions
1	Encoder bracket
2	Short encoder bracket
3	Encoder block
4	The middle wheel seat
5	Encoder
6	Transmission shaft
7	coupling
8	The middle shaft
9	Synchronous pulley
10	Bearing
11	Bearing
12	Photoelectric switch
13	Synchronous pulley



Drawing of the encoder structure

4、The serrated bar structure of the press machine

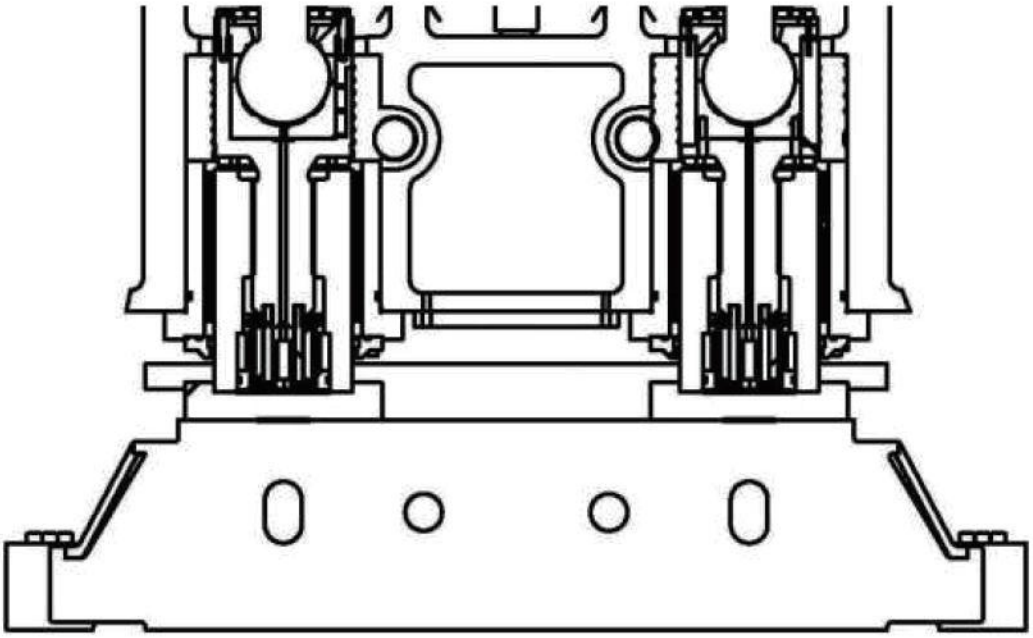


Drawing of the serrated bar structure

5、press machine sliding block lock device

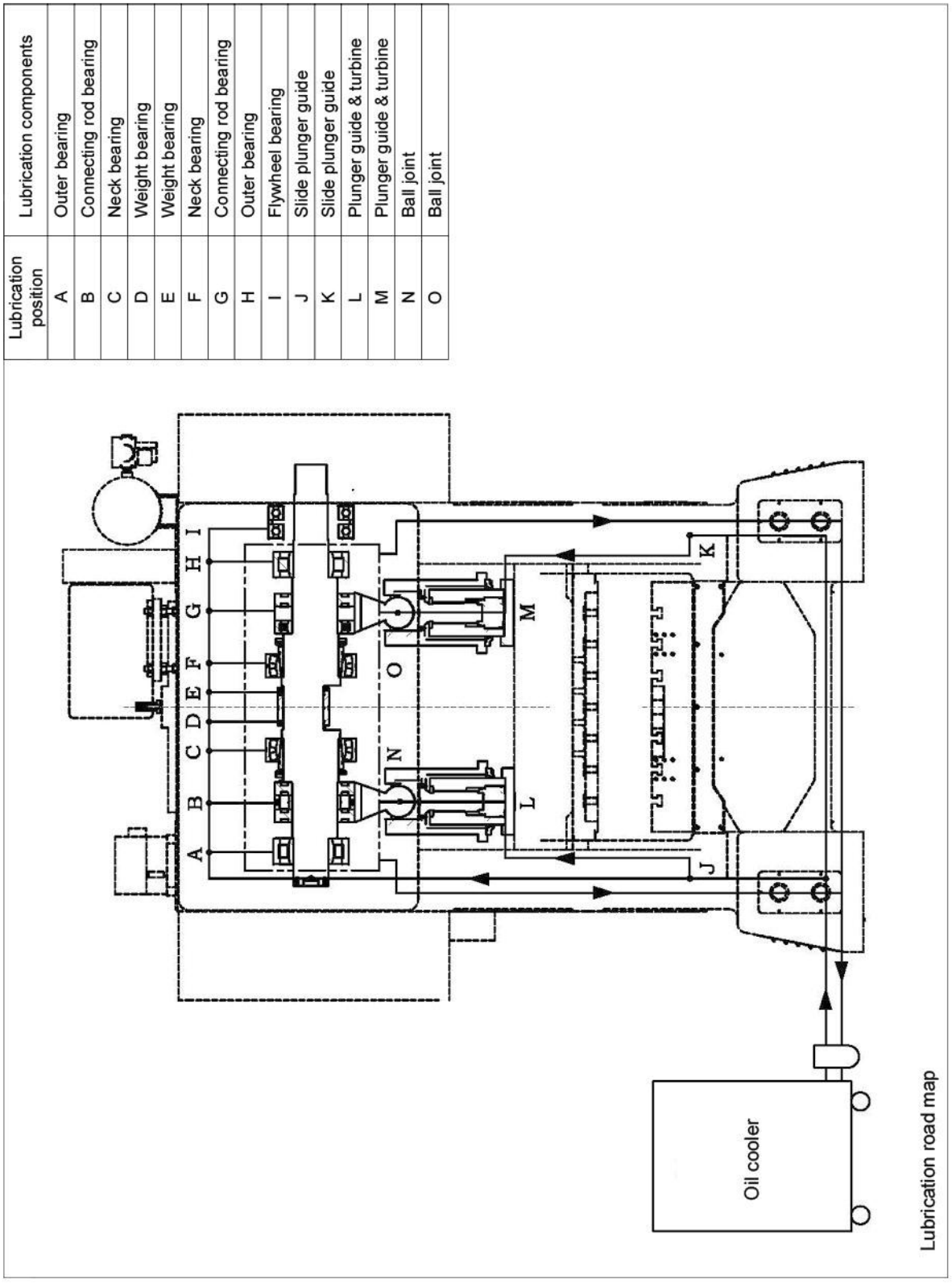
(1) The press machine sliding block locking mechanism is oil pressure locking mechanism, and the memory pressure is 200kg/cm².

(2) Press the sliding block to lock 200kg/cm² oil into the guide piston, locking the serrated group.



Lubrication circuit diagram of press

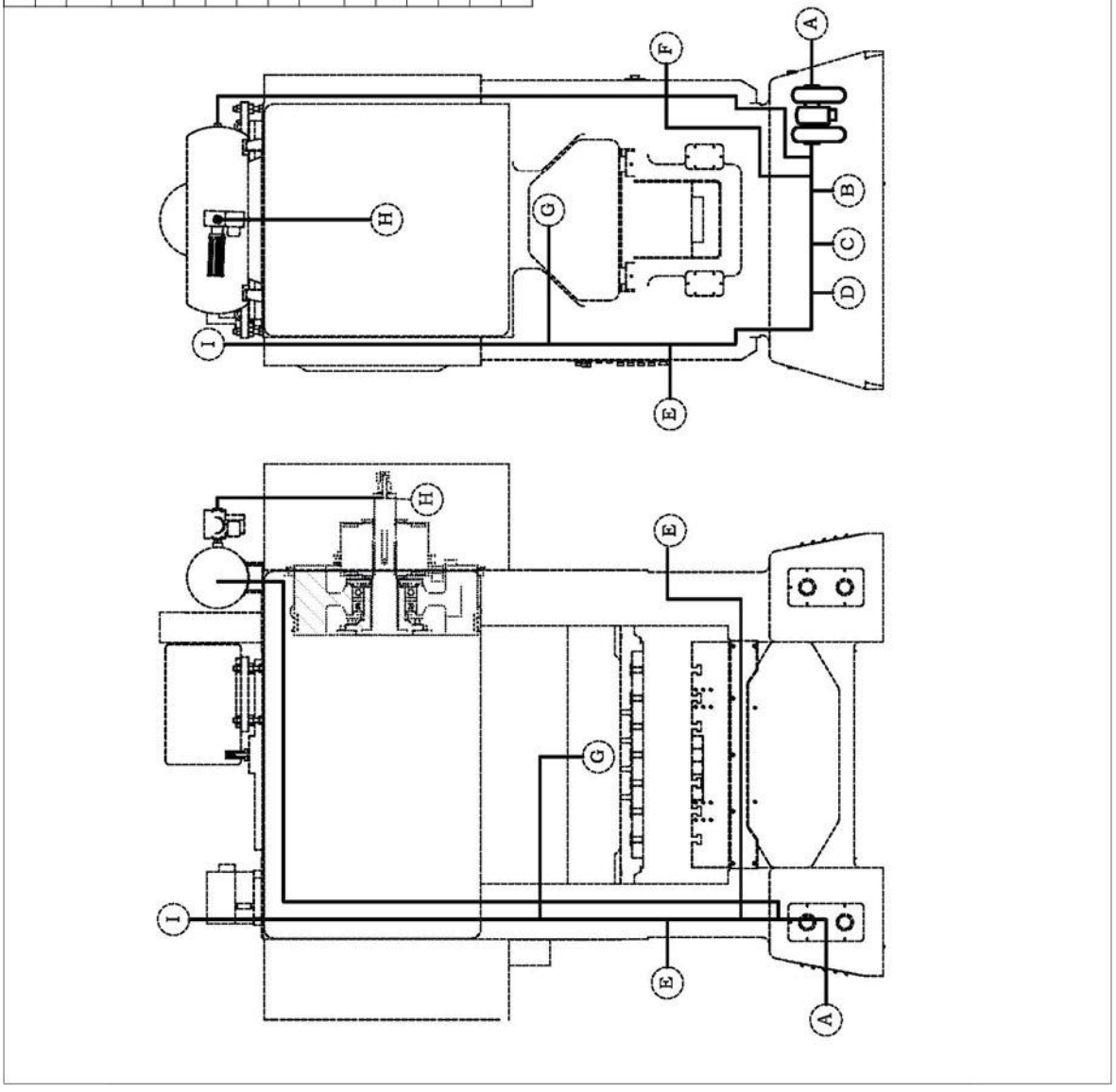
Lubrication position	Lubrication components
A	Outer bearing
B	Connecting rod bearing
C	Neck bearing
D	Weight bearing
E	Weight bearing
F	Neck bearing
G	Connecting rod bearing
H	Outer bearing
I	Flywheel bearing
J	Slide plunger guide
K	Slide plunger guide
L	Plunger guide & turbine
M	Plunger guide & turbine
N	Ball joint
O	Ball joint



Lubrication road map

Gas control roadmap for press

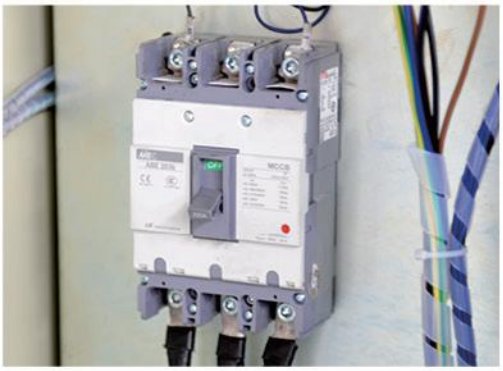
Access Point	Access Component
A	Gas source entrance
B	Pneumatic hydraulic pump unit
C	Pressure sled
D	Feeder relaxation
E	Front air source interface
F	Rear air source interface
G	Balance cylinder
H	Clutch
I	Pneumatic hydraulic pump unit
J	Slide plunger guide
K	Slide plunger guide
L	Plunger guide & turbine
M	Plunger guide & turbine
N	Ball joint
O	Ball joint



Methods of Press Machine Debugging, Starting & Stopping

1、 Check the voltage on the voltmeter before starting There will be fluctuations in the voltage of each area in each period. Please contact the local power sector for any doubt.

2、Please turn on the back door of the electric box and push the total power switch to the position of ON, when the voltmeter shows normal condition.



3、When the power supply of the electric box is completed, the operation power supply green indicator will flicker; press the operation power button, the green indicator light is on, and the oil cooler will start to supply lubrication to the press.

4、The operation power is on for 1-2 minutes, waiting for the lubricating oil pressure, then press the reset button. Check the alarm record on the touch screen until the alarm is relieved, with only one main motor not running

5、Select the direction of the main motor, forward rotation, the main motor starts and the green indicator light start flashing

6、Press the main motor start button, and the motor operates. The ammeter indicator lamp shows the main motor running with current

Methods of Press Machine Debugging, Starting & Stopping

7、Press the reset button. Check the touch screen alarm display, and the system is normal.

8、Switch the operation mode switch to inch mode, select inch stop angle on the touch screen. Press the abnormal reset button; wait for the green light to turn on; press both hands to start the button; the press slider starts sliding; the slider stops at the set angle range.

9、Switch the operation mode switch to a safe stroke; press the abnormal reset button; wait for the green light to turn on; press both hands to start the big head button; the punch slider begins to slide; the slider stops at the top dead point.

10、Switch the operation mode switch to continuous mode; switch the mis-feed detection switch to ON; switch the feed relaxation switch to OFF; press the abnormal reset button; wait for the green indicator light to turn on; press both hands to start the big head button; the press slider begins to slide; the continuous mode on the touch screen sets the required speed, the automatic switch turns to ON; the punch speed will be increased or reduced to the set speed required for production.

11、When the continuous mode shutdown is normal, the automatic acceleration switch of the press machine should be switched to OFF. After the press machine speed is reduced, the yellow button of positioning stop should be pressed and the shutdown is completed.

12、Mold height adjustment. The mode selector switch turns to the cutting position; the mode height adjustment switch turns to ON according to the mold height selection up and down, the mode height adjustment switch turns to OFF after the completion of adjustment.

Methods of Press Machine Debugging, Starting& Stopping

13、Emergency stop switch. Press the button when the press machine is in emergency, and the punching machine stops immediately.

14、Angle display. The punching machine displays the stamping speed when it runs, and the slider angle is displayed when the pressg machine stops.

15、Press the red main motor stop button, then press the red to operate the power off button when it stops.

16、Open the back door of the electric box; switch the total power to OFF; turn off the back door of the electric box, and explain the whole process of the switch. Please arrange technical personnel to come to our company for training and learning.

Function Description Of Touch Screen Man-Machine Interface For Press Machine

1、Output frequency: operating frequency after motor starts

2、Output current: running current after motor starts

3、Flywheel speed: speed of flywheel running

4、Operation mode: display the current operation mode of press machine.

5、Inch angle: choose the stop angle of the press under the inch movement mode.

6、Inch move speed: set the running speed of the press in inch movement mode.

7、Current speed: display the current running speed of the press.

8、Set speed: the speed setting of press machine when running continuously, can be increased or reduced as the demand.

9、 PLC input: press point input signal monitoring

10、PLC input: press output signal monitoring

11、ECAM: set thepress to turn on or stop the peripheral equipment.

12、Miscarriage: choose the range of miscarriage signals and angles.

13、Final material detection: select material tail to stop or not at the end of feeder.

14、Frequency conversion parameter: internal parameters can not be changed.

15、Debugging parameters: internal parameters can not be changed.

16、Abnormal alarm record: record of abnormal condition of punching machine.

17、Air pressure indicator light: green light when it is normal, red light when it is abnormal.

18、Emergency indicator light: green light when it is normal, red light when it is abnormal.

19、Lubricating oil indicator light: green light when it is normal, red light when it is abnormal.

20、Miscarriage indicator light: green light when it is normal, red light when it is abnormal.

21、Clutch / brake indicator light: green light when works, red light when it stops.

22、Slide block locking indicator light: green light when it is normal, red light when it is abnormal.

23、Conveyor belt indicator light: green light when starting, red light when stopping.

24、Delayed start of conveyor belt: set time according to demand, unit (Second)

25、Slider angle: display slider angle of press

26、Output monitor: Y0-Y17

27、Output monitor: Y20-27

28、Output monitor: Y30-Y47

Please view the PLC internal output signal.

Function Description Of Touch Screen Man-machine Interface For Press Machine

① Input monitor, X0-X17

② Input monitor, X20-X57

③ Input monitor, X40-X57

Please view the PLC external input signal.

① Misplaced angle setting, set angle range according to requirement. Once it is out of range, it will not be tested.

② The signal can be selected as NO/NC.

③ Blowing, select on / off, blowing angle can be set. Blowing mode can be selected continuous / interrupted.

① Set ECAM starting / stopping angle

Die installation method

The correct installation method of punching machine die is of great significance for the service life of press machine and the use of die. The specific steps are as follows:

① press the machine to the bottom dead center, showing 180 degrees.

① Transfer the multi segment switch to "OFF", adjust the height of the slider closing height is1mm higher than the die height.

② The molds are rubbed well. Clean up, install the shift arm, lift the mold arm, push the mold into the appropriate position of the worktable.

③ Lower the lifting arm and gently press the mold to the slider with the adjusting button.

④ Locking, upper die

⑤ Put multiple selector switches into single action and tap 5-6 times.

⑥ Locking, lower die

Daily Inspection and Maintenance Project of Press Machine

Regular maintenance and checklist for high speed press machine:

Operation part	Regular maintenance items	Maintenance and inspecion contens	Daily maintenance	Weekly maintenance	Monthly maintenance	Three months' maintenance	Six months' maintenance	Yearly maintenance	Record maintenance& Result improvement
Pre work maintenance	Power switch	Check the supply voltage value, power connector							
	Air source	Check whether the intake gas is above 5. 5kg.		●					
	Lubricating oil	Check whether the lubricating oil pump pressure is above 4kg	●						
	Routine inspection	Check the cooling machine(filter net)is blocked or not.	●	●					
		Check whether the cooling machine(filter) is blocked or not.	●	●					
		Check whether the oil level of the injection tank is in the specified position or not.			●	●		▲	
		Check feeder gear box oil level line	●		▬				
		Check feeder section oll level line			●			▲	
		Check the grease distributor of the feeder grease the butter or not.			●				
		Check whether the feeding wheel of the Feeder is sticky with greasy dirty.							
		Check final material photoelectric switch of eeder							
		Check dripping device of feeder	●						
		Check the leveler and thease distributor grease butter or not.							
		Check leveling machine,optical switch is working normally or not.	●						
		Check pressure tank oil level detection liquid level switch.	●						
		Check the pressure of the balance cylinder is at 2–4kg or not.	●		●				
		Check the clutch brake pressure is at 5–6kg or/not	●		●				
		Check the locking pressure is above 200kg or not	●		●				
		Check whether the rotary joint of brake is leaking air or not.			●		●		
		Check whether the rotary joint of brake is leaking oil or not.	●		●		●		
		Check starting current of the main motor is about 25–30A							

Daily Inspection and Maintenance Project of Press Machine

Regular maintenance and checklist for high speed press machine:

Operation part	Regular maintenance items	Maintenance and inspecion contens	Daily maintenance	Weekly maintenance	Monthly maintenance	Three months' maintenance	Six months' maintenance	Yearly maintenance	Record maintenance& Result improvement
Machine platform	Inspection arter power switch startup	Check the slider idle current s basicaly around 30–35A	●						
		Check whether the sending function is working property or not.	●						
		Check each switch s erroneous or loose	●						
		The emergency stop function s workng or not	●						
	Inspection of each oil pipe	Check the screws are solid or not			●				
		Notice If there is a lttle oil leakage in the tubing	●		●				
		Check whether there s wear or blstemng of oil pipe	●		●				
	Inspection of slider&operating platform	Check if there s a wear surface, or the surface is uneven			●	●			
		Flatness references with our factory checklist				●		●	
	Inspection of rotating parts	Check whether there are abnormal wear in each rotating part			●				
	Inspection of belts	Check the transmisson triangle belt is worn or not.		●				▭	
		Check the toothed belt of feeder is wom or not.			●			▭	
		Check the decoder belt is wom or not			●			▭	
		Check the toothed belt of sychronous is worn or not			●				
	Solenoid valve	Check the appearance of cutch solenoid vale is clean or not			●				
		Check the appearance of brake solenoid valve is dean or not			●				
		Check the clutch solenoid valve is leaking or not			●				
		Check the brake solenoid valve s ealing or not							
	Inspection of locking pneumatic pump	Check whether the oil level line of the pneumat pump is in the specified	●						
		Check whether the junction of pneumatic pump is loose		●					

Regular maintenance and checklist for high speed press machine:

Operation part	Regular maintenance items	Maintenance and inspecion contens	Daily maintenance	Weekly maintenance	Monthly maintenance	Three months' maintenance	Six months' maintenance	Yearly maintenance	Record maintenance& Result improvement
Machine platform	Pneumatic punp for uncoiler	Check the pneumatic pump is leaking or not	●						
		Check whether the oil level lne of the neuman pump is in the specified	●						
		Check whether the junction of pneumatic pump is loose		●					
		Check the pneumatic pump is leaking or not	●						
Electrical components	Chechking ground wire	Check whether the grounding terminals are loose					●		
	Inspection of electrical components	Check whether each relay or contactor has abnormal sound			●				
	Inspection of main motor	Use the air gun to dlean the dust in the radiator fan and remove grease stains.						●	
	Electric box	Clean the dust in the electric box with an air gun.			●				
		Clean the inner dust of the electric box for Ithe leveling machine with air guns.			●				
	Cooling fan	Clean dust and grease from cooling fan			●				
		Use air gun to clean fan dust inside main Inverter			●				
		Use air gun to clean the fan dust inside the mould converter			●				
		Use airgun to clean the fan dust inside the inverter of leveling machine			●				

● Inspected part ▭ Replaced part ▲ Must be replaced

Repair and Maintenance Of Special Parts Of The Machine

1.Repair and maintenance of cooling machine

Air filter (to be cleaned once a week)

To be cleaned once a week

Maintenance of Machine Special Parts

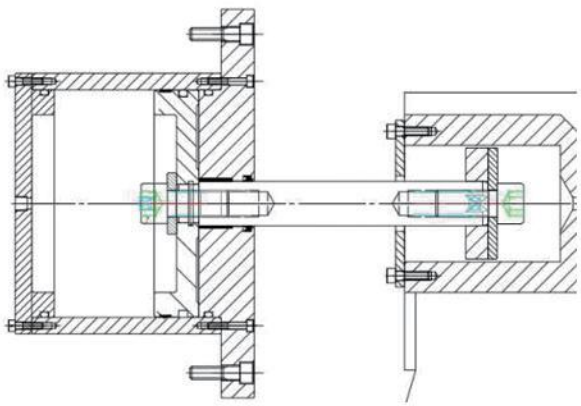
2、Maintenance of v-belt of main motormotor

If v-belt is damaged, it should be replaced according to the following method. Move the electric motion to the side of the flywheel to relax the v-shaped belt and unload it. Replace all parts at the same time, if several strips of tape can be used, it should also be replaced and can be retained as accessories. Because the old and new belts are mixed in use, the elongation of the two is uneven. It may reduce the effect. Even if the nominal length of the two is the same, the actual size may vary slightly. So you have to be very careful and choose the same length products. Then, adjust the tension to positive, press it by hand at the center of the belt if the indentation value is 3.5kg / m, 16 mm / m. The tape needs several days of running-in adaptation. You can check it after a few days and adjust the tension according to the actual situation. The tape should be stored in a sunny, dry place and be careful to prevent grease from sticking up on it.

3、Maintenance of balance cylinder

Air must be removed before inspection, cleaning and adjustment. Although the punching machine shows zero, pay attentions that there is still residual pressure. After assembling, we must confirm whether the bolt and nut are loose or not when fills in air. Firstly set the regulator with 0.5kg / square centimeter, then check whether there is air leakage or relaxation, etc. the staff should leave the balance cylinder and pay attention to be safe when inflating.
Inspection and test methods:

Check through the pressure gauge, only inflate the relevant parts of the balance cylinder, under the condition of lifting pressure (the display value of pressure is 5kg/cm^2). Then it means normal condition if the air pressure remains at 4.5kg/cm^2 after 10 minutes. Conversely, if the pressure value is below 4.5kg/cm^2, the cause should be checked and the necessary treatment should be carried out.
It should be at night or during the day lunch break time. The environment is particularly quiet according to the leakage noise to check the leakage site; only inflate the relevant parts of the balance cylinder, then check it.



4、 Maintenance and repair of mainframe frequency converter

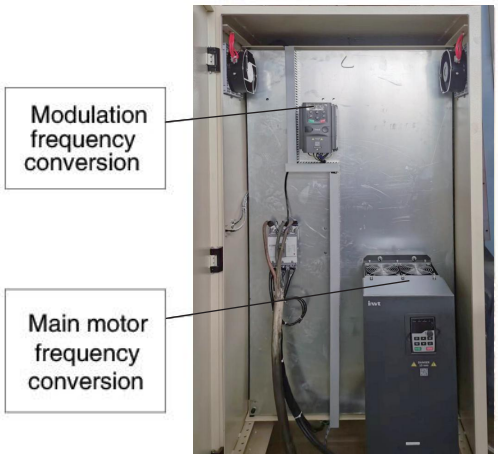
The main engine motor and the mould regulating motor of our company are controlled by frequency converter to guarantee the service life, which should be guaranteed as follows:

① Main electric box must be ventilated

② Avoid direct sunlight

③ Regular cleaning of cooling fans

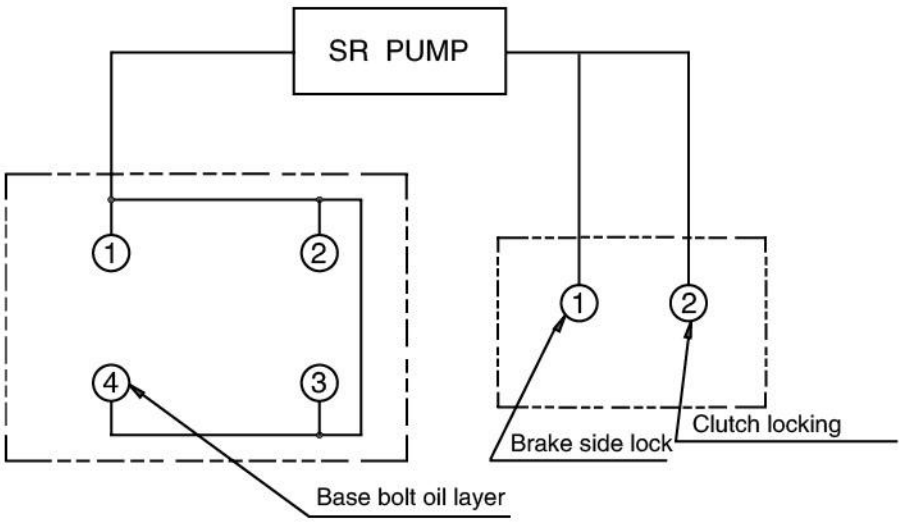
④ Prevent dust / cotton / metal from being finely peeled in



Introduction to High Voltage locking Circuit

A、Locking buckles for pedestal bolts and guide posts

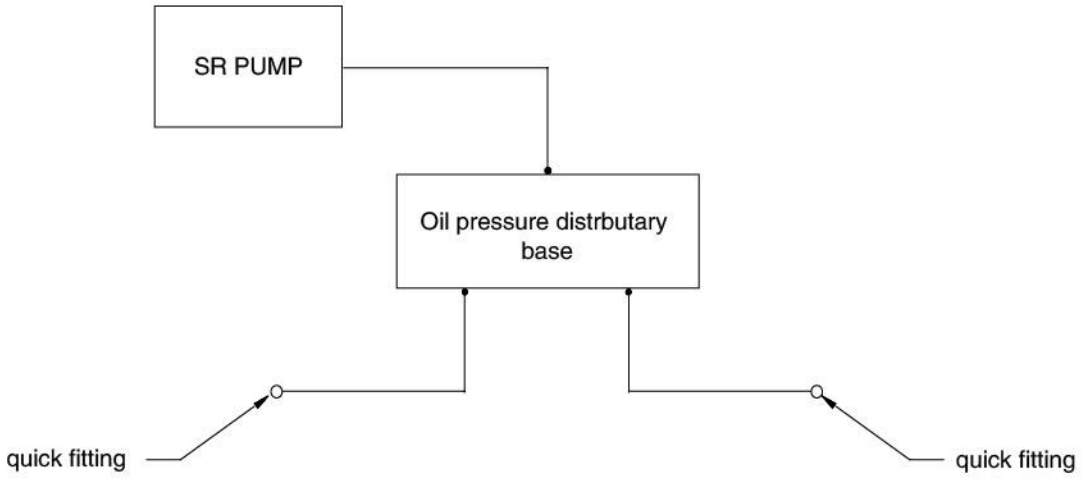
Use Taiwan brand oil pressure pneumatic lock unit. The ratio of air pressure to oil pressure is 1: 50. The reasonable pressure is 4kg/cm² and the corresponding oil pressure is 200kg/cm². The state of use is normally open.



Maintenance of Machine Special Parts

B、The Loop of Oil pressure lifting Die arm

Use Taiwan brand oil pressure pneumatic lock unit. The ratio of air pressure to oil pressure is 1: 50, so the reasonable pressure is 4kg/square centimeter and the corresponding oil pressure is 200kg/square centimeter. The state of use is normally closed.



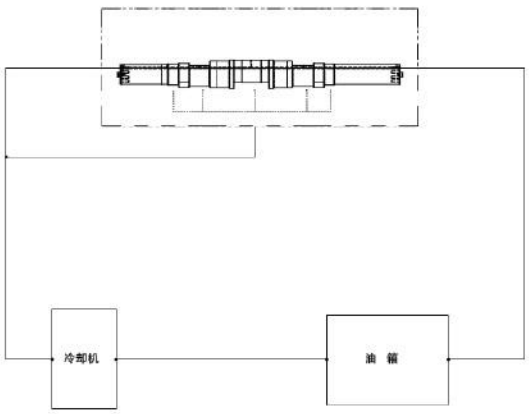
The Introduction of low pressure Lubrication Circuit

C、 Lubrication and cooling of crank shafts

Use Taiwan brand coolers for forced cooling, and it has two main functions:

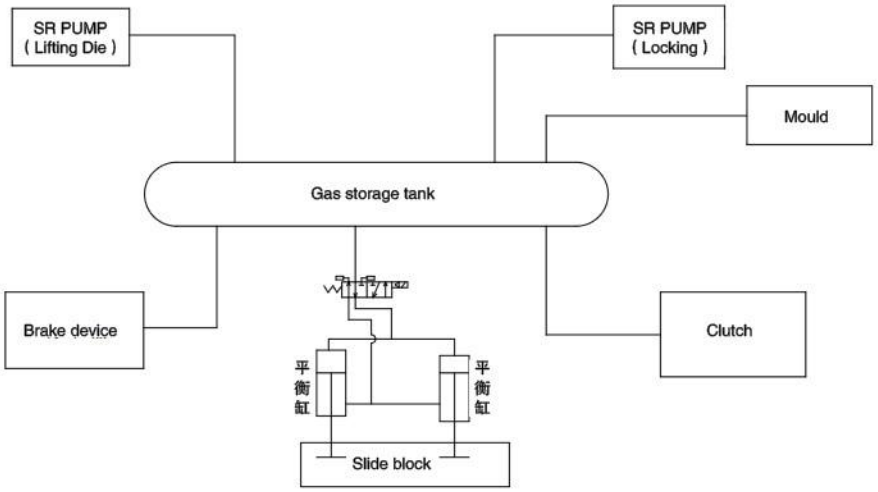
① Lubrication of all high-speed rotating components.

② Take away the temperature to ensure the service life and precision of the machine.



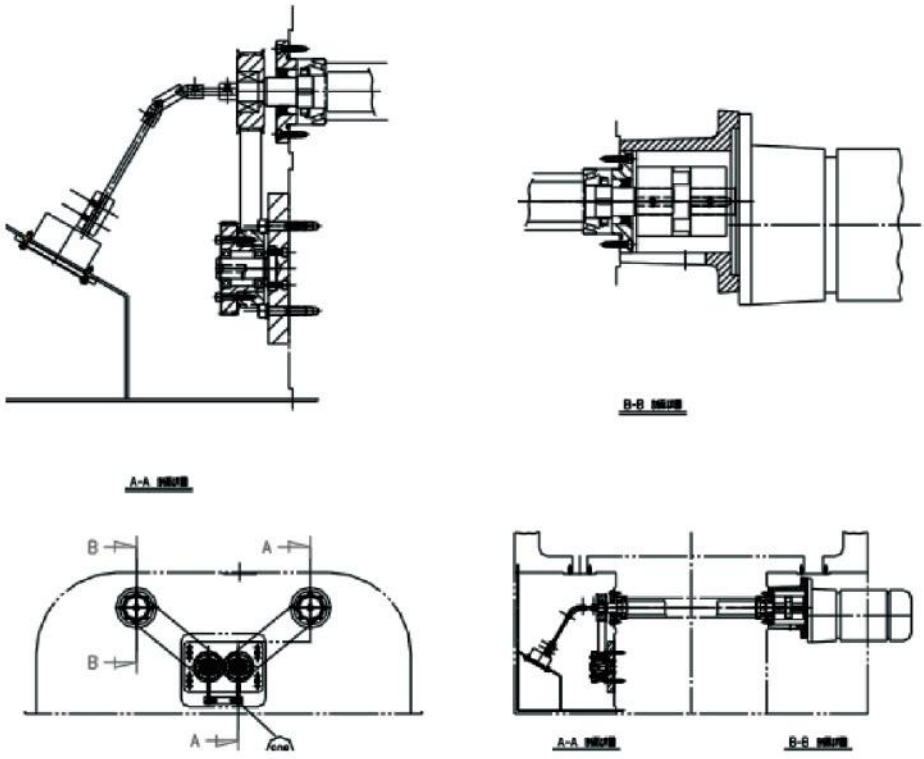
Introduction to pneumatic circuit

The brake and clutch system of our company are all driven by air pressure, and its main gas source is a 1.65*105cm3 gas storage tank. Meanwhile the two MAC dual solenoid valves (made in U.S.A.) are selected to control it. The system is as follows: mould, locking unit, mold lifting unit, The balance cylinder has the corresponding outlet, and there are 2 draining valves under the storage tank, which needs to be drained once a week.



Introduction to Mold Height Adjustment Part

The rotation mode of APJ high-speed gantry punching machine is vortex.
Gear and worm rotation, power source: the speed reducer motor with the deceleration ratio of 1:10. Its control mode is frequency converter. The precision can be controlled in 0.01min.The principle and structure of rotation are as follows:

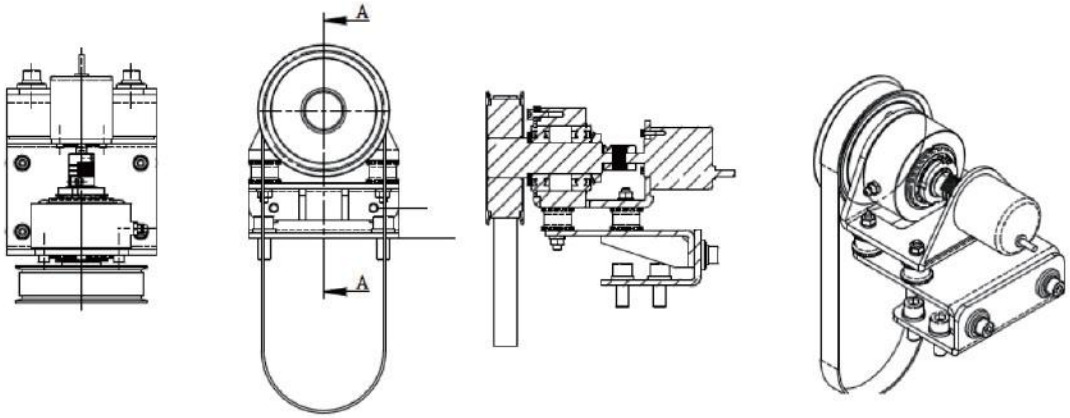


Introduction To Encoder Position

We use a Japanese "KOYO"TRD-J360-RZ encoder. It can minimize the damage to encoder during stamping process with the adoption of shock absorbing foot pad. Its main functions are as follows:

Signal of stroke speed

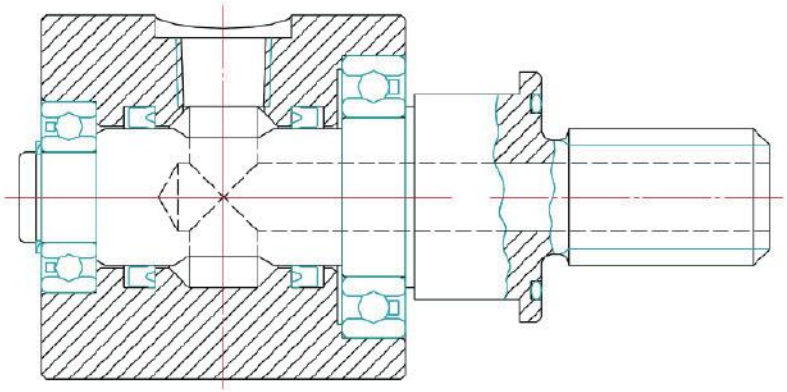
① The signal of Angle ② Bulk and slotting signals



Description of Hydraulic Rotary Joint

The oil pressure rotary joint is designed and developed independently by our company. The main purpose is to lubricate the crank shaft and connecting rod, bearing flange, and the main oil inlet is PT 3 / 4 ", which is directly connected with the oil outlet of the cooler to ensure the supply of oil.

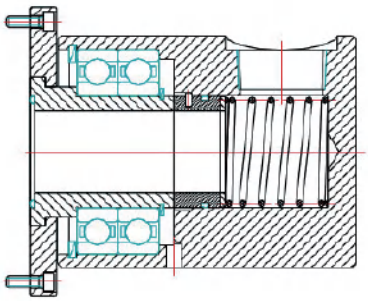
The structure is shown in the figure:

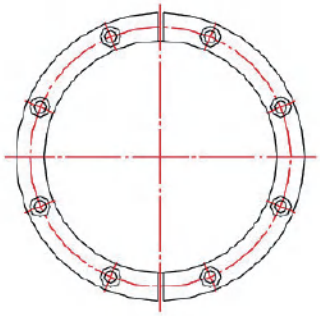


Description of Pneumatic Rotary Joint

This pneumatic rotary joint is designed and developed independently by our company. The main purpose is to supply gas to the clutch. The design of super large caliber "PT1 1/2" ensures the clutch's instantaneous gas supply requirement. Two large deep groove ball bearings can guarantee their long service life.

The structure is shown in the figure:





Description of faults	Troubleshooting
Mainframe frequency converter anomaly	Check the frequency converter abnormal code, and then solve the problem according to the abnormal disposal instructions of frequency converter.
Insufficient pressure of Mechanical Lubricant (setting: 2kg/cm² ~ 8kg/cm²)	1. Check to see whether the pump inlet filter plug is blocked or not 2. Check to see whether the lubrication system pipe is loose or not
Insufficient braking pressure for brakes and clutches (setting: 4 kg/cm² ~ 8kg/cm²)	1.Check to see whether the adjustment pressure setting is correct or not 2. Check to see whether the piping of pneumatic system is loose or not.
Insufficient locking pressure for die height adjustment (setting: 135 kg/cm² ~ 200 kg/cm²)	1. Check SR PUMP, whether the pressure of air pressure is 4kg/c ~4.5kg/c. 2. Check the SR loop and see if the electromagnetic block is stuck or not. 3. Fill up the SR PUMP tank and rotate the SR PUMP exhaust compartment about 1 turn to start the PUMP, so that air is discharged from the exhaust compartment until there is no air inside, then lock the exhaust compartment, and then check whether the oil leak occurs after the lock.
Material transfer	1. Check to see whether the gripping of the feeder is normal or not. 2. Check there are foreign objects or not in the mold.
Final material	1. Check to see whether the materials are finished or not. 2. Re-hang the material.
Material line anomaly	1.Check to see whetherthe leveling machine power supply is turned on or not. 2.Check to see whether the feeding speed of the leveler and speed up it.
Press start switch abnormal	1. Check to see whether the start switch is stuck or not. 2. Check to see whether the procedure is correct or not
Oil anomaly	1. Check to see whether the oil level is below the lower limit. 2. Replenish the oil.
Full number of work	1. Production count is full and reset to 01.
Power switch	1. Check to see whether the power switch is turned on or not.
The machine shall not run during the adjustment of die height.	1. Switch operation mode switch to off position.
The machine is not allowed to run because of the looseness of the feeding machine.	
The machine is not allowed to run while the mold is working.	
The machine shall not run when the automatic clamping die (upper die) is released.	
The machine shall not run when the automatic clamping die (lower die) is released.	

List Of Press Failure Disposals

Description of faults	Troubleshooting
The machine shall not operate in a linked mode during mold releasing.	
The machine must not operate in serial mode when writing detection closed.	
Main engine inversion can only operate in fretting mode.	
If the main motor does not stop, the reverse engine will start again.	
The machine shall not operate during the editing of segment parameter.	1. Close the code area by pressing (edit) key
The machine shall not operate if the set value of the segment parameter exceeds the upper and lower limit.	1. Reset the wrong segment parameter and perform the operation according to the remembered operation procedure
Abnormal situation of main motor start switch	1. Check to see whether start switch of main motor is stuck or not. 2. Check to see whether the operating procedure is correct or not.
Main motor is not started, but to operate the machine.	1.Start engine motor
Mechanical lubrication, cooling machine in an abnormal situation	1.Check to see whether the lubricating oil pressure of the machine is within the range of 2kg/cm2-8kg/cm2 or not, check signals will appear in this range， If not within this range, there is an abnormal cooling opportunity. 2. Please check the abnormality number on the cooler if there is abnormality for it, then refer to the abnormal signal on the cooler manual for instructions to perform.
Die height is adjusted for farther than load.	1. Check to see whether there is foreign body invasion in the adjustment of mold height, which leads to its stuck. 2. Reset motor overload protection switch
Decoder A, B phase fault	
Decoder Z phase fault	
The back door is not closed; the punching machine cannot start.	
The front door is not closed and the punch cannot start in single or continuous mode.	
Emergency stop	

Introduction to Peripheral Equipment

1、Gear replacement feeder

(1) The parameters of the gear feeder are as follows:

Material width	Max.300	mm
Material thickness	0.4~1.0	mm
Divisions of index	3	Stops
Angle of feeding	180	Degree
Direction of fsseding	Left to Right	由左至右
Feeding tange	15~300	mm

(2) Calculation of feeding step

According to the different feeding distance, 1 ~ 2 gears need to be replaced. The following is a description of the calculation method of the mould and tooling as follows:

P= Feeding length

D= 70 (Active wheel diameter)

N1= Number of teeth of No. 1, gears

N2= Number of teeth of No.2, gears

N3= Number of teeth of No. 3, gears

N4= Number of teeth of No. 4, gears

$$P = \frac{\pi \times D}{\text{the Divider number}} \times \frac{N1 \times N3}{N2 \times N4}$$

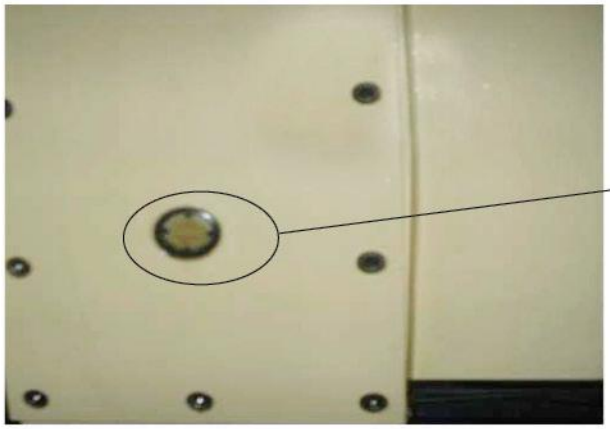
π = 3.1415926

D = 70

the Divider number = 3

2、Maintenance of Gear feeder

Before each use, make sure that the oil content of the following 2 oil level meters is above the median value, and in particular the gear oil needs to be replaced every six months in the separator phase:



Feed machine separator tank oil level

Feed gear tank oil level

(3) Common malfunction and troubleshooting of gear feeder

The following are the common faults of the gear feeder and the corresponding solutions. When you are using the following malfunctions, please follow the form of countermeasures to handle, if there are other reasons for failure, please contact our after-sales service personnel in time.

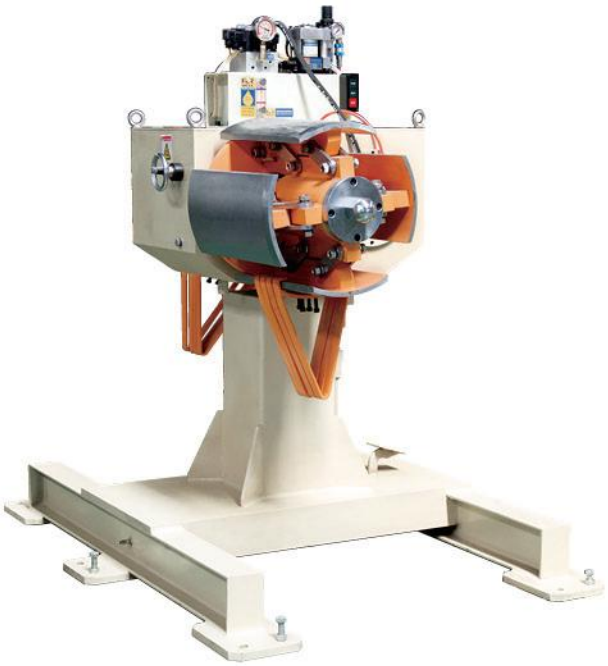
Faults	Descriptions	Troubleshooting
Feeding angle dislocation	1.Belt tension loosening 2.Bolt loosening of tension wheel 3.Belt wear and slip 4.The angle of release is not right	1. Adjust the tension of the belt 2. Locking bolt 3. Replacement belt 4. Adjust release angle
Feeding length disorder	1.Gear malocclusion 2.Feeding angle error 3.The angle of release is not right 4.Insufficient pressure on upper and lower wheels 5. Roller grease makes material slip. 6.Material jumping up and down 7.Wheel wear or wound 8.Cam wear of divider 9. The amount of release is not suitable. 10.Mould anomaly	1.Adjusting gear bite 2.Adjusting feed angle 3.Adjust release angle 4.Adjust up and down wheel compaction 5.Oil pollution removal 6.Improved material orbit 7.Replacement roller 8.Replacement splitter cam 9. Adjusted release 10.Correction mould
Feeding S-shaped	1. The upper and lower rollers are not parallel, only one end is stressed. 2.Compression spring is different in height 3. The amount of release is not suitable. 4. Material inserted into the rollers is skewed. 5. Material thickness is uneven and not straight enough.	1.Adjustment of balance 2.Adjust compression spring 3.Adjust release angle 4.Adjusting material guide 5.Check material specification

3、Leveling machine parameters are as follows：

Material width	Max. 300	mm
O.D of coil	Max.1200	mm
I.D of coil	450~520	mm
Max. feedingh speed	1~80	M/min
Max. coil wight	1500kg*2	
Level ing rollers	19	Pcs
Driving motor	3Hp with inverter	

4、Automatic oil feeding device

Use Taiwan brand oil pressure pneumatic locking unit. The ratio of air pressure to oil pressure is 1: 40. Therefore the reasonable pressure is 5 kg / cm^2; the corresponding oil pressure is 200 kg / cm^2, different material width, different weight, different pressure to rise and tighten, thus avoiding the problem of tightening. It is with the automatic compensation function to avoid the original rotation when leaking.



5、 Oil press ure automatic rack

At present, most punch machines are equipped with manual switch oil valve type oil feeding. We develop automatic oil feeding device, the characteristics are as follows:

① Oil volume can be adjusted arbitrarily.

② Automatic alarm without oil, the main engine can not work, so that the mold is greatly protected.

③ When the machine is not working, the solenoid valve is closed, and the oil is shut down, thus reducing unnecessary waste.

6、Lubricating oil cooler

Taiwan brand "POINT" oil cooler, use the European and American version of heat exchanger to greatly upgrade the exchanger. Use the body synchronous temperature control panel; keep the oil temperature according to room temperature; prevent thermal expansion and cold contraction of the mechanical structure. It has the function of automatic fault detection and display. It can tell CNC mainframe faults through computers, avoid machine damage and adopt new environmental protection refrigerant without polluting the environment.

Refrigerant capacity： 2400 BTU/HR

Electric source： 3ΦAC 220V 50/ 60 HZ

Exhalation quantity：40 L/min

Inlet and outlet diameter：1" x 1"

7、Oil pressure lifting die arm

Use Taiwan brand oil pressure unit to provide power. The standard is 2 heel / set, use oil pressure for fast joint connection, which is convenient and fast.

8、Straight and moving die arm

This shift arm is specially made by our company for Taiwan manufacturers. The features are as follows:

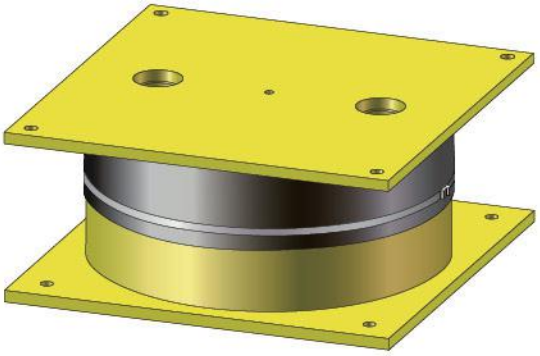
A. The ball is specially heat-treated, with high durability.

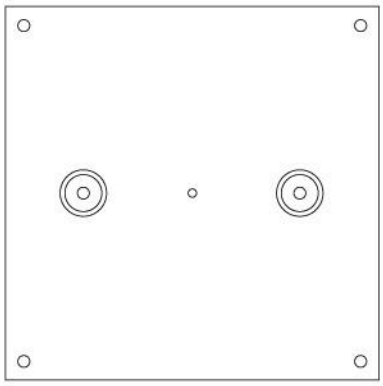
B.The ball spacing is small, the force is uniform, and it is not likely to be damaged.

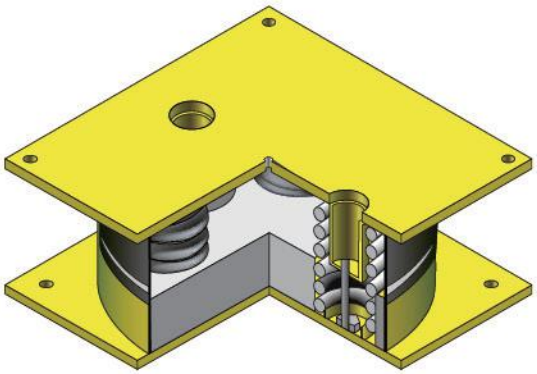
C. The support seat can be adjusted to ensure its flatness.

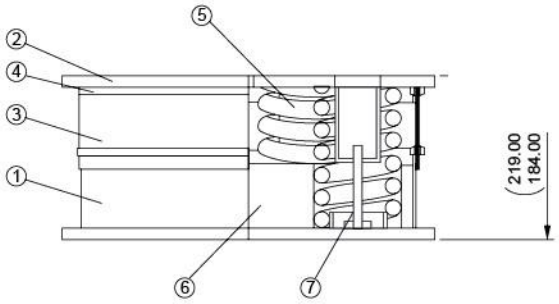
9、Oil pressure damping shockproof foot pad

In order to improve the die life and reduce the vibration of the machine, our company suggests using oil shock proof foot pad. The figure is as follows:









10、Chute controller

It is for equipment selection and the configuration features are shown as below:

① Import Dongfang motor driver

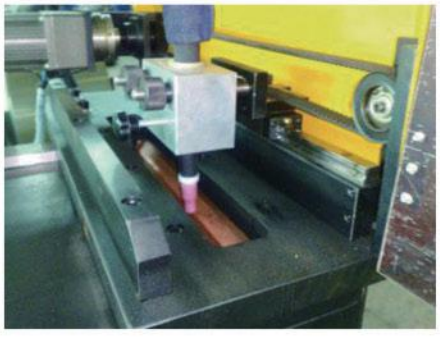
② Taiwan brand 17 "color touch screen

③ 30 groups of mold memory function

④ Five core standard power cord quick plug, plug and play

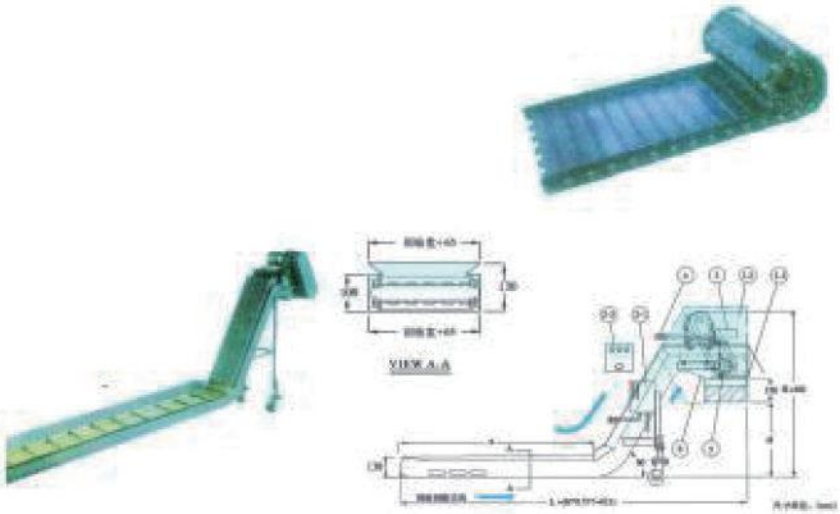
(4) Automatic welding machine

In the coil replacement of high speed gantry punching machine, each coil head has a certain situation of waste, and the head needs to be re-manually fed before continuous stamping, which is time-consuming and laborious. So the use of this equipment can be seen, shown as follows:



11、Industrial sound insulation room/conveyor

It is for equipment selection, depending on the specific environmental noise requirements and the way of conveying waste. The impression drawing is as follows:

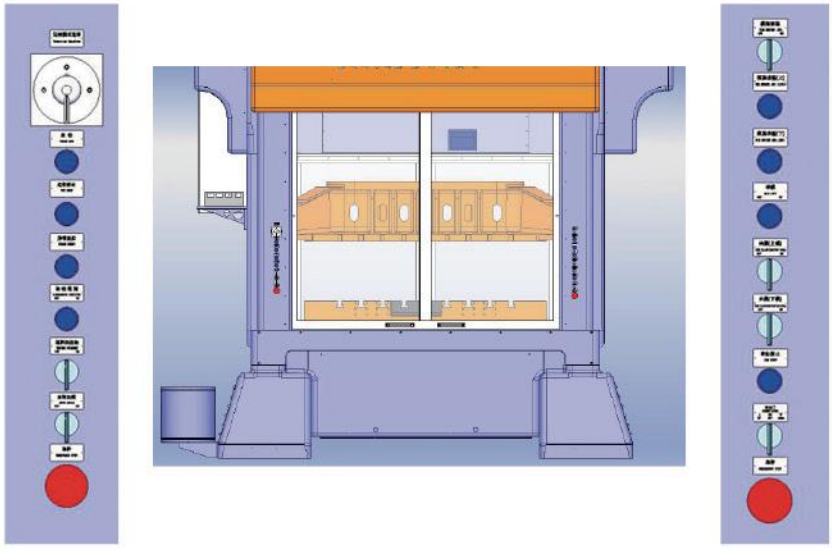


Introduction To Electrical Parts

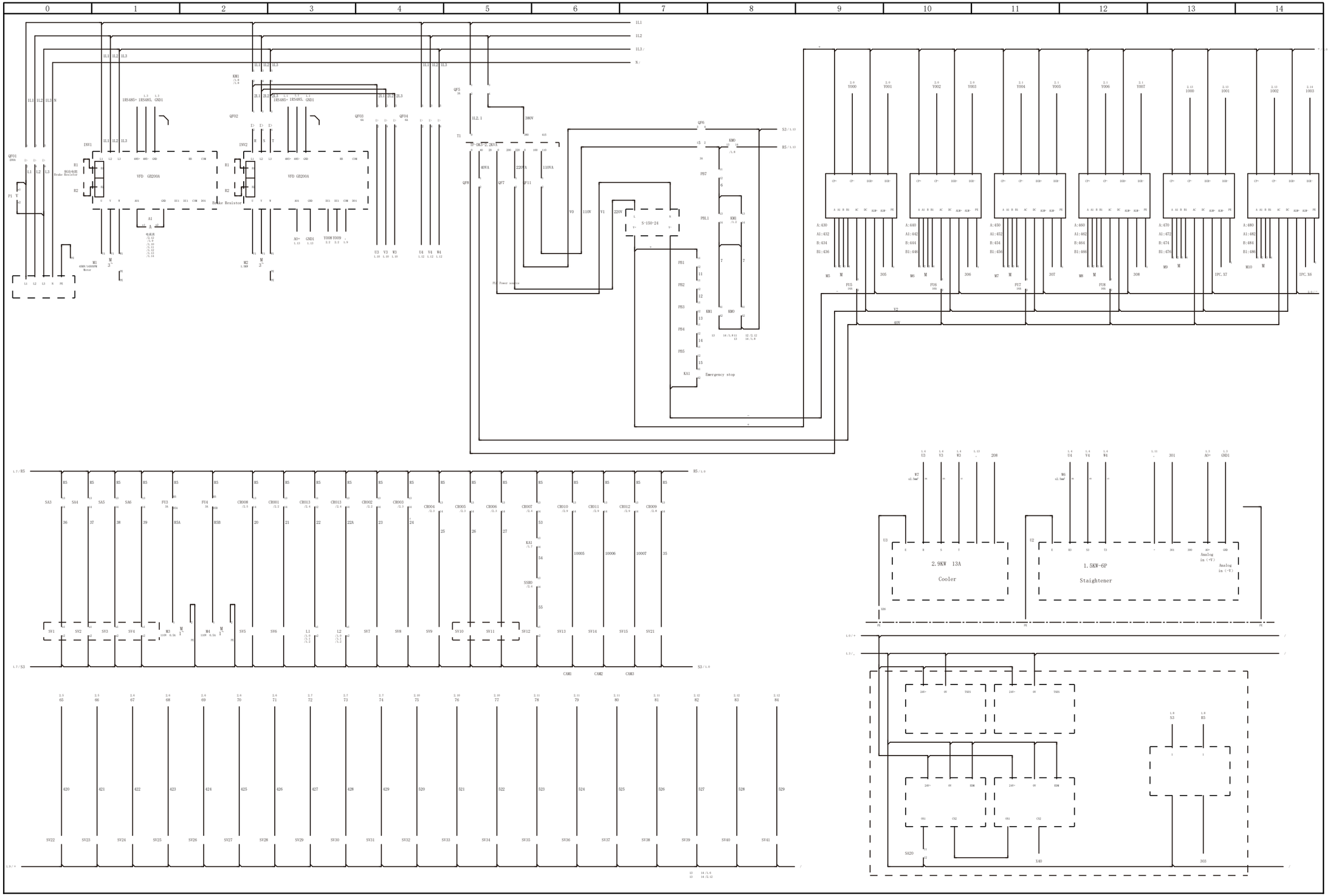
(5) The internal configuration of the main power box is shown below:

Introductions to electrical parts

Operating buttons are located on the left and right grooves of the machine, which is convenient for operation and maintenance. The designed circuit is a European standard safety circuit. Each operation prompt and each abnormal alarm will be displayed on the touch screen. It is convenient and fast, and has a good man-machine dialogue function. Its specific layout is as follows:



High-speed Gantry Machine Electrical Wiring Diagram



High-speed Gantry Machine Electrical Wiring Diagram