



## **KLW4000**

### **Operation And Maintenance Manual Of KLW4000 Series Hydraulic Pump**



#### **Wren Hydraulic**

Welcome to the world of WREN Hydraulic Tools. This handbook contains the instructions, warning and trouble shooting guide.

Before operating, please read and follow carefully.

#### **Safety Guide**

The hydraulic torque wrench pump's safely usage requires correct operation and regular inspect. And the user requested to follow always and carefully precautions.

▲ Precaution to avoid direct loss in economic or property.

▲ Warning to avoid personal injury.

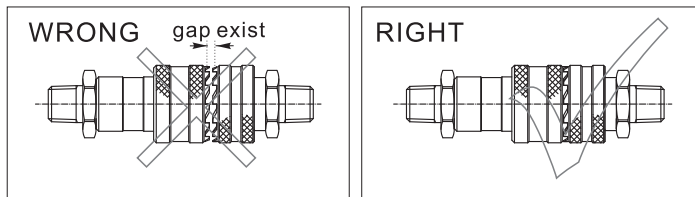
Please follow hereinbefore!

When using, if something abnormal happens, please shut off the power immediately, and then consult WREN or WREN agent.

**ALL OF OUR PRODUCTS MAY HAVE UPGRADES AND CHANGES WITHOUT NOTICE, PLEASE MAKE THE OBJECT AS THE STANDARD.**

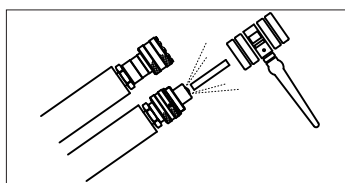
## WARNING

1. When using, do not permit any person stand at the oil output in order to avoid personal injury and equipment damage. Please put the pump far away from the fire.
2. Make sure that the hose and quick coupler be connected before building up the pressure in order to avoid hydraulic fluid spurting out to cause personal injury.
3. The maximum operating pressure of this pump is 70Mpa(10,000Psi), WREN has set up the pressure to 70Mpa before selling this pump. Please do not adjust to a pressure higher than the maximum pressure which WREN has not set.
4. If this pump is used for operating other equipments, make sure the maximum operating pressure of the equipments will be less than 70Mpa. Please adjust the pressure to which the equipment need, or else the equipment would be damaged. (Reference content 5)
5. Make sure the power of the pump is shut off before repairing it.
6. Please shut off the switch before starting power; if the switch is on, the pressure may increase.
7. Make sure the equipment be connected with ground to avoid electric shock.
8. Do not start the pump without oil in tank.
9. Please do not change any part of the pump; if it must be changed, please inform WREN or Wren's agent for help. Without allowance of WREN or its agent, any refit of it will be out of our warranty Range.
10. Please do not fill the pump reservoir with too much oil, otherwise, the pressure of the reservoir will increase and the oil will spill over, so the reservoir will be broken and the environment will be polluted.
11. When the pump works, the pressure may be increased with the returning oil. If the oil filler cop is opened at the moment, this may cause the injury.
12. Make sure the quick coupler is tightened; if the quick coupler is not tightened enough, the equipment will not work normally; if it is a synchronic system, the problem may cause one or several pieces of equipment out of order and the quick coupler may be broken and it may cause personal injury or equipment damage.



PICTURE 1

13. Make sure to keep the pump in cleaning.
14. Please stand away from the position where the hydraulic oil may be spurt out; hydraulic oil may penetrate your hand and hurt you.
15. If the hydraulic oil splashed in your eyes, please immediately wash your eyes about 15 minutes with clean water, then you must go to hospital for help right now.



PICTURE 2

16. Please do not touch the pressurized hose; if the hydraulic oil splashed out, it will cause serious injury.
17. Hydraulic hose is easily spoiled fitting; you inspect the hose with eyes regularly and find no problems, but the inner side may have crack and small hole; WREN suggests you should change the hose regularly for smoothing use. When using, try to avoid bending the hose in sudden.

## PRECAUTION

1. Only WREN hydraulic special oil available.
2. Do not use pressure regulator valve as relief valve.
3. The used hydraulic oil should be put away according to the anti-pollution ordinance.

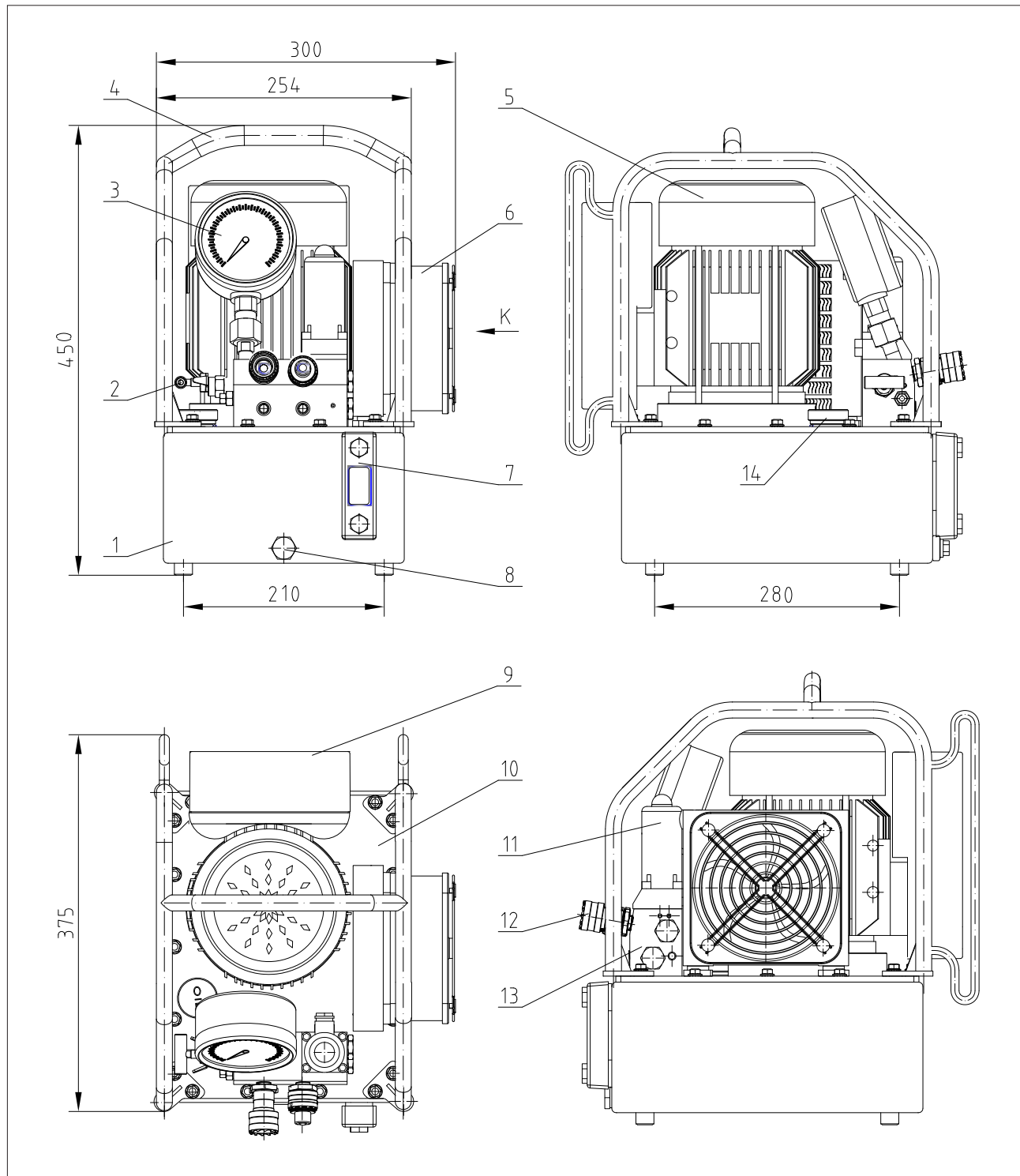
## DESCRIPTION

1. This pump is used for hydraulic torque wrench and fitted in integrated way, it is an independent hydraulic unit that mainly consists of pump, control valve, oil reservoir, motor, meter, control-line fitting, it has the peculiarity of small volume, light weight, simple composition, convenient operation, high working pressure. On high pressure, the pump can supply oil with one high and one low oil outlet at the same time, which could make a large quantity of oil outputting. On low pressure, the low pressure pump will automatically let oil return through the release flow valve, which can reduce power consumption, and the pressure of the outlet can be arbitrarily adjusted from 70 to 700 bar.
2. Hydraulic oil for pump: 32# anti-wear hydraulic oil. No materials that contents water or have causticity to aluminum and steel are allowed.
3. Environmental temperature:-10~60°C (if change to use low temperature hydraulic oil, pump can operate in the state of -30°C )
4. Please use Wren's high pressure hose, high pressure coupler, and so on. The maximum operation pressure of high pressure hose for this pump is 100Mpa; please choose suitable system for it.
5. If you need to use attached hydraulic product for pump, please contact WREN's engineers.
6. Please do not use this pump around the fire.
7. Do not allow the working pressure over 700 Bar to avoid personal injury or equipment damage due to high pressure. If there are some special request, please feel free to contact WREN engineer.
8. Please confirm that the voltage for this pump is the same as the voltage of using on the spot.
9. You'd better use the pump indoor, please protect the pump from rain if it is used outdoors.

## DESCRIPTIONS OF PARTS

1. Oil reservoir: To store hydraulic oil, make sure the reservoir enough oil to keep the pump work normally.
2. The adjusting pressure regulator: Adjust this valve for setting the working pressure of power pack (the)max working pressure has been locked before sales, please do not change the locked pressure at any time.
3. Pressure gauge: it's effects 0-100Mpa, showing the working pressure of the power pack.
4. Frame for protecting: it is fixed on motor for carrying conveniently.
5. Motor: provide power.
6. Radiator: to exclude the heat, ensure the operating time and life of the pump.
7. Oil level measurer: it can help us know the oil level, when the oil less than the 1/3 of total, please Fill the especial oil for hydraulic tools of WREN.
8. Release oil port: G1/4.
9. Control system: the integrated electric equipment of the pump.
10. Cover plate for oil tank: seal the oil tank and install the parts of power pack.
11. Solenoid valve: Its function is output oil when the pressure is very high, control the flow when return oil, and soon. It can be set up the maximum pressure and protect system to work normally at the pressure set up. The threads of oil output port is NPT1/4”.
12. Quick coupler : it's function is output oil when the pressure is very high, control the flow when return oil , and so on, it can be set up the maximum pressure and protect system to work normally at the pressure set up, the threads of oil output port is NPT 1/4”
13. Valve block: control oil driving in and out; make sure the hydraulic system can be worked normally under the pressure to be set up.
14. Oil filling port: To be used for filling and replacing oil.

## EXTERNAL DIMENSION AND DESCRIPTION OF PARTS



Item	Description	Item	Description
1	Oil reservoir	8	Release oil port
2	Adjusting pressure regulator	9	control system
3	Pressure gauge	10	Cover plate for oil tank
4	Frame for protecting	11	Solenoid valve
5	Motor	12	Quick Coupler
6	Radiator	13	Valve block
7	Oil lever measurer	14	Oil filling port

## CHARACTERISTIC

1. KLW4000 is three-stage pump. pressure relief valve is assembled in the high pressure port .  
The flux of 0.8 L/min is under the high pressure, the flux of 1.6L/min is under the middle pressure, and the flux of 7 L/min is under the low pressure
2. Max operating pressure:70Mpa
3. Flow: three-stage,can simultaneity use 2 torque wrenches
4. Motor: 200-240 V 50HZ 1.1KW /200-240V 60HZ 0.9KW /100-130V 60HZ 0.9KW
5. Suit working temperature:-10-80°C
6. Reservoir dimension: 310X240X130cm
7. Weight(no oil):KLW4000:27Kg
8. Hydraulic oil:ISO VG 32#

## WHEN USING ONE SET OF WRENCH, PLEASE COVER TIGHTLY ANOTHER SET`S QUICK COUPLINGS WITH DUST CAP.

## WARNING

-----Must use stable electric source if power supply is un-steady. (For instance, wind plant site and the environment that need the power direct)

1. When operating, do not permit anyone ot stand at the oil output.
2. When using, do not overpass the max operating pressure.
3. If need to check motor tank, please shut off the power.
4. When working, the oil back to oil reservoir may add the pressure. If open the cover plate, unnecessary injury and damage will happen.
5. No operating without oil.
6. Keep the clean of the pump, especially the oil inlet, quick couplers.
7. Suggestion: in the conditions that do not use the pump frequently, please remember to replace the hydraulic oil every year.

Notice:

Please check if the connection is correct after adding the oil, if no error, and then operate.  
Power supply must be firmly grounded.

## MAINTENANCE AND INSPECTION

1. The inspection before operating
  - (1).Please shut off the power and inspect whether the position of the power connection is loose or not.  
If it is loose, please tighten it.
  - (2).Please inspect whether the hydraulic oil in the oil reservoir is enough or not, if it is not enough, please fill the oil in time.
  - (3).The pump is still working when the direction of the solenoid operated direction control valve is changed, please build up pressure and inspect whether the whole equipment is normal or not.
  - (4).Please inspect whether the house and other equipments are leaky or not, if this happened, please inspect to find the reason and repair it or replace it.
2. The inspection in operation  
When inspecting the following items, if there is abnormal situation, please shut off the power and repair it.
  - (1)Please inspect whether there are abnormal condition or not in the course of raising the pressure.
  - (2)Please inspect whether the houses and other equipments are leaky or not.
  - (3)Please inspect whether there is some abnormal noise, rocking and smell or not during the operation of the motor.
  - (4)Please inspect whether the temperature of hydraulic oil is too high or not.
3. The inspection after finishing the operation of the pump.
  - (1)Making sure the power must be cut off.
  - (2)Please inspect whether there are leaky or abnormal condition or not. If there is abnormal situation, please inspect to find the reason and repair it
  - (3)Please clean it after using the pump,And cover on the dust cap.

#### 4. Refer to the changing of hydraulic oil

The oil should be replaced once a year principally. If there are following abnormal conditions, please replace the oil immediately.

- (1) If dust mixes with the oil, please replace the oil.
- (2) If there is abnormal smell, please replace the oil.
- (3) If the water mixes with the oil, the colour of the oil has been changed into milkiness, please replace the oil.
- (4) If the colour of the oil has been changed into black-brown, please replace the oil.
- (5) Unwanted status happened in pressure undulation.

#### 5. The way replacing the hydraulic oil

- (1) Please loosen the oil filler port of oil reservoir.
- (2) Please take down the screw on the flank of the oil reservoir, let hydraulic oil out.
- (3) Please clean the inner of the oil reservoir.

Please install the screw and fill the oil reservoir with the hydraulic oil.

**WARNING:** If the oil splashes into your eyes, please wash with clean water for at least 15 minutes, and then see doctor immediately. If the oil splashes to your skin, please wash it with clean water and soap.

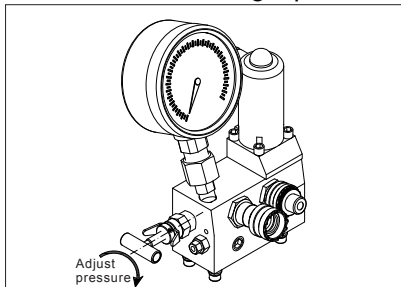
**WARNING:** Waste hydraulic oil belongs to industrial waste, it should be dealt with by special companies of collecting and processing these things.

## OPERATION INSTRUCTION

### 1. Ready:

1.1 KLW4000 hydraulic power pump is designed for hydraulic torque wrench. There is a 2-way, 4-position solenoid operated direction control valve on the pump, port A is high pressure point, it can export the oil at the high pressure, and port B is low pressure point which can output the oil at the low pressure.

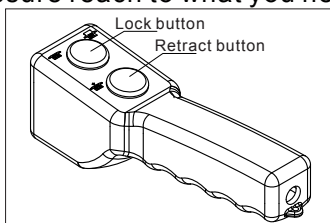
1.2 Please loosen the high-pressure valve for adjusting pressure before operating.



### 2. Adjust the pressure:

2.1 Please connect the power and push the switch at the position of "ON". Then press the lock button to make the power pack working, then the power pack will output the low-pressure.

2.2 Please press the retract button on the controller and adjust the pressure until the working pressure reaches what you need, and then loosen the retract button on the controller.



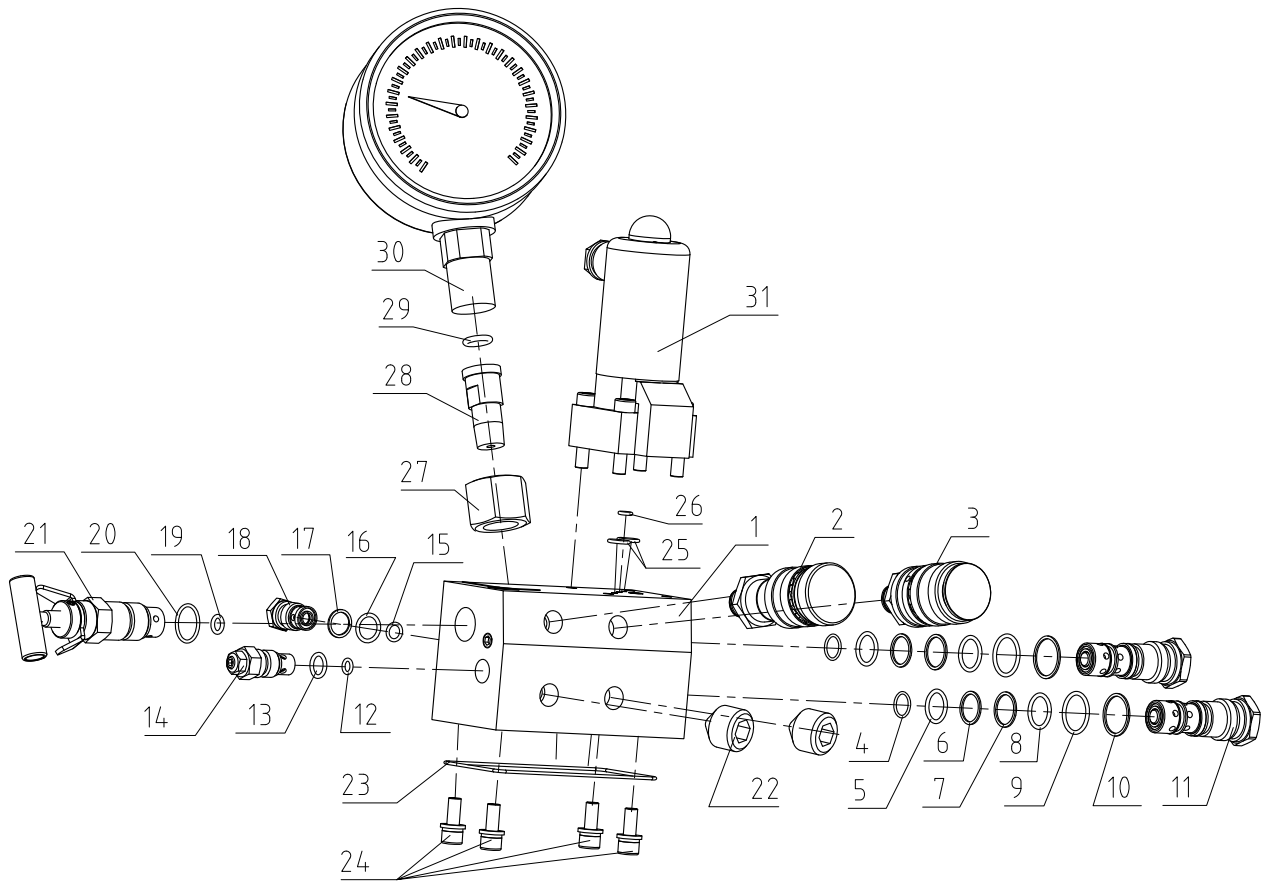
### 3. Operation:

3.1 Please press down the retract button on the controller, the pump outputs high pressure, the torque wrench works; Loosen from the retract button, the pump outputs low pressure, the torque wrench retracts; press down the lock button, the button retracts, the pump stops.

3.2 After operating, please turn off the power. Then press the rubber button on the top of the solenoid operated direction control valve in order to release the pressure in hoses and equipments, then you can take down the hose and cover the safety cap for the quick couplers.

**Attention:** First time to use or after service, please try several times to operate without any loading, this can eliminate the air in the system.

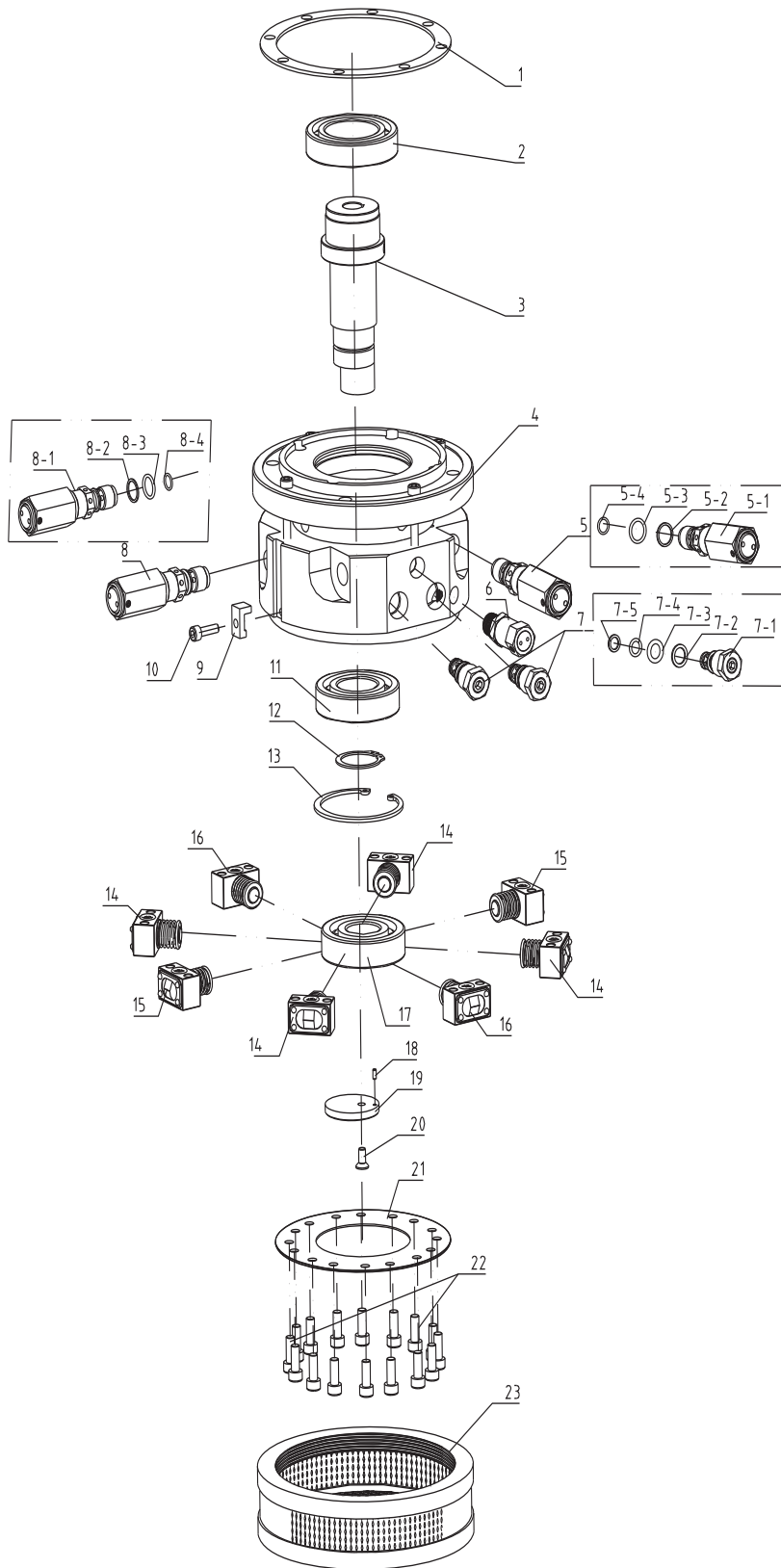
# PART LIST FOR VALVE SYSTEM



ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	Valve block	1	17	Retaining ring	1
2	Female coupler	1	18	Unilateralism valve	1
3	Male coupler	1	19	O-ring	1
4	O-ring	2	20	O-ring	1
5	O-ring	2	21	Adjusting valve	1
6	Retaining ring	2	22	Casing screw	2
7	Retaining ring	2	23	O-ring	1
8	O-ring	2	24	Screw	4
9	O-ring	2	25	O-ring	2
10	Retaining ring	2	26	O-ring	1
11	Reversing valve	2	27	Connector	1
12	O-ring	1	28	Connector	1
13	O-ring	1	29	O-ring	1
14	Adjusting valve	1	30	Gauge	1
15	O-ring	1	31	Solenoid valve	1
16	O-ring	1			



# PART LIST FOR PUMP HEAD



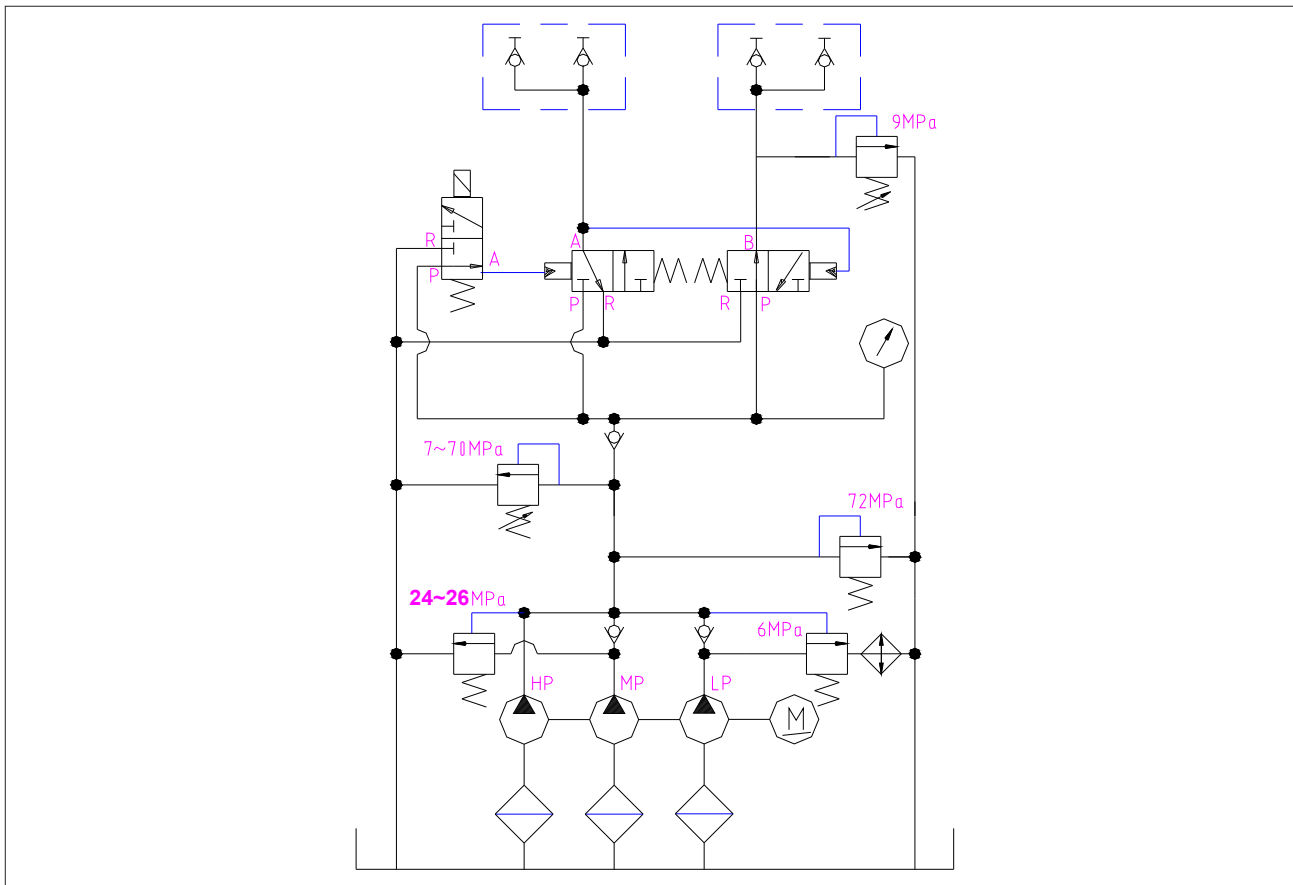
Item	Description	QTY
1	Seal gasket	1
2	Bearing	1
3	Bearing pole	1
4	Pump head	1
5	Release valve	1
5-1	Relief Valve	1/set
5-2	Retaining ring	1/set
5-3	O-ring	1/set
5-4	O-ring	1/set
6	Safety valve	1
7	Unilateralism valve	2
7-1	Check Valve	1/set
7-2	Retaining ring	1/set
7-3	O-ring	1/set
7-4	O-ring	1/set
7-5	Retaining ring	1/set
8	Release valve 2	1
8-1	Relief Valve	1/set
8-2	Retaining ring	1/set
8-3	O-ring	1/set
8-4	O-ring	1/set
9	Clip	1
10	Screw	1
11	Bearing	1
12	Metal Retaining Ring	1
13	Circle	1
14	Piston 1	4
15	Piston 2	2
16	Piston 3	2
17	Bearing	1
18	Pin	1
19	Plate	1
20	Screw	1
21	Connecting plate	1
22	Screw	16
23	Filter	1



## TROUBLE SHOOTING GUIDE OF HYDRAULIC PUMP

Mal function	Reason for caused malfunction	Solution
The pump can not be started	Un-suitable power source	Confirm if the power meets pump's need
	The power is not connected	Check the power
The system has no pressure	The coupler is not connected properly	Re-install
	No oil in the tank	Fill oil
	Not enough oil	Fill oil
	Check if flow control valve, single-direction valve in the system is open	Open the flow control valve to ensure the system is connected
The system has no pressure after reinstall the couplers	The couplers is not connected in the properly position	Uninstall the couplers, check if the steel roll is elastic with a rod, if it can not move please knock it with hammer to eliminate the mist hydraulic oil.
Leaking in the couplers	The o-ring, retaining ring worn out in the couplers	Replace the couplers
The system pressure can not reach to the rated pressure	The pressure for high-pressure leaking valve is adjusted too low	Please check the gauge, adjust it to rated value
	Oil is mixed with water	Replace the oil, please
	Ball steel in pressure relief valve may be broken or the valve seat may be frayed	Replace them, please
	Air may be sucked into the system	Repeat operating the system with no load for several times to eliminate air
	The leaking valve may be frayed	Replace it, please
	High-pressure leaking valve may not be tightened	Tighten it, please
	The o-ring for high-pressure leaking valve may be broken	Replace it, please
	There may be some inclusion into the oil	Wash the power pack valve and replace oil
There is a strong noise when the power pack is operated	The bearing may be broken	Replace it, please
	Air may be mixed into this power pack	Exhaust the air from the system
When using under static pressure, the pressure reduces slowly	The seal is out of control, please check all the seal	Replace the seal
High-pressure flux is not enough	Piston or spring may be broken	Change them, please
	Leaking may be happened at brushfire position	Tighten the couplers and replace the seals
	Oil lever may be too low	Fill the oil, please
	High-pressure system may not eliminate the oil fully	Please try several times without load before using
	Too low oil temperature may make lead to suck oil difficultly	Control the temperature at -10°C to 60°C , please
	Oil temperature may be too high that cause the damage of pump	If so, the power pack need to be replaced with new one

## HYDRAULIC PRINCIPLE



## WARNING FOR USING HIGH PRESSURE HOSE

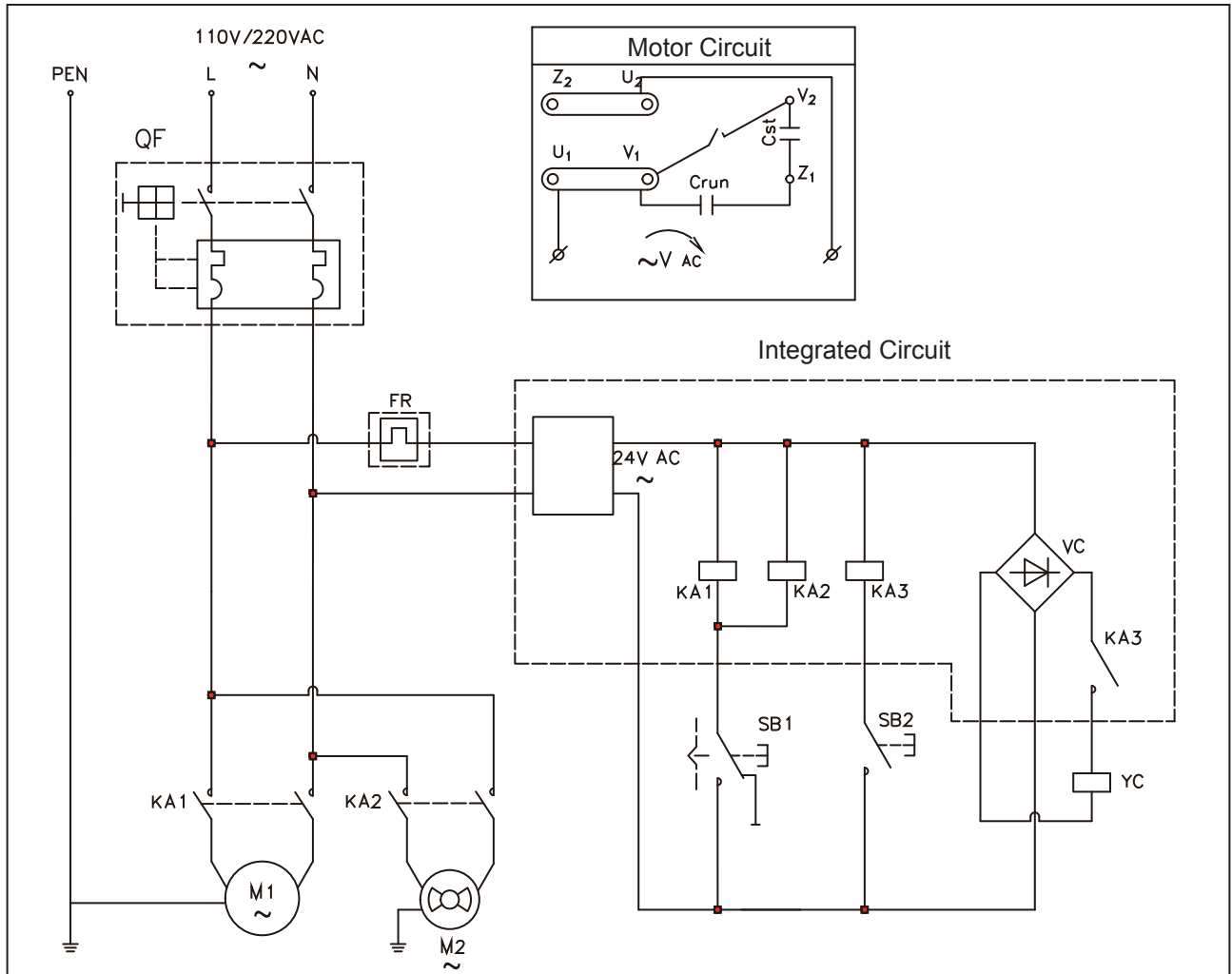
1. Please use Wren's JH series high pressure hoses.
2. The minimum bending radius:  $R > 120\text{mm}$ . Too small bending radius will destroy the high pressure hoses.
3. The maximum operating pressure is 70 Mpa, and it is forbidden overpass the pressure.
4. Do not tighten hoses excessively. Over tightening can cause to premature thread failure or high pressure fittings to split at a pressure lower than their rated capacities.
5. Should any hydraulic hose rupture, burst, or need to be disconnected, immediately shut off the pump. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.
6. Do not use the hose to remove attached equipment. Stress can damage the hose, causing personal injury.
7. Do not subject the hose to potential hazard such as fire, sharp surfaces, extreme heat or cold or heavy impact. Do not kink, twist, or bend the hose so tightly that oil flowing in the hose is blocked or reduced. Periodically inspect the hose for wearing, because any of these conditions can damage the hose.
8. WREN JH series 100Mpa high pressure hose's operating pressure is 70 Mpa, Overpass this Pressure is forbidden.

## AFTER-SALES SERVICE

1. WREN guarantees quality of the material used for manufacturing products and quality of your technical fulfillment. The guarantee period of the products is 12 months from the date of Selling(subject to the contract).
2. If any quality issue due to the defects of the materials or craftsmanship is found within the guarantee period. WREN will be responsible and repair or replace the defective products for free.
3. If the equipment is damaged because of happenstance, wrong operating and modifying or repairing the parts without consulting WREN's technical service department, WREN will not guarantee these cases.

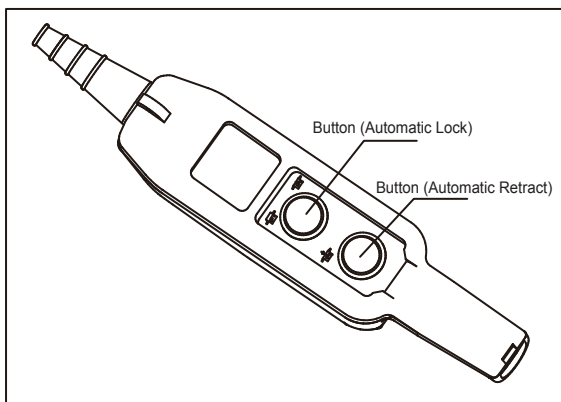
# Drawing for Electrical Principle

1 Pump voltage 100V – 220V



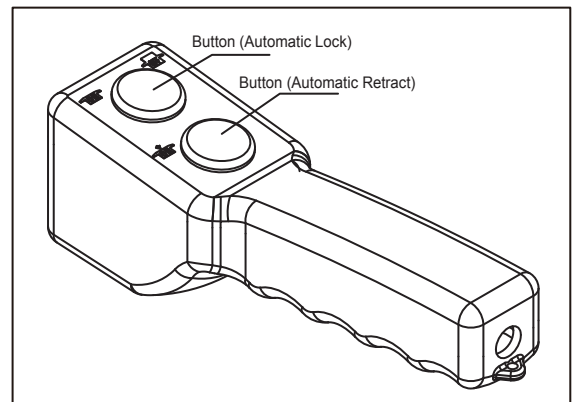
## Selecting Chart for Electrical Component

Standard Remote Controller



Big type

Select



Small type

**WARNING:Due to different standard of voltage and Frequency in countries, please strictly follow manufacturer's indication before using.**

### 100-120V 60HZ Electrical Components Chart:

Mark	Name	Specification and Model	Remark
Crun	Work Capacitance	CBB60 70uF 300V.AC	
Cst	Start Capacitance	CD60 300uF 150V.AC	
YC	Solenoid Valve	GZ3-1 24V.DC	
QF	Breaker	TRL32A(15A)	
M1	Single Phase Motor	0.9KW 115V.AC 60HZ	Switch for hot protecting
M2	FAN	110V.AC 23/21W	
SB1	Button (Automatic Lock)	LAS2GQH-11Z/S/FP	Select for samll remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for samll remote control
		GQ25-11	Select for big remote control
	Integrated Circuit Board	BY31002	

### 200-240V 60HZ Electrical Components Chart:

Mark	Name	Specification and Model	Remark
Crun	Work Capacitance	CBB60 30uF 450V.AC	
Cst	Start Capacitance	CD60 150uF 250V.AC	
YC	Solenoid Valve	GZ3-1 24V.DC	
QF	Breaker	TRL32A(10A)	
M1	Single Phase Motor	0.9KW 220V.AC 60HZ	Switch for hot protecting
M2	FAN	220V.AC 23/21W	
SB1	Button (Automatic Lock)	LAS2GQH-11Z/S/FP	Select for samll remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for samll remote control
		GQ25-11	Select for big remote control
	Integrated Circuit Board	BY31002	

### 100-120V 50HZ Electrical Components Chart:

Mark	Name	Specification and Model	Remark
Crun	Work Capacitance	CBB60 70uF 300V.AC	
Cst	Start Capacitance	CD60 300uF 150V.AC	
YC	Solenoid Valve	GZ3-1 24V.DC	
QF	Breaker	TRL32A(15A)	
M1	Single Phase Motor	0.9KW 115V.AC 50HZ	Switch for hot protecting
M2	FAN	110V.AC 23/21W	
SB1	Button (Automatic Lock)	LAS2GQH-11Z/S/FP	Select for samll remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for samll remote control
		GQ25-11	Select for big remote control
	Integrated Circuit Board	BY31002	

### 200-240V 50HZ Electrical Components Chart:

Mark	Name	Specification and Model	Remark
Crun	Work Capacitance	CBB60 25uF 450V.AC	
Cst	Start Capacitance	CD60 150uF 300V.AC	
YC	Solenoid Valve	GZ3-1 24V.DC	
QF	Breaker	TRL32A(10A)	
M1	Single Phase Motor	1.1KW 220V.AC 50HZ	Switch for hot protecting
M2	FAN	220V.AC 23/21W	
SB1	Button (Automatic Lock)	LAS2GQH-11Z/S/FP	Select for samll remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for samll remote control
		GQ25-11	Select for big remote control
	Integrated Circuit Board	BY31002	

## Specification & Parameter

Model	Oil capacity (L)	Control retron circuit	Moto (Voltage/frequency/ stage)	Power (Kw)	Flow (L/min)			Oil outlet connecting thread	oil retron port connecting thread	Maxwork pressure (MPa)
					Low	Mid	High			
KLW4000	7	E	200~230V/50HZ/ 2Pole/ Single Phase(7.0A, 2795r/min)	1	7	1.6	0.8	NPT1/4	NPT1/4	70
KLW4000A	7	E	200~240V/50HZ/ 2Pole/ Single Phase(7.2A, 2800r/min)	1.1	7	1.6	0.8	NPT1/4	NPT1/4	70
KLW4000B	7	E	200~240V/60HZ/ 4Pole/ Single Phase(6.2A, 1720r/min)	0.9	5.5	1.4	0.7	NPT1/4	NPT1/4	70
KLW4000C	7	E	100~120V/50HZ/2Pole/ Single Phase(13A 2800r/min)	1.1	7	1.6	0.8	NPT1/4	NPT1/4	70
KLW4000D	7	E	100~130V/60HZ/4Pole/ Single Phase(13.1A 1675r/min)	0.9	5.5	1.4	0.7	NPT1/4	NPT1/4	70
KLW4000E	7	E	350~420V/50HZ/2Pole/ Three Phase(2.56A 2800r/min) Nebulous Connection	1.1	7	1.6	0.8	NPT1/4	NPT1/4	70
KLW4000F	7	E	200~240V/50HZ/2Pole/ Three Phase(4.43A 2800r/min) Triquetrous Connection	1.1	7	1.6	0.8	NPT1/4	NPT1/4	70
KLW4000G	7	E	350~420V/60HZ/4Pole/ Three Phase(2.90A 1675r/min) Nebulous Connection	1.1	5.5	1.4	0.7	NPT1/4	NPT1/4	70
KLW4000H	7	E	200~240V/60HZ/4Pole/ Three Phase(5.02A 1675r/min) Triquetrous Connection	1.1	5.5	1.4	0.7	NPT1/4	NPT1/4	70

# EC DECLARATION OF CONFORMITY

THIS IS HEREBY DECLARED THAT FOLLOWING DESIGNATED PRODUCT COMPLIED WITH THE ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF MACHINERY DIRECTIVE 2006/42/EC ON THE APPROXIMATION OF THE LAWS OF THE MEMBER STATES RELATING TO IT.

## MANUFACTURER

Hangzhou WREN Hydraulic Equipment Manufacturing Co.,Ltd

ADD : No.24, Xingxing Road, xingqiao,yuhang district , Hangzhou, China

## AUTHORIZED REPRESENTATIVE TO HOLD THE TECHNICAL FILES

Name of authorized person: Fritz Fischer

Address of authorized person: PETER ROSEGGERSTR.12, GERMANY 85293, REICHERTSHAUSEN

MAILBOX: hstfischer@t-online.de

## DESCRIPTION OF MACHINERY

PRODUCT NAME: HYDRAULIC PUMP

MODEL TYPE:KLW4000 Series/KLW4100 Series/KLW4000N Series/ MP Series /SMP Series  
/HNP Series/SHNP Series

## APPLICABLE STANDARD

EN ISO 12100:2010

EN ISO 4413:2010

THIS DECLARATION APPLIES TO ALL SPECIMENS MANUFACTURED IDENTICAL TO THE MODEL SUBMITTED FOR TESTING/EVALUATION.ASSESSMENT OF COMPLIANCE OF THE PRODUCT WITH THE REQUIREMENTS RELATING TO SAFETY STANDARDS LISTED ABOVE WAS PERFORMED BY MANUFACTURE.



SIGNED ON BEHALF OF MANUFACTURER

SIGNATURE: 

TITLE: Manager

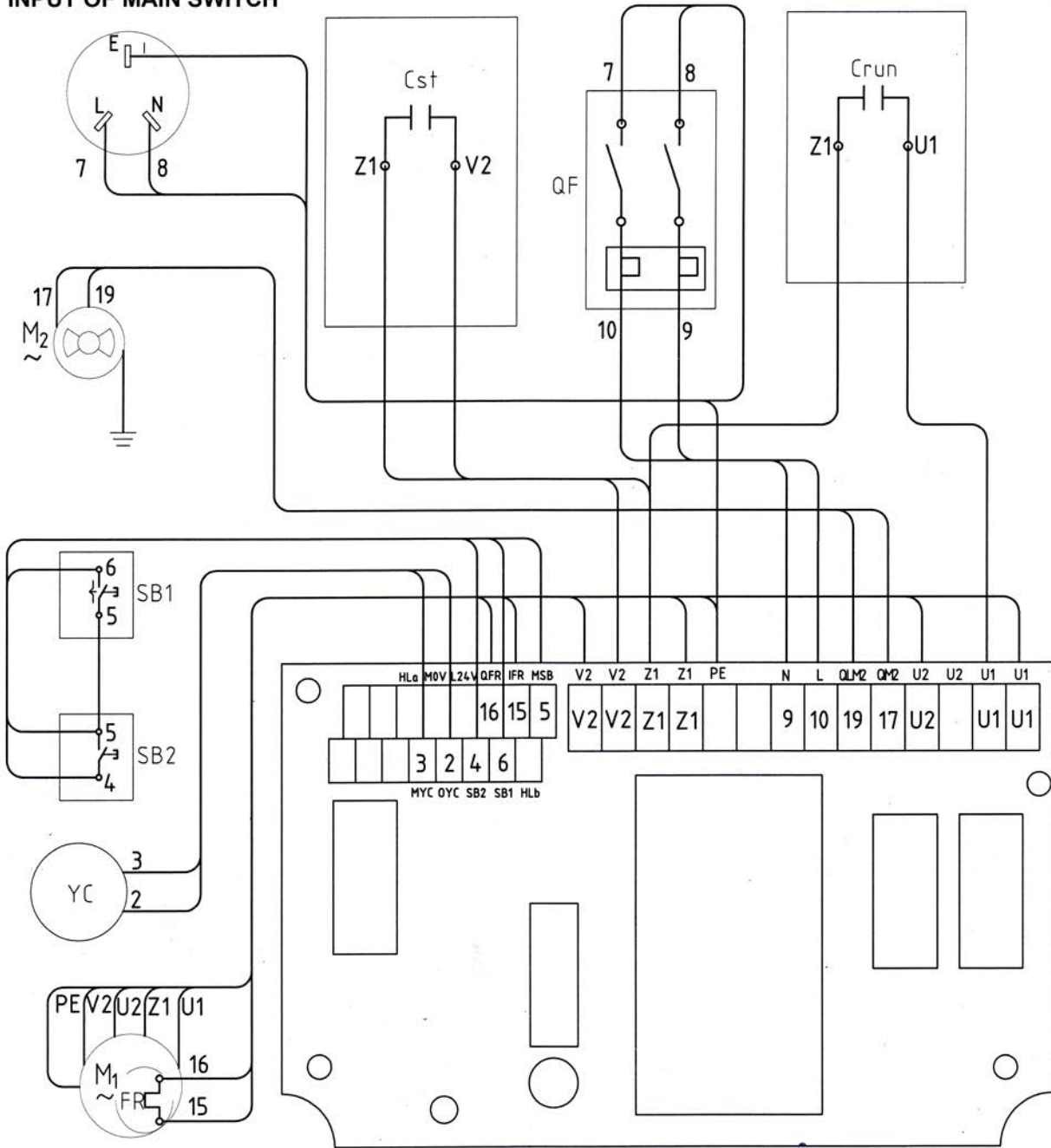
PLACE: Hangzhou

DATE: 2012/8/9



# ELECTRICAL INTERCONNECTDE FIGURE

## INPUT OF MAIN SWITCH



**WREN**  
  
 For prompt service,  
 contact you Authorized  
 WREN Agent

All Wren products are guaranteed against defects in workmanship and materials for as long as you own them. Under this guarantee, free repair or replacement will be made to your satisfaction.

RECYCLED PAPER 



## KLW4000

# 扭矩扳手专用泵 操作保养手册



本操作手册内容包括WREN液压泵的操作规程、警告和注意事项以及故障排除。  
使用前，请仔细阅读本手册，彻底理解其内容并妥善保管。

### 安全指示

液压泵的安全使用，必须要求正确操作和定期检查。

在阅读和彻底理解本手册中的安全指示条例后才可以使用本液压泵。

▲ 注意事项--防止造成直接经济损失或财物损失。

▲ 警告事项--防止造成人身伤害。

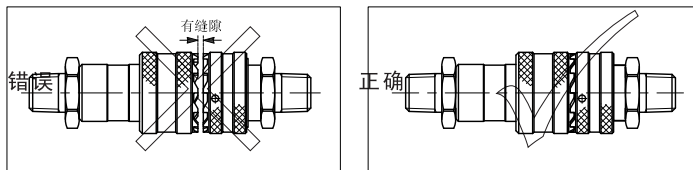
请确实遵守上述两个事项。

在使用过程中，如发生异常情况，请关闭电源开关，拔出电源插头，然后向**WREN** 或**WREN**授权代理商咨询。

声明：所有产品图片说明均有可能因产品改进升级而变更，恕不另行通知，均以实物为准！

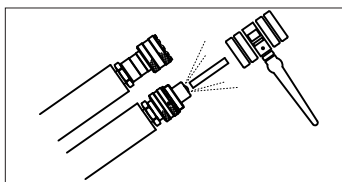
## 警告事项

1. 使用本液压泵时，所有人员禁止站在液压油出口处，防止液压油不小心泄漏时可能发生的人身伤害或财产损失；液压泵必须远离火源。
2. 加压前，应加装软管及执行元件或螺堵，防止高压液压油冲出造成人身伤害。
3. 本液压泵的最高工作压力为**70MPa**；在出厂时工厂已设定压力为**70MPa**，绝不要将压力调节到超过设定压力。
4. 如本液压泵用于操作其它配套设备，配套设备的工作压力应小于**70MPa**，并将压力调定为其配套设备的工作压力，否则配套设备有可能损坏；调整压力调节阀的操作参见第五项。
5. 充分考虑安全性，在维修前，应将动力源切断。
6. 在接通动力源前，关掉按钮开关,打开液压调节阀。
7. 确保接地，避免触电。
8. 禁止无油启动液压泵站，这将会造成设备损坏。
9. 不要改装本液压泵，如确实需要改装，应先向**WREN** 或**WREN**授权代理商咨询。没有**WREN**的书面同意，所作改装，不在质保范围内。
10. 不要加注超过可用油量的液压油，否则，贮油箱中的液压油会溢出，造成对环境和设备污染。
11. 液压泵站工作时，返回储油箱的油可能会溢出，如果此时打开储油箱盖，可能会造成设备和环境的污染。
12. 快速接头互连时，必须保证完全啮合（图1），只有这样才能确保接头内单向阀打开，使油路畅通。否则，连接后接头内单向阀无法打开，致使油路不通，加压时会出现泵站有压力，而扳手无法运转、从扳手旋转体上的自动泻荷阀打开,开始泻压等现象，从而可能造成快速接头、扳手损坏甚至人身伤害。



图（1）

此时须切断液压泵动力源，拆开所有软管接头，检查所有快速接头（包括扳手接头）内的单向阀是否可以用手按动、有弹性。如果不能按动，需要用锤子敲打接头内单向阀（图2），释放接头里的压力（敲打单向阀时会有液压油喷出，虽没有危险，但需小心液压油溅到身上，弄脏您的衣服），直至用手可以按动接头内钢珠为止，再重新连接。



图（2）

13. 必须保持液压泵站的清洁，特别是出油口、快速接头等处，液压油的不清洁是引发液压泵故障的主要原因。
14. 远离超高压液压油可能溢出的位置；液压油可能穿透你的手，导致严重受伤。
15. 如果液压油喷到你的眼睛里，立即用清水冲洗大约**15**分钟，然后去医院清洁眼睛。
16. 不要碰带压力的软管；如果液压油喷出，会导致严重伤害。
17. 液压软管是消耗性配件，经过肉眼检查没有问题，内部也可能有破裂和针孔；考虑到良好使用状况，应定期更换软管，且使用时应避免出现急弯。

## 注意事项

1. 只使用**WREN**液压工具专用油。
2. 使用过的液压油应根据防污染条例处理。

## 一 概述

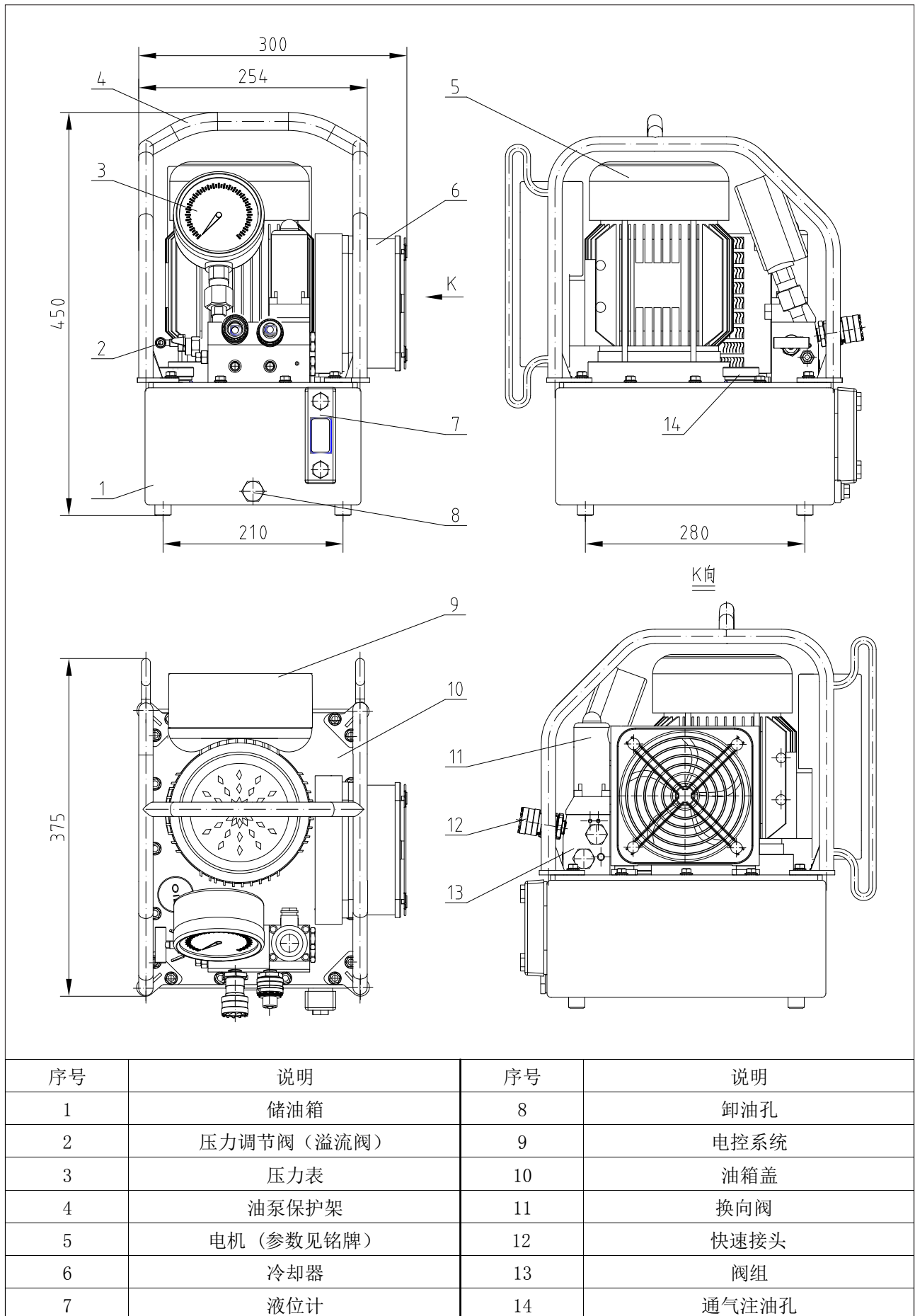
- 1.1 K LW4000为液压扳手专用泵，采用集成方式组装，由动力单元,电气单元,控制装置等组成的一种独立完整的液压装置，具有流量大、体积小、重量轻、结构简单、操作方便、工作压力高等特点，并且高压出口（A口）出油压力可在70~700bar间任意调节。
- 1.2 液压泵使用的液压油：32#耐磨液压油。严禁使用含水和含对钢或铝有腐蚀性介质的液压油。
- 1.3 液压泵使用的环境温度：-10~60℃（如更换低温液压油，可在-30℃低温下使用）。
- 1.4 液压泵通过高压软管和高压接头与执行元件连接，为工作安全，请使用WREN高压软管和高压接头。WREN液压泵配套的高压软管最大工作压力为70MPa，使用时请选用与之配套的压力系统。
- 1.5 此泵如需使用附属液压产品，请咨询WREN工程师。
- 1.6 请不要在靠近火焰处使用液压泵。
- 1.7 液压泵的最大工作压力70MPa，使用时请不要任意调节压力调节阀，以避免超高压引起的设备损坏和人身伤害。（如有特殊要求，请咨询WREN工程师。）
- 1.8 请确认WREN液压泵的使用电压与现场使用的电压相符。
- 1.9 请尽可能在室内使用此泵，室外使用必须做好防雨措施。

## 二 零部件概述及外观示意图

### 2.1 零部件概述

- (1) 储油箱：存放工作用液压油，保证系统正常工作（必须有足够油量），提供系统所需的压力载体。
- (2) 压力调节阀（溢流阀）：调节此阀可以设定液压泵的工作压力，（出厂时已锁定最高工作压力，禁止调高锁定压力）。
- (3) 压力表：显示液压泵的工作压力，量程100 Mpa。
- (4) 油泵保护架：安装在储油箱上，用于提携、保护液压泵站。
- (5) 电机：提供动力源（根据使用地的电压、频率选用合适电机，具体参数见电机铭牌）。
- (6) 冷却器：实行强制冷却，降低油泵工作时的油温，从而延长扳手工作时间和使用寿命。
- (7) 液位计：观察液压油的多少，以保证提供最佳使用油量；液压油低于油标1/3位置时，必须加WREN泵站专用液压油，否则可能会损坏泵站。
- (8) 卸油孔：螺塞G1/4”，实现液压油排出储油箱（更换液压油时使用）。
- (9) 电控系统：液压泵的电气控制部分，实现对液压泵开始打压、高低压转换和停止打压的控制。
- (10) 油箱盖：密封油箱及安装液压泵零部件。
- (11) 换向阀：实现高、低压液压油输出、回油的换向功能。
- (12) 快速接头：实现液压油输出\回油功能，快速连接油管；含内置式单向阀，凸凹接头的螺纹套拧紧。齿部卡住后在升压、降压、脉动过程中不会使螺纹套松开，具有防松功能。
- (13) 阀组：连接液压系统中的各种液压控制阀，实现液压油输出、回油控制，保证系统在设定压力下正常工作。
- (14) 通气注油孔：储油箱换气和注入液压油的通道。

## 2.2 装配示意图



### 三 特性

- 3.1 K LW4000是带有二位三通电磁换向阀和两个液控换向阀，专为液压扳手设计的泵，三级流量输出，自动调节，提供两个输出压力，高压输出（A口）设有高压调节溢流阀，低压输出（B口）设有低压调节溢流阀（出厂时设定为8~10MPa）。
- 3.2 最大工作压力：70MPa。
- 3.3 流量：低压时7L/min；中压时1.6L/min；高压时0.8L/min。
- 3.4 电机：参数见电机铭牌。
- 3.5 正常工作时，液压油温度：40~70℃（在环境温度低于-10℃时，请使用低温液压油）。
- 3.6 储油箱规格（油箱型号）：310×240×130。
- 3.7 重量（不含油）：27kg。
- 3.8 液压油：32#耐磨液压油。

### 四 保养检查

#### 4.1 使用前的检查事项

- 4.11 切断电源，检查电源连接线部位是否有松脱、接线不良的情况，如发现电源接线部位有松脱现象，应将松脱的部位拧紧。
- 4.12 检查电机是否接地，必须保证电机可靠接地。
- 4.13 检查液压泵的使用电压是否与现场使用电压相符，电压是否稳定。
- 4.14 检查液压油的油量是否达到规定的值，不足时请及时添加。
- 4.15 切换方向控制阀时，机具工作、加压有无异常。
- 4.16 检查配管和设备是否有漏油现象，如有此类现象发生，请查明原因并对此进行处理。

#### 4.2 操作中的检查事项，在检查下列项目中，如果发现有异常情况，请立即停机处理故障

- 4.21 在升压过程中是否有异常现象。
- 4.22 配管和设备是否有漏油现象。
- 4.23 电机在工作中是否有异常噪声、振动及异味。
- 4.24 液压油是否温度过高。

#### 4.3 操作后的检查保养事项

- 4.31 必须切断电源。
- 4.32 检查是否有漏油或其他异常情况。如果有异常情况发生，请查明原因并进行处理。
- 4.33 使用后请进行清理, 并给快速接头盖紧防尘帽。

#### 4.4 液压油原则上应每年更换一次，如发现下列这些情况，请立即更换

- 4.41 灰尘进入时。
- 4.42 有异味时。
- 4.43 有水进入时，使油液呈现出乳白色。
- 4.44 油劣化显现出黑褐色时。
- 4.45 压力波动范围异常。

#### 4.5 液压油更换方法

- 4.51 打开液压泵上的通气注油塞。
- 4.52 取下油箱侧面排油口的螺钉。
- 4.53 清洁油箱内部。
- 4.54 装上排油口的螺钉，将油注入油箱，并盖上注油塞。

**警告！** 如不慎将液压油渐入您的眼部，应立即用清水冲洗至少15分钟，完毕后应立即去医院，配合医生接受治疗。如液压油飞溅到您的皮肤上，请用清水和肥皂清洗。

**警告！** 废弃的液压油属于工业废料，应委托具有收集和处理工业废料的公司处。

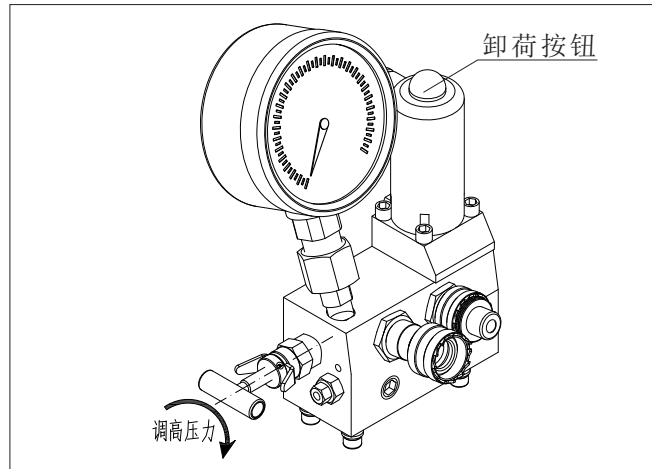


## 五 操作方法

### 5.1 准备

5.1.1 用高压软管分别把泵的高压出口（A口）与液压扳手的高压出口（A口）、泵的低压出口（B口）与液压扳手的低压出口（R口）连接起来。连接时软管上的快速接头应插到底，然后用手拧紧固定螺母。

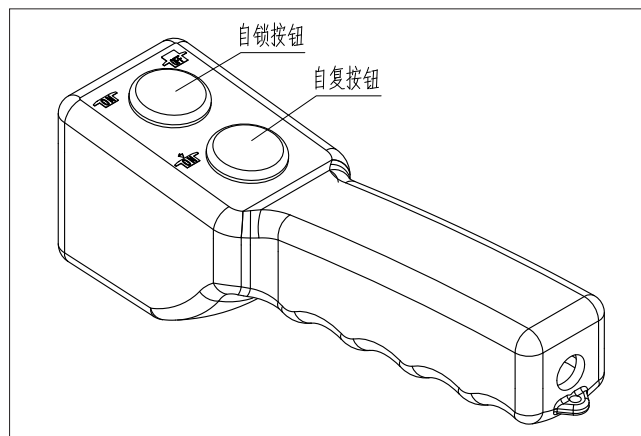
5.1.2 松开高压调节阀。



### 5.2 调整压力

5.2.1 接通电源，并将电器箱侧面断路器扳至[ON]位置，然后按下线控开关上的自锁按钮，使泵工作，此时泵站B出口输出低压。

5.2.2 按住线控开关上的自复按钮不放，同时调整泵上的高压调节阀，直至油泵压力表指针指向所需压力，松开线控开关按钮即可。



### 5.3 使用

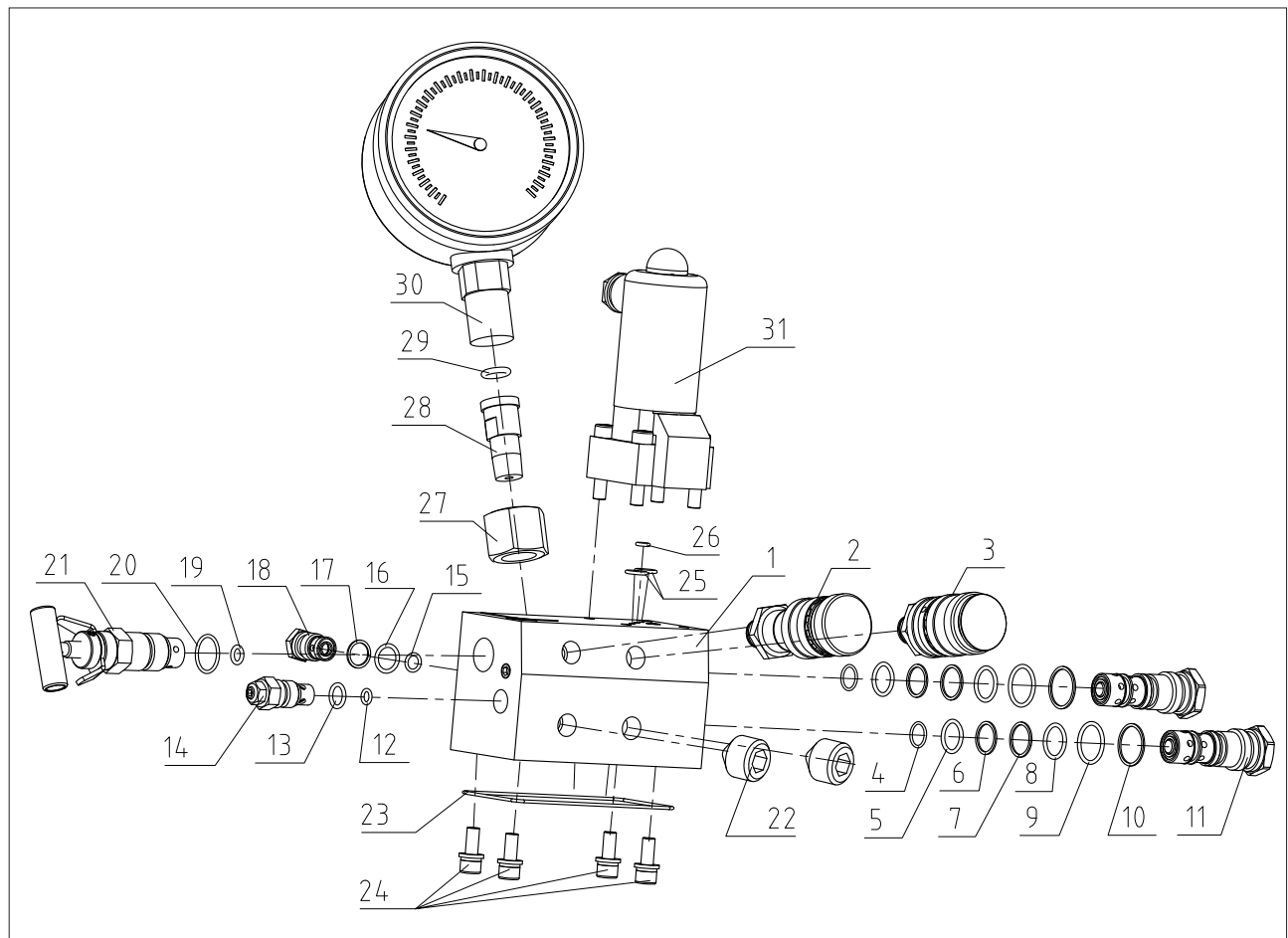
5.3.1 按住线控开关上的自复按钮不放，此时泵站输出高压，扳手工作；松开线控开关上的自复按钮，泵站B出口输出低压，扳手复位；按线控开关上的自锁按钮或卸荷按钮，按钮复位，泵站停止工作。

5.3.2 操作结束后，然后按下自复按钮或卸荷按钮，以卸去存在管内及机具内的剩余压力，再拆下高压软管，分别拧上防尘帽。断开电源，并将电器箱侧面断路器扳至[OFF]位置。

注：初次工作时或维修后，电机应点动数次，待高压泵排空完成，出油正常后方可投入正常运转！



## 六 阀组模块装配爆炸图



序号	名称	数量	序号	名称	数量
1	WE型连接块	1	17	挡圈	1
2	凹快速接头	1	18	单向阀	1
3	凸快速接头	1	19	O形圈	1
4	O形圈	2	20	O形圈	1
5	O形圈	2	21	调压阀	1
6	挡圈	2	22	堵头	2
7	挡圈	2	23	O形圈	1
8	O形圈	2	24	内六角螺钉	4
9	O形圈	2	25	O形圈	2
10	挡圈	2	26	O形圈	1
11	先导换向阀	2	27	压力表接头(二)	1
12	O形圈	1	28	压力表接头	1
13	O形圈	1	29	O形圈	1
14	调压阀	1	30	压力表100MPa	1
15	O形圈	1	31	二位三通换向阀	1
16	O形圈	1			

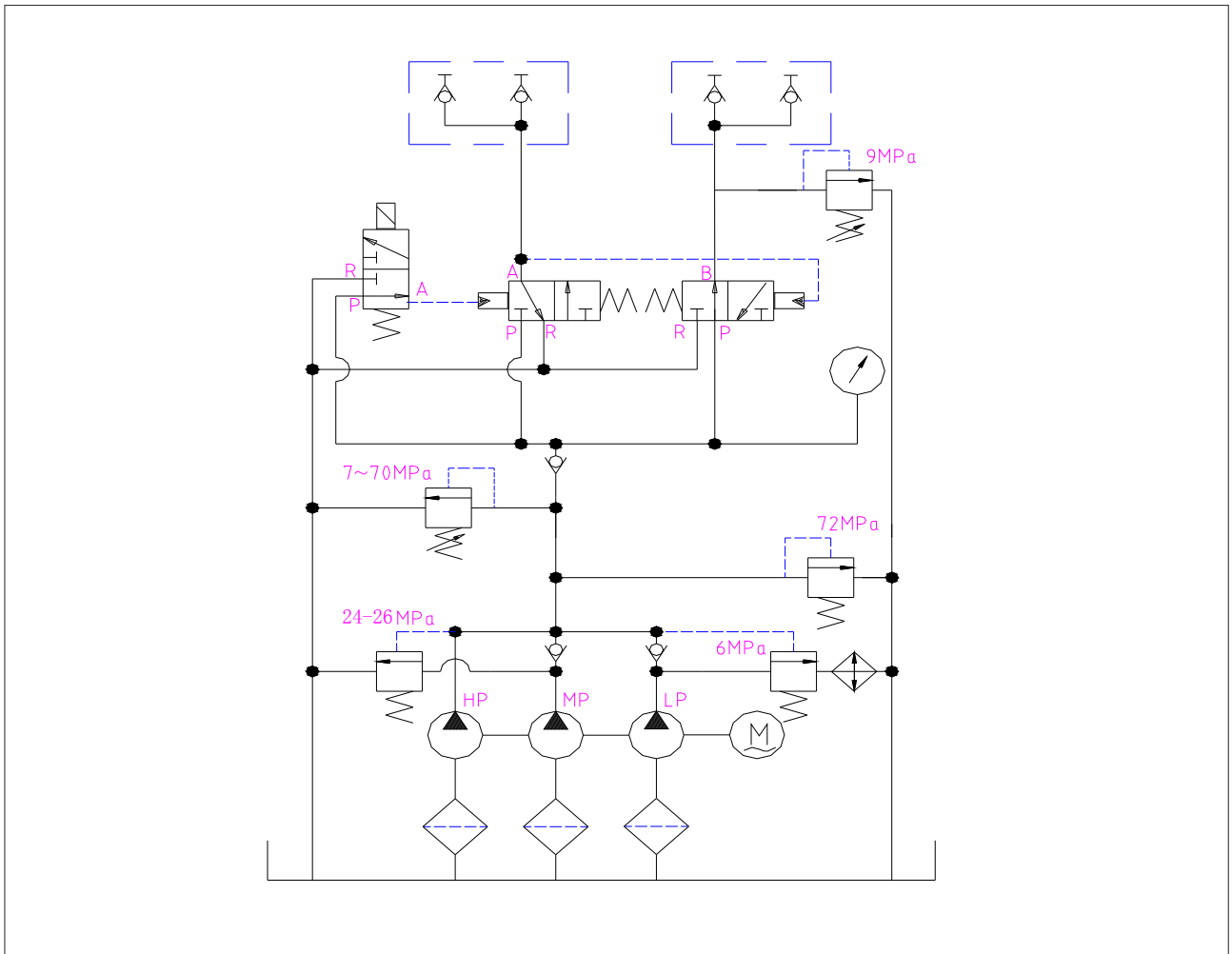
## 七 泵头装配表

序号	名称	数量
1	密封垫	1
2	深沟球轴承	1
3	泵轴	1
4	本体	1
5	卸荷阀 1	1
5-1	卸荷阀本体	1/套
5-2	挡圈	1/套
5-3	O型圈	1/套
5-4	O型圈	1/套
6	超压阀	1
7	单向阀	2
7-1	单向阀本体	1/套
7-2	挡圈	1/套
7-3	O型圈	1/套
7-4	O型圈	1/套
7-5	挡圈	1/套
8	卸荷阀2	1
8-1	卸荷阀本体	1/套
8-2	挡圈	1/套
8-3	O型圈	1/套
8-4	O型圈	1/套
9	滤网压板	1
10	螺钉	1
11	深沟球轴承	1
12	轴用弹性挡圈	1
13	孔用弹性挡圈	1
14	柱塞副1	4
15	柱塞副2	2
16	柱塞副3	2
17	深沟球轴承	1
18	销	1
19	泵轴端板	1
20	螺钉	1
21	连接片	1
22	螺钉	16
23	滤网罩	1

## 八 故障排除

故障现象	故障原因	排除方法
无法启动泵站	电源电压不符	确定电源电压是否符合泵站规定要求
	电源未接通	检查电源、插座、配电箱等，接通电源
泵站无压力	快速接头未接到位	拆开，重新安装
	贮油箱内无油	加注油
	贮油箱内油量不足	加注油
快速接头处漏油	快速接头“O”型圈磨损	更换快速接头
泵站压力达不到额定压力	高压溢流阀调整得过低	压力表检测，溢流阀调至系统额值
	水油混合	换油
	先导换向阀端“O”型圈损坏	更换先导换向阀端“O”型圈
	吸入空气	系统反复空运转数次，排尽空气
	溢流阀磨损	更换溢流阀
	高压溢流阀没有拧紧	拧紧高压溢流阀
	高压溢流阀端“O”型圈损坏	更换高压溢流阀端“O”型圈
	液压油中含有杂质	清洗泵站阀块并更换清洁液压油
泵站工作时强烈噪音	径向柱塞泵轴承损坏	更换轴承
	柱塞损坏	更换柱塞
静压使用时，压力缓慢下降	密封失灵，检查各密封处	更换密封件
高压流量不足	柱塞或弹簧破损	更换柱塞或弹簧
	局部泄漏	拧紧接头，更换密封圈
	液位过低油泵吸空	加注液压油
	高压泵没能完全排空	首次使用前或维修后，点动数次
	油温过低，造成吸油困难	控制油温在-10~60℃
	油温过高，粘度下降，造成泵的损坏	换泵
	滤网阻塞	清洗滤网
压力波动	油箱混入污物，塞堵液压元件	请清洗液压元件，更换液压油
	连接块上单向阀密封不严	更换
	液压系统混入空气	排气

## 九 液压原理图



## 十 高压软管使用警告

10.1 适用于**WREN** JH系列等级的高压软管。

10.2 最小弯曲半径： $R > 120\text{mm}$ 。

过小的弯曲半径，将严重损坏高压软管。

10.3 操作压力以软管外圈上的标识为准，禁止超压使用。

10.4 操作中不得使软管缠绕，否则会使油管生产过大的背压，使软管内部损坏，软管过早报废。

10.5 不得将重物掉到或压到软管上；严重冲击可能引起软管损坏，使用时将会爆裂，并引起人身伤害。

10.6 不得用软管拖、拉、吊起重物。

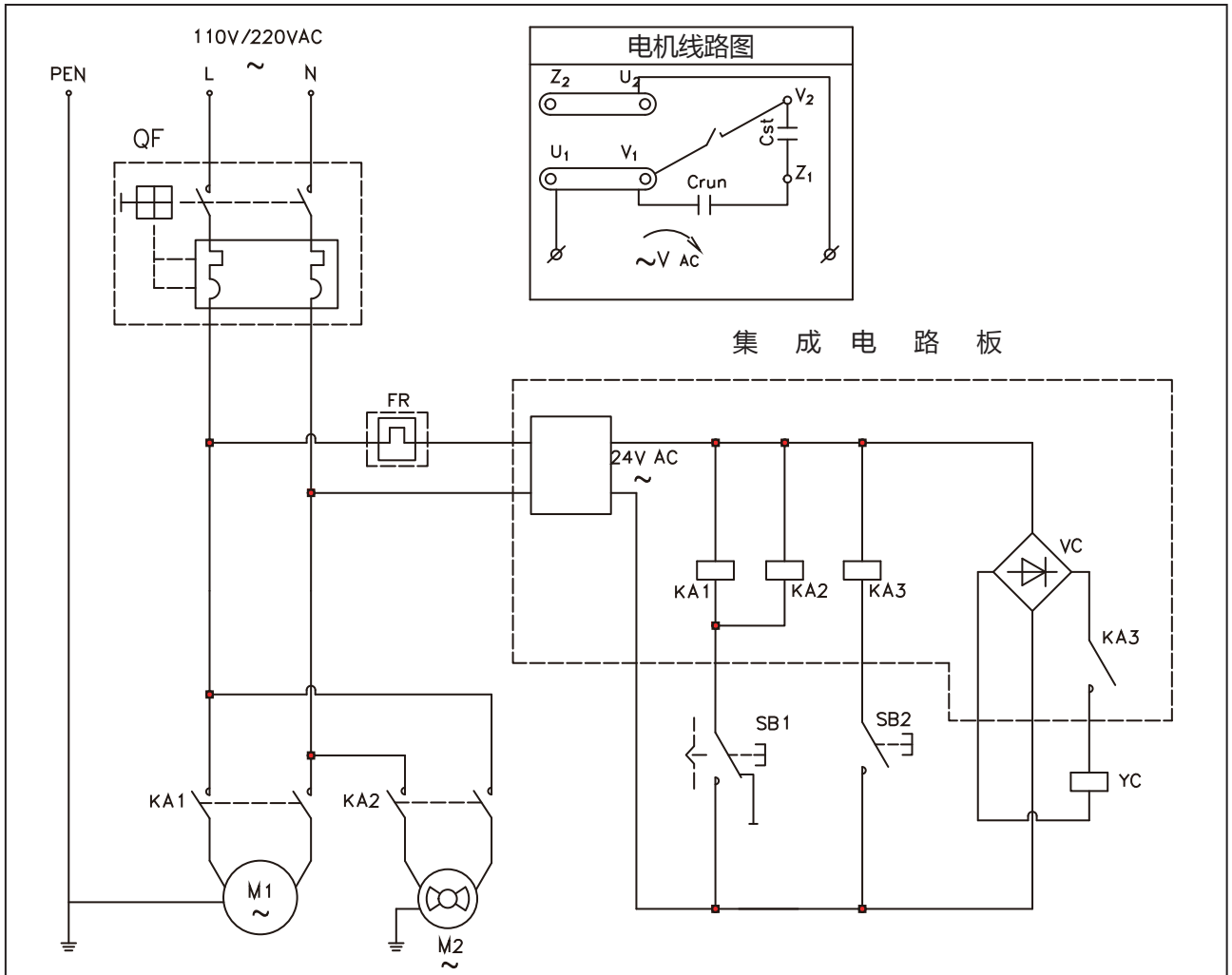
10.7 禁止在过热、火焰、机器辗轧、利刃和化学腐蚀等条件环境下使用。软管布置在通道上时，必须加装盖板。

### 售后服务

- 1 自客户购买**WREN**品牌液压机具产品之日起，**WREN**公司为用户提供十二个月的保质期（以合同为准）。
- 2 **WREN**产品在保质期内因材料、制造缺陷引起的质量问题，由**WREN**公司免费便换、维修。
- 3 因工作状况不符合规定、意外事故、滥用、操作不当、未经授权的产品改装或修理以及不按规范操作而引起的产品损坏，不属本保修范围。

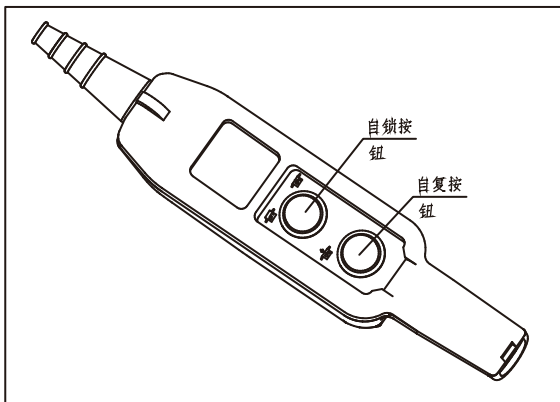
## 十一 电气原理图

### 1 使用电压为100V-220V液压泵的电气原理图

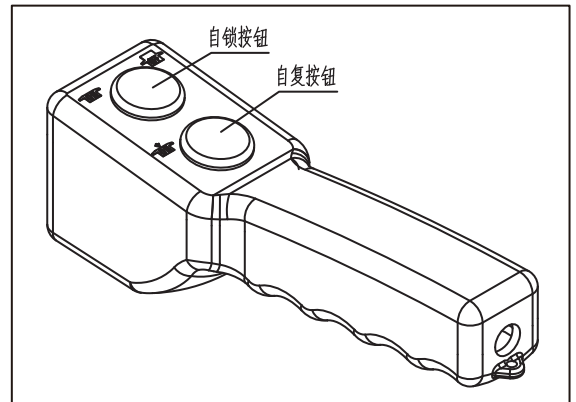


## 十二 电器配置表

大手柄示意图



小手柄示意图



注意！由于不同地区及国家用电标准不同，使用前请严格按照出厂配置对照查看！

100-120V 60HZ电器配置表

符号：	名称	规格型号	备注
Crun	运转电容	CBB60 70uF 300V.AC	
Cst	启动电容	CD60 300uF 150V.AC	
YC	电磁阀	GZ3-1 24V.DC	
QF	主电源断路器	TRL32A(15A)	
M1	单相电机	0.9KW 115V.AC 60HZ	自带热保护开关
M2	轴流风机	110V.AC 23/21W	
SB1	遥控按钮开关（自锁式）	LAS2GQH-11Z/S/FP	小手柄选用
		GQ25-11Z	大手柄选用
SB2	遥控按钮开关（自复式）	GQ16H-10/S	小手柄选用
		GQ25-11	大手柄选用
	集成电路板	BY31002	

200-240V 60HZ电器配置表

符号：	名称	规格型号	备注
Crun	运转电容	CBB60 30uF 450V.AC	
Cst	启动电容	CD60 150uF 250V.AC	
YC	电磁阀	GZ3-1 24V.DC	
QF	主电源断路器	TRL32A(10A)	
M1	单相电机	0.9KW 220V.AC 60HZ	自带热保护开关
M2	轴流风机	220V.AC 23/21W	
SB1	遥控按钮开关（自锁式）	LAS2GQH-11Z/S/FP	小手柄选用
		GQ25-11Z	大手柄选用
SB2	遥控按钮开关（自复式）	GQ16H-10/S	小手柄选用
		GQ25-11	大手柄选用
	集成电路板	BY31002	

100-120V 50HZ电器配置表

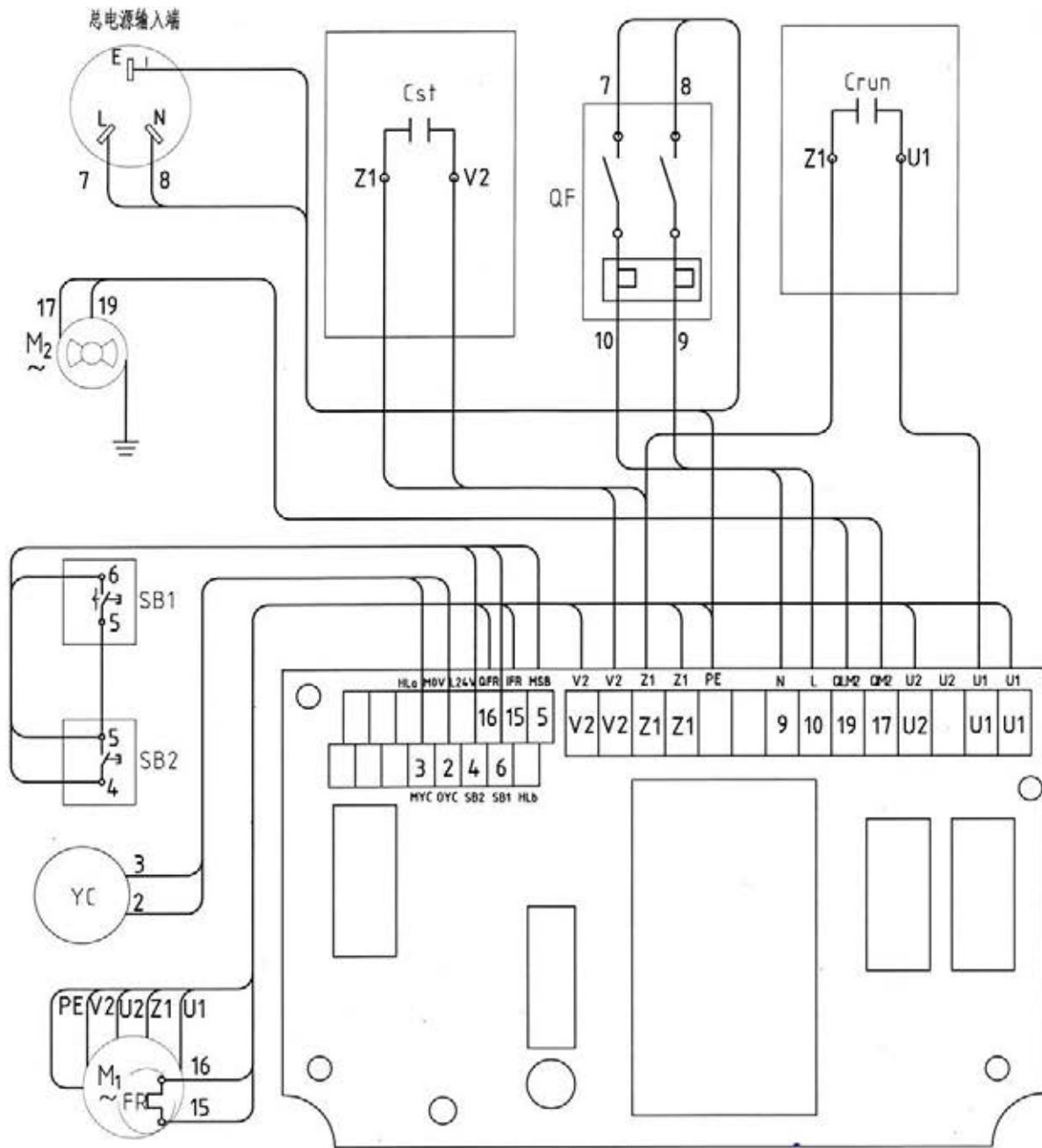
符号：	名称	规格型号	备注
Crun	运转电容	CBB60 70uF 300V.AC	
Cst	启动电容	CD60 300uF 150V.AC	
YC	电磁阀	GZ3-1 24V.DC	
QF	主电源断路器	TRL32A(15A)	
M1	单相电机	1.1KW 115V.AC 50HZ	自带热保护开关
M2	轴流风机	110V.AC 23/21W	
SB1	遥控按钮开关（自锁式）	LAS2GQH-11Z/S/FP	小手柄选用
		GQ25-11Z	大手柄选用
SB2	遥控按钮开关（自复式）	GQ16H-10/S	小手柄选用
		GQ25-11	大手柄选用
	集成电路板	BY31002	

200-240V 50HZ电器配置表

符号：	名称	规格型号	备注
Crun	运转电容	CBB60 25uF 450V.AC	
Cst	启动电容	CD60 150uF 300V.AC	
YC	电磁阀	GZ3-1 24V.DC	
QF	主电源断路器	TRL32A(10A)	
M1	单相电机	1.1KW 220V.AC 50HZ	自带热保护开关
M2	轴流风机	220V.AC 23/21W	
SB1	遥控按钮开关（自锁式）	LAS2GQH-11Z/S/FP	小手柄选用
		GQ25-11Z	大手柄选用
SB2	遥控按钮开关（自复式）	GQ16H-10/S	小手柄选用
		GQ25-11	大手柄选用
	集成电路板	BY31002	



### 十三 电气互连图



**WREN**  
  
 For prompt service,  
 contact you Authorized  
 WREN Agent

All Wren products are guaranteed against defects in workmanship and materials for as long as you own them. Under this guarantee, free repair or replacement will be made to your satisfaction.

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