



# KLW4010EX I

## Operation And Maintenance Manual Of KLW4010 Explosion-proof Hydraulic Pump



This handbook contains the instructions, warning and trouble shooting guide.

Before operating, please read and follow carefully.

### Safety Guide

The Explosion-proof 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.

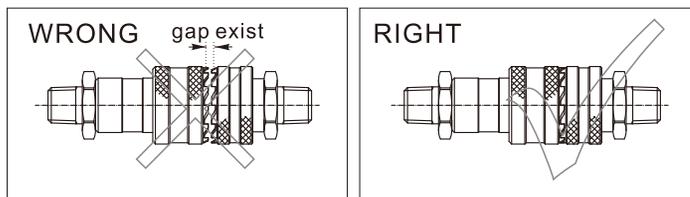
Please follow hereinbefore!

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.**

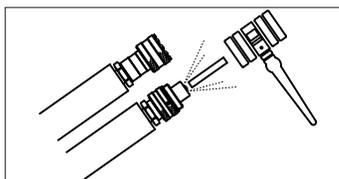
## WARNING

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 700Bar(10,000Psi), WREN has set up the pressure to 700Bar 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 700Bar. 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 cap 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. Do not use pressure regulato valve as relief valve.
2. The used hydraulic oil should de disposed according to the antipollution ordinance.

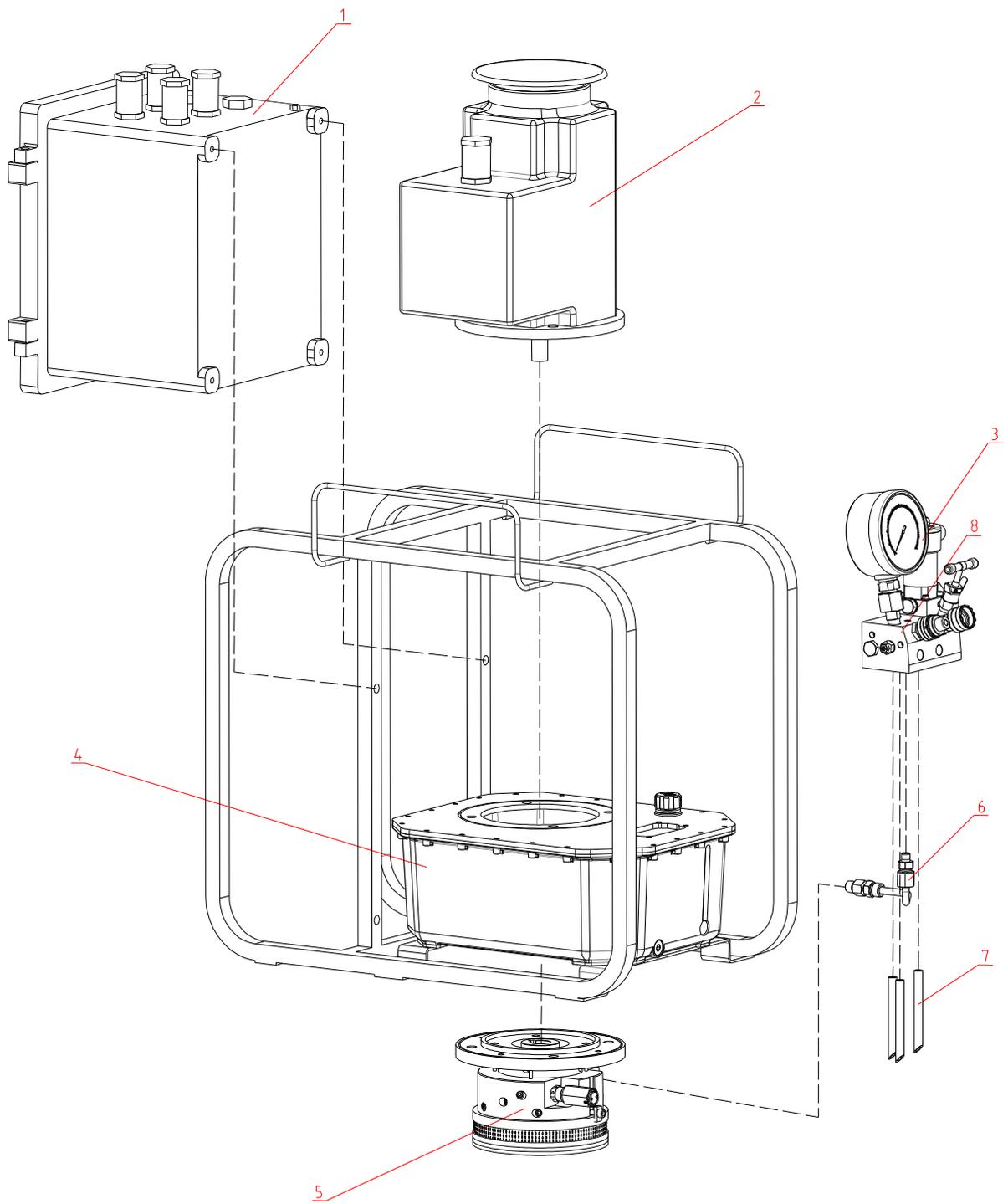
## **DESCRIPTION**

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, and the pressure of the outlet can be arbitrarily adjusted from 70 to 700 bar.
2. Hydraulic oil for pump: 32#, 46# or other same grade anti-wear hydraulic oil.
3. Environmental temperature: -10~72°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 700Bar ; 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 0-1000Bar, 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	Electrical control system	5	Pump Head Assembly
2	Motor	6	Oil pipe Assembly
3	Pressure gauge	7	Oil return pipe Assembly
4	Oil tank Assembly	8	Valve Block Assembly

## CHARACTERISTIC

1. KLW4010 is three-stage pump. pressure relief valve is assembled in the high pressure port .  
The flux of 8.6 L/min is under the high pressure, the flux of 2.2L/min is under the middle pressure, and the flux of 1.1 L/min is under the low pressure
2. Max operating pressure:70Mpa
3. Flow: three-stage,can simultaneity use 2 torque wrenches
4. Motor: 380 V 50HZ 1 1KW.
5. Suit working temperature:-10-80°C
6. Reservoir dimension: 690×520×476cm
7. Weight(with oil): KL W4010 EX :117 Kg
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.

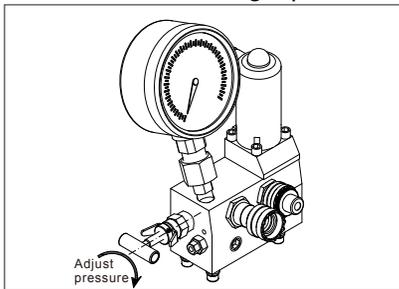
**WARNING:** Waste hydraulic oil belongs to industrial waste, it should be dealt with by special companies of collecting and processing these things.

## OPERATION INSTRUCTION

### 1. Ready:

1.1 Explosion-proof 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.

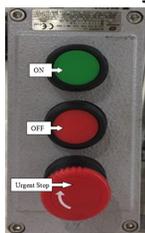
1.2 Please loosen the high-pressure valve for adjusting pressure before operating.



### 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 unit the working pressure reach to what you need, and then loosen the retract button on the controller.



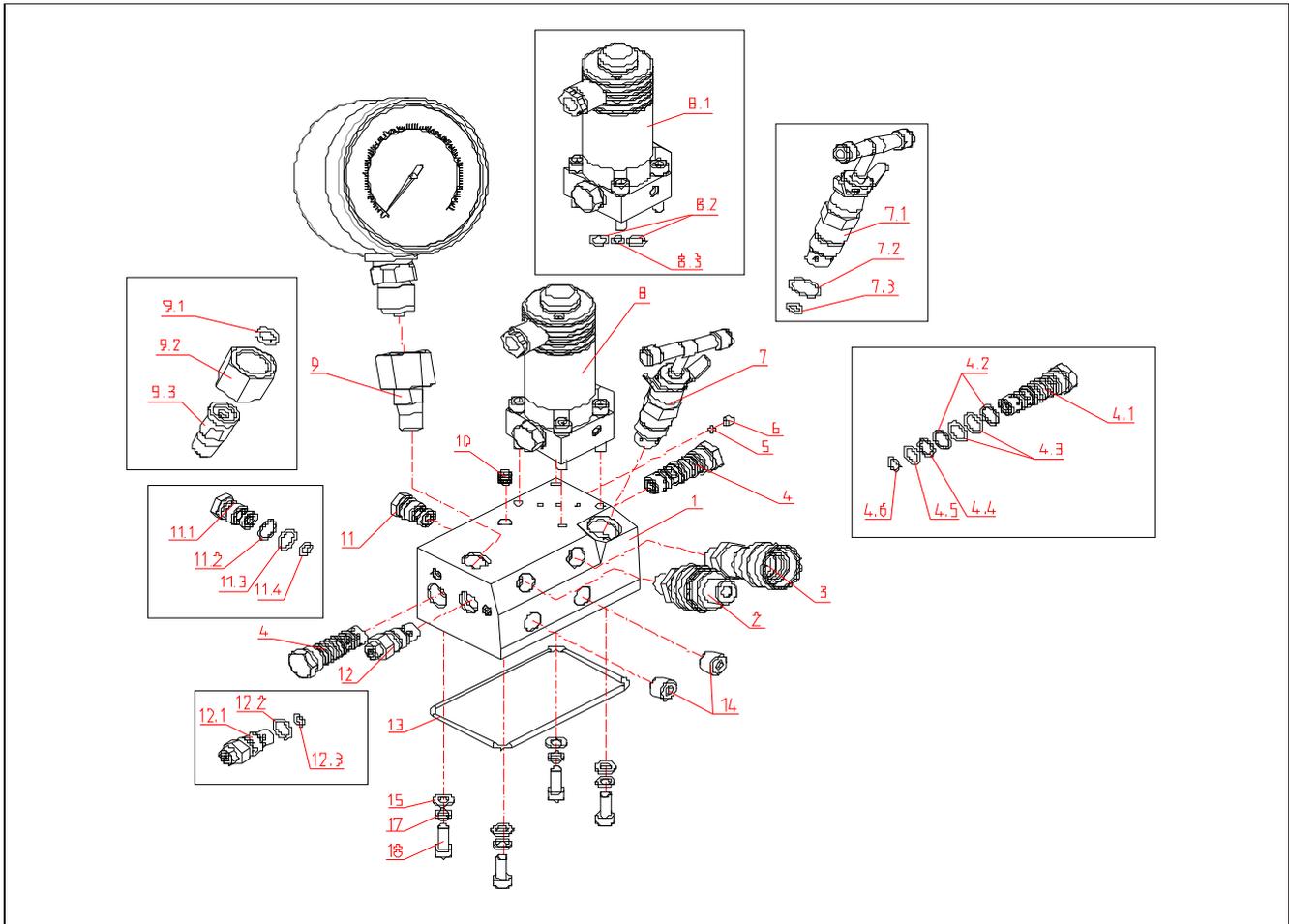
### 3. Operation:

3.1 Please press down the retract button on the controller, the pump output. The high pressure, torque wrench works; Loosen from the retract button, the pump output the 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 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.

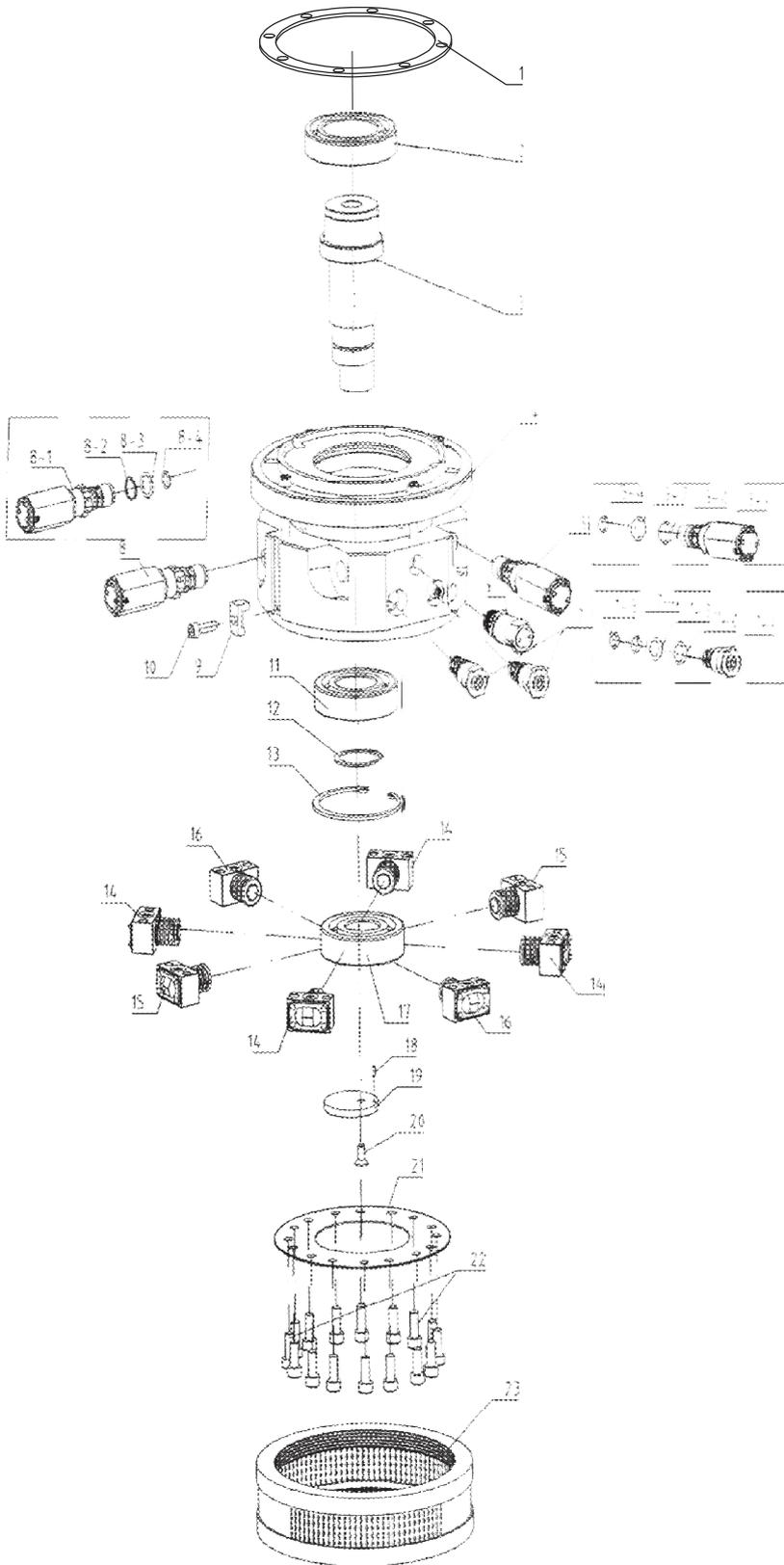
Attention: First time to use or after service, please try several times to operate without any loading, this can eliminate the air in the system.

# PART LIST FOR VALVE SYSTEM



ITEM	DESCRIPTION	QTY	ITEM	DESCRIPTION	QTY
1	Valve Block	1	9	Gauge Fitting Assembly	1
2	Female Coupler	2	9.1	O-Ring	1
3	Male Coupler	2	9.2	Gauge Fitting	1
4	Reversing Valve Assembly	2	9.3	Gauge Fitting	1
4.1	Reversing Valve	2	10	Plug Screw	13
4.2	Retaining Ring	4	11	Check Valve Assembly	1
4.3	O-Ring	4	11.1	Check Valve	1
4.4	Retaining Ring	2	11.2	Retaining Ring	1
4.5	O-Ring	2	11.3	O-Ring	1
4.6	O-Ring	2	11.4	O-Ring	1
5	Steel Ball	5	12	Low Pressure Valve Assembly	1
6	Screw	5	12.1	Low Pressure Valve	1
7	Regulating Valve Assembly	1	12.2	O-Ring	1
7.1	Regulating Valve	1	12.3	O-Ring	1
7.2	O-Ring	1	13	O-Ring	1
7.3	O-Ring	1	14	Plug Screw	2
8	Solenoid Valve Assembly	1	15	Gasket	4
8.1	Solenoid Valve	1	16	Spring Gasket	4
8.2	O-Ring	2	17	Screw	4
8.3	O-Ring	1			

# PART LIST FOR PUMP HEAD

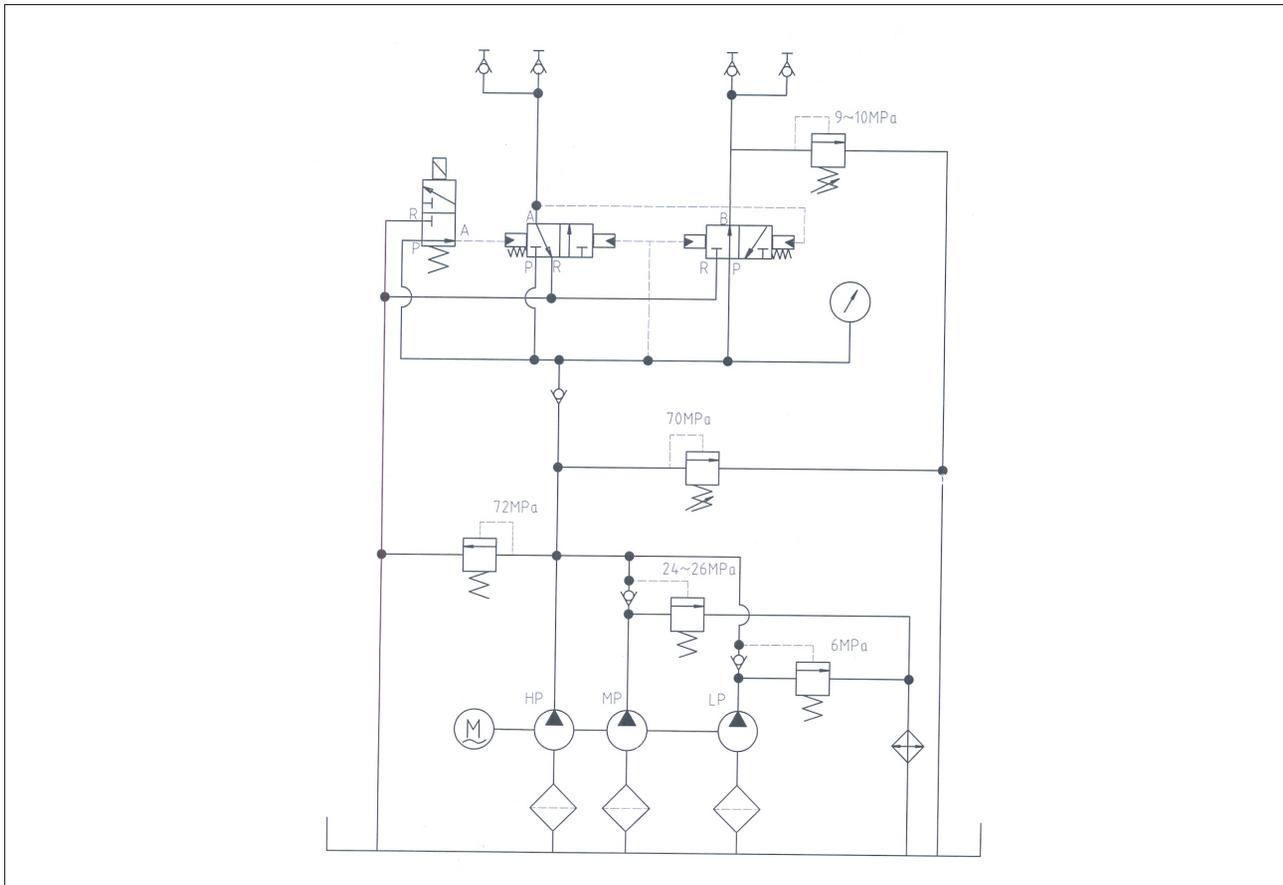


ITEM	Description	QTY
1	Seal gasket	1
2	Bearing	1
3	Bearing pole	1
4	Pump head	1
5	Release valve	1
5-1	Relief Valve	1/set
5-2	Retaining ring	1/set
5-3	O-ring	1/set
5-4	O-ring	1/set
6	Safety valve	1
7	Unilateralism valve	2
7-1	Check Valve	1/set
7-2	Retaining ring	1/set
7-3	O-ring	1/set
7-4	O-ring	1/set
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



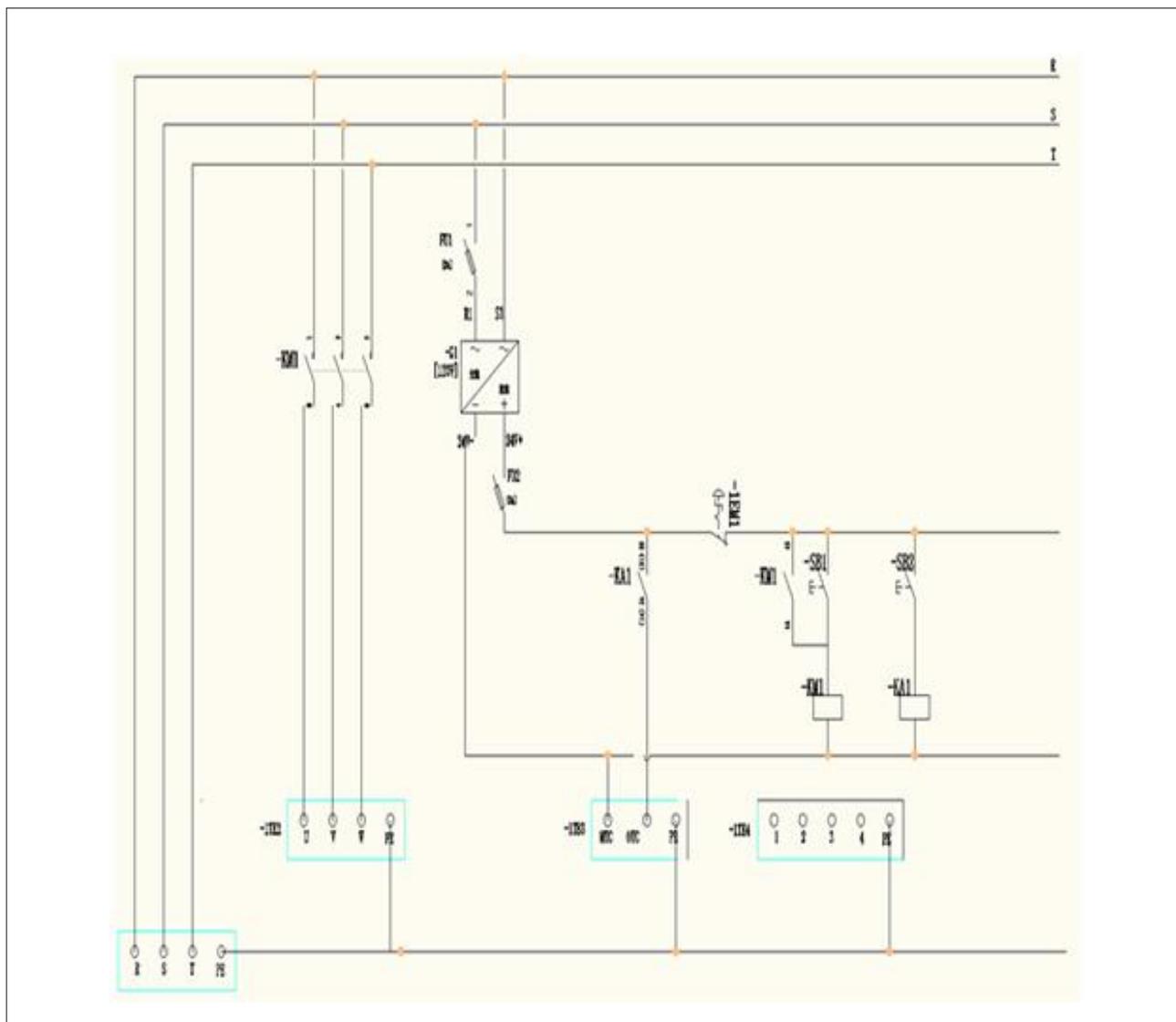
## WARNING FOR USING HIGH PRESSURE HOSE

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 700Bar, 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 1000Bar high pressure hose's operating pressure is 700Bar, 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 ELEMENT



380V 60HZ electrical configuration table:

ITEM	Name	Model	Remark
1	Explosion-proof control box	BXMD81 300*350*280	Warom
2	Explosion-proof button box	BZC8050	Warom
3	Explosion-proof plug device	BCZ85 380V 16A	Warom
4	Explosion-proof line tube	BNG 6M	Warom
5	Explosion-proof line tube	BNG 5M	Warom
6	Explosion-proof line tube	BNG 1M	Warom
7	Switching Power Supply	DRH-120W 24V	Warom
8	Contacor	BC7-30 DC24V	Warom
9	Relay	RCL424024	Warom
10	Fuse	RT18 2A	Warom
11	Motor	380V 50HZ 1.1KW	ABB

## Noise/Vibration And Transport information

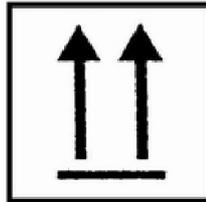
### 1、 Hydraulic pump noise declaration

1).Hydraulic pump noise value:  $\leq 70\text{db}$

### 2、 Hydraulic pump transport information.

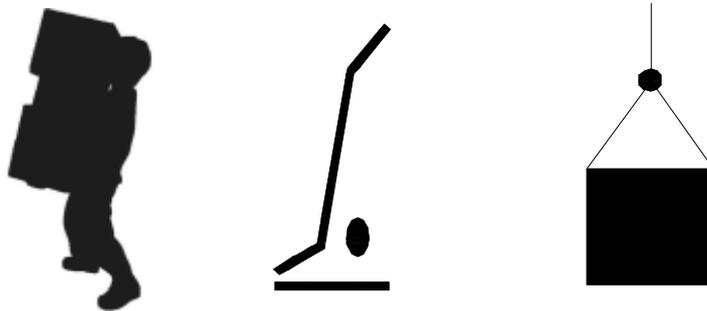
1). Handle with care.

2).The shipment should be vertical upward, as shown in the figure 9-1.



**FIG 9-1**

3).Product handling, generally using portable, car handling and lifting and moving, as shown in the figure 9-2.



**FIG 9-2**

