



**LP3 SERIES**  
**Multi-Port Power Pack**  
**Operation and Maintenance Manual**

## Safety Guide

To use the LP3 series Multi-Port Power Pack safely you must follow correct operation guidelines and inspect the equipment regularly. Read and follow all instructions and put on proper personal protective equipment (PPE) prior to use.

**UPON RECEIPT OF THIS TOOL, INSPECT THE PACKAGE FOR DAMAGE.**

Carefully inspect all components for damage incurred during shipping. If any shipping damage is found, notify the carrier at once. Shipping damage is NOT covered by warranty. The carrier is responsible for all repair or replacement costs resulting from damage in shipment.

Neither manufacturer, nor its distributors are responsible for damage caused by unsafe and/or faulty operations. If a problem arises during use, shut off the power immediately and consult your distributor.

**ALL OF OUR PRODUCTS MAY HAVE UPGRADES AND MODIFICATIONS WITHOUT NOTICE.**

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## Warnings

### Hydraulic Hose:

- Inspect hose for wear and damage prior to every use.
  - Only use twin line high pressure hydraulic hoses rated for 10,000 PSI with at least a 3:1 safety factor.
  - The maximum operating pressure is 10,000 PSI - Do not exceed 10,000 PSI.
- Do not let the hose kink, twist, curl or bend so tightly that oil flow within the hose is blocked or reduced.
  - The minimum bending radius:  $R>5$  inch.
  - Too small of a bending radius will kink and destroy the high pressure hydraulic hose.
- Before operating the hydraulic power pack, tighten all hydraulic hose connections with the proper tools.
  - **Do not** overtighten.
  - Connections should be tightened securely and leak-free.
  - Over tightening can cause premature coupler thread failure.
- Shut off the electric motor before breaking any hydraulic connections in the system.
  - Should a hydraulic hose ever rupture, burst, or need to be disconnected, immediately shut off the hydraulic power pack.
  - Never attempt to grasp a leaking pressurized hose with your hands. The force of the escaping hydraulic fluid could cause serious injury.
- **Do not** subject the hose to potential hazards such as:
  - Fire
  - Sharp surfaces
  - Extreme heat or cold
  - Heavy impact
- Hose material and coupler seals must be compatible with the hydraulic fluid.
  - Keep hoses away from contact with corrosive materials such as creosote-impregnated objects and some paints and solvents.
  - Never paint a hydraulic hose.
  - Never paint hydraulic couplers.
  - Hose deterioration due to corrosive materials can result in premature failure and serious personal injury.

## Caution

- Do not exceed the maximum hydraulic pressure rating of 10,000 PSI.
- Do not tamper with the internal high pressure relief valve.
  - Creating pressure beyond rated capacities can result in serious personal injury.
- Before replenishing the hydraulic oil, retract the system to prevent overfilling the pump reservoir.
  - Overfilling can cause personal injury due to excess reservoir pressure created when the wrenches are retracted.
- **Do not** permit anyone to stand in front of open hydraulic couplers during operation.
- Before performing any maintenance, shut off power.
- **Do not** operate without oil.
- Keep the power pack clean.
- **Do not** operate in wet conditions.
- **Disconnect the hydraulic power pack from the power supply when performing maintenance or repairs.**
  - If the power supply is damaged or the inner wiring is exposed in any way, replace immediately.
  - If the power cord is damaged or wiring is exposed, replace or repair immediately.
  - Check the total amperage draw for the electrical circuit you will be using.
  - Low amperage can cause the power pack to generate excessive heat and may cause the electric circuit break to trip.

## Features:

- LP3 Series Multi- Port Power Pack is a three stage power pack. The pressure relief valve is assembled in the high pressure port.
- Flow rates for the power pack by stage are:
  - 50in /min in high pressure stage
  - 110in /min in mid pressure stage
  - 500in /min in low pressure stage
- Maximum operating pressure: 10,000 PSI
- The standard LP3 series Multi-Port Power Pack can simultaneously run two torque wrenches at the same time. Also it also can simultaneously run four torque wrenches after changing the valve block.
- Electric power options:
  - 115V 60HZ, 1.2 Hp Motor
  - 220V 50HZ, 1.6 Hp Motor
  - 220V 60HZ, 1.6 Hp Motor
- Acceptable working temperature: -20 F to 120 F
- Overall dimensions: 12" x 17.5" x 16.8"
- Weight (no oil): 50.6lbs
- Hydraulic oil: ISO VG 46#

## Coupler Connection

- Never overtighten the hydraulic coupler.
  - Overtightening can cause premature thread failure.
- Check for gaps in the hydraulic coupler.
  - Gaps can cause a disruption in the flow of hydraulic fluid.
  - Gaps will cause the hydraulic torque wrench to not operate.
- Immediately replace any worn or damaged hydraulic couplers.
- Do not use the hose to move the attached equipment.

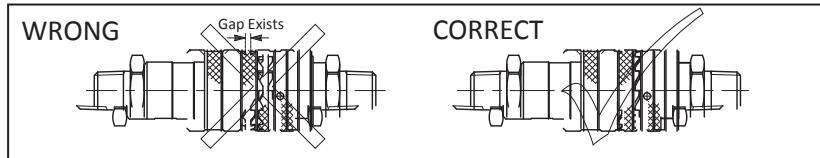


Figure 1

## IMPORTANT

**WHEN ONLY USING ONE HYDRAULIC TORQUE WRENCH, COVER THE EMPTY HYDRAULIC COUPLINGS WITH DUST CAPS.**

**USE A STABLE ELECTRIC SOURCE. IF POWER SUPPLY IS UNSTEADY IT MAY AFFECT THE PERFORMANCE AND MAY DAMAGE THE HYDRAULIC POWER PACK.**

**IF YOU ARE USING AN EXTENSION CORD TO POWER THE HYDRAULIC PUMP, USE A HEAVY GAUGE CORD (12 GAUGE OR BETTER).**

## System Set Up

**Attention:** The power pack has been shipped without oil in the reservoir. Only use a high-grade (Grade 46 or better), quality non-foaming hydraulic oil.

1. Inspect all hydraulic twin line hoses, threads and fittings for signs of wear or damage and replace as needed.
2. Clean all hose ends and hydraulic couplers.
3. Connect the twin line hydraulic hose to the hydraulic torque wrench and the power pack, making sure all hydraulic couplers are snug.
4. Clean the area around the filler cap.
  - a. Any dirt or grime in the hydraulic oil can damage the internal workings of the power pack.
5. Remove the filler cap, and insert a clean funnel.
6. Fill with hydraulic oil to 1" from the top of the filler hole.
7. Cover filler cap.
8. Cycle the power pack (with hydraulic torque wrench attached) several times.
9. Retract the hydraulic torque wrench and check the oil level in the power pack reservoir again.
  - a. This will also help eliminating air from the system.
10. The power pack is now ready to be put into regular operation.

## Pressure Set Up:

**NOTE:** For easy adjustment of the pressure regulating valve always adjust the pressure by increasing to the desired pressure setting.

1. Loosen the locknut on the pressure regulating valve, and back the adjusting knob out a few turns.
  - a. Do so by turning the adjusting knob in a counterclockwise direction. (Figure 2)
  - b. This will decrease the pressure setting to a pressure lower than the desired pressure.

**IMPORTANT: NEVER EXCEED 10,000 PSI**

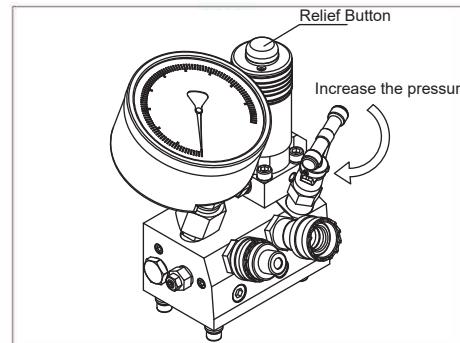


Figure 2

**ATTENTION: THE POWER PACK MUST BE COMPLETELY CONNECTED AND THE HYDRAULIC TORQUE WRENCH MUST NOT BE ON THE APPLICATION WHEN ADJUSTING THE PRESSURE.**

2. Connect the electric power supply and flip the on/off switch to "On"
  - a. This switch is located on the back of the electrical control box.
3. Press the rocker switch on the remote control handle to the center position to turn the power pack on.
  - a. The power pack will deliver hydraulic oil to the low pressure port (Port B).
4. Press the rocker switch on the top position to "Advance".
  - a. The power pack will deliver hydraulic oil to the high pressure port (Port A).
5. While holding remote rocker in the "Advance" position, slowly turn the adjusting knob in a clockwise direction.
  - a. This will gradually increase the pressure setting.
6. When the desired pressure is reached, lock the adjusting knob in position by tightening the locknut.

**IMPORTANT: NEVER EXCEED 10,000 PSI**

## Operation

1. Press the remote rocker switch on the top to advance the hydraulic torque wrench.
2. When you hear an audible “Click” from the hydraulic torque wrench, release the remote rocker.
  - a. The hydraulic torque wrench will automatically retract.
3. When the hydraulic torque wrench is fully retracted, repeat the process until the desired pressure/torque rating is reached.

- To disconnect tools and hoses from system, you must release system pressure.
  - a. To release pressure from system, press the rubber button on top of the solenoid. (Figure 3)



Figure 3

**Attention:** When using a hydraulic power pack for the first time, activate the hydraulic torque wrench prior to putting tool on an application; this will help remove any air from the system.

## Warranties

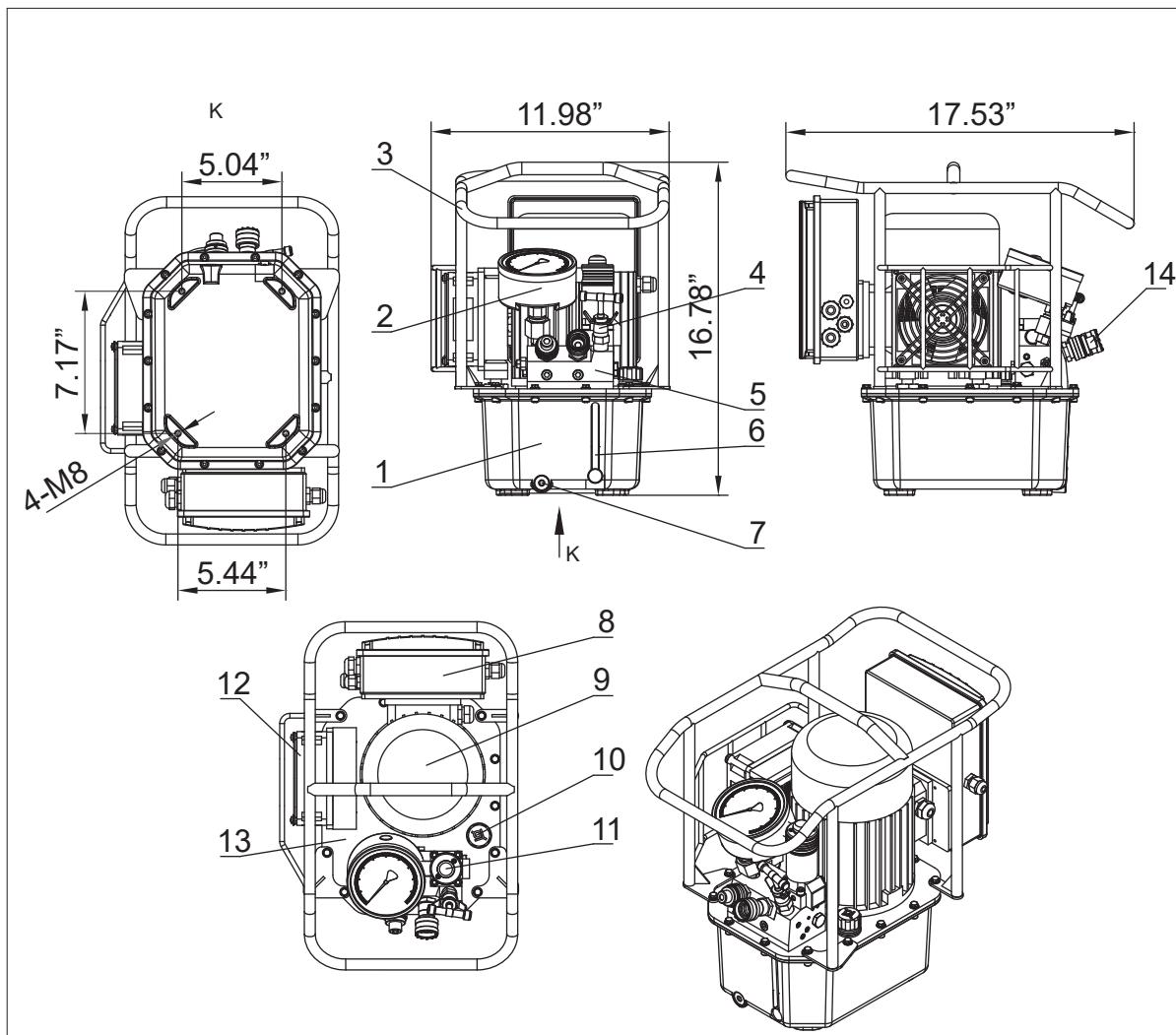
1. Manufacturer guarantees the LP3 series Multi-Port Power Pack quality for 12 months from the date of purchase.
2. If any quality issue due to the defects of the materials or workmanship is found within the guarantee period, manufacturer will repair or replace the defective products at discretion.
3. If the equipment is found to be damaged due to negligence, operating the power pack incorrectly, tampering with, or attempting to repair the power pack in part or whole, the warranty is invalidated.

## Trouble Shooting Sheet

| <b>Malfunction</b>   | <b>Reason for malfunction</b>  | <b>Solution</b>   |
|--|--|---|
| The power pack does not start.                                       | Un-suitable power source.  | Confirm the power supply meets the pump's specifications.   |
|  | The power is not connected.  | Check the power connection.   |
| The system has no hydraulic pressure.                                | The hydraulic couplers are not connected properly.                       | Tighten or re-install.  |
|  | No oil in the tank.  | Fill oil.   |
|  | Not enough oil in tank.  | Fill oil.   |
|  | Faulty pressure gauge.   | Replace gauge.  |
| The system still has no hydraulic pressure after checking the above. | The hydraulic couplers may have a vacuum lock.                           | Check hydraulic couplers to hydraulic torque wrench. Inspect couplers to ensure they are completely coupled. Occasionally couplers have to be replaced because the check ball does not stay open due to wear. |
| Hydraulic couplers are leaking.                                      | The o-ring, is worn or missing in the female hydraulic couplers.         | Replace the hydraulic couplers.   |
| The desired hydraulic pressure can not be reached.                   | The pressure setting for high-pressure relief valve is adjusted too low. | Replace high pressure relief valve.   |
|  | Oil is mixed with water.   | Replace the oil.  |
|  | Pressure relief valve broken.  | Replace valve.  |
|  | Air may be in system.  | Repeat operating the system with no load several time to eliminate air.   |
|  | High-pressure relief valve may be loose.                                 | Tighten valve.  |
|  | The o-ring for high-pressure relief valve may be worn or missing.        | Replace o-rings.  |
| There is a loud noise when the power pack is operated.               | The bearing(s) may be worn or broken.                                    | Replace bearing(s).   |
|  | Air may be in system.  | Repeat operating the system with no load several time to eliminate air.   |
| High-pressure flow is reduced.                                       | Piston or spring may be broken.  | Replace piston assembly.  |
|  | Hydraulic couplers may be loose.   | Tighten hydraulic couplers.   |
|  | Oil level may be low.  | Fill with oil.  |
|  | Oil may be too cold.   | Change hydraulic oil to a lighter grade.  |
|  | Dirt in pump or filter is clogged.                                       | Replace filter and clean tank.  |

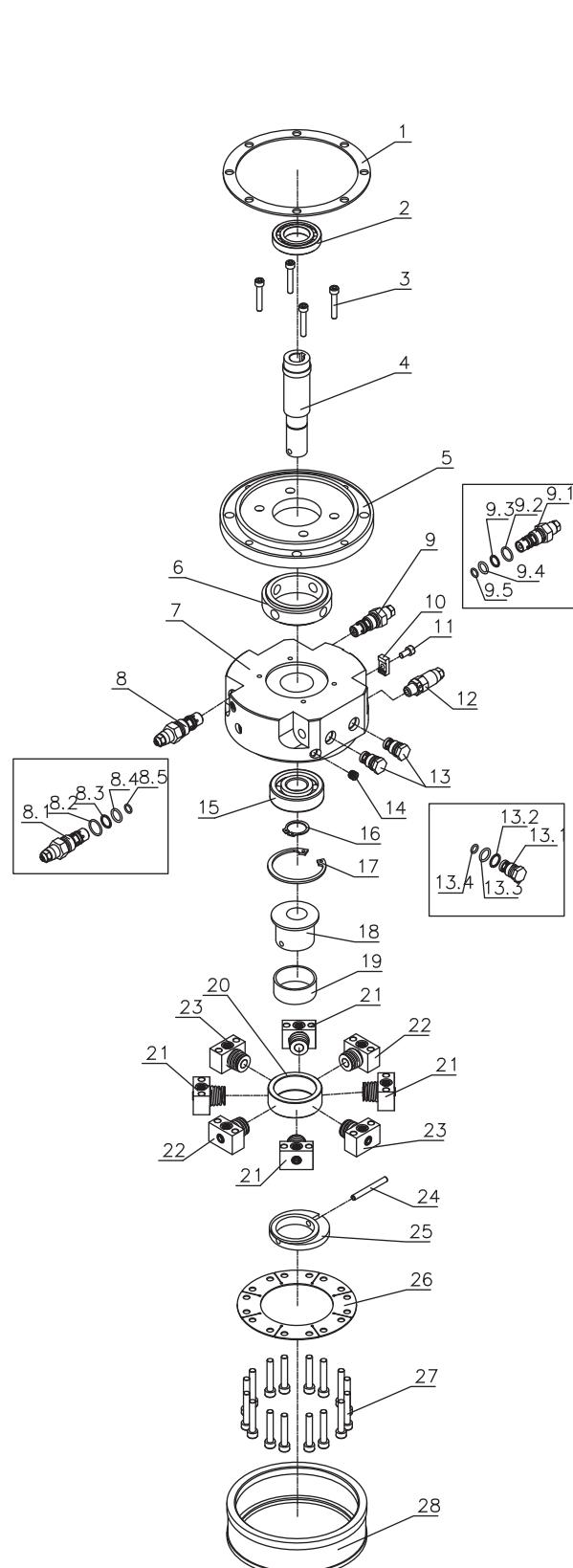
## Appendix

### EXTERNAL DIMENSION AND DESCRIPTION OF PARTS



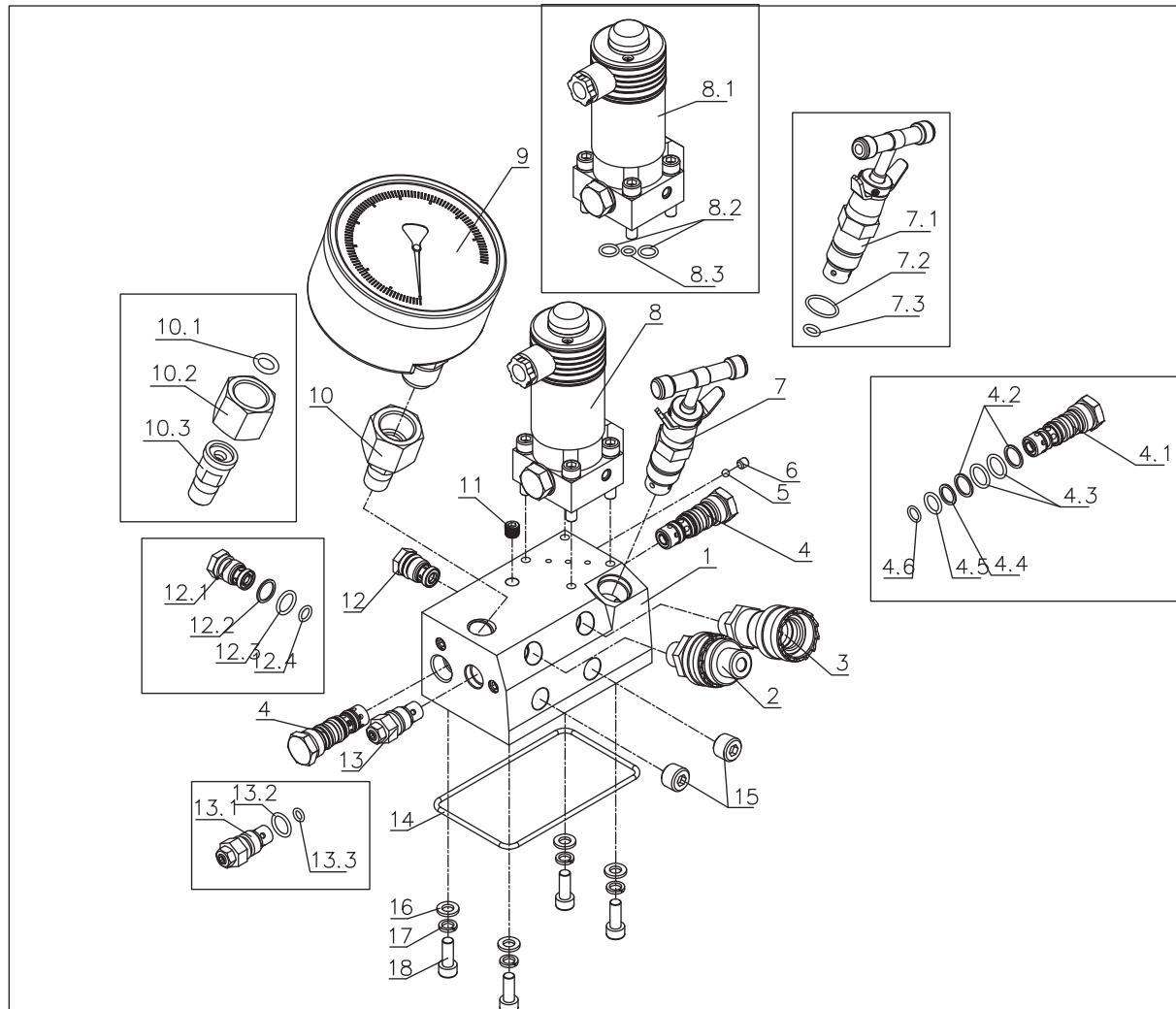
| Item | Description          | Item | Description               |
|------|----------------------|------|---------------------------|
| 1    | Oil Reservoir        | 8    | Electrical Control System |
| 2    | Gauge                | 9    | Motor                     |
| 3    | Frame For Protecting | 10   | Oil Filling Port          |
| 4    | Regulating Valve     | 11   | Solenoid Valve            |
| 5    | Valve Assembly       | 12   | Cooler                    |
| 6    | Oil Lever Measure    | 13   | Tank Cover                |
| 7    | Oil Releasing Port   | 14   | Coupler                   |

## PUMP BODY ASSEMBLY



| Item | Description          | Quantity |
|------|----------------------|----------|
| 1    | Seal Gasket          | 1        |
| 2    | Bearing              | 1        |
| 3    | Screw                | 4        |
| 4    | Connecting Axis      | 1        |
| 5    | Flange               | 1        |
| 6    | Metal Sleeve         | 1        |
| 7    | Pump Body            | 1        |
| 8    | Relief Valve(Low)    | 1        |
| 8.1  | Valve Body           | 1        |
| 8.2  | O-Ring               | 1        |
| 8.3  | Retaining Ring       | 1        |
| 8.4  | O-Ring               | 1        |
| 8.5  | O-Ring               | 1        |
| 9    | Relief Valve(Middle) | 1        |
| 9.1  | Valve Body           | 1        |
| 9.2  | O-Ring               | 1        |
| 9.3  | Retaining Ring       | 1        |
| 9.4  | O-Ring               | 1        |
| 9.5  | O-Ring               | 1        |
| 10   | Filter Fixer         | 1        |
| 11   | Screw                | 1        |
| 12   | Safety Valve         | 1        |
| 13   | Check Valve          | 2        |
| 13.1 | Valve Body           | 1        |
| 13.2 | Retaining Ring       | 1        |
| 13.3 | O-Ring               | 1        |
| 13.4 | O-Ring               | 1        |
| 14   | Screw Plug           | 12       |
| 15   | Bearing              | 1        |
| 16   | Metal Retaining Ring | 1        |
| 17   | Metal Retaining Ring | 1        |
| 18   | Metal Sleeve         | 1        |
| 19   | Copper Sleeve        | 1        |
| 20   | Axis Sleeve          | 1        |
| 21   | Piston               | 4        |
| 22   | Piston               | 2        |
| 23   | Piston               | 2        |
| 24   | Spring Pin           | 1        |
| 25   | Metal Block          | 1        |
| 26   | Connecting Gasket    | 1        |
| 27   | Screw                | 16       |
| 28   | Filter               | 1        |

VALVE ASSEMBLY

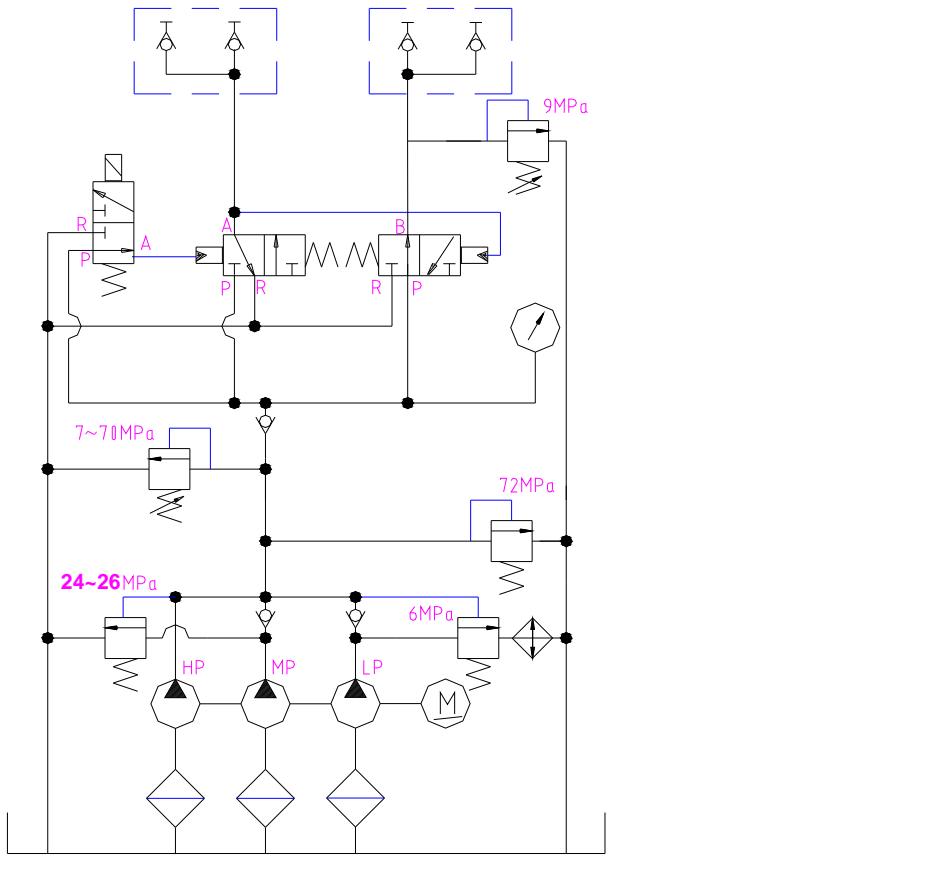


| Item | Description      | Quantity | Item | Description        | Quantity |
|------|------------------|----------|------|--------------------|----------|
| 1    | Valve Block      | 1        | 9    | Gauge 100Mpa       | 1        |
| 2    | Male Coupler     | 1        | 10   | Connector          | 1        |
| 3    | Female Coupler   | 1        | 10.1 | O-Ring             | 1        |
| 4    | Reversing Valve  | 2        | 10.2 | Connecting Fitting | 1        |
| 4.1  | Valve Body       | 1        | 10.3 | Connecting Fitting | 1        |
| 4.2  | Retaining Ring   | 2        | 11   | Screw Plug         | 13       |
| 4.3  | O-Ring           | 2        | 12   | Check Valve        | 1        |
| 4.4  | Retaining Ring   | 1        | 12.1 | Valve Body         | 1        |
| 4.5  | O-Ring           | 1        | 12.2 | Retaining Ring     | 1        |
| 4.6  | O-Ring           | 1        | 12.3 | O-Ring             | 1        |
| 5    | Steel Ball       | 5        | 12.4 | O-Ring             | 1        |
| 6    | Screw            | 5        | 13   | Low Pressure Valve | 1        |
| 7    | Regulating Valve | 1        | 13.1 | Valve Body         | 1        |
| 7.1  | Valve Body       | 1        | 13.2 | O-Ring             | 1        |
| 7.2  | O-Ring           | 1        | 13.3 | O-Ring             | 1        |
| 7.3  | O-Ring           | 1        | 14   | O-Ring             | 1        |
| 8    | Solenoid Valve   | 1        | 15   | Plug               | 2        |
| 8.1  | Valve Body       | 1        | 16   | Gasket             | 4        |
| 8.2  | O-Ring           | 2        | 17   | Spring Gasket      | 4        |
| 8.3  | O-Ring           | 1        | 18   | Screw              | 4        |

## 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

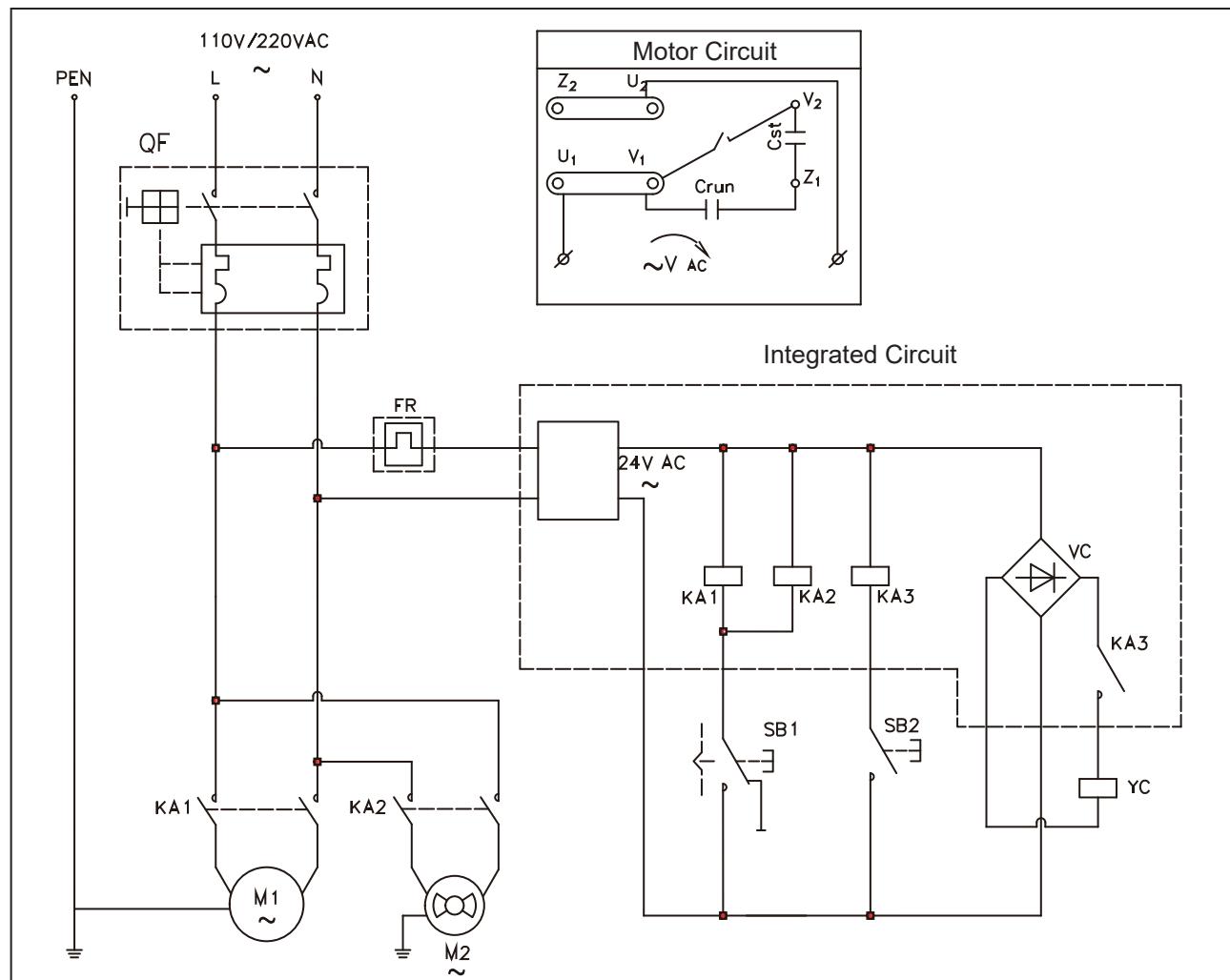
1. Please use WREN's JH series high pressure hoses.
2. The minimum bending radius:  $R > 120\text{mm}$ . Too small bending radius will destroy the high pressure hoses.
3. The maximum operating pressure is 70 Mpa, and it is forbidden overpass the pressure.
4. Do not tighten hoses excessively. Over tightening 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, Over pass this Pressure is forbidden.

## AFTER-SALES SERNICE

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.

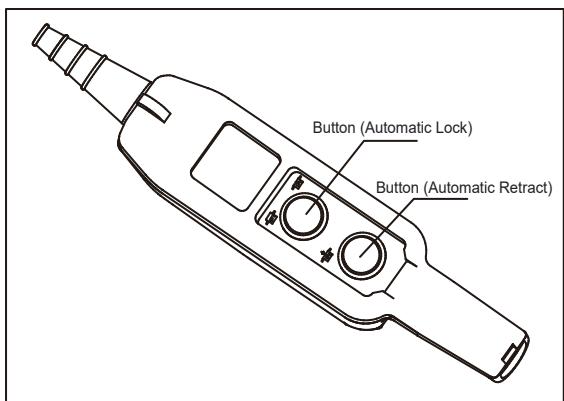
## Drawing for Electrical Principle

1 Pump voltage 100V – 220V



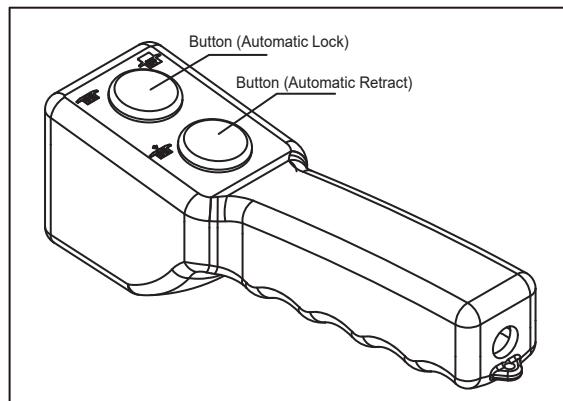
## Selecting Chart for Electrical Component

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:

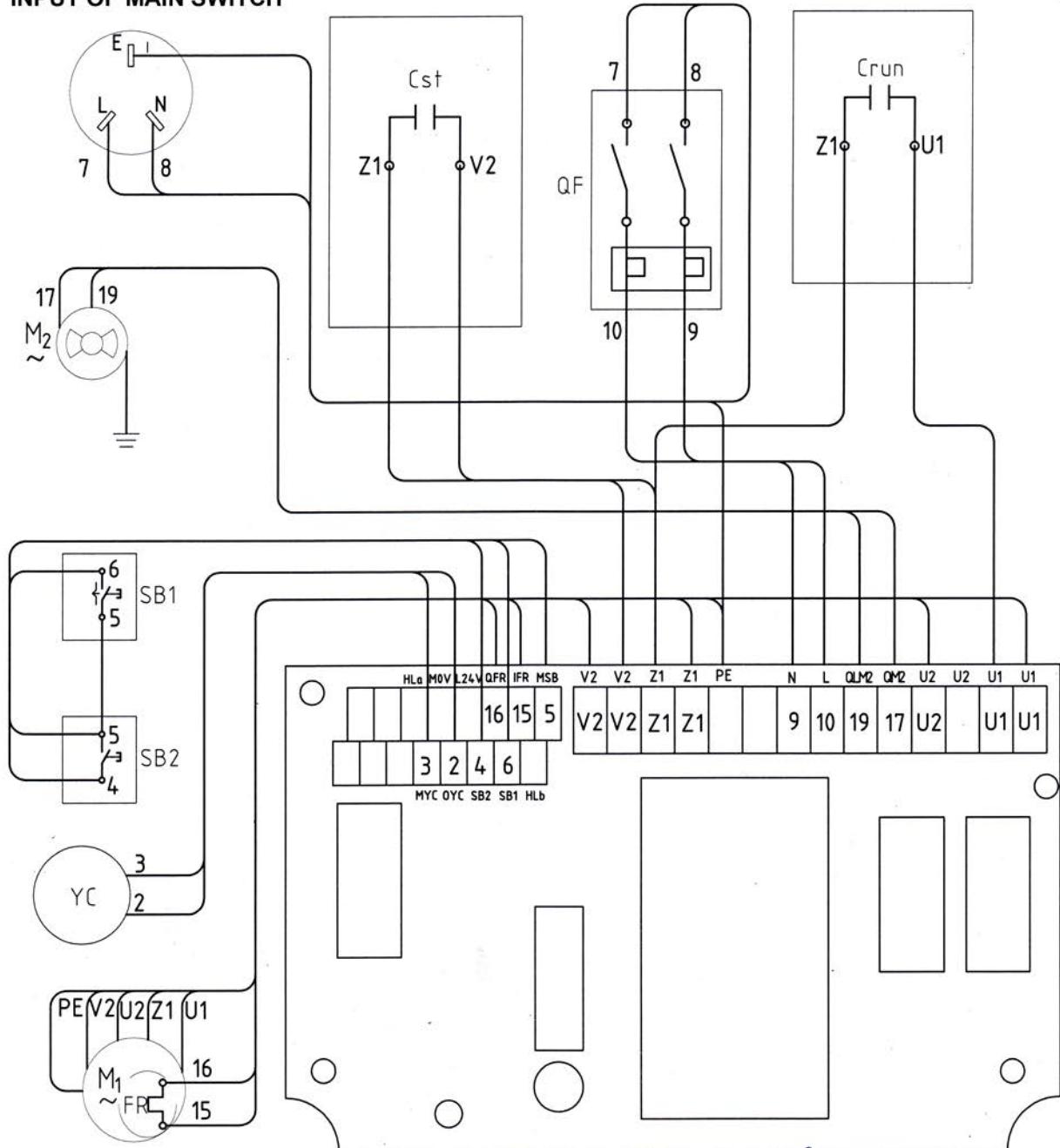
| Mark | Name                       | Specification and Model | Remark                          |
|------|----------------------------|-------------------------|---------------------------------|
| Crun | Work Capacitance           | CBB60 70uF 300V.AC      |                                 |
| Cst  | 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                 |                                 |

## ELECTRICAL INTERCONNECTDE FIGURE

### INPUT OF MAIN SWITCH





LP3系列  
多级出口液压泵操作手册

本操作手册内容包括LP3电动液压泵的操作规程、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

电动液压泵的安全使用, 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, 然后向制造商或制造商授权代理商咨询。

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!

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## 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，应先向制造商或制造商授权代理商咨询。没有制造商的书面同意，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. 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。

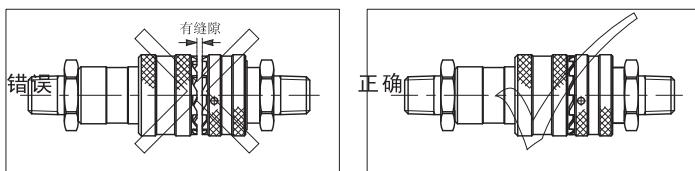


图 (1)

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，请小心操作，请勿面向人员操作！），直至用手可以按动接头内钢珠为止，再重新连接。

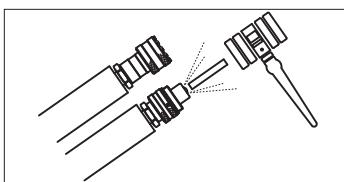


图 (2)

12. 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。
13. 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。
14. 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。
15. 不要碰带压力的软管；如果液压油喷出，会导致严重伤害。
16. 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. 只使用厂商液压工具专用油。
2. 使用过的液压油应根据防污染条例处理。

## 一 LP3系列多级出口液压泵概述

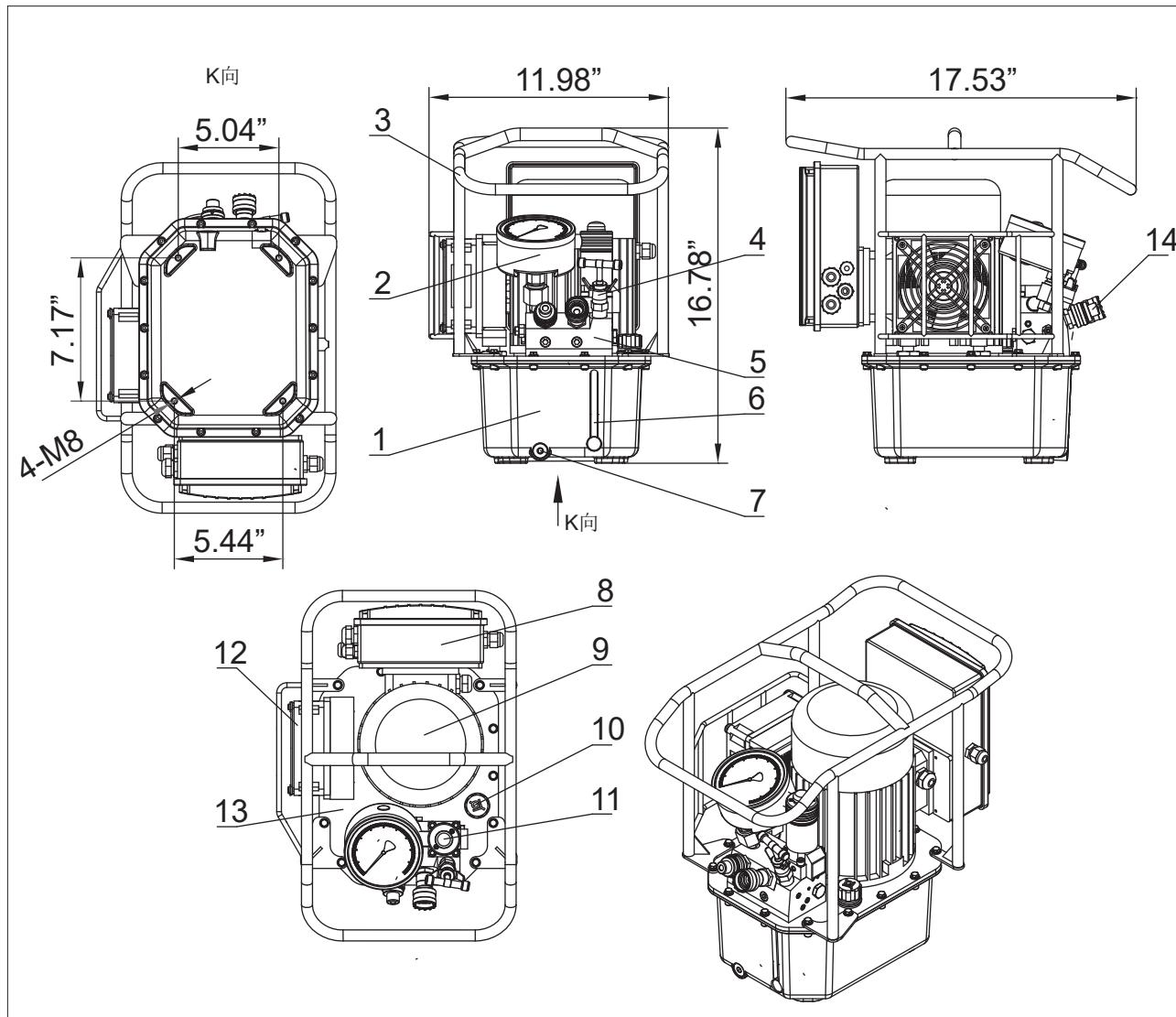
- 1.1 LP3系列为液压扳手专用泵，采用集成方式组装，由动力单元，电气单元，控制装置等组成的一种独立完整的液压装置，具有流量大、体积小、重量轻、结构简单、操作方便、工作压力高等特点，并且高压出口（A口）出油压力可在70~700bar间任意调节。
- 1.2 电动液压泵使用的液压油：32#抗磨液压油。严禁使用含水和含对钢或铝有腐蚀性介质的液压油。
- 1.3 电动液压泵使用的环境温度：-10~60°C（如更换低温液压油，可在-30°C低温下使用）。
- 1.4 电动液压泵通过高压软管和高压接头与执行元件连接，为工作安全，请使用原厂高压软管和高压接头。LP3电动液压泵配用的高压软管最大工作压力为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，请咨询厂商工程师。
- 1.6 请不要在靠近火焰处使用电动液压泵。
- 1.7 电动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，请咨询厂商工程师。）
- 1.8 请确认LP3电动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（必须有足够的油量），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



| 序号 | 说明          | 序号 | 说明         |
|----|-------------|----|------------|
| 1  | 储油箱         | 8  | 电控系统       |
| 2  | 压力表         | 9  | 电机 (参数见铭牌) |
| 3  | 油泵保护架       | 10 | 通气注油孔      |
| 4  | 压力调节阀 (溢流阀) | 11 | 换向阀        |
| 5  | 阀组          | 12 | 冷却器        |
| 6  | 液位计         | 13 | 油箱盖        |
| 7  | 卸油孔         | 14 | 快速接头       |

## 三 特性

- 3.1 LP3系列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°C（在环境温度低于-10°C时，请使用低温液压油）。
- 3.6 储油箱规格（油箱型号）：305×445×426。
- 3.7 重量（不含油）：23kg。
- 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 检查电动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！**如不慎将液压油溅入您的眼部，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。

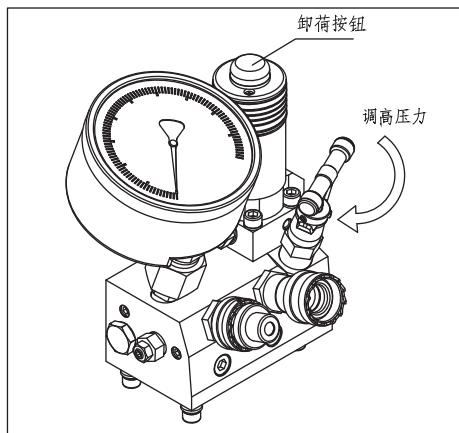
**警告！**废弃的液压油属于工业废料，应委托具有收集和处理工业废料的公司处。

## 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。

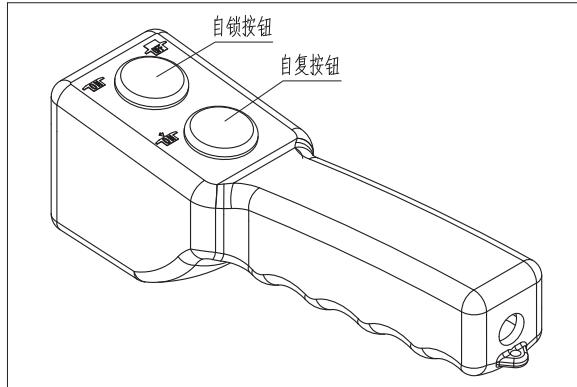
5.1.2 松开高压调节阀。



### 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。



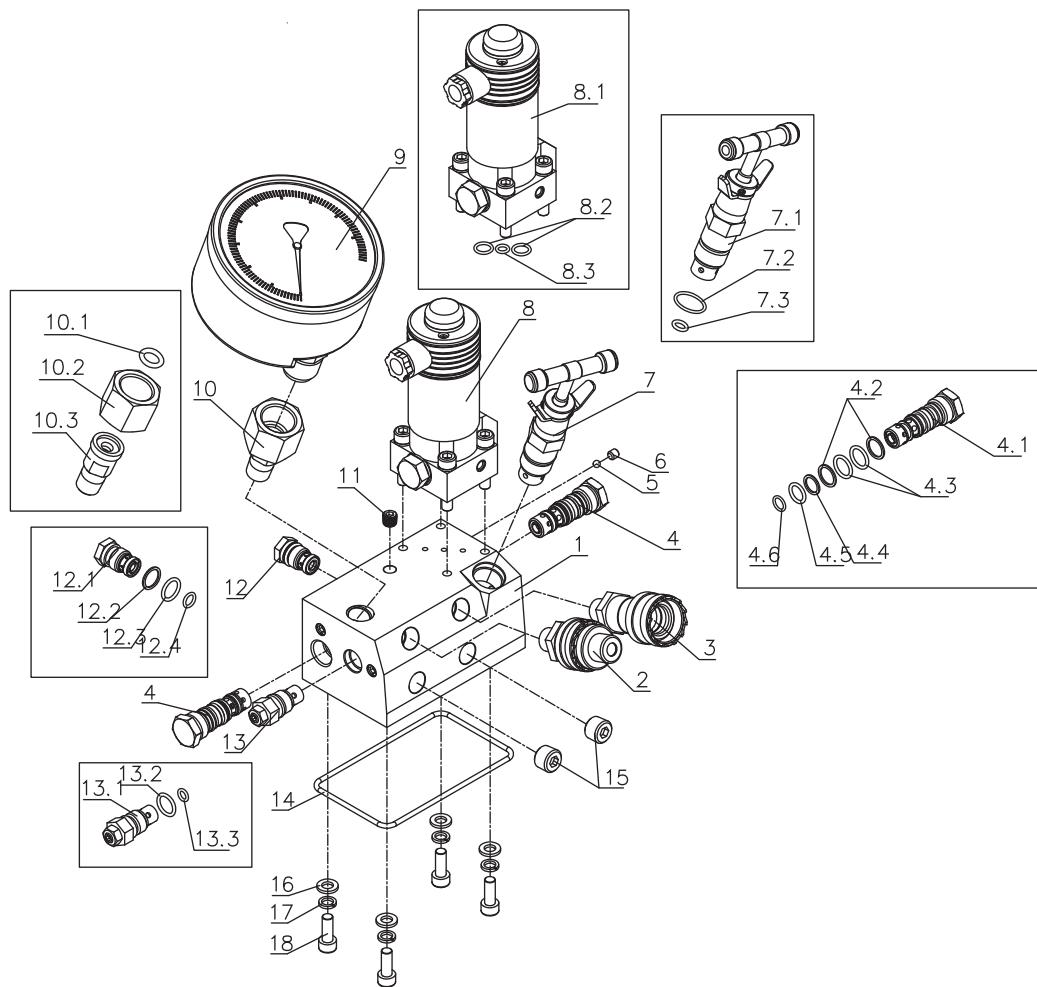
### 5.3 使用

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   | 9    | 压力表100MPa | 1   |
| 2   | 凸快速接头     | 1   | 10   | 压力表接头     | 1   |
| 3   | 凹快速接头     | 1   | 10.1 | O形圈       | 1/套 |
| 4   | 先导换向阀     | 2   | 10.2 | 压力表接头(二)  | 1/套 |
| 4.1 | 阀体        | 1/套 | 10.3 | 压力表接头(一)  | 1/套 |
| 4.2 | 挡圈        | 2/套 | 11   | 堵头        | 13  |
| 4.3 | O形圈       | 2/套 | 12   | 单向阀       | 1   |
| 4.4 | 挡圈        | 1/套 | 12.1 | 阀体        | 1/套 |
| 4.5 | O形圈       | 1/套 | 12.2 | 挡圈        | 1/套 |
| 4.6 | O形圈       | 1/套 | 12.3 | O形圈       | 1/套 |
| 5   | 钢球        | 5   | 12.4 | O形圈       | 1/套 |
| 6   | 内六角紧固螺钉   | 5   | 13   | 低压调压阀     | 1   |
| 7   | 高压调压阀     | 1   | 13.1 | 阀体        | 1/套 |
| 7.1 | 阀体        | 1/套 | 13.2 | O形圈       | 1/套 |
| 7.2 | O形圈       | 1/套 | 13.3 | O形圈       | 1/套 |
| 7.3 | O形圈       | 1/套 | 14   | O形圈       | 1/套 |
| 8   | 二位三通电磁换向阀 | 1   | 15   | 堵头        | 2   |
| 8.1 | 阀体        | 1/套 | 16   | 平垫片       | 4   |
| 8.2 | O形圈       | 2/套 | 17   | 弹簧垫圈      | 4   |
| 8.3 | O形圈       | 1/套 | 18   | 内六角螺钉     | 4   |

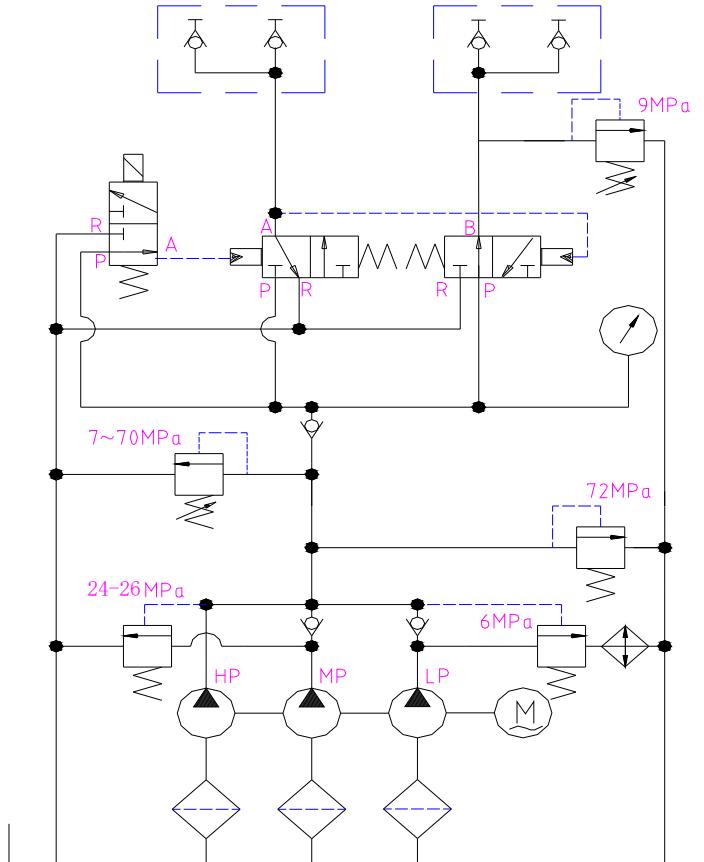
## 七 泵头装配表

| 序号   | 名称     | 数量  |
|------|--------|-----|
| 1    | 密封垫    | 1   |
| 2    | 深沟球轴承  | 1   |
| 3    | 内六角螺钉  | 4   |
| 4    | 泵轴     | 1   |
| 5    | 泵体法兰   | 1   |
| 6    | 泵体套    | 1   |
| 7    | 分离式泵体  | 1   |
| 8    | 低压卸荷阀  | 1   |
| 8.1  | 阀体     | 1/套 |
| 8.2  | 0型圈    | 1/套 |
| 8.3  | 挡圈     | 1/套 |
| 8.4  | 0型圈    | 1/套 |
| 8.5  | 0型圈    | 1/套 |
| 9    | 中压卸荷阀  | 1   |
| 9.1  | 阀体     | 1/套 |
| 9.2  | 0型圈    | 1/套 |
| 9.3  | 挡圈     | 1/套 |
| 9.4  | 0型圈    | 1/套 |
| 9.5  | 0型圈    | 1/套 |
| 10   | 滤网压板   | 1   |
| 11   | 内六角螺钉  | 1   |
| 12   | 超压阀    | 1   |
| 13   | 单向阀    | 2   |
| 13.1 | 阀体     | 1/套 |
| 13.2 | 挡圈     | 1/套 |
| 13.3 | 0型圈    | 1/套 |
| 13.4 | 0型圈    | 1/套 |
| 14   | 堵头     | 12  |
| 15   | 深沟球轴承  | 1   |
| 16   | 轴用弹性挡圈 | 1   |
| 17   | 孔用弹性挡圈 | 1   |
| 18   | 偏心套    | 1   |
| 19   | 铜套     | 1   |
| 20   | 轴承外圈   | 1   |
| 21   | 柱塞1    | 4   |
| 22   | 柱塞2    | 2   |
| 23   | 柱塞3    | 2   |
| 24   | 弹性圆柱销  | 1   |
| 25   | 偏心块    | 1   |
| 26   | 连接片    | 1   |
| 27   | 内六角螺钉  | 6   |
| 28   | 过滤罩    | 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    |
| 泵站工作时有强烈噪音   | 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, 否则会使油管产生过大的背压, 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, 使用时将会暴裂, 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

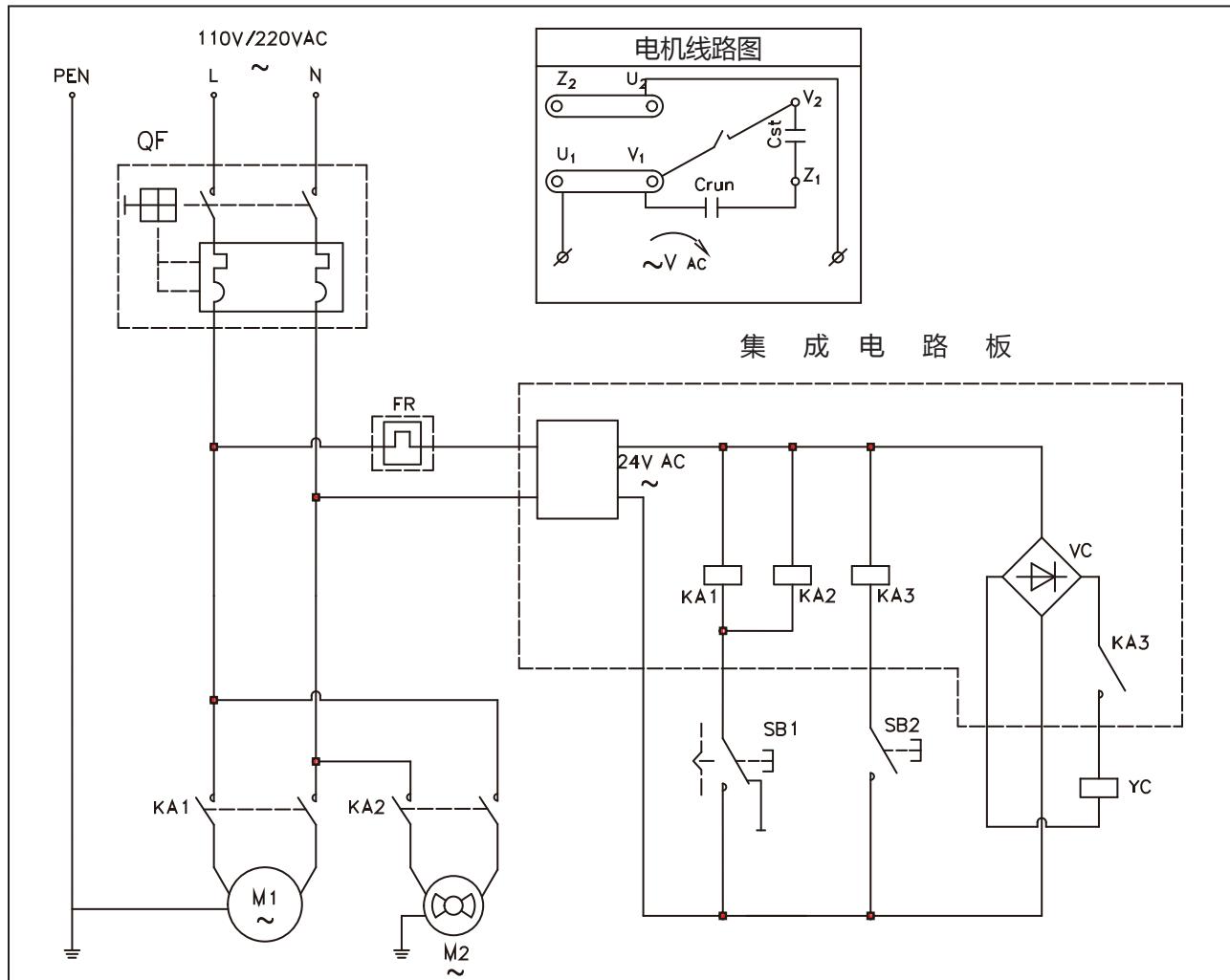
1 自客户购买WREN品牌液压机具产品之日起, WREN公司为用户提供十二个月的保质期（以合同为准）。

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、未经受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。

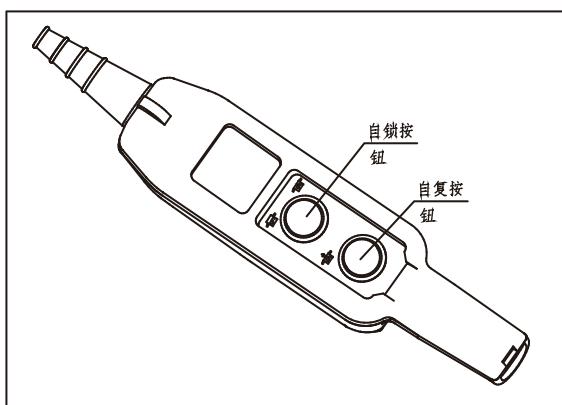
## 十 电气原理图

### 1 使用电压为100V-220V液压泵的电气原理图

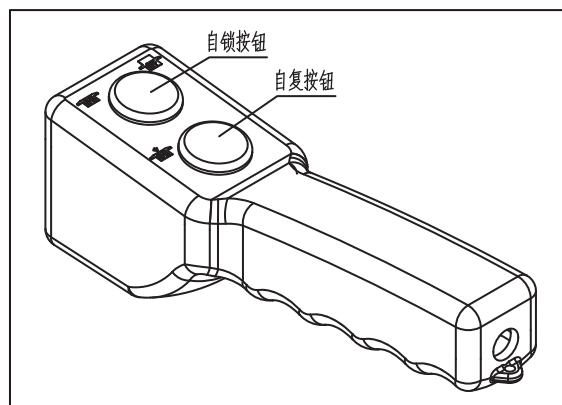


## 十一 电器配置表

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            |         |

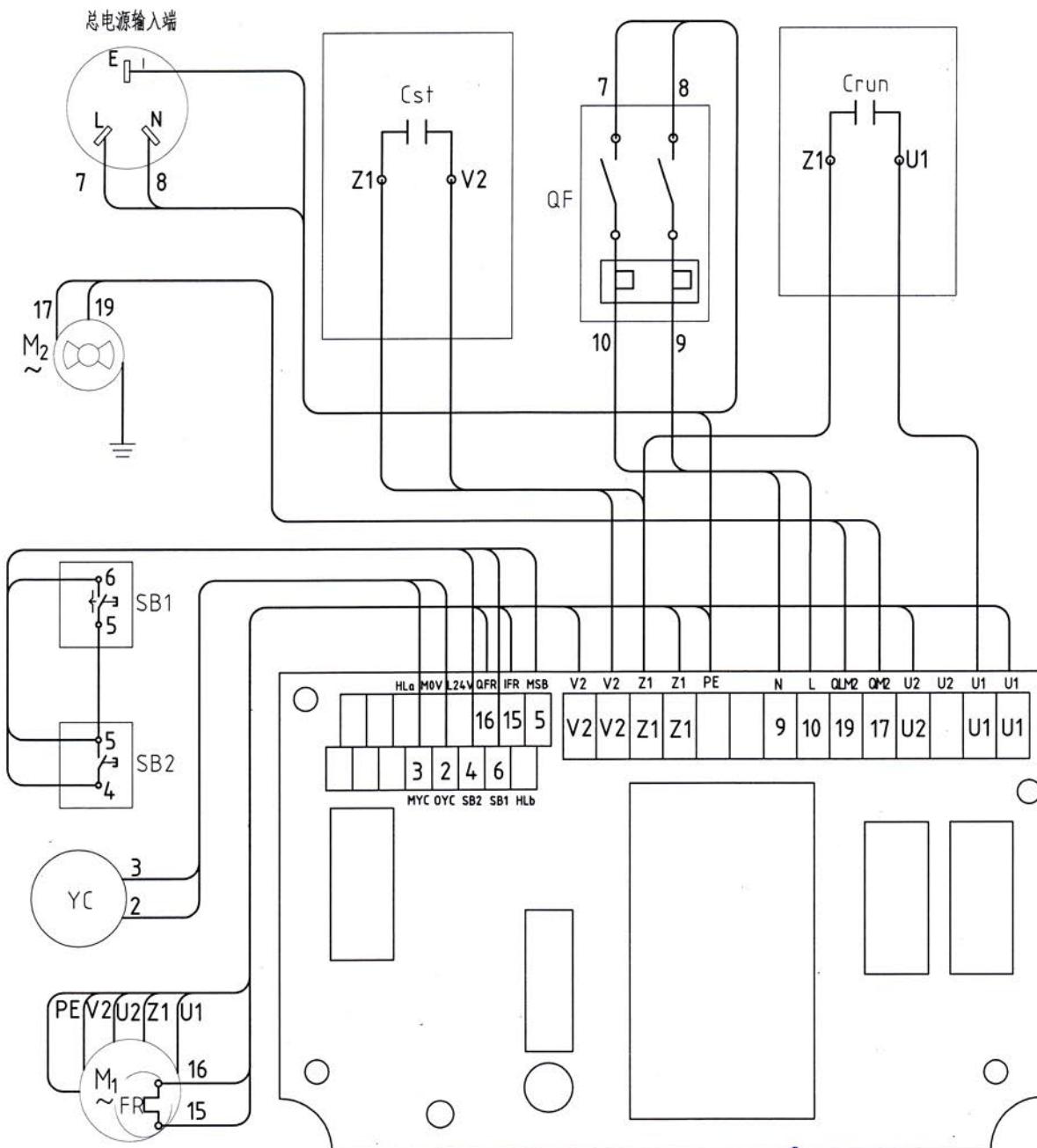
100-120V 50HZ电器配置表

| 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            |         |

## 十二 电气互连图





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