TRITORC
BOLT ON TRUST

HPL-101 SERIES

ELECTRIC Power Pack

Operation and Maintenance Manual

Safety Guide

To use the HPL-101 series Single-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** over tighten.
    - 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:

- HPL-101 Series Single- 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 HPL-101 series Multi- -Port Power Pack can simultaneously run two torque wrenches at the same time.

- 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 over tighten the hydraulic coupler.
    - Over tightening can cause premature thread failure.

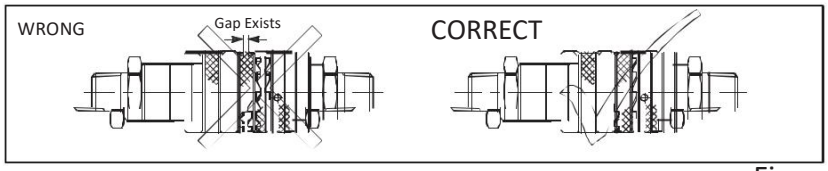


Figure 1

- 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.

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.

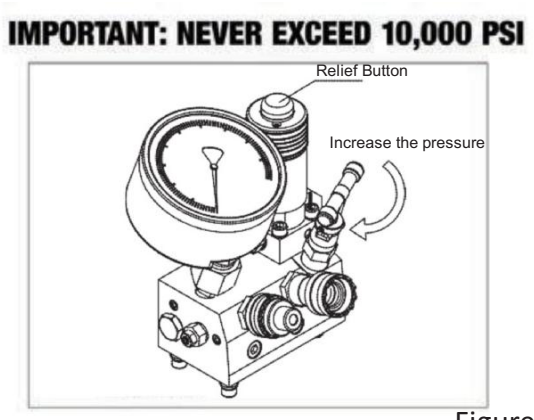


Figure 2

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.

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

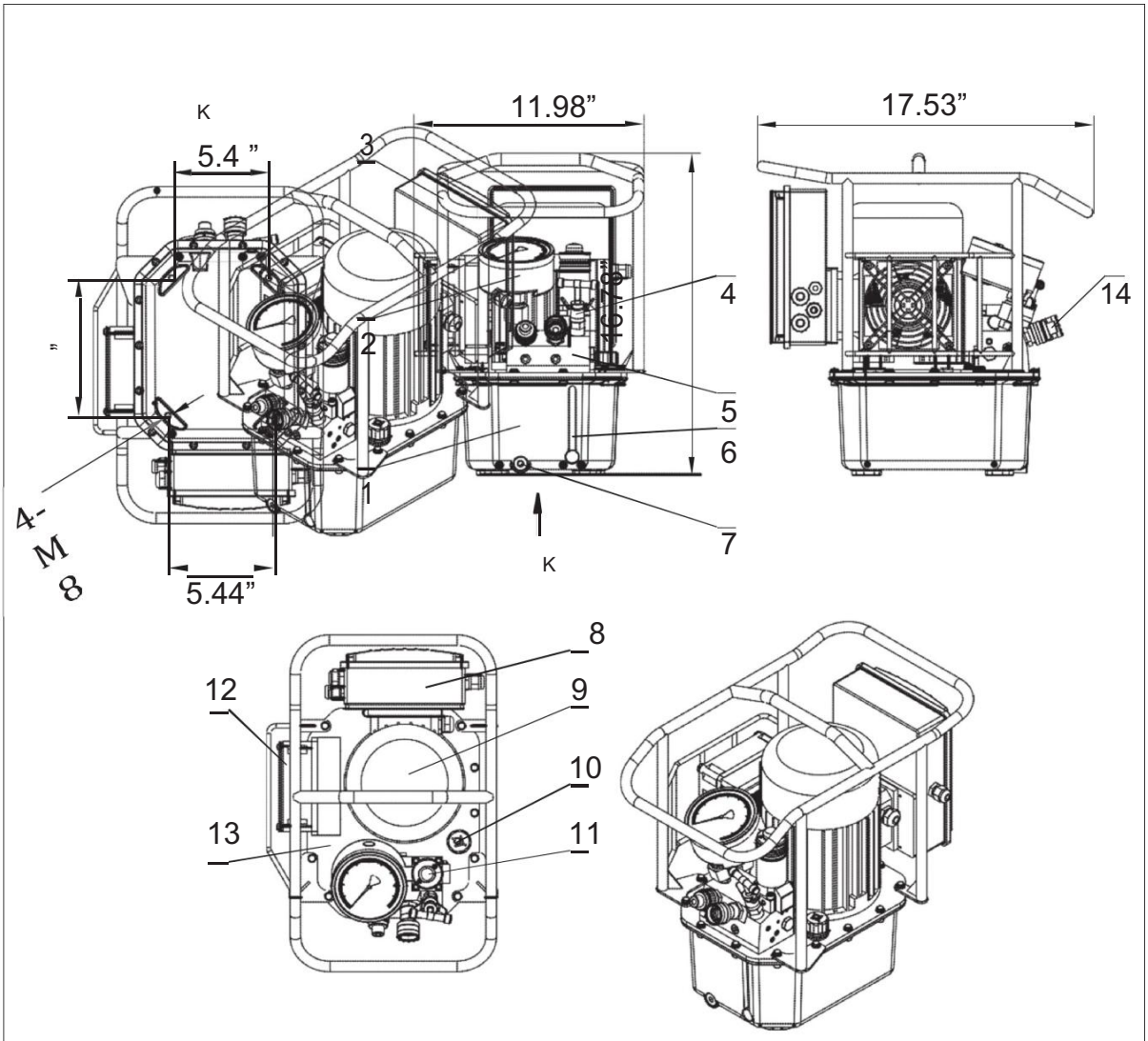
1. Manufacturer guarantees the HPL-101 series Power Pack quality for 12 months from the date of purchase.
2. If any quality issue due to the defects of the materials or workmanship is found within the guarantee period, manufacturer will repair or replace the defective products at discretion.
3. If the 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

Malfunction	Reason for malfunction	Solution
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.

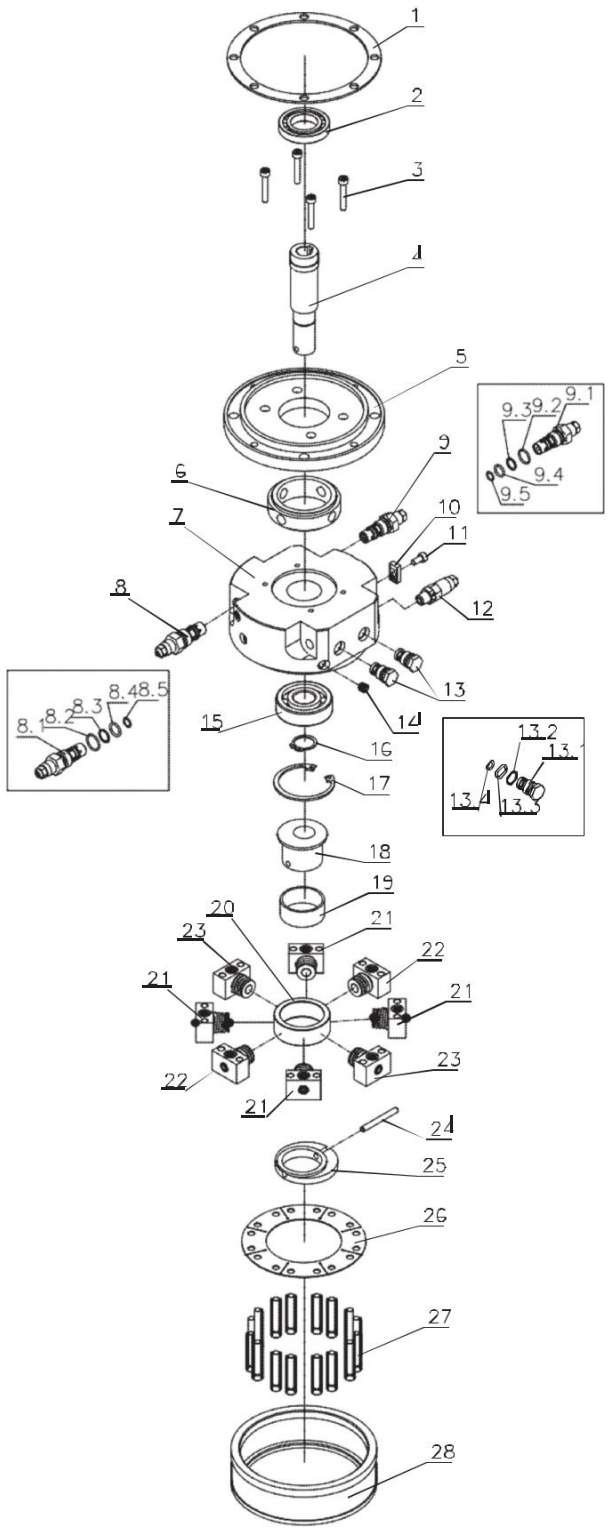
Appendix

EXTERNAL DIMENSION AND DESCRIPT ION OF PARTS



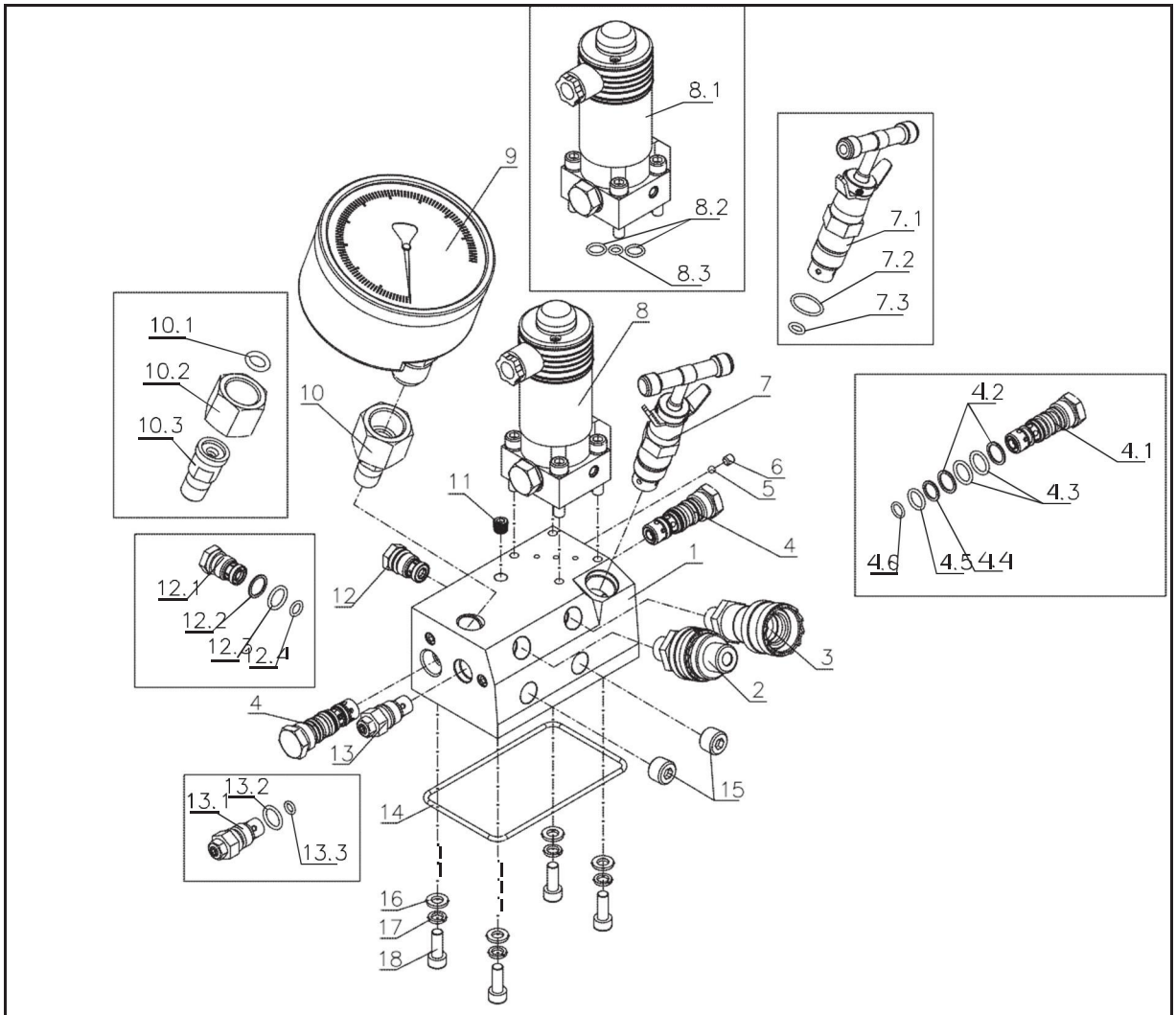
Item	Description	Item	Description
1	Oil Reservoir	8	Electrical Control System
2	Gauge	9	Motor
3	Frame For Protecting	10	Oil Filling Port
4	Regulating Valve	11	Solenoid Valve
5	Valve Assembly	12	Cooler
6	Oil Lever Measure	13	Tank Cover
7	Oil Releasing Port	14	Coupler

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

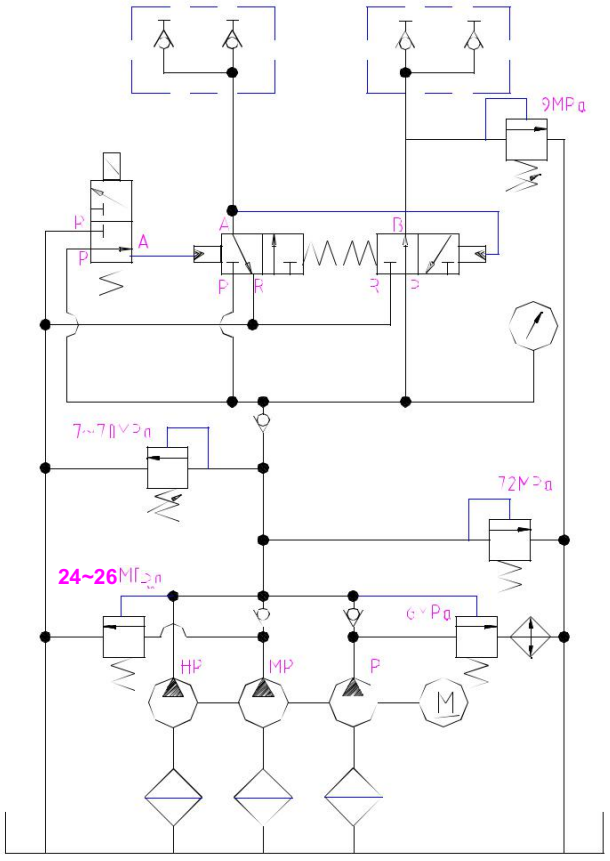


Item	Description	Quantity	Item	Description	Quantity
1	Valve Block	1	9	Gauge 100Mpa	1
2	Male Coupler	1	10	Connector	1
3	Female Coupler	1	10.1	O-Ring	1
4	Reversing Valve	2	10.2	Connecting Fitting	1
4.1	Valve Body	1	10.3	Connecting Fitting	1
4.2	Retaining Ring	2	11	Screw Plug	13
4.3	O-Ring	2	12	Check Valve	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 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
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
	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

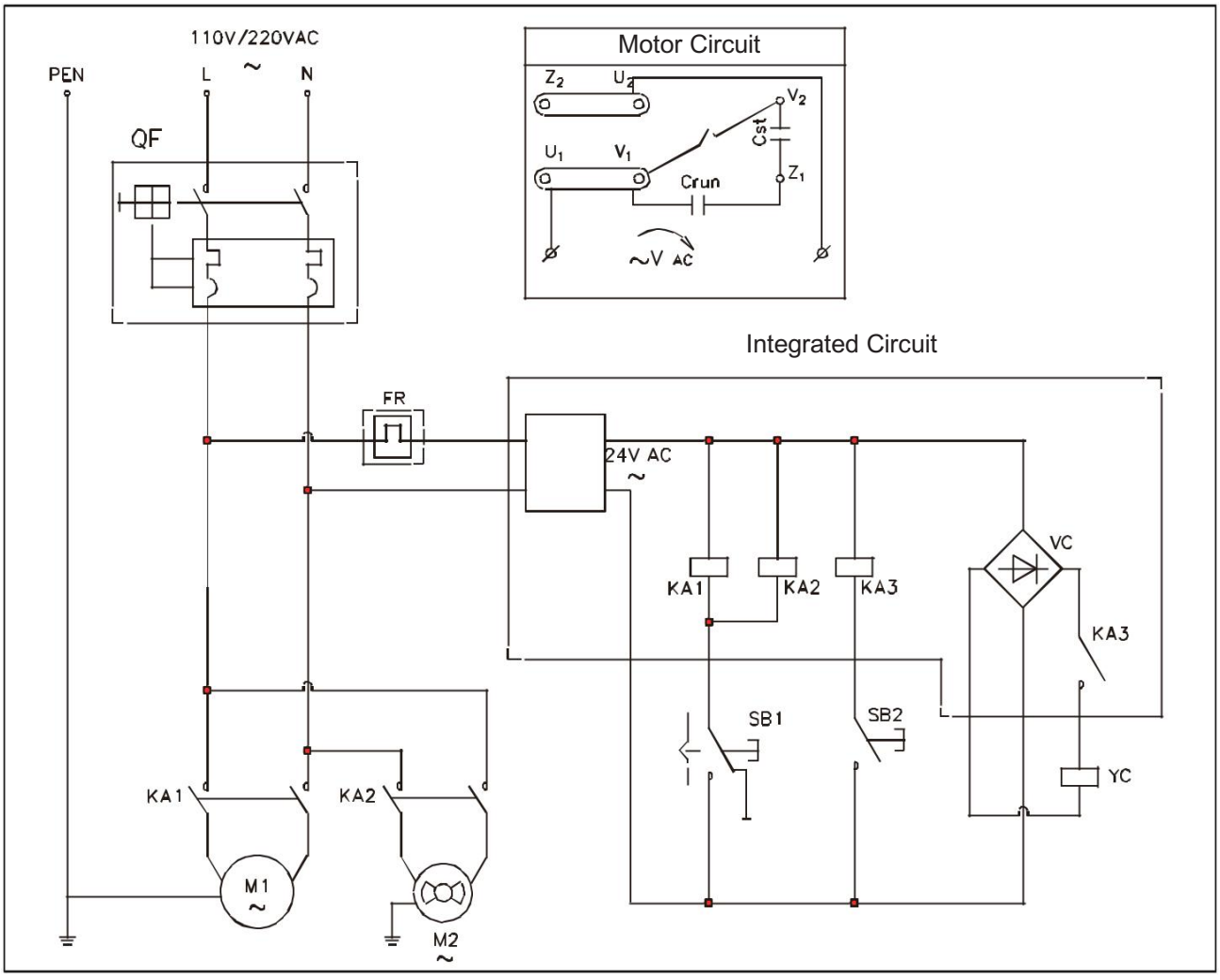


WARNING FOR USING HIGH PRESSURE HOSE

1. Please use ATW's JH series high pressure hoses.
2. The minimum bending radius: R>120mm. 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. ATWJH series 100Mpa high pressure hose's operating pressure is 70 Mpa, Over pass this Pressure is forbidden.

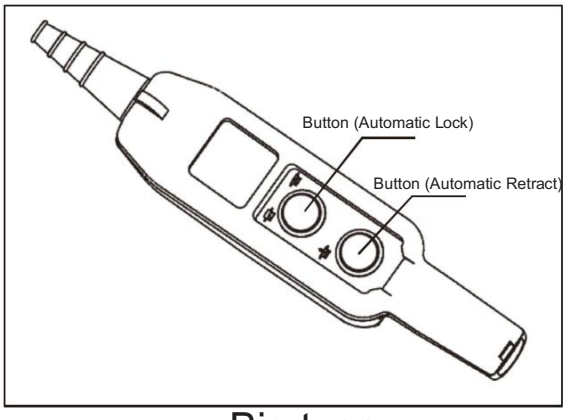
Drawing for Electrical Principle

1 Pump voltage 100V – 220V



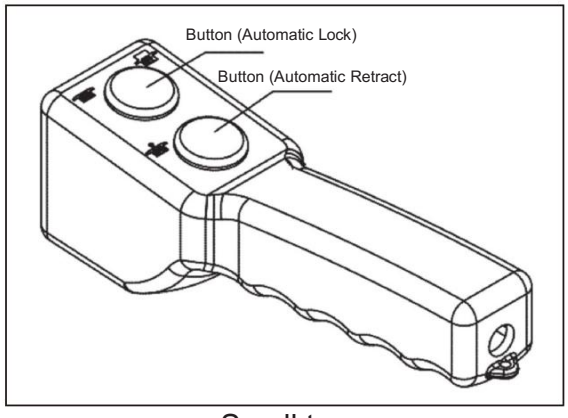
Selecting Chart for Electrical Component

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 small remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for small 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 small remote control
		GQ25-11Z	Select for big remote control
SB2	Button (Automatic Retract)	GQ16H-10/S	Select for small remote control
		GQ25-11	Select for big remote control
	Integrated Circuit Board	BY31002	

ELECTRICAL INTERCONNECTDE FIGURE

INPUT OF MAIN SWITCH