AMP304

Hydraulic Wrench Automatic Pump

Operating Instructions

Pingyuan Jingke Hydraulic Co., Ltd

This operating manual includes the operating procedures, warnings and precautions, and troubleshooting of the AMP304 electric hydraulic wrench automatic pump. Please read this manual carefully before use, understand its content carefully and keep it properly.

Safety Instructions

The safe use of hydraulic electric pumps must require correct operation and regular inspections.

The electric pump can be used after reading and fully understanding the safety instructions in this manual.

▲Precautions-to prevent direct economic losses or property losses.

▲Warning-to prevent personal injury.

Please confirm compliance with the above two items.

During use, if an abnormal situation occurs, please turn off the power to stop working, and then consult Torcstark or Torcstark authorized agents.

Catalogue

I. Security clause

Read all operating instructions, warnings and precautions carefully. When the system is working, follow all precautions to avoid personal injury and property damage. Torcstark is not responsible for any loss and damage caused by dangerous use of the product, lack of maintenance, or incorrect operation of the product and system. In safety precautions and use, if you have any questions, please contact Torcstark. If you have never received training on high-pressure hydraulic safety, please consult with Torcstark for a free safety knowledge training.

Failure to observe the following warnings and precautions may result in equipment damage or personal injury.

Attention-Describe a possible potentially dangerous situation that, if not avoided, may result in minor or general injury and/or property damage.

Warning-describes a potentially dangerous situation that, if not avoided, could result in death or serious injury.

Danger-only used when the operation or lack of operation will cause serious injury or even death

Warning: When operating hydraulic equipment, be sure to wear appropriate protective clothing.

Warning: Keep away from supporting heavy objects with hydraulic equipment. When the oil cylinder is used as a load lifting device, it cannot be used to support heavy objects. When the weight is lifted, a fixed support must be used.

Warning: Rigid objects must be used to support heavy objects. Carefully choose steel or wood blocks that can withstand heavy objects to support the load. Do not use hydraulic cylinders as spacers in lifting or squeezing applications.

Danger: In order to avoid personal injury, keep your hands and feet away from the oil cylinder and the workpiece during operation.

Warning: The working pressure of the system cannot exceed the rated pressure of the component with the lowest rated pressure of the system. Install a pressure gauge in the system to monitor the working pressure. The pressure gauge is your window into the system.

Attention: Avoid damaging the hydraulic hose. When winding the hydraulic hose, avoid violently bending or knotting the hydraulic hose. The use of bent or knotted hydraulic hoses can cause a lot of back pressure. Severe bends or knots can cause internal damage to the hose or lead to premature failure. Don't let heavy objects hit the hose. Severe impact may damage the steel wire of the hose. Using a damaged hose may cause the hose to rupture.

Important: Do not use hydraulic hoses or rotary joints to lift hydraulic components. Carry handles or other safe handling methods should be used.

Attention: The hydraulic equipment should be kept away from flames or heat sources. Excessive temperature will soften packaging and sealing materials, causing oil leakage. Overheating will also weaken the material and packaging of the hose. In order to maintain the best working condition, do not expose hydraulic equipment to an environment with a temperature higher than 65°C (150°F). Prevent electric spark from splashing on the cylinder and hose.

Danger: Do not operate the pressurized hose by hand. Oil leaking under high pressure can penetrate the skin and cause serious injury. If the oil gets into your skin, go to the hospital immediately.

Warning: The hydraulic wrench can only be used in the connected circuit. It is strictly forbidden to use the hydraulic wrench connector when it is not properly connected. Otherwise, if the hydraulic wrench is seriously overloaded, the cut-off steel ball and/or hydraulic oil of the joint will spray out at high speed, causing serious personal injury.

Important: Hydraulic equipment can only be repaired by authorized Torcstark technical service centers. If you want to perform repair services, please contact Torcstark after-sales service personnel.

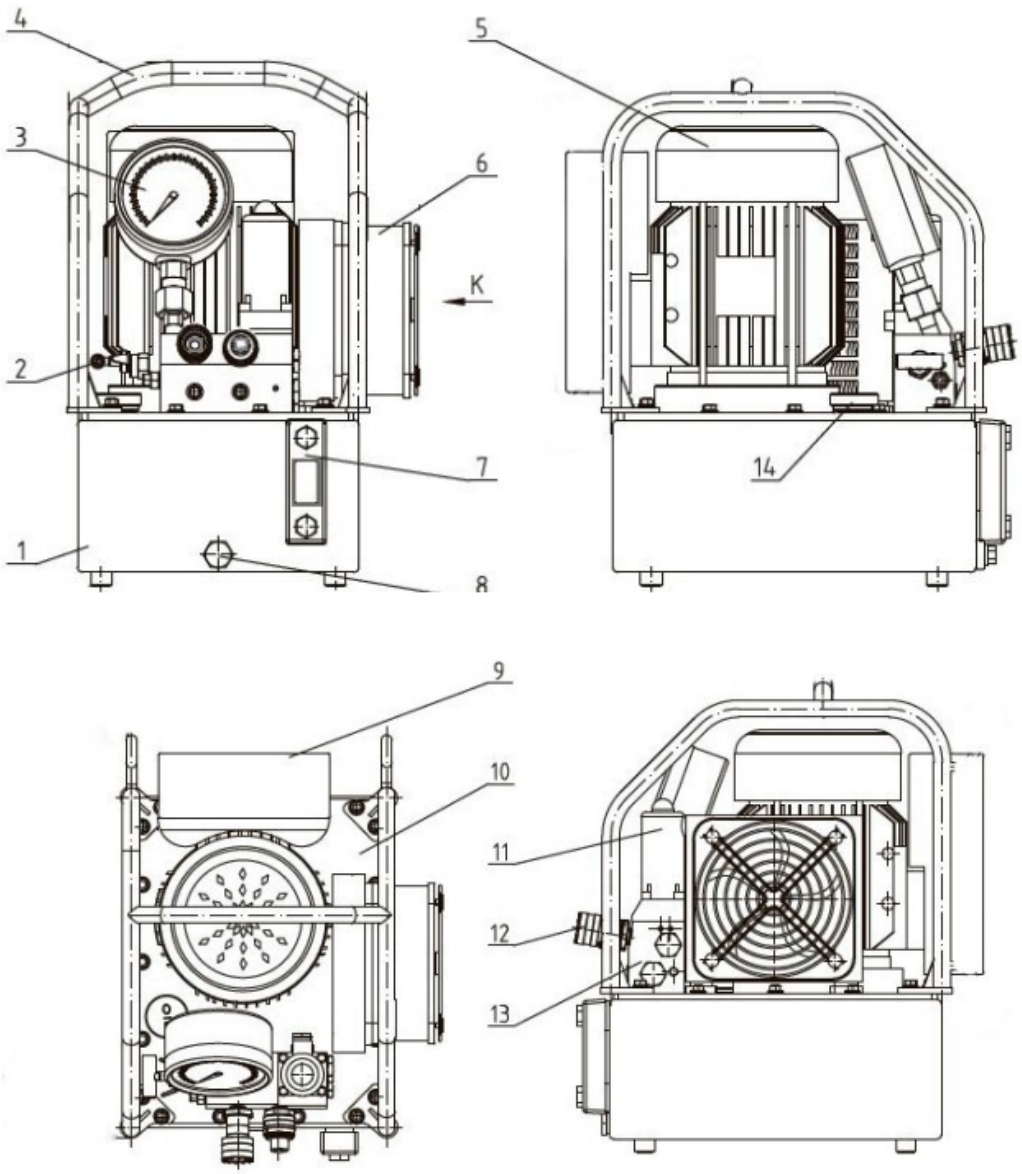
Warning: To avoid personal injury, the electric pump is strictly prohibited to be used in an explosive environment. Observe all local and national electricity regulations. Installation and power connection must be completed by a professional electrician.

Warning: Keep hands away from moving parts and pressurized hoses.

Warning: AMP304 electric pump wrench hydraulic pump has an internal adjustable safety valve. The safety valve is set at the factory and can only be repaired and adjusted by an authorized Torcstark repair center.

Attention: To prevent damage to the electric motor of the pump, please check all specifications. Using an incorrect power supply will damage the pump motor.

II. Schematic diagram



No.	Part name	No.	Part name
1	Oil tank	8	Unloading hole
2	Relief valve	9	Electrical box
3	Pressure gauge	10	Tank cap
4	Protection frame	11	Reversing valve
5	Motor	12	Quick couplers
6	Cooler	13	Valves
7	Level gauge	14	Oil hole

III. Technical parameters and requirements

3.1、AMP304 Electric pump performance parameter table

Model	Motor parameters			Oil pump parameters						Weight for reference (Kg)
				Working pressure(MPa)			Output flow (L/min)			
	Pressure（V）	Rated power (KW)	Maximum current (A)	High pressure	Medium pressure	Low pressure	High pressure	Medium pressure	Low pressure	
AMP304	220	1.1	6.75	70	32	6	0.8	1.6	8	32

3.2、Electrical connections

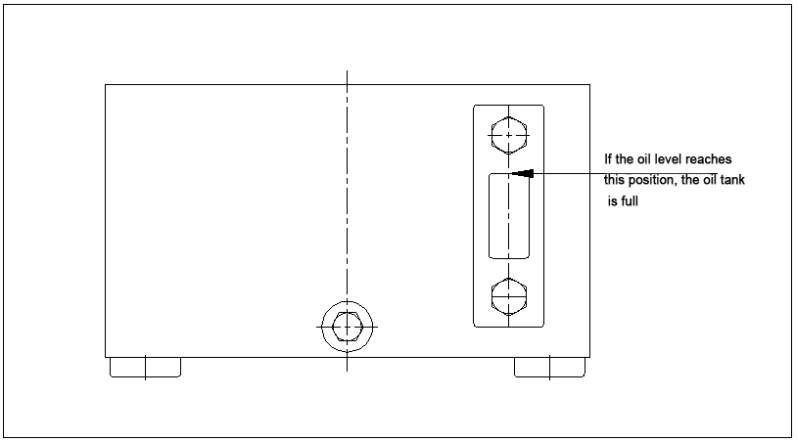
The pump is installed with a universal plug corresponding to the specified voltage before leaving the factory. The work of changing the socket type can only be carried out by a qualified electrician, and the local electricity requirements must be observed at the same time.

① The open circuit and circuit protection should be provided by the user. The circuit protection should be 115% of the motor's full load current at the highest operating pressure.
②For more detailed information, please consult Torcstark after-sales service department or Torcstark authorized agent.

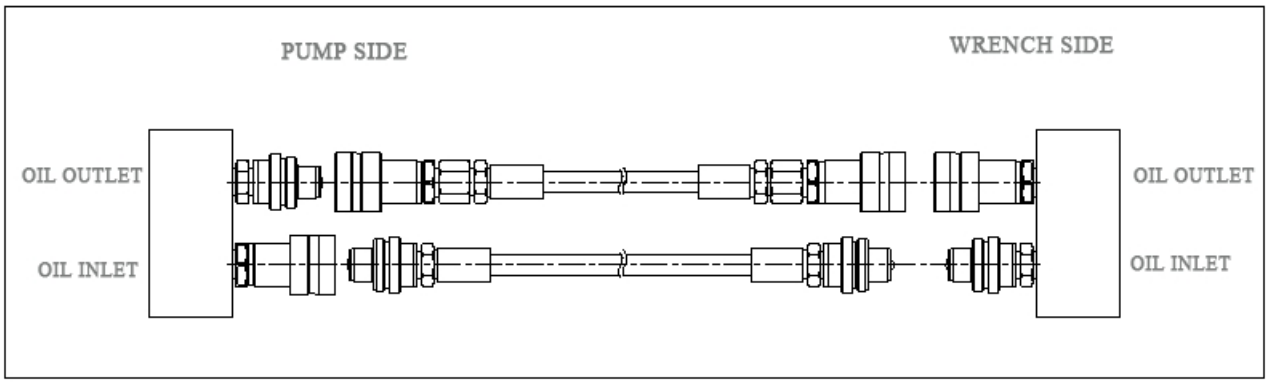
3.3、Level gauge

Before starting the pump, check the oil level of the pump. If you need to refuel, unscrew the air filter on the fuel tank cover and refuel. If the oil level reaches the top of the oil level gauge, the fuel tank is full.

Important: Only when all the parts in the system are fully retracted can you refuel, otherwise the actual amount of oil in the system will be more than the amount of oil that the tank can hold.



3.4、Connect hydraulic hoses



① This type of electric pump is suitable for supporting MXTD series hydraulic wrenches. Please use our company's hydraulic hose with a rated working pressure of 70Mpa. The joints on this hose have been set up before leaving the factory, and there will be no connection errors.

Warning: This hydraulic pump is only suitable for use with our company's MXTD series hydraulic wrench. If it is used with other wrenches, the torque reading may be incorrect.

②. Female joints on hoses and wrenches. Just tighten the thread on the locking ring of the quick change joint by hand, without using any tools.

③. The quick-change connector must be connected as shown in the figure to ensure that the hydraulic wrench can be connected correctly. Before using a hydraulic wrench, make sure that the quick coupling is fully connected and tightened. If the quick coupling is only partially connected, it will affect the correct operation of the hydraulic wrench.

Note: When the hydraulic wrench is connected to the pump for the first time, air may enter the hydraulic circuit. Place the hydraulic wrench and the pipe (pipe should be straightened) at a lower position than the hydraulic pump, and operate the pump to remove air under no load until the wrench rotation does not stop/pause.

IV. Operation

4.1. Check the oil level of the pump and add hydraulic oil to the pump if necessary.
4.2. Plug the pump into the power source, turn on the power switch, and start the control system.
4.3, touch screen

The bottom buttons on the touch screen are: MOTOR, MENU, up arrow, down arrow

MOTOR: used to control the start/stop of the motor

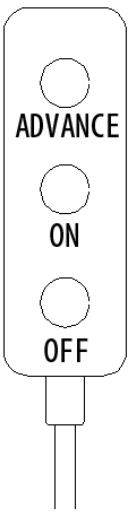
MENU: is the menu key, used to switch between different display contents

Up Arrow/Down Arrow: Used to select

4.4, remote control handle

The remote control handle has three buttons, namely UP, ON, OFF

UP: used to control the solenoid valve



ON/OFF: used to control the start and stop of the motor

Warning: When the motor starts, the hydraulic valve automatically reverses and retracts the hydraulic wrench. Please check the installation of the hydraulic wrench before

starting the motor to avoid damage to the hands and equipment of personnel.

4.5. Set the pressure of the pump

AMP304 series wrench hydraulic pumps provide the operator with two ways to limit the pressure at the oil inlet (port A): user-adjustable relief valve and automatic circulation mode.

①, the user can adjust the overflow valve

Limit the output flow of the pump by adjusting the overflow valve to make the pump pressure reach the set pressure and then directly return to the tank.

1. Check that the <Auto> mode has been turned off

2. Loosen the lock nut of the overflow valve and turn the control handle of the overflow valve counterclockwise to reduce the set pressure value.

3. Press the up arrow on the remote control to not build pressure in the oil inlet circuit. Rotate the control handle of the relief valve clockwise to increase the output pressure of the pump to the required set value.

4. Tighten the lock nut at the set pressure value.

5. Release the up arrow on the remote control to return the pressure in the system to the bypass pressure set at port B.

6. Reverse the solenoid valve to pressurize the system and check whether the final set pressure value of the pump is correct.

Note: In order to get an accurate setting, reduce the pressure to a little lower than the final set value, and then slowly increase the pressure until the final set value is reached.

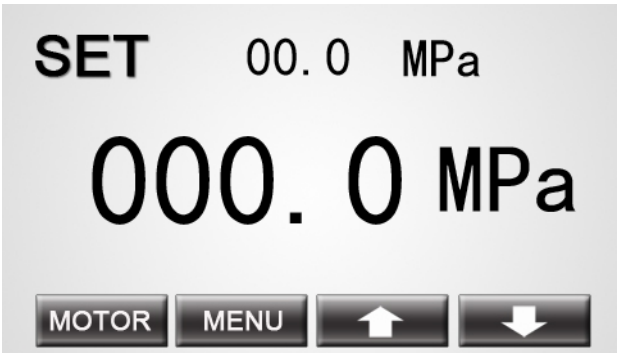
②、 **Automatic mode**

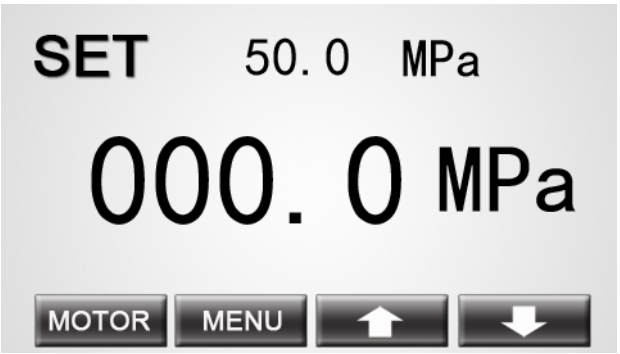
By automatically changing the operation of the wrench from oil input to oil return, the output pressure of the pump is limited to the set pressure value. When the oil return pressure of the pump reaches the pressure value set before the factory, about 1160psi (80bar), the pump will automatically switch from oil return to oil intake working state. The control system on the pump realizes the switch of oil inlet and oil return by reversing the solenoid valve to change the flow direction of the oil in the oil port. The automatic operation cycle of the pump will continue until the upward arrow is released.

Set automatic working mode and pressure setting:

1. Turn the menu option on the LCD screen to manual mode, and use the Up and Down arrow buttons on the pump to switch between manual and automatic.

2、Turn the menu option on the LCD screen to the 'set pressure' setting item, and then click the icon 00.0, an input box will pop up, and enter the pressure (50MPa) that needs to be set in the input box.





3. Press the ON button on the remote control to start the pump.
4. Press and hold the UP arrow on the remote control to automatically operate the hydraulic wrench.
5. If the hydraulic wrench does not work or works very irregularly, the user can adjust the setting value of the relief valve to at least higher than the automatic circulation pressure setting value of 1160psi (8MPa).

3.6 Instructions for use of LCD screen

AMP series wrench hydraulic pump is driven by a set of computer control system: controller and touch screen, connected by data cable.

① LCD function

In addition to the remote control used to operate the motor switches and control valves, the touch screen is the main interface between the operator and the pump.

Note: Make sure to protect the LCD (liquid crystal display) from damage. Never use sharp or sharp tools to operate the buttons, only use your fingers to operate.

②、 Start-up process

When the pump is plugged in, the LCD screen will light up, and after about 5 seconds, the start-up process is successfully completed. The microprocessor controller will automatically recognize the pressure sensor installed on the electric pump.。

③、 LCD operation buttons

There are 4 buttons installed at the bottom of the touch screen, from left to right: on/off; menu; down arrow; up arrow.

On/Off: The button is used to trigger the motor. Regardless of the operation on the pump or the remote control, the function of this button to turn on/off the motor is always effective.

Menu: Make the operator enter the menu mode from the normal operating state. By repeatedly pressing the menu button, the operator can enter different menu interfaces.

Up Arrow/Down Arrow: When a menu is displayed on the display, the down and up arrows are used to scroll through the various options of the menu.

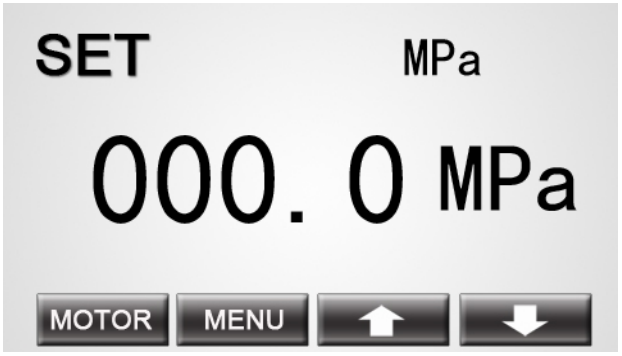
④、 Menu option

The AMP304 series pump software provides the operator with the following menu options:

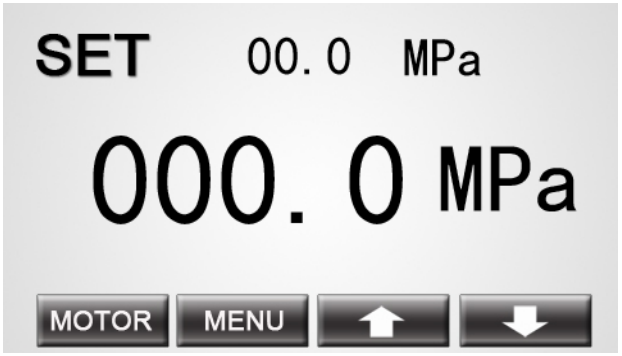
Wrench model: used to select the wrench model, including 8MXTD, 10MXTD, 15MXTD, use the up arrow/down arrow to choose between three types of wrenches.

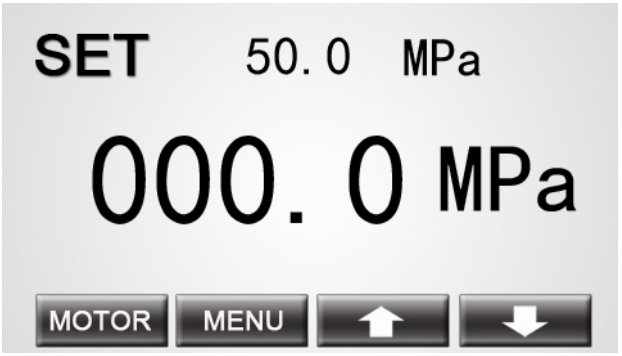
Manual/Auto: To choose between manual mode and automatic mode, use the up arrow/down arrow to select.

Unit options: There are four units to choose from: MPa, Psi, Bar, and Nm. Use the up/down arrow to select.



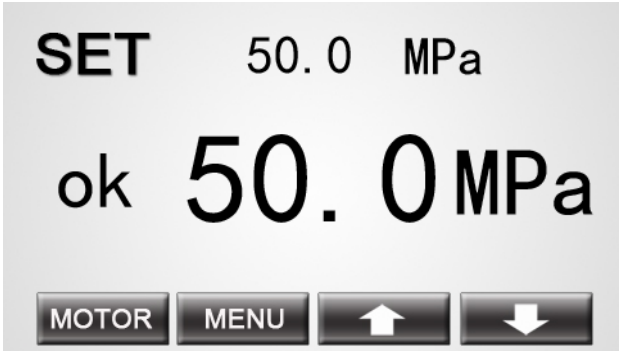
Pressure setting: It is only available in the automatic working mode of the pump. When the automatic mode is turned off, the pressure setting option in the menu will be unavailable, and the set pressure will have no effect on the pump.





④、Operation complete

After the operation is completed, it will display OK.



V. Maintenance

5.0, maintenance

Always check all system components for leaks or damage. Repair or replace damaged parts. For example: electrical components and power cords can only be repaired and replaced by qualified electricians. Please comply with all local and national regulations.

5.1. Check the oil level

Before starting the pump, check the oil level of the pump. If necessary, remove the oil filling hole plug on the oil tank and add oil. Ensure that all hydraulic components in the system are fully retracted when refueling.

5.2. Replace the hydraulic oil and clean the oil tank

Check the contamination of the oil in the pump frequently. Under normal circumstances, after 250 hours of use, the pump should drain all the hydraulic oil in the oil tank and clean the oil tank. If it is used in a dirty environment, it should be replaced more frequently.

Note: This procedure requires you to remove the pump from the tank. Operate on a clean workbench and dispose of used hydraulic oil in accordance with local laws.

5.3、Oil change operation

① Loosen the screws on the connecting cover and the screws on the fuel tank cover, and take the pump unit out of the fuel tank. Be careful not to damage the filter.

② Pour out all the hydraulic oil in the oil tank.

③ Thoroughly clean the fuel tank and magnet with a suitable cleaning agent.

④Remove and clean the oil suction filter. (Do not pull the bottom of the filter and suction port to avoid possible damage). Clean the filter with a suitable solvent and a soft brush, and then reinstall it.

⑤Reassemble the pump and fuel tank, and install a new fuel tank gasket.

⑥ When the oil level reaches the middle of the upper oil mark, it indicates that the oil tank is full.

VI. Troubleshooting (refer to troubleshooting guide)

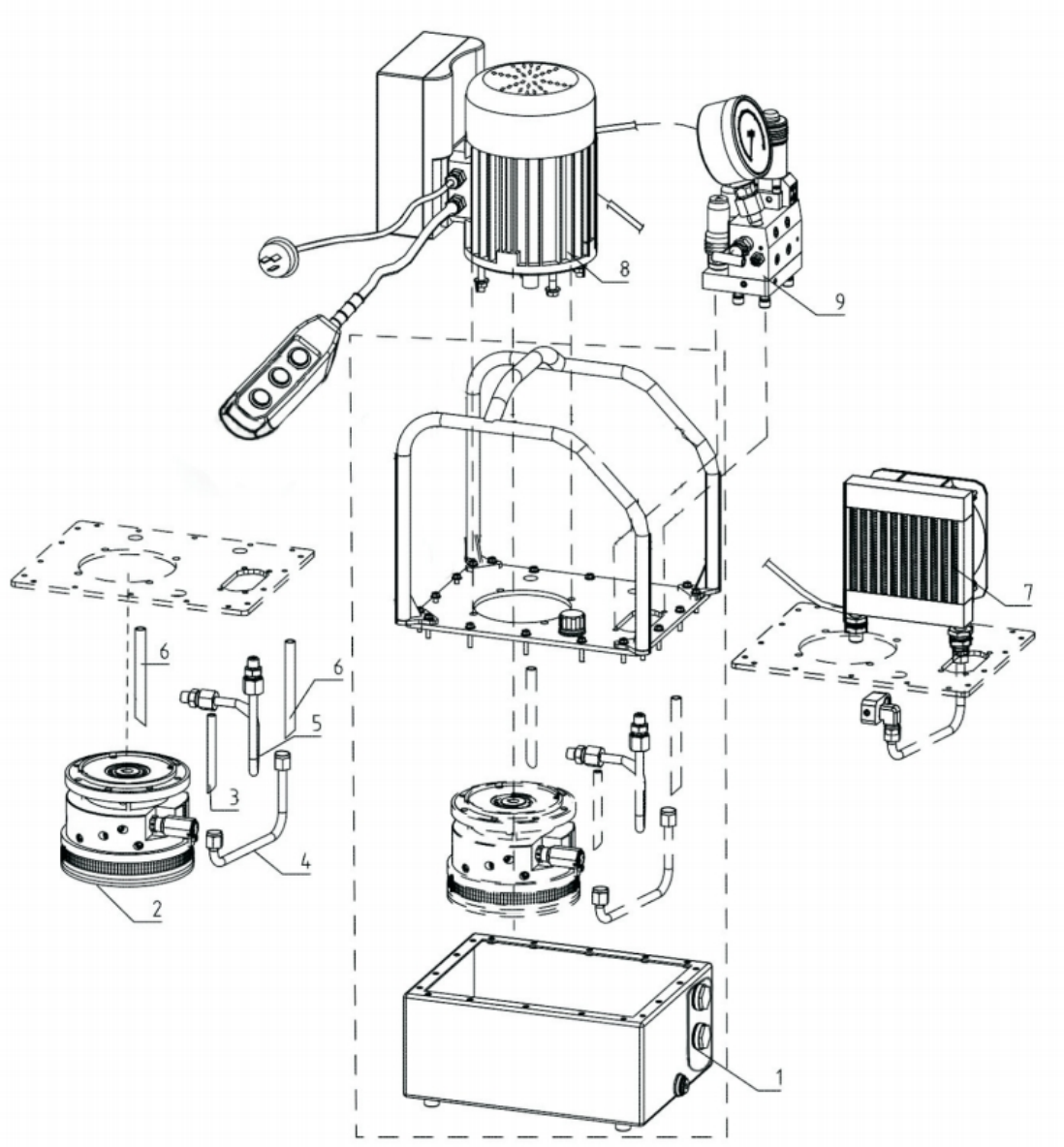
Only qualified hydraulic engineers can repair pumps or other system components. The failure of the system may or may not be caused by the failure of the pump. In order to determine the cause of the failure, a comprehensive inspection of the entire system must be carried out.

The following information is only used to help you determine whether there is a problem. If you need repair service, please contact Torcstark service personnel or Torcstark agent.

Troubleshooting guide		
Malfunction	Possible reason	Measures
Pump won't start	The pump is in a fault state;	Contact an authorized repair center
	The remote control is damaged	Contact an authorized repair center
The motor stops when loaded	Voltage is too low	Other electrical loads or use thicker power cables
The solenoid valve does not operate	The pump has no power or the voltage is wrong	Connect the pump to the correct power source according to the requirements on the pump nameplate
	The control wire of the solenoid valve is disconnected or damaged;	Connect, repair or replace the power cord
	Valve cannot be adjusted	Contact an authorized repair center
The pump cannot build pressure or the pressure is lower than the rated output pressure	The oil level is too low;	Refuel
	The set pressure of the relief valve is too low;	Readjust
	Leaks outside the system;	Check, repair or replace
	Leakage inside the pump;	Contact an authorized repair center
	Leakage inside the valve	Contact an authorized repair center
	The system complains about internal leaks	Contact an authorized repair center
The pump can build pressure, but the hydraulic wrench does not move	The external torque exceeds the torque of the wrench under the maximum pressure;	Use a hydraulic wrench with a larger output torque
	The oil supply of the hydraulic wrench is blocked	Check if the quick coupling is fully connected
The hydraulic wrench cannot work in	The automatic working mode is set to Off;	Set the automatic working status to On

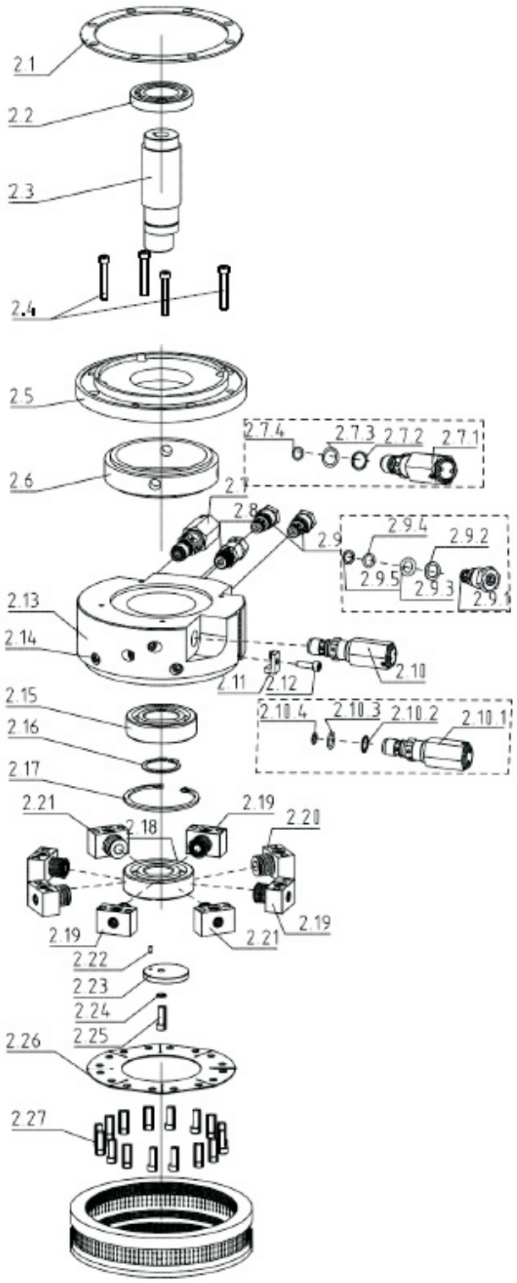
automatic mode or works unstable in automatic mode	The pressure setting of the relief valve is equal to or lower than the pressure setting of "SETPRES"	Increase the setting value of the relief valve
The hydraulic wrench cannot be retracted	The oil return is blocked;	Check whether the quick-change connector is fully connected;
	Valve failure	Run the motor when retracting
The pump is running very hot	The oil intake or return is blocked;	Check if the quick coupling is fully connected
	The external environment temperature is too high	Install the radiator

VII. Electric pump explosive view



No.	Description	No.	Description
1	Oil tank module	7	Cooler module
2	Pump module	8	Electrical control valves
3	Oil return pipe (1)	9	Hydraulic control valves
4	Oil feed pipe (1)		
5	Oil feed pipe (2)		
6	Oil return pipe (2)		

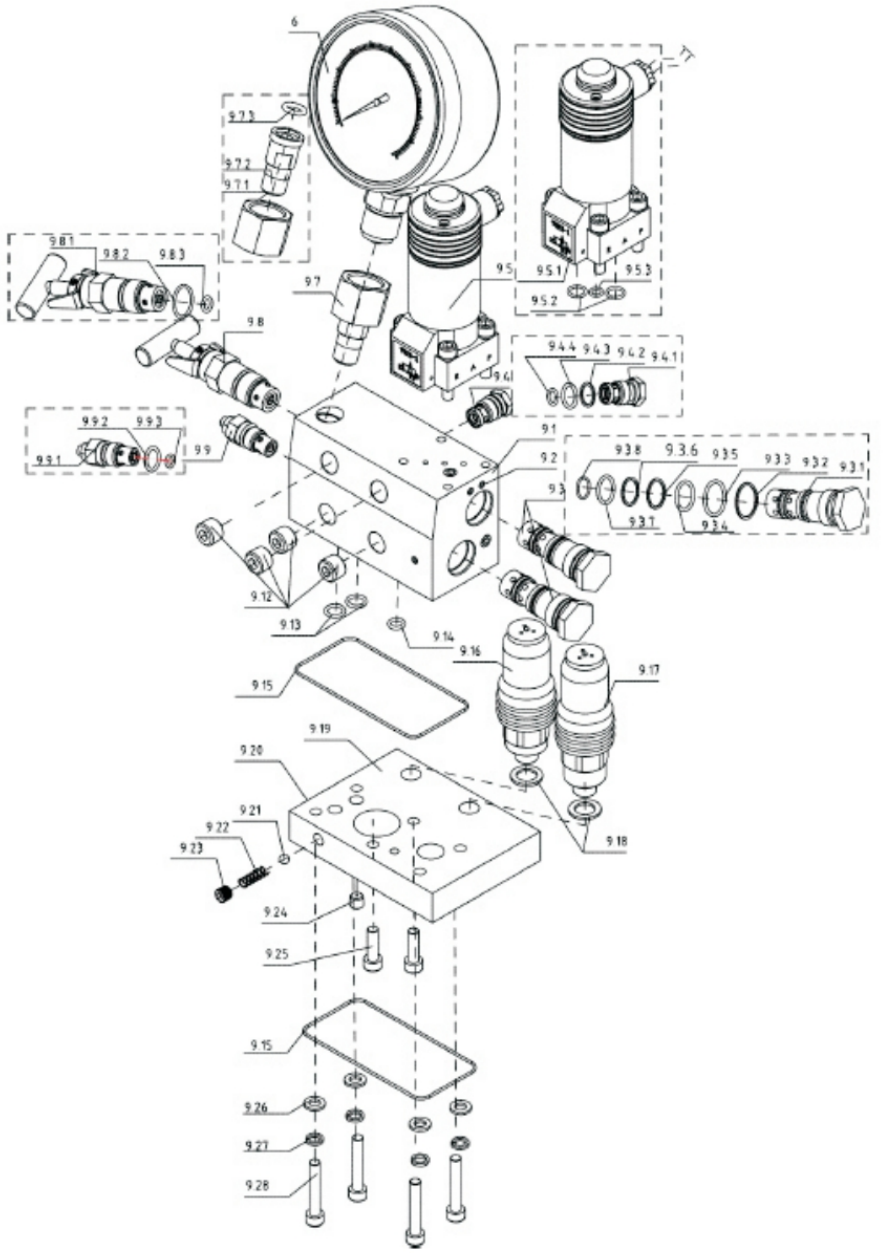
VIII. Pump module explosive view



No.	Name	Quantity
2.1	Seals	1
2.2	Deep groove ball bearing	1
2.3	Pump shaft	1
2.4	bolt	4
2.5	Pump flange	1
2.6	Pump bushing	1

2.7	Unloading valve(1)	1
2.7.1	Unloading valve body	1/1
2.7.2	Check ring	1/1
2.7.3	O ring	1/1
2.7.4	O ring	1/1
2.8	Overpressure valve	1
2.9	One-way valve	2
2.9.1	One-way valve body	1/1
2.9.2	Check ring	1/1
2.9.3	O ring	1/1
2.9.4	O ring	1/1
2.9.5	Check ring	1/1
2.10	Unloading valve(2)	1
2.10.1	Unloading valve body	1/1
2.10.2	Check ring	1/1
2.10.3	O ring	1/1
2.10.4	O ring	1/1
2.11	Filter baffle	1
2.12	Bolt	1
2.13	Separate pump body	1
2.14	Cap	10
2.15	Deep groove ball bearing	1
2.16	Circlip for shaft	1
2.17	Circlip for hole	1
2.18	Deep groove ball bearing	1
2.19	Plunger pair1	4
2.20	Plunger pair2	2
2.21	Plunger pair3	2
2.22	Pin	1
2.23	Bearing end plate	1
2.24	Spring washer	1
2.25	Bolt	1
2.26	Connecting sheet	1
2.27	Bolt	16
2.28	Filter	1

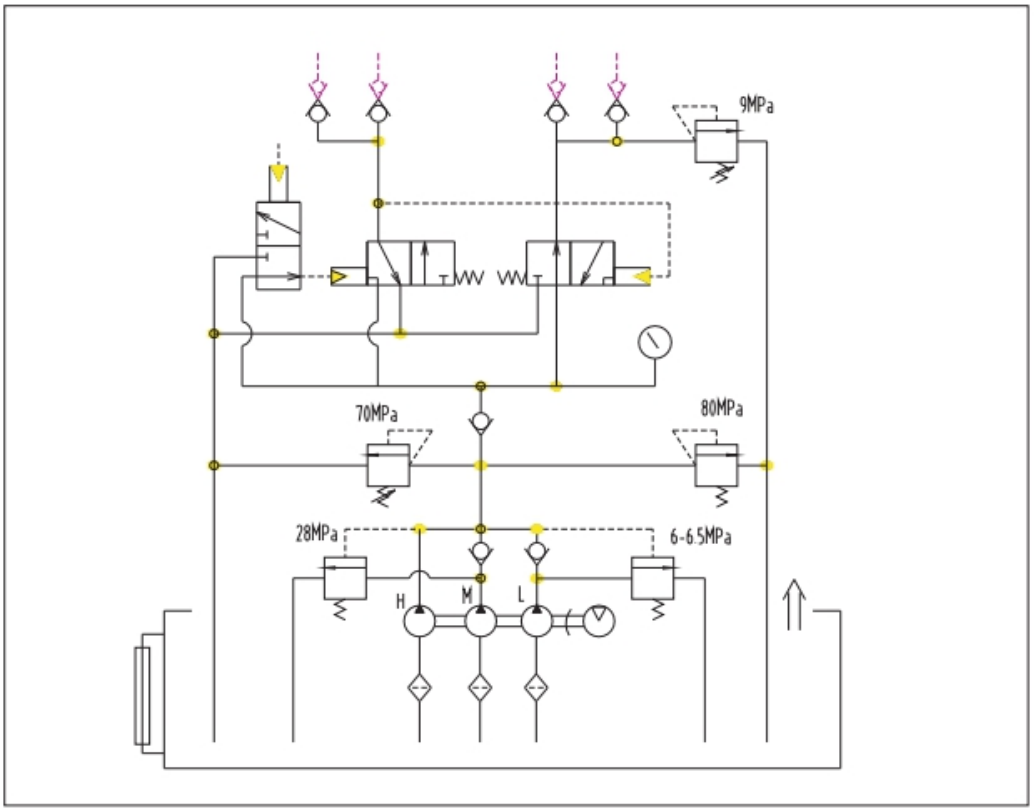
IX. Valves module explosive view



No.	Name	Qty.	No.	Name	Qty.	No.	Name	Qty.
9.1	Connecting plate	1	9.5.2	O ring	2/1	9.13	O ring	2
9.2	Cap	12	9.5.3	O ring	1/1	9.14	O ring	1
9.3	Pilot reversing valve	2	9.6	Pressure gauge 100MPa	1	9.15	Seals	2

9.3.1	Reversing valve body	1/1	9.7	Pressure gauge connector	1	9.16	Pressure relay 1	1
9.3.2	Check ring	1/1	9.7.1	Pressure gauge connector G1/2	1/1	9.17	Pressure relay 2	1
9.3.3	O ring	1/1	9.7.2	Pressure gauge connector G1/2	1/1	9.18	Compound gasket	2
9.3.4	O ring	1/1	9.7.3	O ring	1/1	9.19	Connection plate extension board	1
9.3.5	Check ring	1/1	9.8	Relief valve 1	1	9.20	Cap	3
9.3.6	Check ring	1/1	9.8.1	Relief valve body	1/1	9.21	Steel ball	1
9.3.7	O ring	1/1	9.8.2	O ring	1/1	9.22	Spring	1
9.3.8	O ring	1/1	9.8.3	O ring	1/1	9.23	Cap	1
9.4	Check valve	1	9.9	Relief valve 2	1	9.24	Cap	1
9.4.1	Check valve body	1/1	9.9.1	Relief valve body	1/1	9.25	Bolt	2
9.4.2	Check ring	1/1	9.9.2	O ring	1/1	9.26	Flat washer	4
9.4.3	O ring	1/1	9.9.3	O ring	1/1	9.27	Spring washer	4
9.4.4	O ring	1/1	9.10	Quick coupler female	1	9.28	Bolt	4
9.5	Solenoid directional valve	1	9.11	Quick coupler male	1			
9.5.1	Valve body	1/1	9.12	Cap NPT1/4	4			

X. Hydraulic principle diagram



XI. Electrical diagram