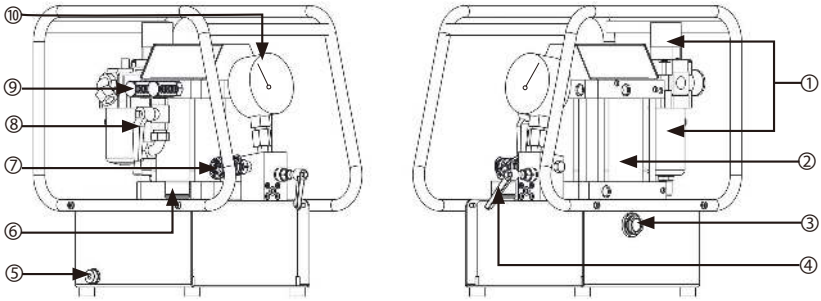
HAP Product Components:



NO	Name
1	Triple Parts
2	Air cylinder
3	Oil Level Gauge
4	Release Valve
5	Oil Outlet
6	Refueling And Exhaust Outlet
7	Quick Interface
8	Air supply switch
9	Suppressor
10	Manometer

Component Function Introduction:

Hand Shank

The start and stop of the HAP pneumatic ultra-high pressure pump motor is controlled by the air source switch. The air source switch is a push-pull type switch. The diagram shows the starting position. When the switch is moved to the horizontal position, the hydraulic pump stops.

Manual Unloading Valve

When the valve is closed, the hydraulic oil flows to the outlet. After the motor starts, the pressure is established; after the motor is shut down, the pressure is maintained.

When the valve is open-the hydraulic oil returns to the tank and the pressure cannot be established.

Air Pressure Control Handle

To use the pressure regulating valve, first pull up the adjusting handle and turn it counterclockwise to the release state. Turn the adjusting handle clockwise to increase the air pressure and raise the system pressure. When the system pressure reaches the target value, press down the adjusting handle to lock the air source pressure.

Barometer

The air pressure gauge of HAP pneumatic ultra-high pressure pump is used to monitor the input pressure of the air source in real time (it needs to be at least 7Bar) to ensure the normal operation of the pneumatic motor. If the air pressure is insufficient or the air supply is less than 140M3/h, the fault can be quickly investigated, and the equipment performance can be prevented from declining or damaged due to abnormal air pressure; the oil port pressure is monitored separately by the hydraulic pressure gauge, and the functions of the two are clearly distinguished.

Oil Level Indicator

Before starting, check the horizontal oil level of the pump. The oil level should be above 2/3 of the upper oil gauge. When the hydraulic oil is insufficient, open the filling port and inject the anti-wear hydraulic oil of the same model as the original pump (it is recommended to use hydraulic oil grade ISO VG46).

- The oil level should be observed after all the actuating elements have returned to their positions.

Product Usage Steps:

1.Preparation Before Use

-Check all parts (frame, motor, pressure gauge, etc.) are undamaged, the feet are stable, and the connection is not loose.

-Regularly check the lubricating oil level of the oil mist machine to ensure that the oil mist machine is always in a state of oil when the hydraulic pump starts, otherwise it will affect the service life of the system components.

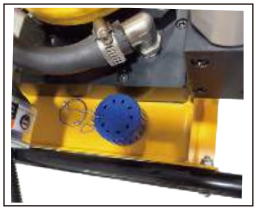
-Check the hydraulic oil level of the pump. The oil level should be above 2/3 of the upper oil gauge. When the hydraulic oil is insufficient, open the filling port and inject the anti-wear hydraulic oil of the same model as the original pump (it is recommended to use hydraulic oil grade ISO VG46). The maximum filling amount is the top of the oil gauge.

Hydraulic oil level

If the oil level is lower than 2/3 of the upper oil gauge scale line,the outlet plug should be removed and the hydraulic oil replenishment operation should be performed.

-Install the exhaust plug, align the exhaust plug with the fuel filling exhaust port, and then rotate it slowly in a clockwise direction until it is tightened to the appropriate degree. Ensure that the tank ventilation function is maintained; replace the exhaust plug during handling or transportation, and reinstall the sealing plug to ensure that it is sealed to prevent oil leakage.

Exhaust plug



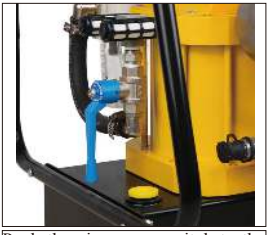
Install the exhaust plug

- If the exhaust plug is not installed to discharge air, it will seriously affect the normal operation of the equipment. The internal air in the oil tank will cause pressure fluctuation and flow deviation, causing component wear and failure, reducing the smoothness and accuracy of operation.

2.Start And Pressure Setting

-The pneumatic pump is reserved with a universal quick connector for the air source input. The input air source pressure should be greater than 7Bar, and the gas supply should be greater than 140M3/H, otherwise it will affect the action of the pneumatic motor, thus affecting the oil supply of the pneumatic pump.

-Connect the air source, push the air source switch, trigger the operation of the pneumatic motor, and check whether the motor runs normally.



Push the air source switch to the vertical position as shown in the figure.

Set the working pressure by adjusting the pressure control handle.

-Pressure setting description:

1. Principle explanation

The working pressure of the air pump is mainly determined by the input air pressure. Through the booster mechanism of the pump itself, the input air pressure is amplified according to a specific booster ratio, so as to obtain the required working pressure.

The relationship between working pressure (P_{work}), input air pressure (P_{input}) and boost ratio (R) follows the formula:

$$P_{work} = P_{input} \times R$$

This pneumatic pump has two types of pressure ratio, 250:1 and 370:1, you can choose according to the actual working requirements.

2. Methods for setting working pressure under different boost ratios

- Boost ratio 250:1: R=250

If the required working pressure P work is known, the required input pressure P input can be calculated by reversing the above formula. Calculate the required input pressure:

$$P_{input} = P_{work} \div R$$

3. Operating Steps:

- Ensure that the pump is stopped and all relevant valves are closed.
- After pushing the switch to the vertical position, the motor starts, and the air source valve is opened. The air source pressure regulating valve is adjusted slowly clockwise to make the input air pressure gradually close to the calculated value. During the adjustment process, the pressure gauge at the air source is closely observed to ensure that the air pressure is stable and accurate.
- The pump starts to work, and the pressure gauge at the output end of the pump is observed to confirm whether the working pressure reaches the expected value. If not, the air source pressure regulating valve can be adjusted until the working pressure meets the requirements.

-Calibration and verification

After the pressure setting is completed, the switch is moved to the horizontal position to stop the motor, open the unloading valve to relieve pressure to 0, and close the unloading valve again.

- Restart the pneumatic motor and observe whether the pressure is consistent with the target value.
- Two times of pressure is consistent, then it is effective; if not, repeat the adjustment until the standard is reached.

-Lock-In And Closure:

- Press the adjustment handle downward to lock the air source pressure.
- Final pressure relief: Open the unloading valve to ensure that the system pressure is completely zero.

- When the pressure ratio is 370:1, the calculation and operation method are similar to the above. Due to the higher pressure ratio, the pressure may rise relatively faster, so pay more attention to the pressure change. If the working pressure does not reach the expected value, carefully adjust the gas source pressure to avoid overshoot.

4. Matters Need Attention

- Pressure adjustment should be slow: in the process of adjusting the input pressure and starting the pump, it is necessary to operate slowly. Rapid adjustment may lead to sudden pressure change, which may cause damage to the pump body, pipeline and related equipment, and even cause safety accidents.
- Pressure monitoring: during the whole process of setting the working pressure, the input air pressure and working pressure should be continuously monitored. The accuracy of the pressure gauge should be checked regularly. If the reading of the pressure gauge is abnormal or fluctuates greatly, the operation should be stopped immediately to check whether there is a fault in the pressure gauge or pump.
- Safety protection: Operators should wear appropriate personal protective equipment, such as goggles, gloves, etc. During pump operation, stay away from areas where pressure leakage or loose parts may cause danger.

Before connecting the tubing, check whether the pressure gauge pointer is 0. If the pressure is not 0, release the unloading valve and perform other operations after the pressure drops to 0.

-Connect the extender and install a CEJN female (or male) fitting at the outlet. The outlet thread is G1/4, with standard plug. The rated pressure of the electric pump is 1500Bar and 2500Bar.

Retraction of the outer lock ring: Push the outer lock ring of the joint axially backward to make the joint in a connectable state.

Axial alignment insertion: Keep the tubing aligned axially with the joint and slowly and smoothly insert the tubing into the joint along the axial direction.

Forward rotation lock of the outer lock ring: When the tubing is fully inserted into the joint, push the outer lock ring forward along the axis until the outer lock ring reaches the locked position and is firmly locked. The fixation of the outer lock ring can be checked by pushing it with appropriate force to ensure that it is locked in place.

The outer lock ring is pushed back, and the oil pipe is fully pushed into the outlet by axial alignment.

After pushing the oil pipe, push the outer lock ring forward and rotate it clockwise to lock.

◆HAP pneumatic ultra-high pressure pump must be connected to the same or higher pressure and matching joints or hoses when in use. Connecting joints or hoses with lower pressure grade may cause the joint to fly out or the oil pipe to break, thus causing personal injury to users.

3. Operation And Adjustment Of The Work

-Start the electric pump, confirm that the pressure has been set and the load equipment is correctly connected, then push the air source switch to the vertical position and start the electric pump.

-Lock the unloading valve and enter the pressure holding state of the pump.

-When the pressure exceeds the target range, open the unloading valve to unload the operation until the pressure drops to 0, and then adjust the target pressure according to the set pressure method.

4. Monitoring in operation

-Pressure monitoring: pay real-time attention to the pressure gauge value, observe whether the working pressure of the system is stable and maintained at the target value, and ensure that the pressure fluctuation is controlled within the target value range.

-Oil level monitoring: continuously observe the oil level of the oil gauge. If the oil level is lower than 1/3, stop the machine immediately and wait for the equipment to cool down. Slowly inject an appropriate amount of ISO VG46 anti-wear hydraulic oil through the oil filling exhaust port to restore the oil level to the normal range. During the process of adding oil, pay attention to avoid impurities mixing into the hydraulic oil.

5.Pressure Relief And Shutdown

-Finish the work: after the work is completed, push the air source switch to the left to the horizontal position, and the tool starts to return. After the tool completely returns, turn off the pneumatic motor.

-Close the pneumatic motor: stop the input of the air source, and then cut off the air source to ensure that there is no air source input in the pump.

-Cut off the oil line: slowly open the unloading valve to reduce the system pressure to the pressure indicator 0 to achieve the unloading of the system.

-Remove the hydraulic line: After the system pressure has completely dropped to 0 and all actuators have returned, carefully remove the hydraulic line. When removing the line, be cautious to prevent residual hydraulic fluid from splashing out, which could cause injury or contamination of the work environment. After removing the line, store it properly for future use.

Troubleshooting:

Troubleshooting Guide		
Issue	Possible causes.	Solution
1. The pump does not start	No gas source is connected.	Check whether the circuit is connected normally and restart.
	The air pressure is too low.	Check whether the circuit is connected normally and restart.
	The gamepad buttons are damaged.	Check the voltage and turn off other electrical loads.
	The pump assembly is damaged.	Replace the high-power socket strip
2. The motor stops during pressurization	The air pressure is too low.	Check the air pressure and adjust the air source pressure.
	Gas supply is insufficient oil is insufficient.	Check the compressor air su- pply and replace it with a larger compressor
3. The pump is not pressurized or the upper pressure is too low	Insufficient amount of oil.	Check the oil level and inject new hydraulic oil.
	Leakage from the outside of the pump.	Observe leaks and carry out repairs or replacement of accessories.
	The hydraulic oil is too dirty and blocking the suction port.	Change the hydraulic oil and clean the suction port.
	Leakage inside the pump.	Contact the manufacturer for repair.
	System leaks.	Check for system leaks and repair them.
4. The system establishes pressure, and the tool does not move	Overloaded.	Check and select the right load.
	System congestion.	Check if the system is clogged and unblock the system.
	The quick connector is not fully screwed in.	Push the quick connector all the way in and tighten it.
5. The flow is too small	The hydraulic oil is too dirty and blocking the suction port.	Change the hydraulic oil and clean the suction port.
	System congestion.	Check if the system is clogged and unblock the system.
6. The tool cannot be returned normally	The tool backstroke has a large damping	Check and remove the large damping term.
	The system has a return throttle valve.	Check the system and adjust the throttle valve.
7. Severe fever	The system throttle valve adjustment is smaller.	Check the circuit and readjust the flow valve.
	Pneumatic motor failure.	Contact the manufacturer for maintenance.