

RIVERLAKE[®]

Operation Instructions

EPHS 100/200 Ton Self-Centering Puller



Please read these instructions carefully before operating. And keep instructions properly for future reference.

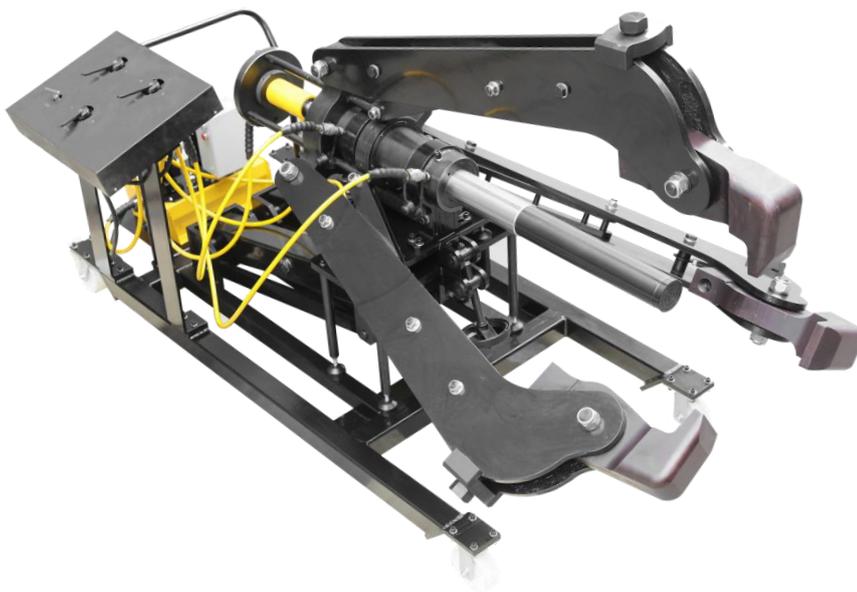


1. Product introduction and main components:

RIVERLAKE's EPHS vehicle-mounted hydraulic puller is hydraulically operated to achieve the vertical height adjustment of the puller, the extension of the jaws, and the pull-out of the workpiece. The puller is mainly composed of a jaw mechanism, a jaw extension mechanism, a main cylinder height adjustment mechanism, a roller cart, an electric hydraulic pump, and other corresponding hydraulic control components.

Hydraulic components and systems are ultra-high 700 bar pressure ;

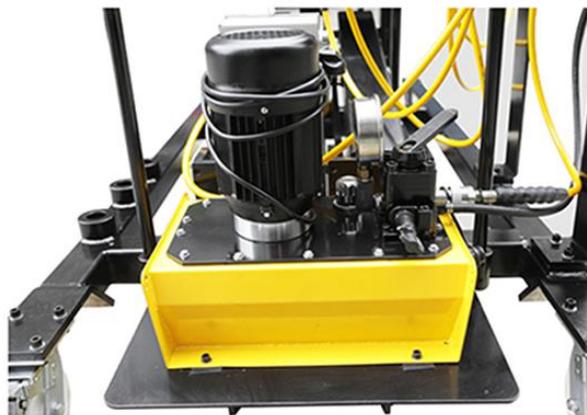
1.1 The outline diagram and main components are as follows:



- **Jaw mechanism:** adjustable jaws to grip the workpiece firmly;
- **Jaw extension mechanism:** the extension hydraulic cylinder control the extension and retraction of the jaw ;
- **Main cylinder height adjustment mechanism:** With height adjustment cylinder, the center height of the main cylinder can be adjusted;

- 100 ton main cylinder; pull out the workpiece
- Control Panel: control the movement of the cylinders;
- Electric hydraulic pump: provide hydraulic power to all cylinders;
- Remote Control: start or shut off the pump station;

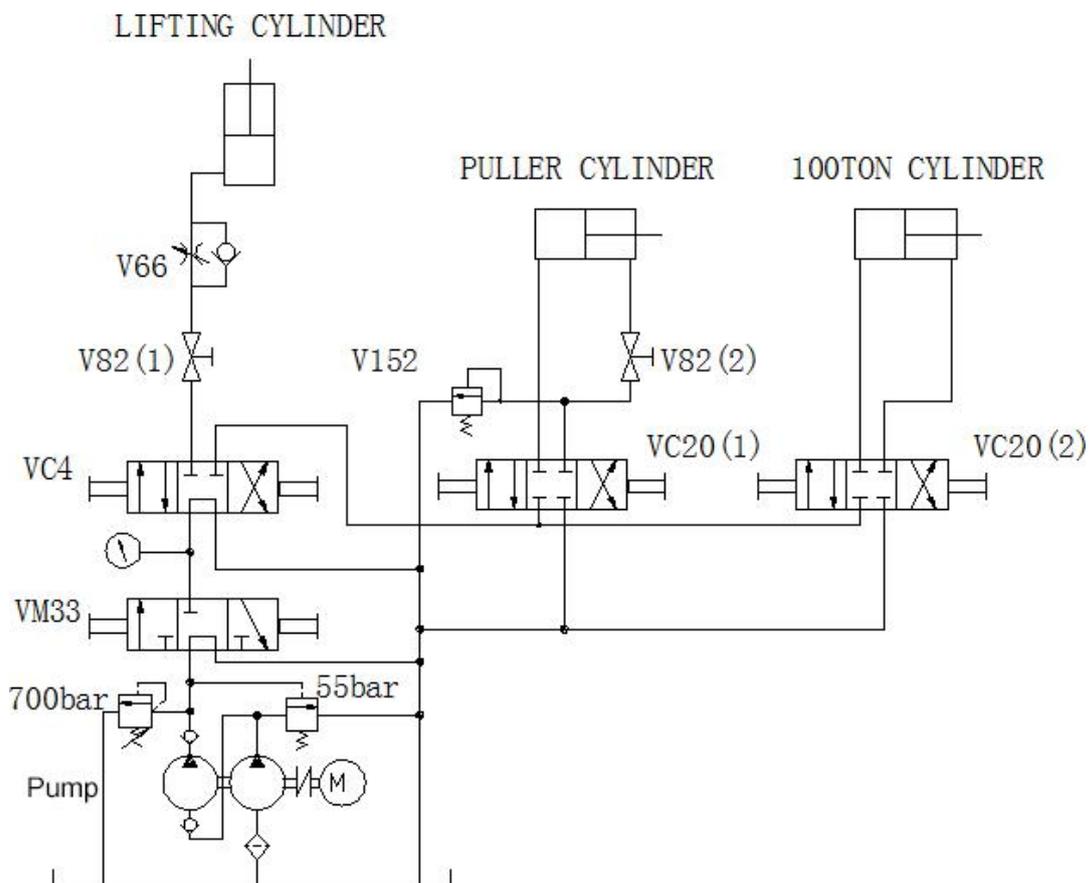
1.2 The outline diagram and main components



- VC20 (1) : Three-position four-way manual reversing valve, control the extension and retraction of the jaw (requires to work with VC4 valve);
- VC20 (2): 3-position 4-way manual reversing valve, controlling 100 TON main cylinder extension and retraction (requires to work with VC4 valve);
- VC4: Three-position four-way manual reversing valve, control the extension and retraction of the height adjustment cylinder(requires to work with throttle valve V82 (1));
- Throttle valve V82 (1): Throttle valve, adjust the speed of the height adjustment cylinder and cut off the height to adjust the hydraulic circuit of the cylinder (requires to work with valve VC4);

- Throttle valve V82 (2): control the speed of the claw opening and closing cylinder (requires to work with VC20 (1));
- One-way throttle valve V66: control the retraction speed of height adjustment cylinder (requires to work with valve VC4);
- Relief valve V152: Adjust the retracting working pressure of the jaw cylinder;
- VM33: Control the pump to supply or return oil to the system;

1.3 Hydraulic schematic diagram



2. Safety precautions:

Warning

Do not overload the cylinder, overloading can cause equipment damage and possibly personal injury. Use pressure gauges in each hydraulic system to ensure proper working pressure. Do not exceed the limit pressure of the lowest pressure rated component in the system. Always use high pressure hoses and fittings.

Warning

Do not allow the cylinder to extend too far beyond its rated travel limit, otherwise it will cause damage to the cylinder.

Warning

Avoid sharp bends and kinks of the hose. When fluid is restricted, severe back pressure can result. Severe bending and kinking can also damage the hose internally, resulting in permanent damage.

Warning

Wear safety glasses to protect them from injury.



Warning

Be careful with your hands, keep your hands and fingers away from the operating area during operation to avoid personal injury;

TIP: It is important to predict the exact force required in each extraction situation. Appropriate pressure values and pull-out force values vary widely from job to job. Structural requirements must be considered as well as the size, shape and condition of the extracted part. Before you choose a puller, examine its various applications. Pay special attention to the maximum effective value of the force that the puller can withstand. Consider these forces and always observe all safety precautions and warnings.

NOTE: Make sure the part being pulled is supported by other components and not by the puller. Do not use the puller as a lifting and support tool. Install the cylinder into the claw head coupling part clockwise through the outer ring threads of the cylinder. Make sure that the outer ring threads of the cylinder are fully screwed into the puller. Fix both ends of the cylinder through the lifting frame. Remove the saddle from the cylinder and insert the jack in the plunger. Select the proper tip for maximum contact with the shaft end face. Make sure the puller fits the part being pulled and extend the plunger until the plug contacts the shaft and is properly centered. (Refer to pump instruction book if necessary.) The center of the head should be in line with the center of the shaft and the wheels should be in full, reliable contact with the pulleys. Continue to slowly extend the plunger to pull the part off its shaft. Never exceed the maximum rated force of the puller;

⚠ Warning

Do not stand on, under or near the puller during use. Avoid contact of hands, feet and clothing with moving parts.

⚠ Warning

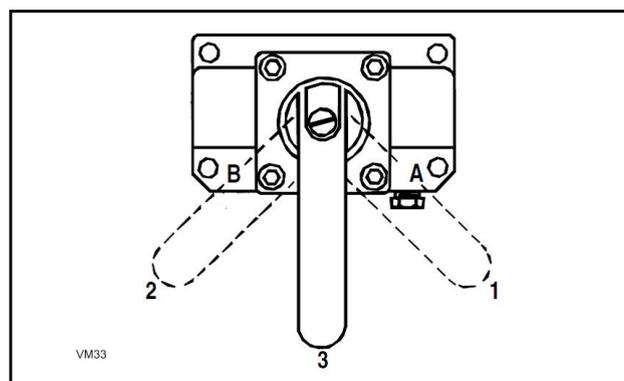
When transporting the puller, place the puller in the lowest position and remove the jaw extender.

3. Operation Steps

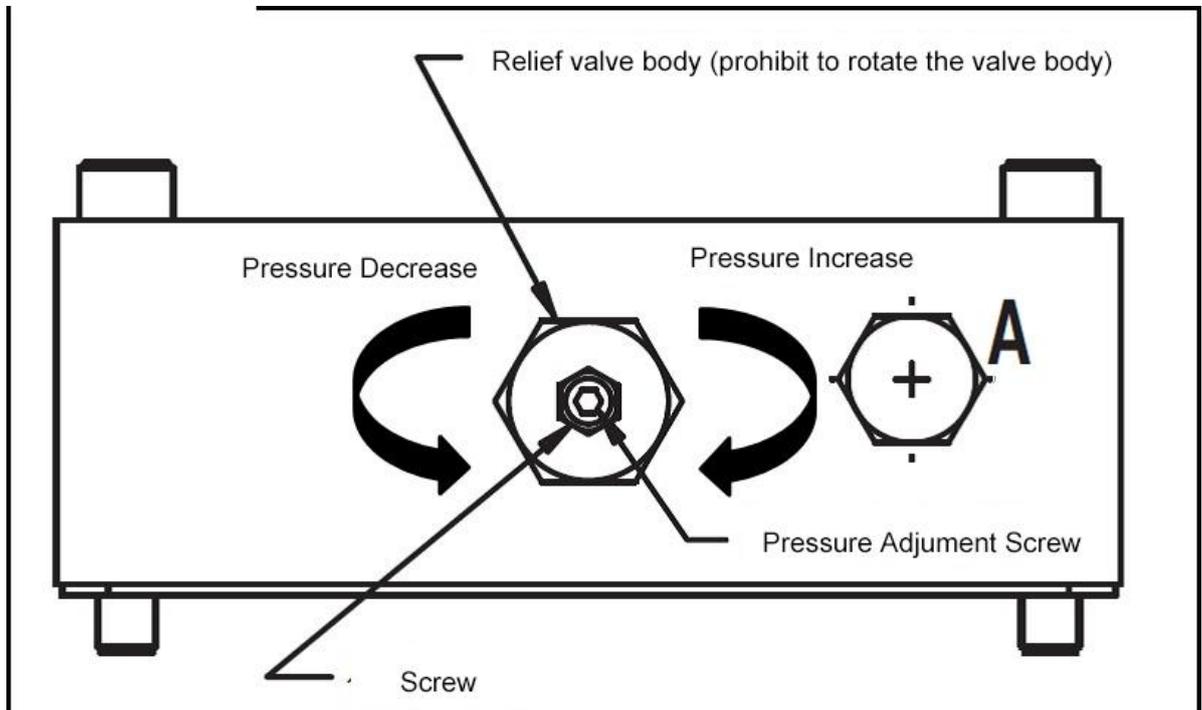
3.1 pump operation: electric hydraulic pump is a two-stage two-speed pump, with a flow rate of 5.26L/min@50bar at low pressure and 0.55L/min@700bar at high pressure. The motor power is 0.75KW, and the voltage is single-phase 220VAC;

(A) Motor start, run and stop: The remote control handle is a double button. Press the button to start and keep running, and press the button again to stop the motor. The remote control handle can be operated according to the actual situation to realize the slow expansion and contraction of the cylinder and increase the load step by step;

NOTE: The VM33 on the pump should be adjusted to neutral position 3 before starting the motor for the first time;



(B) pump pressure setting: The VM33 manual reversing valve installed on the pump is equipped with an adjustable relief valve, and the pressure is adjusted according to the illustration.



Before adjusting the pressure, disconnect the pressure hose and the couplers on the operation panel, press the remote control handle button to start the motor, adjust the VM33 handle to the oil supply position 1, and set the hydraulic pump pressure by monitoring the pressure gauge according to the picture. Below 700bar, it is generally recommended to set at 650-700bar. After the pressure is adjusted, tighten the lock nut, press the button again to stop the motor on the remote control handle, and adjust the VM33 handle to the oil return position 2. After the system pressure drops to zero, change the VM33 valve handle to the neutral position 3, and reconnect the pressure oil pipe to the quick-change connector on the operation panel.

3.2 Initial positions of all valves before operating the puller

Before operating the puller, confirm the position or status of all hydraulic valves. The VC20, VC4 on the operation panel and the VM33 valve handle on the pump should all be in the neutral position 3, the throttle valve V82 on the operation panel should be closed clockwise, and the one-way throttle valve connected to the height adjustment cylinder should be closed clockwise before first use. Special reminder: Due to the design update, the panel layout of different batches of products is different, just operate according to the panel label;



3.3 Puller up and down position adjustment and height adjustment speed control:

(A) Lifting position adjustment and speed control:

Change the VC4 valve handle to the left position 2, turn the throttle valve V82 one to two turns counterclockwise, and change the VM33 valve handle on the pump to the right position 1, press the pump operating handle button to start the pump, and the puller starts to rise. During the ascending process, the ascending speed can be adjusted by adjusting the opening of the throttle valve V82. After the puller rises to the desired height, press the pump operating handle button again, close the throttle valve V82 clockwise, and change the VC4 valve handle to the neutral position 3, the upward adjustment ends.

Tip: Until the position of the puller is adjusted and the pulling work is completed, the handle of the VM33 valve on the pump should be kept in the right position 1, and then change the handle to the left position 2 after all the work is finished. Unload and unload the hydraulic system. Then change the handle to the middle position 3;



(B) Adjustment of descending position and speed control:

change the handle of VC4 valve to right position 1, turn the throttle valve V82 counterclockwise until it is fully opened (two to three turns), and loosen the one-way throttle valve connected to the lift cylinder the lock nut, slowly rotate the one-way throttle handle counterclockwise, and the puller starts to descend slowly. After descending to the desired height, change the VC4 valve handle to the neutral position 3, close the throttle valve V82 clockwise, and the descending adjustment ends;

Tip: When using the puller for the first time, you can adjust the puller's descending speed to the desired speed (slow speed) by adjusting the one-way throttle valve, then lock the lock nut on the one-way throttle valve, and use the puller later. The device no longer has to operate the one-way throttle valve. Puller lowering operation does not require starting the pump.



3.4 Extension and retraction adjustment of puller jaws

(A) Jaw Extension

Change the VC4 valve handle to the right position 1, and the VC20 (1) valve handle to the "extended" position, press the pump operating handle button to start the pump, and the jaws begin to extend. After the jaws are extended to the desired length, press the handle button again, and change the handle of the VC4 and VC20 (1) valves to the neutral position 3, and the jaw extension adjustment is completed;



(B) Jaw retraction adjustment

Change the VC4 valve handle to the right position 1, and the VC20 (1) valve handle to the "retracted" position, press the pump operating handle button to start the pump, and the jaws begin to retract. After the jaws are retracted to the expected length, press the handle button again, and change the handle of the VC4 and VC20 (1) valves to the neutral position 3, and the jaw retraction adjustment is completed. Note: When operating the jaw extension, strictly abide by the "Warning" statement in this instruction manual. When operating the jaw extension, it must be ensured that the throttle valve V82 (1) is completely closed;



3.5 Main oil cylinder telescopic adjustment

(A) Main cylinder extension adjustment

Change the VC4 valve handle to the right position 1, and the VC20 (2) valve handle to the right position 1, press the pump operating handle button to start the pump, the main oil cylinder starts to extend and complete the pulling work. During the pulling process, the pump handle button can be operated to realize step-by-step loading to complete the pulling work. After the puller work is finished, press the operation handle button again, and change the VC4, VC20 (2) valve handle to the neutral position 3, and prepare for the adjustment of the main oil cylinder retraction;

Reminder: In the operation of pulling out the pulley of the main cylinder, strictly abide by the "Warning" statement in this instruction manual.

When operating the main oil cylinder to extend, it must be ensured that the throttle valve V82 (1) is fully closed;



(B) Master cylinder retraction adjustment:

Change the VC4 valve handle to the right position 1, and the VC20 (2) valve handle to the left position 2, press the pump operating handle button to start the pump, the main oil cylinder starts to retract, and after retracting to the initial position, press the operating handle button again, Change the valve handle of VC4, VC20 (2) to the neutral position 3, the operation is over



TIP: Strictly observe the "WARNING" statement in this instruction manual during retraction of the master cylinder. When operating the main oil retraction, the throttle valve V82 (1) must be fully closed

3.6 End of operation

After the puller operation is completed, please adjust the master cylinder and jaws to the fully retracted position, lower the puller to the lowest position, and check that the operation panel and the valve on the pump are in the initial position.

4. Product technical parameters:

Model	EPHS-1002	EPHS-1003	EPHS-2002	EPHS-2003
Jaw	2 Jaw	3Jaw	2Jaw	3Jaw
Capacity/Ton	100	100	200	200
Stroke/mm	300	300	300	300
Max Spread/mm	1535	1535	1580	1580
Min Spread/mm	150	150	140	140
Max Reach/mm	1035	1035	955	955
Min Reach/mm	880	880	803	803
Min Central Height/mm	855	855	855	855
Max Central Height/mm	1490	1490	1490	1490
Weight/Ton	1.1	1.4	1.25	1.6