Operating Instructions
Hydraulic Hand Pumps

Model No.: HA350, HA600, HA700, HB350, HB600, HB700, HC1500, HC2500, HD300 HD500, HF350

1.0 These instructions must be read and followed carefully.

2.0 Inspect the pumps upon arrival thoroughly. The pumps might be damaged from the carriers' carelessly transportation and delivery.

3.0 SAFETY NOTES

- These pumps should only be used by qualified, trained persons who are familiar with this equipment.
- Never rely on the pumps to support and/or hold the loads.
- To avoid personal injury, keep hands and feet away from cylinder and workpiece during operation.
- Do not exceed equipment ratings. Never attempt to lift a load welding more than the capacity of cylinder. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 700 bar (10,000 psi). Do not connect a jack or cylinder to a pump with a higher pressure rating.
- Never Set the relief valve pressure above 725 bar (10,500 psi). Serious personal Injury could result if this maximum limit is exceeded. Damage to pump and components may also occur.
- Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weaker hose materials and packings. For optimum performance don't expose equipment to Temperature of 65℃ (150℉) or higher. Protect hoses and cylinders from weld spatter.

HOSES

- Should a hydraulic hose ever rupture, burst or need to be disconnected immediately shut off the pump and shift the control valve to release all pressure. Never grasp a leaking pressurized hose with your hands.
- Always keep the hose away from fire, sharp surfaces, heavy impact and extreme heat or cold. Never kink, twist, curl or bend the hose so tightly that the oil flow within will be blocked or reduced.

- ♦ Always inspect the hose for wear periodically, as any of these conditions can damage the hose and possibly result in personal injury.
- ♦ Hose material and coupler seal must be compatible with the hydraulic fluid used. Hose also must not come in contact with corrosive materials such as reosote-impregnated objects and some paints. Never paint a coupler, hose deterioration due to toxic materials.
- ♦ Never use the hose to move attached equipment. Stress can damage the hose and possibly cause personal injury.

4.0 PRODUCT INFORMATION

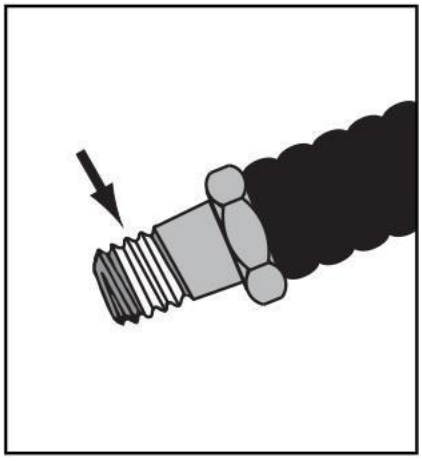
Pump Model	Max. Pressure Rating (bar)		Oil Volume Per Stroke (c.c.)		Usable Oil Capacity (c.c.)	Weight (kg)
	1st Stage	2nd Stage	1st Stage	2nd Stage		
HB350	20	200	13.0	2.8	250	5.9
HB600	20	700	13.0	2.8	550	7.6
HB700	20	700	13.0	2.8	640	8.0
HC1500	20	700	13.0	2.8	1200	11.2
HC2500	20	700	13.0	2.8	2200	12.0
HF350	20	700	7.0	1.0	280	5.5
HA350	200		3.2		280	5.7
HA600	700		3.2		600	7.1
HA700	700		3.2		640	7.6
HD300	700		2.8		200	4.4
HD500	700		2.8		400	5.4

NOTE：The max. working pressure of HB350 is 200bar only.

5.0 INSTALLATION

5.1 Connecting the pump

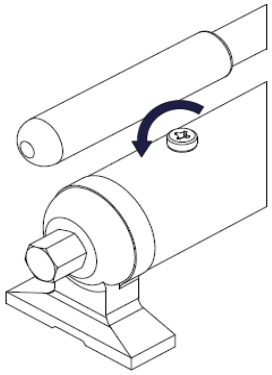
1. Remove shipping plugs from pump outlet ports.
2. Connect hoses to pump. To seal threads, use thread sealer or seal paste or seal tape. **When using seal tape, apply tape one thread back from the end of fitting to prevent tape mesh from entering the hydraulic system.**



3. Install a pressure gauge in-line from the pump for added safety and better control.
4. Connect the hoses to your cylinder or tool. For single-acting cylinders, connect one hose from the pump to the cylinder.

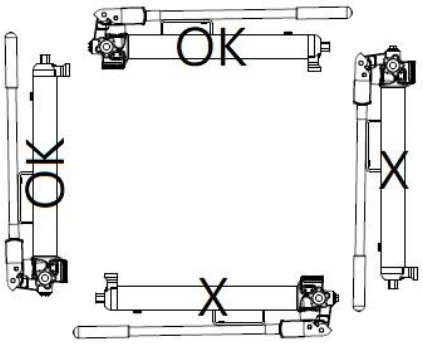
5.2 Venting

Must ensure the air vent from the pump before operating the Pump. The oil fill plug (vent type) should be changed and fully installed before using the pump.



IMPORTANT:

To prevent contaminants from entering the hydraulic system, do not operate pump with oil fill plug loosened or removed.



5.3 Pump Position

The pump may be used in either the horizontal or vertical position. When operated in the vertical position, hose end of pump must be pointed down, or the pump will pick up air and will not build up pressure properly.

6.0 OPERATION

6.1 Before using the pump

1. Inspect all system fittings and connections to be sure they are tight and leak free.
2. Check oil level in reservoir and add oil if needed. Refer to instruction in Section 8.1.
3. Read and understand the following precautions before operating pumps:

BE CAREFUL: In certain situation the pump handle can “spring back”. Always keep your body to the side of the pump, away from the line of force of the handle.

BE CAREFUL: Keep hands and fingers away from pinch point area between pump handle and lifting handle, when operating the pump handle.

⚠**CAUTION:** Never add extensions to pump handle. Extensions cause unstable pump operation.

⚠**CAUTION:** To prevent mechanical damage, do not pull on pump handle after it has reached the end of its travel. Do not apply side force to pump handle.

BE CAREFUL: At the stage of high pressure, take short strokes to reduce handle force. Maximum leverage is obtained in the last 5 degrees of stroke.

6.2 Two Stage Flow

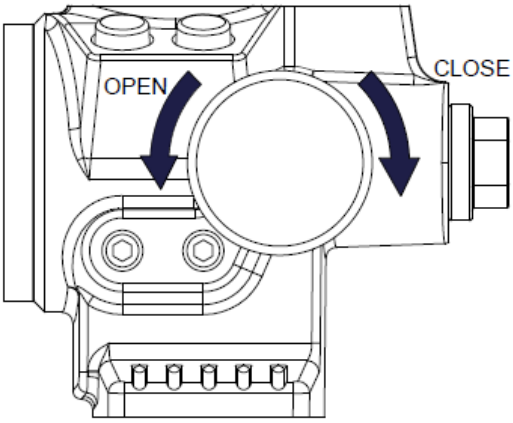
Under no loading, the pump operates in the high flow stage for fast advance. When the load is contacted, the pump shifts automatically to the low flow stage to build up pressure. After

the pump shifts, priming takes less force.

Note: For the best performance, priming pump handle at moderate speed during the high flow stage. Fast handle speed in the high flow stage will prevent the pump from delivering full volume of oil.

6.3 Pump Operation

The pump is designed for use with single-acting cylinders and is equipped with an integral release valve.



1. Only close the release valve by turning knob clockwise until it stops.
2. Open the release valve by turning knob counter-clockwise to release the pressure and allow oil to flow back to the reservoir.

CAUTION: If release valve knob is difficult to turn or becomes stuck, discontinue using pump immediately. Have pump inspected and repaired by POWERRAM authorized dealers.

Max. Capacity：700 Bar (10,000PSI)

7.0 AIR BLEEDING

Removing air from the hydraulic system will help the cylinder to advance and retract smoothly.

7.1 Pump W/ Single-Acting Cylinder

1. Loosen and remove oil fill plug to provide reservoir venting during the following steps.
2. Fully close release valve.
3. Position pump in the horizontal position at higher level than cylinder.
4. Position cylinder with the plunger end down (up if using pull cylinder).
5. Operate pump to extend the piston of cylinder fully (retract if using pull cylinder).
6. Open release valve to retract cylinder (extend if using pull cylinder). This will force the trapped air to move up to the pump reservoir.
7. Repeat steps 2 through 6 as needed, until cylinder operation is smooth.
8. Add oil if necessary, see Section 8.1
9. Assemble oil fill plug back.

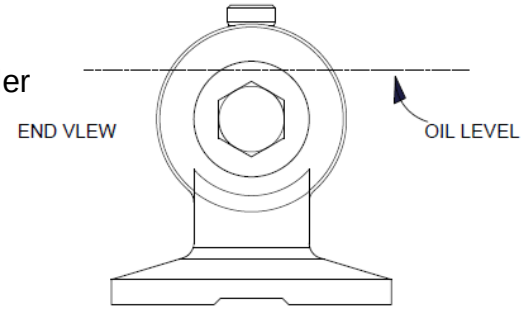
8.0 MANTENANCE

8.1 Adding Oil to the pump

IMPORTANT: Always add oil with cylinders fully retracted (extended if pull cylinders) or the system will contain more oil than the reservoir capacity.

Check oil level regularly and add oil if needed. Refer to the follows.

1. Place pump in the horizontal position on a level surface.
2. Remove oil fill plug from reservoir.
3. Lift the tail base of pump with 30 degrees and check the oil level, if the oil level is not visible (less than 400 c.c.), then need to add the oil
4. Add additional oil until oil level is reaching 10 mm under the bottom thread of the oil fill plug opening.

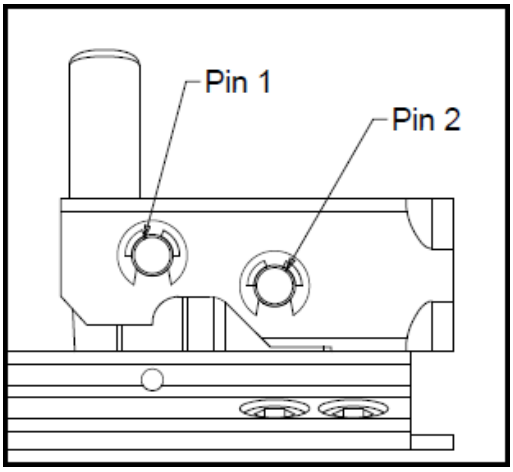


IMPORTANT: Do not overfill! Some air space must be present in reservoir to allow proper operation.
If the reservoir contains too much oil, a vacuum will form, prevent oil flow when pump is operated.

5. Assemble oil fill plug back after oil added. Be sure the plug is fully tightened (not loose).
6. Remove air from system if necessary. See Section 7.0. Recheck oil level after air removed.

8.2 Lubrication

To extend pump life and improve performance, lubricate the handle pins regularly.



9.0 TROUBLESHOOTING GUIDE

A system failure may or may not be the result of a pump malfunction. To determine the cause of the problem is the key issue.

PROBLEM	CAUSE	SOLUTION
Cylinder does not advance, advances slowly or Advances difficultly	1. System components leaking. 2. Lower fluid level in Reservoir. 3. Load is too heavy. 4. Air tapped into system. 5. Too much fluid in Reservoir. 6. Release valve not fully closed.	1.Check all connection are fully tightened. 2.Add oil. 3.Don't attempt to lift more than rated capacity. 4.Air bleeding per the instruction in Section 7.0 5. Remove excess oil. 6.Close the release Valve fully.
Cylinder advances, but not holding pressure	1. System components leaking. 2. Fluid leading past inlet or outlet checks. 3. Seals worn or leaking	1.Check all connection are fully tightened. 2.Contact with Authorized Dealers for service. 3.Contact with Authorized Dealers for service.
Pump handle has a " spongy" feel	1. Air tapped into system.	1. Refer to Air Bleeding.