

3114 801 00 13

5.0 TROUBLE SHOOTING

1. System will not build pressure. Check relief valves in pump for proper setting (see pump repair sheet). Check and secure all hose connections. If trouble is not corrected, remove cylinder and hoses from the valve. Now place a gauge directly in valve port No. 1 and place the valve in advance. If pressure cannot be developed, the unit should be taken to the nearest authorized ENERPAC Service Center. If pressure develops, the cylinder, hoses or couplers are the problem.
2. The cylinder will not hold load or the cylinder creeps when the valve is in the hold position. This is an indication of worn valve seats which must be replaced by a Service Center.
3. The cylinder is hung-up in either the advance or retract position. Contact an authorized ENERPAC Service Center.

6.0 MAINTENANCE

1. Periodically check all hydraulic and air connections to be sure they are tight. Loose or leaking connections may cause erratic and/or total loss of operation. Replace or repair all defective parts promptly.

2. Periodically check the hydraulic oil level in your system.
3. Change hydraulic oil approximately every 250-300 hours of operation. In dusty or dirty areas, it may be necessary to change the oil more frequently.

7.0 STORAGE INSTRUCTIONS

In the event that the unit would be stored for any great length of time (30 days or more), prepare as follows:

1. Wipe the entire unit clean.
2. Disconnect all hydraulic lines to prevent accidental operation.
3. Cover the unit with some type of protective cover.
4. Store in a clean, dry environment that is NOT exposed to extreme temperatures.

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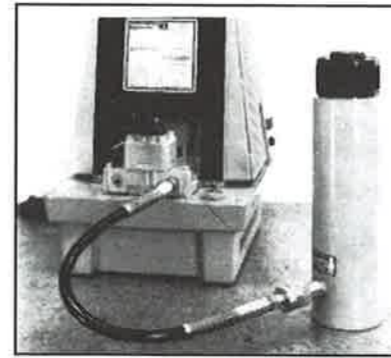
e-mail
info@enerpac.com

	Instruction Sheet
	Manually Operated Control Valves

L1057 Rev. O 04/99



MAKE SURE ALL HYDRAULIC CONNECTIONS ARE MADE TO THE PROPER PORTS.
CHECK POWER CONNECTIONS FOR PROPER VOLTAGE AND CONNECTION.
Make sure all electric connections are made to the proper voltage (120 volt, 50/60 Hertz)



3-WAY VALVE



4-WAY VALVE

1.0 IMPORTANT RECEIVING INSTRUCTIONS

Visually inspect all components for shipping damage. Shipping damage is **not** covered by warranty. If shipping damage is found, notify carrier at once. The carrier is responsible for all repair and replacement costs resulting from damage in shipment.

SAFETY FIRST

2.0 SAFETY ISSUES



Read all instructions, warnings, and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. Contact Enerpac when in doubt as to the safety precautions and operations. If you have never been trained on high-pressure hydraulic safety, consult your distribution or service center for a free Enerpac Hydraulic safety course.

Failure to comply with the following cautions and warnings could cause equipment damage and personal injury.

A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

A **WARNING** indicates a potential danger that requires correct procedures or practices to avoid personal injury.

A **DANGER** is only used when your action or lack of action may cause serious injury or even death.



WARNING: Wear proper personal protective gear when operating hydraulic equipment.



WARNING: Stay clear of loads supported by hydraulics. A cylinder, when used as a load lifting device, should never be used as a load holding device. After the load has been raised or lowered, it must always be blocked mechanically.



WARNING: USE ONLY RIGID PIECES TO HOLD LOADS. Carefully select steel or wood blocks that are capable of supporting the load. Never use a hydraulic cylinder as a shim or spacer in any lifting or pressing application.



DANGER: To avoid personal injury keep hands and feet away from cylinder and workpiece during operation.



WARNING: Do not exceed equipment ratings. Never attempt to lift a load weighing more than the capacity of the cylinder. Overloading causes equipment failure and possible personal injury. The cylinders are designed for a max. pressure of 700 bar. Do not connect a jack or cylinder to a pump with a higher pressure rating.



Never set the relief valve to a higher pressure than the maximum rated pressure of the pump. Higher settings may result in equipment damage and/or personal injury.



WARNING: The system operating pressure must not exceed the pressure rating of the lowest rated component in the system. Install pressure gauges in the system to monitor operating pressure. It is your window to what is happening in the system.



CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.

All Enerpac products are guaranteed against defects in workmanship and materials for as long as you own them. Under this guarantee, free repair or replacement will be made to your satisfaction.

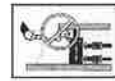
For your nearest authorized Enerpac Service Center, visit us at www.enerpac.com



Do not drop heavy objects on hose. A sharp impact may cause internal damage to hose wire strands. Applying pressure to a damaged hose may cause it to rupture.



IMPORTANT: Do not lift hydraulic equipment by the hoses or swivel couplers. Use the carrying handle or other means of safe transport.



CAUTION: Keep hydraulic equipment away from flames and heat. Excessive heat will soften packings and seals, resulting in fluid leaks. Heat also weakens hose materials and packings. For optimum performance **do not** expose equipment to temperatures of 65°C [150°F] or higher. Protect hoses and cylinders from weld spatter.



DANGER: Do not handle pressurized hoses. Escaping oil under pressure can penetrate the skin, causing serious injury. If oil is injected under the skin, see a doctor immediately.



WARNING: Only use hydraulic cylinders in a coupled system. Never use a cylinder with unconnected couplers. If the cylinder becomes extremely overloaded, components can fail catastrophically causing severe personal injury.



WARNING: BE SURE SETUP IS STABLE BEFORE LIFTING LOAD.

Cylinders should be placed on a flat surface that can support the load. Where applicable, use a cylinder base for added stability. Do not weld or otherwise modify the cylinder to attach a base or other support.



Avoid situations where loads are not directly centered on the cylinder plunger. Off-center loads produce considerable strain on cylinders and plungers. In addition, the load may slip or fall, causing potentially dangerous results.



Distribute the load evenly across the entire saddle surface. Always use a saddle to protect the plunger.



IMPORTANT: Hydraulic equipment must only be serviced by a qualified hydraulic technician. For repair service, contact the Authorized ENERPAC Service Center in your area. To protect your warranty, use only ENERPAC oil.



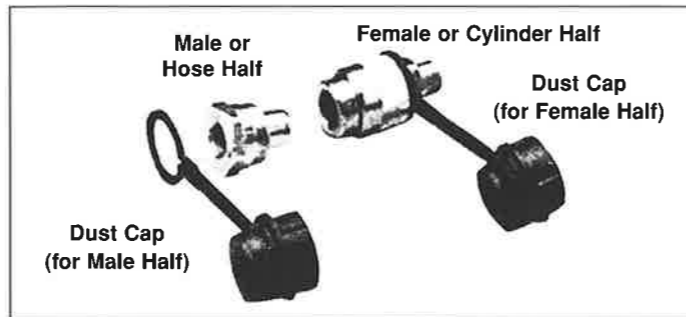
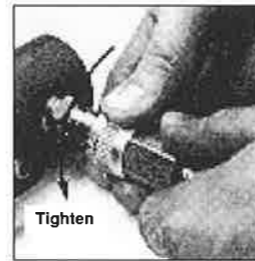
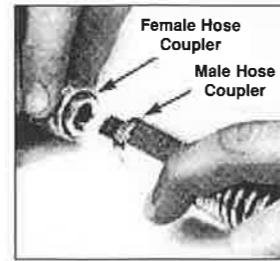
WARNING: Immediately replace worn or damaged parts by genuine ENERPAC parts. Standard grade parts will break causing personal injury and property damage. ENERPAC parts are designed to fit properly and withstand high loads.

3.0 HYDRAULIC CONNECTIONS

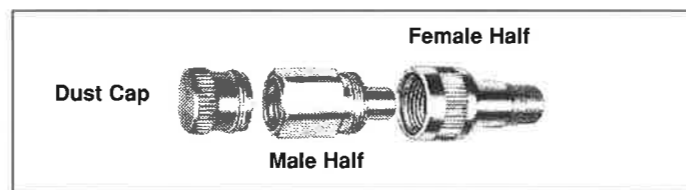
3.1 Check all coupler connection

1. Use Enerpac hi-flow couplers for best results, or Enerpac regular couplers when very low flow pumps are used. (Maximum flow below 1 gpm — 230 Cu. in./min.)

2. Connect hoses to valve at designated port locations. If using pipe sealants on male pipe threads, use sparingly and never over ends of fittings where it can be torn loose and get into system.



3/8" High-Flow Couplers



3/8" Regular Coupler

4.0 OPERATION

1. Connect and secure hoses and cylinders noting that the proper ports are connected.
2. Quick disconnects must be fully engaged and locking collars drawn up fully to ensure free flow of oil between valve and attached component.
3. Place valve handle in proper position before starting pump. Open centered valves should be in "hold" position. Closed centered valves should be in a position which will ensure a safe start up when the pump is started.
4. Valves equipped with a positive locking feature will not permit movement of the load when the handle is moved between positions. Valves not equipped with this feature will lower or drop the load during handle movement. The amount of loss or load movement will depend on the speed of handle movement between detent positions.

NOTE: Enerpac valves are either open or closed center. Open centered valves allow oil to flow from the pump to tank when in the hold position. Closed centered valves block the flow of oil from the pump when in the hold position. Selecting the type of valve which best meets your needs is important for satisfactory operation.

3-WAY MANUAL VALVE DIAGRAMS

Manual Valves
Advance-Neutral/Hold-Retract

Remote Mounted

Manual Locking Valves
Advance-Hold-Retract

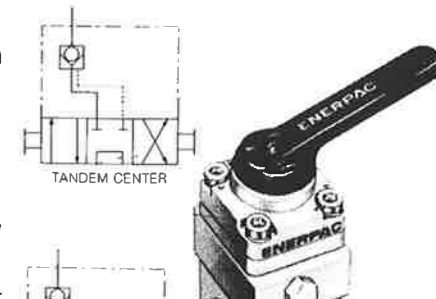
VC-3 Manual 3-Way Directional Valve –

Mounts at any convenient location in system where control point is needed



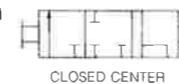
VC-3L Manual 3-Way Locking Valve –

Same as VC-3 but with built-in locking feature.



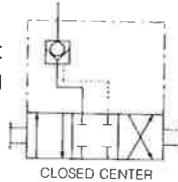
VC-15 Manual 3-Way Directional Valve –

Closed center version of VC-3 – for multiple independent cylinder operation.



VC-15L Manual 3-Way Locking Valve –

Same as VC-15 but with built-in locking feature.



Pump Mounted

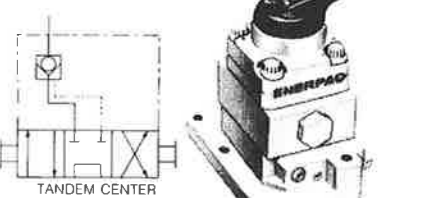
VM-3 Manual 3-Way Directional Valve –

Provides centralized control of pump output. Minimum restriction of hydraulic oil flow during cylinder cycles.



VM-3L Manual 3-Way Locking Valve –

Same as VM-3 but with built-in locking feature.



4-WAY MANUAL VALVE DIAGRAMS

Manual Type Valves
Advance-Neutral/Hold-Retract

Remote Mounted

Manual Locking Type Valves
Advance-Neutral/Hold-Retract

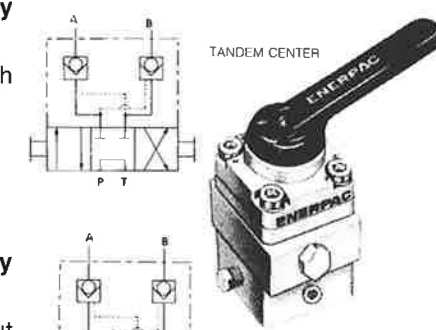
VC-4 Manual 4-Way Directional Valve –

Manually operated remote valve. Allows finger tip control for powered advance and retraction of cylinders with holding in center position. Can be readily mounted at any convenient point in the system.



VC-4L Manual 4-Way Locking Valve –

Same as VC-4 but with built-in locking feature.



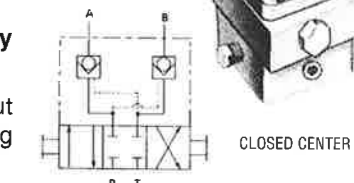
VC-20 Manual 4-Way Directional Valve –

Closed center version of above – for multiple valve operation



VC-20L Manual 4-Way Locking Valve –

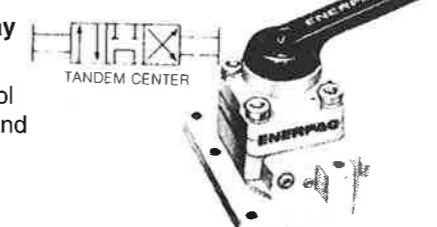
Same as VC-20 but with built-in locking feature.



Pump Mounted

VM-4 Manual 4-Way Directional Valve –

Allows finger tip control for powered advance and retraction of a cylinder.



Advance-Hold-Retract

VM-4L Manual 4-Way Locking Valve –

Same as VM-4 but with built-in locking feature.

