

L4217 Rev. A 08/17

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Repair Parts Sheets for this product are available from the Enerpac website at www.enerpac.com, or from your nearest Enerpac Authorized Service Center or Enerpac Sales office.



WARNING: MAKE SURE ALL HYDRAULIC CONNECTIONS ARE MADE TO THE PROPER PORTS.



WARNING: DO NOT USE ENERPAC VM33VAC OR VM33MVAC VALVES WITH A DOUBLE-ACTING CYLINDER.

1.0 RECEIVING INSTRUCTIONS

IMPORTANT: 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.

2.0 SAFETY



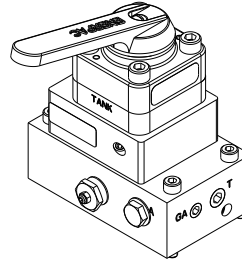
Read all instructions, warnings and cautions carefully. Follow all safety precautions to avoid personal injury or property damage during system operation. Enerpac cannot be responsible for damage or injury resulting from unsafe product use, lack of maintenance or incorrect product and/or system operation. 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 distributor or service center for information about an Enerpac Hydraulic Safety Course.

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

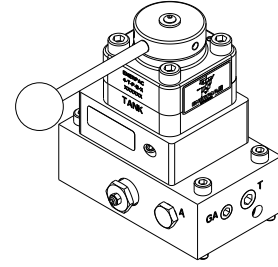
A **CAUTION** is used to indicate correct operating or maintenance procedures and practices to prevent damage to, or destruction of equipment or other property.

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.



VM33VAC
(Plastic Handle)



VM33MVAC
(Metal Handle)



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 10,000 psi [700 bar]. Do not connect a jack or cylinder to a pump with a higher pressure rating.



WARNING: 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.



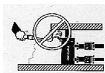
CAUTION: Avoid damaging hydraulic hose. Avoid sharp bends and kinks when routing hydraulic hoses. Using a bent or kinked hose will cause severe back-pressure. Sharp bends and kinks will internally damage the hose leading to premature hose failure.



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 150°F [65°C] 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 Enerpac Authorized Service Center in your area. To protect your warranty, use only Enerpac oil.



WARNING: Immediately replace worn or damaged parts with 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 GENERAL INFORMATION

The Enerpac VM33VAC and VM33MVAC control valves incorporate the following features in a single unit design:

- 10,000 psi [700 bar] operating pressure
- Vacuum-assisted return (single-acting cylinders only)
- User adjustable relief valve
- Gauge ports

These Enerpac valves are specifically designed for use with Enerpac pumps.

3.1 Capacity

Capacity is 900 cu. in/min [14.8 l/min], equivalent to approximately 3.9 gallons per minute.

4.0 INSTALLATION



CAUTION: If you are not trained and familiar with installing a control valve have an Enerpac Authorized Service Center perform this procedure.



WARNING: DO NOT USE THESE VALVES WITH A DOUBLE-ACTING CYLINDER.

1. Install valve onto Enerpac pump using gasket and fasteners included. Torque fasteners to 16-19 ft-lbs [21.7-25.8 Nm]. Take needed steps to ensure pump's pressure tube o-ring and backup are not damaged. **Verify tank return tube is installed to the valve.**
2. Install pressure gauge, if required, into proper port. Pressure can be monitored at the "GP" ports, the "GB" port or the "GA" port or any combination of these, depending on system requirements.



CAUTION: 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 the hydraulic system.

5.0 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. Tandem centered valves should be in the NEUTRAL position.

5.1 Operation

1. Advance
2. Retract
3. Neutral

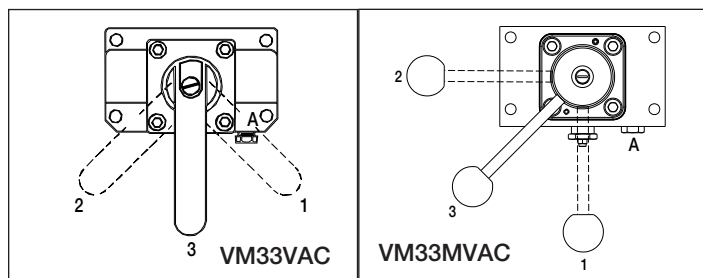


Figure 1, Advance, Retract and Neutral

- VM33VAC and VM33MVAC valves will lower or drop the load during handle movement. The amount of pressure loss or load movement will depend on the speed of handle movement between detent positions.

- VM33VAC and VM33MVAC valves are equipped with an integral system check valve. To “hold” load, keep valve handle in position and simply turn pump off. Rotate handle to lower load.

NOTE: VM33VAC and VM33MVAC are tandem center valves, which allow oil flow from the pump to tank when in the NEUTRAL position.

5.2 Relief Valve Adjustment

Z-Class pumps are equipped with one user adjustable relief valve (see Figure 2). It can be adjusted as follows:

1. Install a gauge on the pump. If a unit is equipped with optional pressure transducer, verify “SET PRES” value is higher than desired relief valve setting or Auto Mode is off.
2. Start the pump to allow the oil to warm.
3. Loosen the set screw locking nut.
4. Shift the valve and build pressure in the system. Using an Allen wrench, turn the set screw counter-clockwise to decrease pressure and clockwise to increase pressure.

NOTE: To obtain an accurate setting, decrease the pressure to a point below the final setting and then slowly increase the pressure until it reaches the final setting.

5. Tighten the locking nut when the desired pressure is set.
6. Shift the valve to the neutral position, allowing the system pressure to return to zero (0) psi/bar.
7. Recheck the final pressure setting by shifting the valve and pressurizing the system.

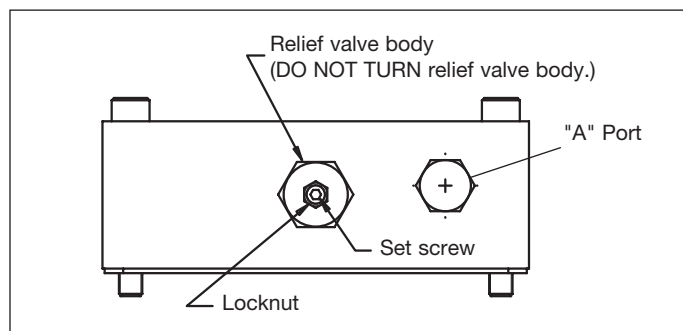


Figure 2, Relief Valve Adjustment

6.0 TROUBLESHOOTING

1. If the system will not build pressure, check relief valves in pump for proper setting (refer to pump repair sheet). Check and secure all hose connections. If trouble is not corrected by this action, remove cylinder and hoses from valve. Now place a 10,000 psi [700 bar] gauge directly in valve port “A” and place the valve in ADV position. If pressure cannot be developed, the unit should be taken to the nearest Enerpac authorized service center. If pressure develops, the problem is located in the cylinder, hoses, or couplers.
2. Slow retract speed of a single acting cylinder may be the result of the return pipe (item 75) is not installed. Make sure that item 75 is installed to the tank return port under

the valve manifold (item 52). Using a hose with a larger inside diameter or using a shorter length hose (between the valve and the cylinder) will improve cylinder retract speed.

3. Refer to Repair Parts Sheet L4218 for more detailed troubleshooting information.

7.0 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. Refer to the pump oil filling instructions for complete information.
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.

8.0 HYDRAULIC SYSTEM

1. Keep all hydraulic components free of dirt, grease, chips, etc.
2. Keep the hydraulic component operating in areas that are uncluttered and free of unnecessary equipment.
3. Periodically check the hydraulic system for possible loose connections, leaks, etc. Replace or properly repair damaged or leaking hydraulic components immediately.
4. Check hydraulic oil in the hydraulic system every 40 hours of operation or more frequently in unusually dirty or dusty areas.
5. Oil temperature must be maintained less than or equal to 150°F [65°C] by use of a heat exchanger or other methods.

9.0 STORAGE

In the event that the unit will 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.

10.0 DIAGRAMS



WARNING: DO NOT USE THESE VALVES WITH A DOUBLE-ACTING CYLINDER.

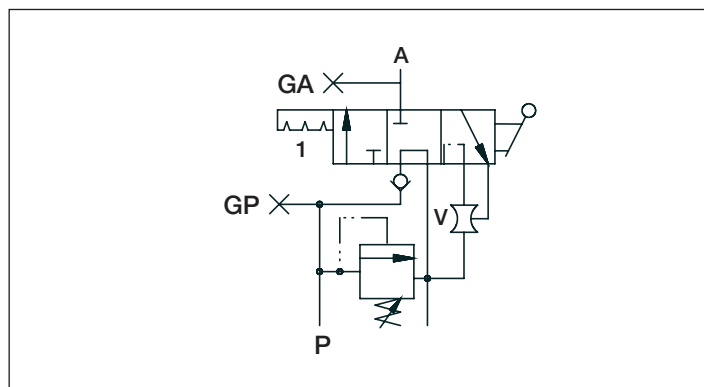


Figure 3, Electrical Schematic, VM33VAC and VM33MVAC

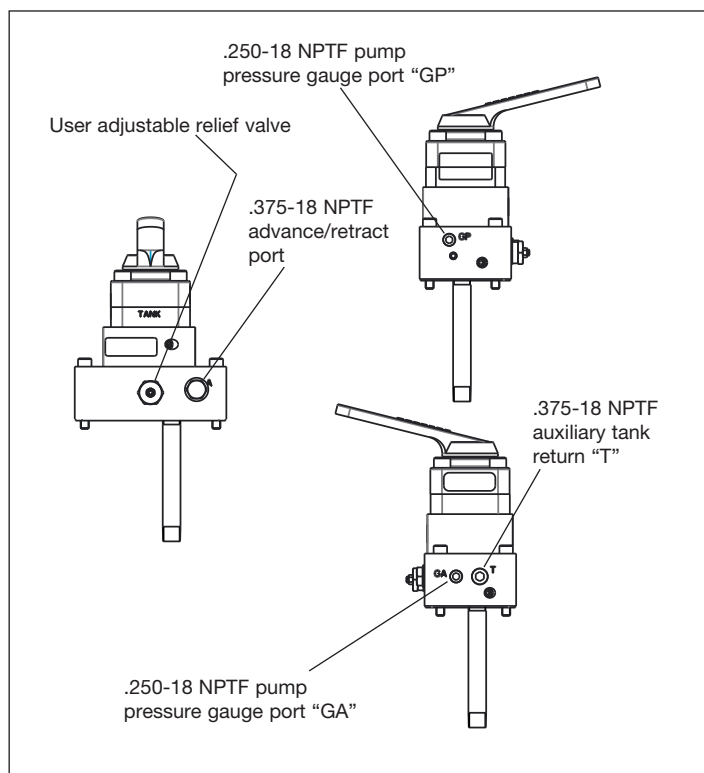


Figure 4, Hydraulic Connections, VM33VAC

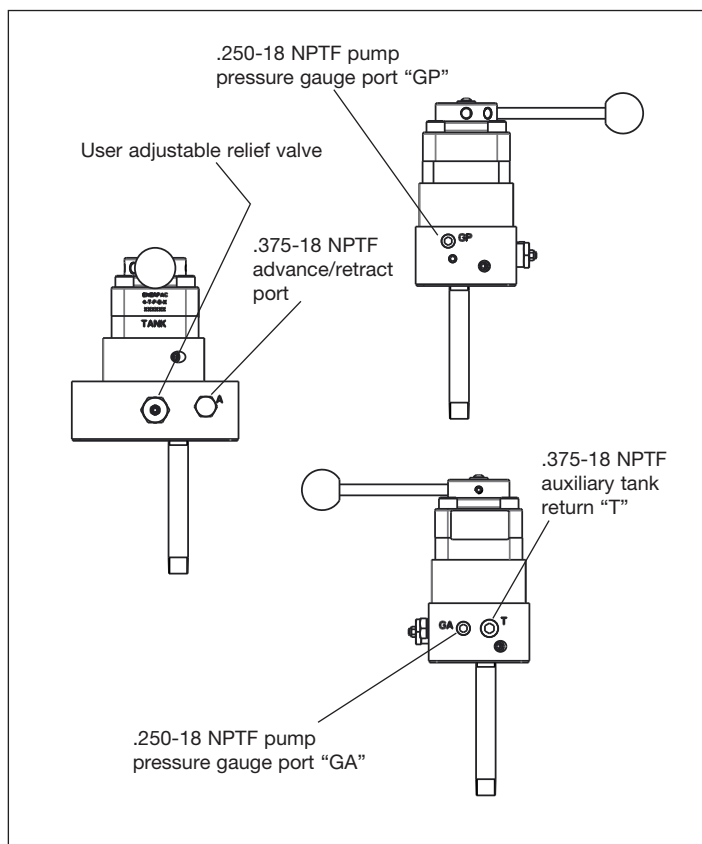


Figure 5, Hydraulic Connections, VM33MVAC