POWER TEAM
HYDRAULIC TECHNOLOGIES

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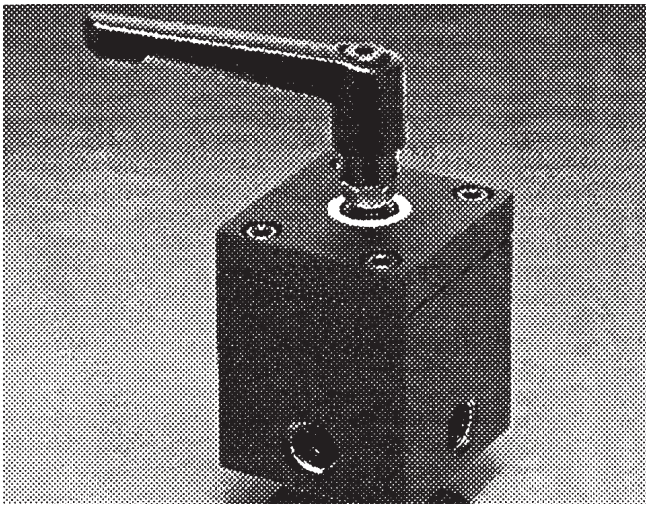
Form No. 102918

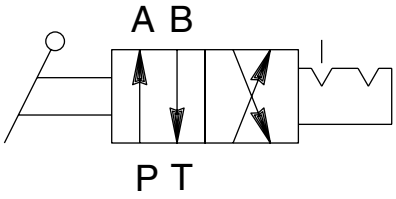
Operating Instructions for:

100969
100970
100971

MODEL A
TWO POSITION, 4-WAY MANUAL
VALVE ASSEMBLY
Max. Capacity: 5,000 PSI

Specifications	
Max. Working Pressure	5,000 PSI
Max. Flow Rating	2 GPM
Max. Valve Case Pressure (Return Tank Line)	1,500 PSI





HYDRAULIC SCHEMATIC

FUNCTION:

Rotate handle CCW to provide:
pressure to "A" port
"B" port to tank

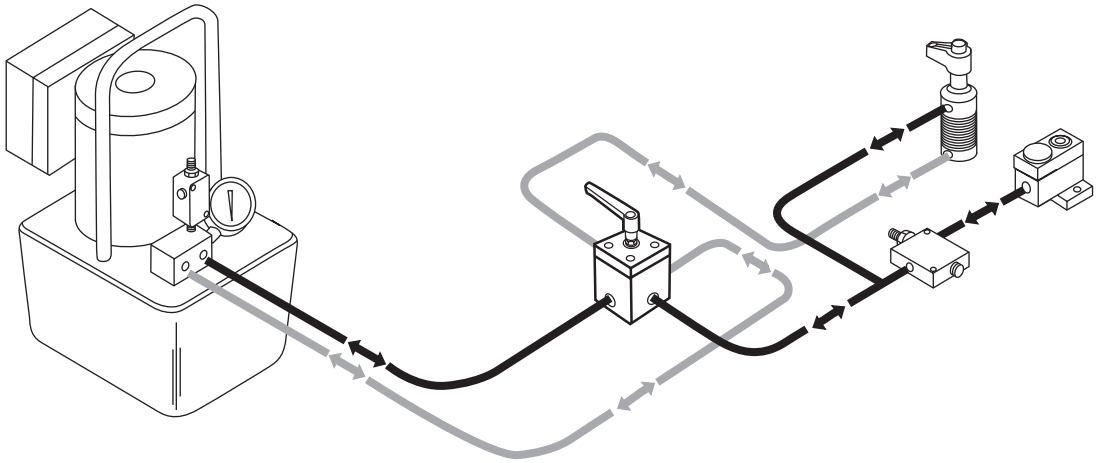
Rotate handle 90° CW to provide:
Pressure to "B" port
"A" port to tank

SAFETY PRECAUTIONS

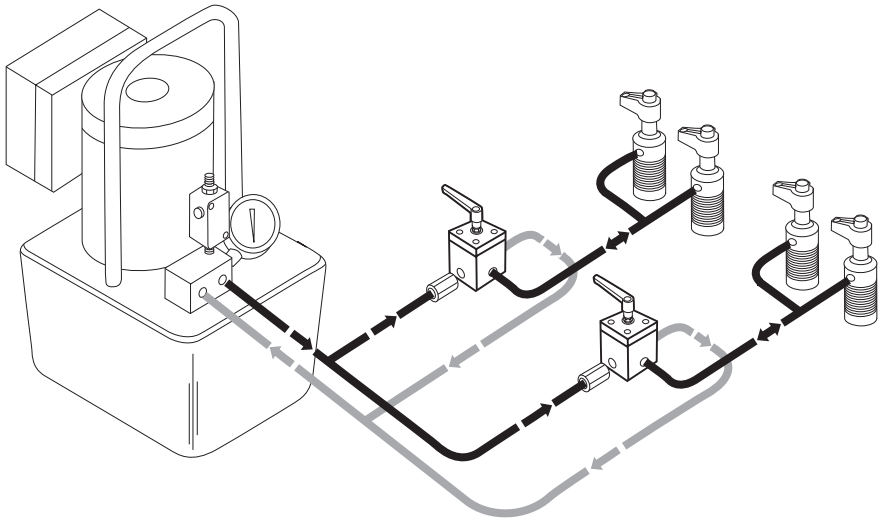
WARNING: To help avoid possible personal injury,

- **Only use manifolds, fittings and pressure lines rated at 5,000 PSI.**
- **Before operating pump, all connections must be tightened with the proper tools. Do not overtighten. Connections should only be tightened securely and leak-free. Overtightening can cause premature thread failure or high pressure fittings to split at lower than their rated capacities.**
- **Should a hydraulic component ever rupture, burst or need to be disconnected, immediately shut off the pump and shift the control valve twice to release all pressure. Never attempt to grasp a leaking pressurized hose with your hands. The force of escaping hydraulic fluid could cause serious injury.**
- **Return line pressure must not exceed 1,500 PSI.**

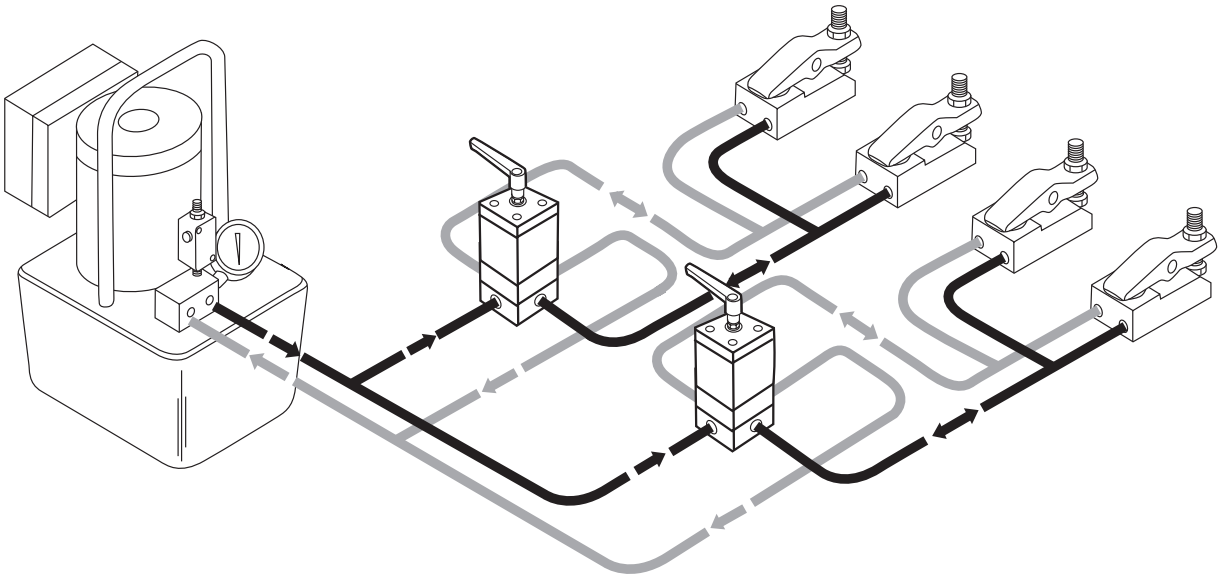
TYPICAL APPLICATIONS



Single- And Double-acting Circuit



Single-acting Circuit



Circuit With Double-acting Actuators

INSTALLATION OF CONVENTIALLY PORTED VALVES (#100969 & #100970)

(Refer to Parts List #101808)

NOTE:

- **These valves have a low torque design for use with double-acting or single-acting actuators.**
- **If these valves are to be used with single-acting cylinders, one port, A or B, must be properly plugged.**
- **Valve handle can be moved to the desired position by lifting and rotating it in increments of 15°. For finer adjustments, the nut under the handle may be loosened to allow repositioning in any orientation. Torque nut to 150/200 in. lbs. See Figure 1.**

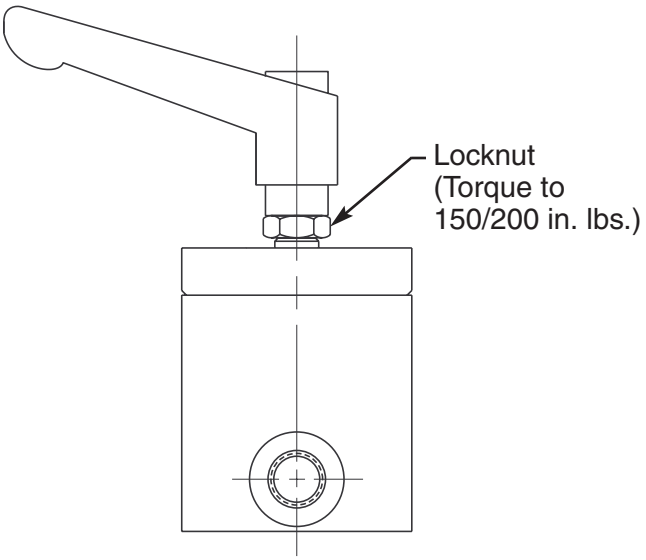


Figure 1

WARNING: To help avoid personal injury,

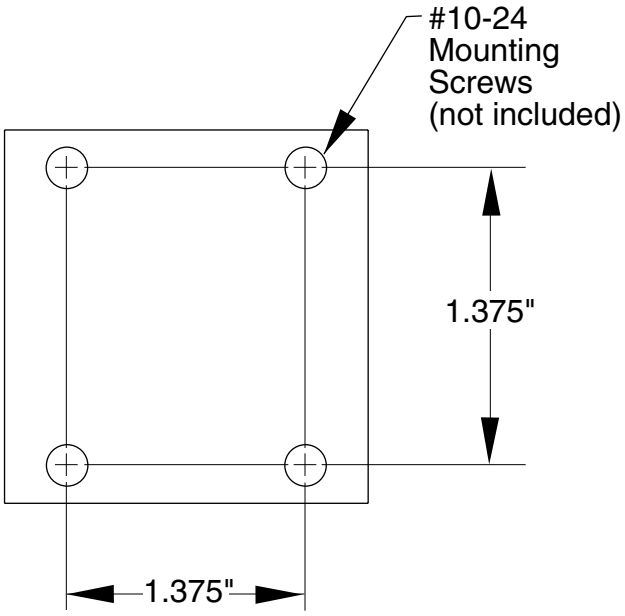
- **Do not install quick couplers in the oil return line between the pump reservoir and the remote mounted valve. Any condition that causes back pressure exceeding 1,500 PSI in a return line has the potential to damage the valve or cause a malfunction in the hydraulic system, possibly resulting in personal injury.**

These valves are built without check valves and so are intended **ONLY** for systems with one valve per hydraulic pressure source. For multiple valve applications, use directional valve #100971 with check valve subplate #100974 (see sheet 3 of 3 for installation). Ported subplates #100972 and #100973, or two-station manifold #100975, can be added as appropriate.

WARNING: To help avoid personal injury,

- **If these valves are used in a multiple valve application, a check valve must be installed at the valve Pressure and Tank ports. Failure to use check valves will allow the shifting of one valve in the system to cause the loss of clamping pressure in another. Pressure fluctuations in one system may also cause single-acting components to actuate unexpectedly, potentially causing personal injury.**

1. To mount these valves, use the four #10-24 threaded holes in the bottom of the valve body. See Figure 2.



#100969 & #100970 Mounting Hole Pattern

Figure 2

2. If applicable, optional mounting plate #500175 allows the valves to be mounted from the top. See Figure 3.

3. **IMPORTANT:**
   When attaching SAE o-ring fittings to the #100969 valve, do not use teflon tape or thread sealant of any kind.

   When attaching NPT fittings to the #100970 valve, use Power Team HTS6 thread sealant or a single layer of teflon tape to seal the threads.
   Note: When using teflon tape, use only a single layer and apply it beginning one or two threads back from the end. Teflon tape applied too close to the end of the fitting can be pinched during assembly causing pieces of tape to break off and contaminate the hydraulic system.

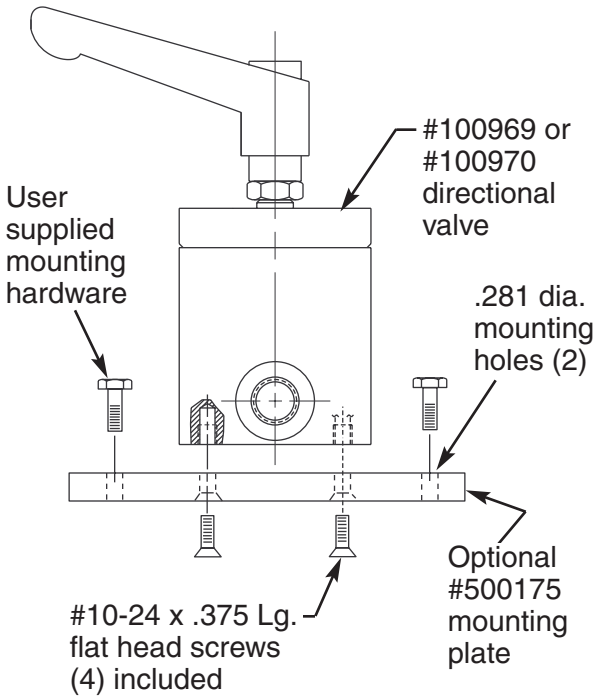


Figure 3

Refer to Figure 4:

4. **When used for controlling double-acting actuators**, the valve's Pressure and Tank ports are connected to the pump's Pressure and Tank ports, respectively, and ports A and B are connected to the actuator(s).

5. **When controlling single-acting systems,** the A or B port is connected to the actuator(s) and the other must be properly plugged at the valve body.

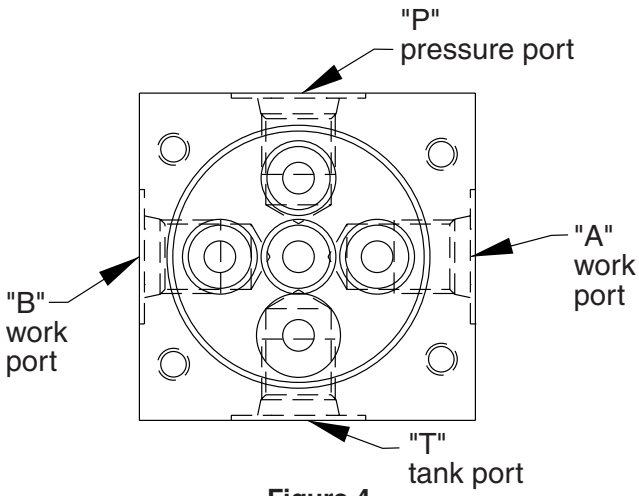


Figure 4

INSTALLATION OF MANIFOLD MOUNT VALVE (#100971)

(Refer to Parts List #101808)

NOTE:

- **These valves have a low torque design for use with double-acting or single-acting actuators.**
- **If these valves are to be used with single-acting cylinders, port A or B must be properly plugged.**
- **Valve handle can be moved to the desired position by lifting and rotating it in increments of 15°. For finer adjustments, the nut under the handle may be loosened to allow repositioning in any orientation. Torque nut to 150/200 in. lbs. See Figure 5.**

WARNING: To help avoid personal injury,

- **Do not install quick couplers in the oil return line between the pump reservoir and the remote mounted valve. Any condition that causes back pressure exceeding 1,500 PSI in a return line has the potential to damage the valve or cause a malfunction in the hydraulic system, possibly resulting in personal injury.**

This valve is designed with a standard ANSI, DO3 mounting and port configuration. Use only a manifold mounting pattern or subplate designed to this specification. All system components must be rated for 5,000 PSI operating pressures.

This valve is built without a check valve and so is intended **ONLY** for systems with one valve per hydraulic pressure source. For multiple valve applications, use this valve with check valve subplate #100974 (see Figure 6). This will prevent pressure fluctuations in one system from affecting the other. Ported subplates #100972 and #100973 or manifold #100975 can also be used as appropriate.

1. Check valve #100974 stacks under the #100971 valve and is attached with screws (included with check valve subplate) that extend through the valve and the check valve subplate into the DO3 mounting pattern. See Figures 6 & 7 and Table 1.

WARNING: To help avoid personal injury,

- **If these valves are used in a multiple valve application, a check valve must be installed at the valve Pressure and Tank ports. Failure to use check valves will allow the shifting of one valve in the system to cause the loss of clamping pressure in another. Pressure fluctuations in one system may also cause single-acting components to actuate unexpectedly, potentially causing personal injury.**

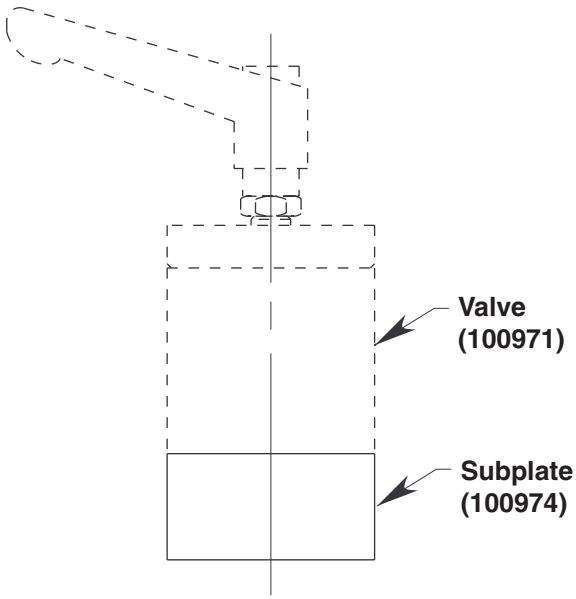


Figure 6

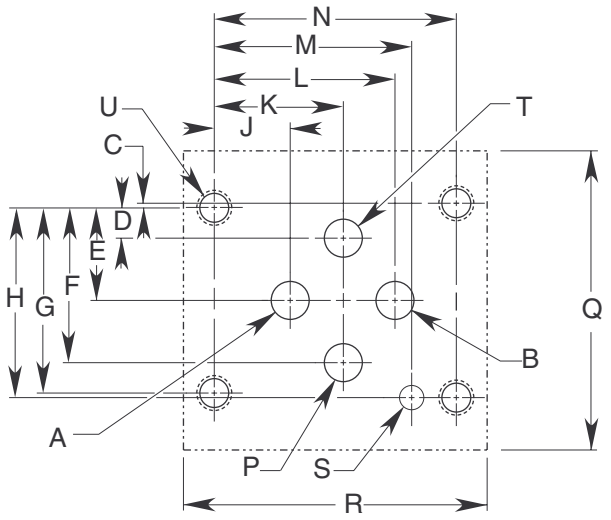


Figure 7

DO3 Mounting Pattern	Dimensions (In Inches)																		
	"A" Port Dia. Max	"B" Port Dia. Max	C	D	E	F	G	H	J	K	L	M	N	"P" Port Dia. Max.	Q Min.	R Min.	† S Dia.	"T" Port Dia. Max.	†† U Thread Size
	.250	.250	.030	.200	.610	1.020	1.220	1.250	.500	.850	1.190	1.300	1.594	.250	1.970	2.000	.160	.250	10-24 UNC

NOTE: † Location hole to be .160 deep min.
†† Minimum thread depth .200

TABLE 1

Refer to Figure 7:

4. **When used for controlling double-acting actuators**, the valve's Pressure and Tank ports are connected to the pump's Pressure and Tank ports, respectively, and ports A and B are connected to the actuator(s).

5. **When controlling single-acting systems,** the A or B port is connected to the actuator(s) and the other must be eliminated from the manifold hole pattern or plugged somewhere downstream.

VALVE OPERATION

1. Connect to a 5,000 PSI maximum capacity pressure source. These valves will now allow the alternate pressurization of ports A & B:

   - **When the handle is rotated CW (clockwise), pressure is routed to Port B. Port A is connected to Tank port.**

   - **When the handle is rotated CCW (counterclockwise), pressure from Port P is routed to Port A. Port B is connected to Tank port.**

2. There is no "center" position in these valves. They should always be rotated to their detented stops, either fully clockwise or fully counterclockwise. In any other position, internal bypassing of the valve may cause loss of clamping pressure or cause excessive cycling of the pressure source.