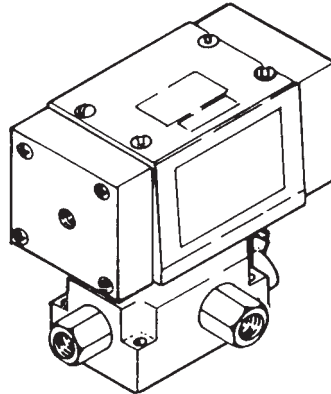


## 2 POSITION, 4-WAY – PUMP OR REMOTE MOUNTED – AIR OPERATED VALVE ASSEMBLY



### NOTE:

- Read and carefully follow the operating instructions before installation and use of this valve. Most problems with new equipment are caused by improper operation or installation.
- Inspect the valve upon arrival. The carrier, not the manufacturer, is responsible for any damage resulting from shipment.

## SAFETY PRECAUTIONS

**⚠ WARNING:** To help avoid personal injury,

### Hydraulic Hose

- Before operating the pump, tighten all hose connections using the proper tools.
- Do not overtighten the connections. Connections need only be tightened securely and leak-free. Overtightening may cause premature thread failure or high pressure fittings to split at pressures lower than their rated capacities.
- Hydraulic Line Disconnection:
  - Fully retract the cylinder and remove any load. Then slightly advance the cylinder and shut the pump motor off. Cover the connection with protective material and disconnect the connection slowly to release line pressure.
- Should a hydraulic hose ever burst or rupture, immediately shut off the pump. Never attempt to grasp a leaking hose under pressure with your hands. The force of the escaping hydraulic fluid could cause serious and permanent injury.
- Avoid any conditions which could damage the hose and impair the pump or valve's performance. Never allow the hose to kink, twist, curl or bend so tightly that the oil flow within the hose is blocked or reduced. This could damage the hose and possibly result in serious injury to persons working in the immediate vicinity.
- Do not subject the hose to any potential hazard (ex: fire, extreme heat or cold, heavy impact or sharp surfaces) which might rupture or weaken the hose.
- Do not use the hose to lift or move the equipment connected to it.
- Periodically inspect the hose for signs of wear. Never use a defective hose with any pressurized equipment.
- Always consult the manufacturer before painting the hose(s). Never paint the couplers!
- Hose material and coupler seals must be compatible with the hydraulic fluid used.
- Avoid contact with creosote-impregnated timber or fabrics.

### CONTROL VALVE

- Do not install quick couplers or allow restrictions in the hydraulic return line located between the hydraulic pump and a remote valve set-up.
- Do not allow the valve case pressure (as measured on the return line from valve to pump at the valve) to exceed 500 PSI. Refer to case pressure check as detailed in the valve set-up procedure in these instructions.
- Do not exceed either the pump, the control valve, or the cylinder's hydraulic pressure rating.

Note: Shaded areas reflect last revision(s) made to this form.

Sheet No. 1 of 2

Rev. 4 Date: 25 May 2012

## SPECIFICATIONS

These are air operated, 2 position, 4-way remote mounted valves for use with power units. They can be used with single- or double-acting cylinders.

The hydraulic hoses from the hydraulic pump are connected to the pressure and return ports located on the side or the back of the valve (see Figure 2).

The hydraulic cylinder(s) connect to valve cylinder ports "A" and "B".

### Position "A" (Air Port "A")

Hydraulic Pressure to "A" Port, "B" Port to tank.

### Position "B" (Air Port "B")

Hydraulic Pressure to "B" Port, "A" Port to tank.

**NOTE:** All ports open to tank during transition between valve positions.

### PUMP MOUNTED

MODELS 9594, 61086, 65286 & 65978

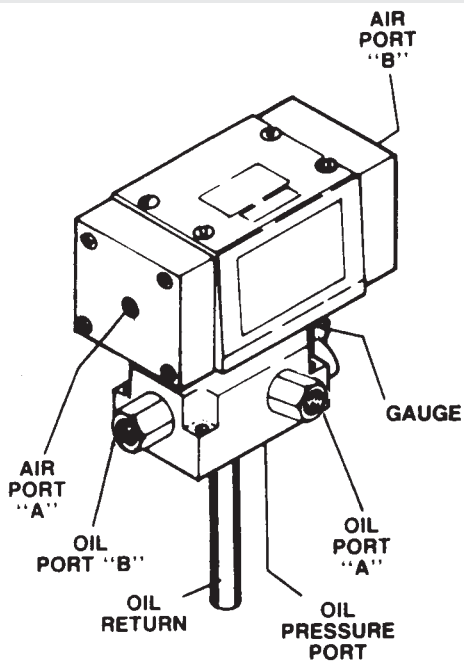


FIGURE 1

### REMOTE MOUNTED

MODEL 9595

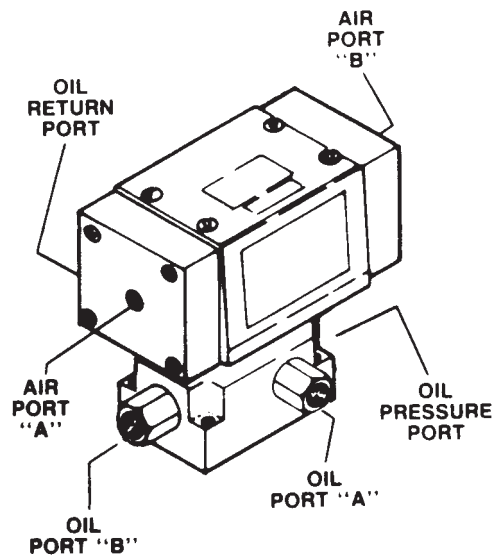
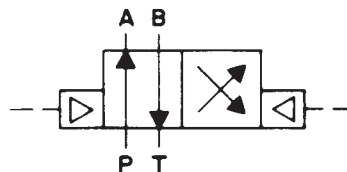


FIGURE 2



J.I.C. SYMBOL

Note: Shaded areas reflect last revision(s) made to this form.

## OPERATION

The 2-position 3-way/4-way valve (either pump, 9594, or remote, 9595,) is an air operated valve. If the pump is equipped with an internal outlet check, a hold position can be obtained by stopping the pump. The pump may be stopped by using a pressure switch or the proper type remote hand control. See the Power Team catalog for additional switch and control information and part numbers.

The valve is designed to be used with either spring return or double-acting cylinders. When the valve is used with spring return cylinders, the valve must have one port plugged (either "A" or "B"). Both ports must be used with double-acting rams.

When using more than one remote control valve in a system, each control valve should have a check valve such as Power Team 9580, in both the pressure and tank ports. See the Power Team catalog for additional check valve information and part numbers. The tank port check valve prevents the uncontrolled extension of a retracted single-acting cylinder when other valves are shifted. The pressure port check valve prevents the uncontrolled pressure loss and possible resulting retraction of an extended single-acting cylinder when other valves in the system are shifted.

### Single-Acting, Spring Return Cylinder

Either oil port "A" or "B" must be plugged on the valve. With port "B" plugged, the sequence of operation is as follows: When the solenoid is energized to position "A", oil port "A" becomes pressurized. When the solenoid is energized to position "B," oil port "A" becomes the return port.

### Multiple Single-Acting, Spring Return Cylinder

When operating multiple single-acting cylinders, one pressure line from one bank can be connected to oil port "A" and the other can be connected to oil port "B" on the valve. The sequence of operation is as follows: When energized to position "A", oil port "A" becomes pressurized and clamps the fixture connected to oil port "A". At the same time, oil port "B" becomes a return port for the cylinder connected to oil port "B" and retracts it. The opposite happens when solenoid "B" is energized.

### Double-Acting Cylinders

When operating double-acting cylinders, oil port "A" can be connected to either the advance or return port of the cylinder and oil port "B" will be connected to the remaining port. Sequence of operation is as follows: When solenoid is energized to position A, oil port "A" becomes pressurized and extends the cylinder and oil port "B" becomes the return port. The opposite happens when solenoid B is energized.

The application in Figure 3 represents a typical set-up using a control valve and multiple double-acting cylinders (one double-acting cylinder may also be used).

The application in Figure 4 represents a typical set-up using a control valve for each of the double-acting cylinders. Check valves should be used with each control valve in this system.

If a different set-up or cylinder is being considered, call Power Team Technical Services to avoid any potential problems.

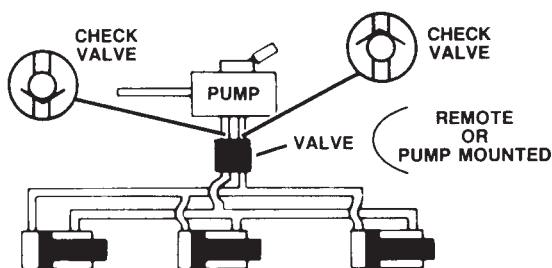


FIGURE 3

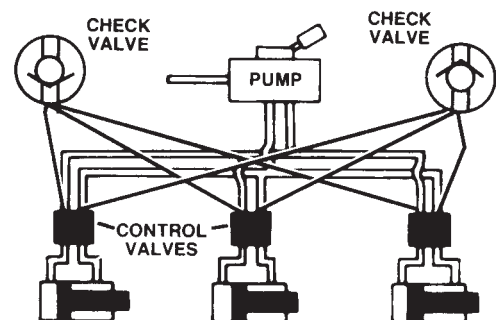


FIGURE 4

## SET-UP

### Pump Mounted

1. With the drain tube attached to the valve, mount the valve to the pump reservoir.

**IMPORTANT: Seal all external pipe connections with a high-quality, non-hardening thread sealant, such as Power Team HTS6. PTFE tape can be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Any loose pieces of tape could travel through the system and obstruct the flow of oil or cause jamming of precision-fit parts.**


2. Remove the port plugs from the required connecting ports.
3. Attach all hoses (air and hydraulic) required to complete the set-up. Refer to Figure 1 for valve port information.
4. Cycle the system several times to bleed the set-up.

### Remote Mounted


1. Remove the port plugs from the required connecting ports pump, valve and cylinders.

**IMPORTANT: Seal all external pipe connections with a high-quality, non-hardening thread sealant, such as Power Team HTS6. PTFE tape can be used to seal hydraulic connections if only one layer of tape is used. Apply the tape carefully, two threads back, to prevent it from being pinched by the coupler and broken off inside the system. Any loose pieces of tape could travel through the system and obstruct the flow of oil or cause jamming of precision-fit parts.**

2. Install a temporary set-up of a hydraulic gauge mounted to a tee adapter, directly into the oil return port of the valve. See Figure 2.

-  **WARNING: Do not install quick couplers in the oil return line between the pump and valve.**
3. Attach all hoses (air and hydraulic) required to complete the set-up. Refer to Figure 2 for valve port information.
  4. Recheck hydraulic and air application and connections. Fully advance and retract the cylinder set up several times. Observe the oil pressure gauge at the return valve port during retraction. If the oil pressure exceeds 500 PSI at the return port STOP and -
    - Switch to a larger diameter return line.
    - Remove any quick couplers from the return line.
    - Eliminate as many bends and restrictions in the return line as possible.
  5. If the return line pressure is below 500 PSI max., remove the temporary test gauge and adapter and reconnect the line to the return valve port.

## MAINTENANCE

-  **WARNING: Disconnect all electrical power and release all hydraulic pressure before starting any maintenance procedure.**

Regularly oil the cam and cam plunger located inside the valve. Remove the outside valve cover to gain access to the cam and plunger.