VALVE SELECTION

Choosing the Right Valve

Step 1 - Select the hydraulic cylinder that best suits the application. See pages 6-8.

Step 2 - Select the series of hydraulic pump with adequate oil output and reservoir capacity to power cylinder. See pages 42-45. Check speed chart on page 6.

Step 3 - Select pump within series with the valve option that is best matches cylinder, pump and application. See pages 122-127.

CONSIDERATIONS:

- Will the valve be used with single- or double-acting cylinders?
- Will the valve be mounted on the pump, away from the pump or directly into the hydraulic lines?
- Will the valve be manually-operated or is remote control preferred?
- Is independent control of multiple cylinders, or hydraulics tools preferred?
- What directional control and pressure control valve functions are needed for the application?

Basic valve types include manually operated, air or solenoid operated and pilot operated. Special application valves for pre-stressing and post-tensioning are also offered. Consult selection chart on page 50 for listings of all Power Team valves.

DIRECTIONAL CONTROL VALVES

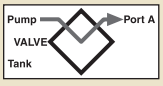
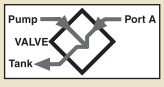
2-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS):

POSITION 1	CENTER POSITION	POSITION 2
 Oil goes from pump to cylinder; pressure is held from valve to cylinder when pump is shut off.	None	 Oil goes from pump to cylinder; pressure is released to reservoir when motor is turned off.

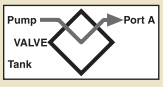
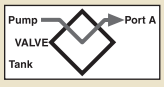
3-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 Oil goes from pump to cylinder and holds when pump is shut off. Return line to reservoir is blocked.	None	 Cylinder retracts, oil returns to reservoir.

3-WAY, 3-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 Oil goes from pump to cylinder and holds when pump is shut off. Return line to reservoir is blocked.	 Cylinder pressure is held; pump can remain running and oil returns to reservoir.	 All oil is open to reservoir through return line.

IN-LINE HYDRAULIC VALVES

Load Lowering Valve – Provides precision metering for controlled return of the cylinder piston.

Sequence Valve – Used when a cylinder in a multiple cylinder application must advance before any other.

Pressure Reducing Valve – Permits independent pressure control to two or more clamping systems operated by a single power source.

Shut-off Valve – For fine metering of hydraulic oil. Several may be used to control multiple single-acting cylinders.

Check Valve – Permits flow of hydraulic oil in one direction only.

Pressure Relief Valve – Used at remote locations in a hydraulic circuit where maximum pressure requirements are less than the setting of the basic overload valve in the pump. Protects a hydraulic system against over pressurization.

Metering Valve – Restricts surges by restricting flow to a certain level; when flow subsides, valve reopens automatically. For systems using large cylinders or extended lengths of hose.

Pressure Regulator Valve – Permits external adjustment of operating pressures at various values below the internal relief valve setting of the pump.

DIRECTIONAL CONTROL VALVES

4-WAY, 2-POSITION

(FOR CONTROL OF SINGLE- OR DOUBLE-ACTING CYLINDERS):

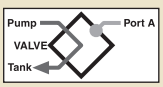
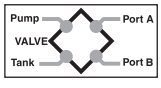
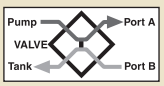
POSITION 1	CENTER POSITION	POSITION 2
 Oil goes to the "extend" side of the cylinder. The oil from the "retract" side returns to reservoir. Cylinder holds with pump shut off.	None	 Oil goes to the "retract" side of the cylinder, oil from the "extend" side returns to reservoir.

4-WAY, 3-POSITION

(FOR CONTROL OF DOUBLE-ACTING CYLINDERS)

POSITION 1	CENTER POSITION	POSITION 2
 Oil goes to the "extend" side of the cylinder, oil from the "retract" side returns to reservoir. Cylinder holds with pump shut off.	 Holds pressure even if pump is running. Oil from pump goes through valve, back to reservoir.	 Oil goes to "retract" side of cylinder. Oil from "extend" side returns to the reservoir.

TYPICAL CENTERS

TANDEM CENTER	CLOSED CENTER	OPEN CENTER
 Cylinder ports are blocked, oil from pump goes to reservoir. Used when pump remains running. Example: gasoline-driven pumps.	 Generally used when running multiple valves in series from one pump.	 Open Center Used when holding is not a requirement, as when running tow separate hydraulic tools such as cutters and crimpers.