



## SELECTING THE RIGHT VALVE:

**Step 1:** What is the tool requirement for valve control - single or double-acting?

**Step 2:** Determine how you intend to plumb the valve in hydraulic circuit - mounted or remote?

**Step 3:** How will you operate it - manual or remote? What type of directional control is needed?

### VALVE SIZING 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 hydraulic tools preferred?
- What directional control and pressure control valve functions are needed for the application?

Note: 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 valve selection chart on pages 115-116 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
 <p>Oil goes from pump to cylinder. Pressure is held from valve to cylinder when pump is shut-off.</p>	None	 <p>Oil goes from cylinder to pump. Pressure is released to reservoir when motor is turned off.</p>


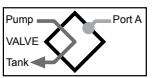

### 3-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

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

### 3-WAY, 3-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

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



### 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.

**CAUTION:** To prevent sudden, uncontrolled descent of a load as it is being lowered, use a 9596 Load-Lowering Valve or 9720 Counter Balance Valve in conjunction with the directional valve used in your application.

## DIRECTIONAL CONTROL VALVES

### 4-WAY, 2-POSITION

(FOR CONTROL OF SINGLE-ACTING CYLINDERS)

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

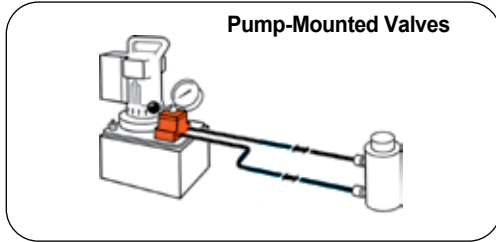
### 4-WAY, 3-POSITION

(FOR CONTROL OF DOUBLE-ACTING CYLINDERS)

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

## TYPICAL CENTERS

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

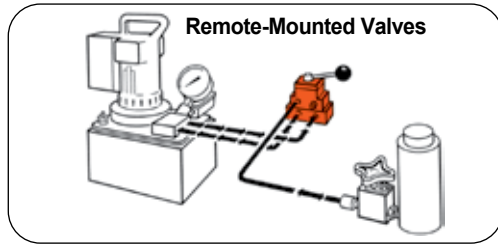


Order No.	Page No.	Cylinder* Applications	Operation	Valve Type	Volt	Advance / Return	Advance / Hold Return	**Posi-Check® Feature
9500	120	SA / DA	Manual	4-Way, 3-Pos. Tandem Center	—	No	Yes	No
9501	120	SA / DA	Manual	4-Way, 3-Pos. Closed Center	—	No	Yes	Yes
9502	119	SA	Manual	3-Way, 3-Pos. Closed Center	—	No	Yes	Yes
9504	118	SA / DA	Manual	3/4-Way, 2-Pos.	—	Yes	Yes	No
9506	120	DA	Manual	4-Way, 3-Pos. Tandem Center	—	No	Yes	Yes
9507	120	DA	Manual	4-Way, 3-Pos. Closed Center	—	No	Yes	Yes
9511	120	SA / DA	Manual	4-Way, 3-Pos. Open Center	—	Yes	Yes	No
9512	123	DA	Solenoid	4-Way, 3-Pos. Tandem Center	24	No	Yes	Yes
9513	123	DA	Solenoid	4-Way, 3-Pos. Tandem Center	115	No	Yes	Yes
9516	123	DA	Solenoid	4-Way, 3-Pos. Tandem Center	12	No	Yes	Yes
9517	118	SA	Manual	2-Way, 2-Pos.	—	No	Yes	No
9519	123	DA	Solenoid	4-Way, 3-Pos. Tandem Center	230	No	Yes	Yes
9520	119	SA	Manual	3-Way, 3-Pos. Tandem Center	—	No	Yes	Yes
9522	123	DA	Solenoid	4-Way, 3-Pos. Open Center	230	Yes	No	No
9523	123	SA	Pilot-Operated Solenoid	3-Way, 2-Pos.	230	Yes	No	No
9552	122	SA / DA	Solenoid	3/4-Way, 2-Pos.	230	Yes	No	No
9553	123	SA	Pilot-Operated Solenoid	3-Way, 2-Pos.	24	Yes	No	No
9569	122	SA	Solenoid	3-Way, 2-Pos.	24	No	Yes	No
9570	122	S.A.	Solenoid	3-Way, 2-Pos.	230	No	Yes	No
9572	122	SA / DA	Solenoid	3/4-Way, 2-Pos.	24	Yes	No	No
9579	122	SA	Solenoid	3-Way, 2-Pos.	115	No	Yes	No
9582	117	SA	Manual	3-Way, 2-Pos.	—	No	Yes	No
9584	117	SA	Manual	3-Way, 2-Pos.	—	No	Yes	No
9589	123	SA	Pilot-Operated Solenoid	3-Way, 2-Pos.	115	Yes	No	No
9590	123	DA	Solenoid	4-Way, 3-Pos. Open Center	115	Yes	No	No
9592	122	SA / DA	Solenoid	3/4-Way, 2-Pos.	115	Yes	No	No
9594	122	SA / DA	Air	3/4-Way, 2-Pos.	—	No	Yes	Yes
9599	121	SA	Pilot-Operated Solenoid	3-Way, 3-Pos. Tandem Center	24	No	Yes	Yes
9605	121	SA	Pilot-Operated Solenoid	3-Way, 3-Pos. Tandem Center	115	No	Yes	Yes
9609	121	SA	Manual	3-Way, 3-Pos. Tandem Center	—	No	Yes	No
9610	117	SA	Auto Pilot-Operated	3-Way, 2-Pos.	—	Yes	No	No
9610A	117	SA	Manual	2/3-Way, 2-Pos.	—	No	Yes	No
9615	123	DA	Solenoid	4-Way, 3 Pos. Open Center	24	Yes	No	No
9628	124	SA / DA	Manual	Post-Tensioning	—	Special	No	No
9632	124	SA / DA	Manual	Post-Tensioning	—	Special	No	No

Note:

\* "SA" represents single-acting cylinders and "DA" represents double-acting cylinders.

\*\* The Posi-Check® feature guards against pressure loss when shifting from "advance" to "hold" position.

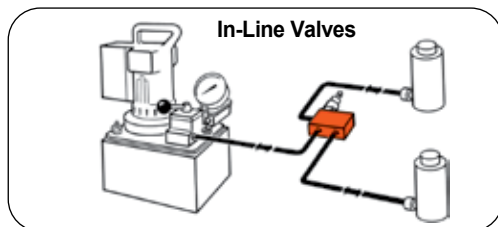


Order No.	Page No.	Cylinder Applications*	Operation	Valve Type	Volt	Advance / Return	Advance / Hold Return	**Posi-Check® Feature
9508	128	SA / DA	Manual	4-Way, 3-Pos. Closed Center	—	No	Yes	Yes
9509	128	SA / DA	Manual	4-Way, 3-Pos. Tandem Center	—	No	Yes	Yes
9514	128	DA	Solenoid	4-Way, 3-Pos. Tandem Center	115	No	Yes	Yes
9524	127	SA / DA	Solenoid	3/4-Way, 2-Pos.	230	No	Yes	No
9525	128	DA	Solenoid	4-Way, 3-Pos. Tandem Center	230	No	Yes	Yes
9526	128	SA	Solenoid	3-Way, 2-Pos.	230	No	Yes	No
9554	127	SA / DA	Solenoid	3/4-Way, 2-Pos.	24	No	Yes	No
9555	128	DA	Solenoid	4-Way, 3-Pos. Tandem Center	24	No	Yes	Yes
9556	128	SA	Solenoid	3-Way, 2-Pos.	24	No	Yes	No
9559	128	SA	Solenoid	3-Way, 2-Pos.	115	No	Yes	No
9593	127	SA / DA	Solenoid	3/4-Way, 2-Pos.	115	No	Yes	No
9595	127	SA / DA	Air	3/4-Way, 2-Pos.	—	No	Yes	No

Note:

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Order No.	Page No.	Cylinder Applications*	Operation	Valve Type
9575	131	SA	Manual	Shut-Off Valve
9580	131	SA	Automatic	One-Way Check Valve
9581	131	SA / DA	Automatic	Pilot-Operated Check Valve
9596	129	SA	Manual	Load-Lowering Valve
9597	129	SA / DA	Automatic	Sequence Valve
9608	129	SA / DA	Automatic	Pressure Reducing Valve
9623	131	SA / DA	Automatic	Pressure Relief Valve
9631	130	SA / DA	Automatic	Metering Valve
9633	130	SA / DA	Automatic	Pressure Regulator Valve
9720	129	SA / DA	Automatic	Counter Balance Valve
9721	129	SA / DA	Automatic	Counter Balance Valve
RV21278	130	—	Automatic	Relief Valve

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