

FULL SYSTEM CONTROL

Hydraulic valves are devices that control different aspects of your hydraulic system's operation. The most common types of valves are **directional control valves**, **flow control valves**, **check valves** and **pressure relief valves**. Once you determine your system requirements, you must select valves that will give your system the operation you desire. Valves can be **pump mounted** or **in-line**. Note: All Simplex pumps come with directional control valves. When selecting a pump, be sure to choose a pump with the appropriate directional control valve. Flow control, check & adjustable pressure relief valves are mounted in line and should be specified as required to obtain the desired system operation.

DIRECTIONAL CONTROL VALVES

Simplex offers a wide variety of directional control valves. Use the valve selection guide to help determine what valve is best suited for your application.

Definition of Terms:

■ Manual Valve

Valves that are manually actuated by shifting a hand lever on the valve.

■ Solenoid Valve

Valves that are actuated by electric solenoids that can be controlled by a remote pendant switch.

■ Pump Mounted Valve

Valves that are mounted directly to the pump cover plate.

■ In-Line Valves

Valves that are installed away from the pump, "in-line" in the hydraulic system.

■ 2 or 3 Way Valves

Valves that are used to operate single-acting cylinders or tools.

■ 4 Way Valves

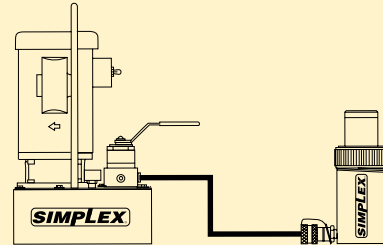
Valves that are used to operate double-acting cylinders or tools.

■ Locking Valves

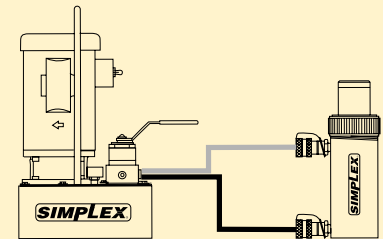
Valves that are used when pressure drop within the system cannot be tolerated while shifting.

DIRECTIONAL CONTROL VALVES SELECTION GUIDE

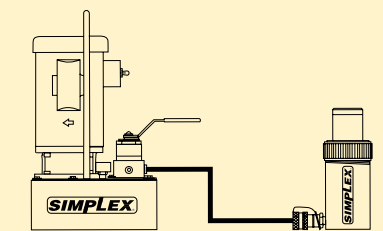
■ 2 or 3 way for single-acting cylinders or tools.



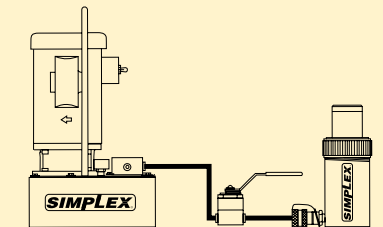
■ 4 Way for double-acting cylinders or tools.



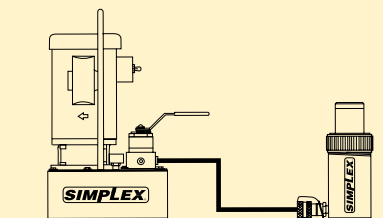
■ Pump Mounted.



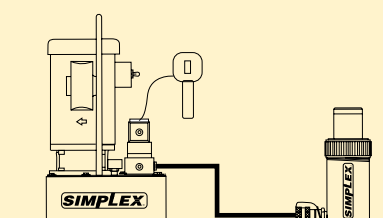
■ In-Line Mounted.

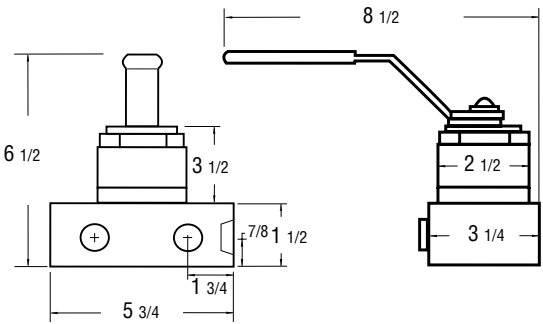
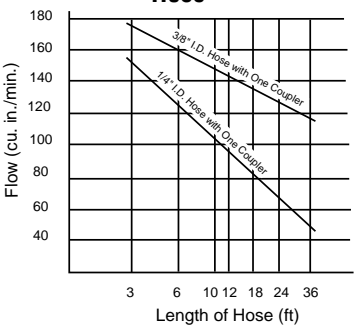
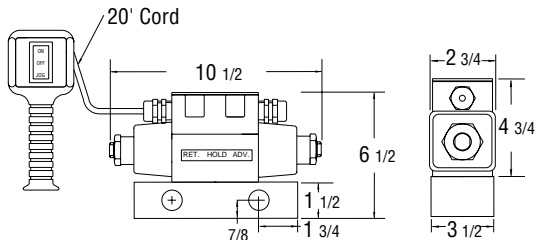
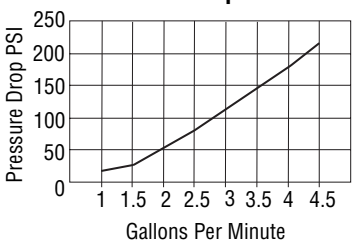
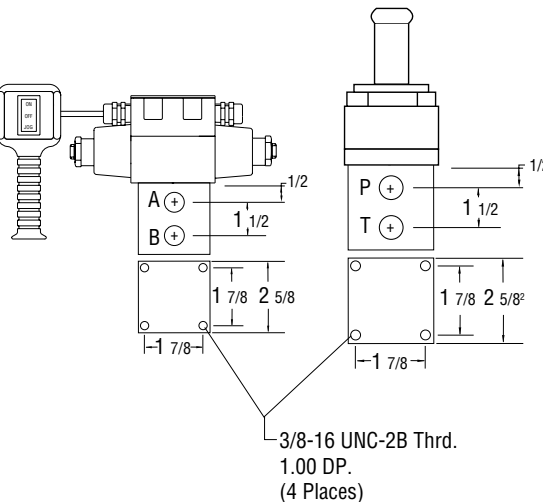
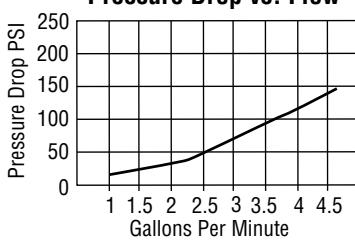
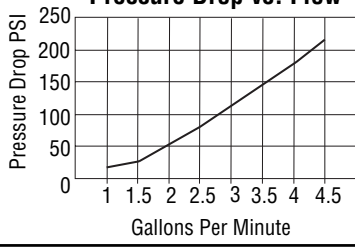


■ Manual Operated.


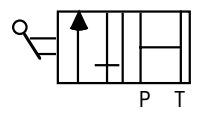
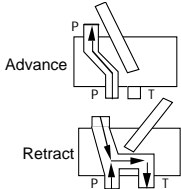

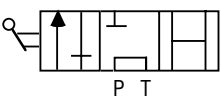
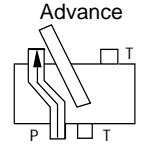

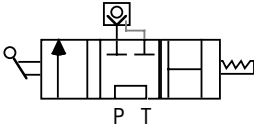
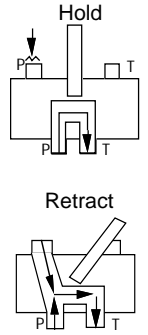

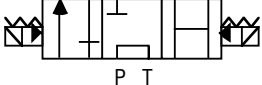
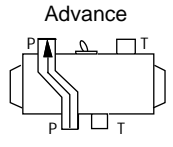

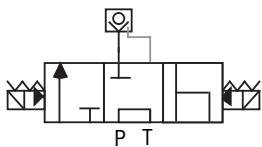
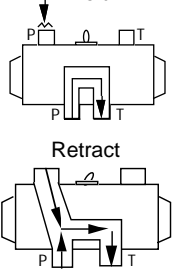

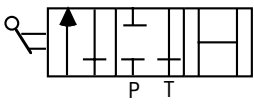
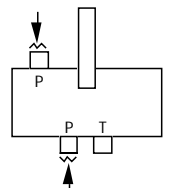

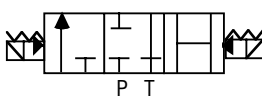
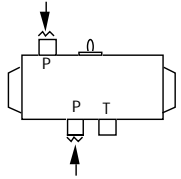


■ Solenoid Operated.




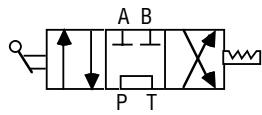
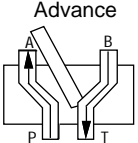
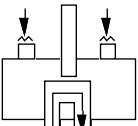
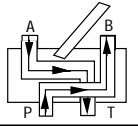

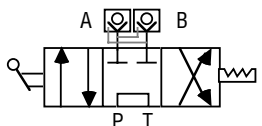
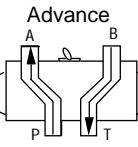
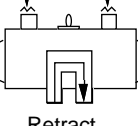
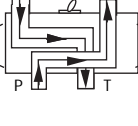

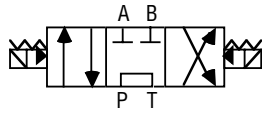
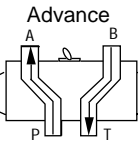
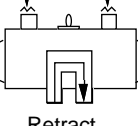
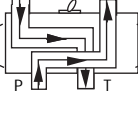

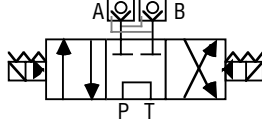
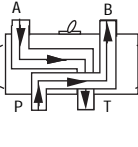
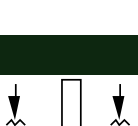
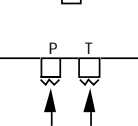

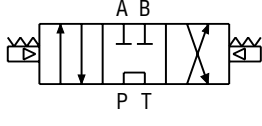
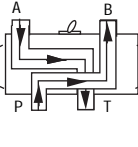
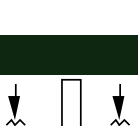
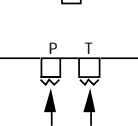

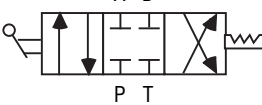
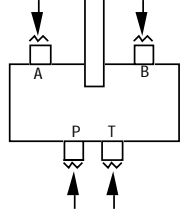

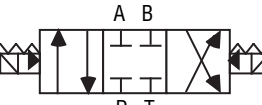
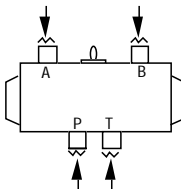
	Description	Oil Flow Chart
<p style="text-align: center;">VP3</p> 	<p>The Simplex patented 3 position/3-way, "Suc-O-Matic™" Valve draws hydraulic oil out of any single-acting cylinder. In the retract position, the valve generates enough suction to fully retract any single-acting load return cylinder automatically.</p> <ul style="list-style-type: none"> ■ Fully Retract load return cylinders. ■ Retracts spring return cylinders up to 33% faster. ■ Full retraction regardless of weak springs or mounting. 	<p style="text-align: center;">Retraction Flow vs. Length of Hose</p> 
<p style="text-align: center;">VPS3</p> 	<p>The Simplex patented Solenoid Valve is available in a 3-way Suc-O-Matic™ version for single-acting cylinders and a 4-way version for double-acting cylinders.</p> <ul style="list-style-type: none"> ■ Suc-O-Matic valve capability. ■ Long life - Patented construction. ■ Largest porting (lowest back pressure) available. ■ Optional coils: 230v AC, 24v AC. ■ Includes manual override. ■ Direct bolt interchange with Simplex manual valves. ■ Designed to handle surge flow conditions. ■ Comes equipped with 20 foot cord and pendant switch. 	<p style="text-align: center;">Pressure Drop vs. Flow</p> 
<p style="text-align: center;">REMOTE VALVES</p> 	<p>Both Simplex manual & solenoid valves are available for remote or inline application. Remote valves are perfect for multiple operating systems, or special fixturing and mounting applications. They are available with tandem or closed centers.</p> <ul style="list-style-type: none"> ■ Available in manual or solenoid. ■ Includes mounting holes. ■ Available in closed center or tandem. ■ Ideal for independent control of two or more cylinders. <p><i>*Remote versions do not include retract feature.</i></p>	<p style="text-align: center;">Remote Manual Valve Pressure Drop vs. Flow</p>  <p style="text-align: center;">Remote Solenoid Valve Pressure Drop vs. Flow</p> 

For Single-Acting Cylinders & Tools


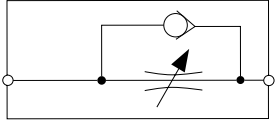

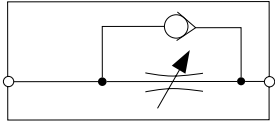

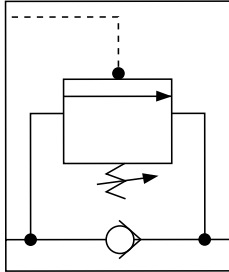

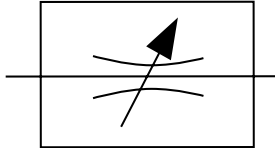

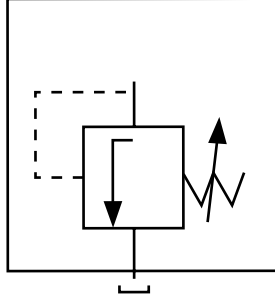

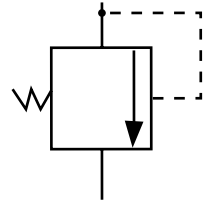
PUMP MOUNTED VALVES		Hydraulic Schematic	Functional Flow Schematic
	<ul style="list-style-type: none"> VP2 Pump mounted 2 position 2 way valve is ideal for pressing, punching, crimping, staking or pulling applications when load holding is not needed. 		 <p>Advance</p> <p>Retract</p>
	<ul style="list-style-type: none"> VP3 Pump mounted 3 position 3 way valve is commonly used with single-acting cylinders for lifting applications or production work. The center position holds the load with the pump motor on or off. 		 <p>Advance</p> <p>Hold</p>
	<ul style="list-style-type: none"> VPL3 Pump mounted 3 position 3 way valve is the same as VP3, but with a built in pilot check valve. The VPL3 provides positive load holding in the center position, and will not allow pressure drop while shifting. Recommended for prestressing, post tensioning and precision holding applications. 		 <p>Retract</p>
	<ul style="list-style-type: none"> VPS3 Pump mounted electric solenoid actuated 3 position 3 way valve with remote pendant switch allows remote operation of system directional control. 		 <p>Advance</p> <p>Hold</p>
	<ul style="list-style-type: none"> VPSL3 Pump mounted electric solenoid actuated 3 position 3 way valve with remote pendant switch is the same as the VPS3, but with a built in pilot operated check valve. The VPSL3 provides positive load holding in the center position, and will not allow pressure drop while shifting. 		 <p>Retract</p>
REMOTE MOUNTED VALVES			
	<ul style="list-style-type: none"> VR3 & VR3CC VR3 is the same as VP3, except for inline mounting. VR3CC is the same valve except all ports are closed in the center position. <p>VR3 hydraulic schematic same as VP3.</p>	<p>VR3CC</p> 	
	<ul style="list-style-type: none"> VRS3 & VRS3CC VRS3 is the same as VPS3 except for inline mounting. VRS3CC is the same valve except all ports are closed in the center position. <p>VRS3 hydraulic schematic same as VPS3.</p>	<p>VRS3CC</p> 	

All remote valves have threaded mounting holes (see page 64).

For Double-Acting Cylinders & Tools

PUMP MOUNTED VALVES		Hydraulic Schematic	Functional Flow Schematic
	<ul style="list-style-type: none"> VP4 Pump mounted 3 position 4 way valve is used with double-acting cylinders and tools. This valve controls direction of oil for advancing, holding & retracting. The center position holds the load with the pump motor running or off. 		<p>Advance</p>  <p>Hold</p>  <p>Retract</p> 
	<ul style="list-style-type: none"> VPL4 Pump mounted 3 position 4 way valve is the same as VP4, but with a built in pilot check valve. The VPL4 provides positive load holding in the center position, and will not allow pressure drop while shifting. Recommended for prestressing and precision holding applications. 		<p>Advance</p>  <p>Hold</p>  <p>Retract</p> 
	<ul style="list-style-type: none"> VPS4 Pump mounted electric solenoid actuated 3 position 4 way valve with remote pendant switch. Same as VP4, but allows remote operation of directional control. 		<p>Advance</p>  <p>Hold</p>  <p>Retract</p> 
	<ul style="list-style-type: none"> VPSL4 Pump mounted electric solenoid actuated 3 position 4 way valve with remote pendant switch functions the same as VPS4, but with a built in pilot operated check valve. The VPSL4 provides positive load holding in the center position, and will not allow pressure drop while shifting. 		<p>Advance</p>  <p>Hold</p>  <p>Retract</p> 
	<ul style="list-style-type: none"> VPA4 Pump mounted air solenoid actuated 3 position 4 way valve with remote pendant switch. Same as VP4, but allows remote operation of directional control. 		<p>Advance</p>  <p>Hold</p>  <p>Retract</p> 
REMOTE MOUNTED VALVES			
	<ul style="list-style-type: none"> VR4 & VR4CC VR4 is the same as VP4, except for inline mounting. VR4CC is the same valve except all ports are closed in the center position. <i>VR4 hydraulic schematic same as VP4.</i> 	<p>VR4CC</p> 	
	<ul style="list-style-type: none"> VRS4 & VRS4CC VRS4 is the same as VPS4 except for inline mounting. VRS4CC is the same valve except all ports are closed in the center position. <i>VRS4 hydraulic schematic same as VPS4.</i> 	<p>VRS4CC</p> 	

All remote valves have threaded mounting holes (see page 64).

	Description	Hydraulic Schematic
	<p>■ V10E Check Valve automatically locks load in raised position as plunger is being extended. Protects against dropping the load due to pressure loss. Required for multiple cylinder lifting from one source. (Includes Hex Nipple).</p>	
	<p>■ V10EC Check Valve is a V10E with polarized high flow couplers for direct, rapid mounting to cylinder couplers.</p>	
	<p>■ V2 Over Center Check Valve can be mounted at the cylinder to hold the load in the event of system failure. Unlike other piloted check valves, the V2 provides controlled retraction without "chatter". Note: When used in multiple cylinder systems, contact Simplex for minimum pump requirements.</p>	
	<p>■ V5B Shut-Off Valve is a needle-type valve for sustained load-holding and flow control. Use for positive shut-off or throttling.</p>	
	<p>■ V1 In-line Adjustable Relief Valve is for in-line mounting into hydraulic systems. Accurately controls maximum pressure from 800 to 10,000 psi. Turn handle until gauge indicates desired working pressure - tighten lock nut. Valve automatically opens and bypasses excess flow from system when preset pressure is reached.</p>	
	<p>■ V3 Safety Relief Valve threads into top port of double-acting cylinders, or inline on hydraulic systems, for protection against over pressurizing. Pressure rating is 10,500 psi.</p>	

Note: All Valves Have 3/8" NPTF Ports.