



# HYDRAULIC VALVES (DIRECTIONAL CONTROL)

**SELECTOR VALVE  
VS SERIES**  
Specification Sheet



The CROSS series VS hydraulic selector valves are manually operated, spool type, 3-way, 2-position valves featuring cast-in metering notches for smooth operation. They provide an economical method of diverting flow to either of two hydraulic circuits and are available with a variety of actuators.

## GENERAL SPECIFICATIONS

Maximum working pressure.....	* 2500 psi (172 bar)
Maximum shock and surge pressure.....	3500 psi (242 bar)
Maximum flow capacity.....	VS2: 20 gpm (76 l/m) ... VS4: 40 gpm (151 l/m)
Mounting.....	2-bolt, any position
Shipping weight .....	VS2: 2.7 lbs. (1.2 Kg). VS4: 6 lbs. (2.7 Kg)

\* 3000 psi with SAE straight thread ports

## MATERIAL SPECIFICATIONS

Body .....	High tensile strength cast-iron
Spool .....	Ground, plated and polished steel
Seals .....	Buna N

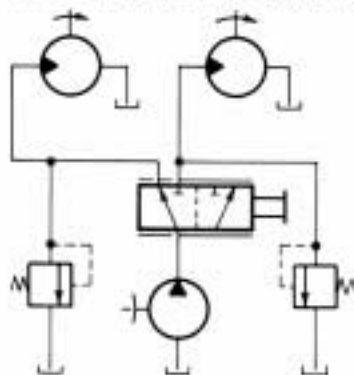
## STANDARD FEATURES

- 1/2" NPTF ports on VS2
- Knob actuator (at port "B")
- 3/4" NPTF ports on VS4
- Front inlet port position

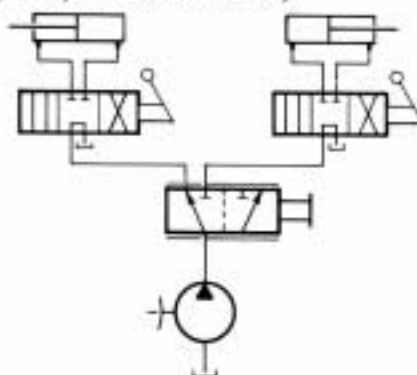
## OPTIONAL FEATURES AVAILABLE

- Actuators include spring return, detents, handles, and solenoid operators: (must be externally piloted and drained - see FM VSOS)

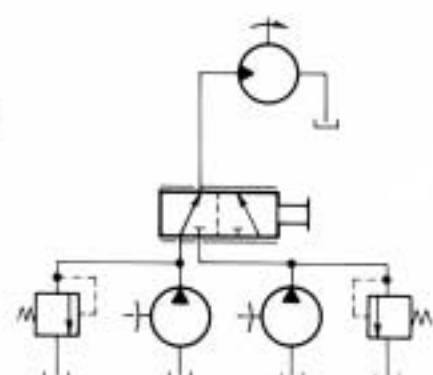
## TYPICAL APPLICATIONS (Simplified circuits)



**CIRCUIT SELECTOR**  
Allows either motor to be driven unidirectionally.



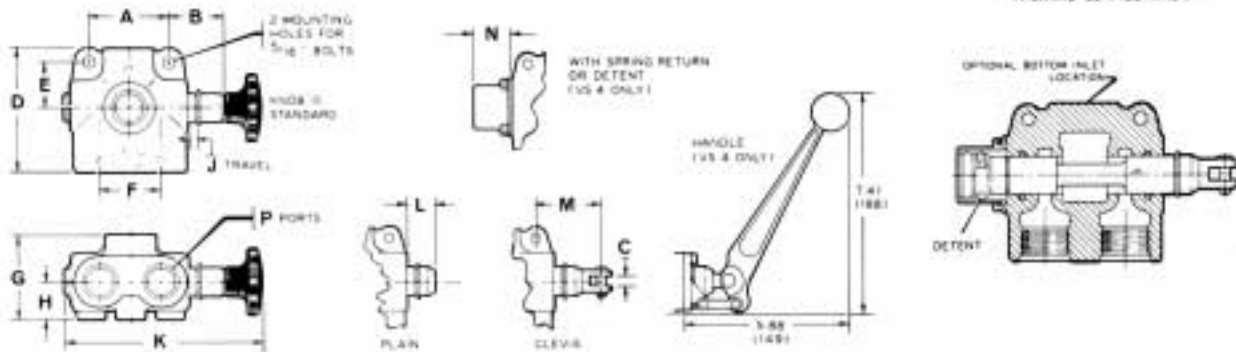
**CIRCUIT SELECTOR**  
Allows either cylinder to be operated independently from single pump.



**INPUT SELECTOR**  
Allows motor to be driven from either of two input sources.

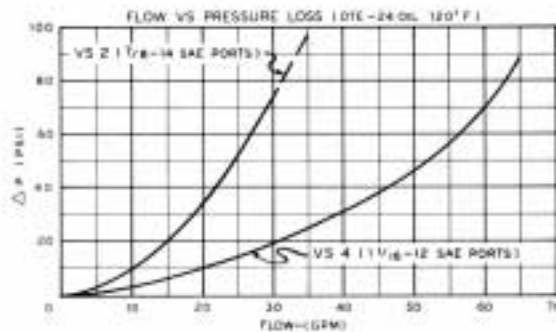


**DIMENSIONAL DATA: in inches and (millimeters)**



MODEL		A	B	C	D	E	F	G	H	J	K	L	M	N	P
VS2	in.	2.12	1.53	.34	3.25	1.19	1.62	2.25	1.00	.31	5.33	1.03	2.16	1.18	7/16 - 16
	mm	54	39	8.6	82	30	41	57	25.4	7.9	135	26	55	30	SAE #8
VS4	in.	3.00	1.56	.34	4.12	1.50	2.12	2.62	1.12	.38	6.12	1.00	2.19	1.18	1 1/16 - 12
	mm	76	40	8.6	105	38	54	66	28	9.6	155	25.4	56	30	SAE #12

**PERFORMANCE DATA: (Typical)**



**ORDERING INFORMATION:**

SERIES	MODEL	ACTUATOR LOCATION	ACTUATOR OPTIONS	END CAP OPTIONS	INLET PORT (C) LOCATION	PORT SIZE (ALL)	
						VS2	VS4
VS	2 20 gpm	A port "A" side	K Knob	L Plain	F Front position B Bottom position A Both pos. mach.	1 1/8 NPTF	6 1/4 NPTF
	4 40 gpm	B port "B" side	C Clevis L Plain			2 1/2 NPTF	7 1 NPTF
			<b>VS4 only</b>	<b>VS4 only</b>		3 SAE #8 (9/16-18)	8 SAE #12 (1 1/16-12)
			A - Handle U - Hydraulic pilot G - Other, specify	B - Spring return D - 2 pos. detent U - Hydraulic pilot G - Other, specify		4 SAE #8 (1/4-16)	9 SAE #16 (1 1/16-12)
						5 SAE #8 (7/8-14)	



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Example: Model VS4BKLF8 is a standard 40 gpm valve with a knob actuator located at the "B" port side with SAE #12 (1 1/16-12) o-ring ports.



# HYDRAULIC VALVES (DIRECTIONAL CONTROL)

## SELECTOR VALVES SD SERIES Specification Sheet



The CROSS series SD hydraulic selector valves are spool type, manually operated, 6-way, 2-position valves featuring cast-in metering notches for smooth operation. They provide an economical method of diverting flow to two separate hydraulic circuits or providing various types of multiple system operations in combination with other valves.

### GENERAL SPECIFICATIONS

Maximum working pressure.....	SD4 valves shipped after 12/98 with casting #4Z0019 Rev.8 are ductile & rated to 5000 psi for SAE#12 ports & smaller, 4500 psi for SAE #16 ports. SD4's with NPTF PORTS are rated to 2500 PSI MAX.	2500 psi (172 bar)
Maximum shock and surge.....		3500 psi (242 bar)
Maximum flow capacity.....		40 gpm (151 l/m)
Mounting.....		2-bolt, any position
Shipping weight.....		9 lbs. (4 Kg)

### MATERIAL SPECIFICATIONS

Body.....	High tensile strength cast iron
Spool.....	Ground, plated and polished steel
Seals.....	Buna N

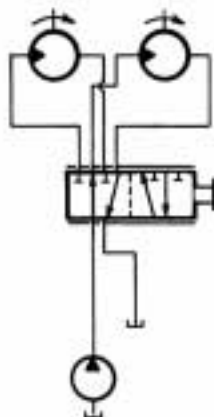
### STANDARD FEATURES

- 1" NPTF ports
- Standard selector spool
- Handle assembly (at port "C")

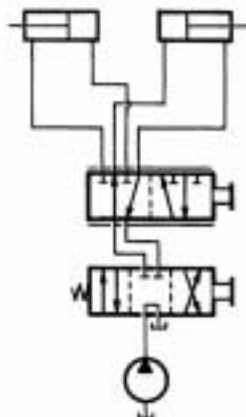
### OPTIONAL FEATURES AVAILABLE

- Various port sizes and type
- Series/parallel spool
- Actuators include spring return, detents, handles, and solenoid operators: (must be externally piloted and drained - see FM VSOS)

### TYPICAL APPLICATIONS (Simplified circuits)



**CIRCUIT SELECTOR**  
Allows either motor to be driven uni-directionally.



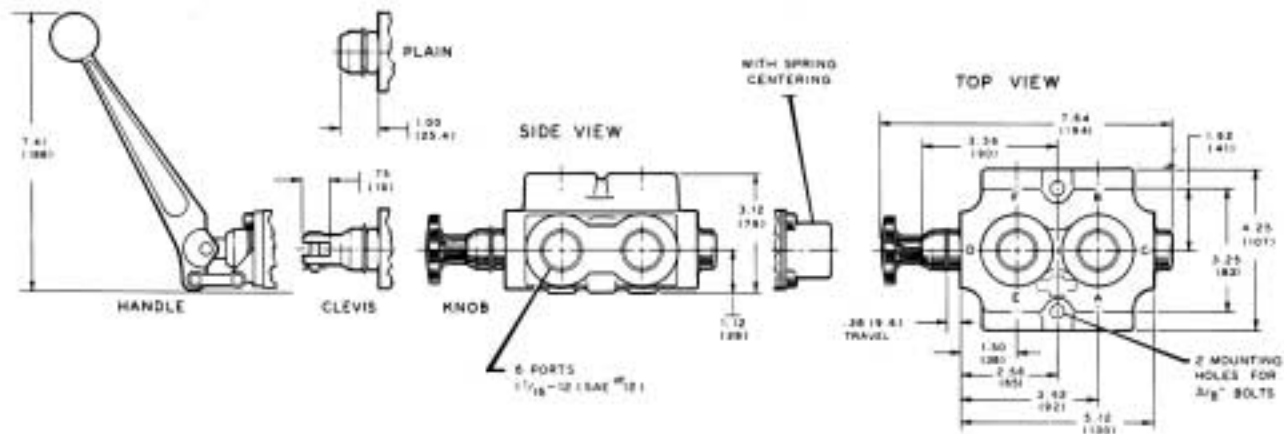
**CIRCUIT SELECTOR**  
Allows either cylinder to be operated by one directional control valve.



**SERIES/PARALLEL**  
Allows selection of either series or parallel motor operation.

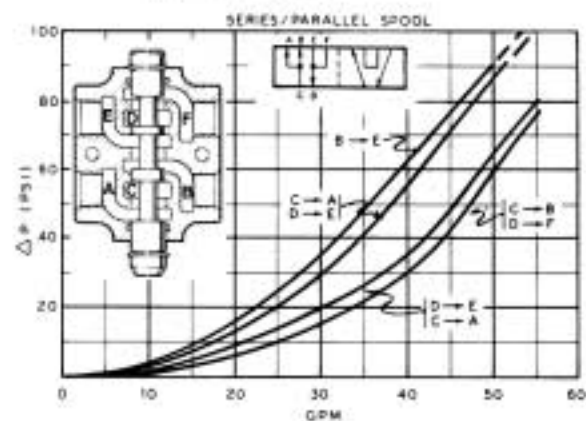
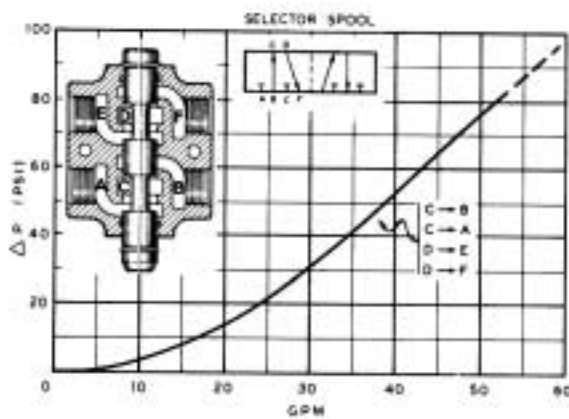


**DIMENSIONAL DATA:** in inches and (millimeters)



**PERFORMANCE DATA:** (Typical)

FLOW VS PRESSURE LOSS (DTE -24 OIL 120° F 1 1/16-12 SAE PORTS)



**ORDERING DATA:**

SERIES	MODEL	ACTUATOR LOCATION	ACTUATOR OPTIONS	END CAP OPTIONS	SPOOL TYPE	PORT SIZES (ALL PORTS)
SD	4 (40 gpm)	A @ Port C side B @ Port D side	A. Handle C. Clevis K. Knob L. Plain U. Hydraulic Pilot G. Other, specify	L. Plain B. Spring Return D. 2 pos. Detent U. Hydraulic Pilot G. Other, specify	A (Selector) B (Series/Parallel)	1. 1/2" NPTF 2. 3/4-16 (SAE #8) 3. 7/8-14 (SAE #10) 4. 3/4 NPTF 5. 1 1/16-12 (SAE #12) 6. 1" NPTF 7. 1 5/16-12 (SAE #16) 8. Other
SD	4	B	K	L	A	5

EXAMPLE: Model SD4BKLA5 is a standard unit with a knob actuator located at the "D" port side with standard selector spool and SAE #12 o-ring ports.



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## HYDRAULIC VALVES SOLENOID SELECTOR

SERIES  
VS4 and SD4

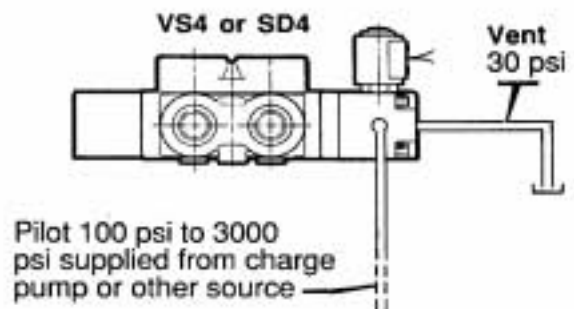
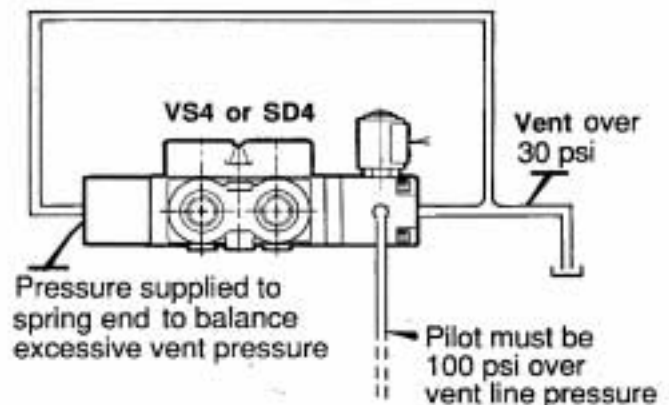
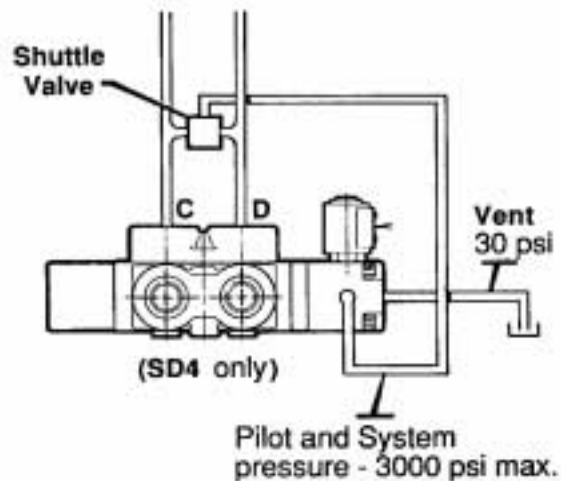
The CROSS VS4 and SD4 selector valves with solenoid operators offer versatility for many remote applications. 12 and 24 volt DC as well as 120 and 240 volt AC options are offered.

A minimum of 100 psi pilot pressure is required for shifting the spool. With heavy duty end caps up to 3000 psi pilot pressure may be used. In some applications, pilot pressure can be supplied with a shuttle valve connected between ports "C" and "D" of the SD4 double selector.

Pilot and drain lines must be plumbed externally since the solenoid operator is not direct acting. When the solenoid is energized, the small valve spool within it is shifted to direct pilot pressure to the end of the selector spool causing it to shift. When the solenoid is de-energized, the small spool in the solenoid is shifted back and the spool cavity is connected to vent. The spring return at the opposite end of the selector spool then returns it to its original position. Pilot pressure is blocked in this position.

Maximum vent or drain line pressure is 30 psi but higher pressures may be used if vent line pressure is supplied to the spring end using a special pilot end cap to balance the main selector spool. Pilot pressure must be at least 100 psi over the vent line pressure in this configuration.

To order the solenoid option, specify "G" - other as the actuator option and note the voltage, as well as heavy duty end caps for pilot pressure above 700 psi. "B" spring return would be specified for the end cap option. A sample part number is as follows:  
**SD4BG - 12 volt, heavy duty end caps - BA6.**



The solenoid selector is not a field convertible option but these valves are available within the standard short lead times from the factory.



# HYDRAULIC VALVES

(DIRECTIONAL CONTROL)

## SELECTOR VALVES SD5 SERIES

Specification Sheet



The CROSS SD5 2-wheel/4-wheel selector valve is a special version of the SD series valve with a special spool and body. It has been specifically designed for use with hydrostatic transmissions and permits selection of either 2-wheel (Transport mode) or 4-wheel (Work mode) drive positions.

### GENERAL SPECIFICATIONS

Maximum working pressure.....	5000 psi (345 bar)
Maximum shock and surge pressure.....	6000 psi (414 bar)
Maximum flow capacity.....	50 gpm (189.3 l/m)
Shipping weight.....	10 lbs. (4.5 Kg)
Mounting.....	2-bolt, any position

### MATERIAL SPECIFICATIONS

Body.....	High tensile strength cast iron
Spool.....	Ground, plated and polished steel
Seals.....	Buna N

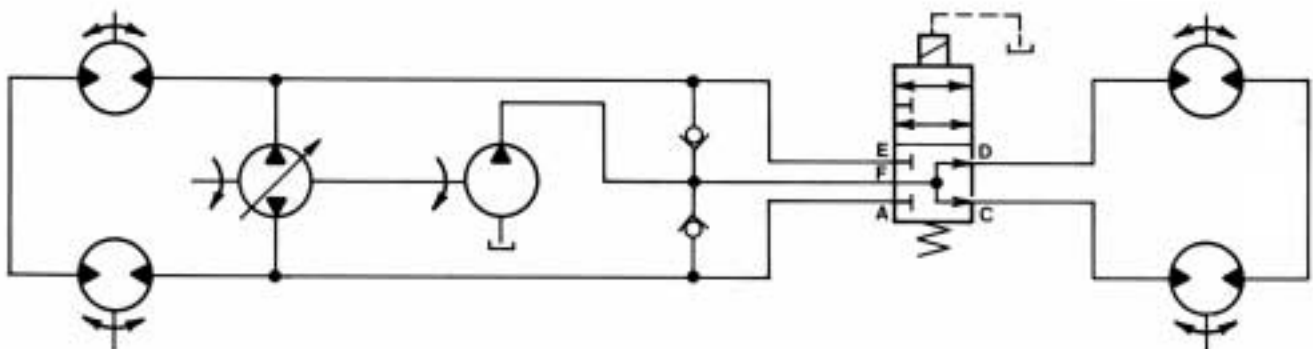
### STANDARD FEATURES

- 1<sup>1</sup>/<sub>16</sub> - 12 (3/4", SAE #12) ports
- 2-wheel/4-wheel selector spool
- 12 VDC solenoid actuator
- Spring return

### OPTIONAL FEATURES AVAILABLE

- 3/4 - 16 (1/2", SAE #8) ports
- 1<sup>1</sup>/<sub>16</sub> - 12 (1", SAE #16) ports
- 3/4" NPTF ports
- Handle actuator
- Knob
- Clevis
- Actuator at either side
- Pilot actuator

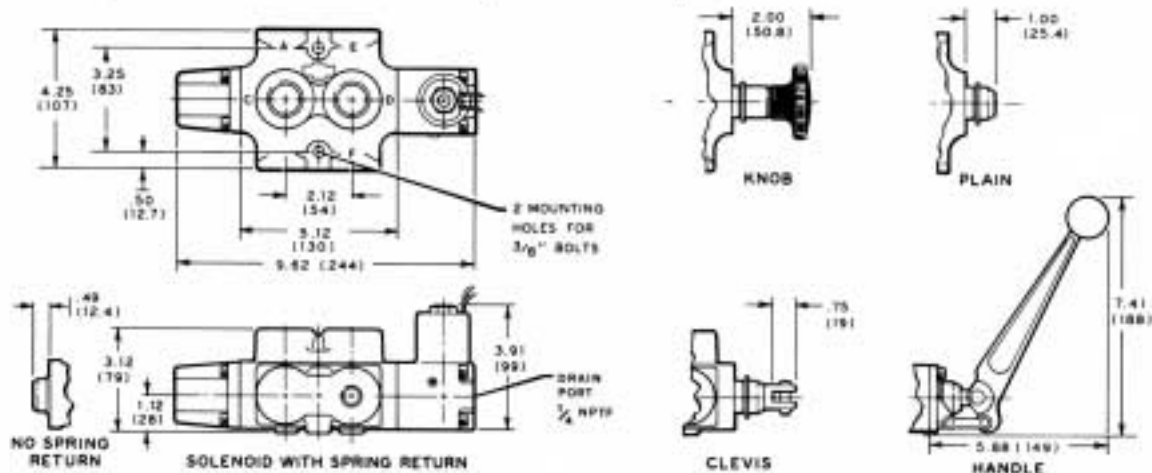
### APPLICATION



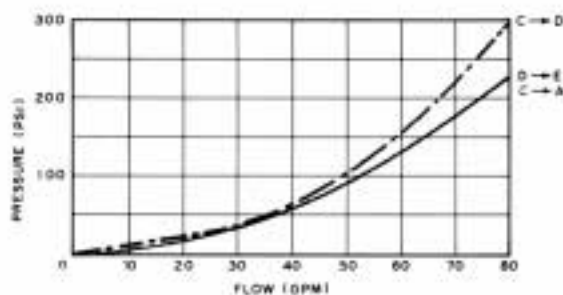
Note that when in 2-wheel drive, supercharge oil is supplied to the non-driving wheels, preventing cavitation. When operating in 2-wheel drive for long periods of time, it may be necessary to occasionally shift into 4-wheel drive in order to cool the non-driving wheel motors.



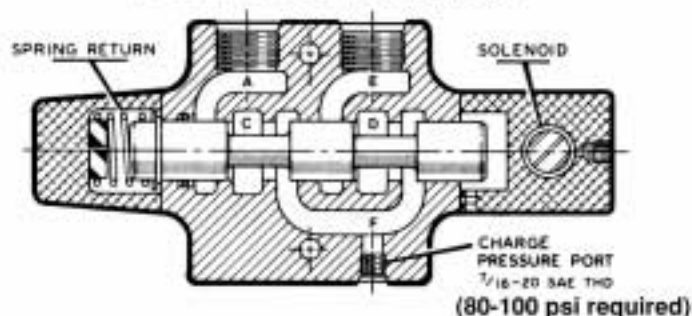
**DIMENSIONAL DATA** in inches and (millimeters)



**PERFORMANCE DATA**



**INTERNAL CONFIGURATION**



**ORDERING DATA**

SERIES	MODEL	ACTUATOR LOCATION	ACTUATOR OPTIONS	END CAP OPTIONS	SPOOL TYPE	PORT SIZE (PORTS A, E, C, D)
SD	5 50 gpm	A Port C side B Port D side	A - Handle C - Clevis K - Knob L - Plain S - 12v DC Solenoid T - 24v DC Solenoid U - Hydraulic Pilot G - Other, Specify	L - Plain B - Spring Return D - 2 pos. Detent U - Hydraulic Pilot G - Other Specify	A 2-wheel/4-wheel selector	2 1/4-16 (SAE 8) 4 3/4" NPTF 5 1 1/16-12 (SAE 12) 7 1 5/16-12 (SAE 16)
<b>SD</b>	<b>5</b>	<b>B</b>	<b>S</b>	<b>B</b>	<b>A</b>	<b>5</b>

Example: SD5BSBA5 is a 2-wheel/4-wheel selector valve with 12v DC solenoid actuator at the "D" port side with spring return and 1 1/16 - 12 (SAE 12) ports.

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