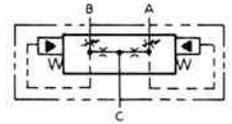




# HYDRAULIC VALVES

(FLOW CONTROL)

## FLOW DIVIDER FD SERIES Specification Sheet



The CROSS series FD proportional flow divider is a biased pressure compensated flow regulator, specifically designed for use as a hydrostatic transmission anti-spin out valve. Various orifice sizes are available to provide required limited slip differential action. One or more units may be used per vehicle, dependent upon anti-spin out requirements in forward and reverse.

### GENERAL SPECIFICATIONS

Maximum working pressure.....	5000 psi (345 bar)
Maximum shock and surge pressure.....	6000 psi (414 bar)
Maximum flow capacity* .....	up to 60 gpm (227 l/m)
Shipping weight .....	7 lbs. (3.2 Kg)
Mounting .....	2-bolt, any position
* Dependent on orifice size	

### MATERIAL SPECIFICATIONS

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

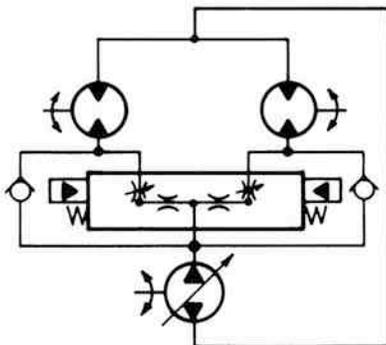
### STANDARD FEATURES

- 1<sup>1</sup>/<sub>16</sub> - 12 (3<sup>3</sup>/<sub>4</sub>" , SAE #12) o-ring ports

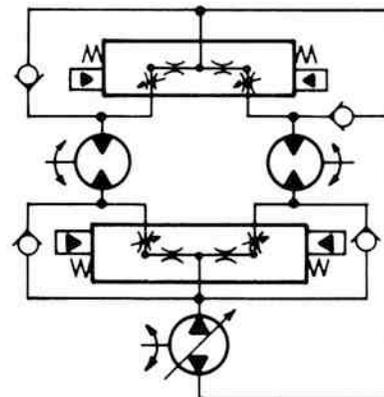
### OPTIONAL FEATURES AVAILABLE

- 7<sup>7</sup>/<sub>8</sub>-14 (5<sup>5</sup>/<sub>8</sub>" , SAE #10) ports

### TYPICAL APPLICATIONS



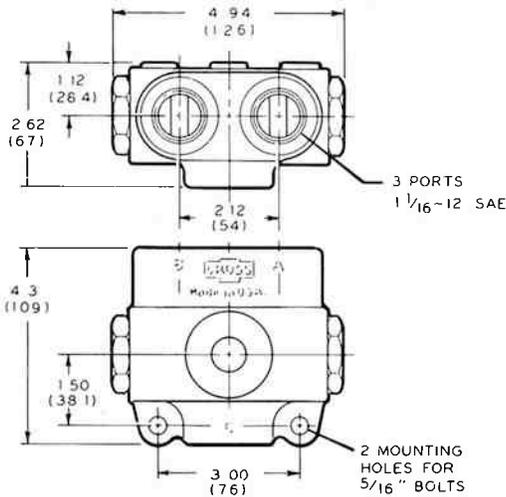
Uni-directional anti-slip  
(one direction only)



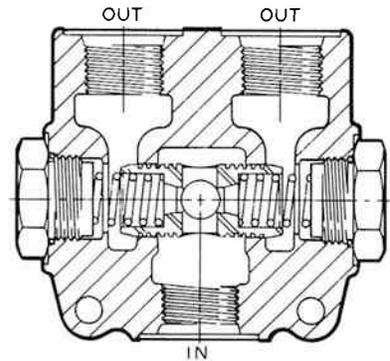
Bi-directional anti-slip  
(forward and reverse)



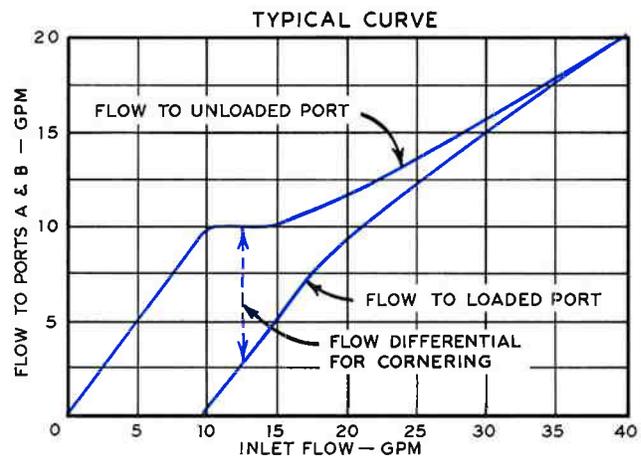
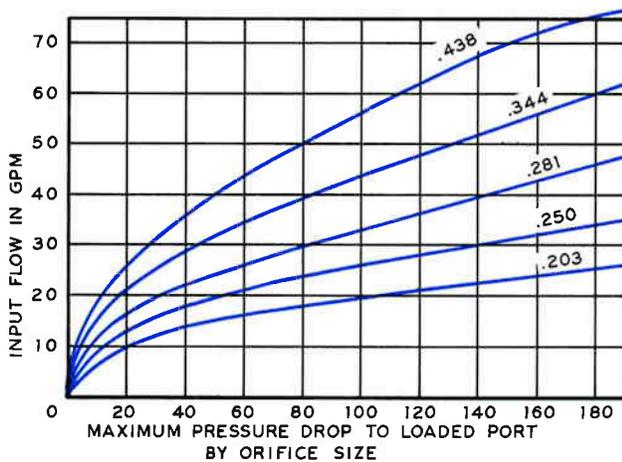
**DIMENSIONAL DATA** in inches and (millimeters)



**INTERNAL CONFIGURATION**



**TYPICAL PERFORMANCE DATA**



**ORDERING DATA**

The proper orifice size must be calculated for each application. The following information should be supplied to the CROSS Mfg. Co. Engineering Department.

- Maximum system flow \_\_\_\_\_ gpm.
- Maximum system flow while cornering \_\_\_\_\_ gpm.
- Inside turning radius \_\_\_\_\_ feet.
- Outside turning radius \_\_\_\_\_ feet.
- Pressure: Typical \_\_\_\_\_ psi; Maximum \_\_\_\_\_ psi.
- Enclose hydraulic circuit.

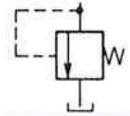
NOTE: A factory stock number will be assigned when proper orifice sizes are determined.



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# HYDRAULIC RELIEF VALVES

DIFFERENTIAL TYPE  
RD SERIES  
Specification Sheet



The CROSS series RD differential-poppet type relief valves have been designed to give long life and smooth performance at an economical price. The hydraulically dampened poppet uses differential areas to provide minimum variation between opening and full flow pressures.

## GENERAL SPECIFICATIONS

Pressure range.....	500 psi (34 bar) to 3000 psi (207 bar) (maximum 2500 psi (207 bar) with NPTF ports)
Maximum flow capacity .....	30 gpm (114 l/m)
Weight.....	2.5 lbs. (1.1 Kg)

## MATERIAL SPECIFICATIONS

Housing.....	High tensile gray iron
Poppet.....	Hardened and ground steel
Seals .....	Buna N

## STANDARD FEATURES (See CROSS Full Line catalog)

- 1 1/16-12 (3/4" SAE #12) straight thread o-ring ports or 3/4" NPTF dry seal pipe thread ports
- Adjustable type, screw adjustment with acorn nut  
Two ranges: 500 to 1499 psi  
1500 to 3000 psi
- Non-Adjustable type, factory pre-set
- Bodied, "in-line" mounting, with mounting holes for 1/4" diameter bolts

## OPTIONAL FEATURES

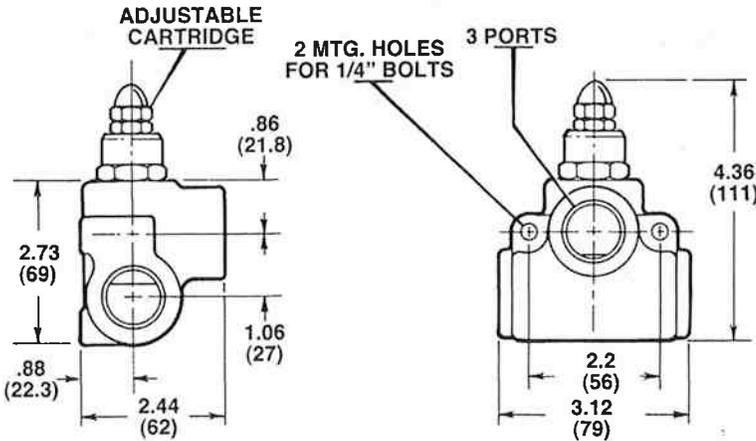
- 3/4-16 (1/2" SAE #8) straight thread o-ring ports
- 7/8-14 (5/8" SAE #10) straight thread o-ring ports
- 1/2" NPTF dry seal pipe thread ports
- Cartridge style, for installation in machined housing

## STYLES AVAILABLE

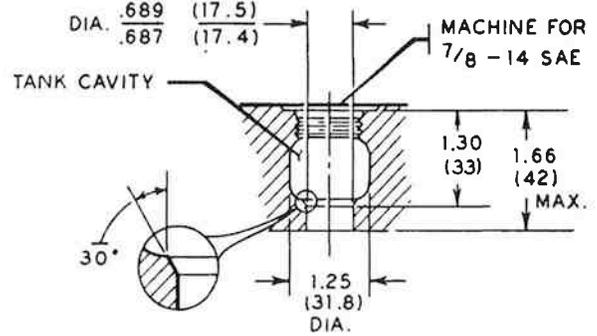
- RD1: RD series, with body, adjustable (500 to 1499 or 1500 to 3000 psi)
- RD2: RD series, with body, non-adjustable (500 to 1499 or 1500 to 3000 psi)
- 1R0016: RD series, cartridge only, adjustable (500 to 1499 psi)
- 1R0017: RD series, cartridge only, adjustable (1500 to 3000 psi)
- 1R0021: RD series, cartridge only, non-adjustable (500 to 1499 psi)
- 1R0037: RD series, cartridge only, non-adjustable (1500 to 3000 psi)



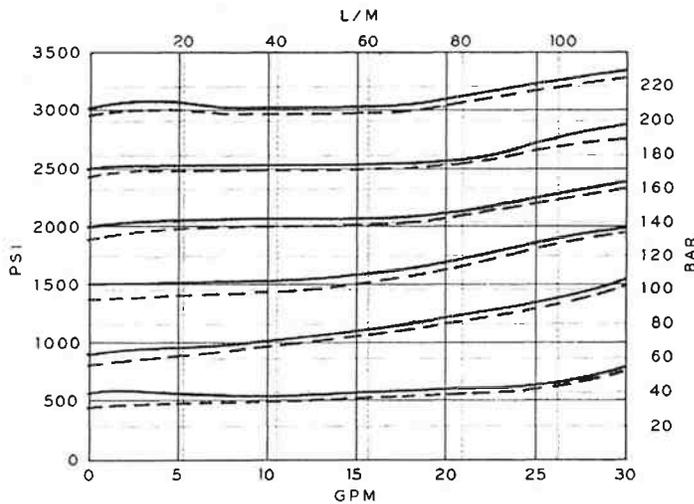
DIMENSIONAL DATA in inches and (millimeters)



MACHINING DIMENSIONS FOR CARTRIDGE UNIT



TYPICAL PERFORMANCE DATA



100 SSU oil at 120° F

— Opening  
- - - Closing

ORDERING DATA

SERIES	ADJUSTMENT	PORT SIZE & TYPE	PRESSURE SETTING (psi) (at 10 gpm)
RD	1 Adjustable	1 - 1/2" NPTF 2 - 3/4" NPTF 3 - 1/2" SAE #8 3/4-16	A - 500 psi B - 1000 psi (1) C - 1500 psi D - 2000 psi (2) E - 2500 psi F - 3000 psi G - Other psi
	2 Non-Adjustable	4 - 5/8" SAE #10 7/8-14 5 - 3/4" SAE#12 1 1/16-12	

(1) Standard setting for 500 - 1500 psi Adjustable units

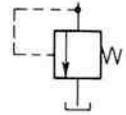
(2) Standard setting for 1500 - 3000 psi Adjustable units



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# HYDRAULIC RELIEF VALVES

PILOT OPERATED TYPE  
RV SERIES  
Specification Sheet



RV 2



1R0002

The CROSS series RV pilot operated relief valves have been designed to provide good response with low differential between opening and full flow pressures. These units give smooth, quiet operation and a built-in pilot flow filter provides trouble free operation.

## GENERAL SPECIFICATIONS

Pressure range .....	400 psi (28 bar) to *3000 psi (207 bar)
Maximum flow capacity .....	40 gpm (114 l/m)
Weight .....	4 lbs. (1.8 Kg)
	*with SAE ports

## MATERIAL SPECIFICATIONS

Housing .....	High tensile strength gray iron
Poppet .....	Hardened and ground steel
Seals .....	Buna N

## STANDARD FEATURES

- 1<sup>1</sup>/<sub>16</sub> - 12 (3/4" SAE #12) straight thread o-ring ports
- Screw adjustment with knob (for frequent adjustment)
- Bodied, "in-line" mounting, with mounting holes for 5/16" dia. bolts

## OPTIONAL FEATURES

- 7/8 - 14 (5/8" SAE #10) straight thread o-ring ports
- 3/4" NPTF dry seal pipe thread ports
- Cartridge type, for installation in machined housing
- Screw adjustment with acorn nut (for infrequent adjustment)

## STYLES AVAILABLE

RV1: RV series, with body, with screw adjustment and acorn nut

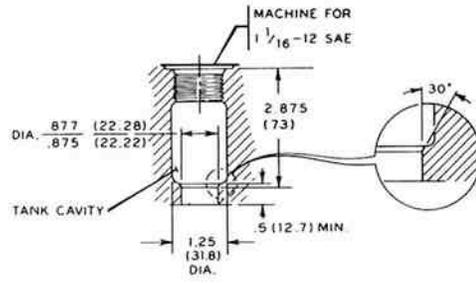
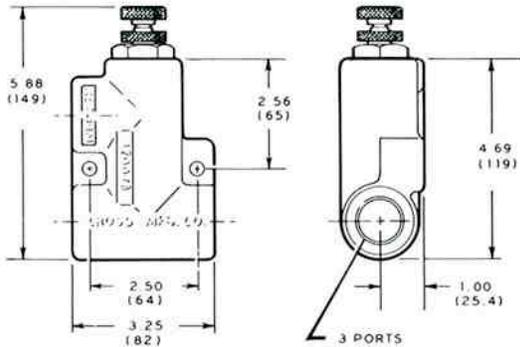
RV2: RV series, with body, with screw/knob adjustment

1R0001: RV series, cartridge only, with screw adjustment and acorn nut

1R0002: RV series, cartridge only, with screw/knob adjustment

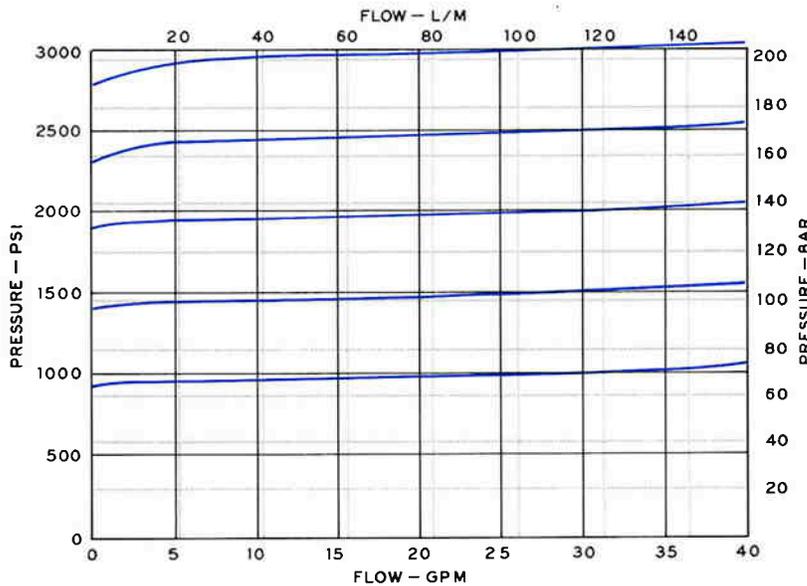


DIMENSIONAL DATA inches and (millimeters)



MACHINING DIMENSIONS FOR CARTRIDGE

TYPICAL PERFORMANCE DATA



100 SSU oil at 120° F

ORDERING DATA

SERIES	ADJUSTABLE	PORT SIZE & TYPE	PRESSURE SETTING (psi) (at 10 gpm)
RV	1 Adjustable w/acorn nut	1-3/4" NPTF	A - 500 psi B - 1000 psi C - 1500 psi D - 2000 psi E - 2500 psi F - 3000 psi G - Other psi
	*2 Adjustable w/knob	2-5/8" SAE #10 7/8 - 14	
		*3-3/4" SAE #12 1 1/16 - 12	
RV	X	X	X

\*Standard



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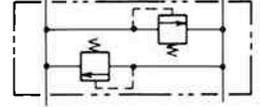
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# HYDRAULIC RELIEF VALVES

## DOUBLE RELIEF RC SERIES Specification Sheet



The CROSS series RC differential - poppet type double relief valve has been designed to protect equal displacement cylinders or motors from external or shock loads. Fluid which passes through one relief valve flows directly to the opposite side or circuit of the valve, thus preventing cavitation of the cylinder or motor as a result of relief discharge. These units incorporate the same hydraulically dampened poppet design as the RD series units.

### GENERAL SPECIFICATIONS

Pressure range.....	500 psi (34 bar) to *3000 psi (207 bar)
Maximum flow capacity .....	30 gpm (114 l/m)
Weight .....	4 lbs. (1.8 Kg)

\*with SAE ports

### MATERIAL SPECIFICATIONS

Housing.....	Ductile iron
Poppet.....	Hardened and ground steel
Seals .....	Buna N

### STANDARD FEATURES

- 3/4" NPTF dry seal pipe thread pipe ports
- Adjustable type, screw adjustment with acorn nut
  - Two ranges: 500 to 1499 psi (A)
  - 1500 to 3000 psi (B)
- Non-adjustable, factory pre-set
- Bodied, "in-line" mounting, with mounting holes for 5/16" dia. bolts

### OPTIONAL FEATURES

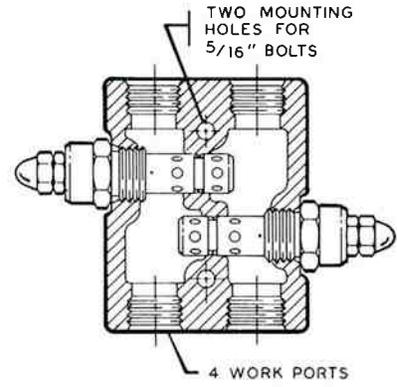
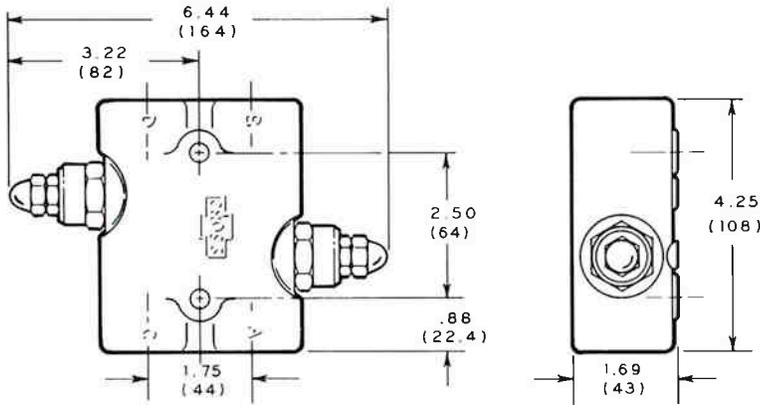
- 3/4 - 16 (1/2" SAE #8) straight thread o-ring ports
- 7/8 - 14 (5/8" SAE #10) straight thread o-ring ports
- 1 1/16 - 12 (3/4" SAE #12) straight thread o-ring ports
- 1/2" NPTF dry seal pipe thread pipe ports

### STYLES AVAILABLE

RC1: Adjustable	RC2: Non-adjustable
-----------------	---------------------

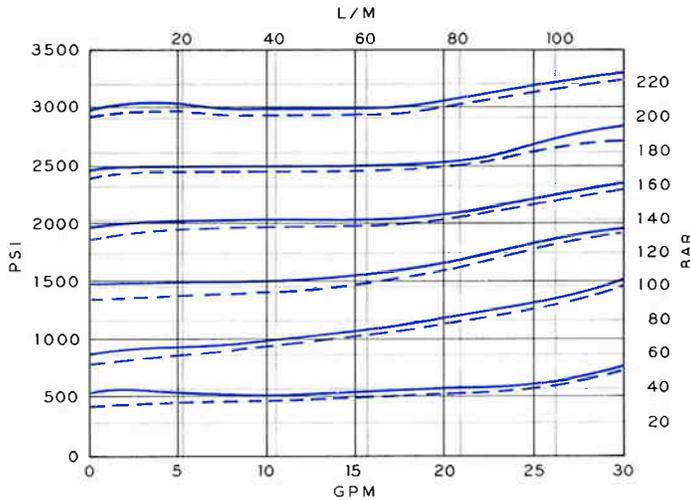


**DIMENSIONAL DATA** in inches and (millimeters)



**INTERNAL CONFIGURATION**

**TYPICAL PERFORMANCE DATA**



100 SSU oil at 120° F.

— Increasing flow  
- - - Decreasing flow

**ORDERING DATA**

SERIES	ADJUSTMENT	PORT SIZE and TYPE	PRESSURE SETTING (psi)	
			Ports A/B #1	Ports C/D #2
RC	1 Adjustable	1-1/2" NPTF 2-3/4" NPTF 3-1/2" SAE #8	A - 500 B - 1000 (1) C - 1500	A - 500 B - 1000 (1) C - 1500
	2 Non-Adjustable	3/4 - 16 4-5/8" SAE #10 7/8 - 14 5-3/4" SAE #12 1 1/16 - 12	D - 2000 (2) E - 2500 F - 3000 G - Other	D - 2000 (2) E - 2500 F - 3000 G - Other
RC	X	X	X	X

(1) Standard setting for 500 - 1500 adjust. units

(2) Standard setting for 1500 - 3000 adjust. units



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# HYDRAULIC VALVES (DIRECTIONAL CONTROL)

SELECTOR VALVES  
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

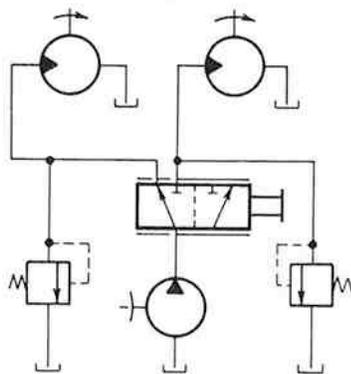
### STANDARD FEATURES (See CROSS Full Line Catalog)

- VS 2 - 1/2" NPTF or 3/4-16 (SAE #8) ports
- VS 4 - 3/4" NPTF or 1 1/16-12 (SAE #12) ports
- Knob actuator (at port "B")
- Front inlet port position

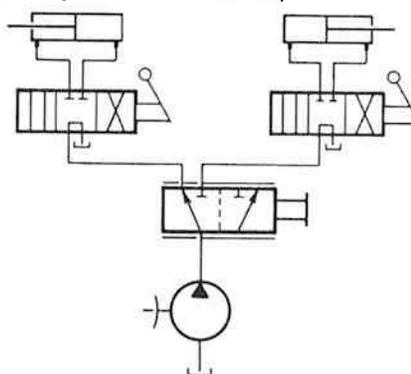
### OPTIONAL FEATURES AVAILABLE

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

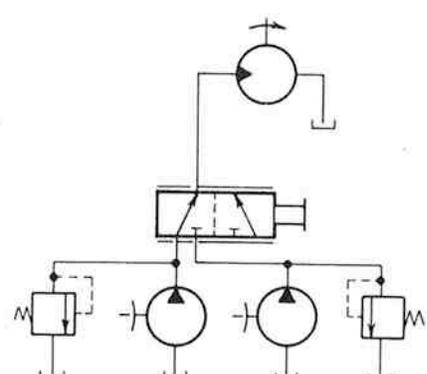
### TYPICAL APPLICATIONS (Simplified circuits)



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



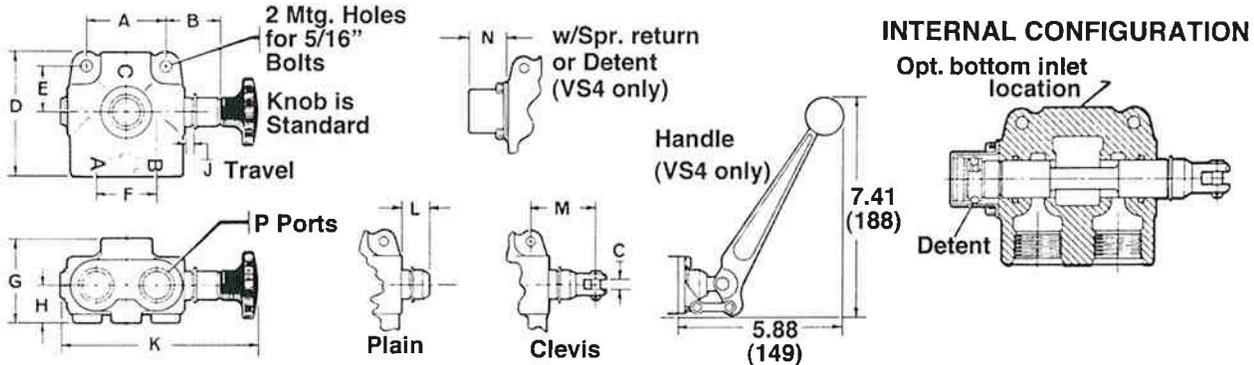
**CIRCUIT SELECTOR**  
Allows either cylinder to be operated independently from single pump.



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

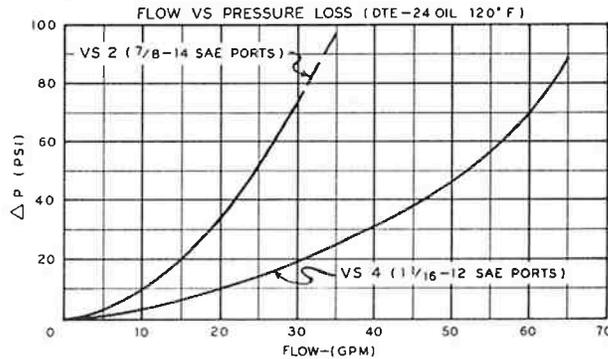


**DIMENSIONAL DATA: in inches and (millimeters)**



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	3/4-16
	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 4 40 gpm	A port "A" side B port "B" side	K Knob C Clevis L Plain	L Plain	F Front position B Bottom position A Both pos. mach.	1	6
						3/8 NPTF	3/4 NPTF
			2	7			
			VS4 only	VS4 only			
			A - Handle U - Hydraulic pilot G - Other, specify	B - Spring return D - 2 pos. detent U - Hydraulic pilot G - Other, specify			
						3 1/2 NPTF	1 1 NPTF
						4 SAE#6(9/16-18)	8 SAE #12
						5 SAE #8 3/4-16	1 1/16-12
						6 SAE #10 7/8-14	9 SAE #16
							1 5/16-12

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-rings ports.



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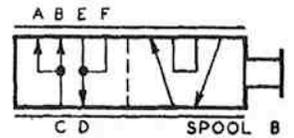
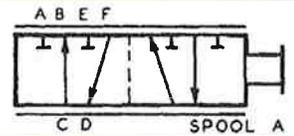
# HYDRAULIC VALVES

(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..... 5000 \* psi (345 bar)
  - Maximum shock and surge pressure..... 6000 \* psi (414 bar)
  - Maximum flow capacity ..... 40 gpm (151 l/m)
  - Mounting . . . . 2-bolt, any position
  - Shipping weight . . . 9 lbs. (4 Kg)
- \*SAE #12 ports and smaller, 4500 psi for SAE #16 ports, 2500 for NPTF ports.

### MATERIAL SPECIFICATIONS

- Body ..... ductile iron
- Spool ..... Ground, plated and polished steel
- Seals ..... Buna N

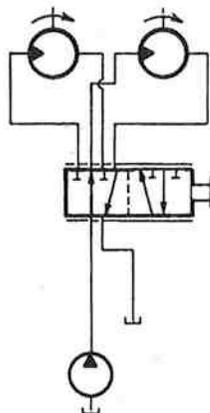
### STANDARD FEATURES (See CROSS Full Line Catalog)

- 1" NPTF or 1 5/16-12, SAE #16 ports
- Standard selector spool
- Handle assembly (at port "C")

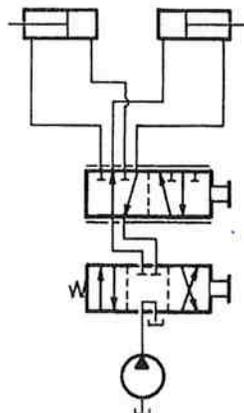
### OPTIONAL FEATURES AVAILABLE

- 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)

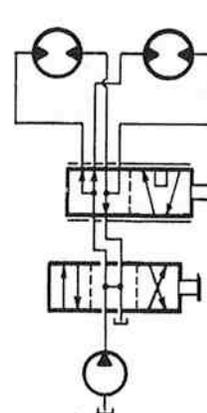
### TYPICAL APPLICATIONS (Simplified circuits)



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



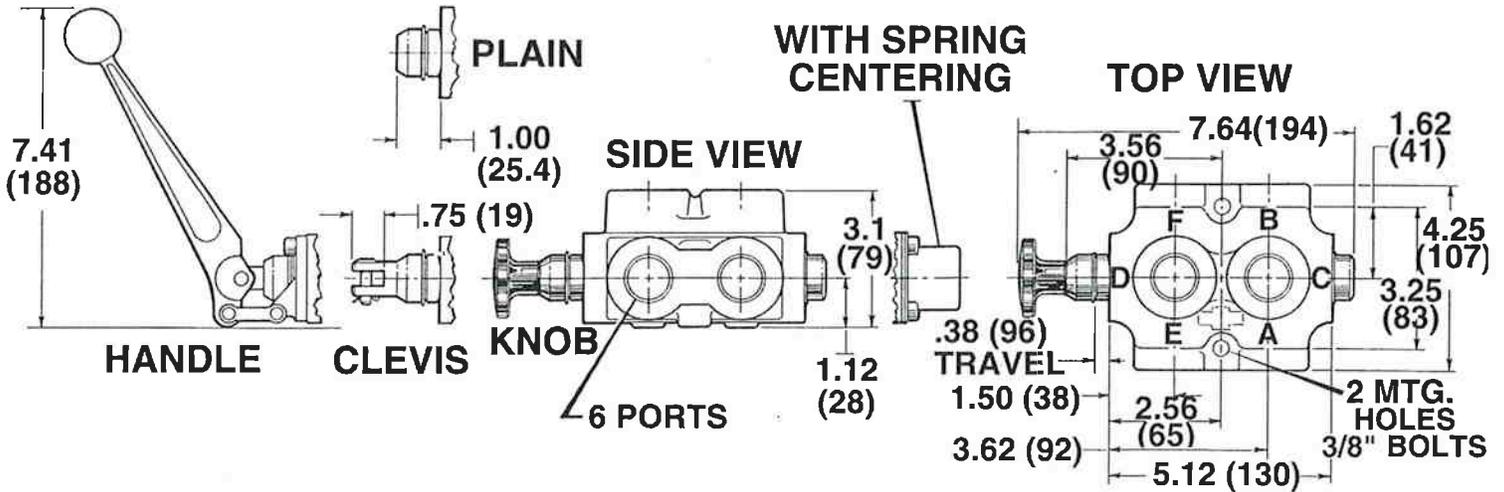
**CIRCUIT SELECTOR**  
Allows either cylinder to be operated by one directional control valve.



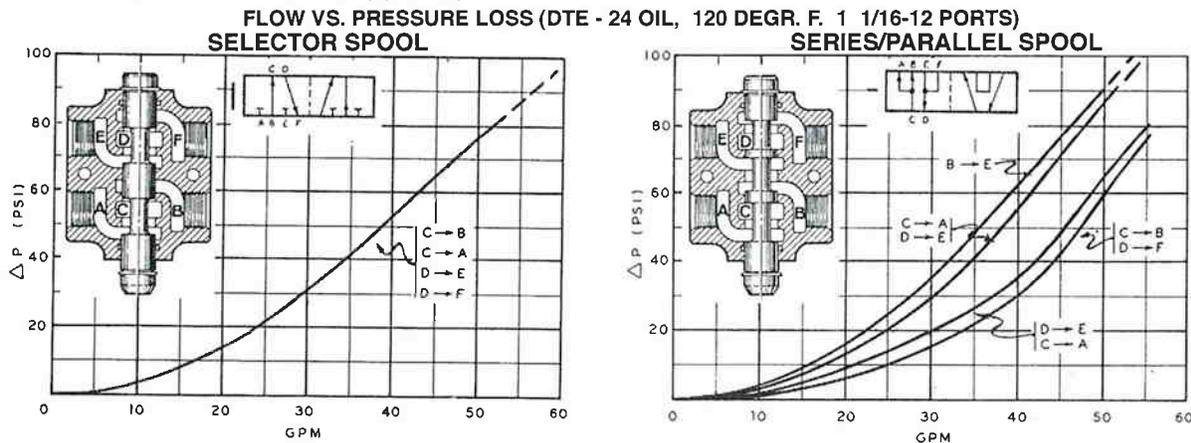
**SERIES/PARALLEL**  
Allows selection of either series or parallel motor operation.



DIMENSIONAL DATA: in inches and (millimeters)



PERFORMANCE DATA: (Typical)



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 typical unit with a knob actuator located at "D" port side with standard selector spool & SAE #12 o-ring ports. See Full Line catalog page 8 for standard stock units SSD4 and SSD4-ORB.



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## HYDRAULIC VALVES SOLENOID SELECTOR

SERIES  
VS4 and SD4

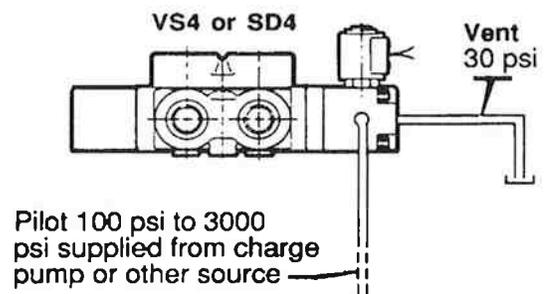
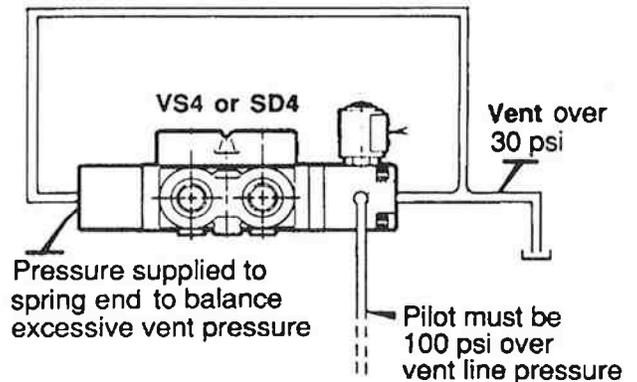
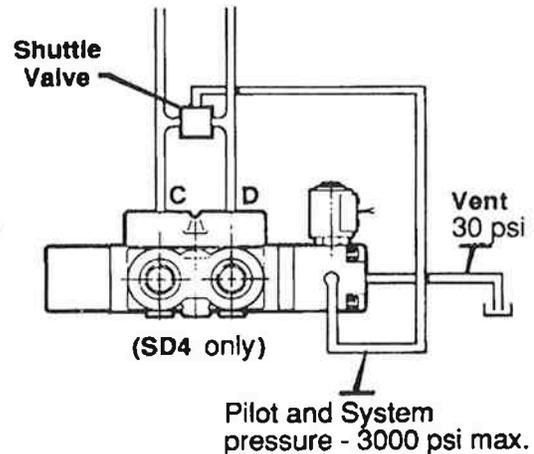
The **CROSS VS4 and SD4 selector valves with solenoid operators** offer versatility for many remote applications. 12 and 24 volt DC as well as 120 and 240 volt AC options are offered.

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.**



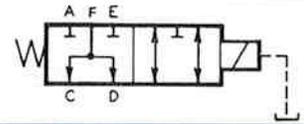
(The solenoid selector is not a field convertible option but is available within the standard short factory lead times.)



# 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

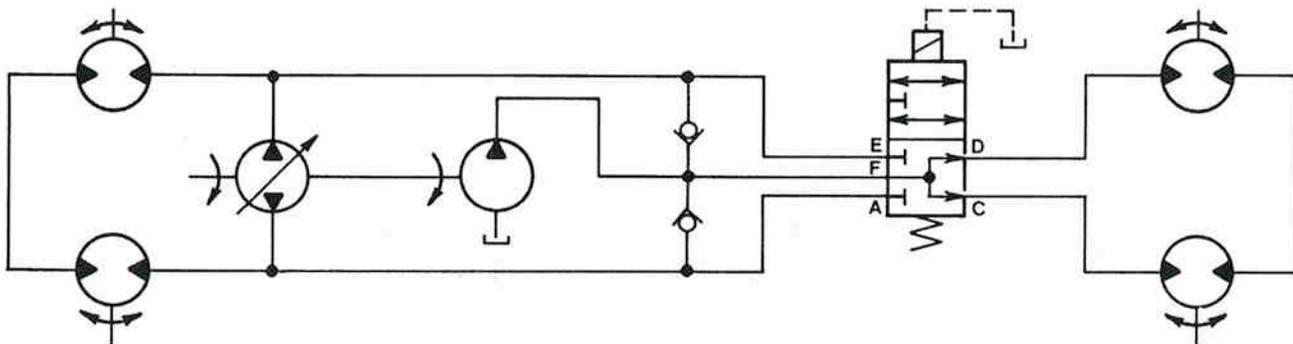
### STANDARD FEATURES

- 1 1/16 - 12 (3/4", SAE #12) ports
- 2-wheel/4-wheel selector spool
- 12 VDC solenoid actuator
- Spring return
- 7/16-20 charge pressure port

### OPTIONAL FEATURES AVAILABLE

- 3/4-16 (1/2", SAE #8) ports
- 3/4" NPTF ports
- Actuator at either side
- 1 5/16-12 (1", SAE #16) ports
- Handle actuator
- Pilot actuator
- Knob
- Clevis
- Charge pressure port sizes to 1 5/16-12

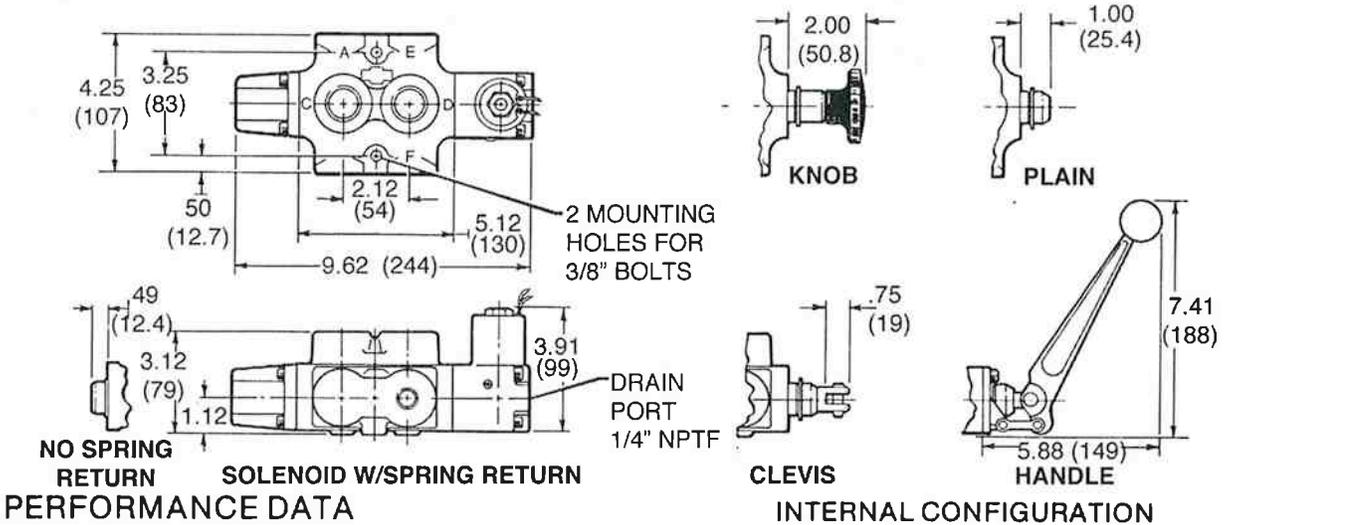
### APPLICATION



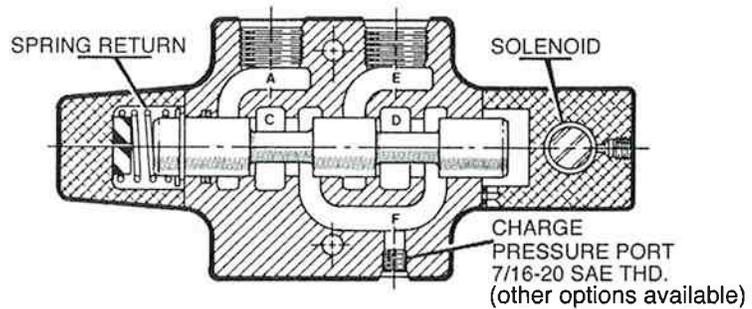
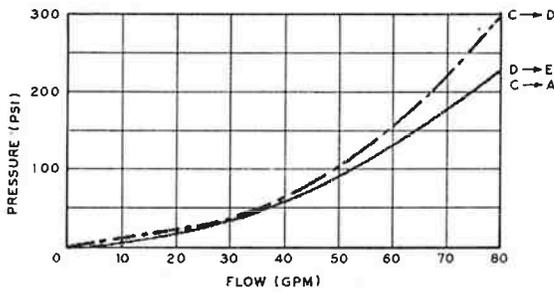
Note that when in 2-wheel drive, supercharge oil is supplied to the non-driving wheels, preventing cavitation. When operating in 2-wheel drive for long periods of time, it may be necessary to occasionally shift into 4-wheel drive in order to cool the non-driving wheel motors.



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



**PERFORMANCE DATA**



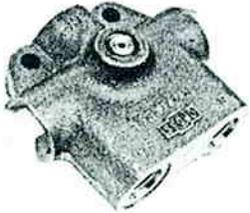
**ORDERING DATA**

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 3/4-16 (SAE 8) 4 3/4" NPTF 5 1 1/16-12 (SAE 12) 7 1 5/16-12 (SAE 16)
SD	5	B	S	B	A	5

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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The **CROSS** sequence or **SQV** valve is designed to alternately operate a pair of **agricultural guide marker cylinders** on a row marker system.

### OPERATION:

**System diagram and valve layout** represent the main cylinder "C" in retracted position (*implement down*), with marker cylinder "A" extended (*marker up*). Marker cylinder "B" is retracted (*marker down*).

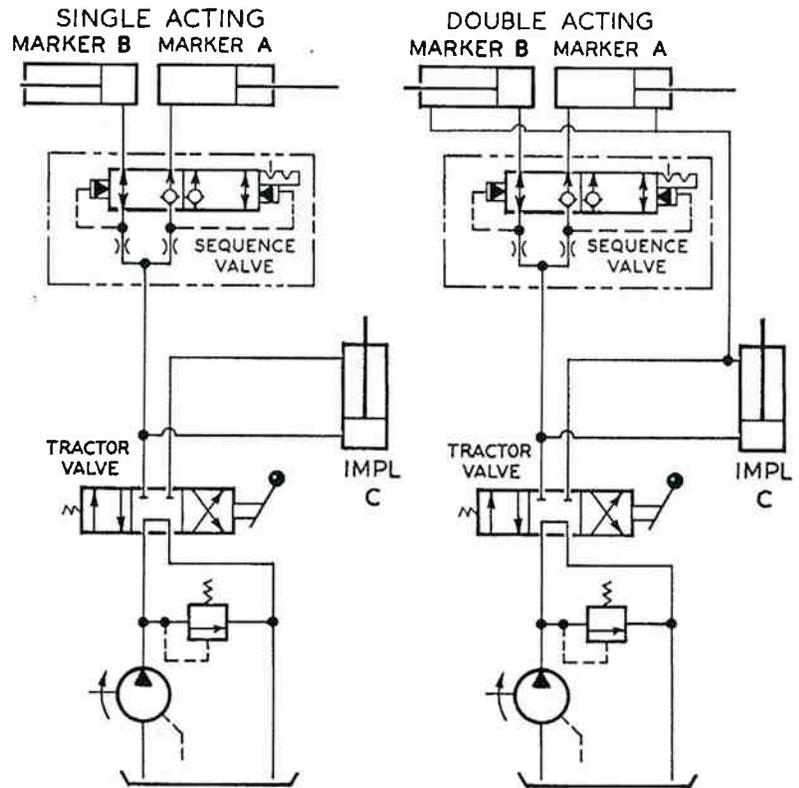
**At the end of a row**, cylinder "C" is extended to lift the implement pressurizing ports "A" and "B" through the sequence valve spool. Marker cylinder "B" would then extend (*marker up*). No flow would pass through "A" port since cylinder "A" is already extended. This condition causes a pressure drop between the "A" & "B" port ends of the sequence valve which shifts the spool to the "B" port end.

**Starting a new row**, main cylinder "C" is retracted (*implement down*) pressurizing marker cylinders "A" and "B" to retract. However, port "B" flow passages are blocked by the spool and integral check in "B" port. Consequently, only marker cylinder "A" is allowed to retract (*marker down*). **Upon completion of this row**, main cylinder "C" is again extended, and the marker cylinder "A" is raised. The pressure differential on the spool shifts the spool to the port "A" end preparing marker cylinder "B" to be lowered. Once the implement and "B" port marker are lowered, **the guide marker system will have completed its full cycle and be back in its original position.**

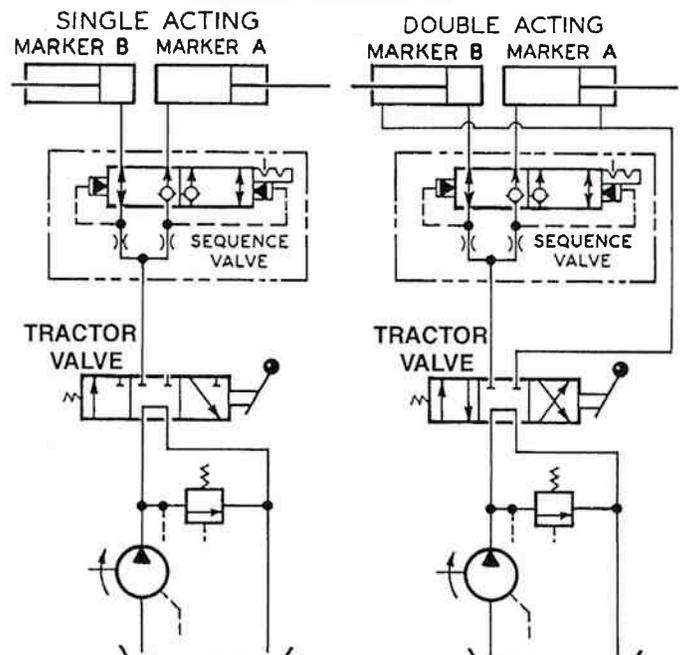
### **Features:**

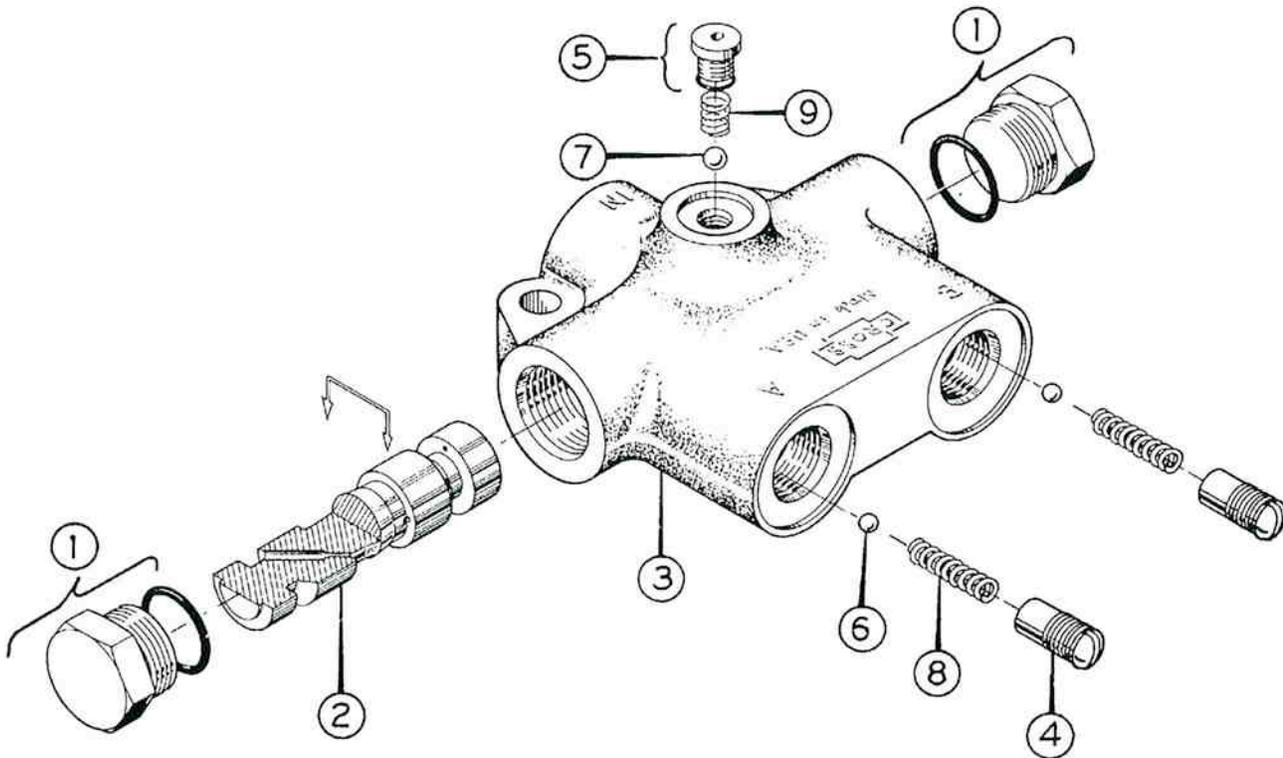
- 2 position, 3 port (3/4-16 SAE)
- M18 x 1.5 threads also available
- Rated to 2500 psi, 2 gpm
- Rugged construction
- 100% testing

### STANDARD INSTALLATION SHOWN WITH IMPLEMENT CYLINDER



### DIRECT HOOK-UP





PARTS LIST

○	PART NO.	DESCRIPTION	QTY
1	1V1880	O-RING BOSS PLUG ASSEMBLY . . . . .	2
2	1V1882	* SPOOL . . . . .	1
3	1V2003	* BODY MACHINING . . . . .	1
4	1V2001	CHECK VALVE RETAINER . . . . .	2
5	3V4153-022	O-RING BOSS PLUG ASSEMBLY . . . . .	1
6	2A0017-6	BALL ( 3/16" ) . . . . .	2
7	2A0017-8	BALL ( 1/4" ) . . . . .	1
8	2A9018-3	CHECK VALVE SPRING . . . . .	2
9	2A9024-1	SPRING . . . . .	1
	2A0353-12	SHIPPING PLUG . . . . .	3

\* THE SELECT-FIT HONING PROCESS AT FACTORY, WHICH FITS A SPOOL TO AN INDIVIDUAL VALVE BODY, ELIMINATES THE POSSIBILITY OF ORDERING THE VALVE BODY OR SPOOL AS SEPARATE ITEMS.



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