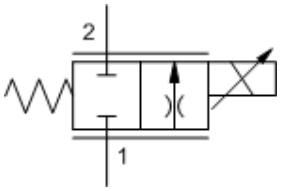
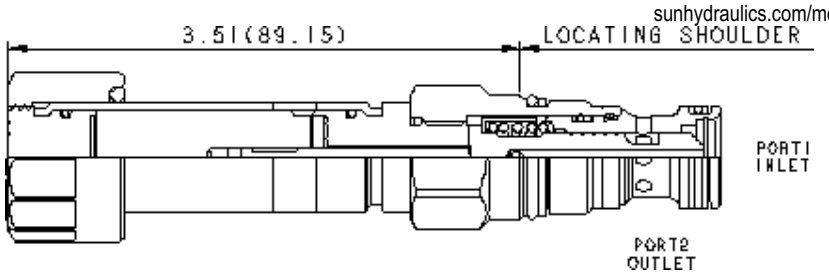
MODEL
FPCC

Electro-proportional flow control valve - normally closed
SERIES 1 / CAPACITY: 10 gpm / CAVITY: T-13A

sunhydraulics.com/model/FPCC





CONFIGURATION

X	Control	No Manual Override
C	Flow Rate	.25 - 7 gpm (1 - 28 L/min.)
N	Seal Material	Buna-N
(none)	Coil	No coil

This valve is a normally closed, electro-proportional throttle that is spring-biased closed. Energizing the coil generates an opening force on the spool proportional to the command current, and this force is countered by the spring and flow forces. This force balance creates a metering orifice whose effective size is proportional to the current. The valve exhibits a large degree of self-compensation in the 1-to-2 direction and will provide proportional flow control in the 2-to-1 direction with the addition of an external compensator. Full reverse flow (2-to-1) with 100% command in the 2-to-1 direction is possible without a compensator under all conditions.

TECHNICAL DATA

NOTE: DATA MAY VARY BY CONFIGURATION. SEE CONFIGURATION SECTION.

Cavity	T-13A
Series	1
Capacity	10 gpm
Maximum Valve Leakage at 110 SUS (24 cSt)	6 in³/min.@3000 psi
Manual Override Force Requirement	5 lbs/1000 psi @ Port 1
Manual Override Stroke	.10 in.
Solenoid Tube Diameter	.75 in.
Valve Hex Size	7/8 in.
Valve Installation Torque	30 - 35 lbf ft
Model Weight (with coil)	1.10 lb
Seal kit - Cartridge	Buna: 990413007
Seal kit - Cartridge	EPDM: 990010014
Seal kit - Cartridge	Polyurethane: 990413002
Seal kit - Cartridge	Viton: 990413006
Seal and nut kit - Coil	Viton: 990770006
Model Weight	0.66 lb.

PROPORTIONAL PERFORMANCE DATA

Hysteresis (with dither)	<4%
Hysteresis with DC input	<8%
Linearity (with dither)	<2%
Repeatability (with dither)	<2%
Recommended dither frequency	140 Hz
Deadband, nominal (as a percentage of input)	25%

NOTES Please verify cartridge clearance requirements when choosing a Sun manifold. Different valve controls and coils require different clearances.

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CONFIGURATION OPTIONS

Model Code Example: FPCCXCN

CONTROL (X)	FLOW RATE (C)	SEAL MATERIAL (N)	COIL *
X No Manual Override	**C** .25 - 7 gpm (1 - 28 L/min.)	**N** Buna-N	No coil
D Twist/Lock (Dual) Manual Override	**A** .1 - 1.5 gpm (0,4 - 6 L/min.)	**E** EPDM	**212** DIN 43650-Form A, 12 VDC
E Twist (Extended) Manual Override	**B** .15 - 3.5 gpm (0,6 - 14 L/min.)	**V** Viton	**224** DIN 43650-Form A, 24 VDC
L Twist/Lock (Detent) Manual Override	**D** .25 - 10 gpm (1 - 40 L/min.)		**224NX01** DIN 43650-Form A, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
M Manual Override			**224NX02** DIN 43650-Form A, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver
T Twist (Momentary) Manual Override			**912** Deutsch DT04-2P, 12 VDC
			912NX01 Deutsch DT04-2P, 12 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
			912NX02 Deutsch DT04-2P, 12 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver
			924 Deutsch DT04-2P, 24 VDC
			924NX01 Deutsch DT04-2P, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-01 driver
			924NX02 Deutsch DT04-2P, 24 VDC, no transient voltage suppression (TVS) diodes, with XMD-02 driver

* Additional coil options are available

TECHNICAL FEATURES

- Available in either a normally open or normally closed configuration with three different capacity ranges.
- Capable of operating with pressures up to 5000 psi (350 bar).
- Low leakage levels in the closed position.
- Coils are interchangeable with Sun's other full flow, solenoid-operated valves and can be mounted on the tube in either direction.
- This cartridge has several manual override choices, including no manual override. See Option Configuration.
- For optimum performance, an amplifier with current sensing and adjustable dither should be used. Dither should be adjustable between 100 - 250 Hz.
- On models equipped with the D or L control, the detent mechanism in the manual override is meant for temporary actuation. The D, E, L and T manual control assemblies have a mechanical life expectancy of approximately 7,000 cycles.
- The momentary/twist override option "E" allows the operator to shift the valve by twisting the manual override clockwise 90 degrees.
- Cartridges configured with EPDM seals are for use in systems with phosphate ester fluids. Exposure to petroleum based fluids, greases and lubricants will damage the seals.
- Incorporates the Sun floating style construction to minimize the possibility of internal parts binding due to excessive installation torque and/or cavity/cartridge machining variations.

PERFORMANCE CURVES

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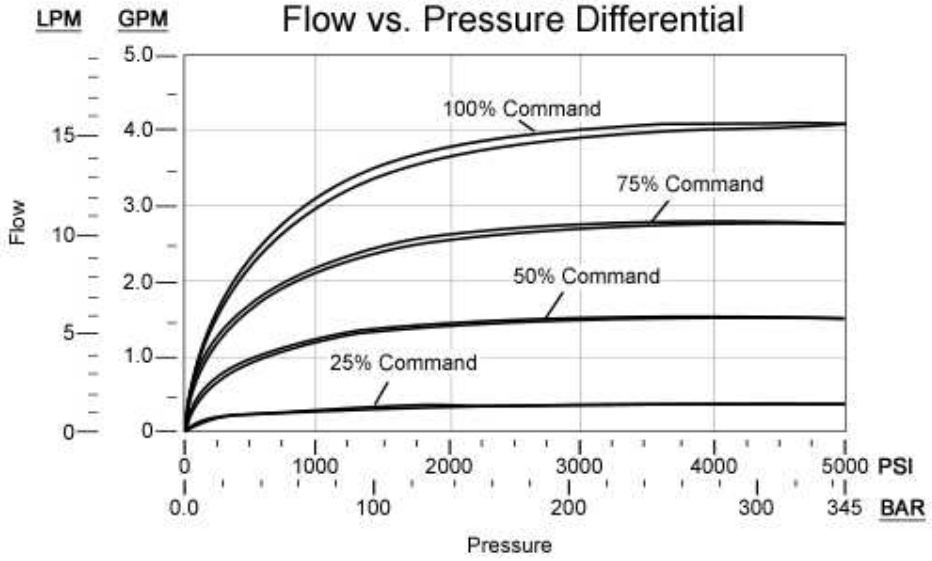
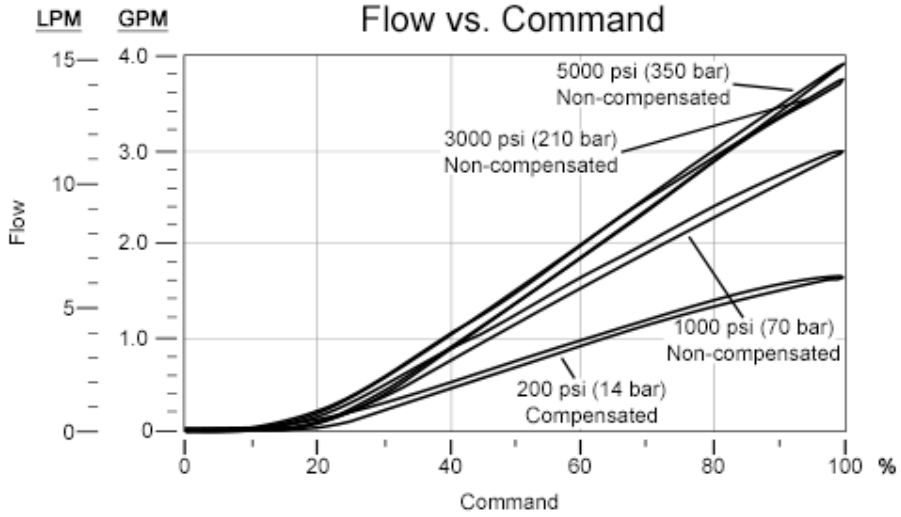
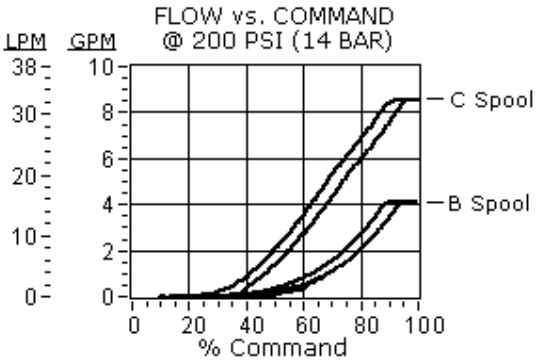
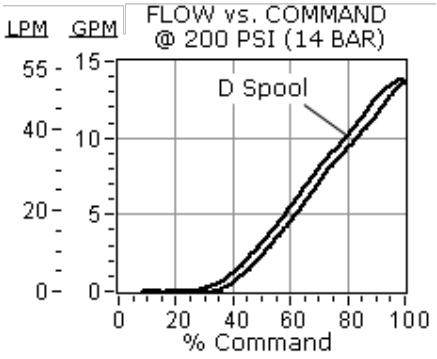
FPCC-*A*
Flow vs. Pressure Differential

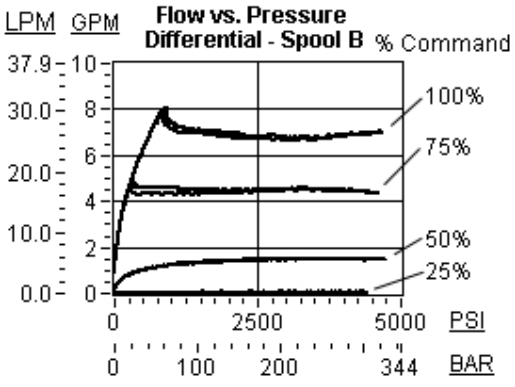


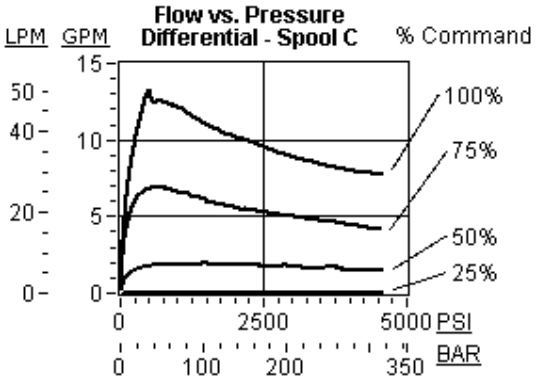
FPCC-*A*
Flow vs. Command











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