

General Description

Series D1FC and D3FC directional control valves of nominal sizes NG6 (CETOP 3) and NG10 (CETOP 5) provide variable flow rates.

Due to a spool and sleeve combination, Series D1FC and D3FC valves provide good repeatability from valve to valve. With the addition of the spool position feedback, these valves have a higher level of control for position and velocity on systems requiring off-board electronics.

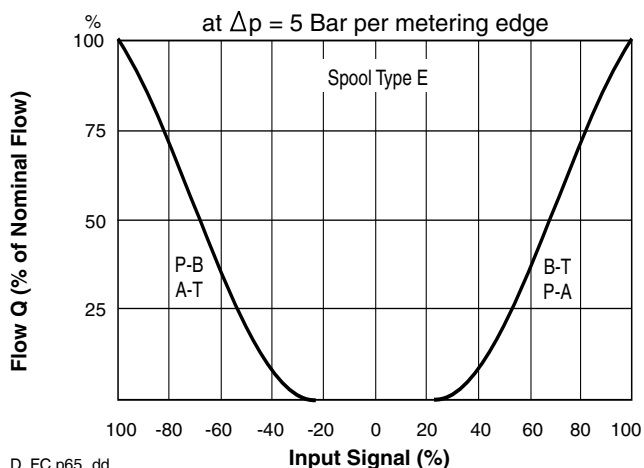
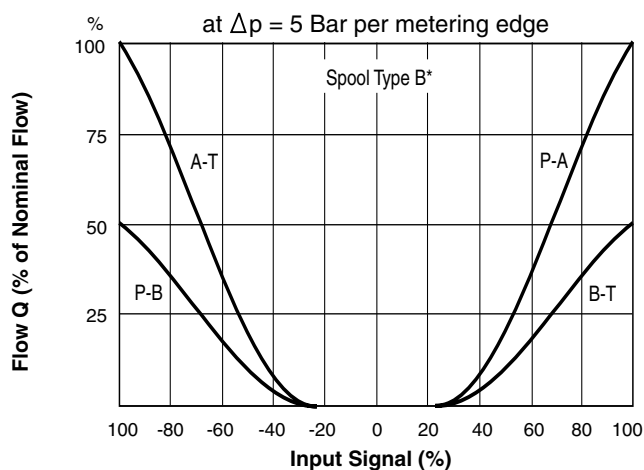
The valve repeatability in combination with the digital power amplifier PWDXXA-40*, where valve parameters can be saved, changed and duplicated, result in faster installation on identical machines.

Features

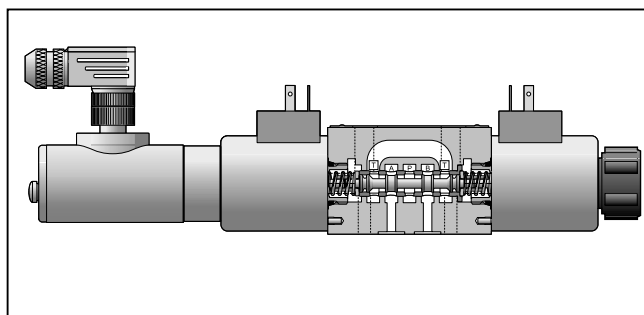
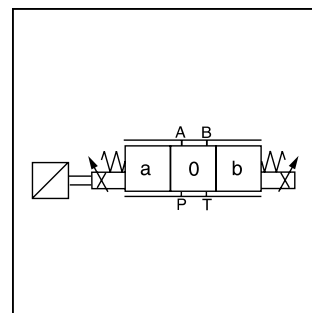
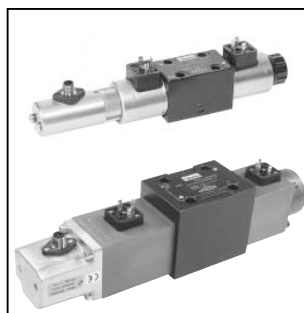
- Spool/sleeve designs.
- Spool position feedback.
- High repeatability from valve to valve.
- Very low hysteresis.
- Manual override.

Performance Curves

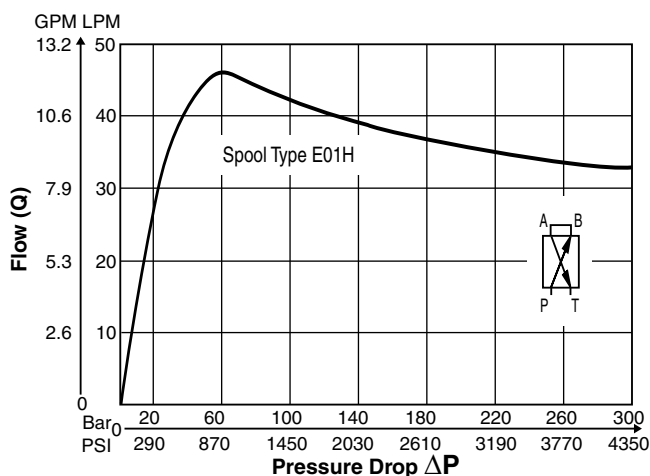
D1FC and D3FC



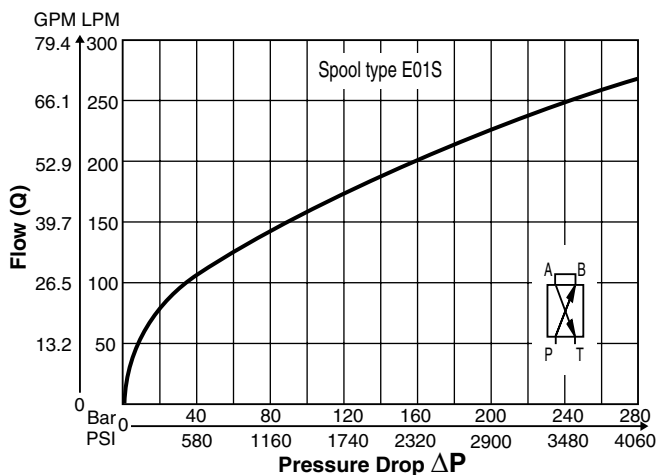
D_FC.p65, dd



D1FC Flow Limit



D3FC Flow Limit

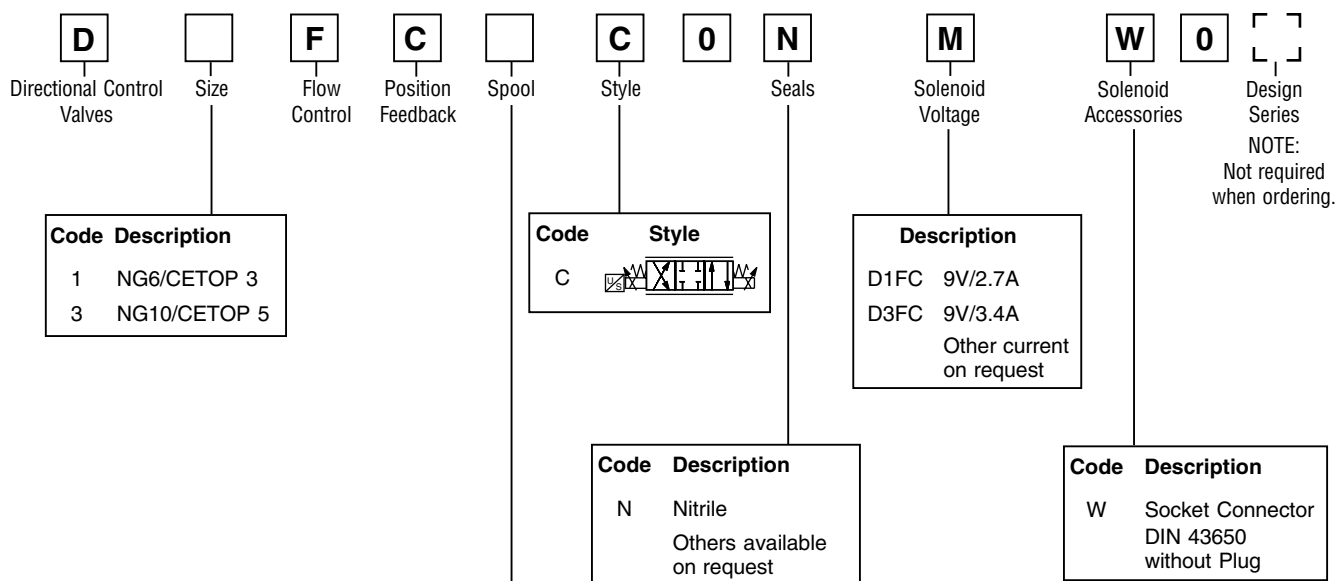


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General			
Design	Direct-operated proportional Directional control valve	Ambient Temperature Range	-20°C to +60°C (-4°F to +140°F)
Actuation	Proportional Solenoid	Vibration Resistance	25 g acc. DIN IEC68, part 2-6
Size	D1FC: NG6 (CETOP 3) D3FC: NG10 (CETOP 5)	Protection Class	D1FC: IP65 acc. DIN 40050 (plugged and mounted) D3FC: IP54
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA		
Mounting Position	Any		
Hydraulic			
Operating Pressure Maximum	D1FC: Ports P, A, B: 350 Bar (5075 PSI) Port T: 250 Bar (3625 PSI) D3FC: Ports P, A, B, T: 350 Bar (5075 PSI)	Viscosity Recommended	30 to 80 cSt (140 to 370 SSU)
		Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1683: 7)
		Flow	nominal at Δp=5 Bar per control edge* D1FC: 6 / 12 / 20 LPM (1.6 / 3.2 / 5.3 GPM) D3FC: 25 / 40 / 60 LPM (6.6 / 10.6 / 15.9 GPM)
Fluid	Hydraulic oil as per DIN 51524 to 535, other on request	Leakage	at 100 Bar (1450 PSI) D1FC: < 50 ml/min (3 in³/min) D3FC: < 100 ml/min (6 in³/min)
Fluid Temperature	-20°C to +60°C (-4°F to +140°F)		
Viscosity Permitted	20 to 380 cSt (97 to 1750 SSU)		
Static / Dynamic			
Step Response @ 100%	D1FC: <20 ms D3FC: <30 ms	Hysteresis	<0.3%
		Sensitivity	<0.1%
Electrical			
Duty Ratio	100%	Coil Insulation Class	F [155°C (311°F)]
Supply Voltage	9 VDC	Connection	2+PE acc. EN 175301-801
Solenoid	Code M	Cable Specification	3x1.5 (AWG 16) overall braid shield
Current Consumption	D1FC: 2.7A D3FC: 3.4A	Cable Length	50m (164 ft.)
Resistance	D1FC: 2.7 ohms D3FC: 1.8 ohms		
Electrical LVDT			
Protection Class	IP65	Current Consumption	<50 mA
Ambient Temperature Range	-20°C to +50°C (-4°F to +122°F)	EMC	EN 50081-1 / EN50082-2
Supply Voltage/ Ripple	18 VDC to 36 VDC, ripple <10% eff.	Interface	4+PE acc. IEC 61076-2-101 (M12)
		Cable Specification	4x0.5 (AWG 20) overall braid shield
		Cable Length	50m (164 ft.)

* Flow rate for different Δp per control edge:

$$Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$$



D1FC

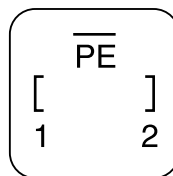
Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01H		20 (5.3)
E01F		12 (3.2)
E01C		6 (1.6)
E02H		20 (5.3)
E02F		12 (3.2)
E02C		6 (1.6)
E03H		20 (5.3)
E03F		12 (3.2)
E03C		6 (1.6)
B31H		20/10 (5.3/2.6)
B31F		12/6 (3.2/1.6)
B32H		20/10 (5.3/2.6)
B32F		12/6 (3.2/1.6)

Weight:

NG6	2.2 kg (4.9 lbs.)
NG10	6.5 kg (14.3 lbs.)

Plugs

Solenoid coil



1 = coil connection

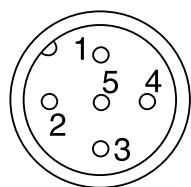
2 = coil connection

PE = ground potential

D3FC

Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01S		60 (15.9)
E01M		40 (10.6)
E01K		25 (6.6)
E02S		60 (15.9)
E02M		40 (10.6)
E03S		60 (15.9)
E03M		40 (10.6)
B31S		60/30 (15.9/7.9)
B31M		40/20 (10.6/5.3)
B32S		60/30 (15.9/7.9)
B32M		40/20 (10.6/5.3)

Spool position feedback



1 = output, actual spool position

2 = supply (18...36 VDC)

3 = GND (0V)

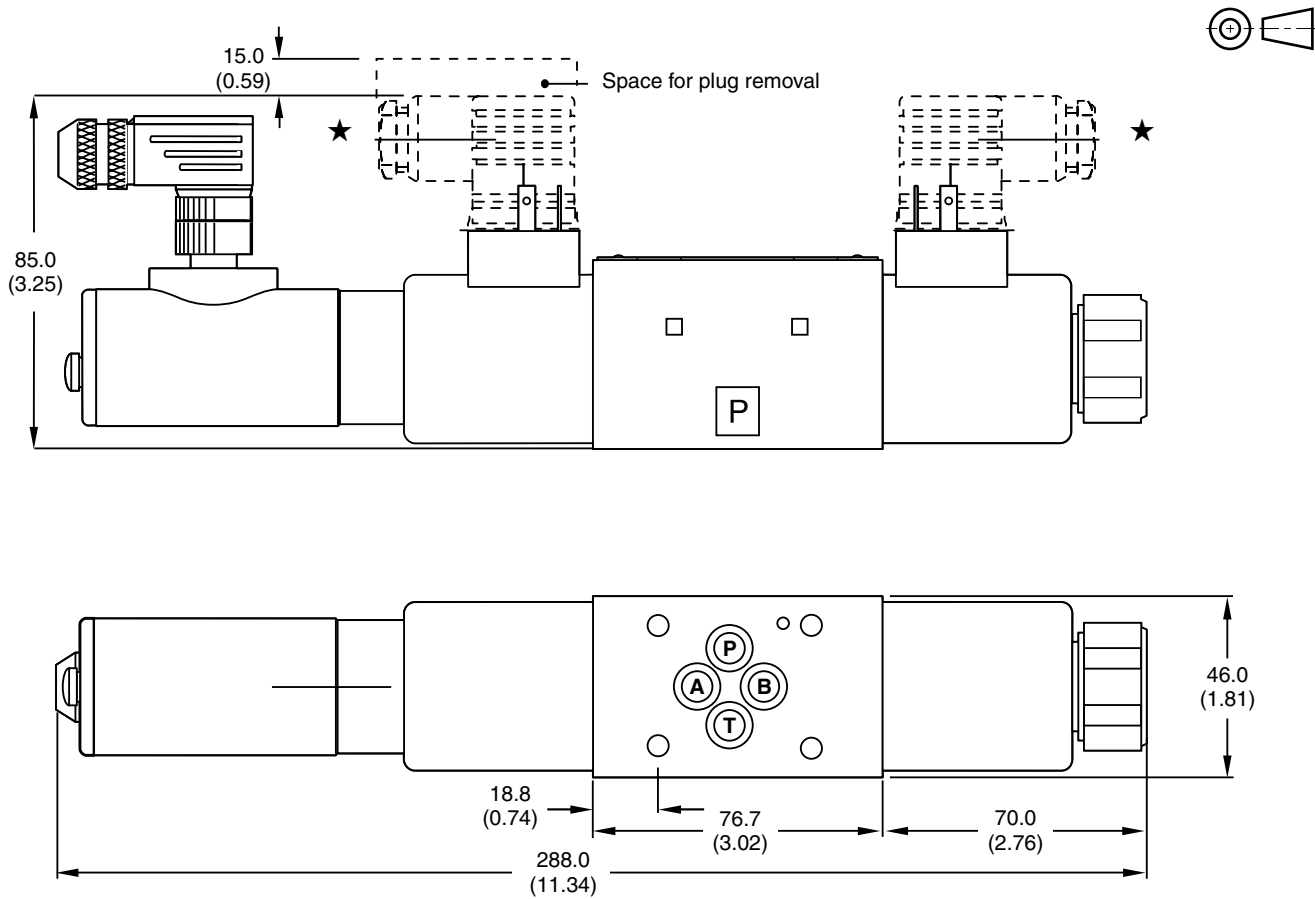
4 = not used

5 = PE


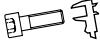


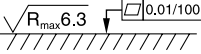
Please order plugs separately. See Accessories.

Inch equivalents for millimeter dimensions are shown in (**)

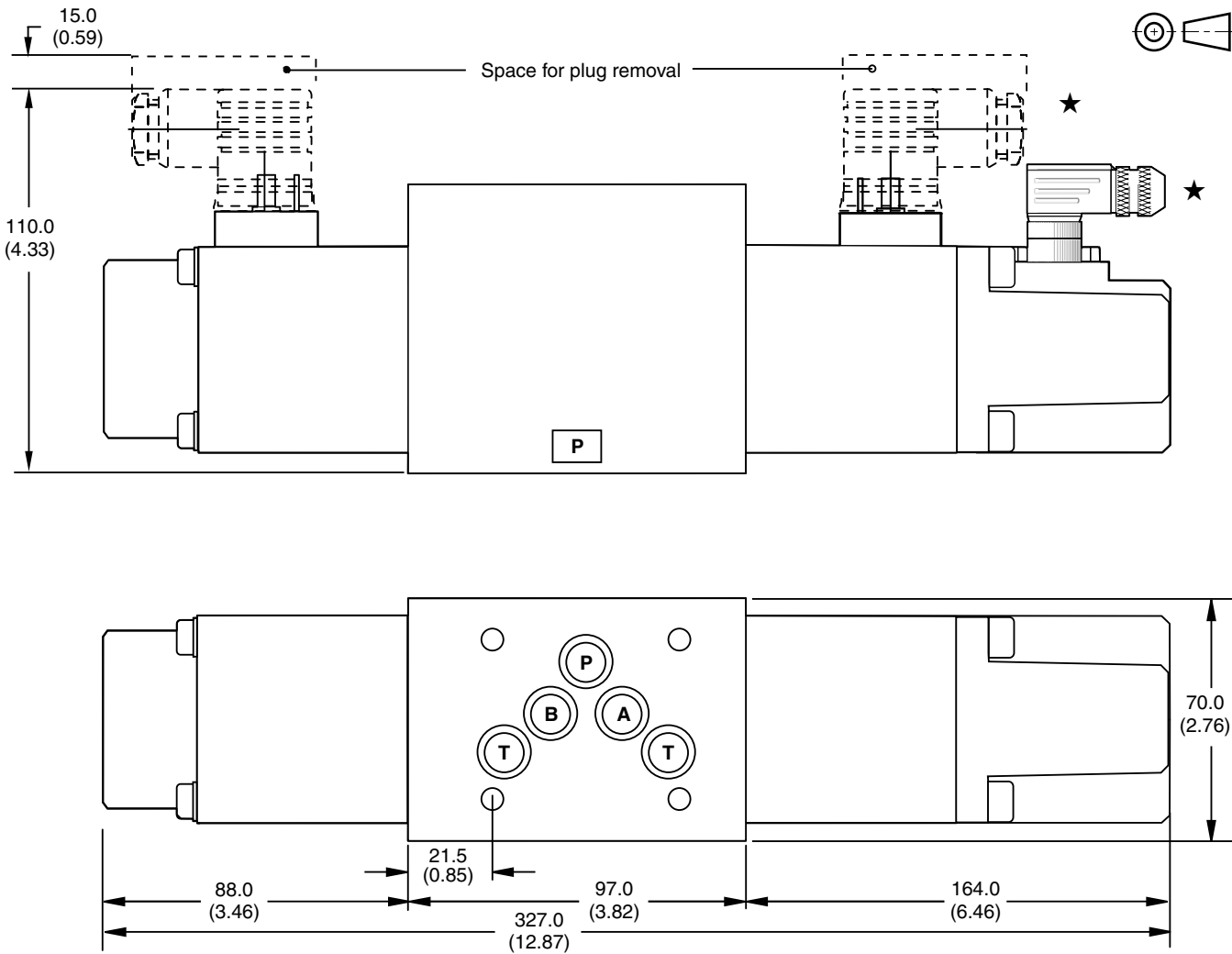
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



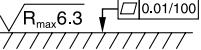
★ Order plugs separately.

Surface finish	 Kit	 Kit		 Kit NBR
	BK375	4x M5x30 DIN 912 12.9	6.8 Nm (5.0 lb.-ft.) ±15 %	SK-D1FC-N
	BK209	4x10-24x1.25"	6.8 Nm (5.0 lb.-ft.)	

Inch equivalents for millimeter dimensions are shown in (**)



★ Order plugs separately.

Surface finish	 Kit			 Kit NBR
	BK385	4x M6x40 DIN 912 12.9	11 Nm (8.1 lb.-ft.) ±15 %	SK-D3FC-N
	BK98	4x1/4-20x1.625"	11 Nm (8.1 lb.-ft.)	