

**General Description**

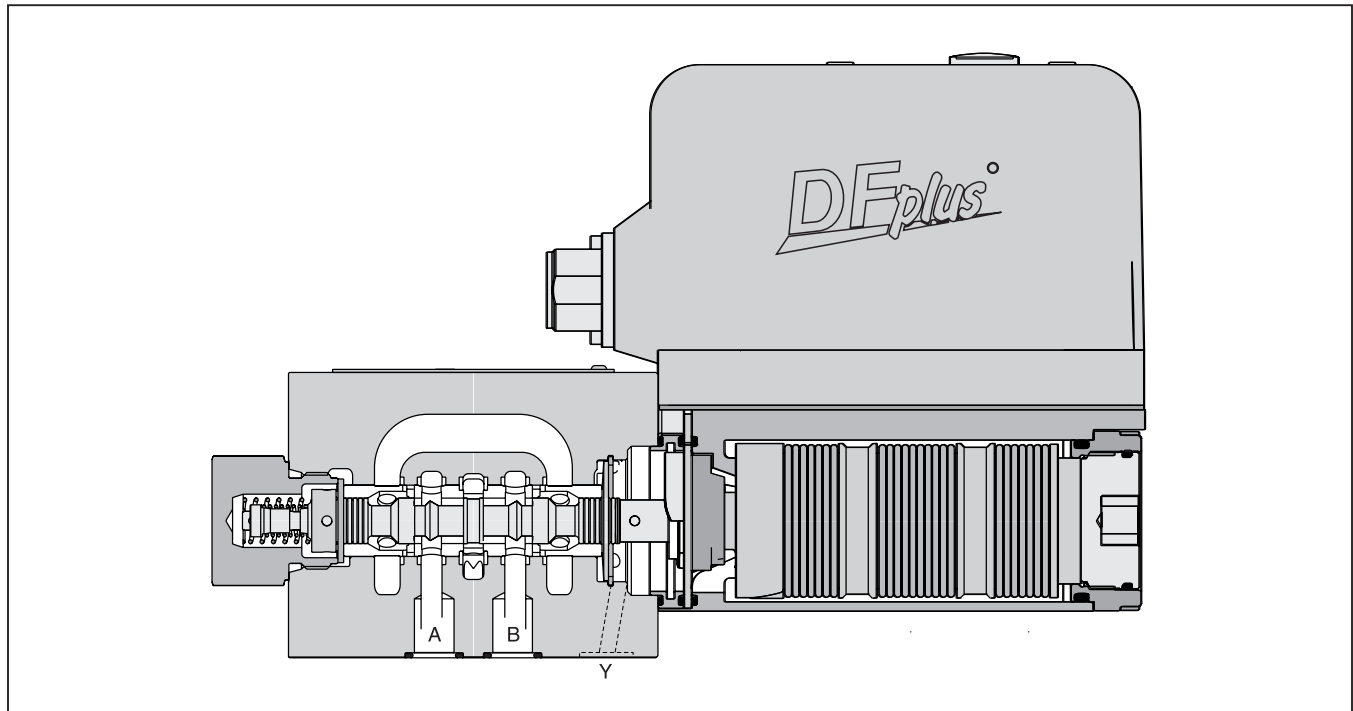
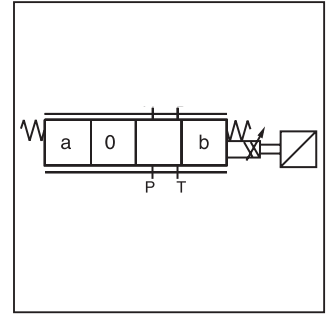
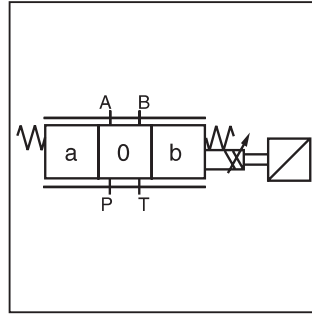
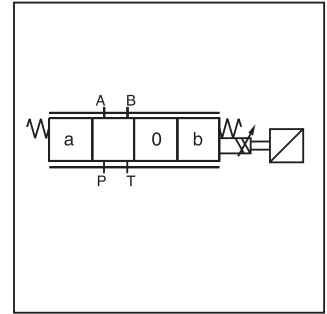
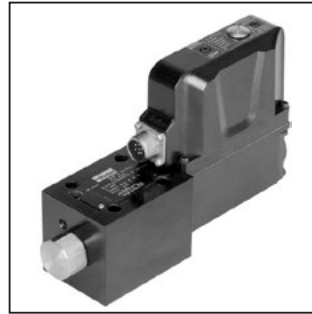
Series D3FP direct operated control NG10 (CETOP 5) valve features extremely high dynamics combined with maximum flow. It is used for high accuracy positioning of a hydraulic axis, and for controlling force and velocity.

Driven by the new patented VCD® actuator, the D3FP reaches the frequency response of servovalves.

At power-down the spool moves in a defined position. All common input signals are available.

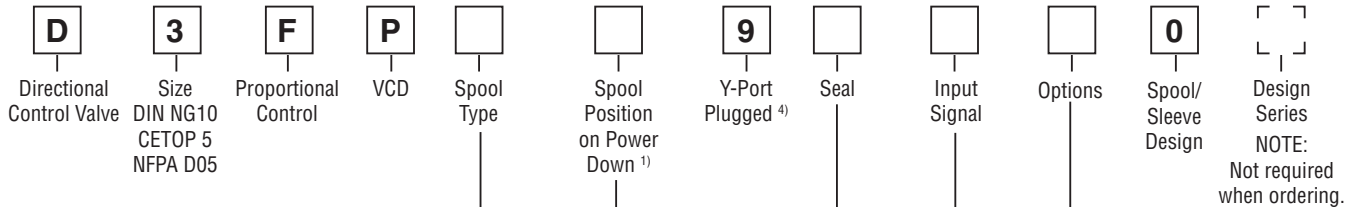
**Features**

- Extremely high dynamics
- Maximum tank pressure 250 Bar (3600 PSI) with external drain Y-port
- Defined spool positioning at power down
- Onboard electronics
- Spool/Sleeve design



**WARNING:** This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).  
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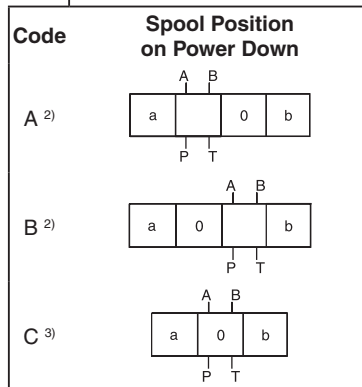
**A**



Code	Spool	Flow LPM (GPM) at Δp 35 Bar (508 PSI) per metering edge
<b>Zerolap</b>		
E50Y		100 (26.5)
E50P		50 (13.2)
B60Y	$Q_B = Q_A / 2$ 	100 (26.5)
B60P	$Q_B = Q_A / 2$ 	50 (13.2)
<b>Underlap approximately -0.5%</b>		
E55Y		100 (26.5)
E55P		50 (13.2)
<b>Overlap 18%</b>		
E01Y E01P		100 (26.5) 50 (13.2)
E02Y E02P		100 (26.5) 50 (13.2)
B31Y B31P		100 / 50 (26.5 / 13.2) 50 / 25 (13.2 / 6.6)
B32Y B32P		100 / 50 (26.5 / 13.2) 50 / 25 (13.2 / 6.6)

Code	Description
N	Nitrile
V	Fluorocarbon
H	For HFC Fluid

Code	Description
0	6 + PE acc. EN175201-804
5	11 + PE acc. EN175201-804
7	6 + PE + Enable



Code	Signal	Flow Direction <sup>5)</sup>
B	+/- 10V	0...+10V -> P-A
E	+/- 20mA	0...+20mA -> P-A
S	4...20mA	12...20mA -> P-A

- <sup>1)</sup> On power down the spool moves in a defined position. This cannot be guaranteed in case of single flow path on the control edge A→T resp. B→T with pressure drops above 120 Bar (1740 PSI) or contamination in the hydraulic fluid.
- <sup>2)</sup> Approximately 10% opening, only available with zerolap spools and underlap spools.
- <sup>3)</sup> Only available with overlap spools.
- <sup>4)</sup> Needs to be removed at tank pressure >35 Bar (507.5 PSI).
- <sup>5)</sup> Flow direction P→A with Pin D > Pin E.

**Bolt Kit:**  
 BK98    (4) 1/4-20x1.62  
 BK385    (4) M6x40  
**Weight:** 6.5 kg (14.3 lbs.)

Please order plugs separately. See Accessories.

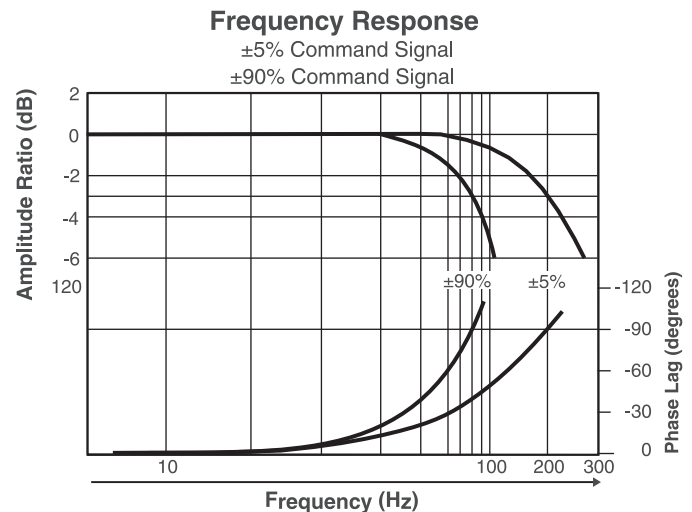
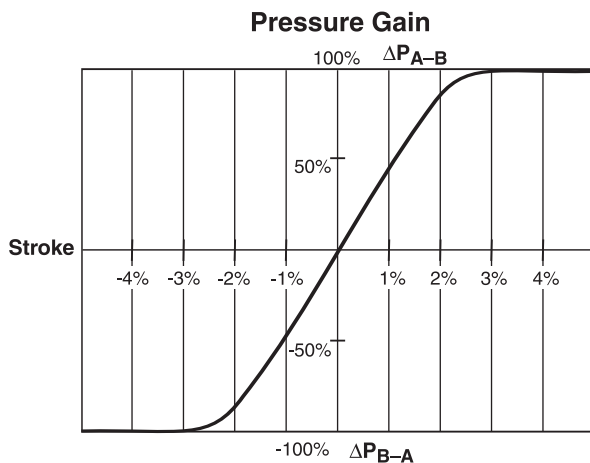
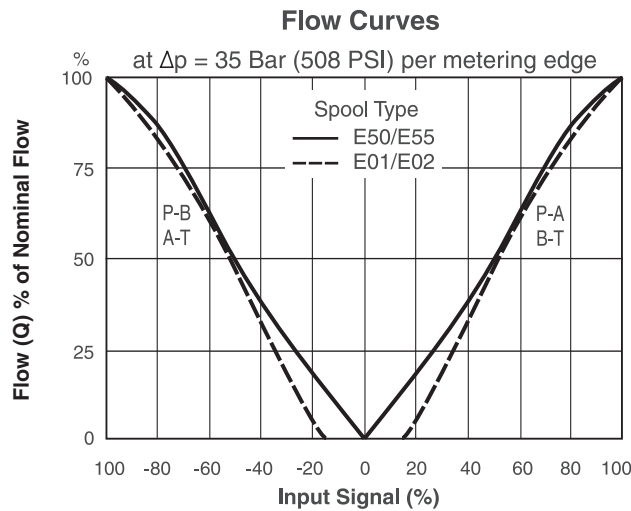
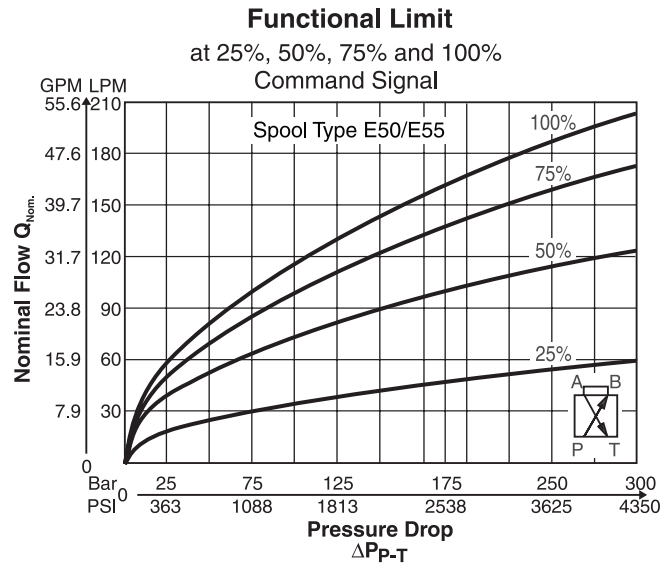
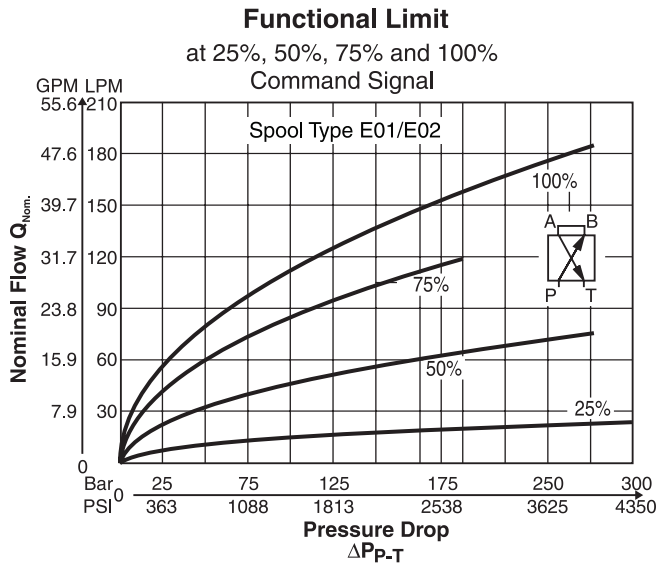
General		
Design	Direct operated proportional DC valve	
Actuation	VCD® actuator	
Size	NG10 / CETOP 5 / NFPA D05	
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA	
Mounting Position	Unrestricted	
Ambient Temperature	[°C]	-20...+50; (-4°F...+122°F)
MTTF <sub>D</sub> Value	[years]	75
Vibration Resistance	[g]	10 Sinus 5...2000 Hz acc. IEC 68-2-6 30 Random noise 20...2000 Hz acc. IEC 68-2-36 15 Shock acc. IEC 68-2-27
Hydraulic		
Maximum Operating Pressure	Ports P, A, B 350 Bar (5075 PSI) Port T max. 250 Bar (3600 PSI), port Y max. 35 Bar (508 PSI) <sup>1)</sup>	
Fluid	Hydraulic oil as per DIN 51524...51535, other on request	
Fluid Temperature	[°C]	-20...+60; (-4°F...+140°F)
Viscosity		
Permitted	[cSt] / [mm <sup>2</sup> /s]	20...380 (93...1761 SSU)
Recommended	[cSt] / [mm <sup>2</sup> /s]	30...80 (139...371 SSU)
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)	
Nominal Flow at Δp=35 Bar (508 PSI) per Control Edge <sup>2)</sup>	50 LPM (13.2 GPM) / 100 LPM (26.5 GPM)	
Flow Maximum	150 LPM (39.7 GPM)	
Leakage at 100 Bar (1450 PSI)	[ml/min]	<400 (zerolap spool); <50 (overlap spool)
Static / Dynamic		
Step Response at 100% Step <sup>3)</sup>	[ms]	<6
Frequency Response (±5% signal) <sup>3)</sup>	[Hz]	350 (amplitude ratio -3dB), 350 (phase lag -90°)
Hysteresis	[%]	<0.05
Sensitivity	[%]	<0.03
Temperature Drift	[%/K]	<0.025
Electrical		
Duty Ratio	[%]	100 ED; CAUTION: Coil temperature up to 150°C (302°F) possible
Protection Class	IP65 in accordance with EN 60529 (plugged and mounted)	
Supply Voltage/Ripple	[V]	DC 22 ... 30, ripple <5% eff., surge free
Current Consumption Maximum	[A]	3.5
Pre-Fusing	[A]	4.0 medium lag
Input Signal		
Voltage	[V]	10...0...-10, ripple <0.01% eff., surge free, 0...+10V P->A
Impedance	[kOhm]	100
Current	[mA]	20...0...-20, ripple <0.01% eff., surge free, 0...+20mA P->A
Impedance	[Ohm]	250
Current	[mA]	4...12...20, ripple <0.01% eff., surge free, 12...20mA P->A <3.6 mA = disable, >3.8 mA = according to NAMUR NE43
Impedance	[Ohm]	250
Differential Input Maximum		
Code 0	[V]	30 for terminal D and E against PE (terminal G)
Code 5 / 7	[V]	30 for terminal 4 and 5 against PE (terminal ↓)
Voltage References:	Not a powered output Only for 10K Ohm pots	
Enable Signal (Only Code 5 / 7)	[V]	5...30, Ri = 9 kOhm
Diagnostic Signal	[V]	+10...0...-10 / +Ub, rated max. 5mA
EMC	EN61000-6-2 / EN61000-6-4	
Electrical Connection	Code 0 Code 5 Code 7	6 + PE acc. EN 175201-804 11 + PE acc. EN 175201-804 6 + PE + Enable
Wiring Minimum	Code 0 Code 5 Code 7	[mm <sup>2</sup> ] 7x1.0 (AWG 18) overall braid shield 12x1.0 (AWG 20) overall braid shield 12x1.0 (AWG 18) overall braid shield
Wiring Length Maximum	[m]	50 (164 ft.)

<sup>1)</sup> For applications with pT>35 Bar (508 PSI) the Y-port plug must be removed and the Y-port connected to tank.

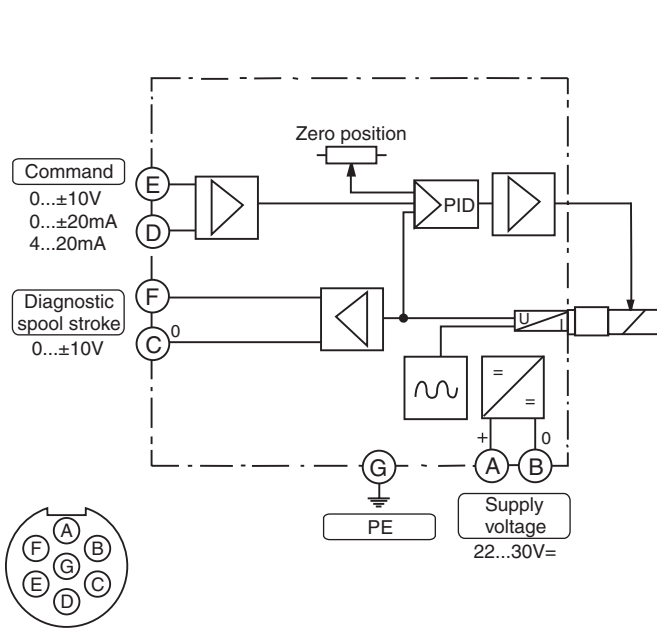
<sup>2)</sup> Flow rate for different Δp per control edge:  $Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$   
 $\Delta P_{Nom.} \cdot \left(\frac{Q_x}{Q_{Nom.}}\right)^2 = \Delta P_x$

<sup>3)</sup> Measured with load 100 Bar (1450 PSI) pressure drop/two control edges

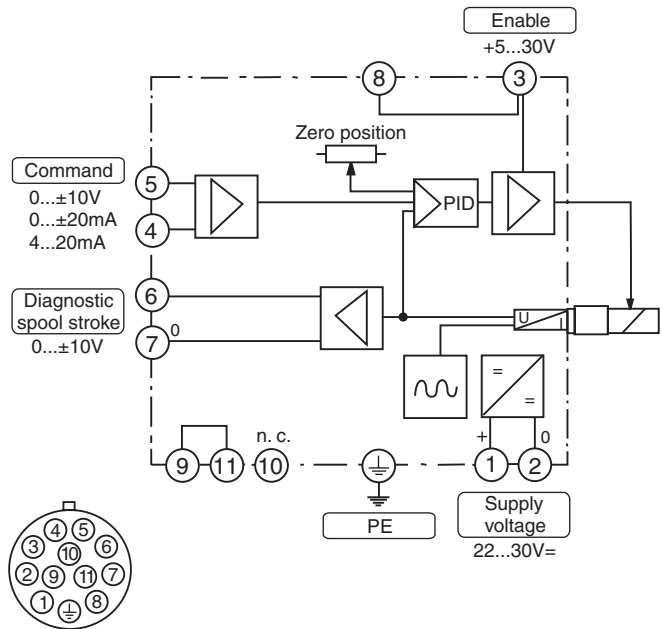
**A**



**Code 0**  
 6 + PE acc. to EN 175201-804

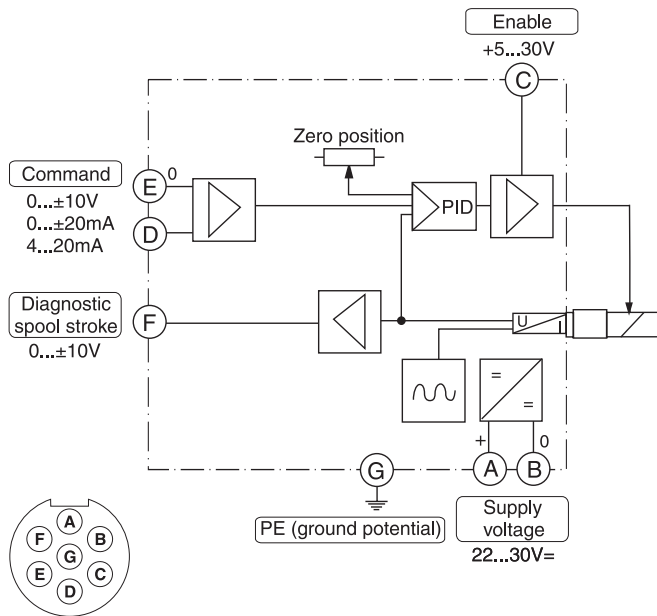


**Code 5**  
 11 + PE acc. to EN 175201-804



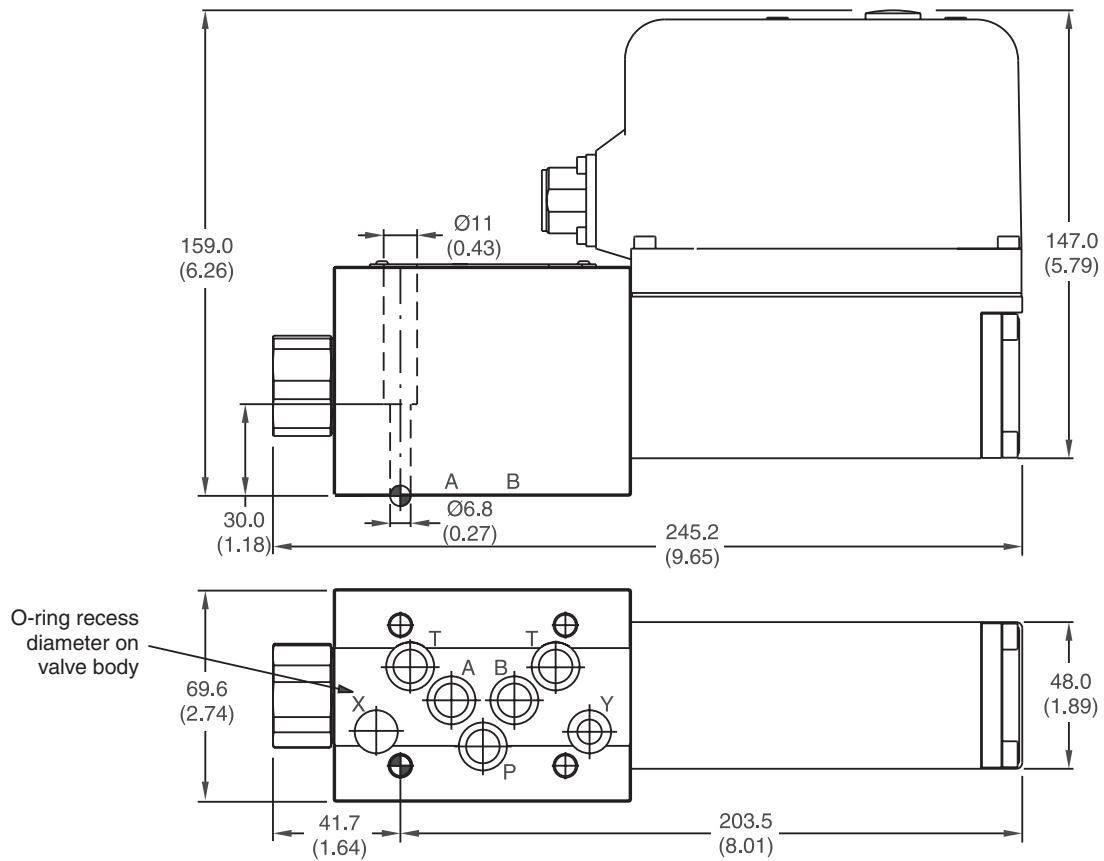
**Note:** When replacing another valve, verify Pin C is 0 V and not wired as an enable.





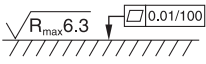
**Code 7**  
 6 + PE + Enable acc. to EN 175201-804



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

**A**



Surface Finish	 Kit	 Kit	 Kit	Seal  Kit
	BK385 BK98	4x M6x40 DIN 912 12.9 4x 1/4-20x1.62	13.2 Nm (9.7 lb.-ft.) ±15 %	Nitrile: SK-D3FP Fluorocarbon: SK-D3FP-V for HFC Fluid: SK-D3FP-H