

Parker Series D3FP Direct Operated Proportional Directional Control Valve Service Manual

Technical Information

General Description

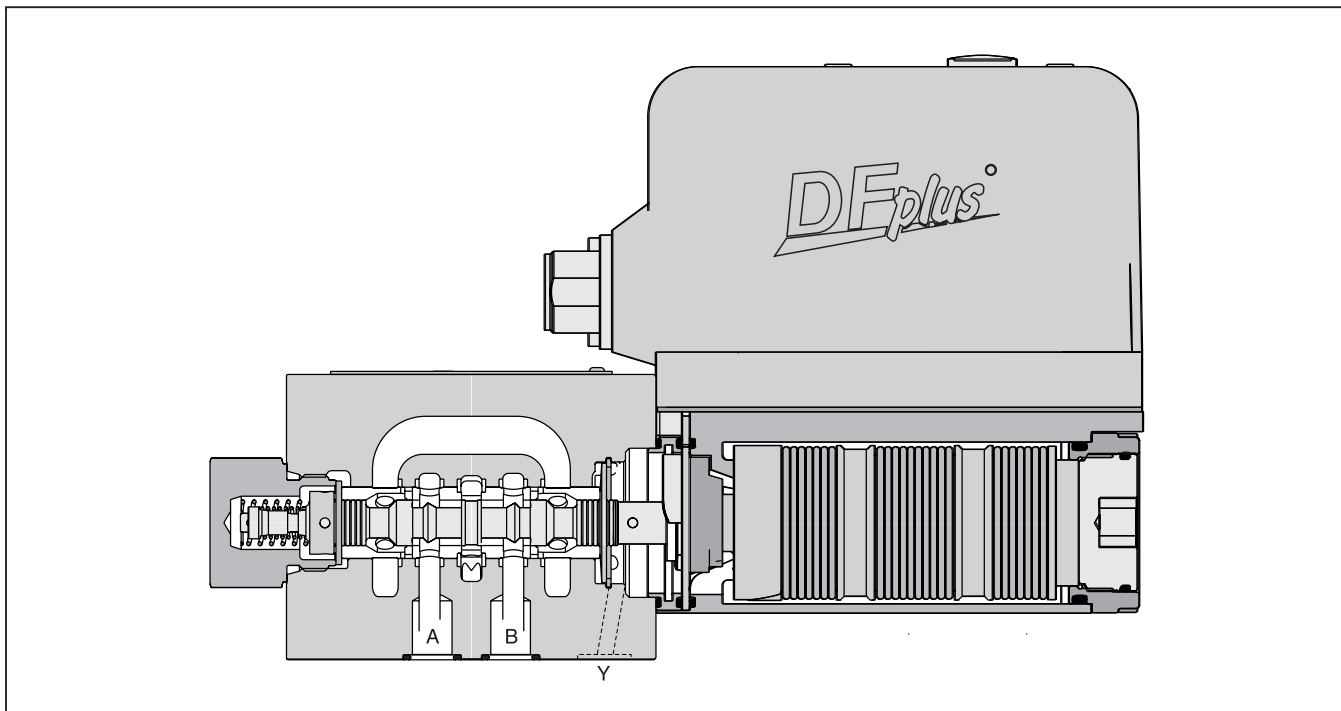
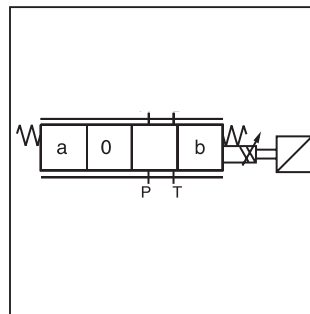
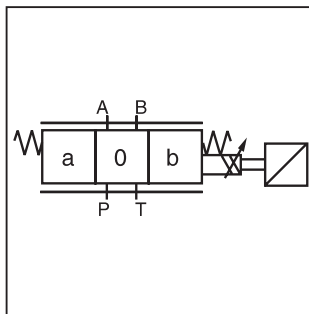
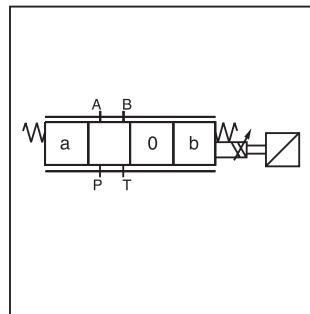
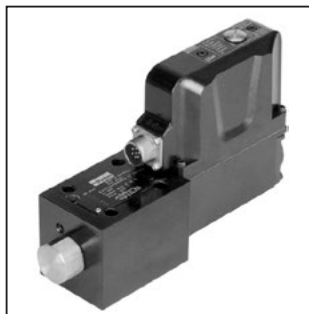
Series D3FP direct operated control NG10 (CETOP 5) valve features extremely high dynamics combined with maximum flow. It is used for high accuracy positioning of a hydraulic axis, and for controlling force and velocity.

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

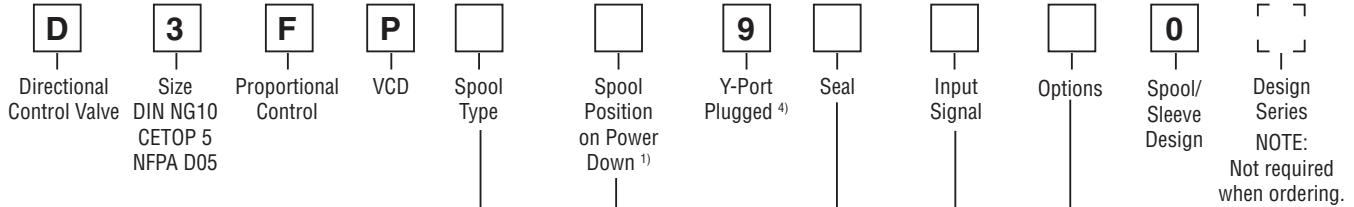


WARNING: This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information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

A01_Cat2500.indd, ddp, 04/19



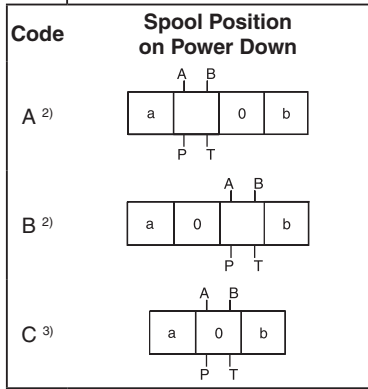
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Code	Spool	Flow LPM (GPM) at Δp 35 Bar (508 PSI) per metering edge
Zerolap		
E50Y		100 (26.5)
E50P		50 (13.2)
B60Y	$Q_B = Q_A / 2$ 	100 (26.5)
B60P	$Q_B = Q_A / 2$ 	50 (13.2)
Underlap approximately -0.5%		
E55Y		100 (26.5)
E55P		50 (13.2)
Overlap 18%		
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 ⁵⁾
B	+/- 10V	0...+10V -> P-A
E	+/- 20mA	0...+20mA -> P-A
S	4...20mA	12...20mA -> P-A

- 1) 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.
- 2) Approximately 10% opening, only available with zerolap spools and underlap spools.
- 3) Only available with overlap spools.
- 4) Needs to be removed at tank pressure >35 Bar (507.5 PSI).
- 5) 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.



Specifications

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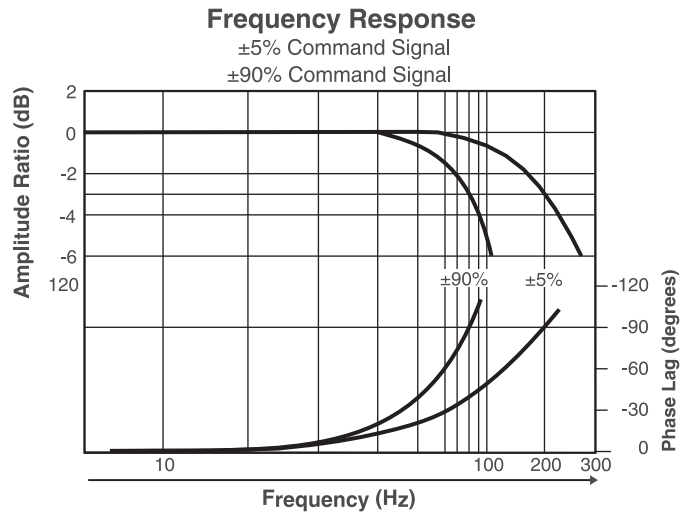
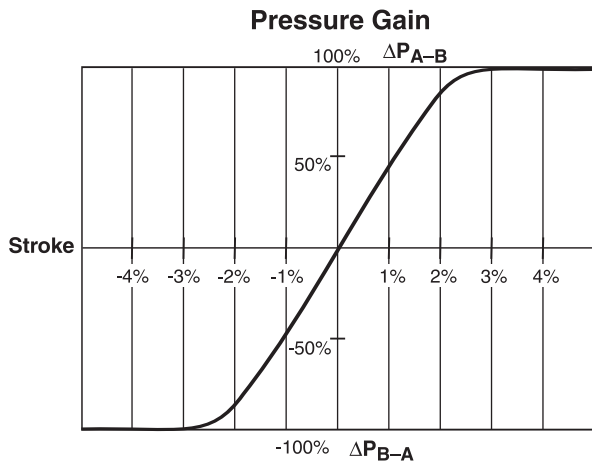
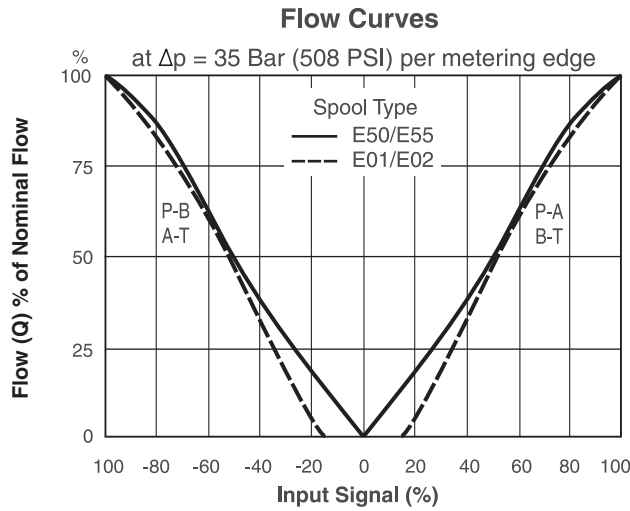
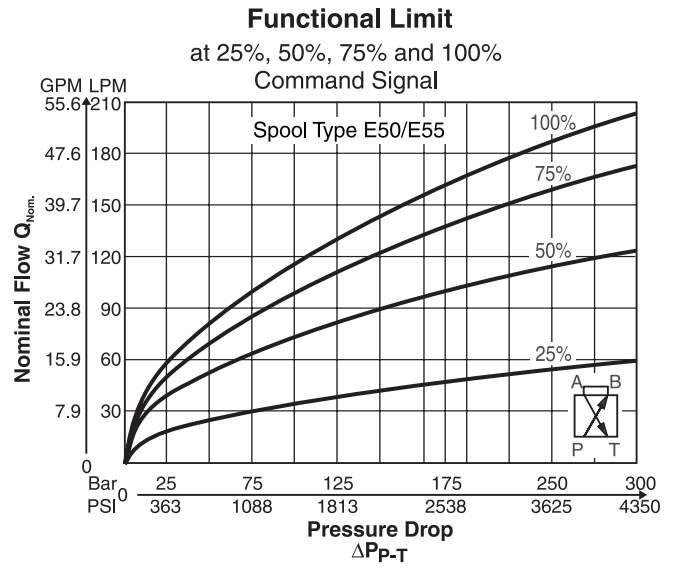
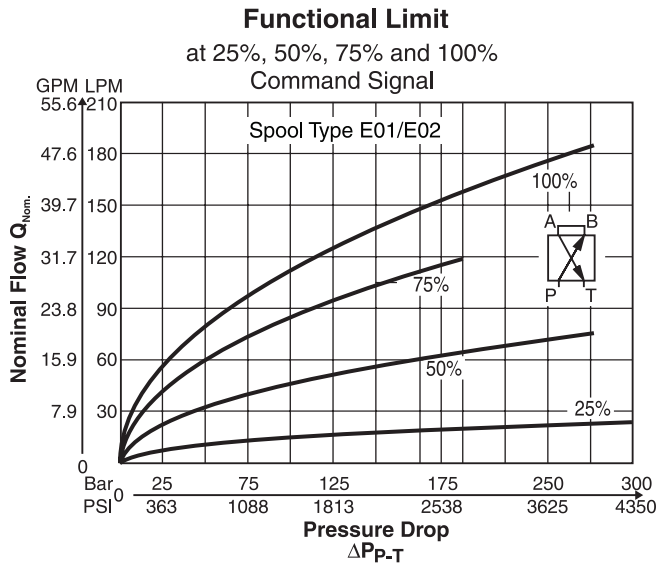
General		
Design	Direct operated proportional DC valve	
Actuation	VCD® actuator	
Size	NG10 / CETOP 5 / NFPA D05	
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA	
Mounting Position	Unrestricted	
Ambient Temperature	[°C]	-20...+50; (-4°F...+122°F)
MTTF _D Value	[years]	75
Vibration Resistance	[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) ¹⁾	
Fluid	Hydraulic oil as per DIN 51524...51535, other on request	
Fluid Temperature	[°C]	-20...+60; (-4°F...+140°F)
Viscosity		
Permitted	[cSt] / [mm ² /s]	20...380 (93...1761 SSU)
Recommended	[cSt] / [mm ² /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 ²⁾	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 ³⁾	[ms]	<6
Frequency Response (±5% signal) ³⁾	[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 ²] 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.)

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

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

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

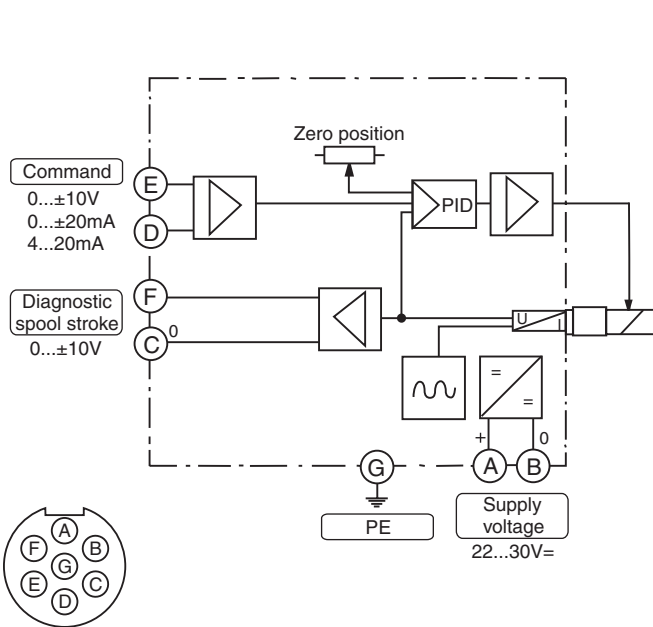
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Block Diagrams — Wiring

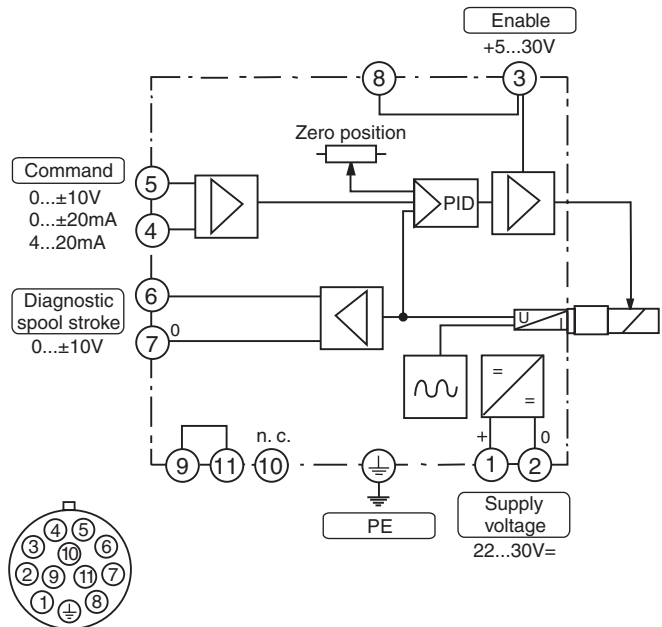
Code 0

6 + PE acc. to EN 175201-804



Code 5

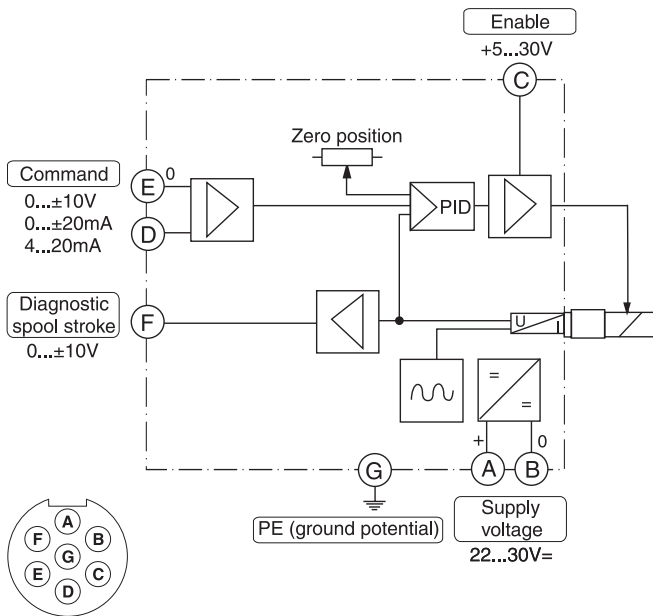
11 + PE acc. to EN 175201-804



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

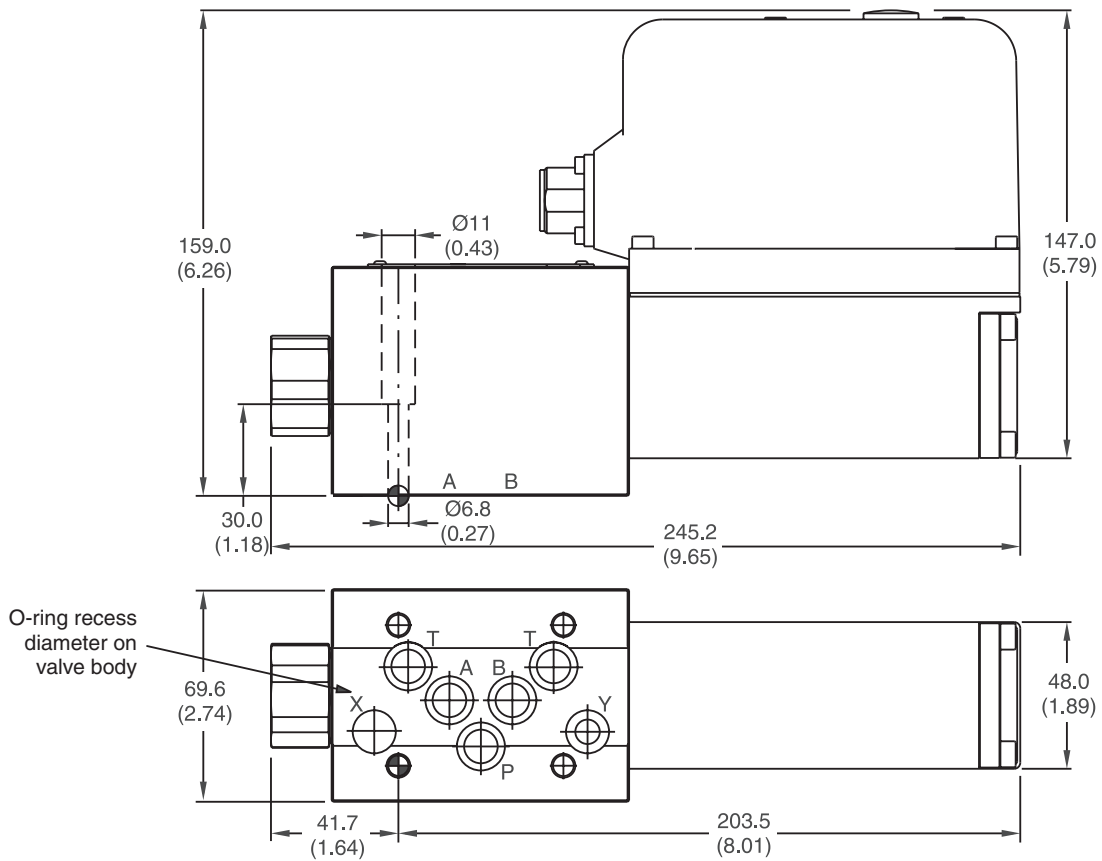
Code 7





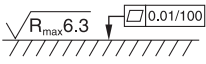
6 + PE + Enable acc. to EN 175201-804



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

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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