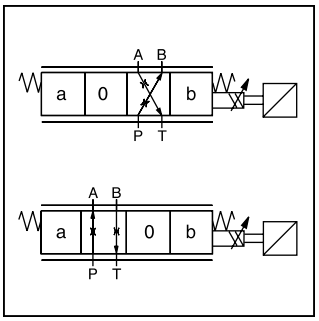
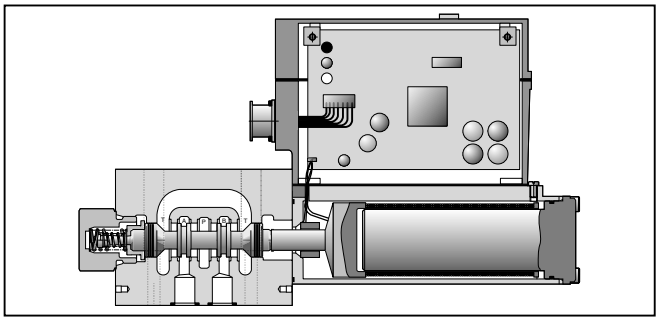
General Description

Series D3FP direct-operated control valve size NG10 (CETOP 5) shows extremely high dynamics combined with high flow. It is used for highest accuracy in positioning of hydraulic axis and controlling of pressure and velocity.

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

A loss of power supply lets the spool move in a defined position. All common input signals are available.



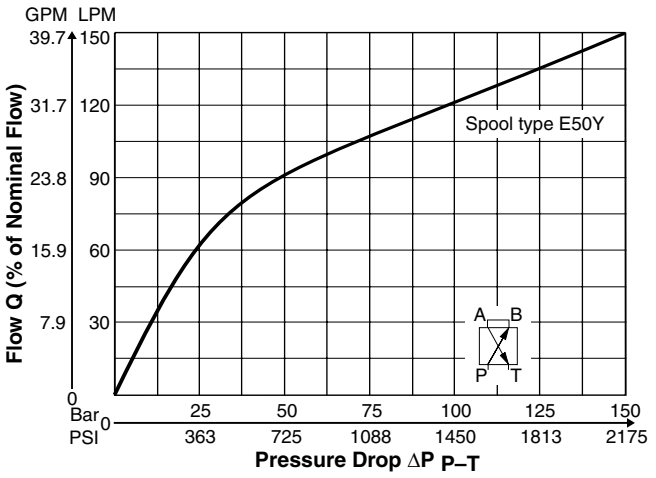


Features

- Extremely high dynamics.
- Max. tank pressure 350 Bar (5075 PSI) (with external leakage port Y).
- Defined spool positioning in case of power supply breakdown.
- On-board electronics.
- Precision spool/sleeve design.

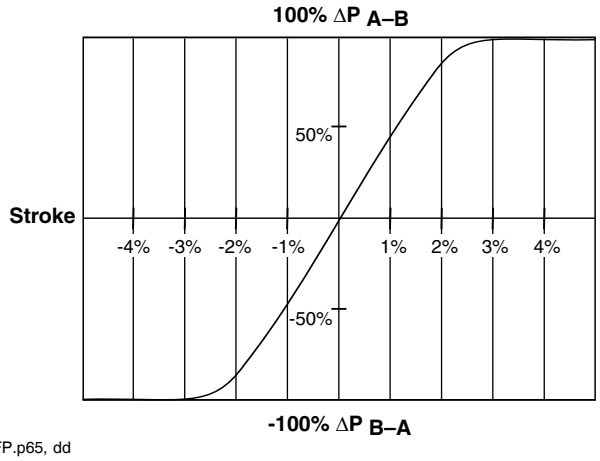
Performance Curves

Operating Limit

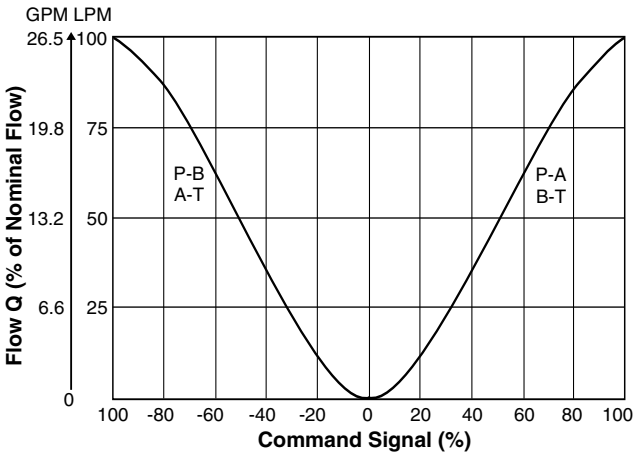


*** When exceeding the operating limits, the valve will shut down in a defined position (Code A, B concerning ordering code). Switch power supply off/on to re-enable the valve within the operating limits.**

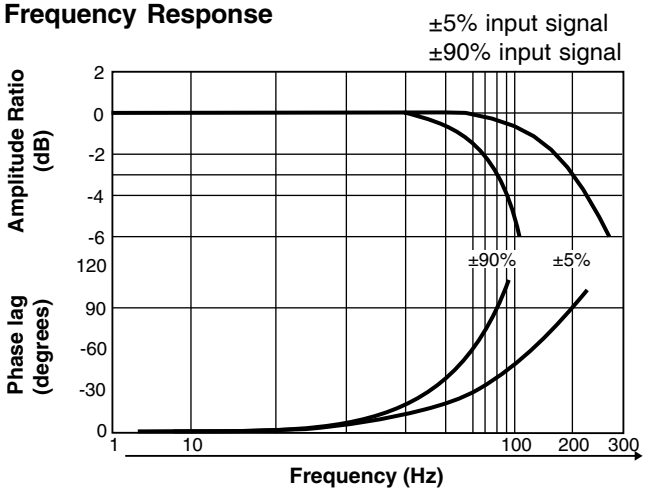
Pressure Gain



Spool Type E50/E55



Frequency Response



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General			
Design	Direct operated proportional Directional control valve	**Mounting Position**	Any
Actuation	VCD® actuator	**Ambient Temperature Range**	-20°C to +50°C (-4°F to +122°F)
Size	NG10 (CETOP 5)	**Vibration Resistance**	25 g acc. DIN IEC68, part 2-6
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA	**Protection Class**	IP65
Hydraulic			
Operating Pressure Maximum	Ports P, A, B: 350 Bar (5075 PSI) Port T: 35 Bar (507.5 PSI) 350 Bar (5075 PSI) discharged at Port Y)[1]	**Filtration**	ISO 4406 (1999) 18/16/13 (acc. NAS 1683: 7)
Fluid	Hydraulic oil as per DIN 51524 to 535, other on request	**Flow**	nominal at Δp=35 Bar (507.5 PSI) per control edge[2] 50 / 100 LPM (13.2 / 26.5 GPM)
Fluid Temperature	-20°C to +50°C (-4°F to +122°F)	**Flow Maximum**	100 LPM (26.5 GPM) at Δp=70 Bar (1015 PSI) over two control edges
Viscosity Permitted	20 to 380 SSU	**Leakage**	at 100 Bar (1450 PSI) <400 ml/min (49 in³/min.)
Viscosity Recommended	30 to 80 SSU		
Static / Dynamic			
Step Response @ 100%[3]	<16 ms@ 100% step with rise and settling, <6 ms rise only	**Hysteresis**	<0.5%
		Sensitivity	<0.3%
Frequency Response (±5% signal[3]	200 Hz (amplitude ratio -3dB), 200 Hz (phase lag -90°)	**Temperature Drift**	<0.025%/°C
Electrical			
Duty Ratio	100%	**Differential Input Maximum**	30 VDC for Terminal D and E against PE
Supply Voltage/ Ripple	22 VDC to 30 VDC, ripple <5% eff.	**Enable Signal (Code 5 Only)**	5 VDC to 30 VDC, R=9K ohm
Current Consumption	3.5A	**Diagnostic Signal**	+10...0...-10 VDC, rated max. 5 mA
Switch-on Current Typical	22A for 0.2 ms	**Prefusing**	4.0A medium lag
		EMC	EN 50081-1 / EN50082-2
Input Signal **Voltage**	Flow with Pin D > Pin E 10...0...-10, ripple <0.01% eff., surge free, 0...+10V P->A	**Interface**	Code 0: 6+PE acc. DIN 43563 Code 5: 11+PE acc. DIN 41651
Impedance	100K ohm	**Cable Specification**	Code 0: 7x1.0 (AWG 18) overall braid shield Code 5: 12x1.0 (AWG 18) overall braid shield
Current	20...0...-20 mA, ripple <0.01% eff., surge free, 0...+20 mA P->A		
Impedance	250 ohm	**Cable Length**	50m (164 ft.)
Current	4...12...20 mA, ripple <0.01% eff., surge free, 12...20 mA P->A		
Impedance	250 ohm		

[1] For applications with p_T>35 bar the Y-port has to be used. Remove the plug in the Y-port of the valve and connect the Y-port to unpressurized tank.

[2] Flow rate for different Δp per control edge: $Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$ **Note:** Equation with Δp ≤35 Bar/edge

[3] Measured with load (70 Bar (1015 PSI) pressure drop/two control edges)

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D	3	F	P	□	□	9	N	□	□	0	[ ]
Directional Control Valves	Size	Flow Control		Spool	Spool Position on Power Down		Seals	Command Signal	Accessories	Sleeve/ Spool	Design Series

NOTE: Not required when ordering.

Code	Description
3	NG10/CETOP 5

Code	Connection
0	6 + PE acc. EN175201-804
5	11 + PE acc. EN175201-804

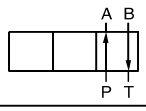
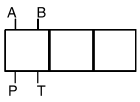
Code	Description
N	Nitrile
	Others available on request

Code	Signal	Flow
B	±10 V	0...+10 V -> P-A
E	±20 mA	0...+20 mA -> P-A
S	4...20 mA	12...20 mA -> P-A

Code	Spool	Flow LPM (GPM) at Δp 35 Bar (507.5 PSI) per metering edge
Zerolap 0 to +1%		
E50Y		100 (26.5)
E50P		50 (13.2)
Underlap approx. -0.5%		
E55Y		100 (26.5)
E55P		50 (13.2)

Please order plugs separately. See Accessories.

Weight: 6.5 kg (14.3 lbs.)

Code	Spool Position on Power Down[1]
A[2]	
B[2]	

[1] On power down the spool moves in a defined position. In case of contamination in the hydraulic fluid, this cannot be guaranteed.

[2] approx. 25% opening.

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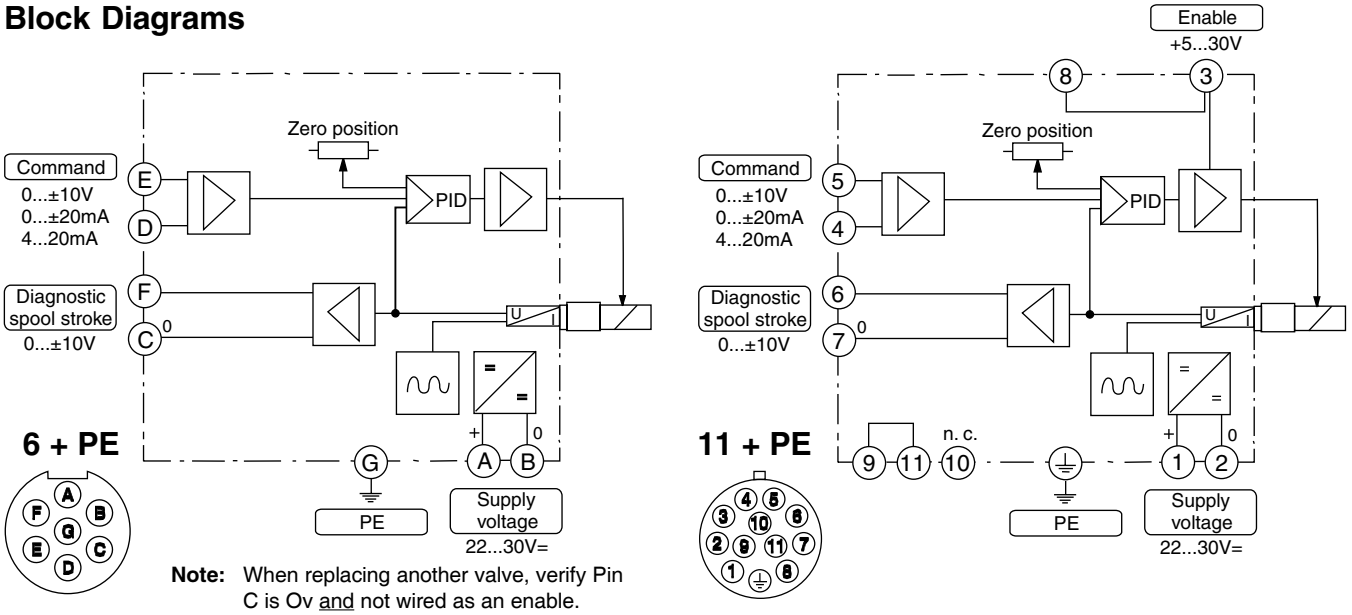
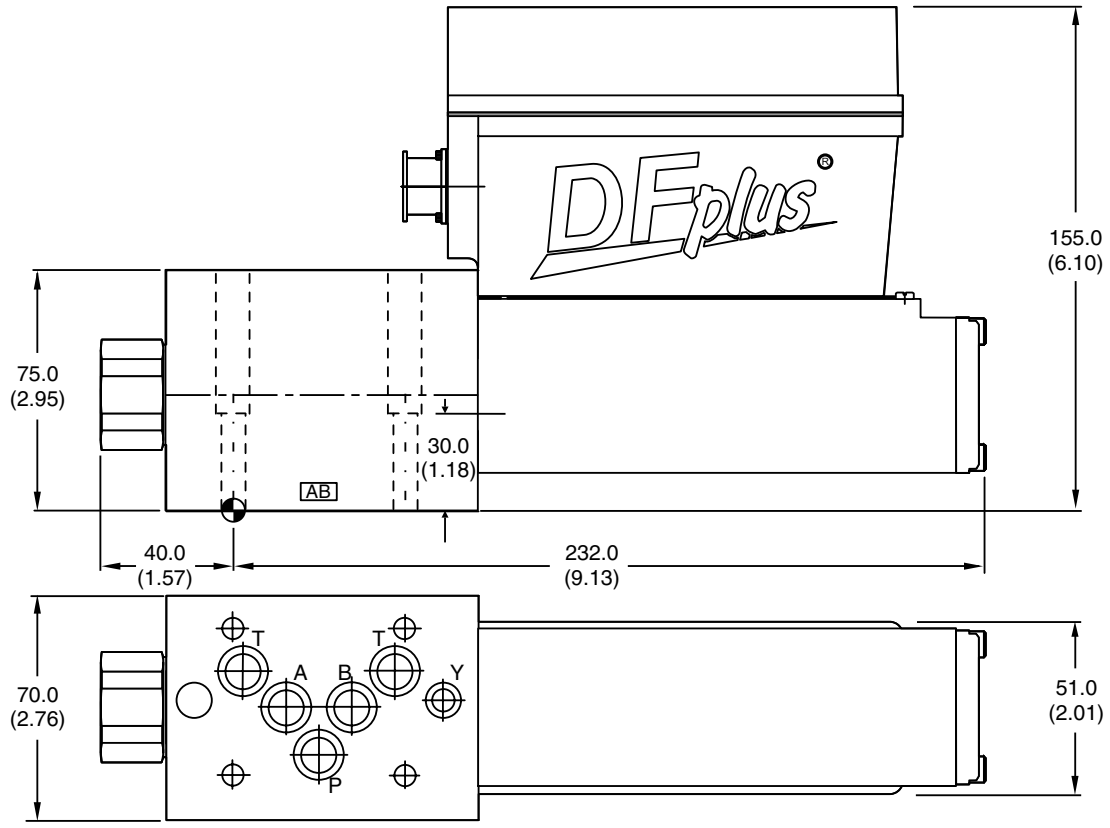
Block Diagrams



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

Dimensions

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



Surface finish	Kit		
R_{max}6.3 ⏥ 0.01/100	BK360	4x M6x40 DIN 912 12.9	11 Nm (8.1 lb.-ft.) ±15 %
	BK98	4x1/4-20x1.625"	11 Nm (8.1 lb.-ft.)

D3FP.p65, dd

Parker Hannifin Corporation
Hydraulic Valve Division
Elyria, Ohio, USA