

**Characteristics**

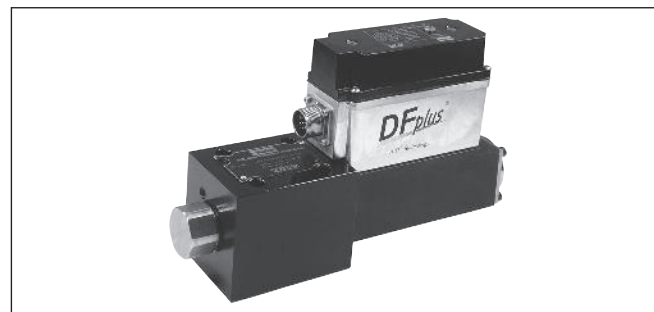
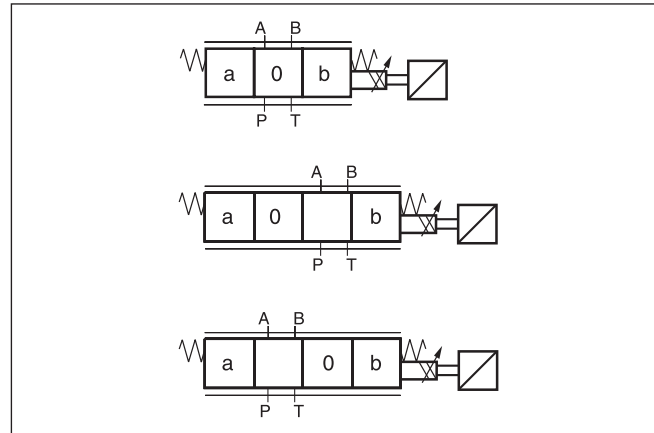
The direct-operated control valve D3FP of the nominal size NG10 (CETOP 5) shows extremely high dynamics combined with high flow. First of all it is used for highest accuracy in positioning of hydraulic axis and controlling of pressure and velocity.

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

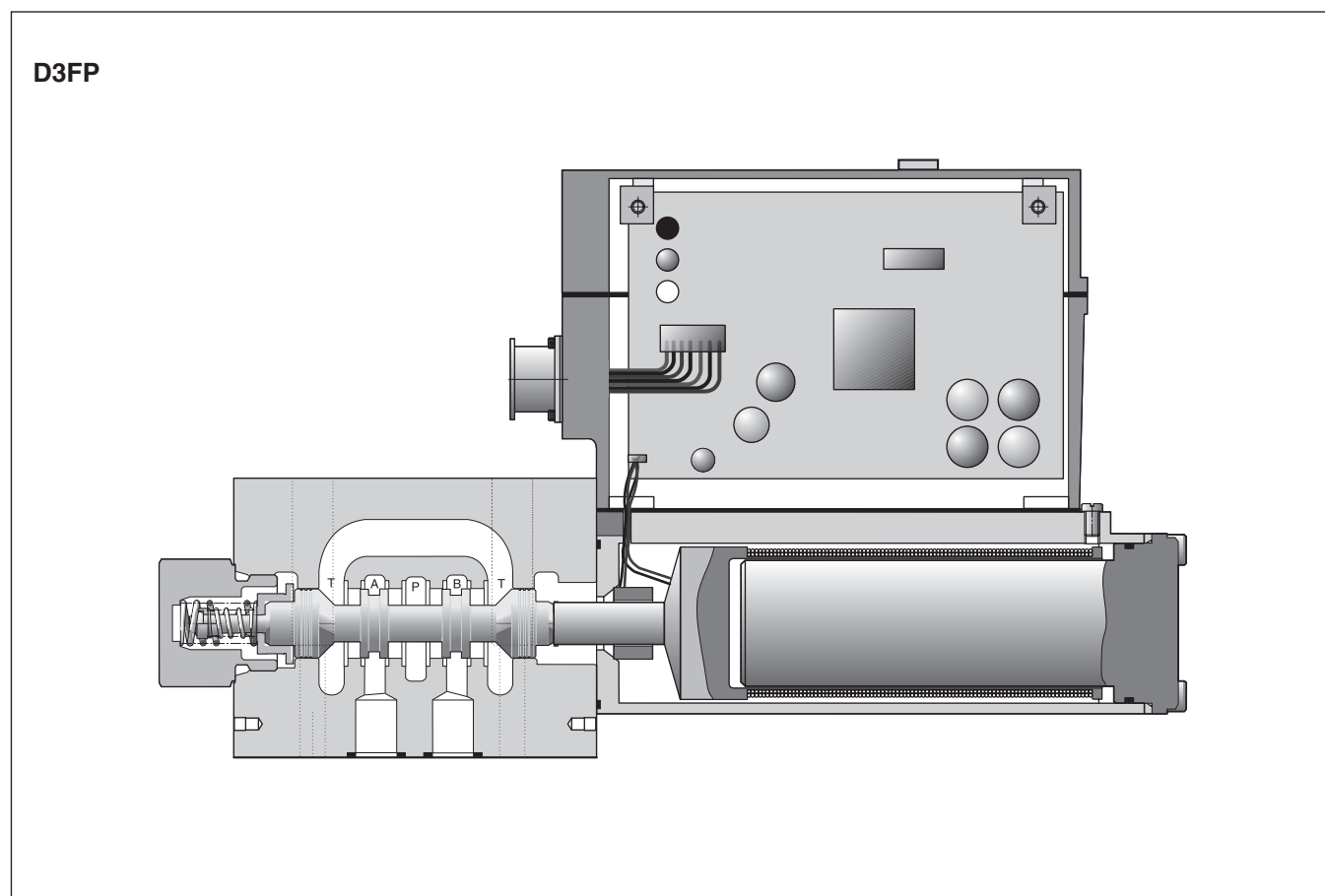
A loss of power supply lets the spool move in a defined position. All common input signals are available.

**Technical features**

- Extremely high dynamics
- Max. tank pressure 350 bar (with external leakage port y)
- Defined spool positioning in case of power supply breakdown
- Onboard electronics

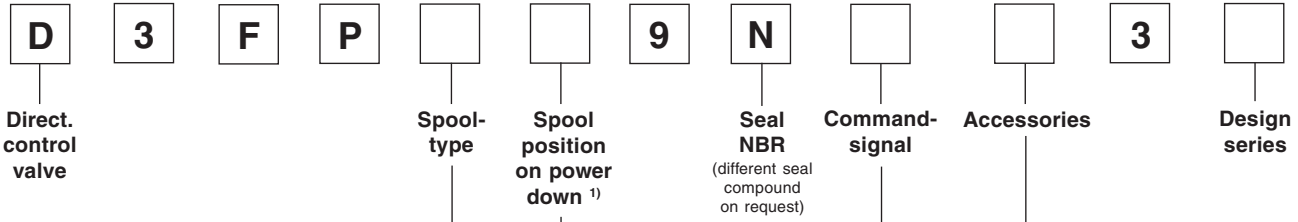


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Code	Spooltype	Flow [l/min] at Δp 35bar per metering edge
Zerolap		
<b>E52Y</b> E52P		<b>100</b> 50
<b>B61Y</b> B61P	$Q_B = Q_A / 2$ 	<b>100 / 50</b> 50 / 25
Overlap 25%		
<b>E01Y</b> E01P		<b>100</b> 50
<b>E02Y</b> E02P		<b>100</b> 50
<b>B31Y</b> B31P	$Q_B = Q_A / 2$ 	<b>100 / 50</b> 50 / 25
<b>B32Y</b> B32P	$Q_B = Q_A / 2$ 	<b>100 / 50</b> 50 / 25

Code	Spool pos. on power down
<b>A<sup>2)</sup></b>	
<b>B<sup>2)</sup></b>	
<b>C<sup>3)</sup></b>	

**Bold letters =  
 Short-term availability**

Code	Connection type
<b>0</b>	<b>6 + PE acc. DIN 43563</b>
<b>5</b>	<b>11 + PE acc. DIN 41651</b>

Code	Signal	Flow direction
<b>B</b>	<b>+/- 10V</b>	<b>0...+10V -&gt; P-A</b>
<b>E</b>	<b>+/- 20mA</b>	<b>0...+20mA -&gt; P-A</b>
<b>S</b>	<b>4...20mA</b>	<b>12...20mA -&gt; P-A</b>

- <sup>1)</sup> On power down the spool moves in a defined position. In case of contamination in the hydraulic fluid, this cannot be guaranteed.
- <sup>2)</sup> approx. 25% opening
- <sup>3)</sup> only for overlapped spools

Please order plugs separately.  
 See chapter 3 accessories.

**Technical Data**

<b>General</b>		
Design		Direct-operated proportional DC valve
Actuation		VCD® actuator
Size		NG10 (CETOP 5)
Mounting interface		DIN 24340 / ISO 4401 / CETOP RP121 / NFPA
Mounting position		Any
Ambient temperature	[°C]	-20...+50
Weight	[kg]	6.5
Vibration resistance	[g]	25 acc. DIN IEC68, part 2-6
<b>Hydraulic</b>		
Max. operating pressure	[bar]	Ports P, A, B max. 350; Port T max. 35 (350 at discharged port Y) <sup>1)</sup>
Fluid		Hydraulic oil as per DIN 51524...535, other on request
Fluid temperature	[°C]	-20...+50
Viscosity permitted	[mm <sup>2</sup> /s]	20...380
Viscosity recommended	[mm <sup>2</sup> /s]	30...80
Filtration		ISO 4406 (1999) 18/16/13 (acc. NAS 1683: 7)
Flow nominal at Δp=35bar per control edge <sup>2)</sup>	[l/min]	50 / 100
Flow maximum	[l/min]	100 (at Δp=70bar over two control edges)
Leakage at 100 bar	[ml/min]	<800
<b>Static / Dynamic</b>		
Step response at 100% step <sup>3)</sup>	[ms]	<6
Frequency response (+-5% signal) <sup>3)</sup>		200 Hz (amplitude ratio -3dB), 200 Hz (phase lag -90°)
Hysteresis	[%]	<0.05
Sensitivity	[%]	<0.03
Temperature drift	[%/°K]	<0.025
<b>Electrical characteristics</b>		
Duty ratio	[%]	100
Protection class		IP65
Supply voltage/ripple	[V]	22 ... 30, ripple <5% eff.
Current consumption max.	[A]	3.5
Switch-on current typical	[A]	22 for 0.2 ms
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
Impedance	[Ohm]	250
Differential input max.	[V]	30 for terminal D and E against PE
Enable signal (only code 5)	[V]	5...30, R <sub>i</sub> = 9 kOhm
Diagnostic signal	[V]	+10...0...-10 / +Ub, rated max. 5mA
Pre-fusing	[A]	4.0 medium lag
EMC		EN 50081-2 / EN50082-2
Electrical connection		
Code 0		6+PE acc. DIN 43563
Code 5		11+PE acc. DIN 41651
Wiring min.		
Code 0	[mm <sup>2</sup> ]	7x1.0 (AWG 18) overall braid shield
Code 5	[mm <sup>2</sup> ]	12x1.0 (AWG 18) overall braid shield
Wiring length max.	[m]	50

<sup>1)</sup> For applications with p<sub>T</sub>>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.

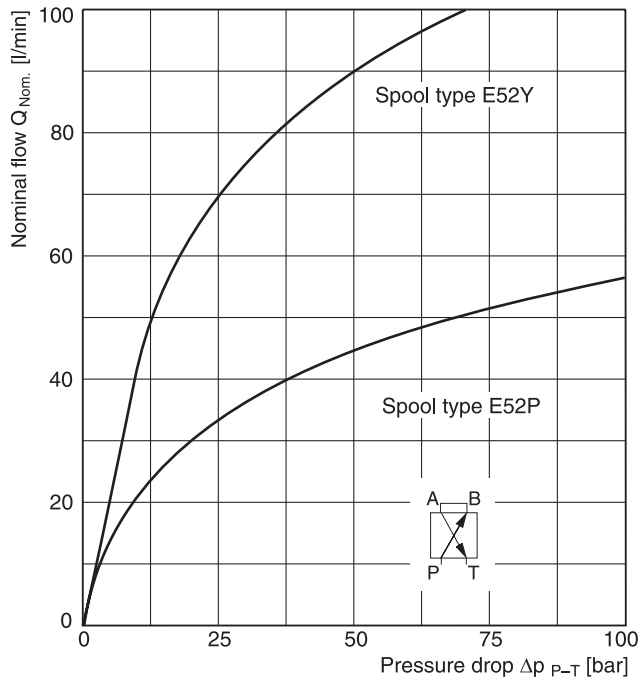
<sup>2)</sup> Flow rate for different Δp per control edge:

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

<sup>3)</sup> Measured with load (70 bar pressure drop/two control edges)

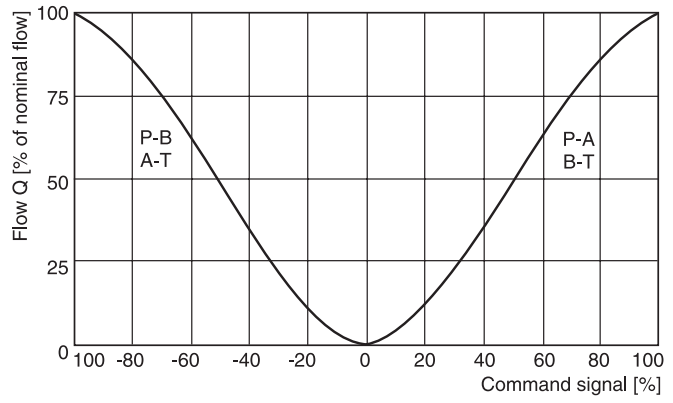
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**Operating limit\***

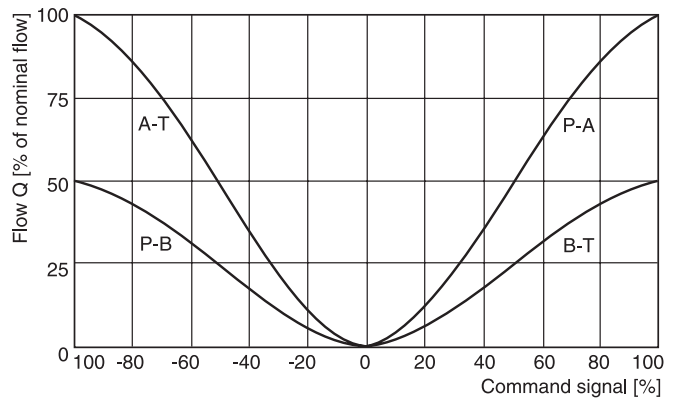


**\* When exceeding the operating limits, the valve will shut down in a defined position (Code A, B or C concerning ordering code). Switch power supply off/on to re-enable the valve within the operating limits.**

**Spool type E52**

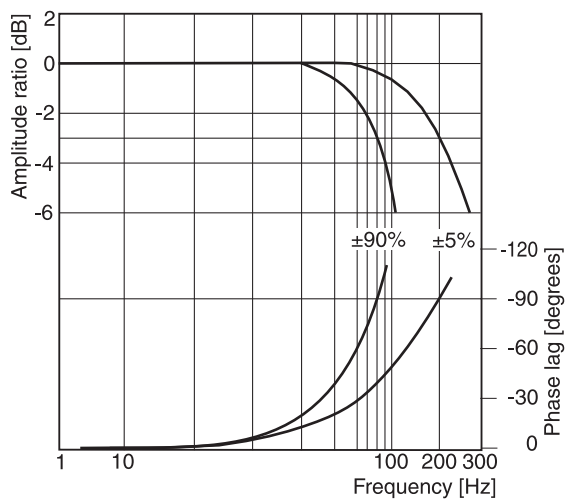


**Spool type B61**



**Frequency response**

$\pm 5\%$  input signal  
 $\pm 90\%$  input signal

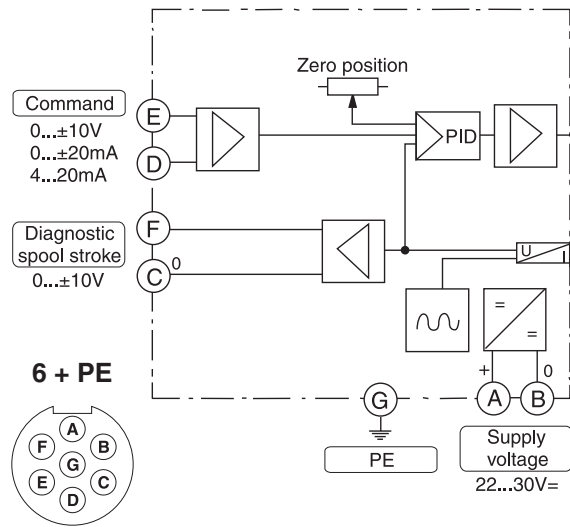


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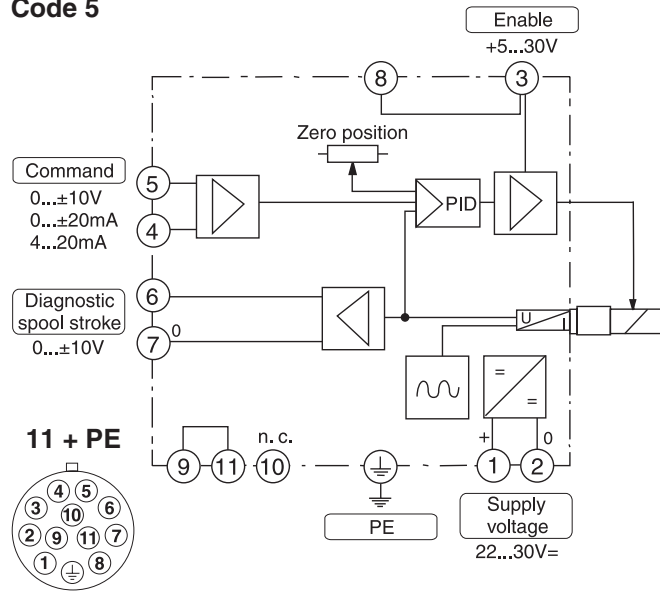


**Block diagrams**

**Code 0**

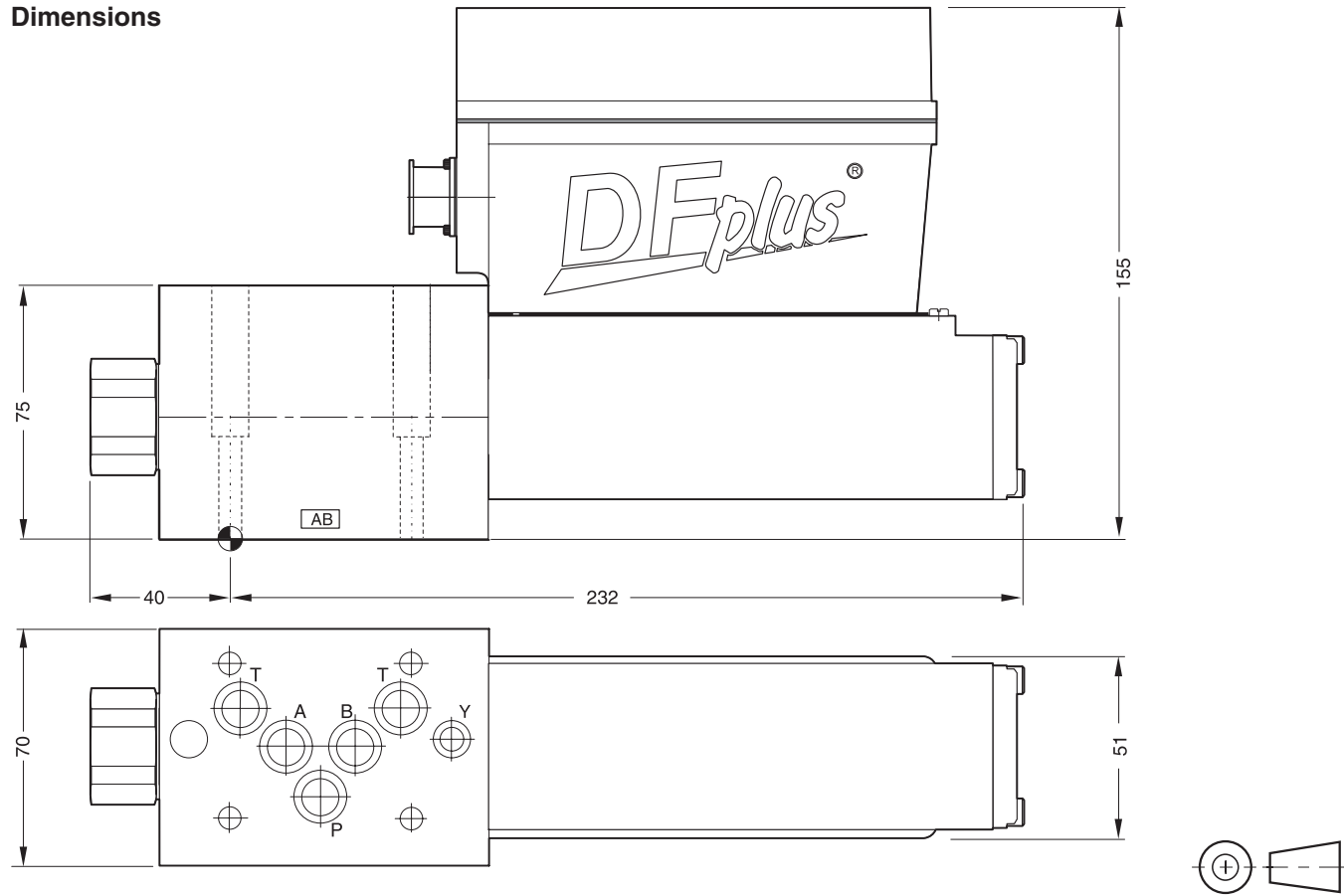


**Code 5**



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**Dimensions**



<b>Surface finish</b>	<b>Kit</b>	<b>4x M6x40 DIN 912 12.9</b>	<b>11 Nm ±15 %</b>
$\sqrt{R_{max} 6.3}$ $\square 0.01/100$	<b>BK360</b>		

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