

The new direct operated proportional DC valve series D3FC (NG10) with digital onboard electronics and position feedback provides high dynamics combined with high flow.

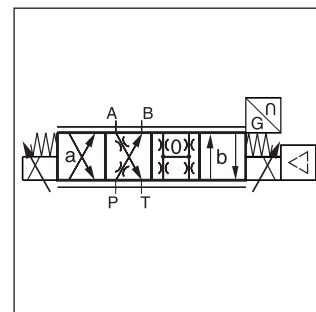
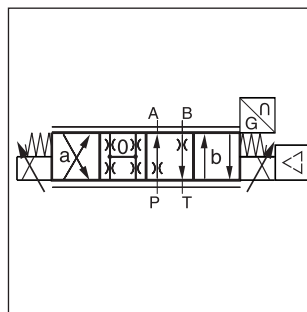
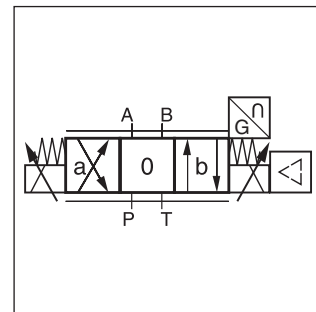
The D3FC is available with overlap spools for open loop applications as well as zero lap spools for closed loop control.

The LVDT is completely integrated into the housing and it does not require an exposed cable connection. Thus an unintended disconnection is impossible.

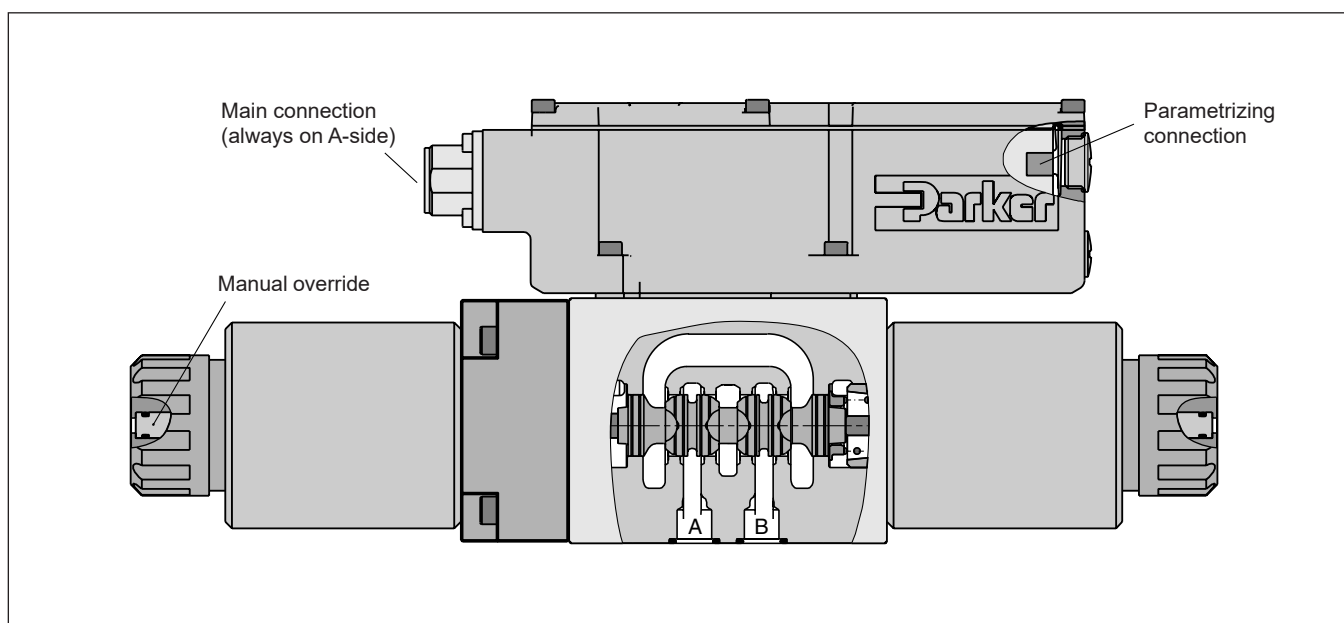
The digital onboard electronics is situated in a robust metal housing, which allows the usage under rough environmental conditions. The nominal values are factory set. The parametrizing cable to connect to a serial RS232 interface is available as accessory.

Features

- Progressive flow characteristics for sensitive adjustment
- Low hysteresis
- High dynamics
- High flow capacity
- Compact dimensions
- Defined spool positioning at power-down for zero lap spools
- Optional pressure compensation element for valve electronics available for environments with strong temperature fluctuations.



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Ordering Code

Direct Operated Proportional DC Valve Series D3FC

D	3	F	C			9				3	
Direct operated DC Valve	Size DIN NG10 CETOP 05 NFPA D05	Proportional control	High dynamics	Spool type	Spool position on power down ¹⁾	Drain port Y plugged ⁴⁾	Seal	Command signal	Electronic option	Spool/body design	Design series (not required for ordering)

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Code	Spool type	Flow [l/min] at Δp 5 bar per metering edge
Zerolap		
E50M		35
E50S		55
E50U		75
B60M	$Q_B = Q_A/2$	17 / 35
B60S		27 / 55
B60U		37 / 75
Overlap		
E01M		35
E01S		55
E01U		75
E02M		35
E02S		55
E02U		75
B31M	$Q_B = Q_A/2$	17 / 35
B31S		27 / 55
B31U		37 / 75
B32M	$Q_B = Q_A/2$	17 / 35
B32S		27 / 55
B32U		37 / 75

Code	Electronic option ⁵⁾
0	6+PE acc. EN175201-804
5	11+PE acc. EN175201-804
7	6+PE + enable acc. EN175201-804

Code	Signal	Function
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
W ⁶⁾	Adjustable	Default ±10V

Code	Seal
N	NBR
V	FPM

Code	Spool pos. at power down
A ²⁾	
B ²⁾	
C ³⁾	

Short delivery time
for all variations

Parametrizing cable OBE [®] RS232, item no. 40982923

- 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 or contamination in the hydraulic fluid.
- ²⁾ Approx. 10 % opening, only zero lap spools.
- ³⁾ Only for overlap spools.
- ⁴⁾ Plug in port Y needs to be removed at tank pressure >35 bar.
- ⁵⁾ Please order connector separately, see chapter 3 accessories.
- ⁶⁾ Available command signals see technical data.

General			
Design			Direct operated proportional DC valve with position feedback
Actuation			Proportional solenoid
Size			NG10 / CETOP 05 / NFPA D05
Mounting interface			DIN 24340 / ISO 4401 / CETOP RP121 / NFPA
Mounting position			unrestricted
Ambient temperature	[°C]		-20...+60 (in case of strong temperature fluctuations see footnote ³⁾)
MTTF _D value ¹⁾	[years]		150
Weight	[kg]		7.7
Vibration resistance	[g]		10 Sinus 5...2000 Hz acc. IEC 68-2-6 10 (RMS) Random noise 20...2000 Hz acc. IEC 68-2-36 15 Shock acc. IEC 68-2-27
Hydraulic			
Max. operating pressure	[bar]		Ports P, A, B 350, port T max. 35; 210 (external drain); port Y max. 35
Fluid			Hydraulic oil according to DIN 51524 ... 535, other on request
Fluid temperature	[°C]		-20...+60 (NBR: -25...+60)
Viscosity permitted	[cSt] / [mm²/s]		20...400
Viscosity recommended	[cSt] / [mm²/s]		30...80
Filtration			ISO 4406; 18/16/13
Nominal flow at Δp=5 bar per control edge ²⁾	[l/min]		35 / 55 / 75
Leakage at 100 bar	[ml/min]		<1000 (zerolap spool); <100 (overlap spool)
Opening point	-		set to 10 % command signal (see flow characteristics)
Static / Dynamic			
Step response at 100 % step	[ms]		40
Hysteresis	[%]		< 0.1
Temperature drift	[%/K]		< 0.01
Electrical characteristics			
Duty ratio	[%]		100
Protection class			IP65 in accordance with EN 60529 (with correctly mounted plug-in connector)
Supply voltage/ripple DC	[V]		18...30, electric shut-off at < 17, ripple < 5 % eff., surge free
Current consumption max.	[A]		3.5
Pre fusing medium lag	[A]		4.0
Command			Depending on choosen signal type
voltage	signal [V]		+10...0...-10, ripple < 0.01% eff., surge free, 0...+10 V P→A
impedance	[kOhm]		100
current	signal [mA]		+20...0...-20, ripple < 0.01 % eff., surge free, 0...+20 mA P→A
impedance	[Ohm]		<250
current	signal [Ohm]		4...12...20, ripple < 0.01 % eff., surge free, 12...20 mA P→A
impedance	[Ohm]		< 3.6 mA = enable off, > 3.8 mA = enable on (according to NAMUR NE43)
Differential input max. Code 0/7	[V]		30 for terminal D and E against PE (terminal G) 11 for terminal D and E against 0V (terminal B)
Code 5			30 for terminal 4 and 5 against PE (terminal PE) 11 for terminal 4 and 5 against 0 V (terminal 2)
Adjustment ranges	Min [%]		0...50
Max [%]			50...100
Ramp [s]			0...32.5
Parametrizing interface			RS232C, parametrizing connection 5pole
Enable signal (code 5/7)	[V]		5...30
Diagnostic signal	[V]		+10...0...-10 / +12.5 error detection, rated max. 5 mA
EMC			EN 61000-6-2, EN 61000-6-4
Electrical connection Code 0/7			6 + PE acc. to EN 175201-804
Code 5			11 + PE acc. to EN 175201-804
Wiring min. Code 0/7	[mm²]		7 x 1.0 (AWG 16) overall braid shield
Code 5	[mm²]		8 x 1.0 (AWG 16) overall braid shield
Wiring length max.	[m]		50

¹⁾ If valves with onboard electronics are used in safety-related parts of control systems, in case the safety function is requested, the valve electronics voltage supply is to be switched off by a suitable switching element with sufficient reliability.

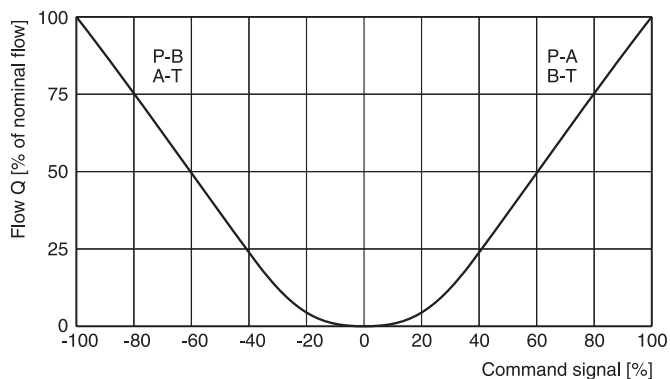
²⁾ Flow rate for different Δp per control edge: $Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$

³⁾ In case of strong temperature fluctuations, such as in outdoor applications, a pressure compensation element for the onboard electronics is recommended, available on request with ordering code suffix XG481.

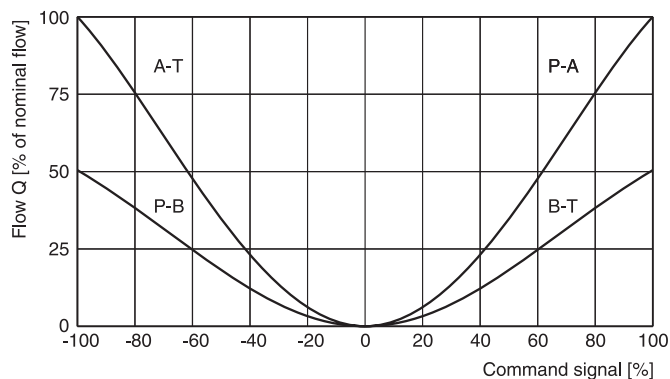
Flow characteristics

(Electrically set to opening point 10 %) at $\Delta p = 5$ bar per metering edge

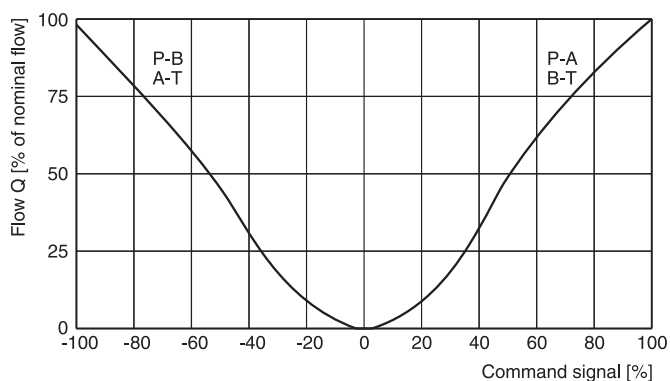
Spool type E01



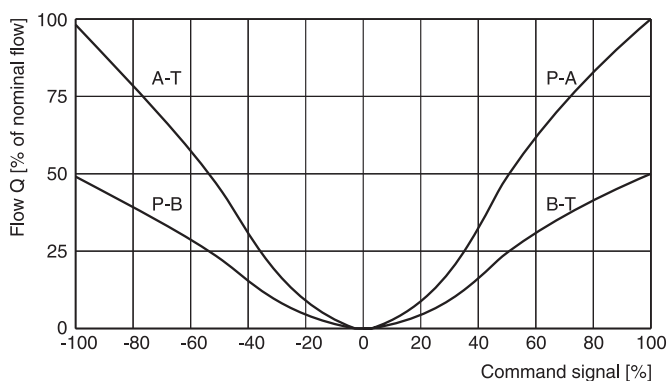
Spool type B31



Spool type E50



Spool type B60



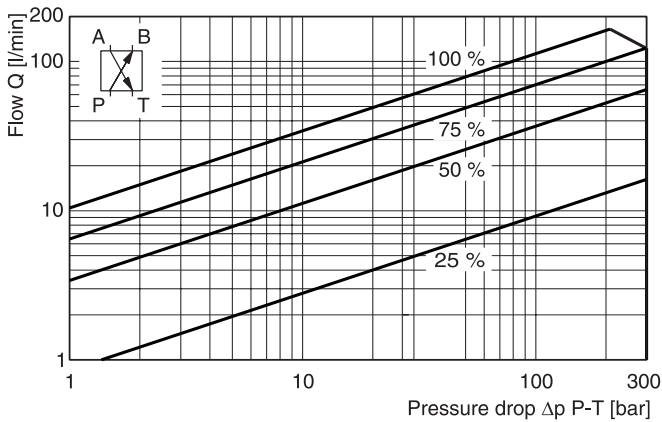
All characteristic curves measured with HLP46 at 50 °C.

Functional limits

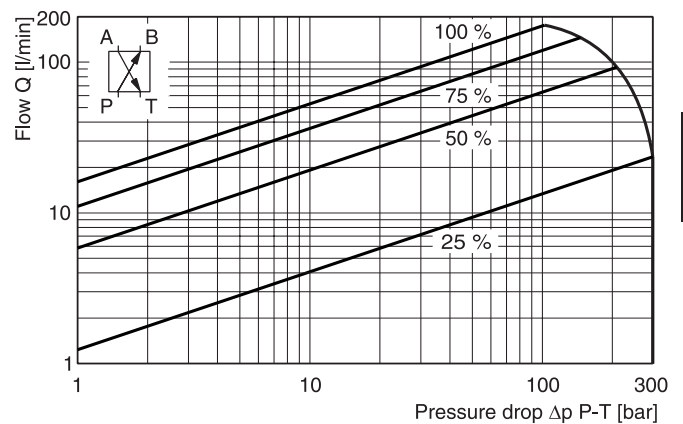
25 %, 50 %, 75 % and 100 % command signal (symmetric flow).

At asymmetric flow a reduced flow limit has to be considered.

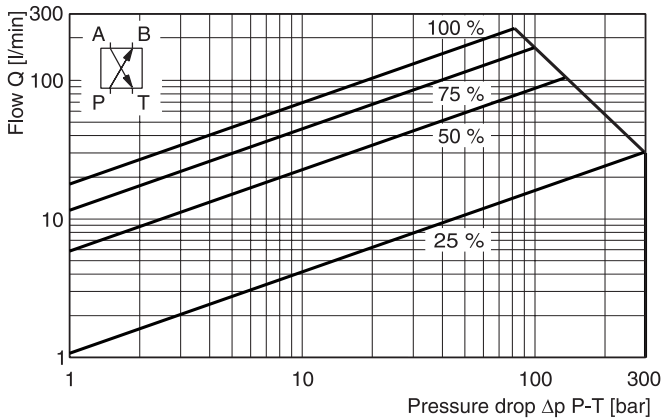
Spool type E01M



Spool type E01S

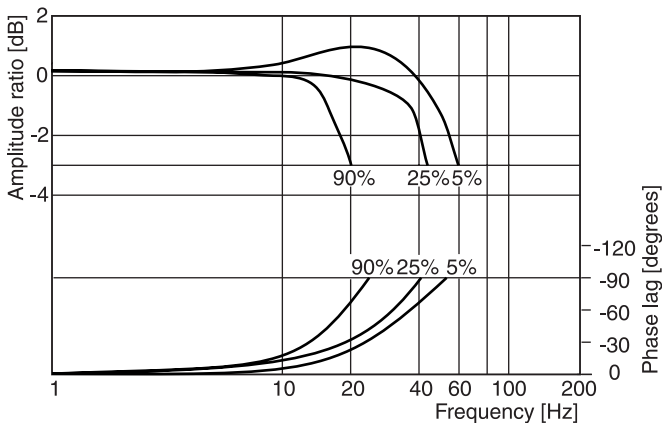


Spool type E01U

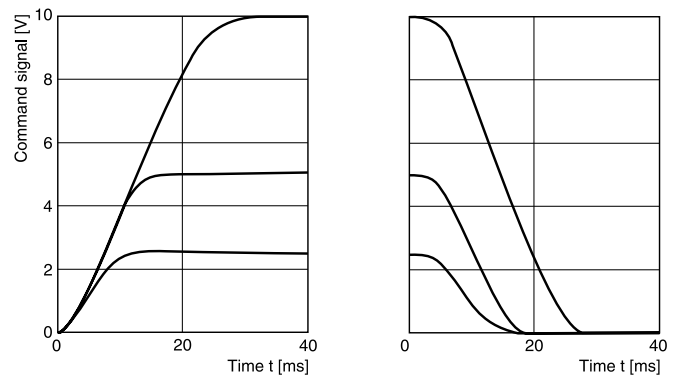


Frequency

$\pm 5\%$, $\pm 25\%$, $\pm 90\%$ input signal

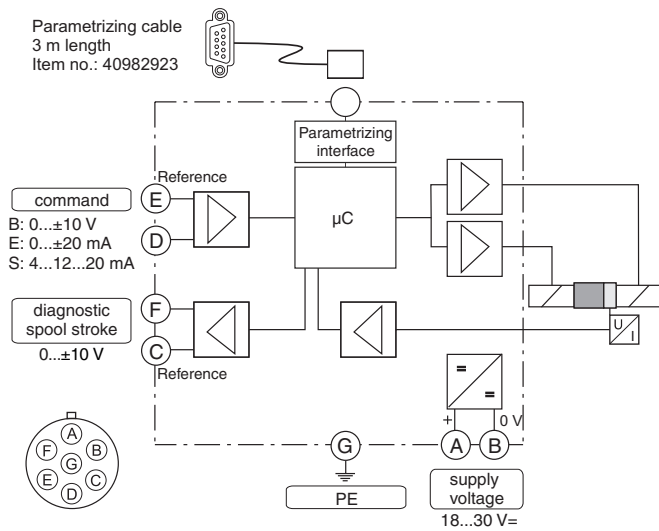


Step response

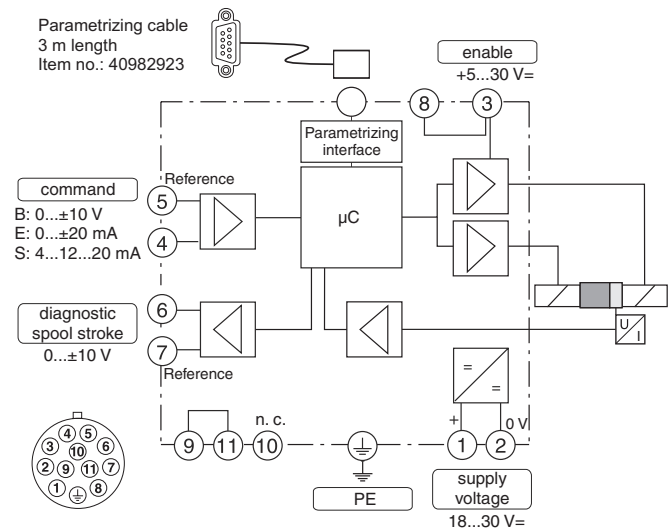


All characteristic curves measured with HLP46 at 50 °C.

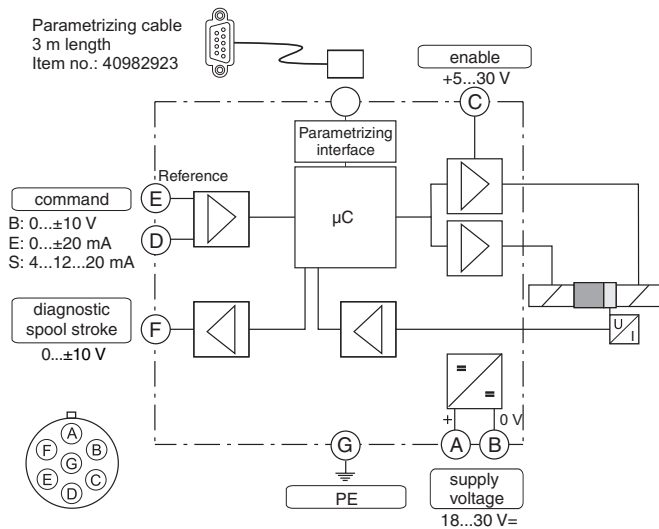
Code 0, 3
 6 + PE acc. to EN 175201-804



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



Code 1, 7
 6 + PE acc. to EN 175201-804 + enable



ProPxD interface program

The ProPxD software allows quick and easy setting of the digital valve electronics. Individual parameters as well as complete settings can be viewed, changed and saved via the comfortable user interface.

Parameter sets saved in the non-volatile memory can be loaded to other valves of the same type or saved for documentation purposes.

The PC software "ProPxD" can be downloaded free of charge from www.parker.com

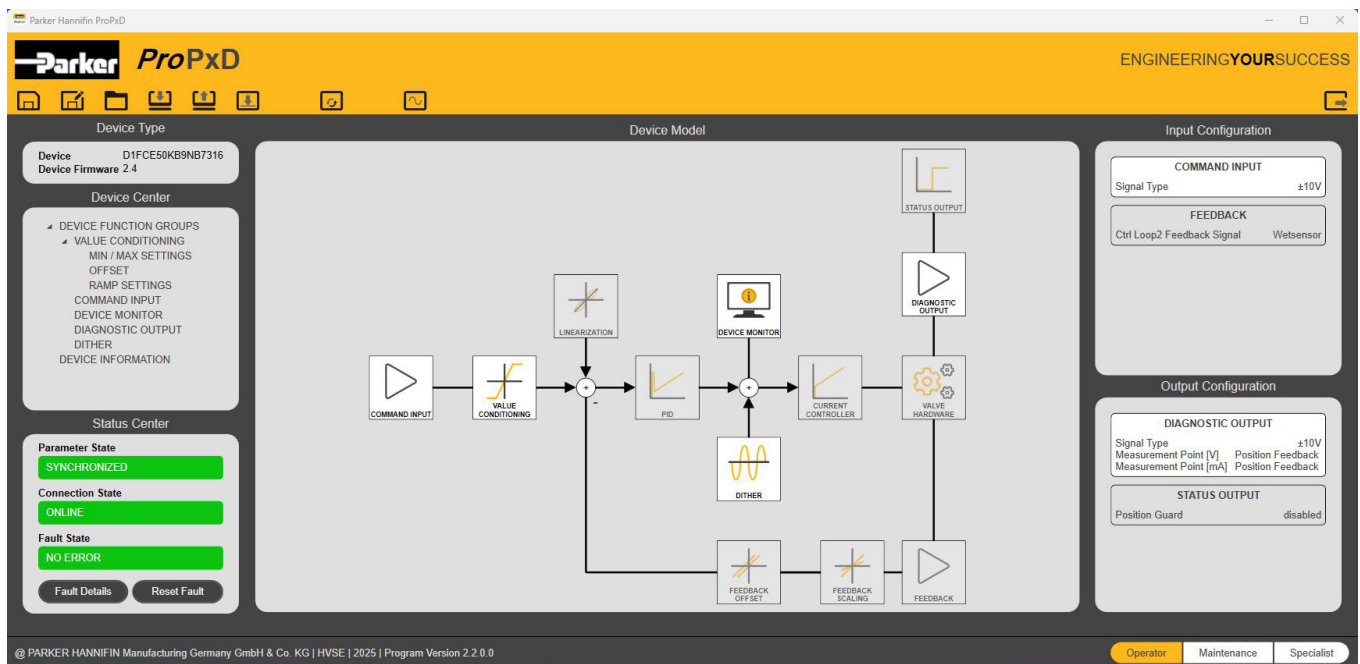
Features

- Comfortable editing of all parameters
- Oscilloscope function
- Storage and loading of optimized parameter adjustments
- Plain communication between PC and electronics via serial interface RS232C

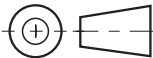
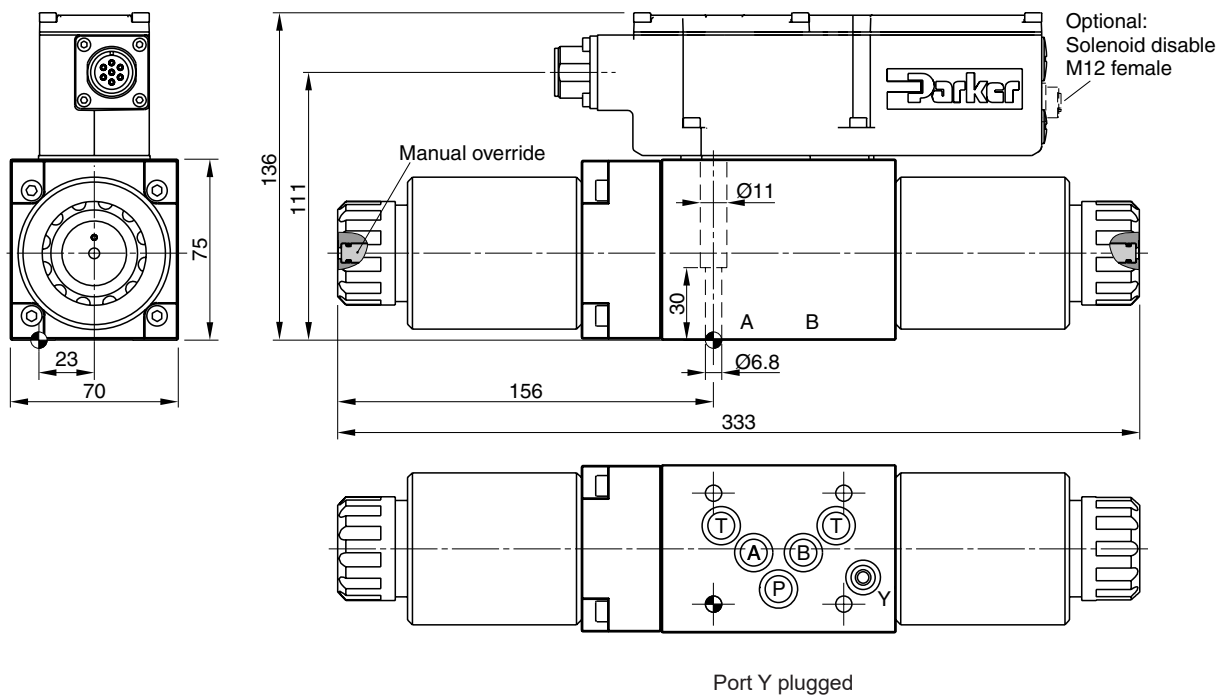
The parametrizing cable may be ordered under item no. 40982923.

If no RS232 interface is available, standard RS232-to-USB adapters can be used. These are available from electronics retailers.

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Surface finish	Kit	Kit	Kit	Kit NBR
$\sqrt{R_{max} 6.3}$	BK385	4x M6x40 ISO 4762-12.9	13.2 Nm ±15 %	NBR: SK-D3FC FPM: SK-D3FC-V