

Parker Series D1FB Direct Operated Proportional Directional Control Valve Service Manual

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General Description

Series D1FB (NG6) proportional directional valves are available with and without onboard electronics (OBE).

D1FB OBE:

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 cable connection to a serial RS-232 interface is available as an accessory.

D1FB for external electronics:

The parameters can be saved, changed and duplicated in combination with the digital power amplifier PWD00A-400.

The valve parameters can be edited with the common ProPxD software for both versions.

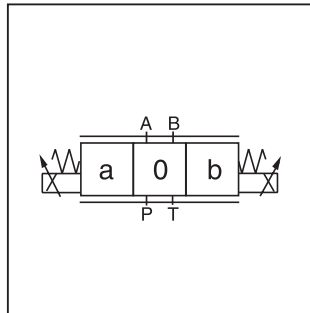
Series D1FB valves can be ordered with spool/sleeve design (D1FB*0) for maximum precision, as well as spool/body design (D1FB*3) for high nominal flow – see functional limit curves for maximum flow capability



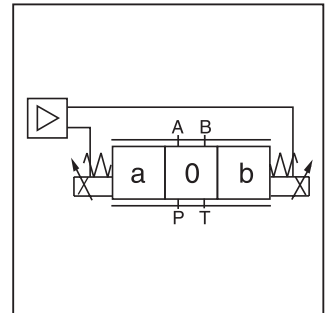
D1FB



D1FB OBE



D1FB



D1FB OBE

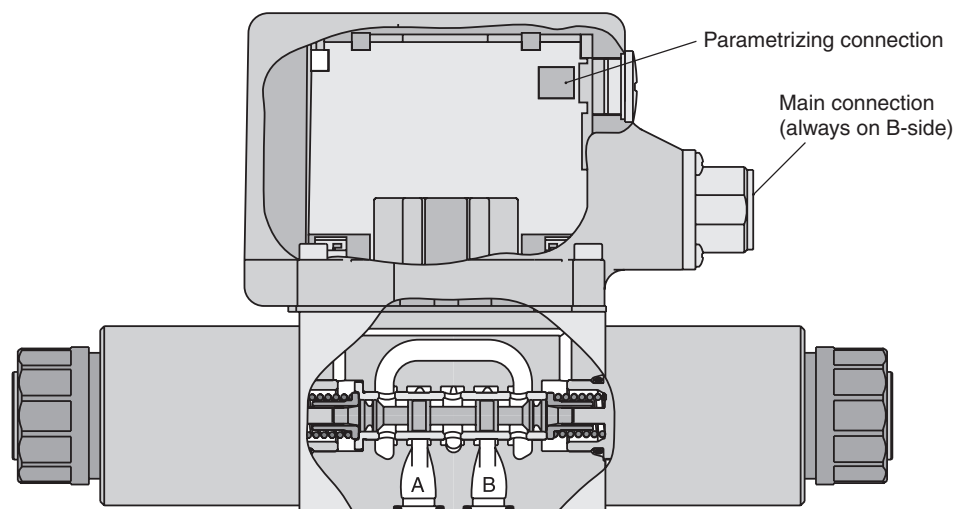
Features

- Spool/sleeve and spool/body
- 3 command options for D1FB OBE : +/- 10V, 4...20mA, +/- 20mA
- High repeatability from valve to valve

- Low hysteresis
- Manual override
- Digital onboard electronics

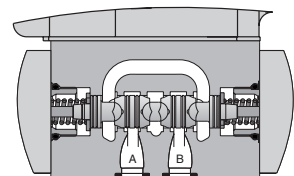
D1FB*0 OBE

Spool/Sleeve Design



D1FB*3 OBE

Spool/Body Design

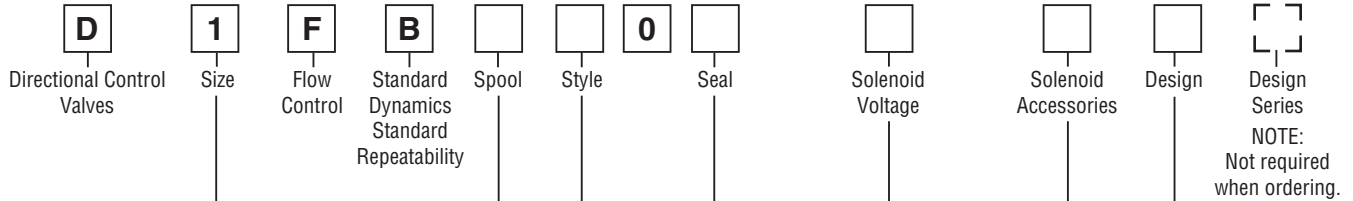


WARNING: This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information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

A01_Cat2500.indd, ddp, 04/19



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Code	Description
1	DIN NG6 CETOP 3 NFPA D03

D1FB*0: Spool/Sleeve Design	
Code	Solenoid
M	9V/2.7A
J	24V/0.8A

Code	Description
0	Spool/sleeve design
3	Spool/body design

D1FB*3: Spool/Body Design	
Code	Solenoid
K	12V / 2.2A
J	24V / 1.1A

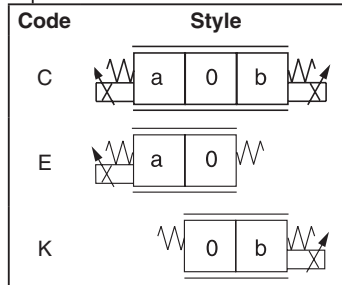
Code	Description
N	Nitrile
V	Fluorocarbon

Code	Description
W*	Connector as per DIN 43650 without plug
J*†	Connector DT04-2P "Deutsch"

* Please order plugs separately.
 † Not for spool/sleeve design.

D1FB*0: Spool/Sleeve Design		
Overlap		
Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01H E01F E01C		20 (5.3) 12 (3.2) 6 (1.6)
E02H E02F E02C		20 (5.3) 12 (3.2) 6 (1.6)
E03H E03F E03C		20 (5.3) 12 (3.2) 6 (1.6)
B31H B31F	$Q_b = Q_a / 2$ 	20/10 (5.3/2.6) 12/6 (3.2/1.6)
B32H B32F	$Q_b = Q_a / 2$ 	20/10 (5.3/2.6) 12/6 (3.2/1.6)

D1FB*3: Spool/Body Design		
Overlap		
Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01K E01H E01F		30 (7.9) 20 (5.3) 10 (2.6)
E02K E02H E02F		30 (7.9) 20 (5.3) 10 (2.6)



Bolt Kit:

- BK209 (4) 10-24x1.25 SHCS
- BK375 (4) M5x30

Weight:

D1FB 2.2 kg (4.9 lbs.)

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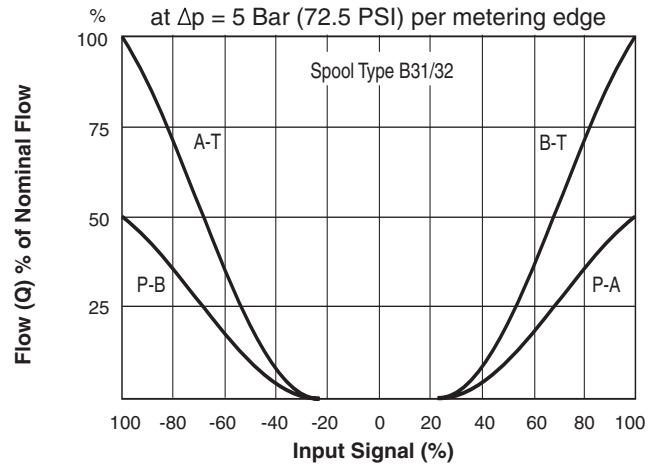
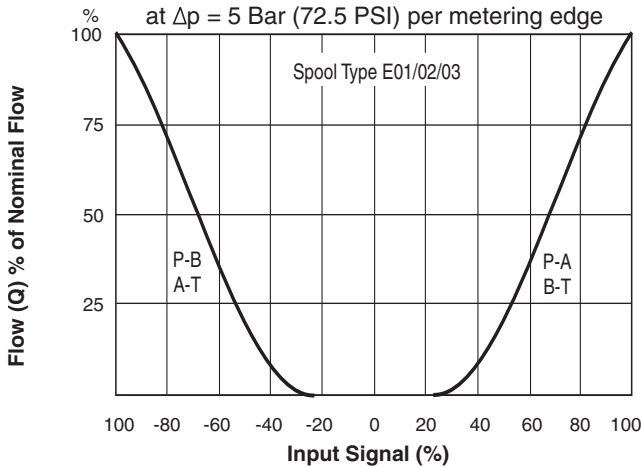
General			
Design	Direct operated proportional DC valve		
Actuation	Proportional solenoid		
Size	NG6 / CETOP 3 / NFPA D03		
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA		
Mounting Position	Unrestricted		
Ambient Temperature	[°C]	-20...+60; (-4°F...+140°F)	
MTTF _d Value (OBE)	[years]	150 (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 210 Bar (3045 PSI)		
Maximum Pressure Drop PABT / PBAT	350 Bar (5075 PSI)		
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= 5 Bar (72.5 PSI) per Control Edge *	D1FB*0 (Spool/sleeve)		D1FB*3 (Spool/body)
	6 LPM (1.6 GPM) / 12 LPM (3.2 GPM) / 20 LPM (5.3 GPM)		10 LPM (2.6 GPM) / 20 LPM (5.3 GPM) / 30 LPM (7.9 GPM)
Leakage at 100 Bar (1450 PSI) Per Land	[ml/min]	<50 (overlap spool)	<60
Overlap	[%]	25, electrically normalized at 10 (see flow characteristics for OBE valves)	
Static / Dynamic			
Step Response at 100% Step	[ms]	30	30
Hysteresis	[%]	<4	<6
Temperature Drift Solenoid Current	[%/K]	<0.02	
Electrical			
Duty Ratio	[%]	100 ED; CAUTION: Coil temperature up to 150°C (302°F) possible	
Protection Class	Standard (as per EN175301-803) IP65 in accordance with EN60529 (plugged and mounted) DT04-2P "Deutsch" IP69K (plugged and mounted)		
Solenoid		Code "M"	Code "K" Code "J" (Spool/sleeve)
Supply Voltage	[V]	9	12 24
Current Consumption	[A]	2.7	2.2 0.8 (1.1)
Resistance	[Ohm]	2.7	4.4 18.6
Coil Insulation Class	F (155 °C); (331°F)		
Solenoid Connection	Connector as per EN 175301-803 (code W), DT04-2P "Deutsch" connector (code J). Solenoid identification as per ISO 9461.		
Wiring Minimum	[mm ²]	3x1.5 (AWG 16) overall braid shield (Code W), "Deutsch" connector DP4 2-Pin (Code J)	
Wiring Length Maximum	[m]	50 (164 ft.)	

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

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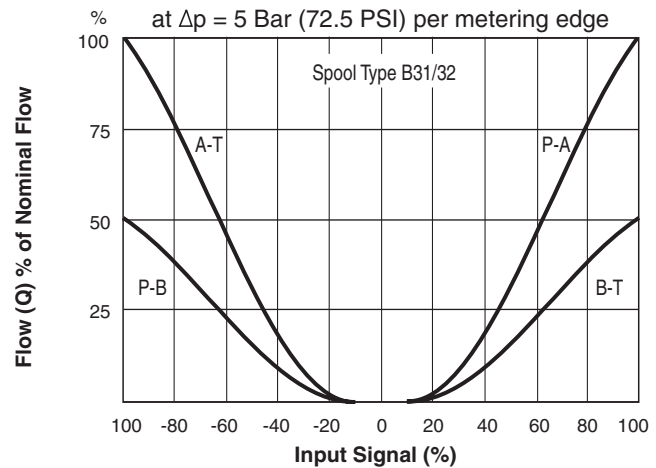
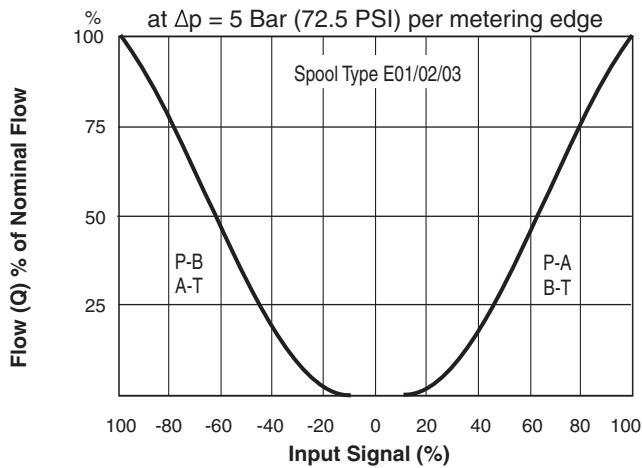
D1FB Flow

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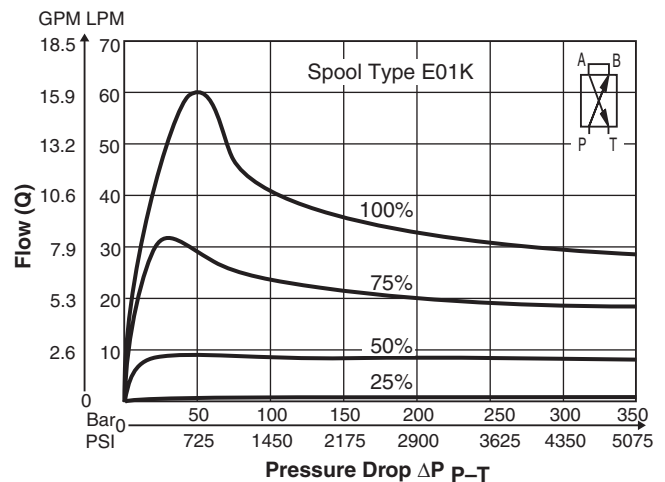
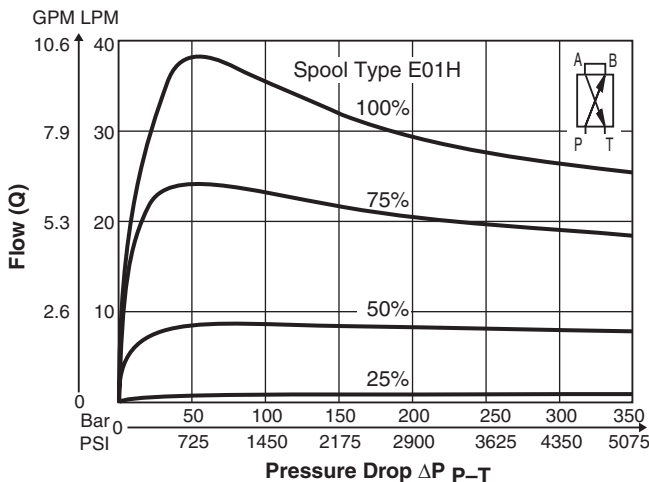
D1FB OBE Flow

(Electrically set to opening point 10%)



Functional Limits

At 25%, 50%, 75% and 100% command signal (symmetric flow). At asymmetric flow a reduced flow limit has to be considered – typically approx. 10% lower.



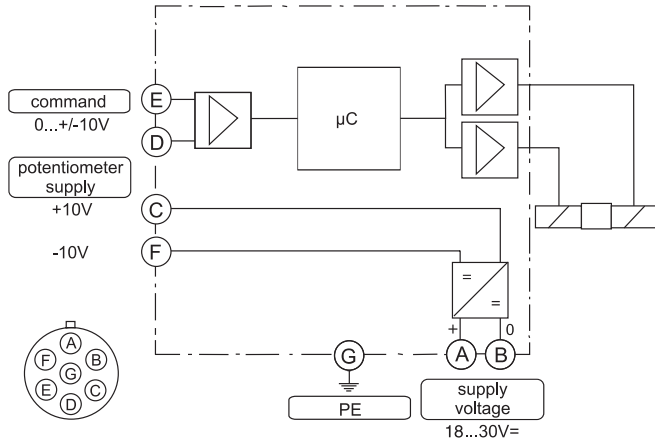
All performance curves measured with HLP46 at 50°C (122°F).

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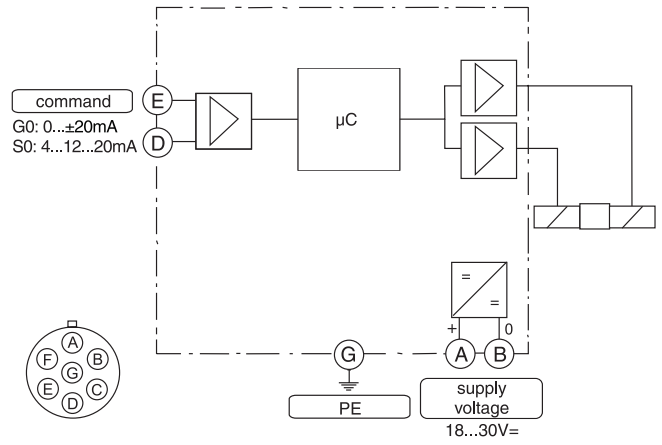
Code F0

6 + PE acc. to EN 175201-804



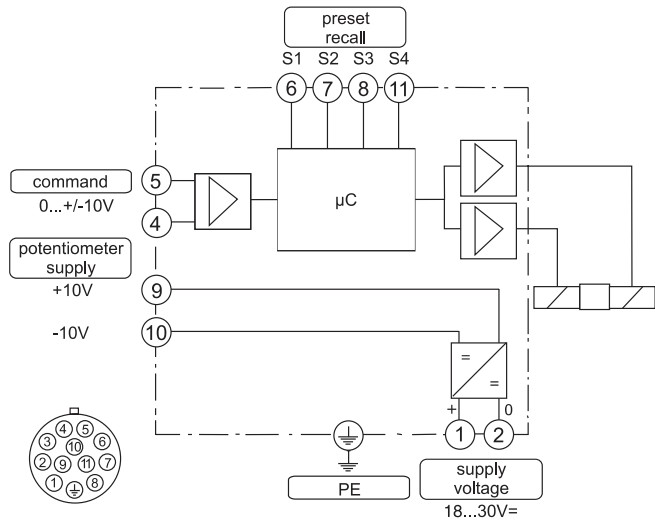
Code G0, S0

6 + PE acc. to EN 175201-804



Code W5

11 + PE acc. to EN 175201-804



ProPxD Interface Program

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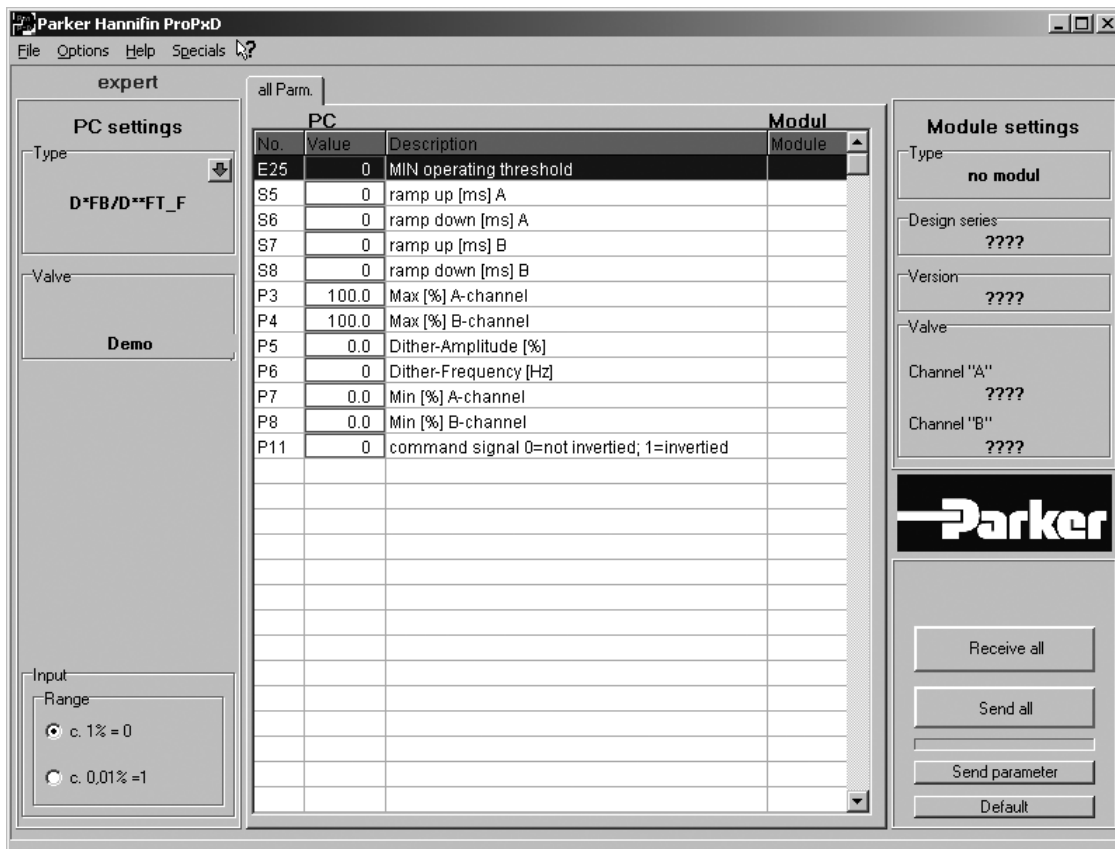
The ProPxD software allows quick and easy setting of the digital valve electronics. Individual parameters as well as complete settings can be viewed, changed and saved via the comfortable user interface. Parameter sets saved in the non-volatile memory can be loaded to other valves of the same type or printed out for documentation purposes.

Features

- Simple editing of all parameters.
- Storage and loading of optimized parameter adjustments.
- Executable with all Windows® operating systems from Windows® 95 upwards.
- Communication between PC and electronics via serial interface RS-232.

The valve electronics cannot be connected to a PC with a standard USB cable – this can result in damages of PC and/or valve electronics.

Simple to use interface program. Download free of charge www.parker.com/propxd



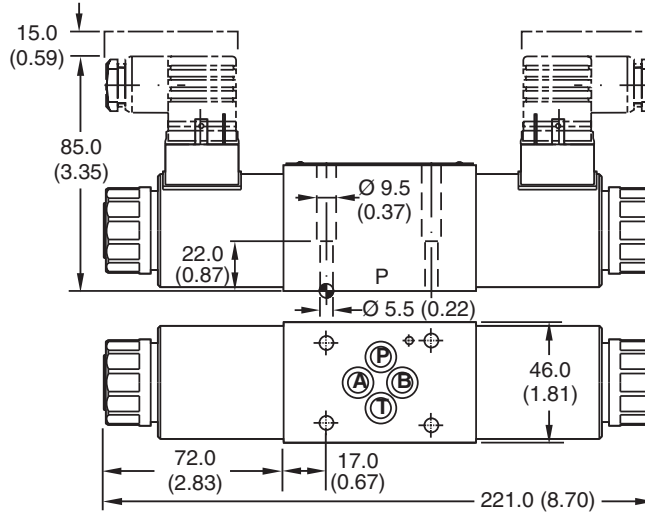
The parametrizing cable may be ordered under item no. 40982923.

Dimensions

Series D1FB (Offboard Electronics)

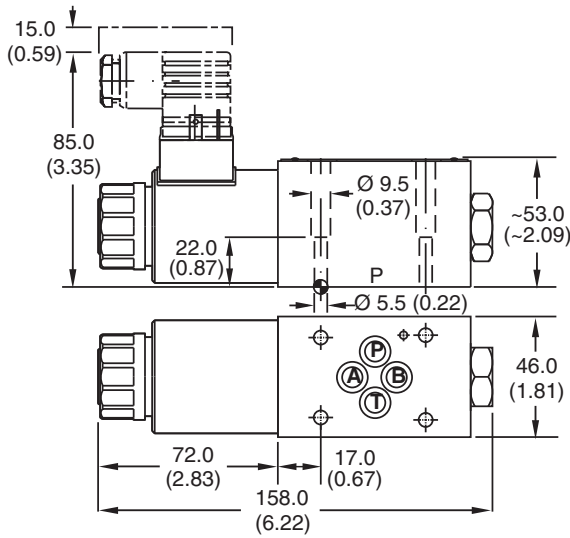
Inch equivalents for millimeter dimensions are shown in (**)

D1FB*C

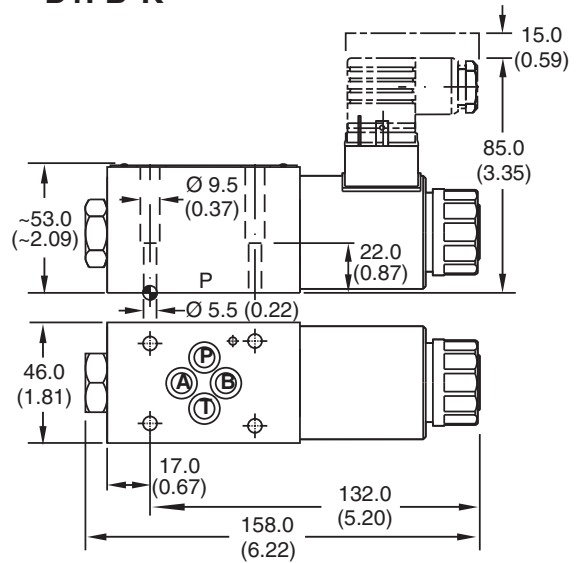


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D1FB*E

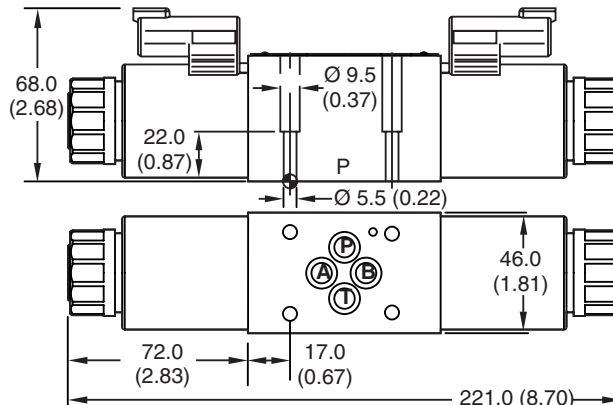


D1FB*K

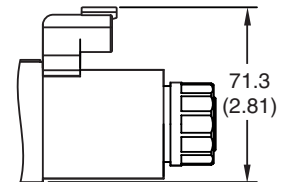


D1FB*C*0 with DT04-2P "Deutsch" Connector

(Only C style shown)



D1FB*C*3



Surface Finish	Kit			Seal Kit
	BK375		4x M5x30 DIN 912 12.9	Nitrile: SK-D1FB Fluorocarbon: SK-D1FBV
	BK209		4x 10-24x1.25	
			7.6 Nm (5.6 lb.-ft.) ±15 %	