

General Description

Series D1FB (NG6) and D3FB (NG10) proportional directional valves with CANopen interface are based on the series for standard digital electronics of the same name.

CANopen-Profile

CANopen Application Layer and Communication Layer
 CiA DS - 301 Version 4.01

CANopen Layer Setting Services (LSS) and Protocols
 CiA DS – 305 Version 2.0

Device Profile in accordance with
 CiA DSP – 408 Version 1.5.2

The baud rate and node ID can be set by dip switches or Layer Setting Service (LSS).

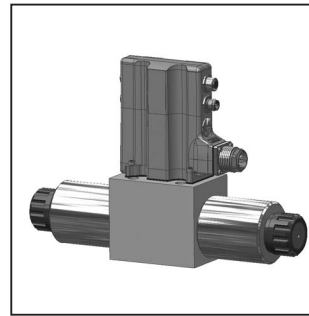
The valve parameters are factory set. Additionally the ProPxD software permits the editing of all parameters via the separate communication port. The software is also used for the valves with digital onboard electronics and the electronics modules. The cable for connection to a serial RS-232 interface is available as accessory.

The digital onboard electronics is situated in a robust metal housing and can be used in rough environments.

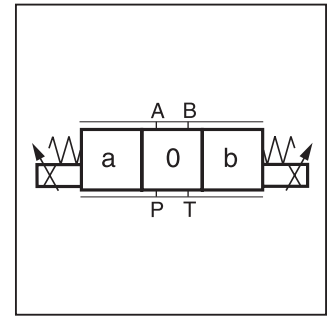
The series D1FB and D3FB are available with spool/sleeve design as well as with spool/body design.

D3FB*C*0

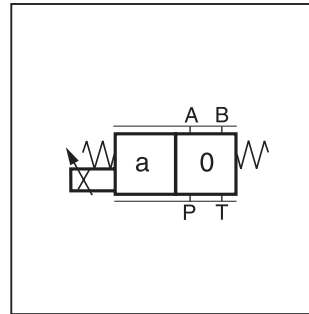
Spool/Sleeve Design



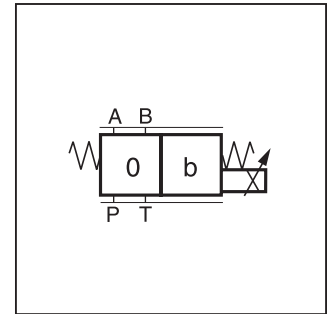
D3FB*C



D*FB*C



D*FB*E



D*FB*K

Features

- CANopen interface.
- Spool/sleeve design and spool/body design.
- High repeatability from valve to valve.
- Low hysteresis.
- Manual override.
- Failsafe center position.

Baud rate switch

Node ID switch

M12 female connection

M12 male connection

Parametrizing connection

Supply voltage connection

A

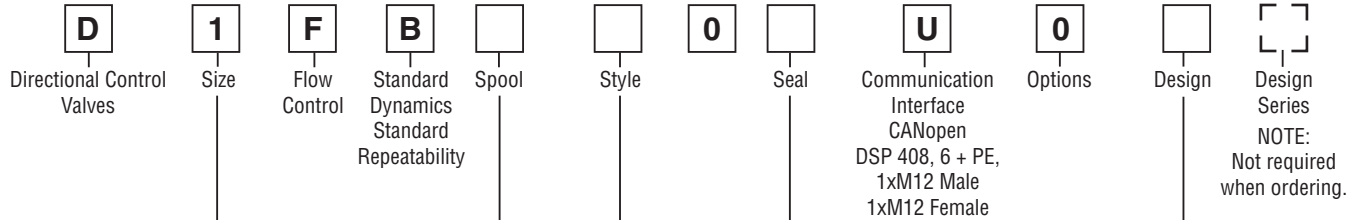
B

D1FB*C*0
Spool/Sleeve Design

D3FB*C*3
Spool/Body Design

A

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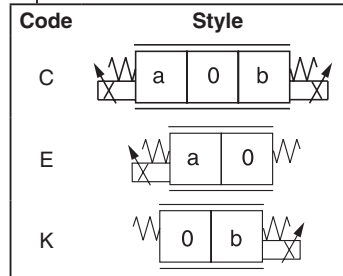


Code	Description
1	DIN NG6 CETOP 3 NFFA D03

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

D1FB*0: Spool/Sleeve Design		
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)

Code	Description
N	Nitrile
V	Fluorocarbon



D1FB*3: Spool/Body Design		
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)

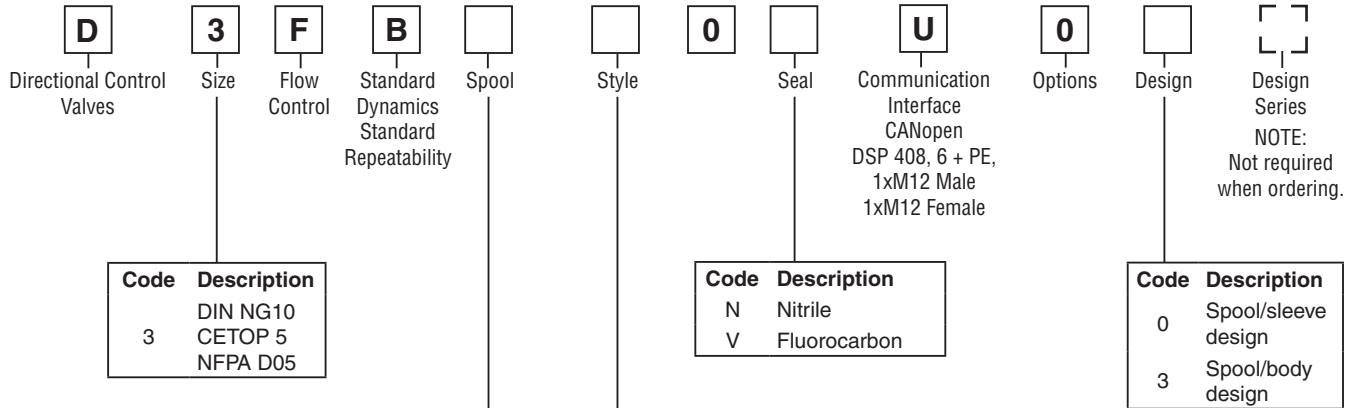
Bolt Kit:

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

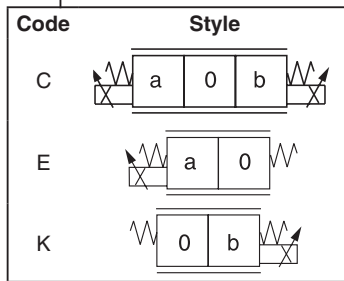
Weight:

- D1FB 2.5 kg (5.5 lbs.)

Parametrizing cable OBE => RS-232
 Item no. 40982923



D3FB*0: Spool/Sleeve Design		
Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01M E01S		40 (10.6) 60 (15.9)
E02M E02S		40 (10.6) 60 (15.9)
B31M B31S	$Q_b = Q_a/2$ 	40 / 20 (10.6 / 5.3) 60 / 30 (15.9 / 7.9)
B32M B32S	$Q_b = Q_a/2$ 	40 / 20 (10.6 / 5.3) 60 / 30 (15.9 / 7.9)



D3FB*3: Spool/Body Design		
Code	Spool	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge
E01M E01S E01U		40 (10.6) 60 (15.9) 80 (21.2)
E02M E02S E02U		40 (10.6) 60 (15.9) 80 (21.2)

Bolt Kit:
 BK98 (4) 1/4-20x1.625 SHCS
 BK385 4x M6x40

Weight:
 D3FB 7.0 kg (15.4 lbs.)

Parametrizing cable OBE => RS-232
 Item no. 40982923

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General			
Design	Direct operated proportional DC valve		
Actuation	Proportional solenoid		
Size	NG6 / CETOP 3 / NFPA D03		NG10 / CETOP 5 / NFPA D05
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]	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)	
Viscosity 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	D1FB*3
		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)
		D3FB*0/3	
		40 LPM (10.6 GPM) / 60 LPM (15.9 GPM) / 80 LPM (21.2 GPM)	
Leakage at 100 Bar (1450 PSI)	[ml/min]	<50 (3.0 cu. in.)	<60 (3.7 cu. in.)
Overlap	[%]	25, electrically normalized at 10 (see flow characteristics)	
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	IP65 in accordance with EN60529 (plugged and mounted)		
Supply Voltage/Ripple DC	[V]	18...30, ripple < 5% eff., surge free	
Current Consumption Maximum	[A]	2.0	3.0
Pre-fusing Medium Lag	[A]	2.5	4.0
EMC	EN 61000-6-2, EN 61000-6-4		
Connection Supply Voltage	6 + PE acc. to EN 175201-804		
Connection CANopen	1 x Male M12x1: 5p 1 x Female M12x1: 5p acc. to IEC61076-2-101		
Wiring Supply Voltage Minimum	[mm ²]	3 x 1.0 (AWG16) overall braid shield	
Wiring Length Maximum	[m]	50 (164 ft.)	
Wiring CANopen	acc. to CiA DS-301 Version 4 / Twisted pair cable acc. to ISO11898		

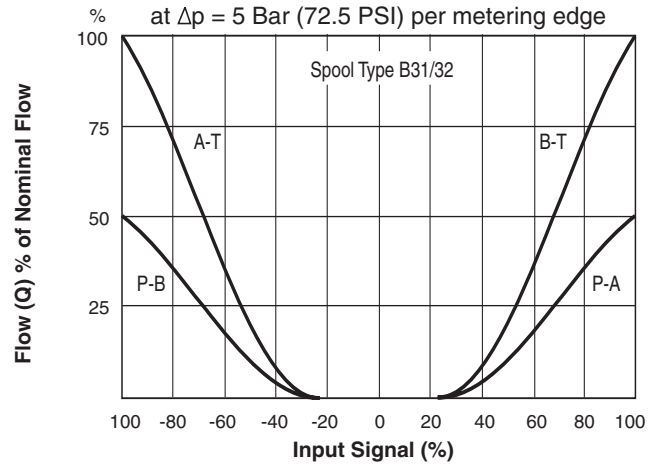
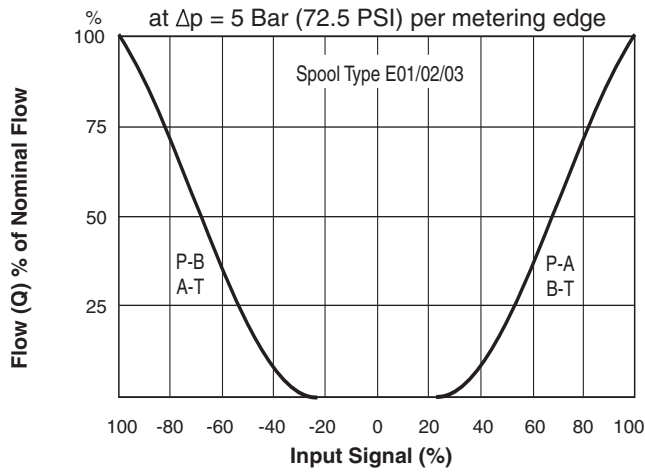
* Flow rate for different Δp per control edge: $Q_x = Q_{Nom.} \cdot \sqrt{\frac{\Delta p_x}{\Delta p_{Nom.}}}$

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CANopen	
Profiles	Communication Layer CIA DS - 301 Version 4 Device Profile in accordance with CIA DS - 408 Version 1.5.2 Layer Setting Service CIA DS - 305 Version 2
Functionality	CANopen slave One PDO (Receive) One PDO (Transmit) One SDO (not useable for valve parameterizing) Emergency object Sync object Node guarding Life guarding Heartbeat time (producer/consumer) Minimum boot - up Node - ID - adjustment by DIP switch and LSS Baud Rate - adjustment by DIP switch and LSS
Parameterization	
Interface	RS-232, parametrizing cable order code 40982923
Interface Program	ProPxD (see www.parker.com/euro_hcd)
Adjustment Ranges	
Minimum	[%] 0...50
Maximum	[%] 50...100
Ramp	[s] 0...32.5

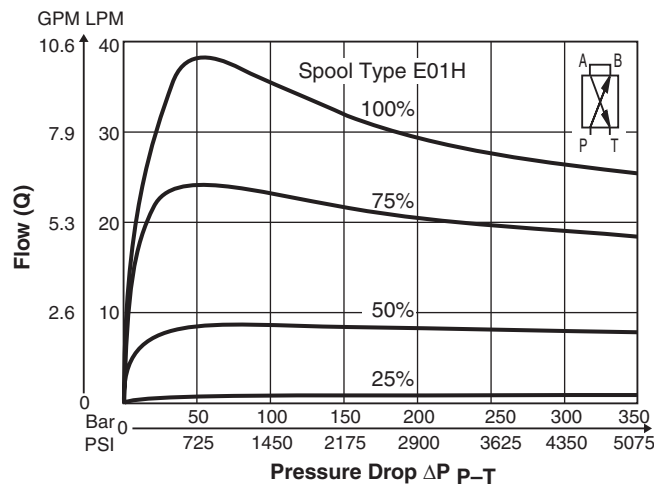
D1FB*0 Flow



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

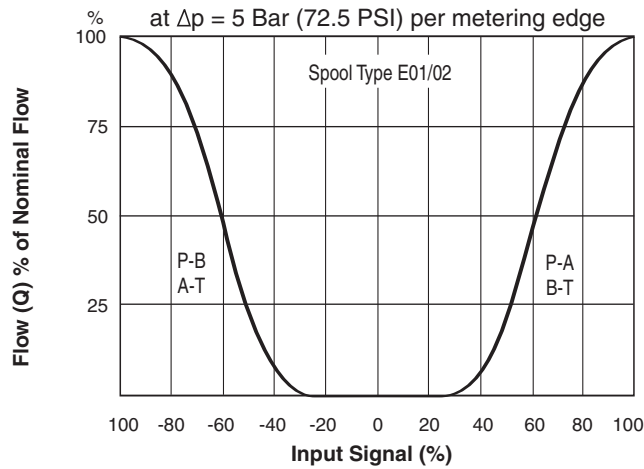
Flow Limit

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).

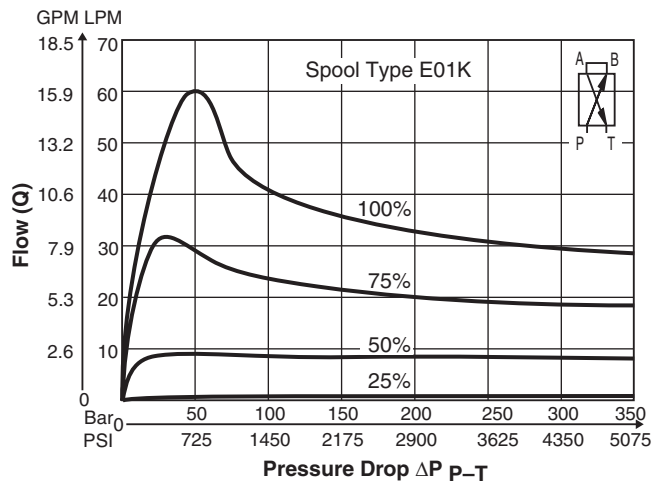
D1FB*3 Flow



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

Flow Limit

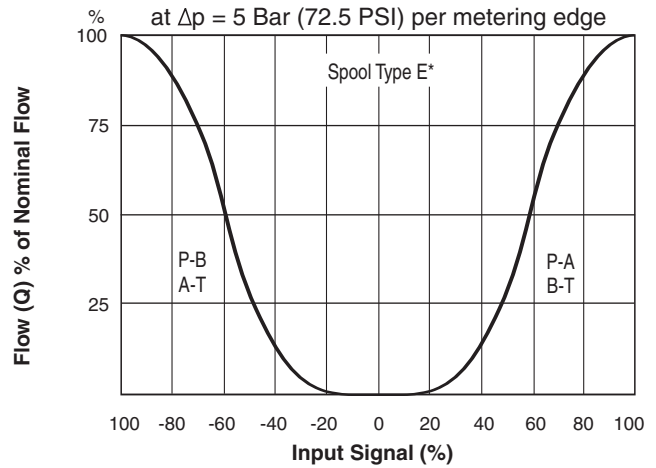
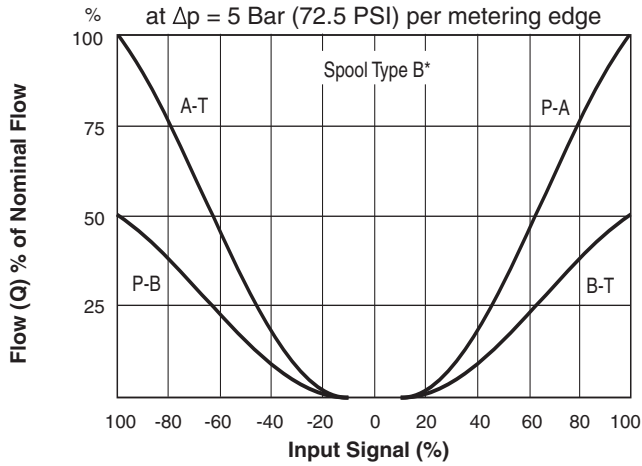
At 25%, 50%, 75% and 100% command signal (symmetric flow). At asymmetric flow a reduced flow limit has to be considered – typically approx. 10% lower.



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

D3FB Flow

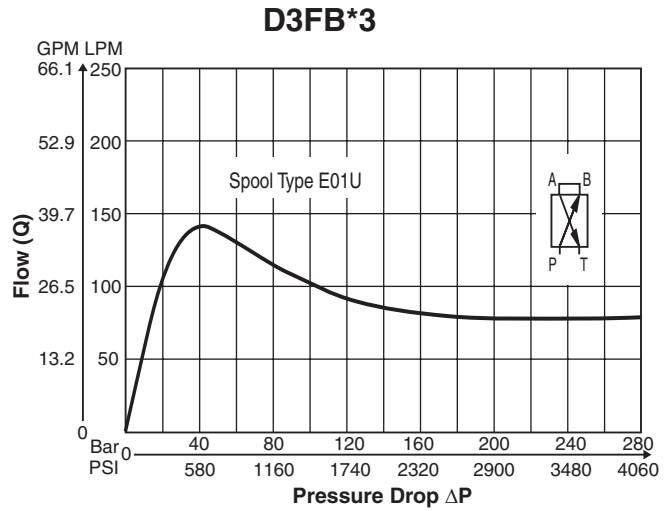
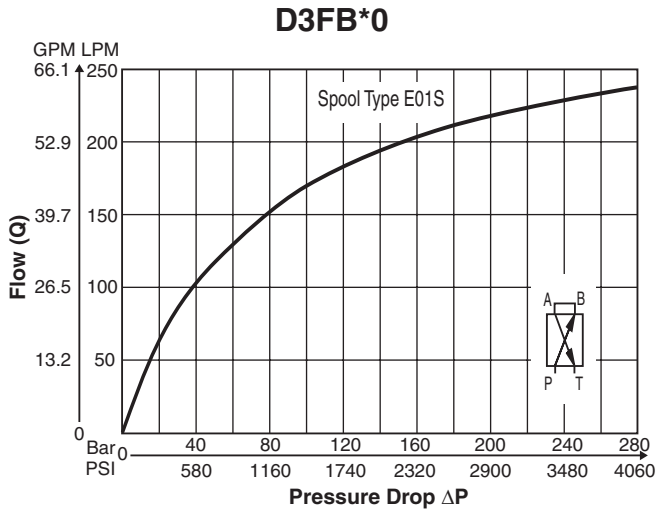
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All performance curves measured with HLP46 at 50°C (122°F).

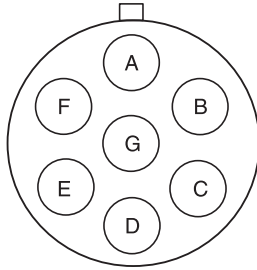
Flow Limit

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



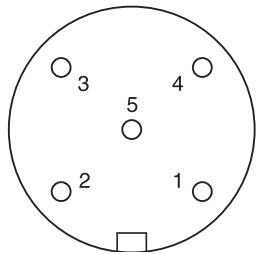
All performance curves measured with HLP46 at 50°C (122°F).

Supply Voltage Connection 6 + PE



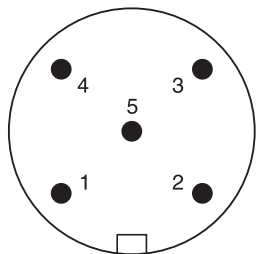
- A Supply voltage 18...30V
- B Supply voltage 0V
- C hC
- D hC
- E hC
- F hC
- G PE

CANopen Connection



- CAN in: M12, 5 pole male terminals.
- Pin 1: CAN_SHLD
 - Pin 2: nc
 - Pin 3: CAN_GND
 - Pin 4: CAN_H
 - Pin 5: CAN_L

Shield is CAN_GND.

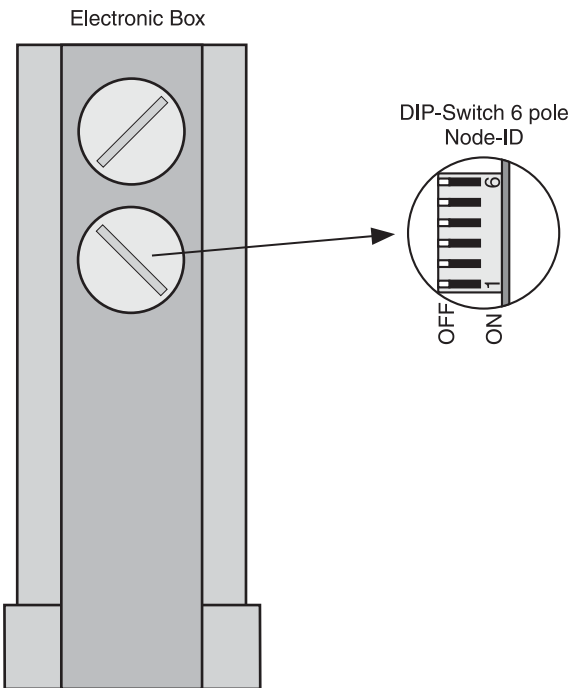


- CAN out: M12, 5 pole female terminals.
- Pin 1: CAN_SHLD
 - Pin 2: nc
 - Pin 3: CAN_GND
 - Pin 4: CAN_H
 - Pin 5: CAN_L

Shield is CAN_GND.

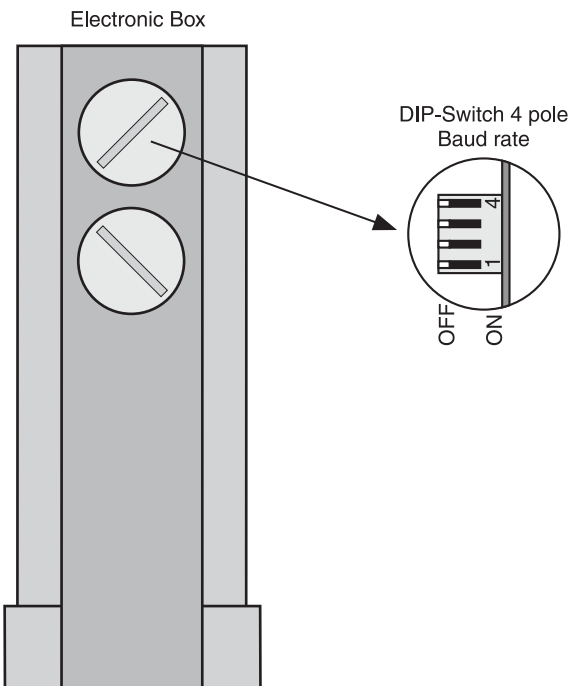
Node-ID Adjustment with DIP Switches

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Node-ID	DIP Switch Setting					
	1	2	3	4	5	6
0 LSS -Priority	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF
2	OFF	ON	OFF	OFF	OFF	OFF
3	ON	ON	OFF	OFF	OFF	OFF
...						
61	ON	OFF	ON	ON	ON	ON
62	OFF	ON	ON	ON	ON	ON
63	ON	ON	ON	ON	ON	ON
	1	2	3	4	5	6
	Value					

Baud Rate Adjustment with DIP Switches



Baud Rate	DIP Switch Setting			
	1	2	3	4
0 LSS -Priority	OFF	OFF	OFF	Valve Parameterization and Diagnostics ON/OFF
10 kBit/s	ON	OFF	OFF	
20 kBit/s	OFF	ON	OFF	
50 kBit/s	ON	ON	OFF	
125 kBit/s	OFF	OFF	ON	
250 kBit/s	ON	OFF	ON	
500 kBit/s	OFF	ON	ON	
1 MBit/s	ON	ON	ON	



ProPxD Interface Program

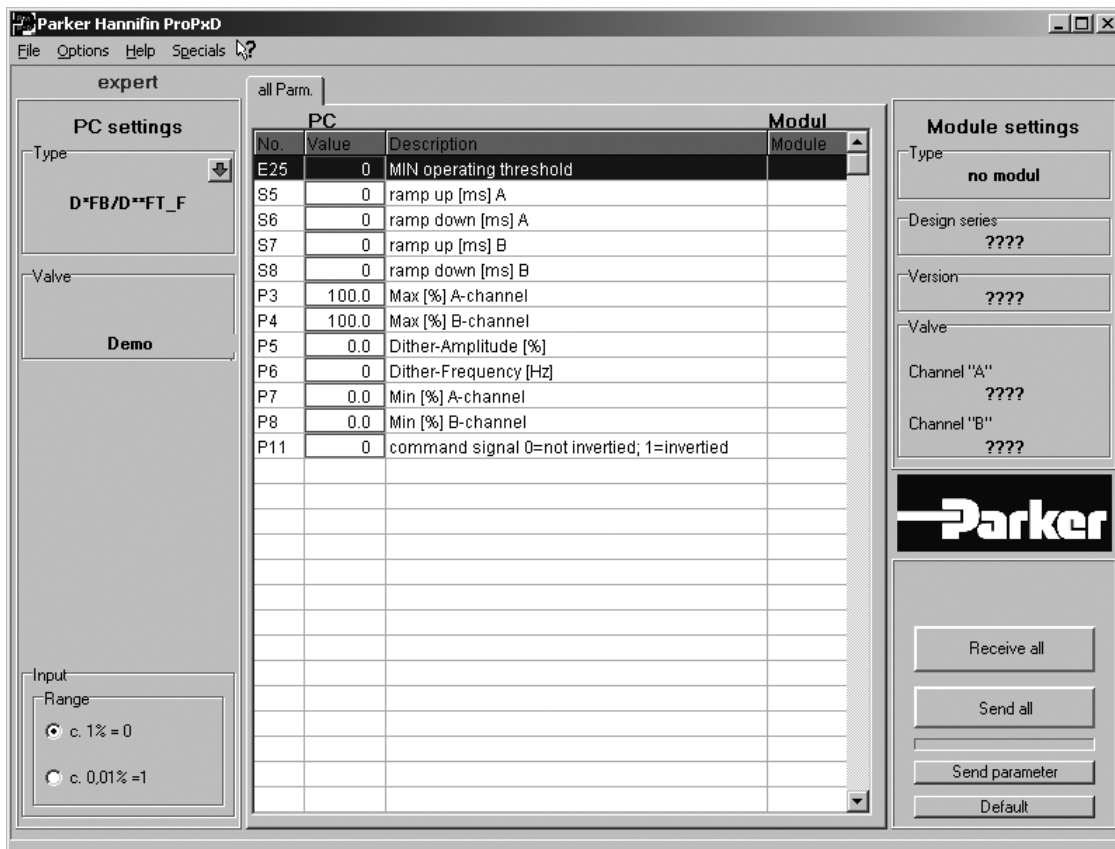
The ProPxD software allows quick and easy setting of the digital valve electronics. Individual parameters as well as complete settings can be viewed, changed and saved via the comfortable user interface. Parameter sets saved in the non-volatile memory can be loaded to other valves of the same type or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



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

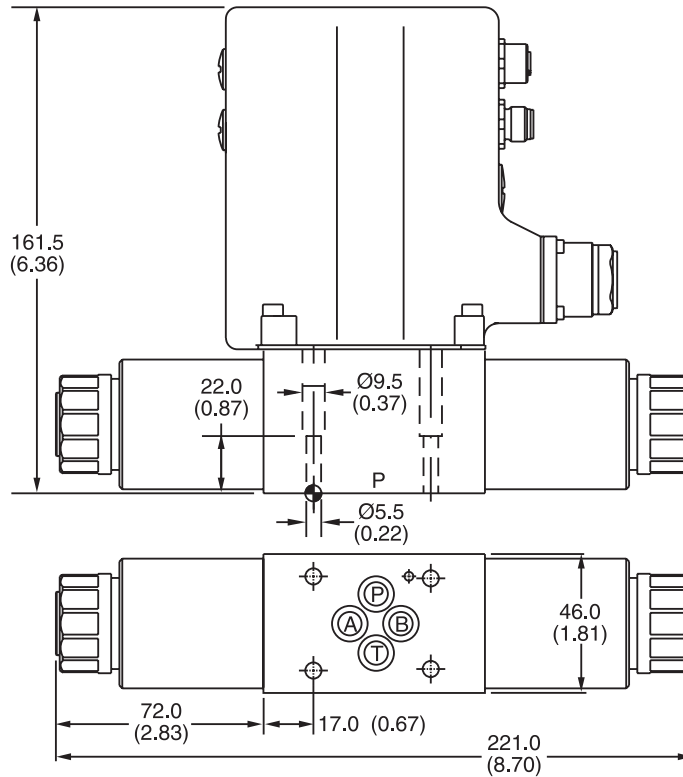
Dimensions

**Proportional Directional Control Valves
Series D1FB with CANopen**

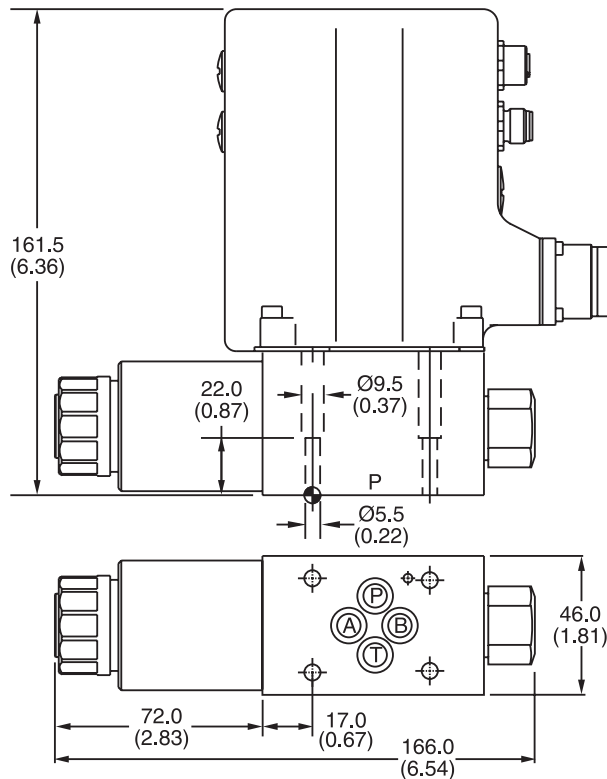
Inch equivalents for millimeter dimensions are shown in (**)





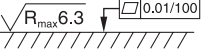
A

D1FB*C



D1FB*E

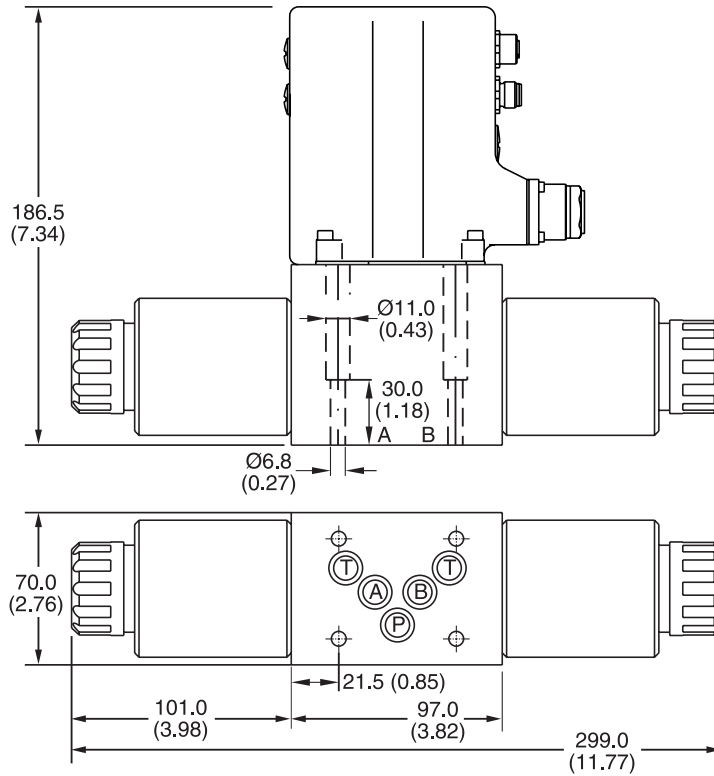


Surface Finish	 Kit	 Kit	 Torque	Seal  Kit
	BK375 BK209	4x M5x30 DIN 912 12.9 4x 10-24x1.25	7.6 Nm (5.6 lb.-ft.) ±15 %	Nitrile: SK-D1FB Fluorocarbon: SK-D1FBV

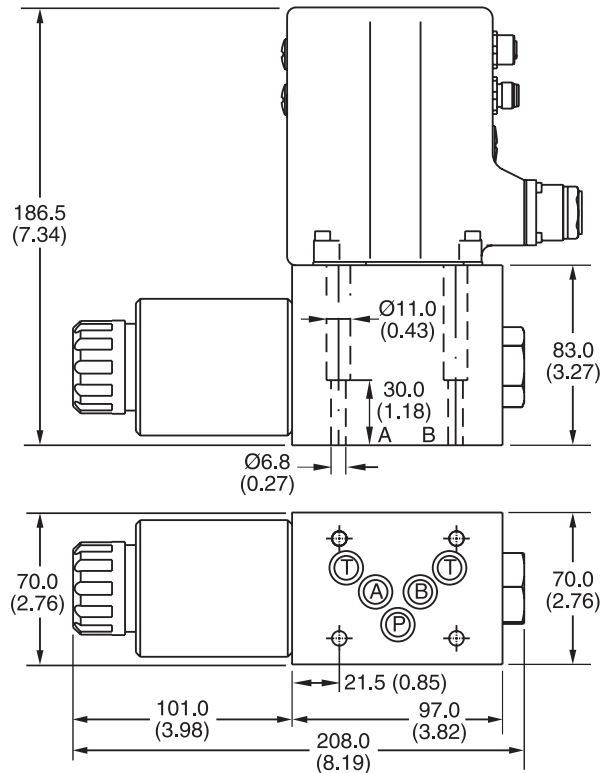
Dimensions

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

D3FB*C



D3FB*E



Surface Finish	Kit			Seal Kit
	BK385	4x M6x40	13.2 Nm (9.7 lb.-ft.)	Nitrile: SK-D3FB
	BK98	DIN 912 12.9	±15 %	Fluorocarbon: SK-D3FBV
		4x 1/4-20x1.62		