

General Description

A

Series D*1FB*EE pilot operated proportional directional valves come in 4 sizes:

D31FB*EE	NG10 (CETOP 5)
D41FB*EE	NG16 (CETOP 7)
D91FB*EE	NG25 (CETOP 8)
D111FB*EE	NG32 (CETOP 10)

The D*1FB*EE series with explosion proof solenoids is based on the standard D*1FB series. The specific solenoid design allows the usage in hazardous environments. The explosion proof class is

CE  II 2 G

Ex mbe II T4

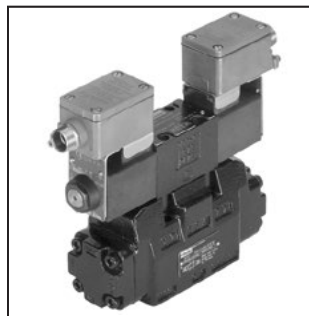
for use in zone 1 (conform to ATEX).

The parameters can be saved, changed and duplicated in combination with the digital power amplifier PWD00A-400 (to be used in an explosion proof cabinet or outside of the hazardous area).

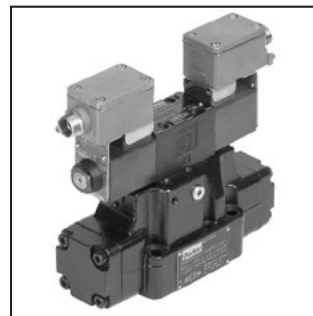
The valve parameters can be edited with the common ProPxD software.

Features

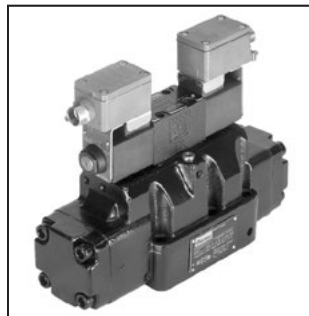
- Progressive flow characteristics for precise adjustment of flow rate
- High flow capacity



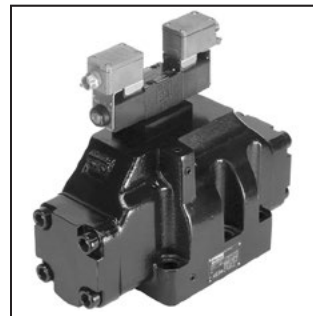
D31FB



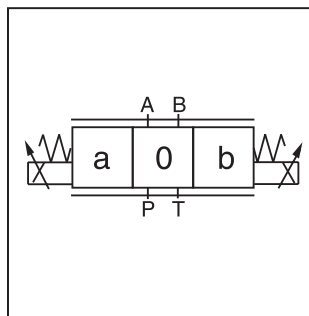
D41FB



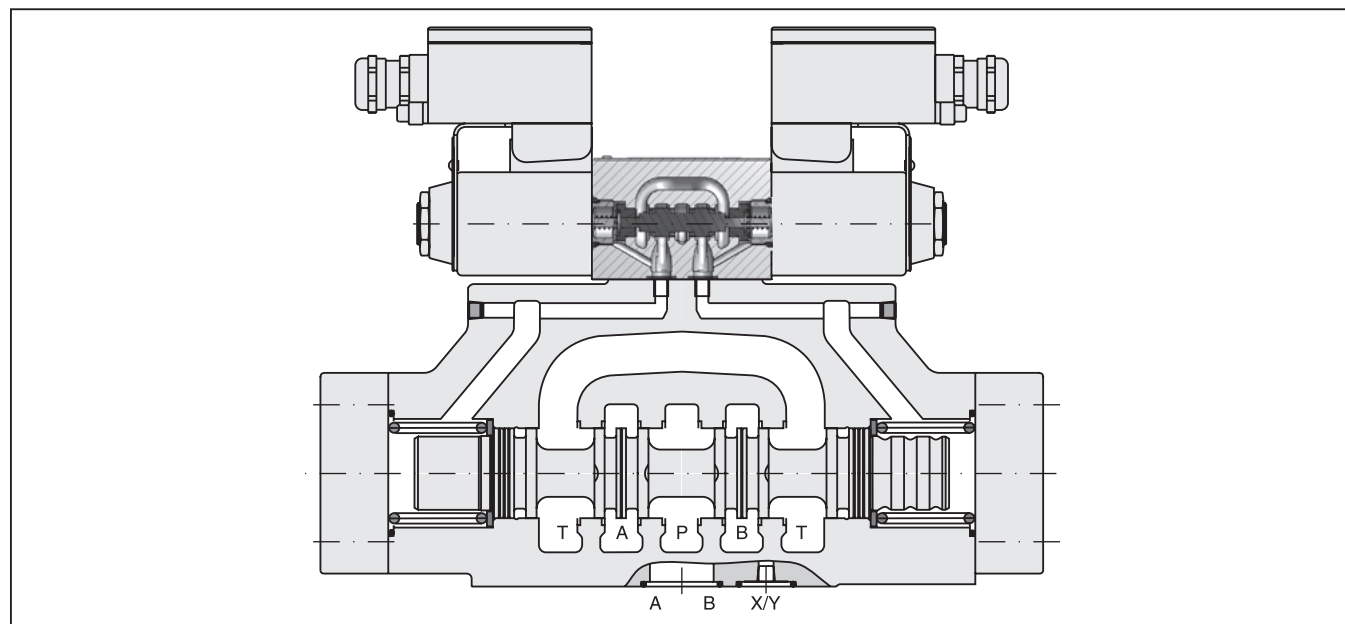
D91FB



D111FB



D91FB*EE



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

Ordering Information

D		1	F	B							E	0		EE
Directional Control Valves	Size	NG6 Pilot	Flow Control	Dynamics Standard	Spool	Flow	Spool Position	Pilot Connection	Seal	Solenoid Voltage	Explosion Proof	Valve Accessories	Design Series	Connection: Explosion Proof with Cable Glands Ex me II T4

NOTE: Not required when ordering

Code	Description
3	NG10 / CETOP 5
4	NG16 / CETOP 7
9 ¹⁾	NG25 / CETOP 8
11	NG32 / CETOP10

¹⁾ With enlarged connections Ø 32 mm

Code	Spool Type
E01	
E02	
B31	$Q_B = Q_A / 2$
B32	$Q_B = Q_A / 2$

Code	Description
J	24V / 1.5A
K	24V / 2.3A

Code	Description
N	Nitrile
V	Fluorocarbon

Code	Inlet	Drain
1	Internal	External
2	External	External
4	Internal	Internal
5	External	Internal

Code	Flow LPM (GPM) at Δp 5 Bar (72.5 PSI) per metering edge			
	D31	D41	D91	D111
B	—	100 ²⁾ (26.4)	—	—
C	75 ²⁾ (19.8)	130 ²⁾ (34.3)	—	—
D	90 (23.8)	—	—	—
E	120 (31.7)	—	250 ²⁾ (66.1)	—
F	—	200 (52.8)	—	—
H	—	—	400 (105.8)	—
L	—	—	—	1000 (264.2)

²⁾ Not for spool type B31 and B32

Code	Style
C	
E	
K	

Mounting Bolt Kits:

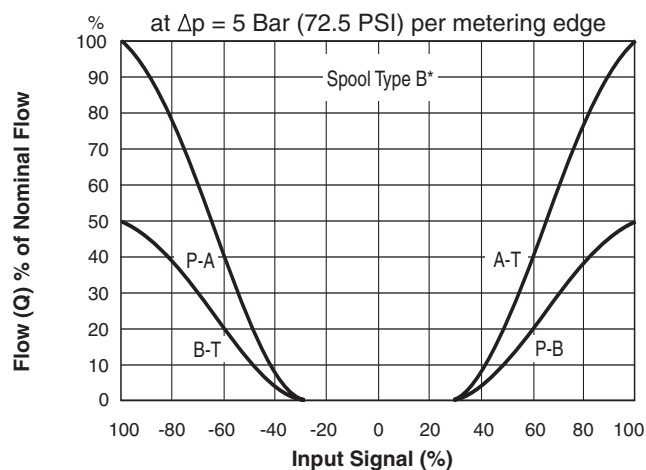
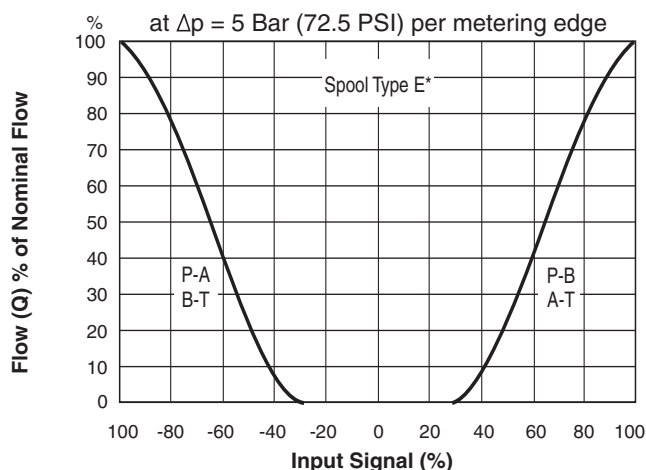
D31FB*EE	BK98
D41FB*EE	BK160
D91FB*EE	BK228
D111FB*EE	BK150

Weight:

D31FB*EE	9.4 kg (20.7 lbs.)
D41FB*EE	12.8 kg (28.2 lbs.)
D91FB*EE	20.3 kg (44.8 lbs.)
D111FB*EE	69.3 kg (152.8 lbs.)

Performance Curves

D*1FB Flow



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

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General				
Design	Pilot operated DC valve			
Actuation	Proportional solenoid			
Size	NG10 (CETOP 5)	NG16 (CETOP 7)	NG25 (CETOP 8)	NG32 (CETOP 10)
Mounting Interface	DIN 24340 / ISO 4401 / CETOP RP121 / NFPA			
Mounting Position	unrestricted			
Ambient Temperature	[°C]	-20...+40; (-4°F...+104°F)		
MTTF _p Value	[years]	75		
Vibration Resistance	[g]	10 Sinus 5...200Hz acc. IEC 68-2-6		
		30 Random noise 20...20Hz acc. IEC 68-2-36		
		15 Shock acc. IEC 68-2-27		
Hydraulic				
Maximum Operating Pressure	Pilot Drain Internal: Ports P, A, B, X 350 Bar (5075 PSI); Port T, Y 185 Bar (2683 PSI) NG10: Port T, Y 15 Bar (218 PSI) Pilot Drain External: Ports P, A, B, T, X 350 Bar (5075 PSI); Port Y 185 Bar (2683 PSI) NG10: Port Y 15 Bar (218 PSI)			
Fluid	Hydraulic oil as per DIN 51524...51535, other on request			
Fluid temperature	[°C]	-20...+40; (-4°F...+104°F)		
Viscosity	Permitted [cSt] / [mm²/s] Recommended [cSt] / [mm²/s]	20...380 (93...1761 SSU)		
		30...80 (139...371 SSU)		
Filtration	ISO 4406 (1999) 18/16/13 (acc. NAS 1638: 7)			
Nominal Flow at Δp=Bar (72.5 PSI) per Control Edge *		75 LPM (19.8 GPM) 90 LPM (23.8 GPM) 120 LPM (31.7 GPM)	100 LPM (26.4 GPM) 130 LPM (34.4 GPM) 200 LPM (52.9 GPM)	250 LPM (66.1 GPM) 400 LPM (105.8 GPM) 1000 LPM (264.2 GPM)
Leakage at 100 Bar	[ml/min]	100	200	600 1000
Pilot Supply Pressure	Minimum 30 Bar (435 PSI) [+T/Y pressure]; Maximum 350 Bar (5075 PSI)) Optimal Dynamics at 50 Bar (725 PSI)			
Pilot flow at 100 Bar		<0.5 LPM (0.13 GPM)	<1.2	<1.2 <1.2
Pilot Flow, Step Response		2 LPM (0.5 GPM)	1.9 LPM (0.5 GPM)	4.5 LPM (1.2 GPM) 18 LPM (4.8 GPM)
Static / Dynamic				
Step Response at 100% Step	[ms]	50	75	100 180
Hysteresis	[%]	<5		
Electrical				
Duty Ratio	[%]	100 ED; CAUTION: Coil temperature up to 150°C (302°F) possible		
Protection Class		C Ⅱ 2 G , Ex mbe II T4, IP66 (plugged and mounted)		
Solenoid	Code	K		J
Supply Voltage	[V]	12		24
Current Consumption	[A]	2.3		1.15
Resistance	[Ohm]	3.7		14.8
Solenoid Connection	Box with M20x1.5 entry for cableglands. Solenoid identificationas per ISO 9461.			
Wiring Minimum	[mm²]	3 x 1.5 recommended		
Wiring Length Maximum	[m]	50 (164 ft.) recommended		

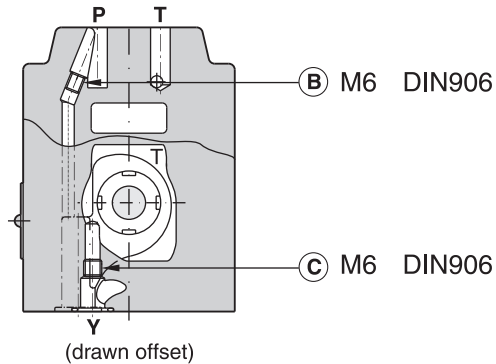
With electrical connections the protective conductor (PE) must be connected according to the relevant regulations.

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

Pilot Flow

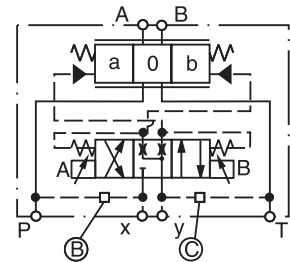
Pilot Oil Inlet (supply) and Outlet (drain)

D31FB

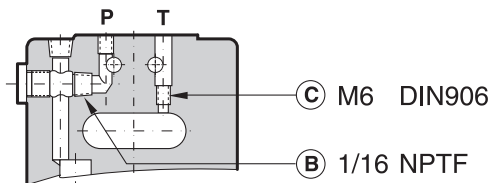


○ open, ● closed

Pilot oil		B	C
Inlet	Drain		
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○

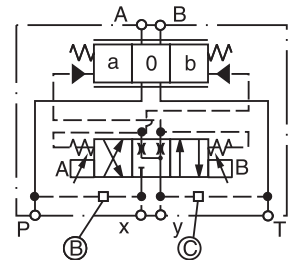


D41FB

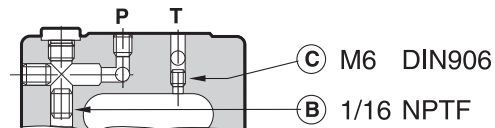


○ open, ● closed

Pilot oil		B	C
Inlet	Drain		
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○

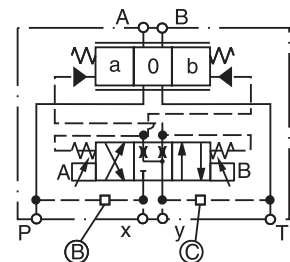


D91FB

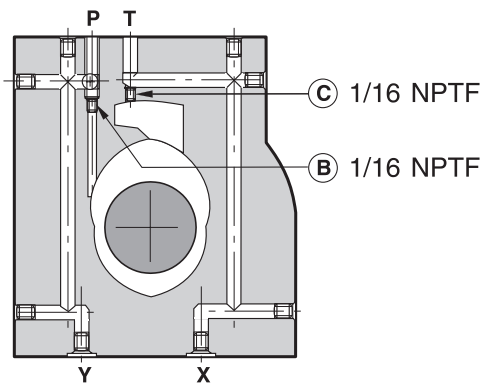


○ open, ● closed

Pilot oil		B	C
Inlet	Drain		
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○

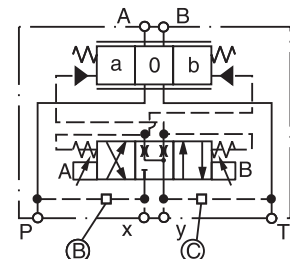


D111FB



○ open, ● closed

Pilot oil		B	C
Inlet	Drain		
internal	external	○	●
external	external	●	●
internal	internal	○	○
external	internal	●	○



Dimensions

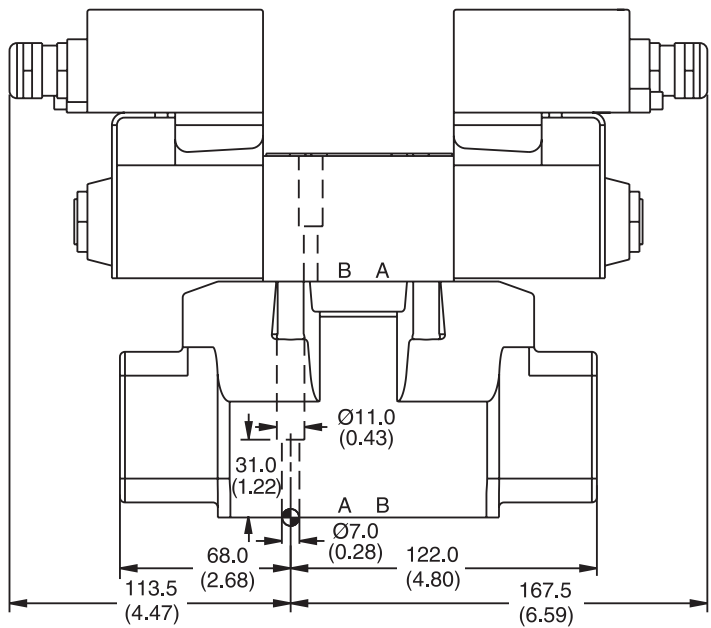
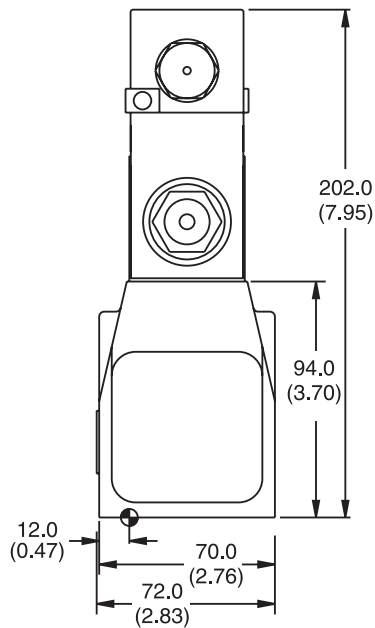
Proportional Directional Control Valves
Series D*1FB*EE with Atex Coils

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



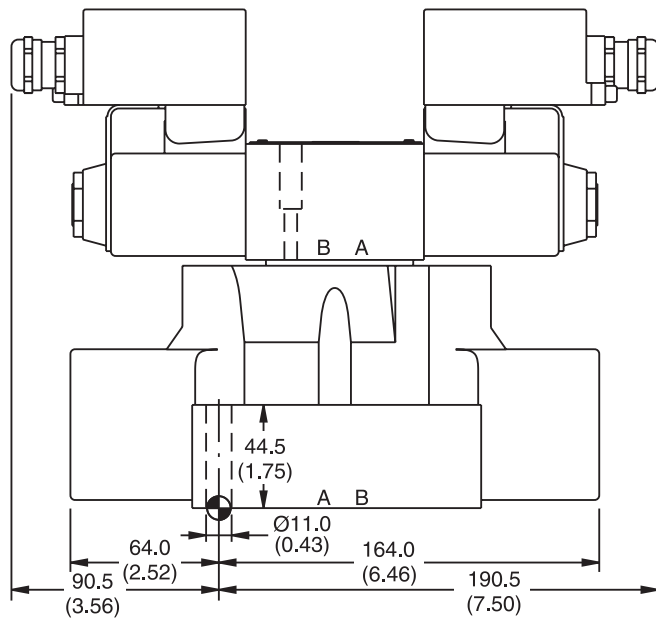
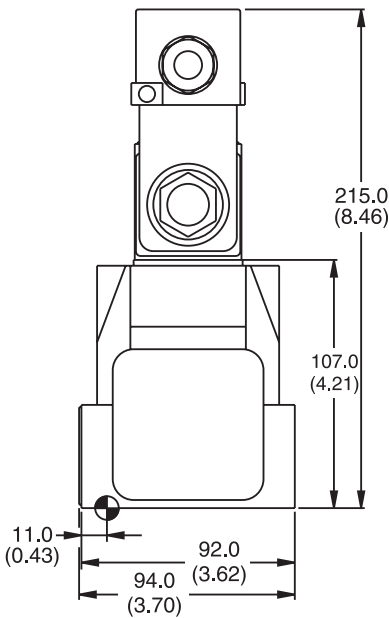
D31FB*EE

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Surface Finish	Kit			Seal Kit
	BK385 BK98	4x M6x40 DIN 912 12.9 4x 1/4-20x1.62	13.2 Nm (9.7 lb.-ft.) ±15 %	Nitrile: SK-D31FB Fluorocarbon: SK-D31FBV

D41FB*EE



Surface Finish	Kit			Seal Kit
	BK320 BK160	2x M6x55 4x M10x60 DIN 912 12.9 4x 3/8-16x2.5 4X 3/8-16X2.5	13.2 Nm (9.7 lb.-ft.) 63 Nm (46.5 lb.-ft.) ±15 %	Nitrile: SK-D41FB Fluorocarbon: SK-D41FBV

Dimensions

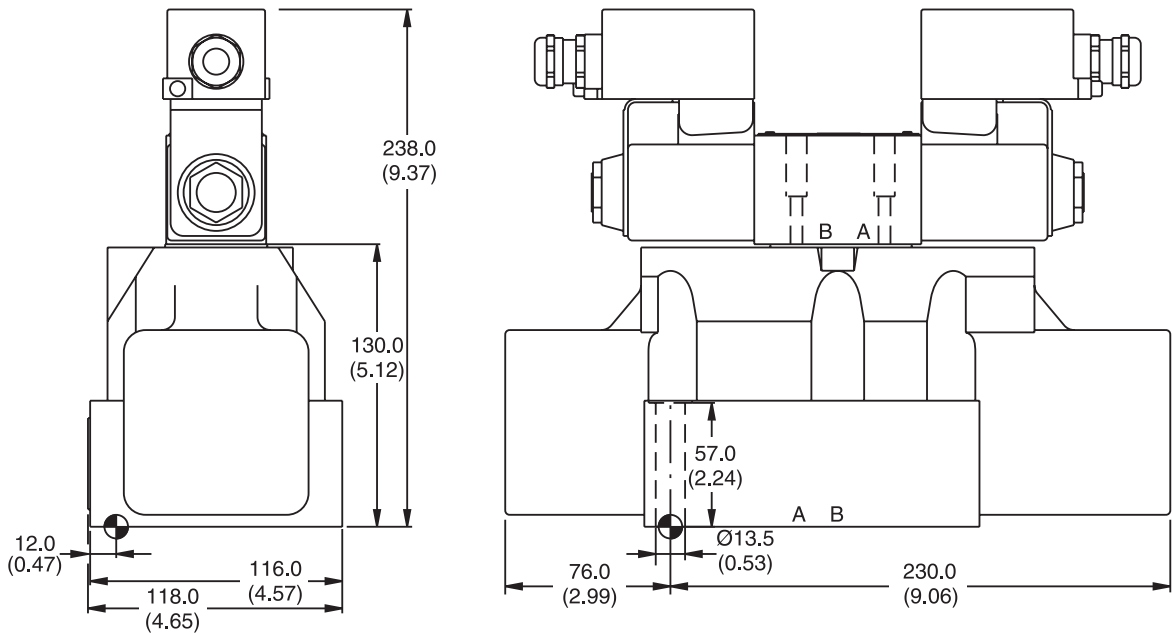
Proportional Directional Control Valves
Series D*1FB*EE with Atex Coils

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

D91FB*EE

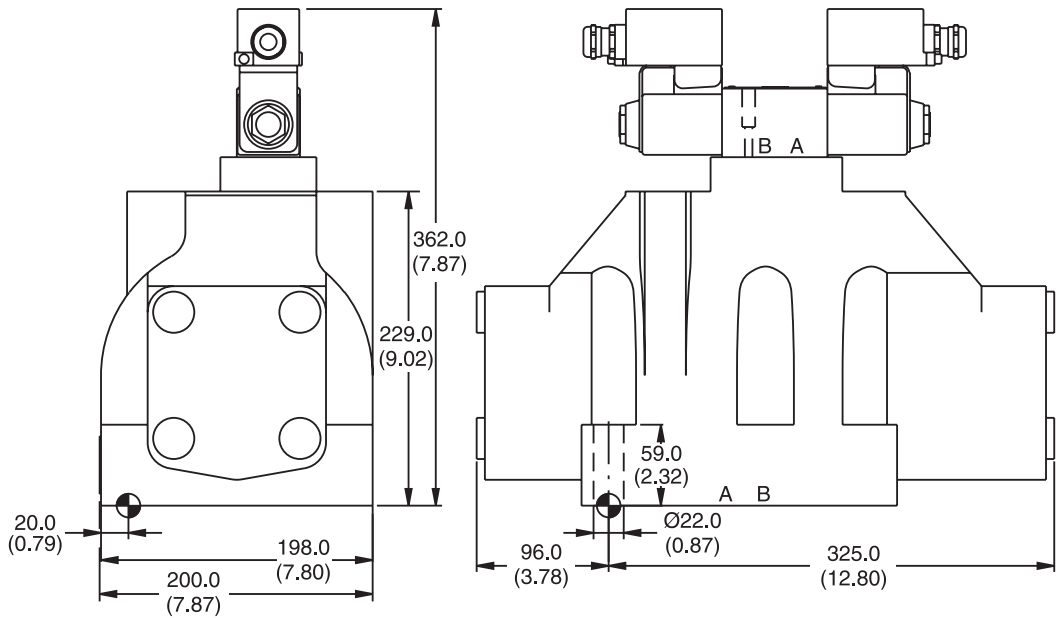


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Surface Finish	Kit			Seal Kit
	BK360	6x M12x75 DIN 912 12.9	108 Nm (79.7 lb.-ft.) ±15 %	Nitrile: SK-D91FB Fluorocarbon: SK-D91FBV
	BK228	6x 1/2-13x3.0		

D111FB*EE



Surface Finish	Kit			Seal Kit
	BK386	6x M20x90 DIN 912 12.9	517 Nm (373.9 lb.-ft.) ±15 %	Nitrile: SK-D111FB Fluorocarbon: SK-D111FBV
	BK150	6x 3/4-10x3.5		