



PF6 Series Stainless Steel Piston Actuated On/Off Valves

Description

A 2-port pneumatically actuated on / off stainless steel valve for use on steam, water, air, oil and gases. A pneumatic signal acts on the actuator piston to open or close the valve with a spring return action. The valve plugs have a PTFE soft seal (**G**) to provide a tight shut-off. A valve position indicator is included on standard and flow regulator models.

Valves are available with one of three sizes of actuator:

Type 1 (45 mm), **Type 2** (63 mm) and **Type 3** (90 mm) with the following action options:

- **NC (Normally Closed)**

These valves are designed for flow over the seat (port 1 to 2). Recommended for pneumatic applications. Not recommended for water applications.

- **NO (Normally Open)**

These valves are designed for flow under the seat (port 2 to 1). Can be used to prevent waterhammer on valve closure in liquid applications.

- **BD (Bi-Directional normally closed)**

These valves are designed for special applications that require flow in both directions and incorporates an anti-waterhammer design for liquid applications flowing under the seat (port 2 to 1). Note: To help prevent the possibility of waterhammer on liquid applications flowing over the seat (port 1 to 2) the pressure should not exceed 15 psig.



Optional extras (see 'Valve selection guide', page 7):

- Travel switch - Flow regulator

Sizes, pipe connections and actuator combinations

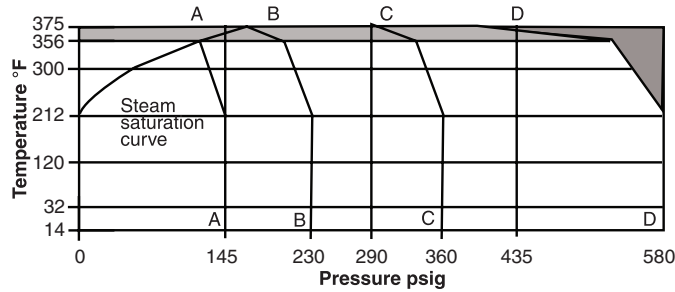
Valve type	Pipe connections	Actuator type	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
PF61G	NPT or BSP	1 PTFE version	•	•				
		2 PTFE version	•	•	•	•	•	•
		H version	•	•	•			
		3 PTFE version			•	•	•	•
		H version			•	•	•	•
		2 PTFE version	•	•	•	•	•	•
PF63G	Flanged to ANSI Class 150 or EN 1092 (welded on flanges)	H version	•	•	•	•	•	•
		3 PTFE version			•	•	•	•
		H version			•	•	•	•
		1 PTFE version	•	•				
PF65G	Sanitary clamp to ISO 2852 Note: clamp and clamp gasket are not included	2 PTFE version	•	•	•	•	•	•
		3 PTFE version			•	•	•	•

Available range

Valve action	BSP or NPT	Butt weld	Flanged (EN 1092 or ANSI)	Socket weld	Sanitary clamp
NC - Normally Closed (flow over seat)	PF61G - 1NC	PF62G - 1NC	-	PF64G - 1NC	PF65G - 1NC
	PF61G - 2NC	PF62G - 2NC	PF63G - 2NC	PF64G - 2NC	PF65G - 2NC
	PF61G - 3NC	PF62G - 3NC	PF63G - 3NC	PF64G - 3NC	PF65G - 3NC
NO - Normally Open (flow under seat)	PF61G - 1NO	PF62G - 1NO	-	PF64G - 1NO	PF65G - 1NO
	PF61G - 2NO	PF62G - 2NO	PF63G - 2NO	PF64G - 2NO	PF65G - 2NO
	PF61G - 3NO	PF62G - 3NO	PF63G - 3NO	PF64G - 3NO	PF65G - 3NO
BD - Bi-Directional normally closed (flow over or under seat)	PF61G - 1BD	PF62G - 1BD	-	PF64G - 1BD	PF65G - 1BD
	PF61G - 2BD	PF62G - 2BD	PF63G - 2BD	PF64G - 2BD	PF65G - 2BD
	PF61G - 3BD	PF62G - 3BD	PF63G - 3BD	PF64G - 3BD	PF65G - 3BD

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Pressure / temperature limits



The product **must not** be used in this region or beyond the body design conditions quoted in the table below as damage to the internals will occur.

- A - A PN10
- B - B PN16 and ANSI 150
- C - C PN25
- D - D PN40

Body design	NPT, BSP	1/2" - 2"
	Flanged ANSI 150	
conditions	Sanitary clamp compatible connections PN10	1/2" - 2"
PMA	Maximum allowable pressure	<i>Refer to the graph left</i>
TMA	Maximum allowable temperature	356°F
Minimum allowable temperature 14°F		
PMO	Maximum operating pressure	130 psig @ 356°F
TMO	Maximum operating temperature	356°F
Minimum operating temperature (Note: For lower operating temperatures consult Spirax Sarco.) 14°F		
ΔΔPMX	Maximum differential pressure	(see page 4)
Designed for a maximum cold hydraulic test pressure of: 1.5 x PMA (PN rating)		
PTMX	Maximum test pressure is equal to the √ΔPMX	

Technical details

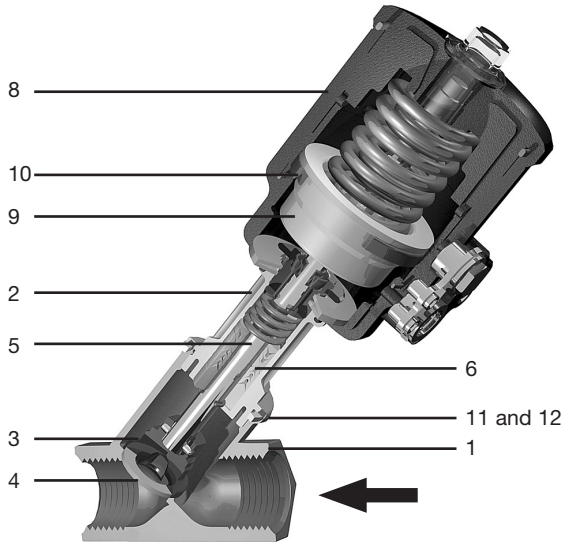
Leakage	PTFE soft seal	ANSI class V1	
Flow characteristic	Fast opening	On/off	
Flow direction	PF6_G-NC	Flow over seat Port 1 to 2	
	PF6_G-NO	Flow under seat Port 2 to 1	
	PF6_G-BD	Flow over seat Port 1 to 2 Flow under seat Port 2 to 1	
Pilot media	Air or water	140°F maximum	
Actuator rotation	360°		
Actuator type and size	Pilot connection Maximum pilot pressure		
	Type 1 = 45 mm diameter	1/8" BSP	150 psig
	Type 2 = 63 mm diameter	1/4" BSP	150 psig
	Type 3 = 90 mm diameter	1/4" BSP	115 psig

C_v values

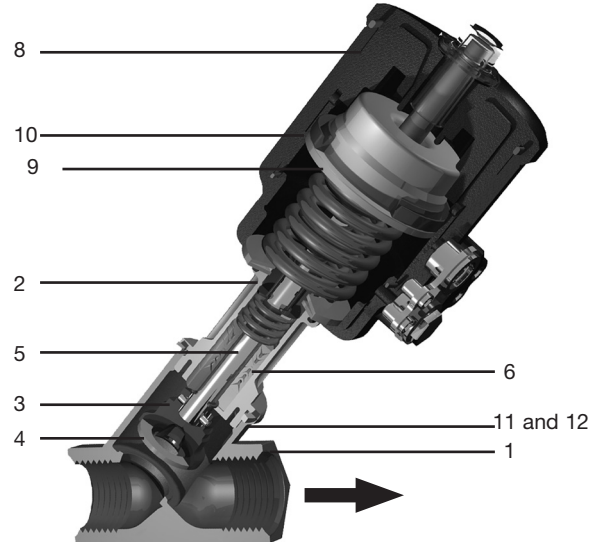
Size	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"
C_vs	4.9	9.0	22	31	49	60

PF6 Series Stainless Steel Piston Actuated On/Off Valves

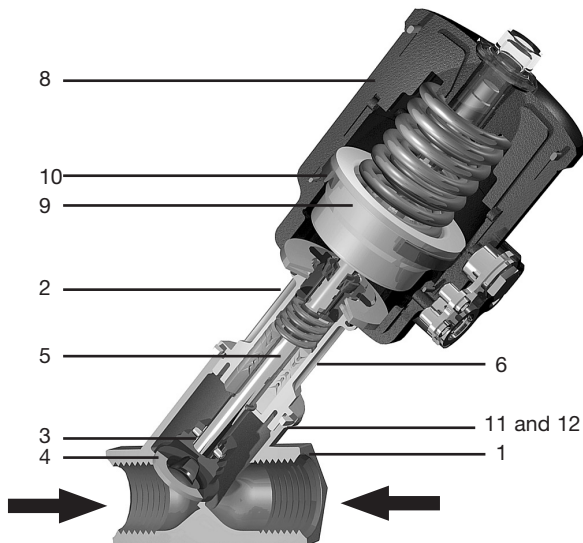
NC (Normally Closed)



NO (Normally Open)



BD (Bi-Directional normally closed)



Materials

No.	Part	Material	
1	Body	Stainless steel	AISI 316L
2	Bonnet	Stainless steel	AISI 316L
3	Plug	Stainless steel	AISI 316L
4	Valve plug seal	PTFE	
5	Valve stem	Stainless steel	AISI 316
6	Stem seals	PTFE chevrons	
7	Stem 'O' ring	Viton	
8	Actuator housing	Glass filled polyamide	
9	Piston	Glass filled polyamide	
10	Piston lip seal	Viton	
11	Gasket	PTFE	
12	'O' ring	Viton	

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Stainless Steel Piston Actuated On/Off Valves

ΔPMX - Maximum differential pressures for PF6 piston actuated valves

***Notes:**

1. Maximum differential pressure for saturated steam service is 130 psig.
2. Sanitary clamp connections are limited to PN10 pressure rating.
3. ANSI flange connections are limited to ANSI 150 pressure rating.

PF6 G-NC (Normally closed)

Model	Valve size	Actuator diameter (mm)	Flow direction (port 1 to 2)	*Maximum differential pressure (psig)	Pilot Pressure	
					Minimum (psig)	Maximum (psig)
PF6_G-1NC	1/2"	45	over seat	230	26	150
	3/4"	45	over seat	230	26	150
PF6_G-2NC	1/2"	63	over seat	290	22	150
	3/4"	63	over seat	290	22	150
	1"	63	over seat	290	22	150
	1-1/4"	63	over seat	230	41	150
	1-1/2"	63	over seat	230	41	150
	2"	63	over seat	160	41	150
PF6_G-3NC	1"	90	over seat	290	15	115
	1-1/4"	90	over seat	230	41	115
	1-1/2"	90	over seat	230	41	115
	2"	90	over seat	220	41	115

* See Notes at the top of this page

PF6 G-NO (Normally open)

Model	Valve size	Actuator diameter (mm)	Flow direction (port 2 to 1)	*Maximum differential pressure (psig)	Pilot Pressure	
					Minimum (psig)	Maximum (psig)
PF6_G-1NO	1/2"	45	under seat	230	26	150
	3/4"	45	under seat	230	26	150
PF6_G-2NO	1/2"	63	under seat	230	22	150
	3/4"	63	under seat	230	22	150
	1"	63	under seat	230	22	150
	1-1/4"	63	under seat	230	22	150
	1-1/2"	63	under seat	230	22	150
	2"	63	under seat	175	22	150
PF6_G-3NO	1"	90	under seat	230	15	115
	1-1/4"	90	under seat	230	15	115
	1-1/2"	90	under seat	230	15	115
	2"	90	under seat	230	15	115

* See Notes at the top of this page

PF6 G-BD (Bi-Directional normally closed)

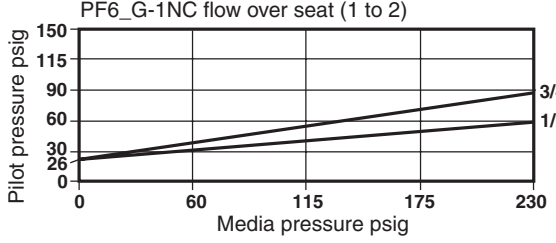
Model	Valve size	Actuator diameter (mm)	Flow direction (port 1 to 2)	*Maximum differential pressure (psig)	Flow direction (port 2 to 1)	*Maximum differential pressure (psig)	Pilot pressure	
							Minimum (psig)	Maximum (psig)
PF6_G-1BD	1/2"	45	over seat	230	under seat	230	60	150
	3/4"	45	over seat	230	under seat	100	60	150
PF6_G-2BD	1/2"	63	over seat	230	under seat	230	55	150
	3/4"	63	over seat	230	under seat	230	55	150
	1"	63	over seat	230	under seat	160	55	150
	1-1/4"	63	over seat	230	under seat	87	55	150
	1-1/2"	63	over seat	175	under seat	60	55	150
	2"	63	over seat	115	under seat	36	55	150
PF6_G-3BD	1"	90	over seat	230	under seat	205	48	115
	1-1/4"	90	over seat	230	under seat	175	48	115
	1-1/2"	90	over seat	230	under seat	115	48	115
	2"	90	over seat	205	under seat	73	48	115

* See Notes at the top of this page

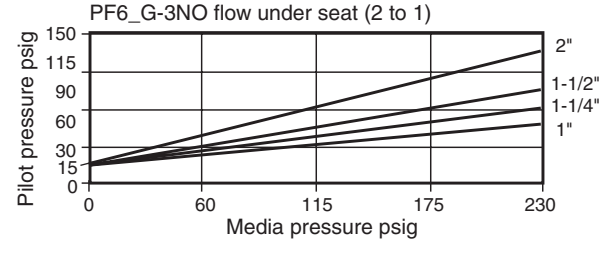
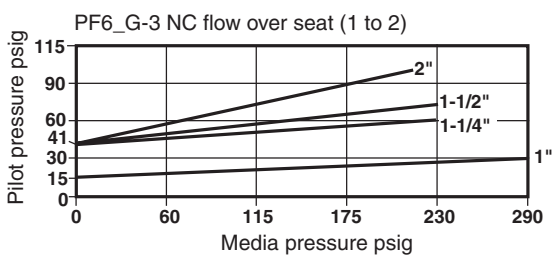
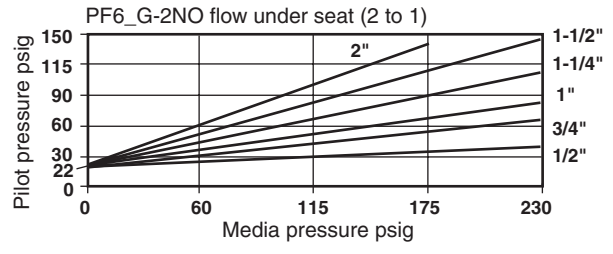
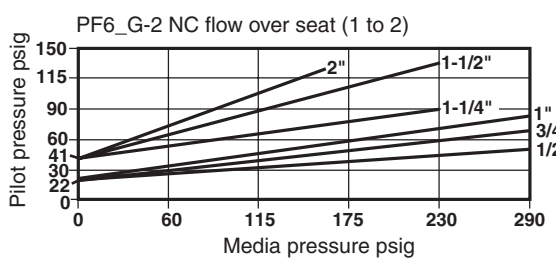
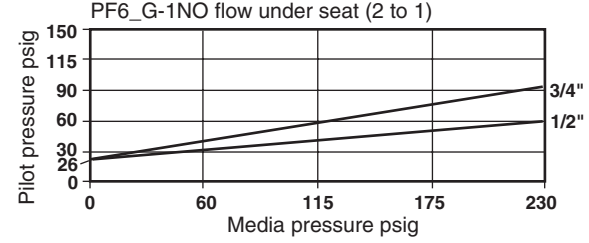
PF6 Series Stainless Steel Piston Actuated On/Off Valves

Pilot / media pressure relationship

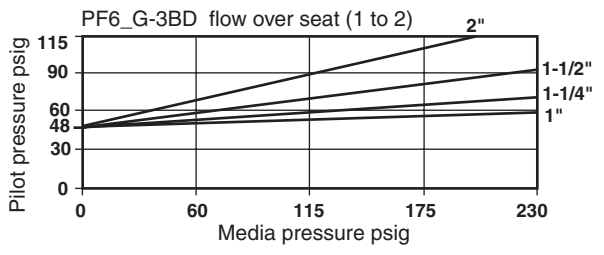
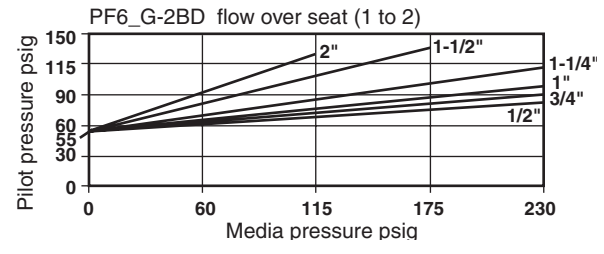
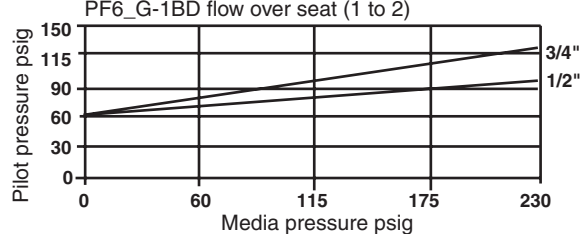
PF6_G-NC (Normally Closed)



PF6_G-NO (Normally Open)



PF6_G-BD (Bi-Directional normally closed)



PF6 Series Stainless Steel Piston Actuated On/Off Valves

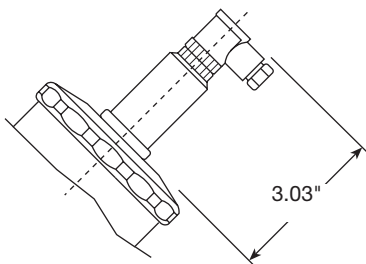
Dimensions and weights (approximate) in inches and lbs.

Valve size	Actuator type and size	Screwed, socket weld and butt weld					Sanitary clamp (to ISO 2852)				Flanged				
		A1	B1	C	D†	Weight	A2	B2	C	Weight	EN 1092 A3	ANSI 150 A4	B3	C	Weight
1/2"	1 (45 mm)	2.56	5.67	4.85	.20	1.8	4.02	6.43	4.85	1.9	-	-	-	-	-
	2 (63 mm)	2.56	7.56	6.74	.20	2.7	4.02	8.28	6.70	2.9	5.12	5.51	8.59	7.65	5.5
3/4"	1 (45 mm)	2.96	6.11	4.97	.28	2.0	4.49	6.58	4.93	2.5	-	-	-	-	-
	2 (63 mm)	2.96	7.80	6.93	.28	2.9	4.49	8.55	6.93	3.3	5.91	6.00	9.30	8.28	6.4
1"	2 (63 mm)	3.55	8.35	7.29	.32	3.3	5.08	9.10	7.29	4.0	6.31	6.50	9.42	8.20	8.2
	3 (90 mm)	3.55	8.79	7.72	.32	4.9	5.08	9.58	7.73	5.3	6.31	6.50	9.85	8.63	9.5
1-1/4"	2 (63 mm)	4.33	8.87	7.60	.39	4.2	5.52	9.46	7.57	5.3	7.09	7.26	9.93	8.51	12.2
	3 (90 mm)	4.33	9.22	7.96	.39	5.3	5.52	9.89	8.04	6.2	7.09	7.26	10.37	8.95	13.0
1-1/2"	2 (63 mm)	4.73	9.06	7.80	.47	5.3	6.27	9.81	7.76	6.2	7.88	8.00	10.13	8.67	14.2
	3 (90 mm)	4.73	9.42	8.16	.47	5.8	6.27	10.25	8.24	7.1	7.88	8.00	10.56	9.14	15.2
2"	2 (63 mm)	5.91	9.77	8.16	.63	6.4	7.49	10.52	8.12	8.0	9.06	9.00	10.84	9.06	19.0
	3 (90 mm)	5.91	10.13	8.51	.63	7.3	7.49	11.00	8.55	8.9	9.06	9.00	11.27	9.46	20.0

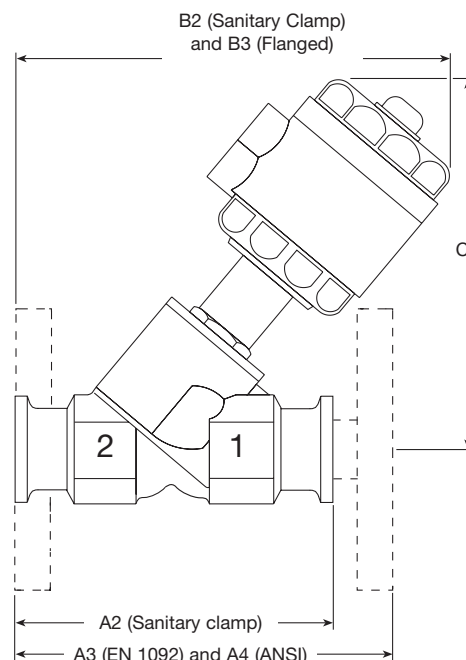
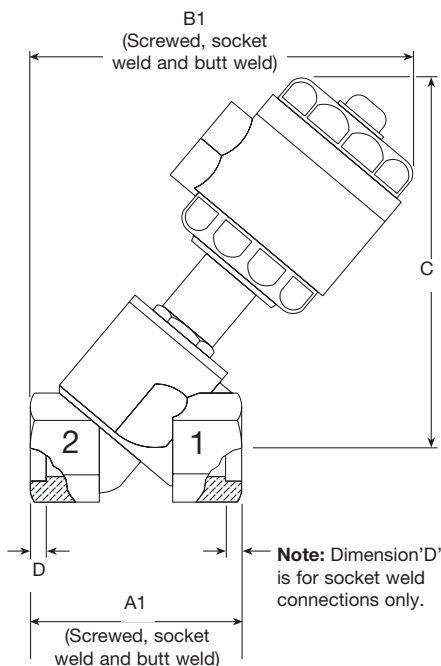
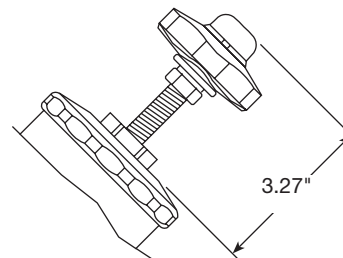
Notes: * Add 0.5 lbs. for travel switch or flow regulator options (not available for use with the Type 1 actuator).

† Dimension 'D' is for socket weld connections only.

* Travel switch



* Flow regulator



PF6 Series

Stainless Steel Piston Actuated On/Off Valves

Valve selection guide

Valve type	P = Piston valve		P
Valve characteristic	F = Fast opening		F
Body material	6 = Stainless steel		G
Connections	1 = BSP or NPT		
	3 = Flanged	EN 1092 or ANSI Class 150 (welded on flanges)	1
	5 = Sanitary clamp	ISO 2852	
Valve plug seal	G = PTFE		G
Actuator type	1 = 45 mm diameter		
	2 = 63 mm diameter		2
	3 = 90 mm diameter		
Valve position	NC = Normally Closed		
	NO = Normally Open		NC
	BD = Bi-Directional		
Valve size	1/2", 3/4", 1", 1-1/4", 1-1/2", 2"		1"
Optional	I = Travel switch	Provides indication of open or closed valve position through a magnetic reed switch with volt free contacts. Maximum rating: Voltage (V) = 500 V, Current (I) = 0.5 A, Power (P) = 30 VA.	I
	R = Flow regulator	Available on Type 2 and Type 3 actuators with suffix 'I' if this option is required. Provides manual control of maximum flow through the valve. Can also provide manual shut-off on normally open valves. Available on Type 2 and Type 3 actuators with suffix 'R' if this option is required.	

Note: Shaded areas represent fixed parameters

Valve selection guide example	PF6	1	G	2	NC	1" NPT	I	SS, 63mm, Normally Closed, NPT TravelSwitch
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How to order

Example: 1 of Spirax Sarco PF61G-2NC-1" NPT- I stainless steel piston actuated on/off valve having NPT connections, with travel switch

Spare parts

A seal kit is available for all valve and actuator sizes comprising: Piston lip seal, stem 'O' ring, valve head seal (PTFE), body seal and 'O' ring.

How to order spare seal kits

Always order spares by specifying the valve size, type and date code (given on the actuator label i.e. 120 = week 12, year 2000).

Example: 1 of Seal kit for a 1" PF61G-2NC, date code 120.

Safety information, installation and maintenance

For full details, see the Installation and Maintenance Instructions supplied with the product.

Installation note: These valves can be mounted in any orientation. The actuator can be rotated 360° in the direction indicated on the product label to facilitate easy pilot mounting connection.

PF6 Series

Stainless Steel Piston Actuated On/Off Valves

Associated equipment

Pilot solenoid

Type DM 3-port two way electropneumatic pilot solenoid valve that can be directly mounted (banjo connection) to the PF61G-NC, NO and BD series piston actuated valves to provide actuator pilot pressure to open normally closed or close normally open valves. Suitable for air or water operating media. The valve is supplied with a DIN connector. For full details refer to the relevant Technical Information Sheet.

Available types

Model	Type	Actuator	Frequency/ Voltage	Actuator Connection	Line Connection
DM11N	1	45 mm	230/50 or 240/60 Vac	1/8" BSP	1/8" NPT
DM12N	1	45 mm	110/50 or 120/60 Vac	1/8" BSP	1/8" NPT
DM13N	1	45 mm	24/50 or 24/60 Vac	1/8" BSP	1/8" NPT
DM14N	1	45 mm	24 Vdc	1/8" BSP	1/8" NPT
DM21N	2	63 mm	230/50 or 240/60 Vac	1/4" BSP	1/8" NPT
DM22N	2	63 mm	110/50 or 120/60 Vac	1/4" BSP	1/8" NPT
DM23N	2	63 mm	24/50 or 24/60 Vac	1/4" BSP	1/8" NPT
DM24N	2	63 mm	24 Vdc	1/4" BSP	1/8" NPT
DM31N	3	90 mm	230/50 or 240/60 Vac	1/4" BSP	1/8" NPT
DM32N	3	90 mm	110/50 or 120/60 Vac	1/4" BSP	1/8" NPT
DM33N	3	90 mm	24/50 or 24/60 Vac	1/4" BSP	1/8" NPT
DM34N	3	90 mm	24 Vdc	1/4" BSP	1/8" NPT

