

spirax
sarco
PM6

TI-P373-17
CMGT Issue 4

Stainless Steel
Piston Actuated Modulating Control Valves

Description

The PM6 is a 2-port pneumatically actuated modulating stainless steel control valve designed for use on steam, water, air, oil, gases and vacuum applications. As standard it is fitted with a PEEK plug seal for operation up to 180°C, and both the body and shaped-plug have undergone a hardening treatment.

Valves are available with one of two sizes of actuator:

Type 2 (63 mm) and Type 3 (90 mm) with the following action:

NC - Normally Closed Designed for flow under the seat (port 2 to 1).

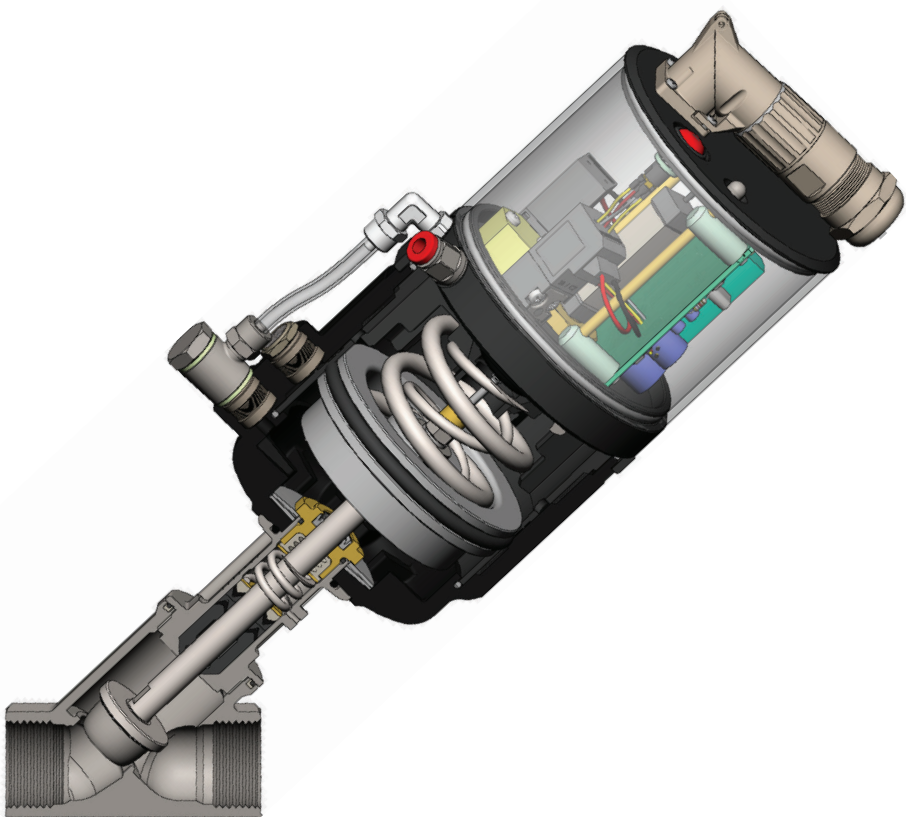
Valves are available with the following fail safe options:

C - Closed The valve fails in the closed position

M - Maintained The valve fails in the last known operating position

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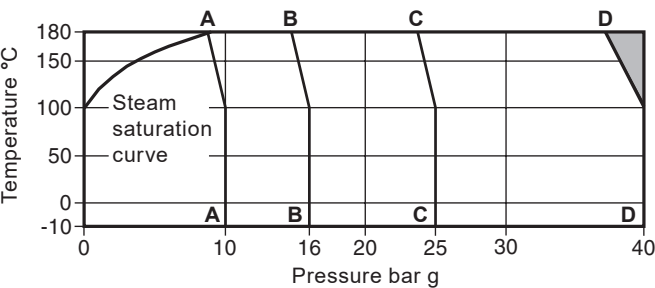
Control systems

Control valves

Sizes, pipe connections and actuator combinations

Pipe connections	Valve type C	or	Valve type M	Actuator type	DN15 ½"	DN20 ¾"	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"
Screwed to BSP or NPT	PM61GC	or	PF61G - 1GM	-2NC	•	•				
	PM61GC	or	PF61G - 1GM	-3NC			•	•	•	•
Butt weld to DIN 11850 pipe, ASME B 36.10/ISO 65 pipe or ISO 4200 pipe	PM62GC	or	PF62G - 1GM	-2NC	•	•				
	PM62GC	or	PF62G - 1GM	-3NC			•	•	•	•
Flanged to EN 1092 or ASME Class 150 (welded on flanges)	PM63GC	or	PF63G - 1GM	-2NC	•	•				
	PM63GC	or	PF63G - 1GM	-3NC			•	•	•	•
Socket weld to ASME B 36.10/ISO 65 pipe	PM64GC	or	PF64G - 1GM	-2NC	•	•				
	PM64GC	or	PF64G - 1GM	-3NC			•	•	•	•
*Sanitary clamp to ISO 2852 or ASME BPE	PM65GC	or	PF65G - 1GM	-2NC	•	•				
	PM65GC	or	PF65G - 1GM	-3NC			•	•	•	•

Pressure/temperature limits



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

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.

Body design conditions	Screwed, butt weld, socket weld and flanged EN 1092	DN15 - DN32 (½" - 1")	PN40
		DN32 and DN40 (1¼" - 1½")	PN25
		DN50 (2")	PN16
	Flanged ASME	DN15 - DN50 (½" - 2")	Class 150
	Sanitary clamp compatible connections	DN15 - DN50 (½" - 2")	PN10
Maximum design pressure			Refer to graph above
Maximum design temperature			180 °C
Minimum design temperature			-10 °C
Maximum operating pressure for saturated steam service			9 bar g @ 180 °C
Maximum operating temperature			180 °C
Minimum operating temperature			-10 °C
Ambient temperature limits	Maximum		60 °C
	Minimum		-10 °C
Note: Protection from environmental influences (e.g. UV radiation, humidity, chemicals) is required. Ensure that adequate shelter is provided for outdoor installations.			
Maximum differential pressure			(see bottom of page)
Designed for a maximum cold hydraulic test pressure of:		1.5 x Maximum design pressure (PN rating)	

Technical details

Leakage		PEEK soft seal	ASME Class VI
Flow characteristic		Equal percentage	
Flow direction		Flow under seat	Port 2 to 1
Pilot media		Instrument air quality	60 °C maximum
Actuator rotation		360°	
Actuator type and size		Pilot connection	Maximum pilot pressure
	Type 2 = 63 mm diameter	Push-in type to suit Ø6 mm pipe	8 bar g
	Type 3 = 90 mm diameter	Push-in type to suit Ø6 mm pipe	8 bar g

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Control systems
Control valves

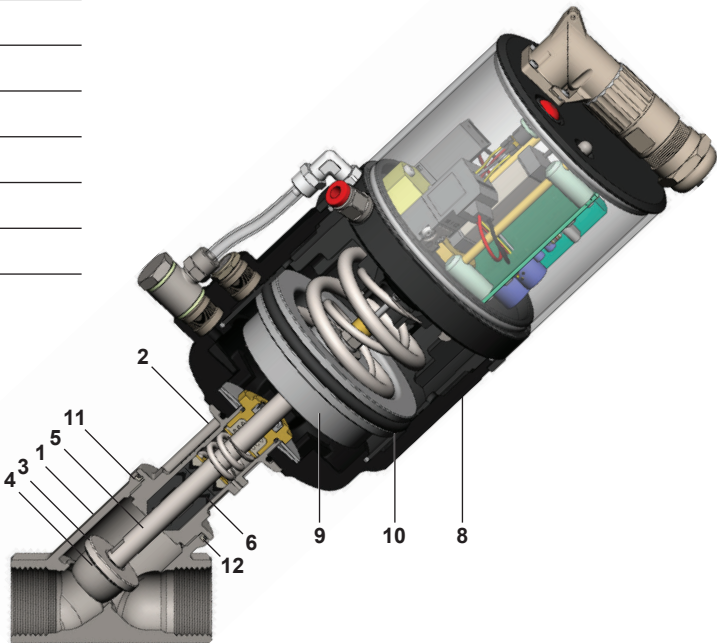
K_{vs} values

Size	DN15 ½"	DN20 ¾"	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"	For conversion: C _v (UK) = K _v x 0.963 C _v (US) = K _v x 1.156
K _{vs}	4.5	8.7	12.7	19.8	29.7	36.3	

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	PEEK	
5	Valve stem	Stainless steel	AISI 316L
6	Stem seals	PTFE + Carbographite	
7*	Stem 'O' ring	FKM	
8	Actuator housing	30% glass filled polyamide	
9	Piston	Aluminium	
10	Piston 'O' ring	NBR	
11	Gasket	PTFE	
12	'O' ring	FKM	

* **Note:** Item 7 is not shown.



ΔPMX - Maximum differential pressures for PM6 piston actuated valves

- Notes:
- 1. Maximum differential pressure for saturated steam service is 9 bar g.
 - 2. Sanitary clamp connections are limited to PN10 pressure rating.
 - 3. ASME flange connections are limited to ASME 150 pressure rating.

PF51G-NC (Normally closed)

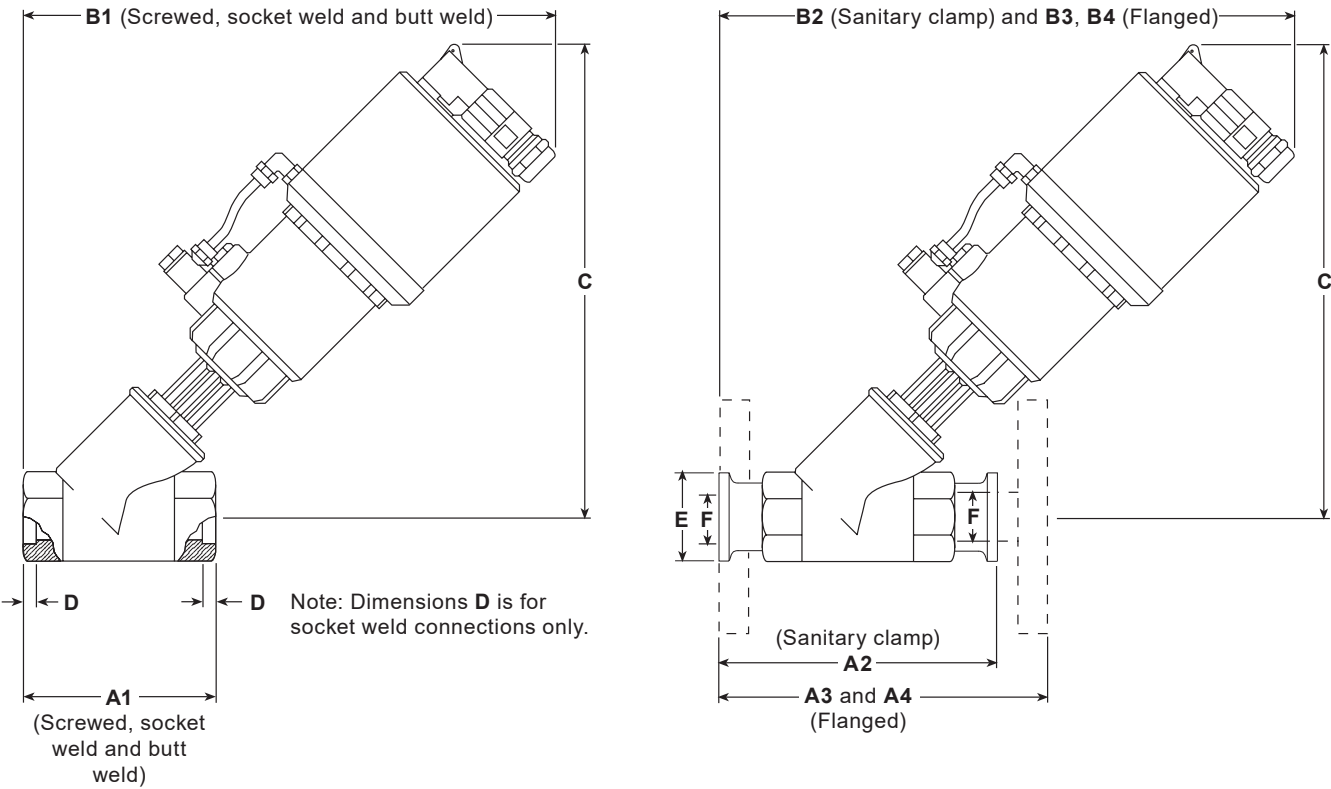
Model	Valve size	Actuator diameter (mm)	Flow direction (port 2 to 1)	Maximum differential pressure (bar)	Pilot Pressure	
					Minimum (bar)	Maximum (bar)
PF6_GC-2NC and PM6_GM-2NC	DN15 - (1/2")	63	under seat	16	4.5	8
	DN20 - (3/4")	63	under seat	16	4.5	8
PF6_GC-3NC and PM6_GM-3NC	DN25 - (1")	90	under seat	14	4.5	8
	DN32 - (1¼")	90	under seat	12	4.5	8
	DN40 - (1½")	90	under seat	8	4.5	8
	DN50 - (2")	90	under seat	6	4.5	8

Control systems
Control valves

Dimensions and weights (approximate) in mm and kg

Valve size	Actuator type and size		A1	B1	C	D	Weight*
DN15 - ½"	2	(45 mm)	65	144	136	123	0.8
DN20 - ¾"	2	(45 mm)	75	49	142	126	0.9
DN25 - 1"	3	(45 mm)	90	168	161	141	1.1
DN32 - 1¼"	3	(63 mm)	110	225	217	193	1.9
DN40 - 1½"	3	(63 mm)	120	230	25	198	2.4
DN50 - 2"	3	(63 mm)	150	248	241	207	2.9

*Note: Add 0.2 kg for travel switch or flow regulator options (not available for use with the Type 1 actuator).



Valve size	Actuator type and size		Sanitary clamp (to ISO 2852)						Sanitary clamp (ASME BPE)					
			A2	B2	C	E	E	Weight	A2	B2	C	E	E	Weight
DN15 - ½"	2	(63 mm)	102	313.0	269.0	34.0	17.2	2.5	102	313.0	269.0	25.0	9.4	2.5
DN20 - ¾"	2	(63 mm)	114	320.5	274.0	34.0	21.3	2.7	114	320.5	274.0	25.0	15.75	2.7
DN25 - 1"	3	(90 mm)	140	341.0	285.0	50.5	25.0	3.7	140	341.0	285.0	50.5	22.1	3.7
DN32 - 1¼"	3	(90 mm)	159	353.5	292.5	50.5	33.7	4.1	-	-	-	-	-	-
DN40 - 1½"	3	(90 mm)	159	353.5	297.5	64.0	40.0	4.5	159	353.5	297.5	50.5	34.8	4.5
DN50 - 2"	3	(90 mm)	190	372.0	306.5	64.0	51.0	5.3	190	372.0	306.5	64.0	47.5	5.3

Valve selection guide

Valve size	DN15 (½"), DN20 (¾"), DN25 (1"), DN32 (1¼"), DN40 (1½") and DN50 (2")			DN25	
Valve type	P	= Piston valve		P	
Valve characteristic	M	= Modulating		M	
Body material	6	= Stainless steel		6	
Connections	1	= Screwed	BSP or NPT	3	
	2	= Butt weld	Note: state pipeline connection when ordering		- DIN 11850 pipe
					- ASME B 36.10/ISO 65 pipe
					- ISO 4200 pipe
	3	= Flanged	EN 1092 or ASME Class 150 (welded on flanges)		
	4	= Socket weld	ASME B 36.10 / ISO 65 pipe		
5	= Sanitary clamp	Note: state pipeline connection ISO 2852 or ASME BPE when ordering			
Valve plug seal	G	= PEEK		G	
Fail safe position	C	= Closed		C	
	M	= Maintained			
Actuator type	2	= 63 mm diameter		2	
	3	= 90 mm diameter			
Valve position	NC	= Normally Closed		NC	
Control signal	mA	= 4 - 20 mA		mA	

Note: Shaded areas represent fixed parameters

Valve selection guide example

DN25 - P - M - 6 - 3 - G - C - 2 - NC - Flanged EN 1092 PN40

How to order

Example: 1 off Spirax Sarco DN25 PM63GC-2NC-mA stainless steel piston actuated modulating valve having flanged EN 1092 PN40 connections

Spare parts

- Electronic board spare kit
- Transducer spare kit
- Inlet microvalve spare kit
- Outlet microvalve spare kit

A seal kit is available for all valve and actuator sizes comprising: Piston 'O' ring, stem 'O' ring, valve head seal, PEEK 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 off Seal kit for a 1" PM61GC-2NC-mA, 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.



TI-P373-04

CTLS Issue 5

DM Type

Solenoid Valves

for use with Piston Actuated Valves

Description

A 3-port two way electropneumatic pilot solenoid valve that can be directly mounted (banjo connection) to the PF51G and PF61G-NC, NO and BD series piston actuated valves.

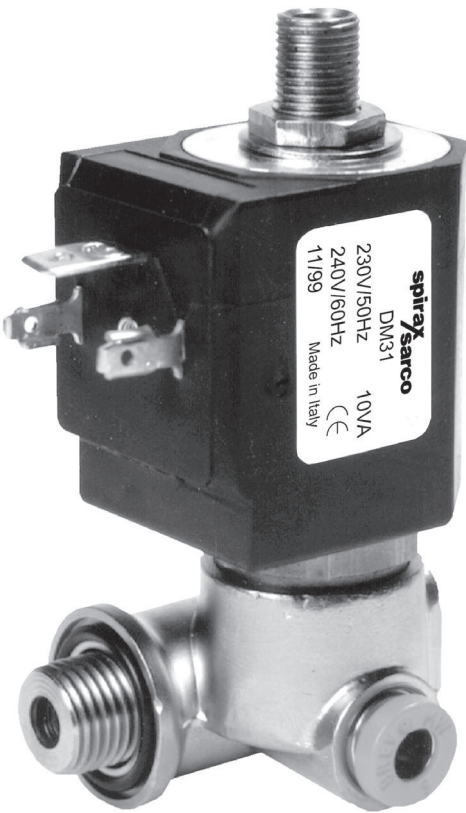
Suitable for air or water operating media. The valve is supplied with a DIN connector and fitted with manual override as standard.

Available types

Model	Actuator	Voltage/Frequency	Connection
DM11	45 mm	230/50 or 240/60 Vac	1⁄8" BSP
DM12	45 mm	110/50 or 120/60 Vac	1⁄8" BSP
DM13	45 mm	24/50 or 24/60 Vac	1⁄8" BSP
DM14	45 mm	24 Vdc	1⁄8" BSP
DM21	63 mm	230/50 or 240/60 Vac	1⁄4" BSP
DM22	63 mm	110/50 or 120/60 Vac	1⁄4" BSP
DM23	63 mm	24/50 or 24/60 Vac	1⁄4" BSP
DM24	63 mm	24 Vdc	1⁄4" BSP
DM31	90 mm	230/50 or 240/60 Vac	1⁄4" BSP
DM32	90 mm	110/50 or 120/60 Vac	1⁄4" BSP
DM33	90 mm	24/50 or 24/60 Vac	1⁄4" BSP
DM34	90 mm	24 Vdc	1⁄4" BSP

Technical details

Mounting		Banjo connection
Manual override		Fitted as standard
DIN connector	Type B	DM11, DM12, DM13 and DM14
	Type B	DM21, DM22, DM23 and DM24
	Type A	DM31, DM32, DM33 and DM34
Pilot media connection	DM11 to DM14 DM21 to DM24 DM31 to DM34	Push in type to suit 6 mm dia. nylon or copper tube
	DM11, DM12,	ac 10 VA (holding)
Coil consumption	DM13 and DM14	ac 16 VA (maximum) dc 7 Watts
	DM21, DM22, DM23, and DM24	ac 10 VA (holding) ac 16 VA (maximum) dc 7 Watts
	DM31, DM32, DM33 and DM34	ac 18 VA (holding) ac 36 VA (maximum) dc 14 Watts



Control systems
Control valves

Limiting conditions

Maximum media temperature	60 °C
Minimum media temperature	-10 °C
Protection class	IP65 (with connector)
Operating pressure	0 bar g min. to 10 bar g max.

Materials

Part	Material
Body	ELNP Niploy coated brass
Seal	FKM

Spares parts

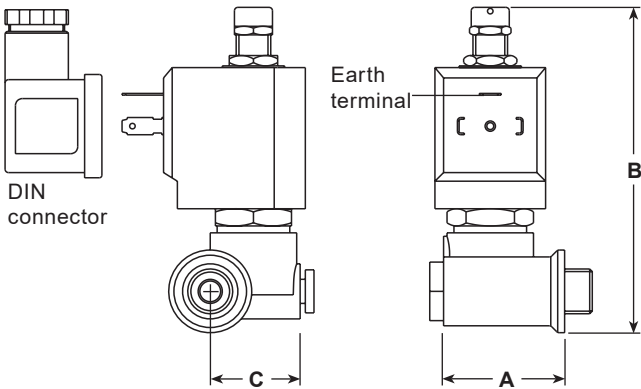
No spares are available for this product.

Installation

The valve can be directly mounted (banjo connection) onto the actuator.

Dimensions/weights (approximate) in mm and kg

Type	A	B	C	Weight
DM11, DM12, DM13 and DM14	31	77	27	0.27
DM21, DM22, DM23 and DM24	35	78	27	0.27
DM31, DM32, DM33 and DM34	35	95	27	0.38



How to order

Example: 1 off Spirax Sarco DM21 solenoid valve 240 Vac.