



PM6

## 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:

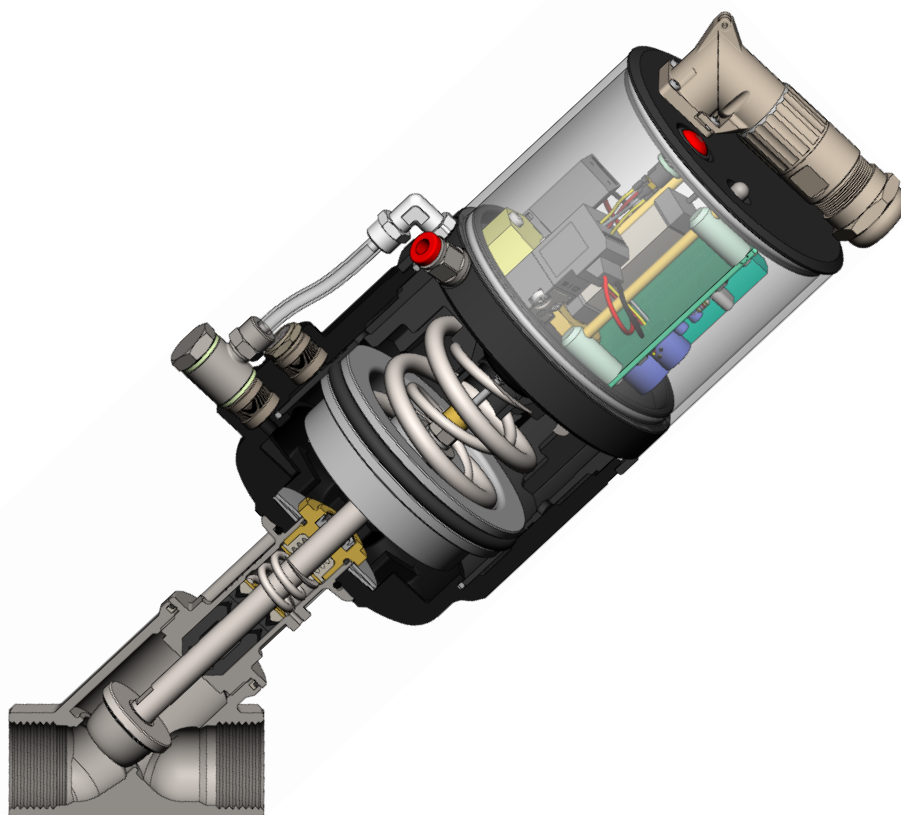
**Type 2** (63 mm) and **Type 3** (90 mm) with the following action:

**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

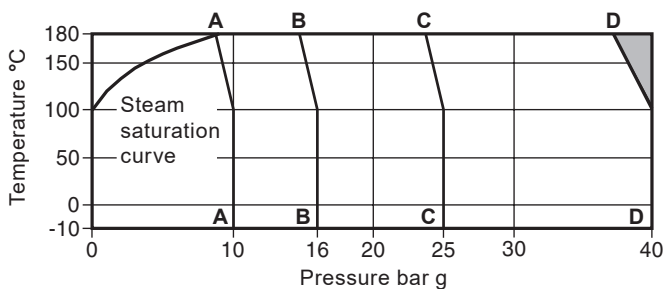
**M - Maintained**                The valve fails in the last known operating position



## 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	
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

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

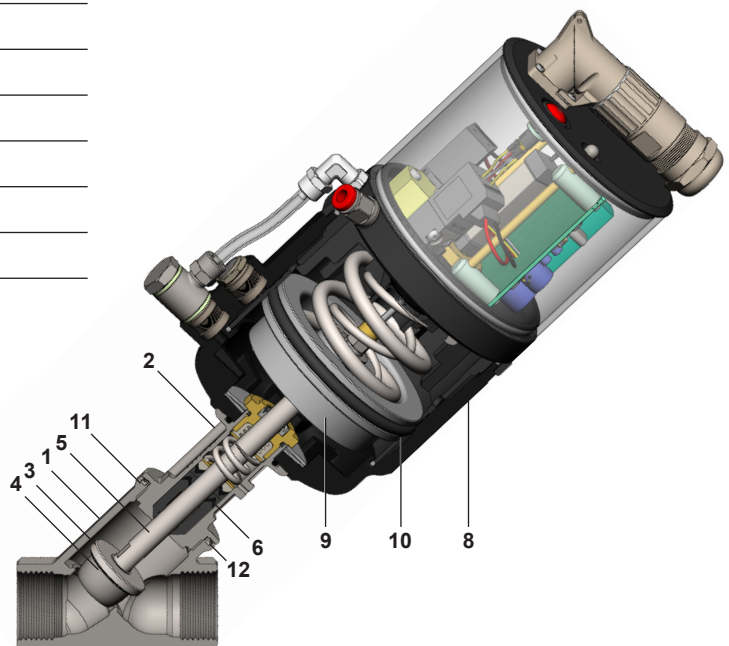
## K<sub>vs</sub> values

Size	DN15 ½"	DN20 ¾"	DN25 1"	DN32 1¼"	DN40 1½"	DN50 2"	For conversion: C <sub>v</sub> (UK) = K <sub>v</sub> x 0.963 C <sub>v</sub> (US) = K <sub>v</sub> x 1.156
K <sub>vs</sub>	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.

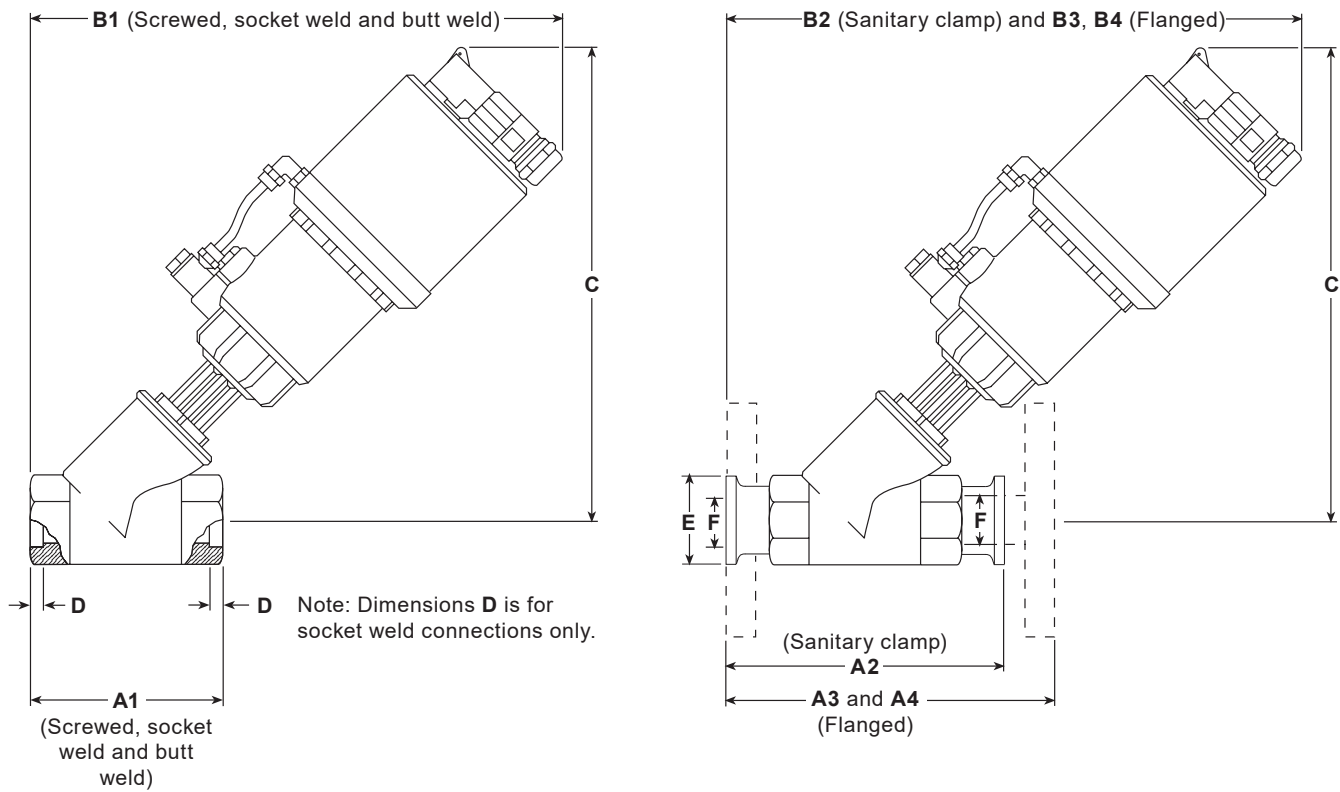
### PF51G-NC (Normally closed)

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 - (½")	63	under seat	16	4.5	8
	DN20 - (¾")	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

**Dimensions and weights (approximate) in mm and kg**

Valve size	Actuator type and size		A1	B1	C	D	Weight*
DN15 - 1/2"	2	(45 mm)	65	144	136	123	0.8
DN20 - 3/4"	2	(45 mm)	75	49	142	126	0.9
DN25 - 1"	3	(45 mm)	90	168	161	141	1.1
DN32 - 1 1/4"	3	(63 mm)	110	225	217	193	1.9
DN40 - 1 1/2"	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 - 1/2"	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 - 3/4"	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 - 1 1/4"	3 (90 mm)	159	353.5	292.5	50.5	33.7	4.1	-	-	-	-	-	-
DN40 - 1 1/2"	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

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

**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.