

PTFE - Micro-flow Valve Series 6a

Application:

PTFE-lined control valve for severely aggressive or corrosive media, especially for low flow rates and chemical processes:

- Nominal sizes DN 6 to DN 15
- Nominal pressure PN 10
- Temperatures up to 150°C

The control valve consists of a single-seated globe valve with PTFE-lining and either a pneumatic actuator or hand-operated actuator.

The valve is designed according to the modular-assembly principle and can be combined with various options and has the following features:

- Valve body of PTFE and a reinforcing casting of ductile iron with a plastic coating.
- Exchangeable PTFE seat and PTFE plug.
- Stem sealed by PTFE bellows. Secondary seal by additional wiper ring.
- Exchangeable actuator.
- Additional equipment can be added in acc. to DIN EN 60534 and Namur recommendations.

Versions:

The Series 6a Micro-flow Valve is available optionally in the following versions:

- Samson actuator (Fig. 1).
- Samson hand-operated actuator.
- actuators of other manufacturers on request.

Special designs:

- Lining made of compounds, e.g. conductive PTFE.
- Valve plug and seat made of special materials (e.g. tantalum or aluminium oxide) for erosive media
- additional PTFE safety packing.
- guided v-port plug

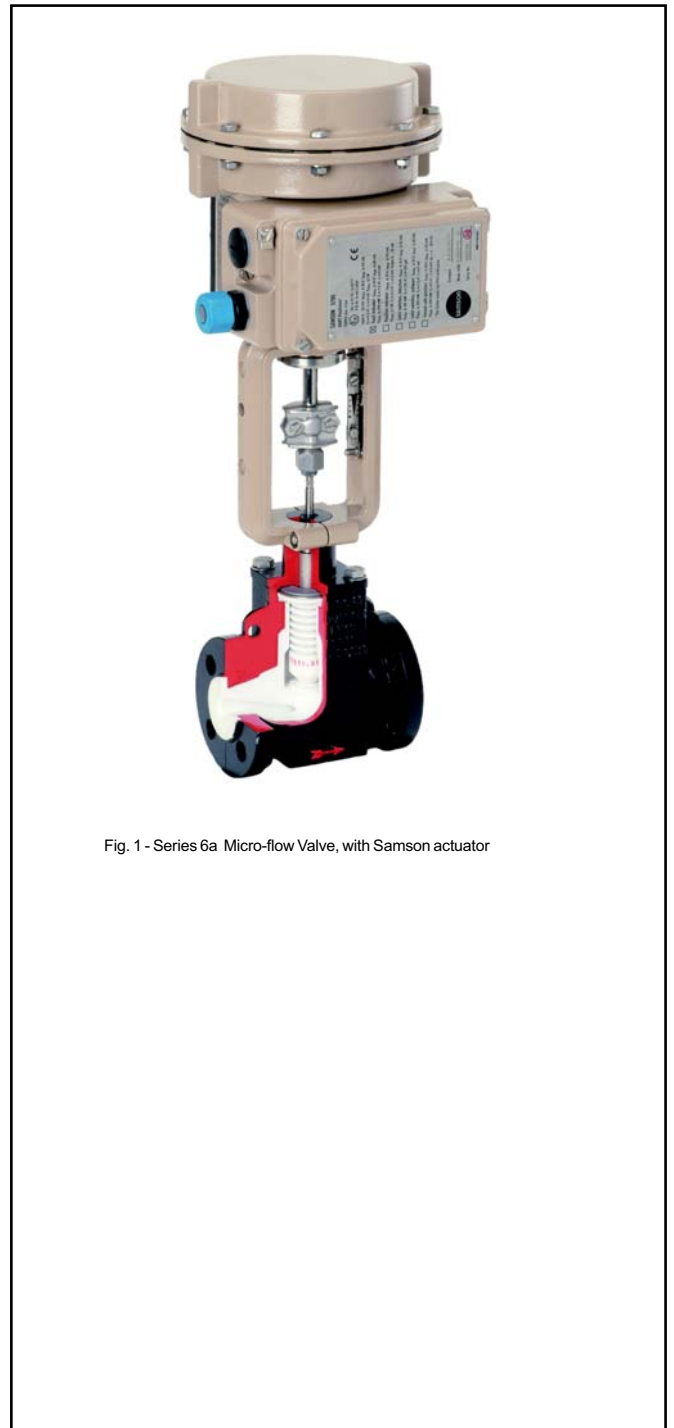


Fig. 1 - Series 6a Micro-flow Valve, with Samson actuator

Micro-flow Valve Series 6a

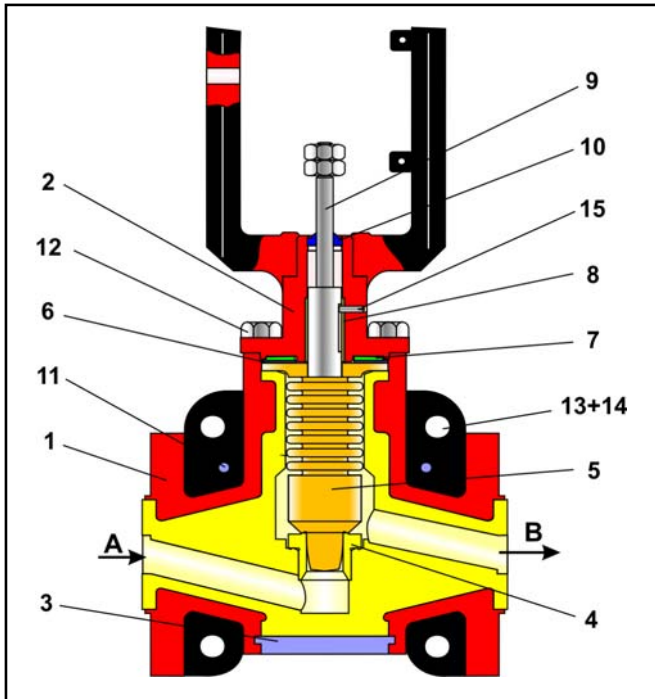


Fig. 2 – PTFE Micro-flow valve

Item	Description	Item	Description
1	PTFE body with steel casing	9	Stem connector
2	Bonnet flange	10	Wiper ring
3	Bottom flange	11	Grooved pin
4	Seat	12	Screw
5	Bellows with plug	13	Screw
6	Thrust washer	14	Nut
7	Disc spring	15	Grooved pin
8	Bushing		

Table 1 – Parts List

Principle of operation:

The process medium flows through the Series 6a Globe Valve in the flow-to-open direction.

The valve plug position determines the cross-sectional area of flow between the seat (4) and the bellow with integrated valve plug (5).

The PTFE bellows (5) seals the area between the valve body (1) and stem connector (9). In the standard version, the bellow unit is suitable for operating pressures (p_2) up to 6 bar.

The Wiper ring (10) is used as a backup stem sealing.

The PTFE seat (3) is screwed into the valve body (1) over a thread suitable for plastic.



Note: Before using the valve in hazardous areas, check whether this is possible according to ATEX 94/9/EC. by referring to the Operating Instructions <BA 01a_EN>.



Fail-safe position: Depending on how the pneumatic actuator is mounted to the valve, the valve has two fail-safe positions which become effective when the air pressure in the actuator is relieved or when the supply air fails:

Control valve with actuator "Spring closes":

Upon air failure, the valve is closed. The valve opens when the signal pressure increases, acting against the force of the springs.

Control valve with actuator "Spring opens":

Upon air failure, the valve is opened. The valve closes when the signal pressure increases, acting against the force of the springs.

Additional equipment and add-on pieces:

For the control valves, the following accessories are available either individually or in combination:

- positioner
- limit switch
- solenoid valves
- air sets
- gauge block

Further accessories are available on request for customer specifications.

Pressure-temperature diagram:

The range of application is determined by the pressure-temperature diagram. Process data and medium can affect the values in the diagram.

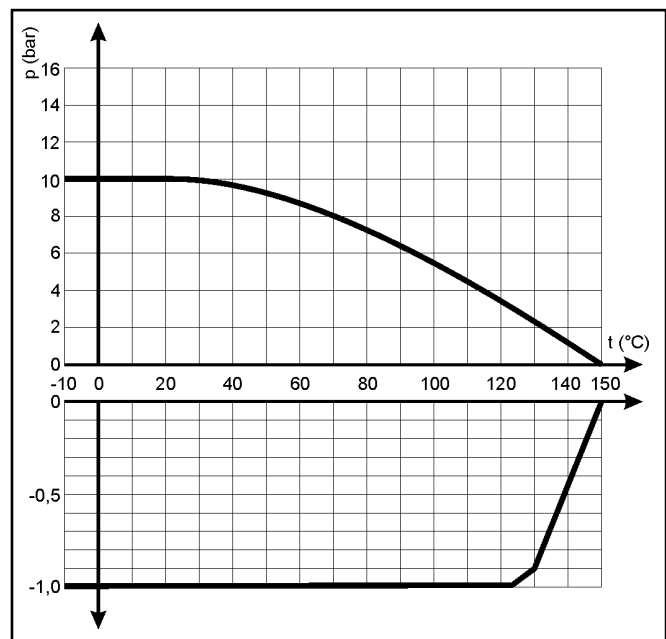


Fig. 3 - pressure-temperature diagram

General Technical Data:

Nominal size	DN 6 to DN 15
Nominal pressure	PN 10
Temperature range	see Pressure-Temperature Diagram
Characteristic	equal percentage / linear
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12 (Leakage rate 1 BO acc. to DIN 3230 Part 3)
Rangeability	30 : 1
Flanges	as per DIN EN 1092-2, Form B

Table 2 – technical Data

Material:

Body	Pure-PTFE
Casing	EN-JS 1049 (GGG 40.3)
Valve plug with bellows	PTFE ¹⁾ optionally Tantalum or other metals
Seat	PTFE
Bonnet flange	1.0065
Bearing bushing	Glycodur
Wiper ring	NBR
Plug stem	1.4571 / 1.4301
Coating	2-Components-Pur-Varnish Colour: Black, RAL 9005

Table 3 - Materials

¹⁾ when seat diameter 2 mm, only tantalum or other metals

z values depending on kvs value and nominal diameter:

DN		6		8		10		15				
Seat-ø in mm		2 ²⁾	6	2 ²⁾	6	2 ²⁾	6	10	2 ²⁾	6	10	13
Travel in mm		10										
kvs	Cv	Acoustical valve coefficient z										
0.005	0.006	0.9		0.9		0.92			0.92			
0.01	0.01	0.85		0.85		0.9			0.9			
0.03	0.04											
0.05	0.06											
	0.1											
0.1	0.12											
0.16	0.19											
0.25	0.29		0.6		0.6		0.65			0.65		
0.63	0.74											
1.0	1.17											
1.6	1.9							0.6			0.6	
2.5	2.9											
3.5	4.0											0.55

Table 4 – acoustically determined valve parameter "z" in accordance with VDMA 24422

²⁾ when seat diameter 2 mm, only linear characteristic line available.

Permissible differential pressures Δp:

Terms for noise level calculation:

according to VDMA 24422.

z = acoustical valve coefficient.

Terms for control valve sizing:

accordance to

DIN EN 60534-2-1:

$$FL = 0,95 \quad xT = 0,75$$

Correction terms:

For gases and vapours : $\Delta LG = 0$,

For liquids: $\Delta LF = 0$

Actuator spring range		0.2...1.0	0.4...1.2	0.4...2.0	0.2...1.0			
Signal pressure range (Travel = 10mm)		0.2...0.8	0.4...1.0	0.4...1.6	0.4...1.0			
Required supply pressure		1.3	1.4	2.3	1.2	1.4		
DN	kvs	Seat in mm	Actuator in cm ²	Δ p with p ₂ = 0				
6 to 15	0.005 to 0.05	2	120	> 16	-	-	> 16	-
			240	> 16	-	-	> 16	-
	0.1 to 1.0	6	120	4	> 16	> 16	4	> 16
			240	> 16	-	-	> 16	-
10 to 15	1.6 to 2.5	10	120	-	> 16	> 16	-	> 16
			240	> 16	-	-	> 16	-
15	3.5	13	120	-	12	12	-	12
			240	12	> 16	> 16	12	> 16

Table 5a - Valves with spring closing actuator
Valve with signal pressure 0 bar closed.

Table 5b - Valves with spring opening actuator
Valve with required signal pressure closed.

The shaded columns of the table show the standard values.

The differential pressures in the white columns of table 5a apply to live-loaded springs.

The permissible differential pressures quoted are only valid for soft-sealing valves.

Dimensions and weights:

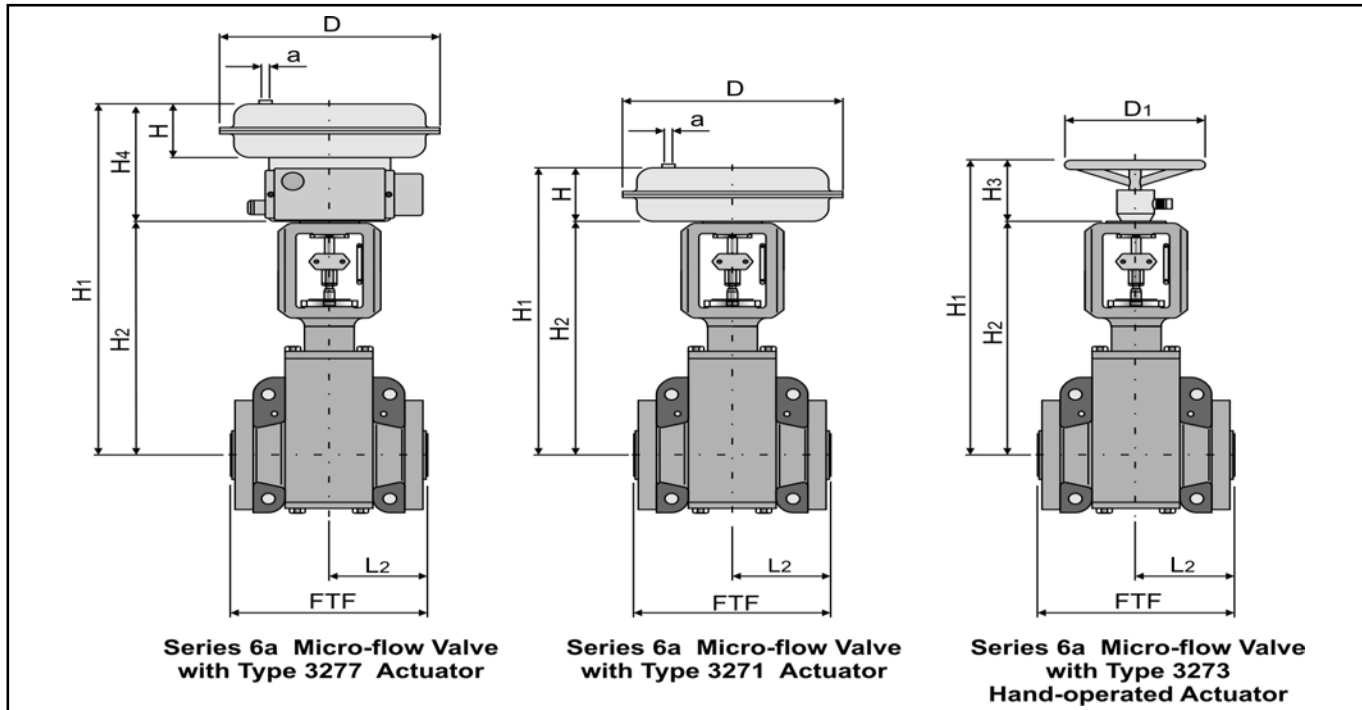


Fig. 4 - Dimensional drawing

DN	6	8	10	15
FTF	130			
L2	65			
H1	Samson Type 3271	H ₂ + H		
	Samson Type 3277	H ₂ + H ₄		
	Samson Type 3273	H ₂ + H ₃		
H ₂	266			
Weight of valve in kg	4			
D ₁	180			
H ₃	110			
Weight of Type 3273	2			

Actuator in ccm	120	240
D	168	240
H	70	65
H ₄	154	166
a	G 1/8"	G 1/4"
Weight of Type 3271	4	5
Weight of Type 3277	3,2	9

Table 6 - Dimensions in mm and weights in kg

Selection and sizing of the control valve:

1. Calculation of the appropriate k_{vs} -value in accordance with DIN EN 60534
2. Selection of DN and k_{vs} -value in accordance with table 4.
3. Determination of the permissible Δp , selection of the appropriate actuator in acc. with tables 5a and 5b.
4. Checking the application in view of the pressure-temperature-diagram.
5. Additional equipment

Order text:

Micro-flow Valve Series 6a, DN . . . , PN . . . , k_{vs} . . .
 Basic characteristic curve: equal percentage / linear
 Body: EN-JS 1049 / PTFE-white, Flange design: Form C / F - groove
 Special design:
 Actuator: Samson Type , . . . cm², Control pressure range : bar,
 Connection of a positioner, a limit switch and/or a solenoid valve



Note: All relevant details regarding the version ordered, which deviate from the specified version in this technical description data, can be taken if required, from the corresponding order confirm.

Please contact our technical sales team for your special requirements

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Specifications subject to change without notice.