



## BR 06a · PTFE-lined Micro-flow Valve

Single-seated Micro-flow Valve · DIN-Version



### Application

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

- **Nominal size DN 6 to 15**
- **Nominal pressure PN 10**
- **Temperature range -10 to 150°C**

The control valve consists of a micro-flow 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 made of PTFE reinforced by a casing of spheroidal graphite iron EN-JS 1049 with a plastic coating
- Exchangeable PTFE seat and PTFE plug
- Stem sealed by a PTFE bellows
- Additional PTFE backup packing
- Exchangeable actuator
- Additional equipment can be added in according to DIN EN 60534 and NAMUR Recommendation

### Versions

The BR 06a Micro-flow Valve is available optionally in the following versions:

- With SAMSON pneumatic actuator
- With hand-operated actuator
- With 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)



Fig. 1: BR 06a Micro-flow Valve with SAMSON actuator

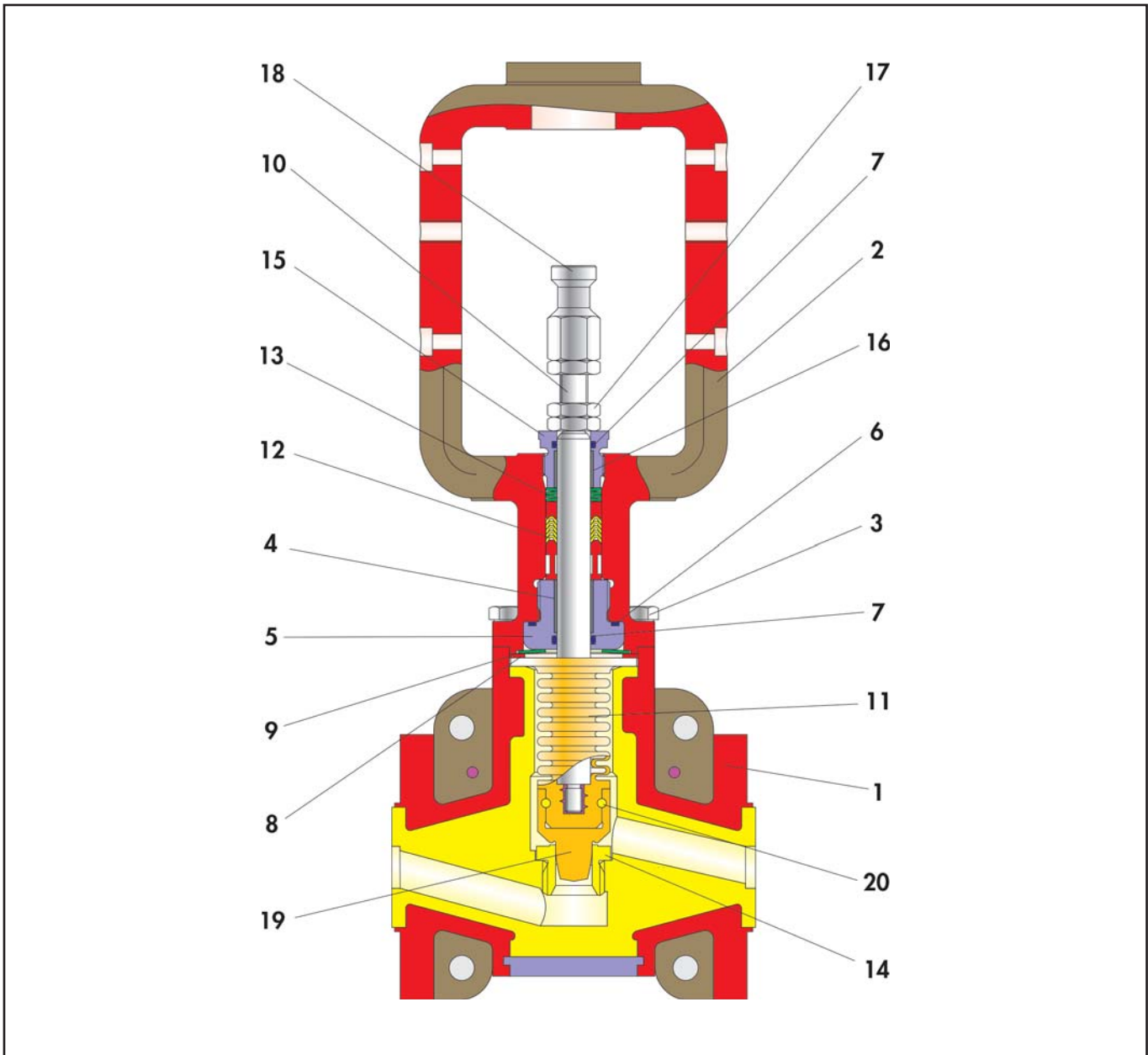


Fig. 2: Cross-sectional drawing of a micro-flow valve

Table 1: List of parts

Item	Description
1	Basic body with internal casing
2	Bonnet flange with Yoke
3	Screw
4	Bearing bushing
5	Guide bushing
6	O-ring
7	O-ring
8	Thrust washer
9	Spring washer
10	Stem

Item	Description
11	Bellows
12	V-ring packing
13	Set of spring washers
14	Seat
15	Stuffing box
16	Bearing bushing
17	Nut
18	Coupling
19	Plug
20	Cord

## Principle of operation

The process medium flows through the valve in the flow-to-open direction.

The valve plug position determines the cross-sectional area of flow between the seat ( 14 ) and the plug ( 19 ).

The valve plug ( 19 ) is connected over the stem ( 10 ) to the actuator stem.

The PTFE bellows ( 11 ) seals the area between the valve body ( 1 ) and stem ( 10 ).

In the standard version, the bellow unit is suitable for operating pressures (p2) up to 6 bar.

In addition, the Stem is sealed by a PTFE V-ring packing ( 12 ) which is spring supported by disc springs ( 13 ) positioned above the packing.

The PTFE seat ( 14 ) is screwed into the valve body ( 1 ) over a thread suitable for plastic.



### Note:

Refer to the Operating Instructions <BA 01a> to check whether it is possible to use the valve in hazardous areas according to **ATEX 2014/34/EU**.

## 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:

- **Fail-close valves:**  
Upon air failure, the valve is closed.  
The valve opens when the signal pressure increases, acting against the force of the springs.
- **Fail-open valves:**  
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 accessories

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

- Positioner
- Limit switch
- Solenoid valves
- Air sets
- Pressure gauge block
- Pneumatic volume booster

Further accessories are available on request to meet 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.

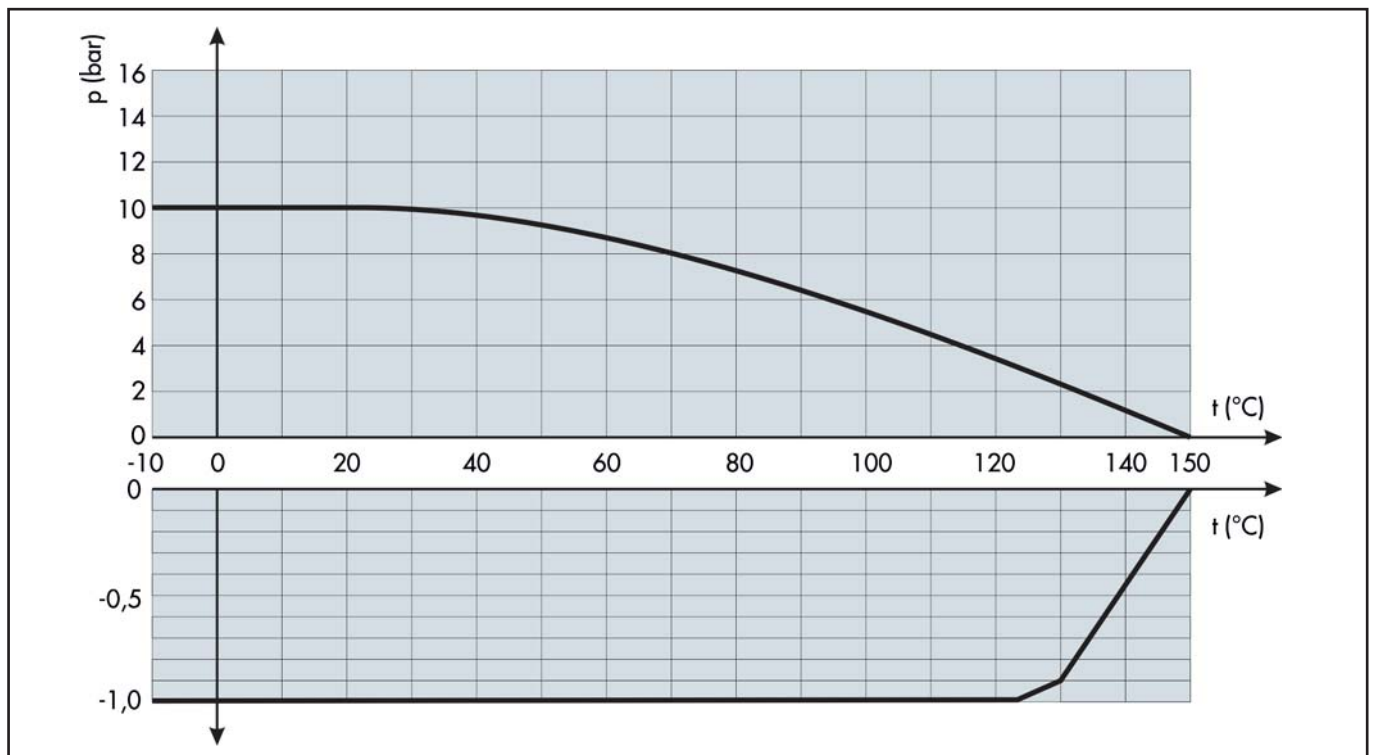


Fig. 3: Pressure-temperature diagram

**Table 2: General technical data**

Nominal size	DN 6 ... 15
Nominal pressure	PN 10
Temperature range	See pressure-temperature diagram
Characteristic	Equal percentage <sup>1)</sup> / 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	DIN EN 1092-2, Form B

<sup>1)</sup> kvs 0,1 and larger

**Table 3: Material**

Body	Pure PTFE
Casing	EN-JS 1049 (GGG 40.3)
Bonnet flange	EN-JS 1049 (GGG 40.3)
Valve plug	PTFE <sup>2)</sup> optionally tantalum or other metals
Valve seat	PTFE optionally tantalum or other metals
Bellows	PTFE
Bearing bushing	PTFE with carbon
Packing	PTFE V-ring packing loaded by spring washers
Plug stem	1.4571
Coating	Two-component polyurethane coating, grey beige, (RAL 1019)

<sup>2)</sup> Tantalum or other metals only for 2 mm seat diameter

**Table 4: z values depending on kvs value, nominal size and seat diameter**

DN		6		8		10			15			
Seat ø in mm		2 <sup>3)</sup>	6	2 <sup>2)</sup>	6	2 <sup>3)</sup>	6	10	2 <sup>3)</sup>	6	10	13
Travel in mm		10										
K <sub>vs</sub>	C <sub>v</sub>	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	0.12											
0.1	0.12		0.6		0.6		0.65		0.65			
0.16	0.19											
0.25	0.29											
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

<sup>3)</sup> Linear characteristic only with 2 mm seat diameter

## Terms for control valve sizing

According to IEC 60534-2-1:

$$FL = 0.96 \quad xT = 0.75$$

### Correction terms

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



#### NOTICE:

Only actuators with double-sided stroke limitation use!

**Table 5:** Permissible differential pressures  $\Delta p$

Actuator spring range				STAF			STEF	
				0.2 ... 1.0	0.4 ... 1.2	0.4 ... 2.0	0.2 ... 1.0	
Signal pressure range (travel = 10 mm)				0.2 ... 0.8	0.4 ... 1.0	0.4 ... 1.6	0.4 ... 1.0	
Supply pressure				Required supply pressure			Max. supply pressure	
				1.3	1.4	2.3	1.2	1.4
DN	kvs	Seat in mm	Actuator in cm <sup>2</sup>	$\Delta p$ with $p_2 = 0$				
6 ... 15	0.005 ... 0.1	2	120	10	-	-	10	-
			175v2	10	-	-	10	-
			240	10	-	-	10	-
	0.1 ... 1.0	6	120	4	10	10	4	10
			175v2	10	-	-	10	-
			240	10	-	-	10	-
10 ... 15	1.6 ... 2.5	10	120	-	10	10	-	10
			175v2	9	10	-	9	10
			240	10	-	-	10	-
15	3.5	13	120	-	10	12	-	10
			175v2	3	10	-	3	10
			240	10	10	10	10	10

**Table 5a:** Valves with fail-close actuator  
Valve with signal pressure 0 bar closed.

**Table 5b:** Valves with fail-open 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-sealed valves.

## Dimensions and weights

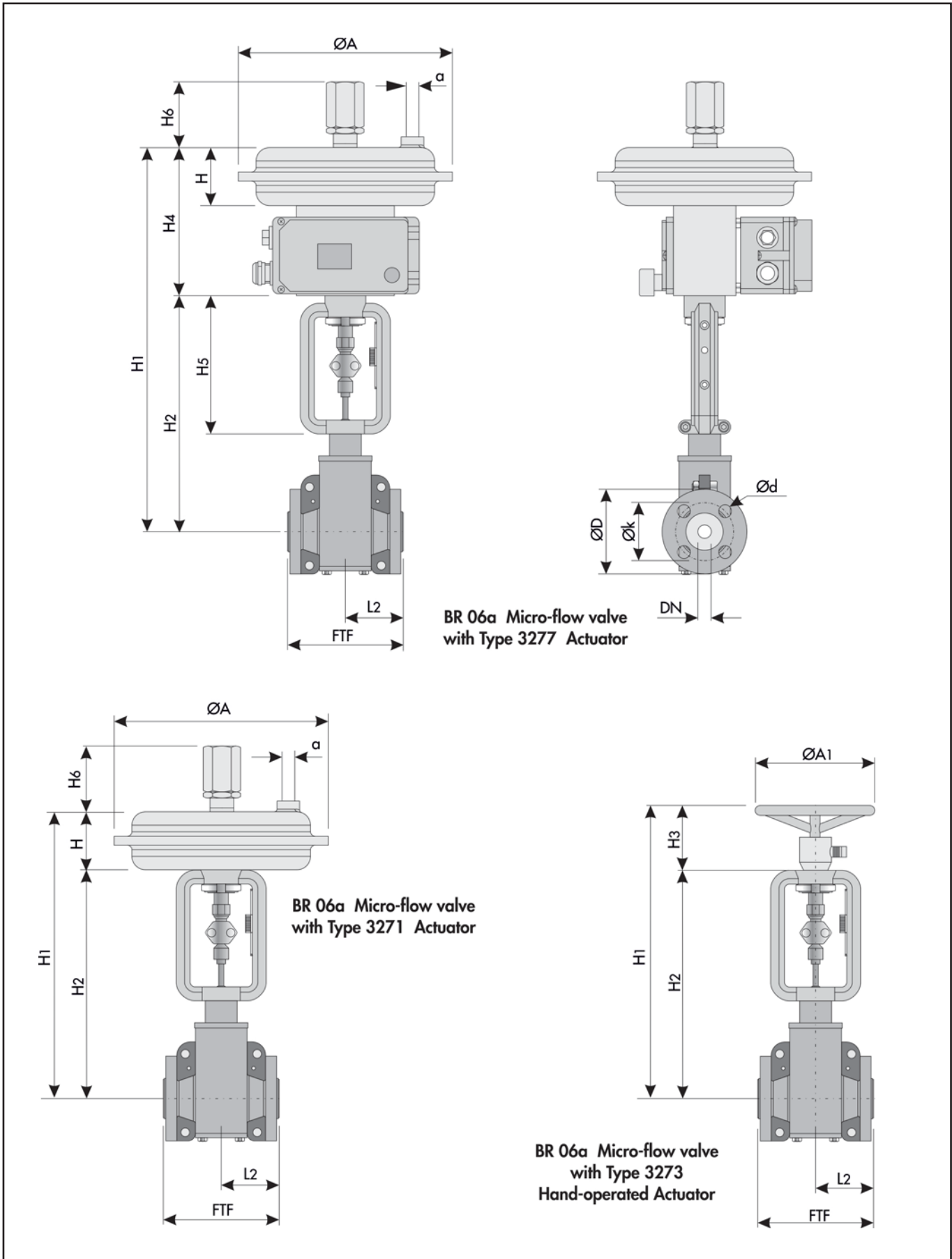


Fig. 4: Dimensional drawing

**Table 6:** Dimensions and weights for Type 06a Micro-flow Valve

DN	6	8	10	15
FTF	130	130	130	130
L2	65	65	65	65
H1	SAMSON Type 3271	H2 + H		
	SAMSON Type 3277	H2 + H4		
	SAMSON Type 3273	H2 + H3		
H2	269	269	269	265
H5	156	156	156	156
ØD	Ø90	Ø90	Ø90	Ø95
Ød	Ø14	Ø14	Ø14	Ø14
Øk	Ø60	Ø60	Ø60	Ø65
Weight of valve in kg	4	4	4	4

**Table 7:** Dimensions and weights for Type 3271 and Type 3277 Pneumatic Actuators

Actuator in cm <sup>2</sup>	120	175v2	240
ØA	168	215	240
H	70	78	62
H4	158	179	166
H6	75	75	75
a	G 1/8"	G 1/4"	G 1/4"
Weight of Type 3271	2.5	6	5
Weight of Type 3277	3.2	10	9

**Table 8:** Dimensions and weights for Type 3273 Hand-operated Actuator

ØA1	180
H3	110
Weight of Type 3273	2

## Selection and sizing of the control valve

1. Calculate the appropriate kvs coefficient acc. to IEC 60534
2. Select the valve size and kvs coefficient from Table 4
3. Determine the permissible differential pressure, select the appropriate actuator from Tables 5a and 5b
4. Check the application based on the pressure-temperature diagram
5. Additional equipment



### 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 confirmation.

## Associated data sheets

- For Pneumatic actuator T8310-1 to T8310-3

## Ordering text

BR 06a Micro-flow Valve

Nominal size: . . . . .

Nominal pressure: . . . . .

Flow coefficient: kvs . . . . .

Characteristic: equal percentage / linear

Body: EN-JS 1049/white PTFE

Flange design: Form C/F, groove

Special design: . . . . .

Actuator: SAMSON Type . . . . ., . . . . . cm<sup>2</sup>

Control pressure range: . . . . . bar

Fail-safe position: . . . . .

Limit switch ( brand name): . . . . .

Solenoid valve ( brand name): . . . . .

Positioner ( brand name): . . . . .

Others: . . . . .