



## BR 08a · PTFE-Angle Valve

Single-seated Angle Valve · DIN and ANSI Version



### Applications

PTFE-lined control valve for severely aggressive or corrosive media, especially für chemical processes:

- **Nominal size DN 15 to DN 50 and NPS½ to NPS2**
- **Nominal pressure PN 10/16**
- **Temperatures up to +150°C**

The angle valve consists of a valve body with PTFE-lining and either a pneumatic actuator or hand operated actuator.

The angle valve with its modular design 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 a PTFE bellows and a backup spring-loaded PTFE V-ring packing
- Test connection for monitoring of the primary bellow seal
- Exchangeable actuator
- Additional equipment can be added in acc. to DIN EN 60534 and Namur recommendations
- Face-to-face dimensions acc. to DIN EN 558, basic series 8

### Versions

The BR 08a Angle Valve is available optionally in the following versions:

- SAMSON actuator
- SAMSON hand-operated actuator.
- Actuators of other manufacturers on request.

### Special designs

- Further nominal diameters available on request
- Lining made of special compound, e.g. conductive PTFE
- Valve plug and seat made of special materials (e.g. tantalum or aluminium oxide) for erosive media
- Guided V-port plug

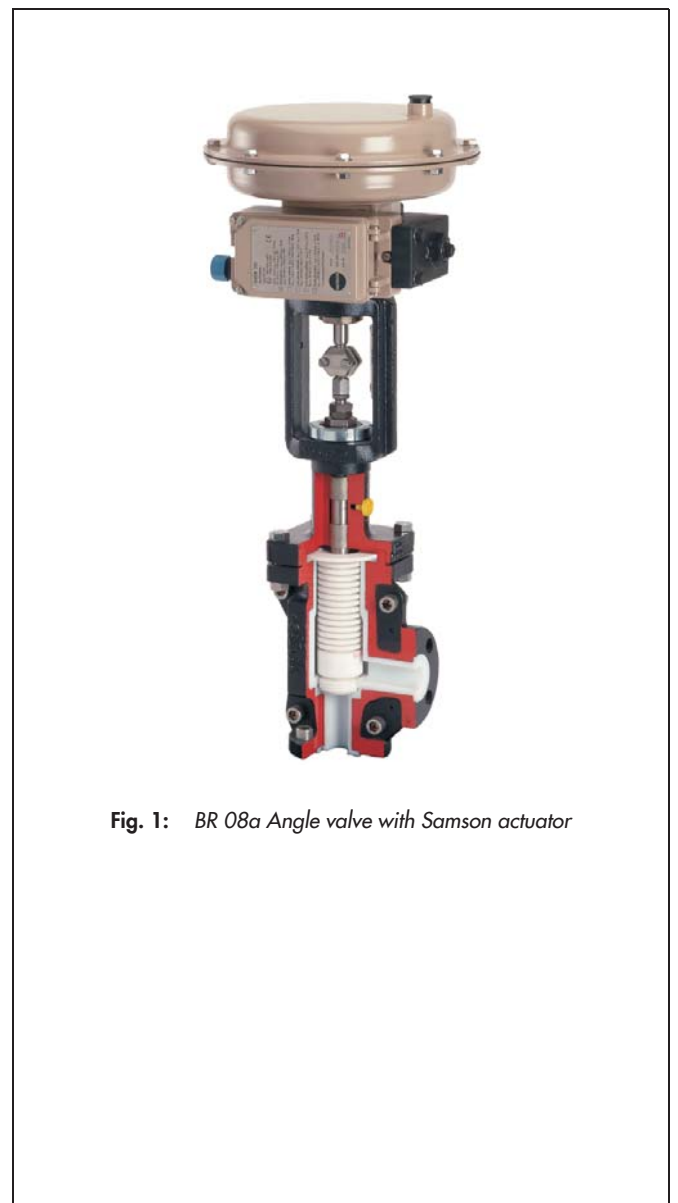


Fig. 1: BR 08a Angle valve with Samson actuator

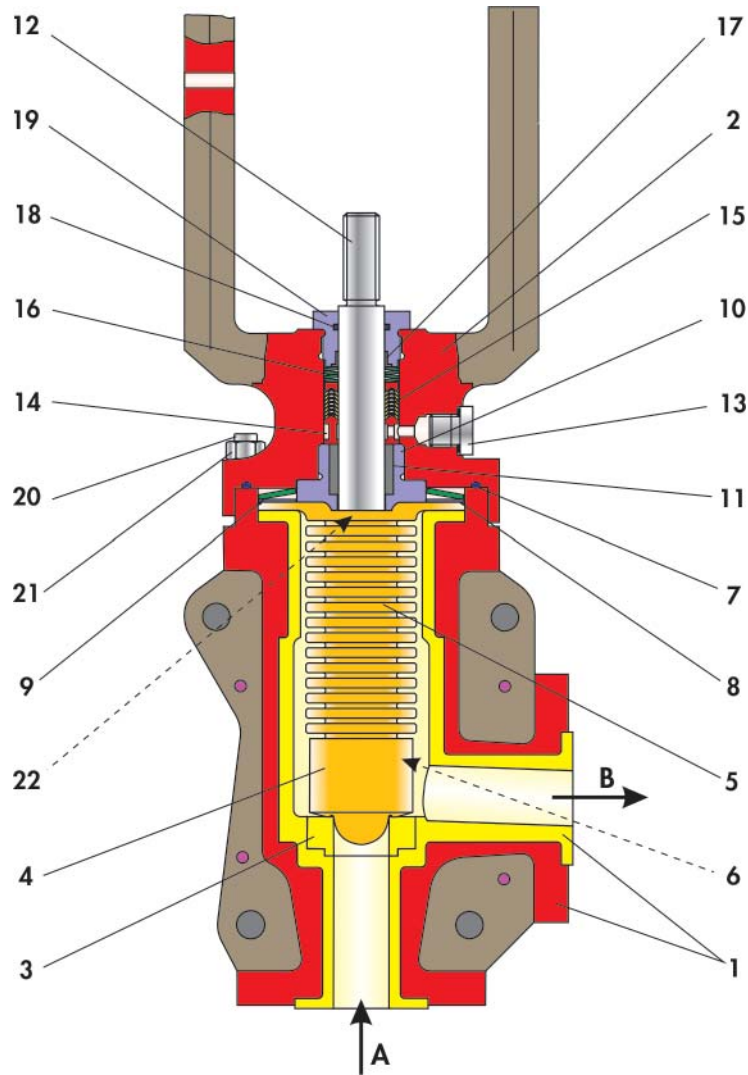


Fig. 2: Sectional diagram of BR 08a Angle valve

Table 1: List of parts

Item	Description
1	PTFE body with steel casing
2	Bonnet flange
3	Seat
4	Plug
5	Bellows
6	Cord
7	O-ring
8	Thrust washer
9	Disc spring
10	Guide bushing
11	Bushing

Item	Description
12	Stem connector
13	Locking screw
14	Distance bushing
15	V-ring packing
16	Set of Belleville washers
17	Bearing bushing
18	O-ring
19	Stuffing box
20	Stud
21	Nut
22	Retainer ring

## Principle of operation

The process medium flows through the BR 08a Angle valve in the flow-to-open direction. The valve plug position determines the cross-sectional area of flow between the seat ( 3 ) and the plug ( 4 ).

The plug is connected over the stem connector ( 12 ) to the actuator stem. The PTFE bellows ( 5 ) seals the area between the valve body ( 1 ) and stem connector ( 12 ). The PTFE V-ring packing ( 15 ) is used as a backup stem sealing.

A test connection port ( 13 ) allows the bellow to be monitored for leakage, e.g. by connecting a suction line or inert gas line.

The plug ( 4 ) is easily exchanged thanks to its tongue and groove connection to the PTFE bellows which is secured by a strong PTFE cord ( 6 ).

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

### **i** Note

In the event that cavitation may occur, we recommend the use of a guided plug for differential pressures over 3 bars and differential pressure ratio  $p_2 < \Delta p!$

### **i** Note

Before using the valve in hazardous areas, check whether this is possible according to ATEX 2014/34/EU by referring to the Operating Instructions ► BA 01a.

## 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
- Supply air pressure regulator/filter
- Pressure gauge mounting blocks
- Pneumatic volume booster

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 of the diagram.

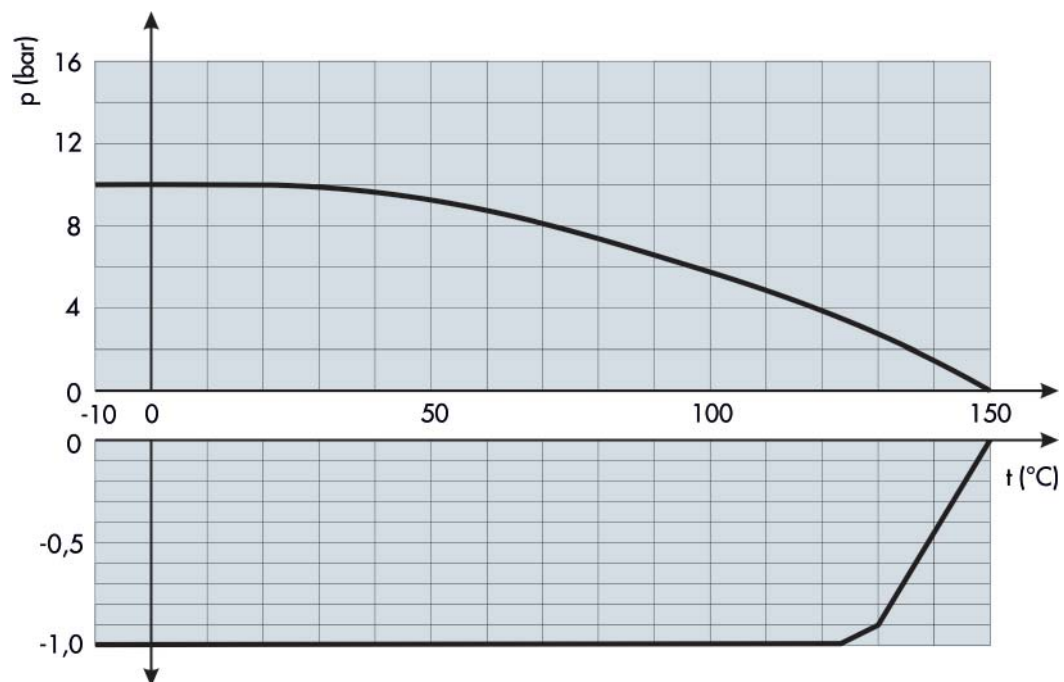


Fig. 3: Pressure-temperature diagram

**Table 2:** General technical Data

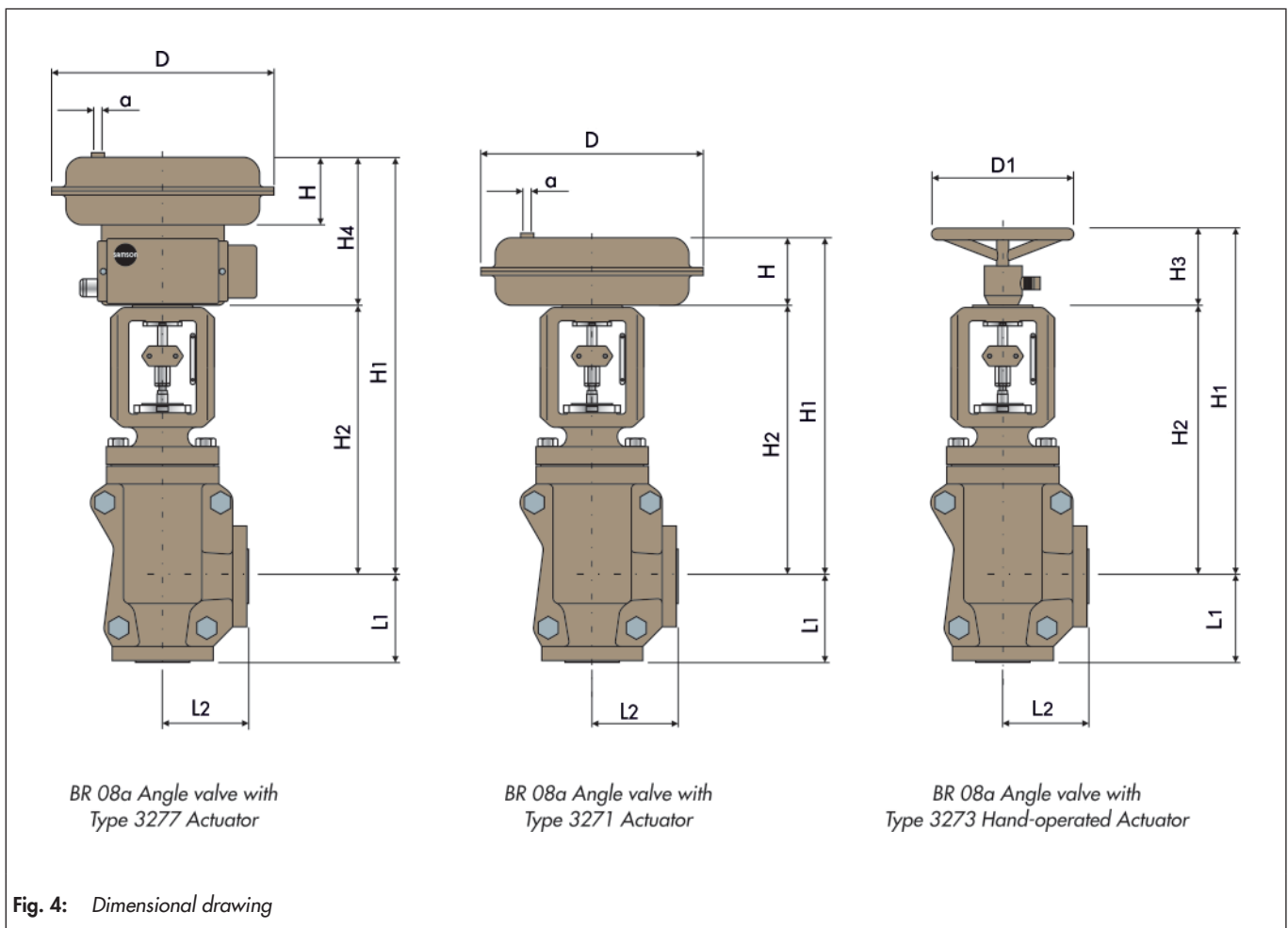
Nominal size	DN 15 ... DN 50	NPS½ ... NPS2
Nominal pressure	PN 10 / 16	
Temperature range	See pressure-temperature diagram	
Characteristic	Equal percentage / linear	
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12 (Leakage rate 1 BO acc. to DIN 3230 Part 3)	
Rangeability	30 : 1	
End connections	DIN EN 1092-2, Form B	ANSI cl150

**Table 3:** Materials

Body	Pure - PTFE or PTFE with 10% or with 25% carbon
Casing	EN-JS 1049 (GGG 40.3) / 1.0570
Valve plug and seat	PTFE <sup>1)</sup> optionally Al <sub>2</sub> O <sub>3</sub> , Tantalum or other metals
Bellows	PTFE
Bearing bushing	PTFE with carbon
Packing	PTFE V-ring packing loaded by Belleville washers (1.8159)
O - ring	Viton
Plug stem	1.4571 / 1.4301
Coating	Two-component polyurethane coat, grey beige, (RAL 1019)

<sup>1)</sup> when seat diameter 2 mm, only tantalum or other metals

## Dimensions and weights



**Table 4: Dimensions in mm and Weights in kg**

Nominal size		DN 15	DN 25	DN 40	DN 50
		NPS½	NPS1	NPS1½	NPS2
L1		90	99	111	127
L2		90	89	102	127
H1	SAMSON Type 3271	H2 + H			
	SAMSON Type 3277	H2 + H4			
	SAMSON Type 3273	H2 + H3			
H2		247.5	345	317	469
Weight valve in kg		10	14	18	21
Actuator	240 cm <sup>2</sup>	•	•	•	•
	350 cm <sup>2</sup>		•	•	•
D1		180	180	180	180
H3		92	92	92	92
Weight Type 3273 in kg		2	2	2	2

Actuator in cm <sup>2</sup>	240	350
D	240	280
H	65	85
H4	166	186
a	G ¼"	G ⅜"
Weight Type 3271 in kg	5	8
Weight Type 3277 in kg	9	12

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

The shaded columns of the table show the standard values. The differential pressures in the white columns of table 5a apply to max. pre-loaded springs. The permissible differential pressures quoted are only valid for soft-sealing valves.

Signal pressure range				0.2 ... 1.0	0.3 ... 1.1	0.4 ... 1.2	0.4 ... 2.0	0.6 ... 2.2	0.2 ... 1.0		
Required supply pressure				1.3	1.4	1.4	2.3	2.5	1.2	1.4	1.6
DN	NPS	Seat $\varnothing$ in mm	Actuator in cm <sup>2</sup>	$\Delta p$ at $p_2 = 0$							
15 ... 25	½ ... 1	2	240	> 16	-	-	-	-	> 16	-	-
		6	240	> 16	-	-	-	-	> 16	-	-
		10	240	> 16	> 16	-	-	-	> 16	-	-
25	1	13	240	8	> 16	-	> 16	-	8	> 16	-
		24	240	-	3.5	-	7.6	15.8	-	7.6	15.8
			350	3.2	-	15.2	15.2	-	3.2	15.2	-
40	1½	30	240	-	1.1	-	3.9	9.3	-	3.9	9.3
			350	0.9	-	8.9	8.9	> 16	0.9	8.9	-
50	2	38	240	-	-	-	1.5	4.9	-	1.5	4.9
			350	-	-	4.7	4.7	9.7	-	4.7	9.7

**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.

### Terms for noise level calculation

According to IEC 60534-2-1:

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

### Correction terms

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

For liquids:  $\Delta LF = 0$

**Table 6:** z values depending on kvs value and nominal size

Nominal size	DN 15			DN 25				DN 40	DN 50
	NPS½			NPS1				NPS1½	NPS2
Seat-ø in mm	2 <sup>2)</sup>	6	10	2 <sup>2)</sup>	6	13	24	30	38
Travel in mm	10	15		10	15				
kvs	Cv	Acoustical valve coefficient z							
0.005	0.006	0.9							
0.01 0.05	0.01 0.06	0.85			0.85				
0.1 0.25 0.63 1.0	0.12 0.29 0.74 1.17		0.65			0.65			
1.6 2.5	1.9 2.9			0.6			0.6		
4	4.7					0.55		0.55	
6.3	7.4						0.45	0.5	0.5
10	12						0.4	0.45	0.45
16	19							0.4	0.4
25	29								0.35

<sup>2)</sup> when seat diameter 2 mm, only linear characteristic line available.

### Selection and sizing of the control valve

1. Calculate the appropriate Kvs acc. DIN EN 60534-2-1
2. Select valve size and Kvs over Table 6.
3. Determine the differential pressure and select the suitable actuator over Tables 5a and 5b.
4. Check the application against the pressure-temperature diagram.
5. Select additional equipment.

### Associated data sheets

- For pneumatic actuator ▶ T8310-1 to T8310-3 from SAMSON

#### **i** 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.

### Order text

BR 08a Angle valve

Nominal size: . . . . .

Nominal pressure: . . . . .

Flow coefficient: kvs . . . . .

Basic characteristic curve: equal percentage / linear

Body: EN-JS 1049 / PTFE-white

Flange design: . . . . .

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: . . . . .