DATA SHEET TB 27d

BR 27d / BR 27e · PFA-lined sampling valve

Inline sampling ball valve for horizontal installation
DIN and ANSI version

CE

Applications

Tight-closing cavity-free PFA-lined sampling valve designed to sample liquids from flowing media without bypass. Particularly suitable for aggressive media in process plants:

- **Nominal size DN 25 to 80 and NPS1 to 3**
- **Nominal pressure PN 16 and cl150**
- **Temperatures -10 °C to +200 °C (14 °F to 392 °F)**

The **discontinuous** sampling valve **BR 27d** has the following characteristics:

- Sampling with a defined sample volume from a material flow
- Diverse sample volumes
- In the case of liquid media, depressurised sampling and therefore sampling from pressures to 16 bar and from vacuum permissible
- No fore- and no after-running
- No risk of overflow as the sample volume is determined per stroke
- No direct connection to the environment
- No false operation due to long opening times

The **continuous** sampling valve **BR 27e** offers the following characteristics:

- Sampling with a variable sample volume from a material flow
- Sampling also possible under pressure to 16 bar
- Actuation only with dead man's handle (not part of the valve)

Both valves consist of a sampling valve and a pneumatic quarter-turn actuator or a hand-lever or dead man's handle. The modular design can be combined with various additional parts and have the following characteristics:

This modular design has the following characteristics:

- Body of 1.0460 with PFA lining
- Ball / shaft of 1.4021 with PTFE coating
- Representative sampling due to the direct installation in the pipeline
- No necking or abrasion of the pipeline during sampling
- Venting or control connection 1/4"
- Seat ring shells for a sampling without cavity
- The sampling valve has a connection as per ISO 4796 DIN thread GL 45
- Ball stem sealing by means of a cup spring pre-loaded PTFE packing
- Connection as per DIN ISO 5211
- Face to face as per DIN EN 558, row 1

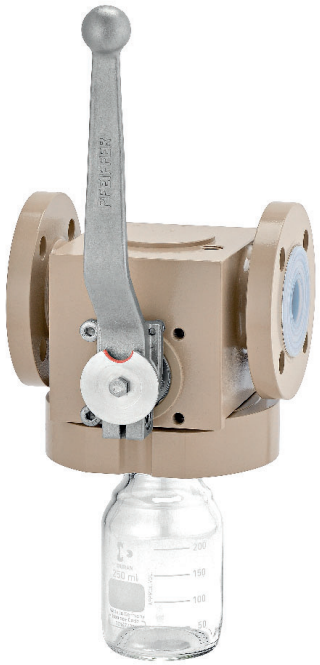

Fig. 1: *Sampling valve with lever*

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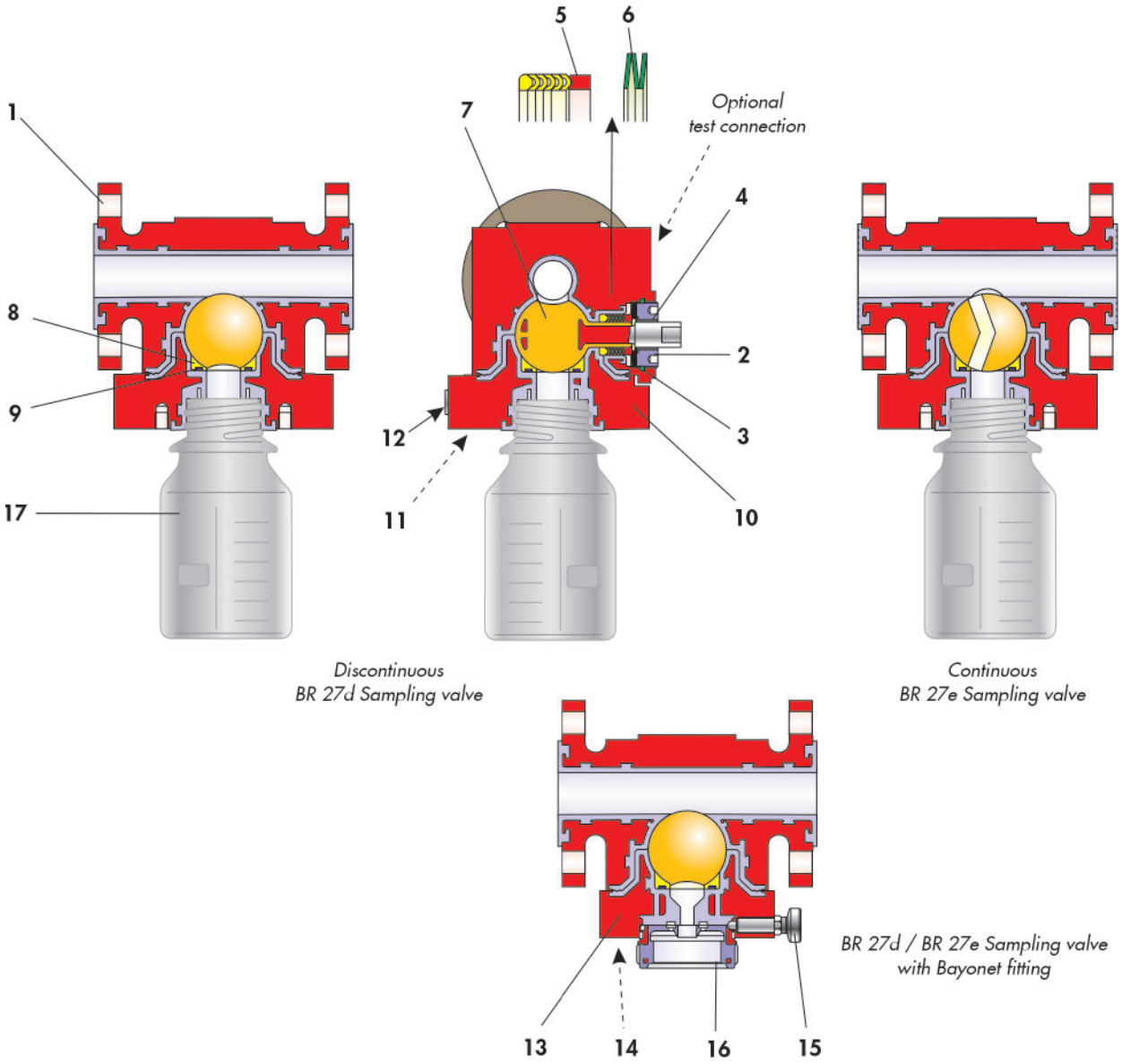

Fig. 2: *Sampling valve*

Table 1: *List of parts*

Sampling valve	
Item	**Description**
1	Main body
2	Stuffing box flange
3	Retaining ring
4	Bearing bush
5	V-ring packing
6	Disc spring set

Sampling set	
Item	**Description**
7	Sampling ball
8	Seat ring
9	O-ring

Screw-on bonnet (Standard)	
Item	**Description**
10	Bonnet
11	Screw
12	Screw plug

Sampling container	
Item.	**Description**
17	Sampling bottle

Bonnet with bayonet lock (option)	
Item	**Description**
13	Bonnet
14	Screw
15	Locking pin
16	Adapter

Versions

Sampling valve available in the following designs:

- **Discontinuous BR 27d sampling valve**
  - With hand lever (180°)
  - Automatic with 180° Quarter-turn actuator (for details see respective data sheet)
- **Continuous BR 27e sampling valve**
  - With dead man's handle
  - Automatic with 90° Quarter-turn actuator (for details see respective data sheet)

Principle of operation

The sampling valve is installed in the product pipeline by means of flanges and permits bidirectional flow.

Due to the concave milling-out of the sampling ball (7), there is no necking in the area of the medium flow.

The sampling ball is surrounded on all sides by tight-closing seat rings (8).

The sampling ball is sealed by means of exchangeable PTFE seat ring.

This can also be specially adapted to the medium.

The sampling ball (7) is bearing-mounted and rotatable around the control shaft.

The outward-leading stem is fitted as standard with a hand lever resp. dead man's handle.

The connection according to DIN ISO 5211 permits the fitting of an actuator.

The sealing of the shaft is ensured by means of a PTFE V-ring packing (5).

The packing is maintenance-free pre-loaded via a disc spring set (6).

The sample bottle (17) has a connection in accordance with ISO 4796 thread GL 45.

Customer-specific adapters for other connections can also be offered.

Additional equipment and add-on pieces

For the sampling valve, the following accessories are available individually or in combinations:

- Protective box in stainless steel
- Special gas chamber exhaust
- Pneumatic switch box for automation
- Pneumatic timer
- Counter
- Adapter for locally employed sample containers

Other add-on parts are available as per specification on request.

Note

Particular attention must be paid to the fact that only temperature-adapted vessels are employed for sampling!

Note

In case of media temperatures above 60 °C, safety precautions are to be taken due to the risk of scalding.

Note

The generally valid regulations for prevention of accidents when taking samples are to be strictly observed!

Note

Please, pay attention to the usability according to the ATEX 2014/34/EU in correspondence to he maintenance sheet ▶ EB 27d or ▶ EB 27e before using the ball valve in hazardous area!

Note

Due to the fact of continuous sampling there is a risk to overfill the sample bottle.
This demands the use of death man´s handle to operate the valve.
This secures to stop flow off product immediately with end off manual operation.

Pressure-temperature diagram

The operating range is determined by the pressure-temperature diagram.

Process data and media can influence the values of the diagram.

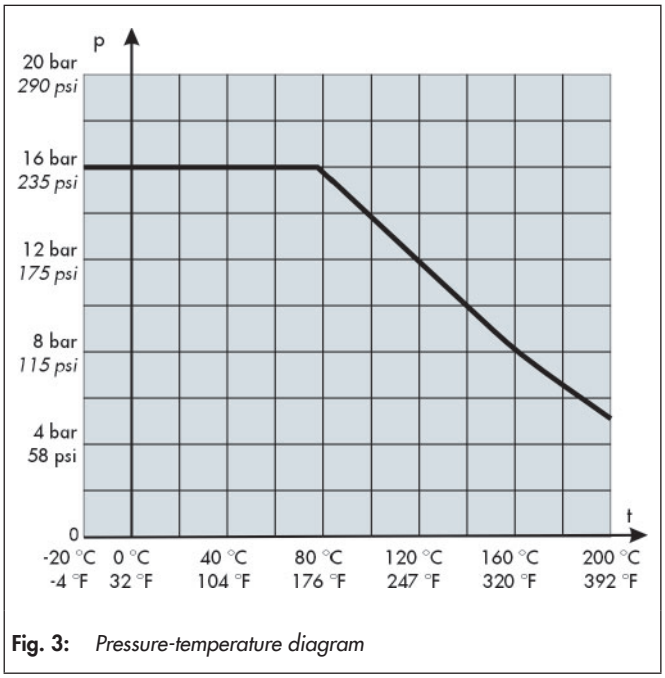

Fig. 3: *Pressure-temperature diagram*

General technical data

Table 2: General technical data

	DIN	ANSI
Nominal size	DN 25 ... 80	NPS1 ... 3
Nominal pressure	PN 16	cl150
Temperature range	-10 °C ... +200 °C (14 °F ... 392 °F)	
Leakage rate	Leakage rate A according to DIN EN 12266-1, P12	
Flange connection	All DIN - Versions	
Packing	PTFE - V-ring packing supported by disc spring set	
Face to face connection	DIN EN 558, row 1	
Bottle connection	GL 45 according to ISO 4796	

Material

Table 3: Material

	DIN	ANSI
Main body	1.0460 / PFA	
Sampling ball with shaft	1.4021 / PTFE	AISI 420/ PTFE
Seat ring	PTFE	
Seat ring inlet	PTFE	
Stuffing box packing	PTFE - V-ring packing with disc springs of 1.8159, Delta Tone	
Bearing bushing	PTFE with carbon	
Body sealing	PFA	
Coating	Two-component polyurethane coat, grey beige (RAL 1019)	
Sample bottle	Glass	

Torque and breakaway torque

Table 4: *Torque and breakaway torque*

Differentia pressure Δp in bar				**0**	**5**	**10**	**16**
Nominal size		**perm. operating torque MDmax. in Nm**	**req. operating torque Md in Nm**	**Breakaway torque Mdl in Nm**			
DN	**NPS**						
25	**1**	139	12	20	26	32	39
50	**2**						
80	**3**						

The breakaway torques indicated are average values which were measured at the appropriate differential pressures with air at 20 °C. Operating temperature, medium as well as longer periods of operation can lead to a notable change in breakaway and operating torques. The listed max. permissible operating torques are valid for the standard materials in table 3.

Dimensions and weights

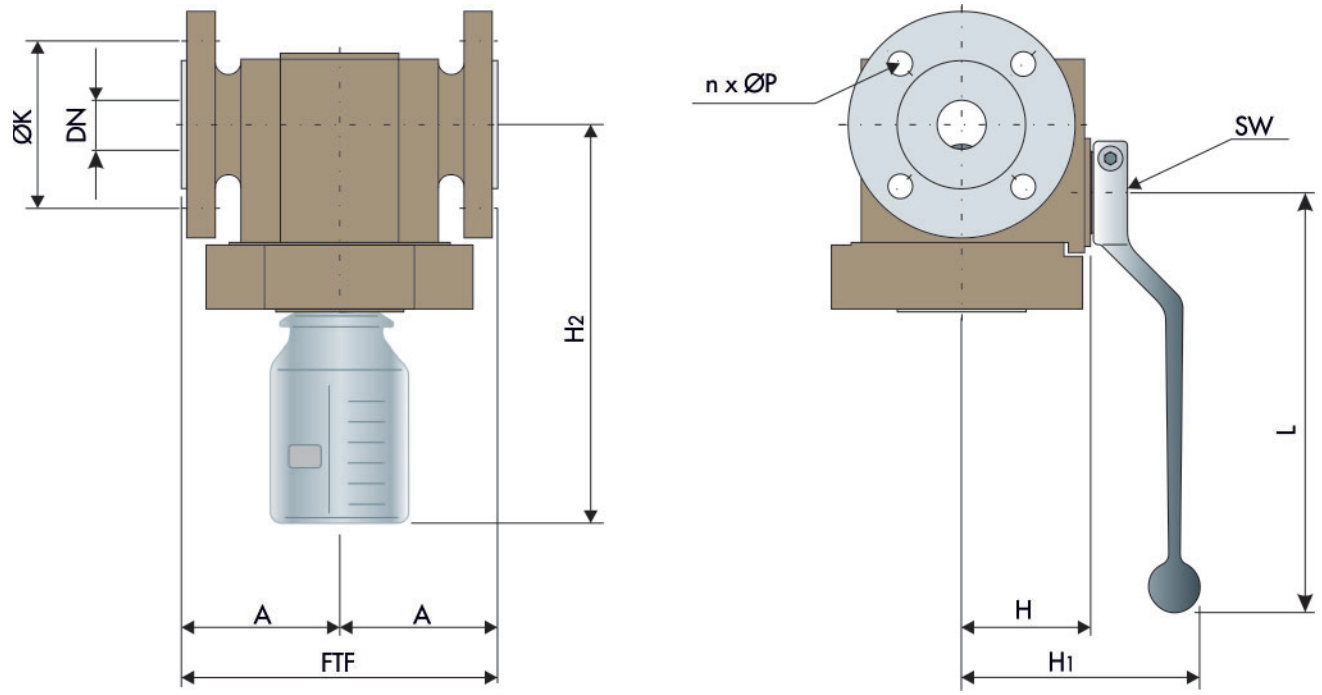

Fig. 4: *Dimension drawing sampling valve with hand lever*

Table 5: *Dimensions in mm and weights in kg*

Nominal size	DN	25	50	80
	NPS	1	2	3
FTF		160	230	310
A		80	115	155
H		65	65	65
H_1		136	136	136
L		220	220	220
SW		12	12	12
DIN/ISO Connection		F07	F07	F07
ØK		85	125	160
n x ØP		4 x 14	4 x 18	8 x 18
H_2	Sample bottle 100 ml	175	188	202
	Sample bottle 250 ml	215	228	242
	Sample bottle 500 ml	255	268	282
	Sample bottle 1000 ml	305	318	332
Weight ca. kg		10,5	14	

Selection and sizing of the sampling valve

1. Determination of the required nominal diameter
2. Selection of the valve in accordance with table 2, table 3 and the pressure-temperature diagram
3. Choice of the appropriate actuator in accordance with table 4
4. Additional equipment

Ordering text

Sampling valve Type:	BR 27d / BR 27e
Nominal size:	DN / NPS . . . . .
Nominal pressure:	PN / Class . . . .
Optional special version:	. . . .
Possible sampling volumes:	. . . .
Lever or dead man's handle:	. . . .
Automation:	. . . .
Medium:	. . . .
Temperature:	. . . .
Viscosity:	. . . .
Property:	. . . .
Sampling container connection:	. . . .
Additional equipment:	. . . .
Actuator (brand name):	. . . .
Supply pressure:	. . . . bar
Limit switch (brand name):	. . . .
Solenoid valve (brand name):	. . . .
Others:	. . . .

Associated documents

Mounting and Operating Instructions BR 27d	▶ EB 27d
Mounting and Operating Instructions BR 27e	▶ EB 27e
Pneumatic quarter-turn actuators BR 31a	▶ TB 31a

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

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