BR 27a / BR 27c · Stainless steel sampling valve

Inline sampling ball valve for horizontal installation DIN and ANSI Version



CE

Applications

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

- Nominal size DN 25 to 100 and NPS1 to 4
- Nominal pressure PN 25 and 40 as well as cl150 and cl300
- Temperatures -20 °C to +200 °C (-4 °F to 392 °F)

The **discontinuous BR 27a** Sampling valve 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 at high pressures 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 BR 27c** Sampling valve 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 quarterturn 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:

- Body of stainless steel (1.4571)
- Ball / shaft of stainless steel (1.4571)
- Representative sampling due to the direct installation in the pipeline
- No necking or abrasion of the pipeline during sampling
- Venting or control connection 1/8"
- Sear ring shells for a sampling without cavity
- The sampling valve has a connection as per ISO 4796, DIN thread GL 45
- Control shaft sealing by means of a disc spring pre-loaded PTFE V-ring packing
- Connection as per DIN ISO 5211
- Face to face as per DIN EN 558, row 1





Table 1: List of parts

Sampling valve				
Item	Description			
1	Main body			
2	Control shaft			
3	Stuffing box flange			
4	Bearing bush			
5	Bearing bush			
6	V-ring packing			
7	Disc spring set			
8	Screw			

Sampling set				
Description				
Sampling ball				
Seat ring				
Disc spring				
Sealing disc				
O-ring				

Sampling container			
Item	Description		
22	Sampling bottle		

Screw-on bonnet (Standard)				
ltem	Description			
14	Bonnet			
15	Screw			
16	Funnel			
17	Screw plug			

Bonnet with bayonet lock (option)				
ltem	Description			
18	Bonnet			
19	Screw			
20	Locking pin			
21	Adapter			

Versions

Sampling valve available in the following designs:

• Discontinuous BR 27a sampling valve

- With hand lever (180°)
- Automatic with 180° Quarter-turn actuator (for details see respective data sheet)
- Continuous BR 27c 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 (9), there is no necking in the area of the medium flow.

The sampling ball is surrounded on all sides by tight-closing seat rings (10).

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

This can also be specially adapted to the medium.

The sampling ball (9) with its cylindrical passage is bearingmounted and slew around the control shaft (2).

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

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

The control shaft is sealed with a maintenance free PTFE V-ring packing (6), which is pre-loaded by a disc spring set (7) located above the packing.

The glass bottle (22) 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

The following accessories are available for the sampling valve, either separately or in combination:

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

Further accessories are available according to customer specifications.

i Info

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

i Info

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

i Info

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

i Info

Before using the valve in hazardous areas, check whether this is possible according to ATEX 2014/34/EU by referring to the mounting and operating instructions ► EB 27a!

i Info

Due to the fact off continuous sampling there is a rish 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 range of application is determined by the pressuretemperature diagram. Process data and medium can affect the values of the diagram.



General technical data

Table 2: General technical data

	DIN	ANSI		
Nominal size	DN 25 100	NPS1 4		
Nominal pressure	PN 16 40 cl150 300			
Temperature range	-20 °C +200 °C (-4 °F 392 °F)			
Leakage rate	Leakage rate A according to DIN EN 12266-1, P12			
Flange connections	All DIN-Versions			
Packing	PTFE V-ring packing supported by disc springs			
Face to face dimensions	DIN EN 558, row 1			
Bottle connection	GL 45 according to ISO 4796			

Materials

Table 3: Materials

	DIN	ANSI			
Main body	1.4571	A351 CF8M			
Ball with control shaft	1.4571 / 1.4462 A351 CF8M / A182 Gr. F51				
Sealing element	PTFE				
Seat rings	PTFE				
Packing	PTFE - V-ring packing with disc springs of 1.8159, Delta Tone				
Lower bearing bush	PTFE with 25% glass				
Upper bearing bush	PTFE with 25% carbon				
Body sealing	Viton O-ring				
Sampling bottle	Glass				

Torque and breakaway torque

Table 4: Max. permissible torque, required torque and breakaway torque

Differential pressure Δp in bar			0	5	10	15	20	25	30	40	
Nominal size Mdmax.											
DN	NPS	in Nm		Breakaway torque Mdl in Nm							
25	1										
50	2	226	226	1.5	22	20	24	42	50	E/	10
80	3			226 15	22	29	36	43	50	56	68
100	4										

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



 Table 5: Dimensions in mm and weights in kg

Nominal size		DN 25 / NPS1	DN 25 / NPS1 DN 50 / NPS2		DN 100 / NPS4	
	FTF	160 230		310	350	
	А	80	115	155	175	
	н	60,5	60,5	60,5	60,5	
	Hı	136	136	136	136	
	L	220	220	220	220	
	SW	12	12 12		12	
DIN ISO connection ØK		F07	F07 F07 F07		F07	
		85	125	160	180	
	n x ØP	4 x 14	4 x 18	8 x 18	8 x 18	
	Sample bottle 100 ml	171	184	198	198	
	Sample bottle 250 ml	211	224	238	238	
H2	Sample bottle 500 ml	251	264	278	278	
	Sample bottle 1000 ml	301	314	328	328	
	Weight appr. kg	8	12	17	28	

Selection and sizing of the sampling valve

- Determination of the required nominal diameter 1.
- 2. Selection of the valve in accordance with table 2, table 3 and the pressure-temperature diagram
- Choice of the appropriate actuator in accordance with 3. table 5
- Additional equipment 4.

Ordering text

-	
Sampling valve Type: Nominal size: Nominal pressure: Optional special version: Possible sampling volumes:	BR 27a / BR 27c DN / NPS PN / Class
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 27a	▶ EB 27a
Mounting and Operating Instructions BR 27c	▶ EB 27c
Pneumatic quarter-turn actuators BR 31a	▶ TB 31a

i Info

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.