Pfeiffer
Chemie-Armaturenbau GmbH

PFA - lined
Ball Valve Series 20b

Application:

Tight-closing PFA-lined ball valve for corrosive media, especially with high process demand in chemical plants:

- nominal diameters from DN 25 to DN 100,
- nominal pressure PN 16,
- temperatures -10°C up to 200°C.

The ball valves consist of a PFA ball valve with a pneumatic quarter-turn actuator or a hand-lever.
The valves, which are of modular construction, have the following features:

- Body of EN-JS 1049 lined with PFA.
- Exchangeable PTFE seat rings.
- Ball and integral stem of stainless steel with PFA coating.
- Stem sealing with a cup spring life-loaded PTFE packing.
- Connections according to DIN ISO 5211.
- Face to Face acc. DIN EN 558-1, basic series 1 (acc. DIN 3202, F1).

Versions:

PFA ball valve BR 20b alternatively in the following designs:

- PFA ball valve with hand-lever.
- PFA ball valve with gear-operated actuator.
- PFA ball valve with pneumatic quarter-turn actuator, (for details see respective data sheet).

Special designs:

- Nominal sizes in DN 15 and DN 150.
- 1/2“ till 6“ acc. to ANSI 150 lbs please look at series 20a.
- Lined bottom drain ball valve look series 21a
- Control ball valve by seatring with characteristic curve.
- Two-piece ball and stem with floating ball of Al_2O_3.
- Live-loaded sealing of body.
- Live-loaded seatrings.
- Flange groove acc. to DIN EN 1092.
- Various materials for ball and sealing rings.
- Lining PFA - conductive.

Fig. 1 - Ball valve Series 20b

Fig. 2 - Ball valve Series 20b with pneumatic quarter-turn actuator

Additional equipment and add-on pieces:

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

- pneumatic and electric actuators.
- positioner.
- limit switch.
- solenoid valves.
- air sets.

Further accessories are available on request for customer specifications

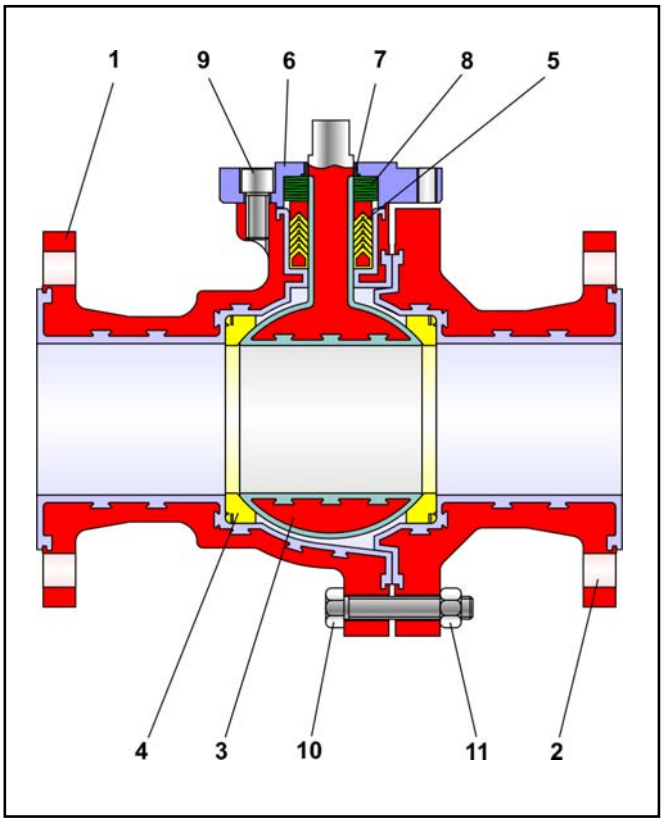

Fig. 3 - PFA-lined ball valve Series 20b

Pos.	Description	Pos.	Description
1	Body and lining	7	Bearing bush
2	Body	8	Set of spring washers
3	Ball with shaft	9	Screw
4	Seatring	10	Screw
5	PTFE - V-ring packing	11	Nut
6	Stuffing box		

Table 1 – Parts list

Advantages of the cup spring live-loaded sealing system

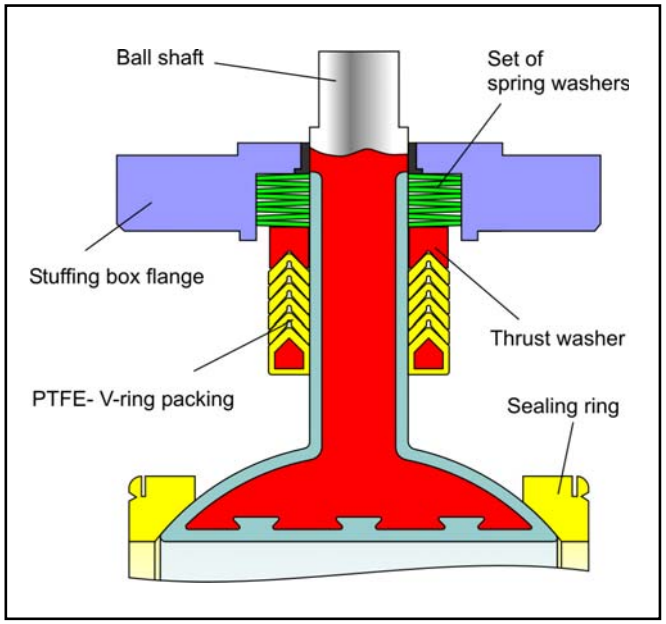

Fig. 4 - Cup spring live-loaded packing

- maintenance-free and self-adjustable.
- highest level of tightness, even under extreme pressure and temperature changes.
- longer service life.
- ***all in all: extremely economic!***

Principle of operation:

The ball valves of series 20b permit full flow through the valve in both directions.

The ball (3) with its cylindrical passage rotates around the middle axis.
The opening angle of the ball determines the flow through the free area between the body (1) and passage.

When the ball valve is opened, the entire profile is available.
The stem is externally equipped with a hand-lever.
Optionally, a pneumatic quarter-turn actuator can be fitted.

The sealing of the ball (3) inside the PFA-lined body (1 aund 2) is provided by exchangeable seat rings (4).

The ball stem is sealed by a maintenance-free live-loaded PTFE - V-ring packing (5).
The live-loading is carried out by cup springs (8) positioned above the packing.

Note: The ball valve series 20b also can be used for controlling applications.
Please pay attention to the technical data sheet <DB 20a-kd>.

Note: Please, pay attention to the usebility acc. to the ATEX 94/9/EG in correspondance to the maintenance sheet before using the ball valve in hazardous area!

Failure position: In dependance of mounting position of the actuator there are two failure positions, wich take place by pressure relieving or on failure of air supply:

- **Ball valve with actuator " on failure closing "**
  on failure of air supply the ball valve closes. The opening of the ball valve accures on rising of air supply against the force of the springs.
- **Ball valve with actuator " on failure opening "**
  on failure of air supply the ball valve opens. The closing of the ball valve accures on rising of air supply against the force of the springs.

General Technical Data:

Nominal diameter	DN 25 to DN 100
Nominal pressure	PN 16
Temperature range	-10°C to 200°C
Ball seal	soft - sealing
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12 (Leakage rate 1 BO acc. to DIN 3230 Part 3)
Flanges	acc. to DIN EN 1092-2, Form B
Packing	cup spring live - loaded PTFE - packing
Face to face	acc. to DIN 558-1, series 1

Table 2 – Technical Data

Materials:

Body	EN-JS 1049 (GGG 40.3) with PFA - lining
Ball	1.4313 / 1.4317 with PFA - casing
Sealing rings	PTFE - white
Packing	PTFE - V-ring-packing with cup springs of 1.8159, Delta Tone
Bearing bush	PTFE with 25% carbon
Coating	2-Components Pur-Varnish Colour: black, RAL 9005

Table 3 – Materials

Pressure - Temperature Diagram:

The operating range is determined by the pressure-temperature diagram. Process data and medium can influence the values of the diagram.

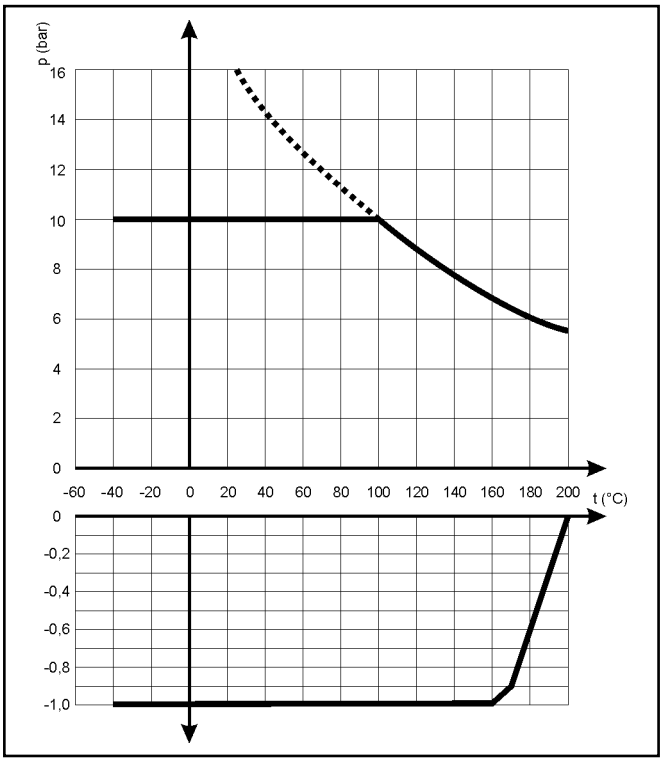

Fig. 5 - Pressure-Temperature Diagram

Operating and breakaway torques:

Differential pressure Δp in bar			0	5	10	15
DN	perm. operating torque $MD_{max.}$ in Nm	required operating torque Md in Nm	breakaway torque Mdı in Nm			
25	130	6	10	12	14	16
40	140	12	20	22	24	27
50	140	17	30	32	34	37
80	608	44	74	80	86	96
100	833	70	120	128	136	145

Table 4 - Max. permissible operating torque, required operating torques and breakaway torques

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

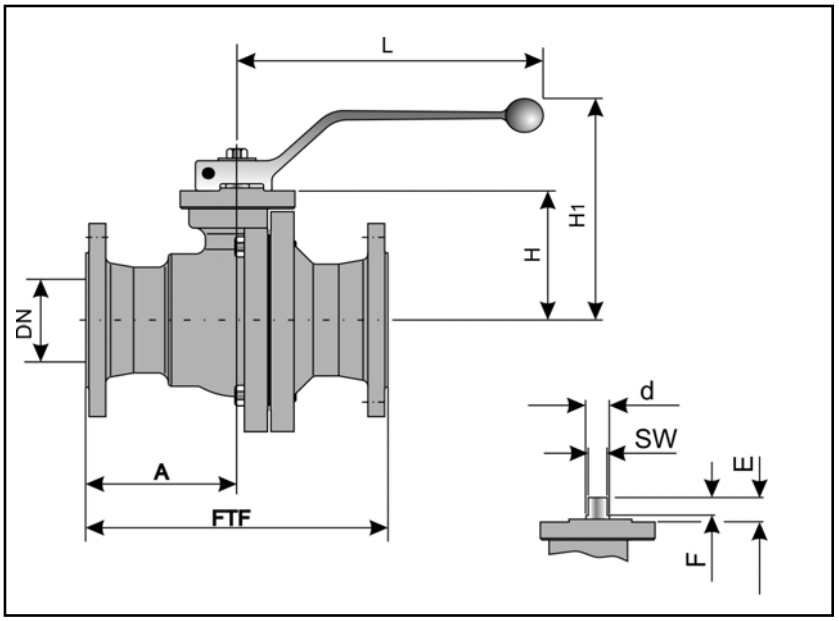

Fig. 6 – Ball Valve

DN	25	40	50	80	100
FTF	160	200	230	310	350
A	80	100	115	155	175
H	76	85	90	133,5	152
H1	142	159	164	200	221
E	19	19	19	23	27
F	12	12	12	16	20
L	152	220	220	365	365
SW	12	12	12	16	20
Ø d	16	16	16	24	28
DIN ISO Connection	F05	F07	F07	F10	F12
Weight in kg	7	11	13.5	28.5	36

Table 5 - Dimensions in mm and weights in kg

Selection and sizing of the ball valve:

1. Calculation of the required nominal diameter
2. Selection of the valve in accordance with table 2, table 3 and the Pressure-Temperature diagram
3. Selection of the appropriate actuator from table 4
4. Additional equipment

Order text:

PFA – ball valve type: Series 20b,
DN . . . . / PN . . . . ,
optional.... special design

Handlever, resp. actuator manufacturer: . . . .
air supply: . . . . bar,
safety position: . . . .

Limit switch manufacturer: . . . .
Solenoid valve manufacturer: . . . .
Positioner: . . . .

Other: . . . .

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.

For your special requirements please contact our technical sales department

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Specifications subject to change without notice

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