

PTFE - lined Ball Valve Series 20a

Application:

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

- Nominal diameters from DN 15 to DN 100 and 1" to 4".
- Nominal pressure PN 10 and ANSI 150 lbs.
- Temperatures -10°C up to 200°C (14°F to 392°F).

The ball valves consist of a PTFE ball valve with a pneumatic quarter-turn actuator, a hand-lever or a gear-operated actuator.

The valves, which are of modular construction, have the following features:

- Body of EN-JS 1049 with PTFE-liner.
- Exchangeable PTFE seat rings.
- PTFE ball and integral stem of stainless steel with PTFE-coating.
- Stem sealing with a cup spring life-loaded PTFE V-ring packing.
- For on-off operation with a particularly small leakage rate („bubble-tight version“).
- Anti blow out valve shaft.
- Connections acc. to DIN ISO 5211.
- For DIN-Type, face to face acc. to DIN EN 558-1, series 1.
- For ANSI-Type, face to face acc. to DIN EN 558-2, series 3.

Versions:

Ball valve Series 20a, in DN 25 to DN 100 and 1" to 4",
Ball valve Series 20z, in DN 150 and 6", look <TB 20z>,
alternatively in the following designs:

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

Special designs:

- Lined bottom drain ball valve look Series 21a.
- Control ball valve by seating with characteristic curve.
- Lining PTFE - conductive.
- Heating.
- Stem sealing with two PTFE V-ring packings and test connection.
- Flange groove acc. to DIN EN 1092.
- various materials for ball and sealing rings.
- nominal pressure PN 16 on request.

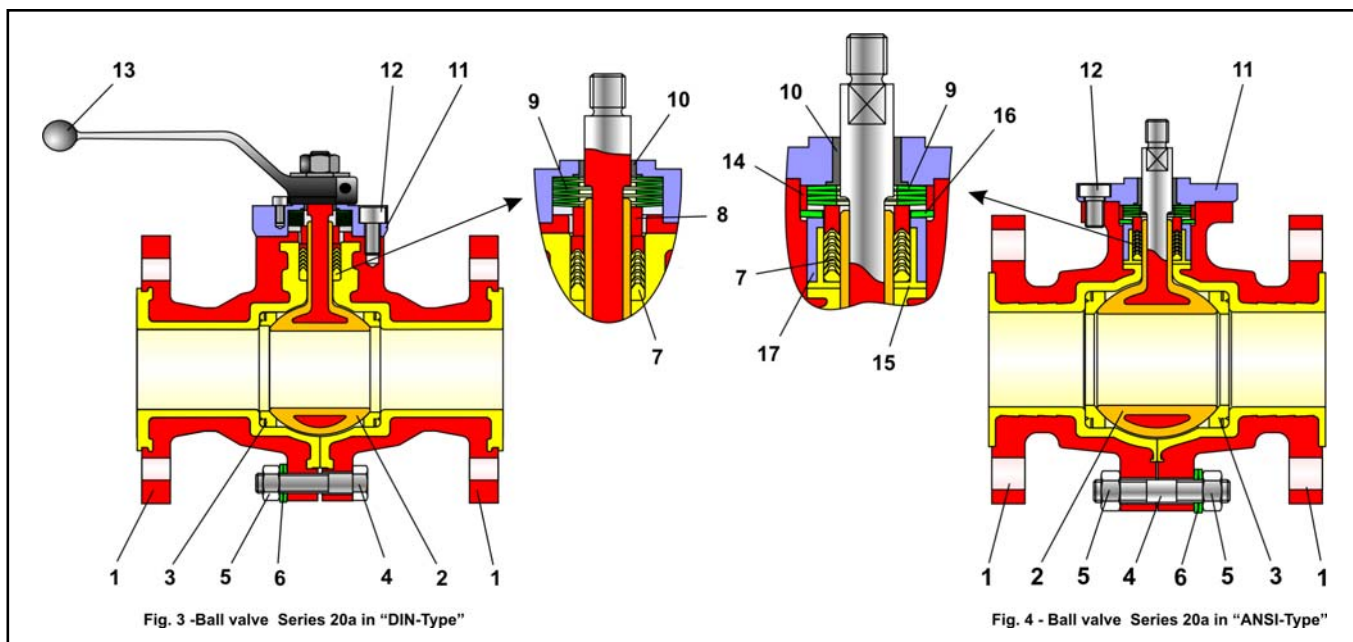


Fig. 1 - Ball Valve Series 20a in ANSI-Type



Fig. 2 - Ball Valve Series 20a with Quarter-Turn Actuator Series BR 31a

Ball Valve Series 20a



Pos.	Description	Pos.	Description
1	Body with lining	10	Bearing bushing
2	Ball with coating	11	Stuffing box
3	Set of seatings	12	Screw
4	Screw	13	Hand-lever
5	Nut	14	Eccentric ring
6	Spring washer	15	Bushing
7	V-ring packing	16	Spring washer
8	Thrust washer	17	Bushing
9	Set of spring washers		

Table 1 - Parts list

Principle of operation:

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

The ball (2) 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 (13). Optionally, a pneumatic quarter-turn actuator can be fitted.

The sealing of the ball (2) inside the PTFE-lined body is provided by exchangeable seatings (3).

The ball stem is sealed by a maintenance-free live-loaded PTFE - V-ring packing (4). The live-loading is carried out by cup springs positioned above the packing.



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



Note: Please, pay attention to the usability 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.

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

Advantages of the cup spring live-loaded sealing system:

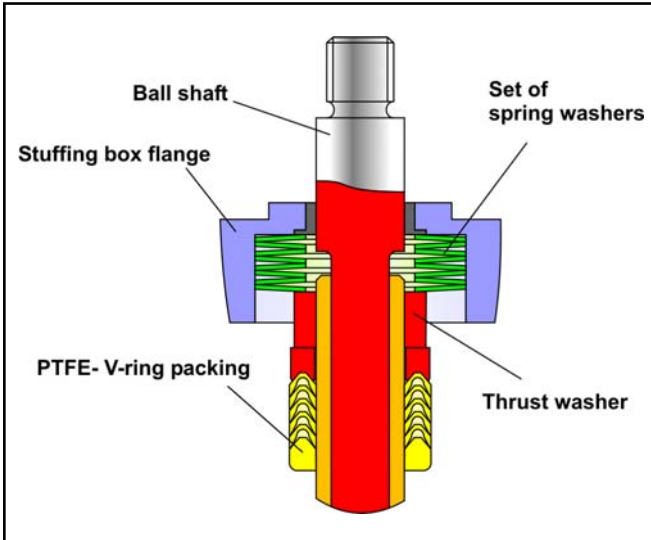


Fig. 5 - Cup spring live-loaded packing

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

General Technical Data:

Nominal diameter	DN 15 to DN 100 and 1" to 4"
Nominal pressure	PN 10 bar and ANSI 150 lbs
Temperature range	-10°C to 200°C (14°F to 392°F)
Ball seal	Pure PTFE
Leakage rate	Leakage rate A acc. to DIN EN 12266-1, P12 (Leakage rate 1 BO acc. to DIN 3230 Part 3)
Flanges/connections	acc. to DIN EN 1092-2, Form B and ANSI 150
Packing	cup spring live - loaded PTFE V-ring packing
Face to face	DIN-Version acc. to DIN 558-1, series 1 ANSI-Version acc. to DIN 558-2, series 3

Table 2 – Technical data

Materials:

Body	EN-JS 1049 (GGG 40.3) with PTFE - lining
Ball	1.4313 / 1.4317 with PTFE - casing
Sealing rings	Pure PTFE
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.

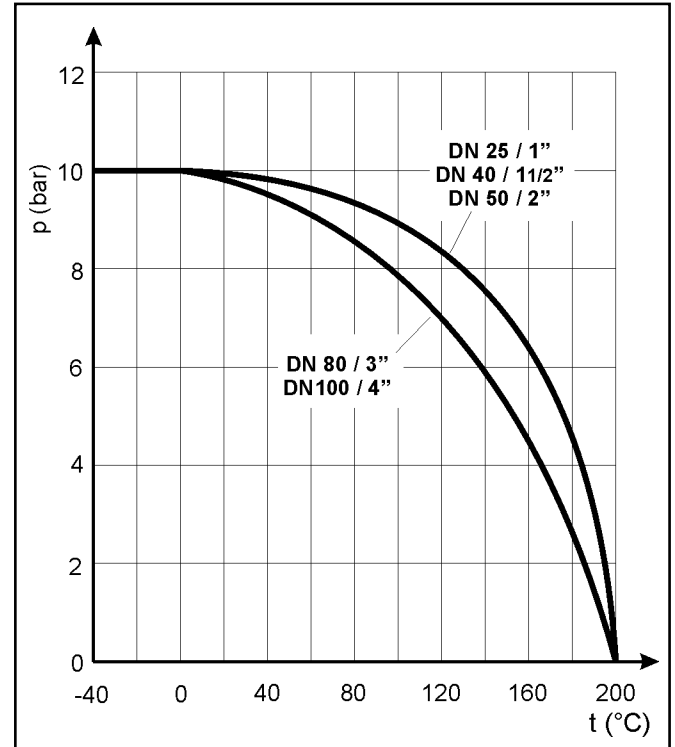


Fig. 6 - Pressure-Temperature Diagram

Operating and breakaway torques:

DN	perm. operating torque MD _{max} in Nm	required operating torque Md in Nm	Differential pressure						
			Δp in bar	Δp in psi	0	2	4	6	8
15	126	6	10	10	10	10	10	10	10
25 / 1"	139	5	7,5	10	10	10	10	10	14
40 / 1 1/2"	140	10	15	15	15	15	15	15	18
50 / 2"	140	15	22,5	23	23	23	23	23	28
80 / 3"	608	38	57	57	60	65	70	80	
100 / 4"	833	60	90	92	99	110	120	130	

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:

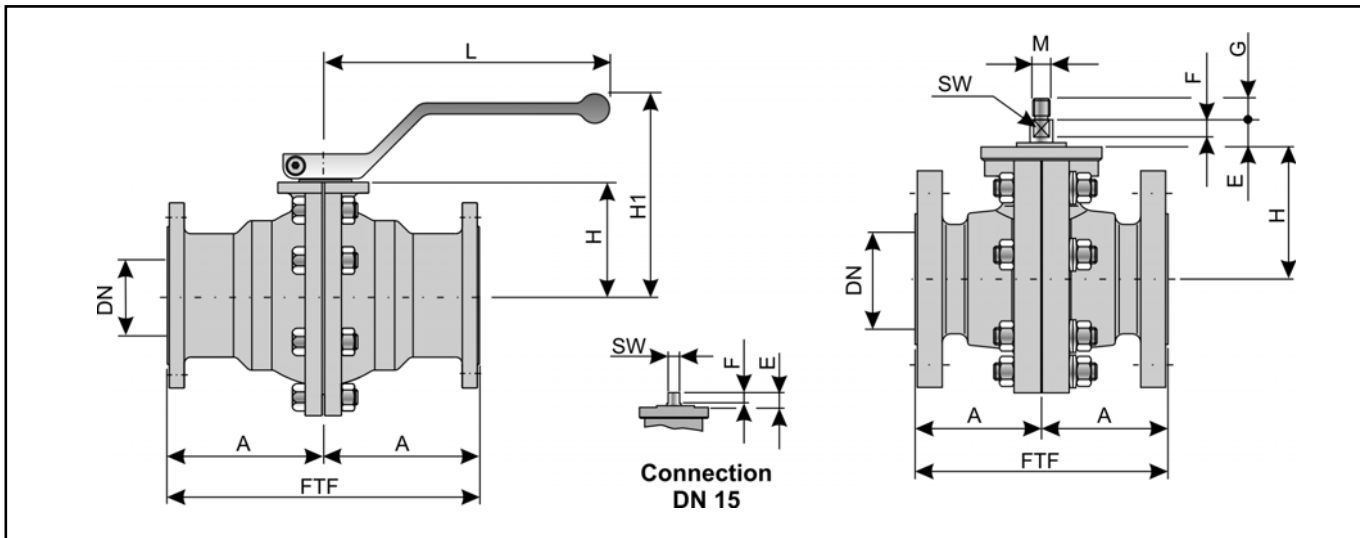


Fig. 7 – Ball Valve

DN		15	25 / 1"	40 / 1 1/2"	50 / 2"	80 / 3"	100 / 4"
FTF	PN 10	130	160	200	230	310	350
	ANSI 150	-	127	165	178	203	229
A	PN 10	65	80	100	115	155	175
	ANSI 150	-	63.5	82.5	89	101.5	114.5
H		48	82	96	103	138,5	161
H1		115.5	149.5	171.5	178.5	206.5	229
E		19	19	19	19	23	19
F		12	12	12	12	12	12
G		-	15	15	15	18	18
M		-	M12	M12	M12	M16	M16
L		151.5	151.5	220	220	365	365
SW		12	12	12	12	16	20
DIN / ISO Connection		F05	F05	F05	F05	F07	F07
Weight	PN 10	5	6.5	11	14	26	37
	ANSI 150	-	5.5	9.5	11	18	29

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:

PTFE – ball valve type: Series 20a,
 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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