Stainless Steel
BR 26d Ball valve

Application:

Tight-closing Ball valve made of stainless steel for corrosive media, especially to meet high process requirements in chemical plants:

- Nominal sizes DN 15 to 100 or NPS ½ to 4
- Nominal pressures PN 16, PN 40 or ANSI cl150, cl300
- Temperatures -10°C to 200°C (optional -60°C / -80°C)

The control equipment consists of a stainless steel ball valve and a pneumatic quarter-turn actuator, a manual gear or a lever. The valves are designed according to the modular-assembly principle have the following features:

- **Design**
  - Standard, not spring supported
  - Spring supported sealing system
  - Fire-safe acc. to B.S. 6755 Part 2
- **Further features**
  - Valve body made of stainless steel 1.4408/A351 CF8M
  - Seat ring spring supported on one side
  - Exchangeable seat rings
  - On/off operation with leakage rate A acc. to DIN EN 12266-1, bubble-tight version
  - Shaft sealed by a self-adjusting PTFE V-ring packing, supported by disc springs, maintenance-free
  - Blowout-proof shaft made of 1.4462, TA Luft
  - DIN face-to-face dimensions Series 1 and 27 acc. to EN 558
  - ANSI face-to-face dimensions acc. to ASME B16.10-2000
  - Connecting flange for actuators according to DIN ISO 5211
  - Double body seal system
  - Antistatic discharge

Versions:

BR 26d Ball valve are optionally available in the following versions:

- Ball valve with lever
- Ball valve with manual gear
- Ball valve with pneumatic quarter-turn actuator (see associated data sheet for details)
- Acc. to customer specifications

Special versions:

- Valve body made of steel 1.0619 / A216 WCB
- Backup shaft seal (Safety stem extension)
- Heating jacket, stainless steel with various connection
- Flange versions acc. to DIN EN 1092
- Ball valve for controlling by characteristic seat ring
- Body, seal or ball modifications

Fig. 1 - BR 26d Ball Valve with BR 31a Quarter-turn Actuator

Fig. 2 - BR 26d Ball Valve with BR 31a Quarter-turn Actuator

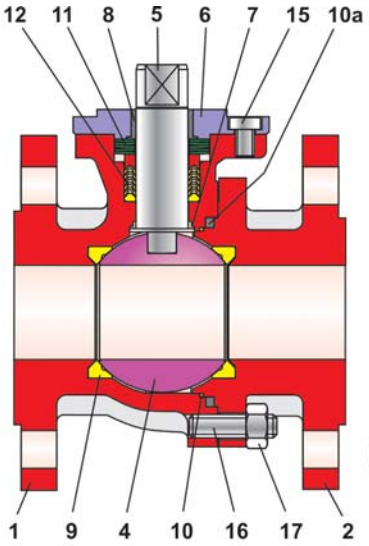

Fig. 3 - Ball valve with not spring supported sealing system

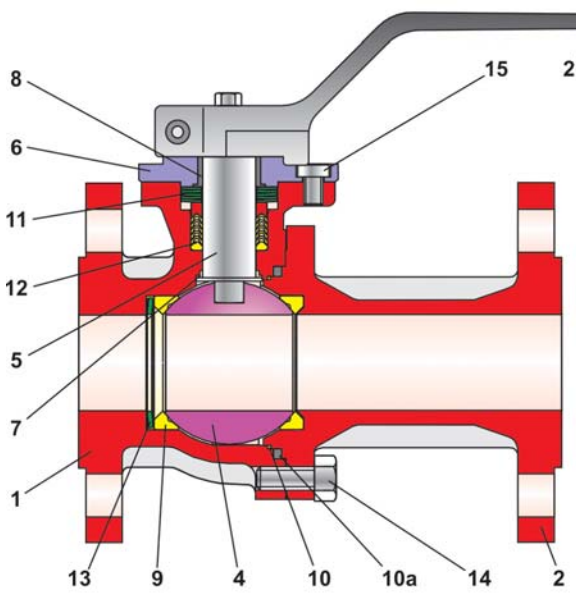

Bild 4 - Ball valve with spring supported sealing system

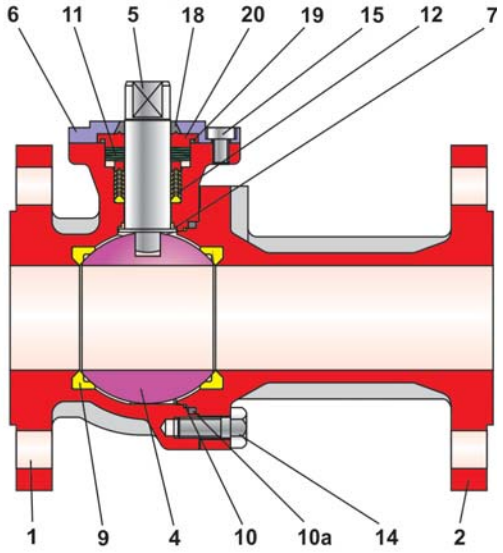

Fig. 5 - Ball valve in fire-safe version

Item	Description
1	Main body
2	Side body
4	Ball
5	Shaft
6	Gland flange
7	Bearing bush
8	Bearing bush
9	Seat ring
10	Body sealing, inside
10a	Body sealing, outside
11	Disc spring set

Item	Description
12	V-ring packing
13	Disc spring
14	Screw [1)]
15	Screw
16	Stud bolt [1)]
17	Nut [1)]
18	Graphite ring
19	Graphite ring
20	Bush
21	Lever

Table 1 - Parts list

[1)] Depending on the nominal width, stud bolts can be fitted with nuts or screws.

Principle of operation:

The BR 26d Ball Valves allow the full flow through the valve in either direction.

The ball (4) with its cylindrical passage slew around the middle axis.
The opening angle of the ball determines the flow through between the body (1) and bore.

The ball (4) is sealed by exchangeable seat rings (9).

The ball shaft is sealed by a PTFE V-ring-packing (12) which is spring supported by disc springs positioned above the packing.

The shaft is equipped with a lever (21). Optionally, a pneumatic actuator or gear-operated actuator can be assembled.

Note:
BR 26d Ball valves can also be used for control applications. Refer to the data sheet <**DB 20a-kd**>.

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 26a>**.

Fail-safe position:

Depending on assembly position of the pneumatic actuator, 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:

- **Ball valve with fail-close actuator**

While air failure, the valve is closed. The valve opens when the signal pressure increases, acting against the force of the springs.

Ball valve with fail-open actuator

While air failure, the valve opens. The valve closes when the signal pressure increases, acting against the force of the springs.

Optional material combinations:

For best adaption to process conditions, it is possible to optimize ball valve by modification of materials (eg. body, shaft, ball and sealing).

Additional accessories:

The following accessories are available (separately or in combination):

- Locking device
- Shaft extension (100 mm, standard)
- Pneumatic or electric quarter-turn actuators
- Positioner (with optional ball valve for control application)
- Limit switches
- Solenoid valves
- Filter regulator
- Heating jacket
- Ball valve for control application by characteristic seat ring

Further accessories are possible on customer request.

Advantages of the live-loaded sealing system:

- Maintenance-free and self-adjusting
- Highest tightness, even under extreme pressure and temperature conditions
- High durability

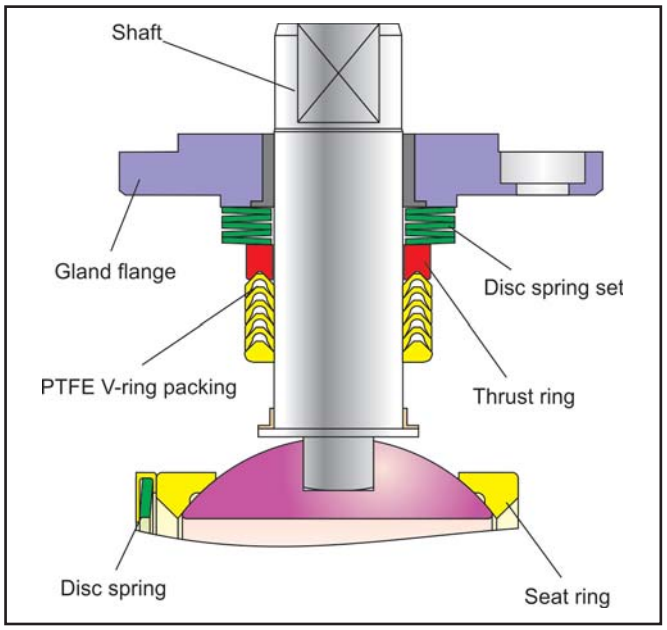

Fig. 6 – Live-loaded sealing system

Advantages of spring supported sealing system:

- Two active seat rings
- Reduced in increase torque by rising temperatures. Therefore smaller actuators are possible for automation.
- ***All in all:***
  Extremely economic!

Pressure-temperature diagrams for DIN version:

The operating range is given by the pressure-temperature diagram. Process data and medium may influence the values in the diagram.

Pressure-temperature diagram, PN 16

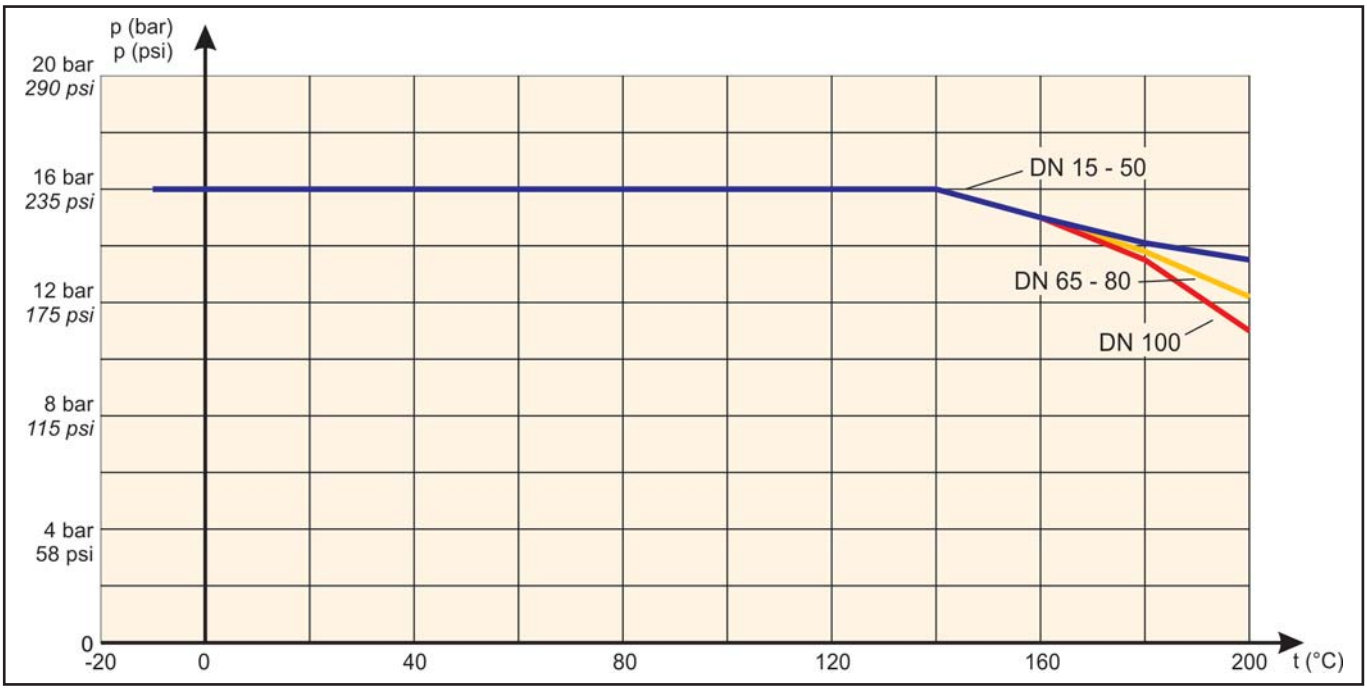

Fig. 7 - Pressure-temperature diagram, PN 16

Pressure-temperature diagram, PN 40

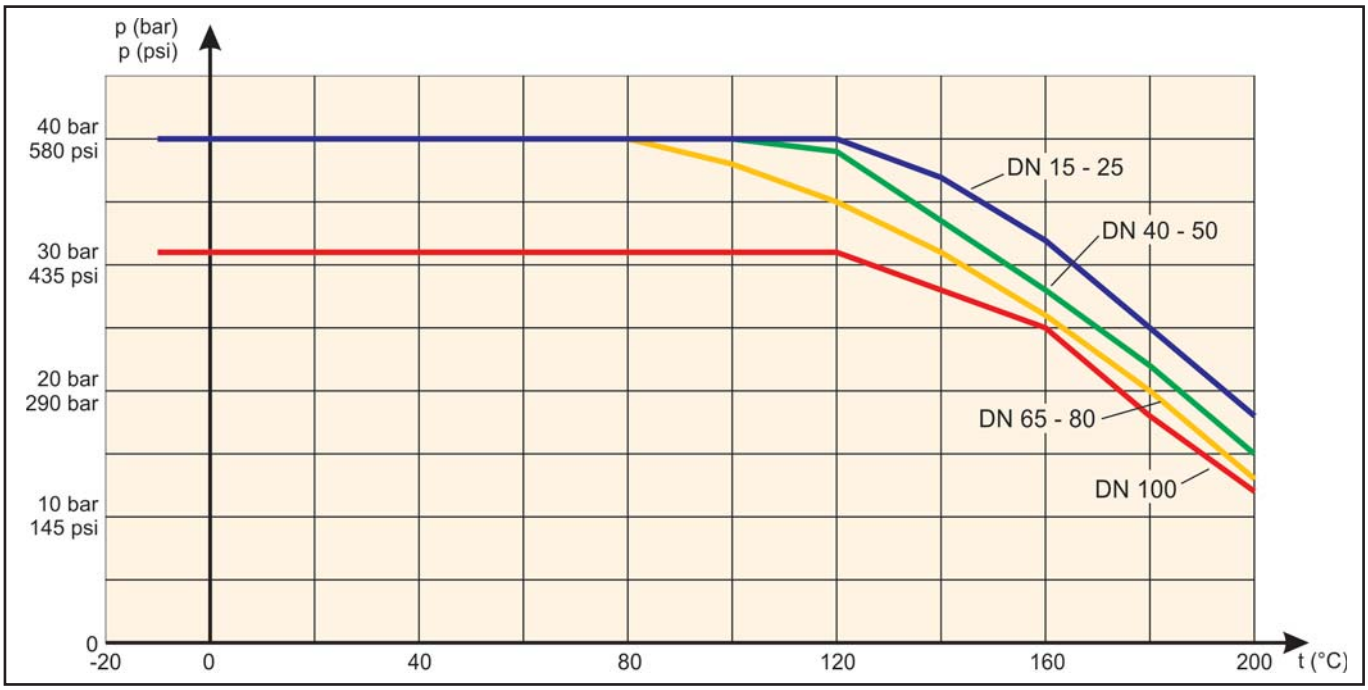

Fig. 8 - Pressure-temperature diagram, PN 40

Pressure-temperature diagrams for ANSI version:

The operating range is given by the pressure-temperature diagram. Process data and medium may influence the values in the diagram.

Pressure-temperature diagram, Class 150

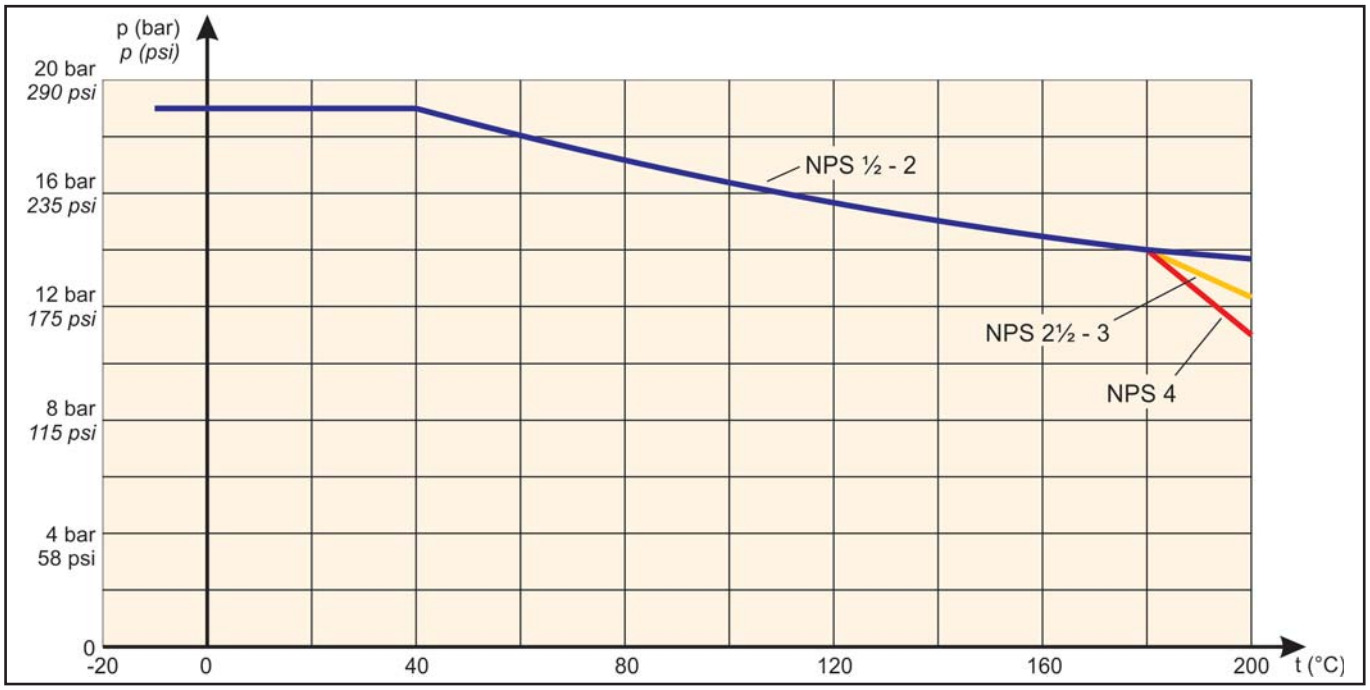

Fig. 9 - Pressure-temperature diagram, Class 150

Pressure-temperature diagram, Class 300

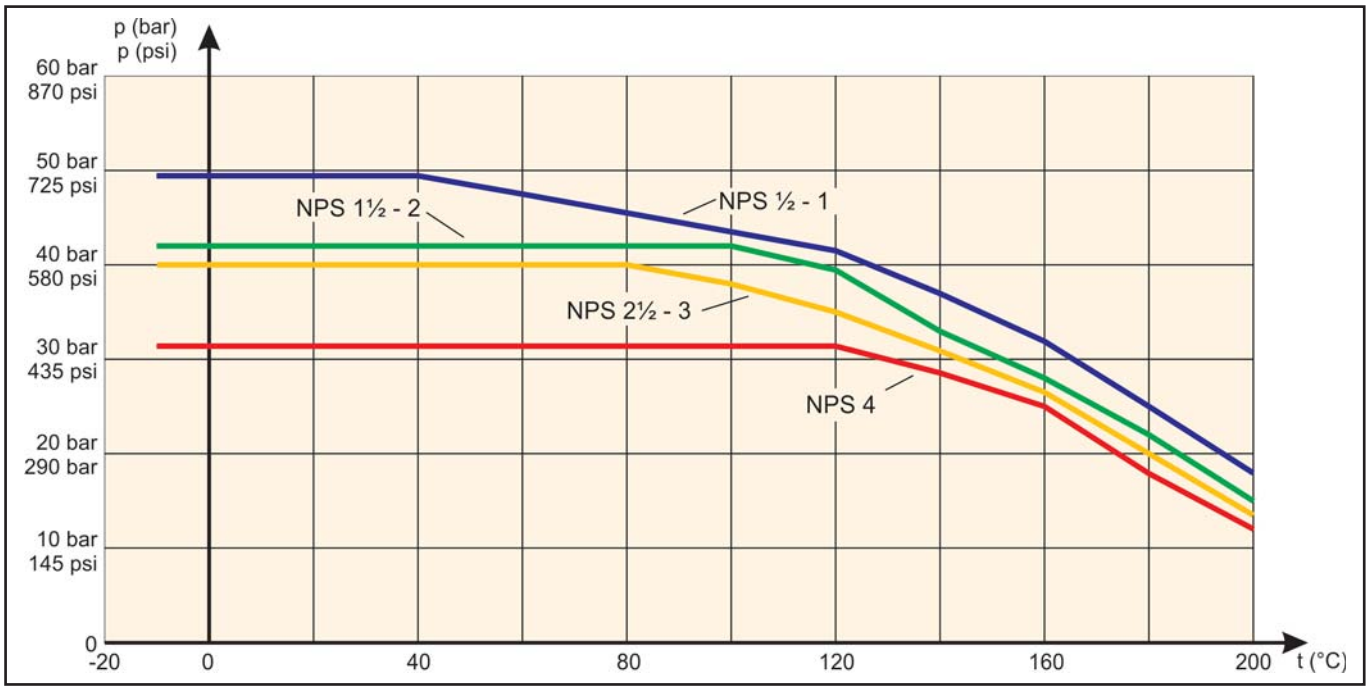

Fig. 10 - Pressure-temperature diagram, Class 300

General technical data:

	DIN	ANSI
Nominal size	DN 15 to 100	NPS ½ to 4
Nominal pressure	PN 16 or 40	cl150 or cl300
Temperature range	-10°C to +200°C (optional -60°C / -80°C)	
Ball sealing	TFM (PTFE)	
Leakage rate	Leakage rate A according to DIN EN 12266-1, P12 (leakage rate 1 BO acc. to DIN 3230 Part 3)	
Flanges	DIN EN 1092-1	ASME B16.34 and B16.5
Packing	PTFE V-ring packing supported by disc springs	
Face to face dimensions	DIN 558, row 1 or 27	DIN 558, row 3 or 4

Table 2 - Technical data

Materials:

	DIN	ANSI
Main body	1.4408	A351 CF8M
Side body	1.4408 / 1.4571	A351 CF8M
Ball	1.4408	A351 CF8M
Shaft	1.4462	A479 S3 1803
Seat rings	TFM (PTFE)	
Disc spring	1.4404 covered by PTFE	
Packing	PTFE V-ring packing with disc springs in 1.8159, Delta-Tone	
Upper bearing bush	PTFE with 25% glass	
Lower bearing bush	PTFE with 25% carbon	
Body sealing	PTFE / graphite	

Table 3 - Materials

K_{vs} and C_v coefficients:

DN	15	20	25	32 [1)]	40	50	65	80	100
NPS	½	¾	1	1¼ [1)]	1 ½	2	2½ [1)]	3	4
kvs	12	23	49	80	116	178	291	422	610
Cv	14	27	57	93	135	207	338	491	709

Table 4 - K_{vs} and C_v coefficients

[1)] On request

Torques and breakaway torques:

Differential pressure			Δp in bar	0	5	10	16	25	40
DN	NPS	Mdmax. in Nm	Md in Nm	Mdl in Nm					
15	½	81	3	5	5	8	9	9	11
20	-	338	5	10	10	14	18	23	28
-	¾	81	4	7	7	11	14	16	19
25	1	338	5	10	10	14	18	23	28
32	1¼	338	8	15	15	20	27	29	40
40	1 ½	654	10	20	20	26	35	35	52
50	2	654	15	30	33	36	42	57	73
65	2½	654	20	45	45	55	65	85	115
80	3	988	25	60	66	72	86	115	144
100	4	988	40	90	105	120	140	200	251

Table 5 - Max. permissible torque, required torque and breakaway torque

The above listed torques are based on the opening of the ball valve at the differential pressure for water with corrosion inhibitors added at room temperature and with one-day non-actuation.
Since temperature, pressure, process medium, switching frequencies and idle times considerably affect the arising torques, corresponding factors need to be taken into consideration on selecting and sizing the actuator. In case of doubt, contact Pfeiffer.
The listed maximum permissible torques apply to the standard material listed in Table 3.

Dimensions and weights:

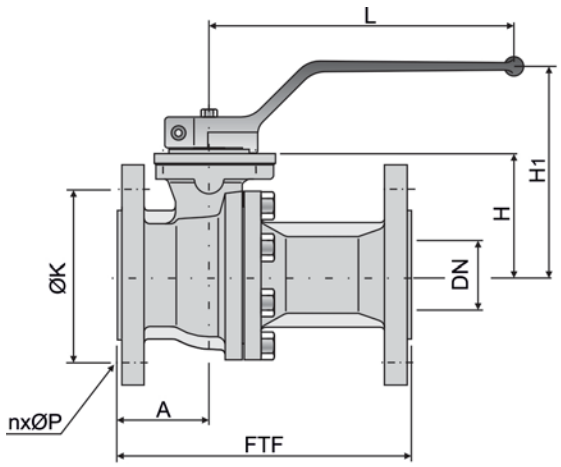

Fig. 11 - Ball valve, face to face series 1

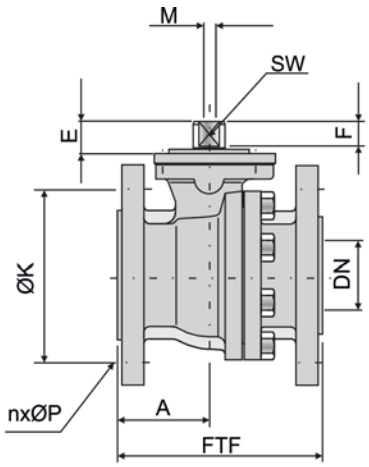

Fig. 12 - Ball valve, face to face series 27

DN		15	20	25	32	40	50	65		80	100	
PN		40						16	40	40	16	40
FTF	Series 1	130	150	160	180	200	230	290		310	350	
	Series 27	115	120	125	130	140	150	170		180	190	
A		50	56	56	54	62.5	65.5	72		72.5	82.5	
E		13	19	19	19	22	22	22		26	26	
F		9	14	14	14	17	17	17		19	19	
H		46.5	58	58	62	83	91	104.5		130.5	143.5	
H1		98.5	109.5	109.5	113.5	143.5	151.5	165		177	190	
L		151	155	155	155	250	250	250		550	550	
M		M5	M6	M6	M6	M6	M6	M6		M8	M8	
SW		9	14	14	14	17	17	17		19	19	
DIN/ISO Connection		F03	F05	F05	F05	F07	F07	F07		F10	F10	
ØK		65	75	85	100	110	125	145		160	180	190
nxØP		4x14	4x14	4x14	4x18	4x18	4x18	4x18	8x18	8x18	8x18	8x22
Weight in kg	Series 1	2.6	4.5	5	8	9	12	15		28	48	51
	Series 27	2	4	4	7	7.5	10	13		23	33	35

NPS		½	¾	1	1¼	1½	2	2½	3	4
FTF	cl150	108	117	127	on request	165	178	190	203	229
	cl300	140	152	165		190	216	241	283	305
A		46.5	56	54		62.5	62.5	72	79.5	120
E		13	13	19		22	22	22	26	26
F		9	9.5	14		17	17	17	19	19
H		46.5	47.5	58		83	91	101.5	130.5	143
H1		98.5	99.5	109.5		143.5	151.5	161.5	177	189.5
L		151	151	155		250	250	250	550	550
M		M5	M5	M6		M6	M6	M6	M8	M8
SW		9	9	14		17	17	17	19	19
DIN/ISO Connection		F03	F04	F05		F07	F07	F07	F10	F10
ØK	cl150	60.3	69.9	79.4		98.4	120.6	139.7	152.4	
nxØP		4x15.9	4x15.7	4x15.9		4x15.9	4x19	4x19.1	4x19	
ØK	cl300	66.7	82.6	88.9		114.3	127	149.2	168.3	200
nxØP		4x15.9	4x19	4x19		4x22.2	8x19	8x22.3	8x22.2	4x22.3
Weight in kg	cl150	2.5	2.7	4		8	9	17.2	20	42
	cl300	3	3.7	5		9	11	19.2	25	51.3

Table 6 - Dimensions in mm and weights in kg

Selection and sizing of the ball valve:

1. Determine the required nominal size.
2. Select valve in accordance to table 2 rsp. 3 and by pressure-temperature diagram.
3. Select the appropriate actuator using table 5.
4. Select additional equipment.

Ordering text:

BR 26d Ball Valve in stainless steel
DN/NPS . . . .
PN/Class . . . .
Live-loaded sealing system or with floating ball
Fire-safe version, optional special version

Actuator (brand name): . . . .
Supply pressure: . . . . bar
Fail-safe position: . . . .

Limit switch (brand name): . . . .
Solenoid valve (brand name): . . . .
Positioner: . . . .

Others: . . . .

Note: All relevant details regarding the version ordered, which deviate from the specified version in this technical description data, can be taken from the order confirmation.