DATA SHEET TB 26d

BR 26d · Ball Valve
DIN- and ANSI-Version

CE

Application

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

- **Nominal size DN 15 to 150 and NPS½ to 4**
- **Nominal pressure PN 16 and 40 as well as cl150 and cl300**
- **Temperatures -10 °C to 200 °C, (optional -60 °C / -80 °C to +230 °C)**

The control equipment consists of a 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**
  - Not spring supported
  - Spring supported sealing system
  - Fire-safe version with test certificate
    - API 607 6th ed. & EN ISO 10497
    - British Standards B.S. 6755 Part 2
  - TA-Luft 2021 / DIN EN ISO 15848-1

- **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 M-PTFE packing, supported by disc springs, maintenance-free
  - Blowout-proof shaft made of 1.4462
  - 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 acc. to DIN ISO 5211
  - Double body seal system
  - Antistatic discharge

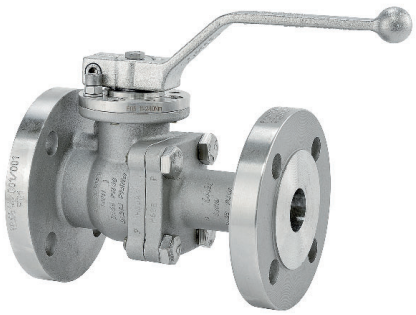


Fig. 1: *BR 26d Ball valve with Lever*

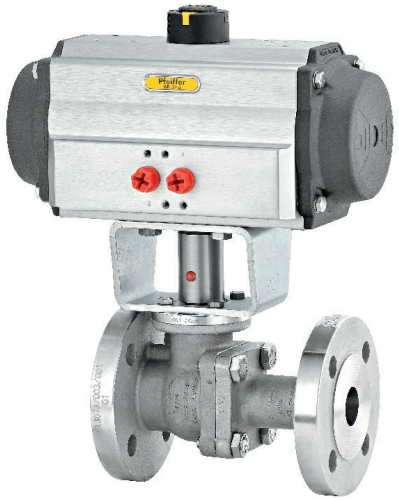


Fig. 2: *BR 26d Ball valve with BR 31a Quarter-turn actuator*

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

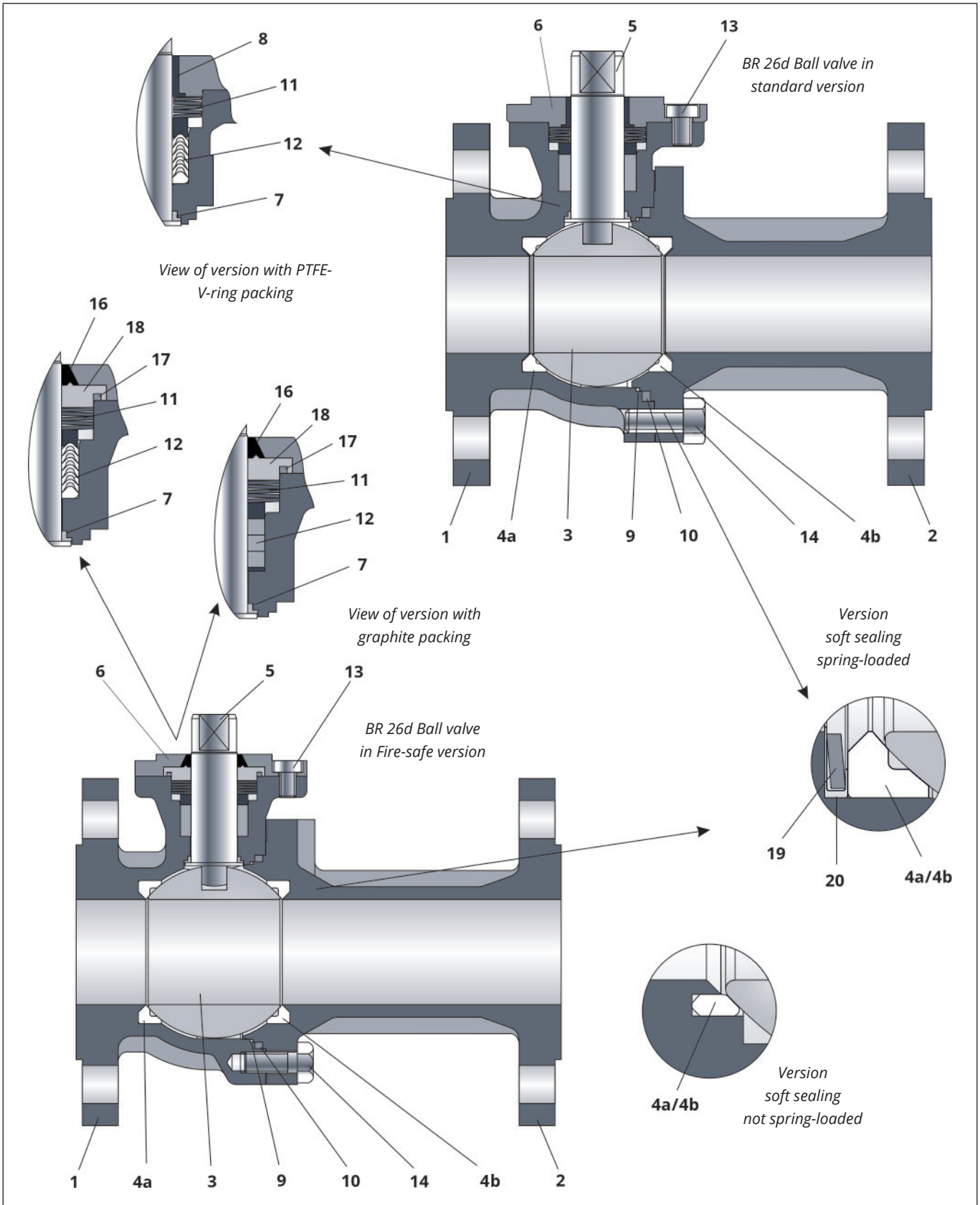


Fig. 3: *BR 26d Ball valve*

Table 1: *Parts list*

Item	Description
1	Main body
2	Side body
3	Ball
4	Seat ring
5	Shaft
6	Stuffing box flange
7	Bearing bush
8	Bearing bush
9	Sealing
10	Sealing

Item	Description
11	Disc spring set
12	Packing
13	Screw
14	Screw / Stud bolt
15	Nut
16	Bush
17	Seal ring
18	Bush
19	Disc spring
20	Disc spring jacket

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

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
- High temperature version up to 230 °C

Principle of operation

The BR 26d Ball valves allow the full flow through the valve in either direction.
The ball (3) with its cylindrical passage slew around the shaft.
The opening angle of the ball determines the flow through between the body (1) and bore.
The ball (3) is sealed by exchangeable seat rings (4).
The ball shaft is sealed by a M-PTFE 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 mounting and operating instructions ▶ EB 26d.

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

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!

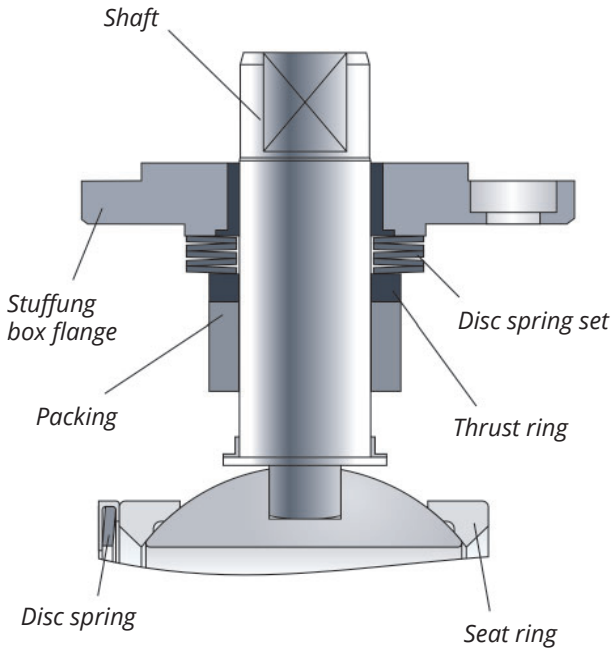


Fig. 4: *Live-loaded sealing system*

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.

Body material: 1.4408 (DIN EN 1092-1)
Seal ring material: M-PTFE / PTFE

Table 2: *Pressure-temperature values PN16*

HT	**-10 °C ... 230 °C**
Standard	**-10 °C ... 200 °C**
LT60	**-60 °C ... 200 °C**
LT80	**-80 °C ... 200 °C**

	Temperature in °C																
DN	**-80**	**-60**	**-10**	**0**	**20**	**40**	**60**	**80**	**100**	**120**	**140**	**160**	**180**	**200**	**220**	**230**	
15 ... 25	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	15.7	15.5	15.2	14.9	10.0	8.0	**Pressure in bar**
32 ... 50	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	15.7	15.5	15.2	14.0	9.0	7.0	
65 ... 80	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	15.7	15.5	15.2	13.5	8.0	6.0	
100	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	15.7	15.5	15.2	12.0	7.0	5.0	
125 ... 150	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	15.9	15.7	15.5	15.2	8.0	4.0	1.5	
			Standard														

Table 3: *Pressure-temperature values PN40*

HT	-10 °C ... 230 °C
Standard	-10 °C ... 200 °C
LT60	-60 °C ... 200 °C
LT80	-80 °C ... 200 °C

	Temperature in °C																
DN	-80	-60	-10	0	20	40	60	80	100	120	140	160	180	200	220	230	
15 ... 25	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	37.0	32.0	25.0	18.0	10.0	8.0	Pressure in bar
32 ... 50	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	39.5	33.5	28.0	22.0	15.0	9.0	7.0	
65 ... 80	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0	35.5	31.0	26.5	20.0	13.5	8.0	6.0	
100 [1]	40.0	40.0	40.0	40.0	40.0	40.0	39.4	38.2	37.0	33.0	29.0	24.0	18.0	12.0	7.0	5.0	
			Standard														

[1] Values for designs compliant with „TA-Luft 2021“

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.

Body material: A351-CF8M (ASME B16.34 / ASME B16.5)
Seal ring material: M-PTFE / PTFE

Table 4: *Pressure-temperature values cl150*

HT	-10 °C ... 230 °C
Standard	-10 °C ... 200 °C
LT60	-60 °C ... 200 °C
LT80	-80 °C ... 200 °C

	Temperature in °C																
NPS	-80	-60	-10	0	20	40	60	80	100	120	140	160	180	200	220	230	
½ ... 1	19.0	19.0	19.0	19.0	19.0	19.0	17.9	17.0	16.2	15.6	15.0	14.6	14.1	13.7	10.0	8.0	Pressure in bar
1 ¼ ... 2	19.0	19.0	19.0	19.0	19.0	19.0	17.9	17.0	16.2	15.6	15.0	14.6	14.1	13.7	9.0	7.0	
2½ ... 3	19.0	19.0	19.0	19.0	19.0	19.0	17.9	17.0	16.2	15.6	15.0	14.6	14.1	13.5	8.0	6.0	
4	19.0	19.0	19.0	19.0	19.0	19.0	17.9	17.0	16.2	15.6	15.0	14.6	14.1	12.0	7.0	5.0	
6	19.0	19.0	19.0	19.0	19.0	19.0	17.9	17.0	16.2	15.6	15.0	14.6	14.0	8.0	4.0	1.5	
			Standard														

Table 5: *Pressure-temperature values cl300*

HT	-10 °C ... 230 °C
Standard	-10 °C ... 200 °C
LT60	-60 °C ... 200 °C
LT80	-80 °C ... 200 °C

	Temperature in °C																
NPS	-80	-60	-10	0	20	40	60	80	100	120	140	160	180	200	220	230	
½ ... 1	49.6	49.6	49.6	49.6	49.6	49.6	46.9	44.5	42.2	40.7	37.0	32.0	25.0	18.0	10.0	8.0	Pressure in bar
1 ¼ ... 2	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	41.0	39.5	33.5	28.0	22.0	15.0	9.0	7.0	
2½ ... 3	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	38.0	35.5	31.0	26.5	20.0	13.5	8.0	6.0	
4 [1]	40.0	40.0	40.0	40.0	40.0	40.0	39.4	38.2	37.0	33.0	29.0	24.0	18.0	12.0	7.0	5.0	
			Standard														

[1] Values for designs compliant with „TA-Luft 2021“

Table 6: *General technical data*

	DIN	ANSI
Nominal size	DN 15 ... 150	NPS ½ ... 4
Nominal pressure	PN 16 ... 40	cl150 ... cl300
Temperature range	-10 °C ... +200 °C (optional -60 °C / -80 °C ... +230 °C)	
Ball sealing	M-PTFE	
Leakage rate	Leakage rate A according to DIN EN 12266-1, P12	
Flanges	DIN EN 1092-1	ASME B16.5
Packing	M-PTFE packing supported by disc springs	
Face to face dimensions	DIN 558, row 1 or 27	ASME B16.10

Table 7: *Materials*

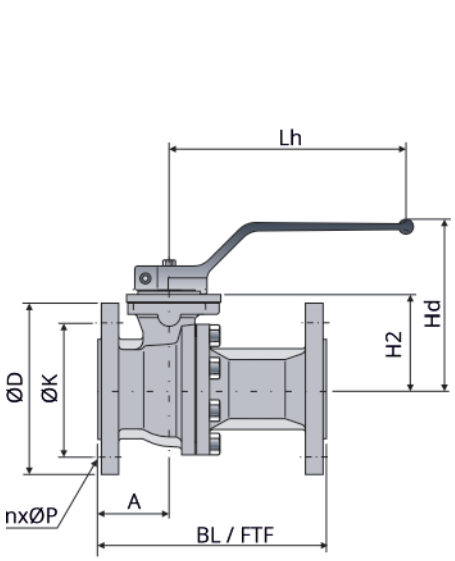
	DIN	ANSI
Main body	1.4408	ASTM A351 CF8M
Side body	1.4408 / 1.4571	ASTM A351 CF8M
Ball	1.4408	ASTM A351 CF8M
Shaft	1.4462	ASTM A182 Gr. F51
Seat rings	PTFE	
Packing	M-PTFE packing with disc springs	
Upper bearing bush	PTFE with 25 % glass	
Lower bearing bush	PTFE with 25 % carbon	
Body sealing	M-PTFE / graphite	

Table 8: *kvs and Cv coefficients*

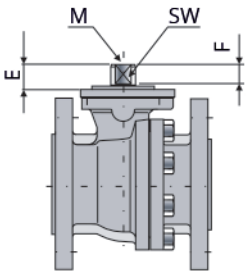
DN	15	20	25	32	40	50	65	80	100	125	150
NPS	**½**	**¾**	**1**	**1¼** [1)]	**1 ½**	**2**	**2½** [1)]	**3**	**4**	**5**	**6**
kvs	12	23	49	80	116	178	291	422	610	954	1575
Cv	14	27	57	93	135	207	338	491	709	1108	1830

[1)] On request

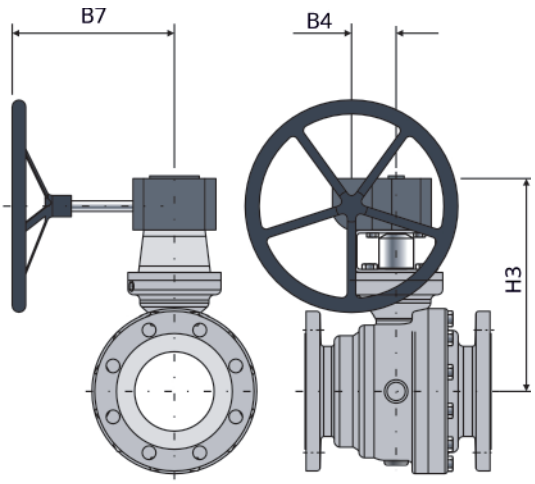
Dimensions and weights



BR 26d Ball valve face to face series 1



BR 26d Ball valve face to face series 27



BR 26d Ball valve DN 125 and DN 150 with Manual gear

Fig. 5: *Dimensional drawing*

Table 9: *Dimensions in mm and weights in kg of the ball valve in DIN version*

DN		15	20	25	32	40	50	65		80	100		125	150
PN		40						16	40	40	16	40	16	
FTF	Row 1	130	150	160	180	200	230	290		310	350		-	-
	Row 27	115	120	125	130	140	150	170		180	190		325	350
A		50	56	56	54	62.5	65.5	72		72.5	82.5		120	172
B4		-	-	-	-	-	-	-		-	-		69	84
B7		-	-	-	-	-	-	-		-	-		330	315
ØD		95	105	115	140	150	165	185		200	220	235	250	285
E		13	19	19	19	22	22	22		26	26		31	37
F		9	14	14	14	17	17	17		19	19		24	30
H2		46.5	58	58	62	83	91	104.5		130.5	143.5		198.5	223
H3		-	-	-	-	-	-	-		-	-		369	405
Hd		98.5	109.5	109.5	113.5	143.5	151.5	165		177	190		-	-
ØK		65	75	85	100	110	125	145		160	180	190	210	250
Lh		151	155	155	155	250	250	250		550	550		-	-
M		M5	M6	M6	M6	M6	M6	M6		M8	M8		M10	M12
nxØP		4x14	4x14	4x14	4x18	4x18	4x18	4x18	8x18	8x18	8x18	8x22	8x18	8x22
SW		9	14	14	14	17	17	17		19	19		24	30
DIN/ISO connection		F03	F05	F05	F05	F07	F07	F07		F10	F10		F12	F14
Weight in kg	Row 1	2.6	4.5	5	8	9	12	15		28	48	51	-	-
	Row 27	2	4	4	7	7.5	10	13		23	33	35	64	100

Table 10: *Dimensions in mm and weights in kg of the ball valve in ANSI version*

NPS		½	¾	1	1¼	1½	2	2½	3	4
BL/FTF	cl150	108	117	127	140	165	178	190	203	229
	cl300	140	152	165	178	190	216	241	283	305
A	cl150	51.5	56	54	49	62.5	62.5	72	79.5	82.5
	cl300			63.5	52		78.5		85.5	120
ØD	cl150	88.9	89.6	108	115	127	152.4	177.8	190.5	228.6
	cl300	95.2	117.3	124	135	155.4	165.1	190	209.5	255
E		13	13	19	19	22	22	22	26	26
F		9	9.5	14	14	17	17	17	19	19
H2		46.5	47.5	58	62	83	91	101.5	130.5	143
Hd		98.5	99.5	109.5	123.5	143.5	151.5	161.5	177	189.5
Lh		151	151	155	165	250	250	250	550	550
DIN/ISO connection		F03	F04	F05	F05	F07	F07	F07	F10	F10
ØK	cl150	60.3	69.9	79.4	88.9	98.4	120.6	139.7	152.4	190,5
nxØP		4x15.9	4x15.7	4x15.9	4x15.9	4x15.9	4x19	4x19.1	4x19	4x19.1
ØK	cl300	66.7	82.6	88.9	98.4	114.5	127	149.2	168.3	200
nxØP		4x15.9	4x19	4x19	4x19.1	4x22.2	8x19	8x22.3	8x22.2	4x22.3
M		M5	M5	M6	M6	M6	M6	M6	M8	M8
SW		9	9	14	14	17	17	17	19	19
Weight in kg	cl150	2.5	2.7	4	4.8	8	9	17.2	20	42
	cl300	3	3.7	5	6.4	9	11	19.2	25	51.3

Table 11: *Max. permissible torque, required torque and breakaway torque*

Differential pressure			Δp in bar	0	5	10	16	20	25	30	40	only ANSI 50
DN	NPS	M_{MAST} max. Shaft in Nm	M_{RTO} in Nm	M_{BTO} in Nm								
15	½	81	3	5	6	7	7	8	9	10	11	13
20	-	338	5	10	12	15	17	19	21	24	28	33
-	¾	81	4	10	12	15	17	19	21	24	28	33
25	1	338	5	10	12	14	17	19	21	24	28	33
32	1¼	338	8	15	18	21	25	28	31	34	40	46
40	1½	654	10	20	24	28	33	36	40	44	52	60
50	2	654	15	30	35	41	47	52	57	62	73	84
65	2½	654	20	45	54	63	73	80	89	98	115	133
80	3	988	25	60	71	81	94	102	113	123	144	-
100	4	988	40	90	110	130	154	171	191	211	251	-
125	5	2170	80	170	232	294	368	418	480	-	-	-
150	6	3992	110	240	300	360	432	-	-	-	-	-

MAST = max. allowed stem torque
RTO = Run to open
BTO = Break to Open

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.

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 7
4. Select additional equipment.

Ordering text

BR 26d Ball Valve
Nominal size: DN/NPS . . . .
Nominal pressure: 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: . . . .

Associated data sheets

- Associated Mounting and Operating Instructions ▶ EB 26d
- Associated Safety Manual ▶ SH 26
- For pneumatic Quarter-turn actuator ▶ 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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