GEMÜ B22

Manually operated 2/2-way ball valve

EN **Operating instructions**

further information
webcode: GW-B22

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27.11.2020

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1 General information

1.1 Information

- The descriptions and instructions apply to the standard versions. For special versions not described in this document the basic information contained herein applies in combination with any additional special documentation.
- Correct installation, operation, maintenance and repair work ensure faultless operation of the product.
- Should there be any doubts or misunderstandings, the German version is the authoritative document.
- Contact us at the address on the last page for staff training information.

1.2 Symbols used

The following symbols are used in this document:

Symbol	Meaning
●	Tasks to be performed
▶	Response(s) to tasks
–	Lists

1.3 Definition of terms

Working medium

The medium that flows through the GEMÜ product.

Control function

The possible actuation functions of the GEMÜ product.

Control medium

The medium whose increasing or decreasing pressure causes the GEMÜ product to be actuated and operated.

1.4 Warning notes

Wherever possible, warning notes are organised according to the following scheme:

SIGNAL WORD	
Possible symbol for the specific danger	Type and source of the danger ▶ Possible consequences of non-observance. ● Measures for avoiding danger.

Warning notes are always marked with a signal word and sometimes also with a symbol for the specific danger.

The following signal words and danger levels are used:

⚠ DANGER

Imminent danger!

▶ Non-observance can cause death or severe injury.

⚠ WARNING

Potentially dangerous situation!

▶ Non-observance can cause death or severe injury.

⚠ CAUTION

Potentially dangerous situation!

▶ Non-observance can cause moderate to light injury.

NOTICE

Potentially dangerous situation!

▶ Non-observance can cause damage to property.

The following symbols for the specific dangers can be used within a warning note:

Symbol	Meaning
	Danger of explosion
	Corrosive chemicals!
	Hot plant components!

2 Safety information

The safety information in this document refers only to an individual product. Potentially dangerous conditions can arise in combination with other plant components, which need to be considered on the basis of a risk analysis. The operator is responsible for the production of the risk analysis and for compliance with the resulting precautionary measures and regional safety regulations.

The document contains fundamental safety information that must be observed during commissioning, operation and maintenance. Non-compliance with these instructions may cause:

- Personal hazard due to electrical, mechanical and chemical effects.
- Hazard to nearby equipment.
- Failure of important functions.
- Hazard to the environment due to the leakage of dangerous materials.

The safety information does not take into account:

- Unexpected incidents and events, which may occur during installation, operation and maintenance.
- Local safety regulations which must be adhered to by the operator and by any additional installation personnel.

Prior to commissioning:

1. Transport and store the product correctly.
2. Do not paint the bolts and plastic parts of the product.
3. Carry out installation and commissioning using trained personnel.
4. Provide adequate training for installation and operating personnel.
5. Ensure that the contents of the document have been fully understood by the responsible personnel.
6. Define the areas of responsibility.
7. Observe the safety data sheets.
8. Observe the safety regulations for the media used.

During operation:

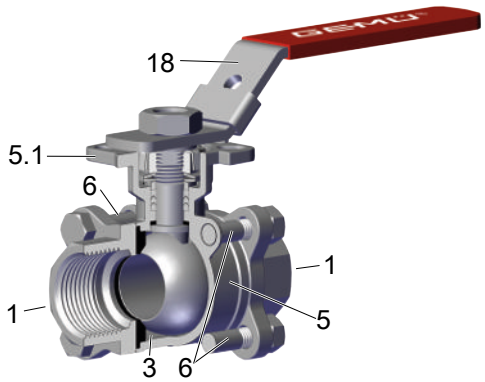
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not described in this document without consulting the manufacturer first.

In cases of uncertainty:

15. Consult the nearest GEMÜ sales office.

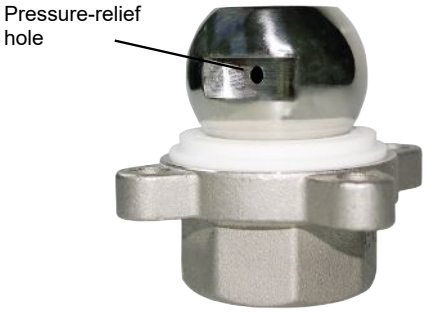
3 Product description

3.1 Construction

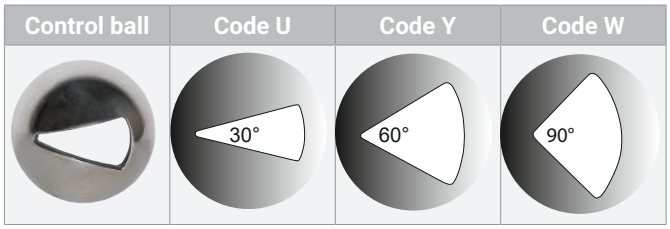


Item	Name	Materials
5	Ball valve body	1.4408 / CF8M
1	Pipe connections	1.4408 / CF8M , 1.4409 / CF3M butt weld connections
5.1	Mounting flange ISO 5211	1.4408 / CF8M
18	Hand lever	1.4408 / CF8M
6	Studs	A2 70
3	Seal	PTFE

3.2 Pressure-relief hole



3.3 Control ball



Note: The control ball cannot be retrofitted to standard 2/2-way bodies at a later date.

3.4 Description

The GEMÜ B22 3-piece 2/2-way metal ball valve is manually operated. It has a plastic sleeved hand lever with a locking device. The seat seal is made of PTFE.

3.5 Function

The GEMÜ B22 2/2-way ball valve is made of metal and is equipped with a plastic sleeved hand lever and a stainless steel top flange.

The ball valve can be continuously open or closed.

The position of the ball valve can be secured using a suitable lock (e.g. padlock). This lock is not included in the scope of delivery.

4 GEMÜ CONEXO

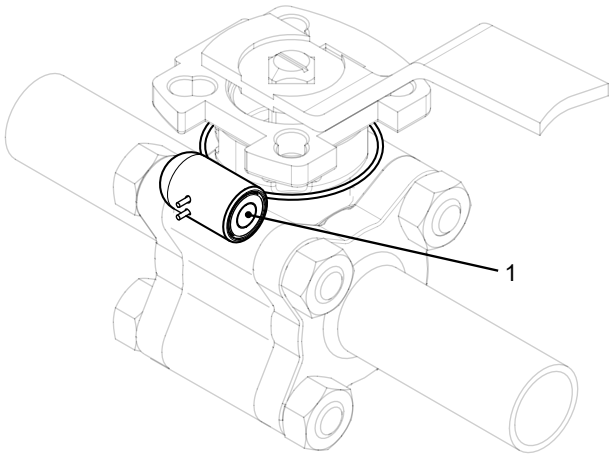
The interaction of valve components that are equipped with RFID chips and an associated IT infrastructure actively increase process reliability.

Thanks to serialization, every valve and every relevant valve component such as the body, actuator or diaphragm, and even automation components, can be clearly traced and read using the CONEXO pen RFID reader. The CONEXO app, which can be installed on mobile devices, not only facilitates and improves the "installation qualification" process, but also makes the maintenance process much more transparent and easier to document. The app actively guides the maintenance technician through the maintenance schedule and directly provides him with all the information assigned to the valve, such as test reports, testing documentation and maintenance histories. The CONEXO portal acts as a central element, helping to collect, manage and process all data.

For further information on GEMÜ CONEXO please visit:
www.gemu-group.com/conexo

Installing the RFID chip

In the corresponding design with CONEXO, this product has an RFID chip (1) for electronic recognition. The position of the RFID chip can be seen below.



5 Correct use

⚠ DANGER

Danger of explosion

- ► Risk of severe injury or death.
- ● Only versions that have been approved according to their technical data may be used in potentially explosive environments.

⚠ WARNING

Improper use of the product

- ► Risk of severe injury or death.
- ► Manufacturer liability and guarantee will be void.
- ● Only use the product in accordance with the operating conditions specified in the contract documentation and in this document.

The product is suitable for installation in piping and for controlling a media flow. The operating conditions according to the technical data apply to the media to be controlled.

The product can be controlled by a manual, pneumatic or electric actuator according to the technical data.

The product is not intended for use in potentially explosive areas.

The product must not be exposed to pressure fluctuations. If the product is to be used with pressure fluctuations, please contact GEMÜ.

6 Order data

The order data provide an overview of standard configurations.

Please check the availability before ordering. Other configurations available on request.

Order codes

1 Type	Code
Ball valve, metal, manually operated, 3-piece, ISO 5211, top flange, lockable hand lever	B22

2 DN	Code
DN 8	8
DN 10	10
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80
DN 100	100

3 Body/ball configuration	Code
2/2-way body	D
2/2-way body, V-ball 30° (for Kv value see datasheet)	U
2/2-way body, V-ball 90° (for Kv value see datasheet)	W
2/2-way body, V-ball 60° (for Kv value see datasheet)	Y

4 Connection type	Code
Spigot	
Spigot DIN EN 12627	19
Spigot ASME BPE	59
Spigot ISO 1127/EN 10357 series C/DIN 11866 series B	60

4 Continuation of Connection type	Code
Threaded socket	
Threaded socket DIN ISO 228	1
Threaded socket NPT	31
Flange	
Flange EN 1092, PN 16, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1	8
Flange EN 1092, PN 40, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1	11

5 Ball valve material	Code
1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)	37
1.4408 / CF8M (body), 1.4409 / CF3M (connection), 1.4401 / SS316 (ball, shaft)	C7

6 Seal material	Code
PTFE	5

7 Control function	Code
Manually operated, hand lever, lockable	L

8 Special version	Code
Without	
ATEX version	X

9 CONEXO	Code
without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Order option	Code	Description
1 Type	B22	Ball valve, metal, manually operated, 3-piece, ISO 5211, top flange, lockable hand lever
2 DN	15	DN 15
3 Body/ball configuration	D	2/2-way body
4 Connection type	1	Threaded socket DIN ISO 228
5 Ball valve material	37	1.4408 / CF8M (body, connection), 1.4401 / SS316 (ball, shaft)
6 Seal material	5	PTFE
7 Control function	L	Manually operated, hand lever, lockable
8 Special version		Without
9 CONEXO	C	Integrated RFID chip for electronic identification and traceability

7 Technical data

7.1 Medium

Working medium: Corrosive, inert, gaseous and liquid media and steam which have no negative impact on the physical and chemical properties of the body and seal material.

7.2 Temperature

Media temperature:
Connection code 19, 59, 60 -10 to 180 °C
Connection code 1, 31, 8, 11 -20 to 180 °C

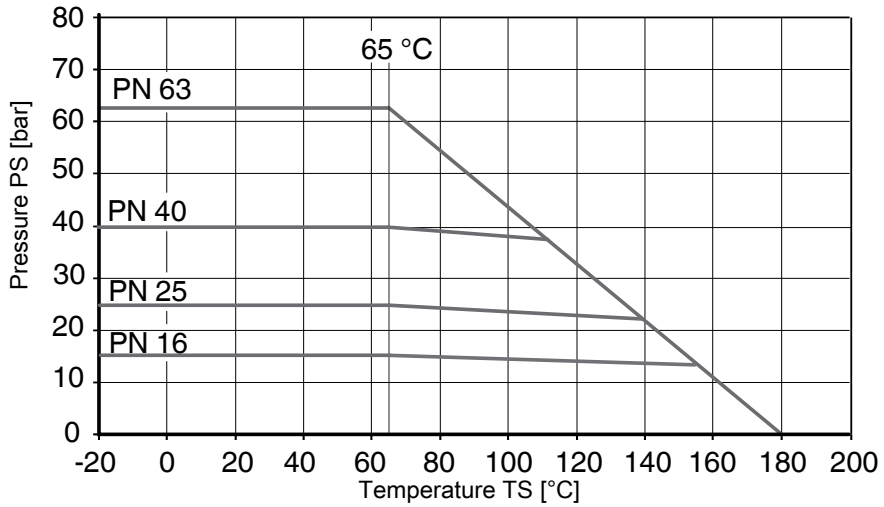
Ambient temperature: -20 — 60 °C

Storage temperature: -60 — 60 °C

7.3 Pressure

Operating pressure: 0 to 63 bar

Pressure/temperature diagram:



Note media temperature

Leakage rate: Leakage rate according to ANSI FCI70 – B16.104
Leakage rate according to EN12266, 6 bar air, leakage rate A

Kv values:

DN	NPS	Kv values
8	**1/4"**	8.0
10	**3/8"**	8.0
15	**1/2"**	17.0
20	**3/4"**	34.0
25	**1"**	60.0
32	**1¼"**	94.0
40	**1½"**	213.0
50	**2"**	366.0
65	**2½"**	595.0
80	**3"**	935.0
100	**4"**	1700.0

Kv values in m^3/h

Kv values:

V-ball 30° (code U)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
8	**1/4"**	0	0.019	0.044	0.088	0.151	0.232	0.327	0.446	0.576	0.727	0.885
10	**3/8"**	0	0.021	0.05	0.1	0.172	0.265	0.374	0.51	0.659	0.83	1.012
15	**1/2"**	0	0.085	0.085	0.17	0.255	0.425	0.68	0.935	1.36	1.87	2.21
20	**3/4"**	0	0.085	0.17	0.425	0.595	0.935	1.53	2.04	2.805	3.825	4.59
25	**1"**	0	0.085	0.255	0.68	1.105	1.955	2.975	4.335	8.33	7.225	8.5
32	**1¼"**	0	0.17	0.34	0.935	1.7	3.145	4.675	6.8	8.5	11.05	12.75
40	**1½"**	0	0.255	0.51	1.36	2.55	4.25	6.375	9.35	11.9	14.45	17.0
50	**2"**	0	0.34	1.02	3.23	5.1	8.5	12.75	19.55	26.35	36.55	51.0
65	**2½"**	0	0.34	0.85	3.4	6.8	10.2	15.3	23.8	31.45	52.7	63.75
80	**3"**	0	0.425	1.02	3.4	6.8	11.9	19.55	28.05	39.1	55.25	69.7
100	**4"**	0	0.51	1.7	5.1	12.75	24.65	40.8	60.35	85.0	110.5	135.2

Kv values in m³/h

V-ball 60° (code V)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
8	**1/4"**	0	0.026	0.06	0.141	0.249	0.372	0.539	0.762	1.034	1.38	1.845
10	**3/8"**	0	0.03	0.068	0.161	0.285	0.425	0.616	0.871	1.182	1.577	2.108
15	**1/2"**	0	0.085	0.085	0.255	0.425	0.765	1.19	1.7	2.805	3.74	5.1
20	**3/4"**	0	0.085	0.17	0.595	0.85	1.445	2.38	3.4	5.525	7.65	10.2
25	**1"**	0	0.17	0.34	0.935	1.53	2.89	4.505	6.715	10.46	13.01	17.85
32	**1¼"**	0	0.17	0.51	1.53	2.55	4.675	8.075	10.88	16.15	22.1	33.15
40	**1½"**	0	0.34	0.68	2.125	3.4	6.8	11.05	16.15	22.95	34.0	44.2
50	**2"**	0	0.34	1.275	3.91	7.65	14.03	22.95	33.15	46.75	70.55	93.5
65	**2½"**	0	0.34	1.275	4.25	8.5	17.85	28.9	45.05	63.75	87.55	127.5
80	**3"**	0	0.425	2.125	5.1	11.9	21.25	34.0	55.25	77.35	108.8	140.3
100	**4"**	0	0.595	2.55	9.35	21.25	34.0	50.15	76.5	119.9	180.2	302.6

Kv values in m³/h

V-ball 90° (code W)

DN	NPS	Opening angle										
		0	15%	20%	30%	40%	50%	60%	70%	80%	90%	100%
8	**1/4"**	0	0.037	0.086	0.212	0.39	0.658	1.008	1.391	1.837	2.332	3.012
10	**3/8"**	0	0.043	0.098	0.242	0.446	0.752	1.152	1.59	2.1	2.665	3.443
15	**1/2"**	0	0.085	0.17	0.34	0.51	0.765	1.275	1.87	3.23	4.59	5.865
20	**3/4"**	0	0.17	0.34	0.68	1.02	1.7	2.635	3.91	6.8	9.605	11.9
25	**1"**	0	0.17	0.51	1.53	2.89	4.335	6.885	9.69	13.6	17.85	24.65
32	**1¼"**	0	0.255	0.68	1.7	4.25	6.8	11.9	16.15	23.8	33.15	46.75
40	**1½"**	0	0.425	0.765	2.975	5.95	11.05	17.0	26.35	35.7	53.55	66.3
50	**2"**	0	0.595	1.7	5.1	10.2	18.7	29.75	38.25	59.5	89.25	114.8
65	**2½"**	0	0.425	1.445	5.95	11.9	23.8	40.8	59.5	90.1	136.0	185.3
80	**3"**	0	0.595	2.975	6.8	15.3	29.75	51.0	76.5	114.8	174.3	263.5
100	**4"**	0	0.85	2.975	13.6	34.0	63.75	106.3	161.5	250.8	375.7	569.5

Kv values in m³/h

Pressure rating:

DN	Connection type code [1]					
	60	19	1, 31	11	8	59
8	PN63	PN63	PN63	-	-	-
10	PN63	PN63	PN63	-	-	-
15	PN63	PN63	PN63	PN40	-	PN63
20	PN63	PN63	PN63	PN40	-	PN63
25	PN63	PN63	PN63	PN40	-	PN63
32	PN63	PN63	PN63	PN40	-	-
40	PN63	PN63	PN63	PN40	-	PN63
50	PN63	PN63	PN63	PN40	-	PN63
65	PN40	PN40	PN40	PN40	-	PN40
80	PN40	PN40	PN40	-	PN16	PN40
100	PN25	PN25	PN25	-	PN16	PN25

1) **Connection type**
Code 1: Threaded socket DIN ISO 228
Code 31: Threaded socket NPT
Code 8: Flange EN 1092, PN 16, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1
Code 11: Flange EN 1092, PN 40, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1
Code 19: Spigot DIN EN 12627
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127/EN 10357 series C/DIN 11866 series B

7.4 Product conformities

Pressure Equipment Directive: 2014/68/EU

Explosion protection: ATEX (2014/34/EU), order code Special version X

ATEX assessment:

External
Gas: Zone 1, 2 IIB
Dust: Zone 21, 22 IIIC

Internal
Up to DN 65
Gas: Zone 0, 1, 2 IIC
Dust: No zone

DN 80 and 100
Gas: Zone 0, 1, 2 IIB
Dust: No zone

7.5 Mechanical data

Torques:

DN	NPS	Breakaway torque
8	**1/4"**	6.0
10	**3/8"**	6.0
15	**1/2"**	6.0
20	**3/4"**	10.0
25	**1"**	11.0
32	**1¼"**	17.0
40	**1½"**	28.0
50	**2"**	53.0
65	**2½"**	76.0
80	**3"**	89.0
100	**4"**	138.0

Torques in Nm
A safety factor of 1.2 is included
With dry, non-lubricating media the breakaway torque may be increased.
Valid for clean, non-particulate and oil-free media (water, alcohol, etc.), gas or saturated steam (clean and wet).
PTFE seal.

Weight:

Ball valve

DN	NPS	Threaded connection, spigot	Flange
8	**1/4"**	0.55	1.15
10	**3/8"**	0.55	1.15
15	**1/2"**	0.6	1.35
20	**3/4"**	0.7	1.45
25	**1"**	0.8	1.8
32	**1¼"**	1.2	2.4
40	**1½"**	2.3	3.5
50	**2"**	3.5	4.9
65	**2½"**	6.9	9.3
80	**3"**	11.7	14.7
100	**4"**	19.3	22.3

Weights in kg

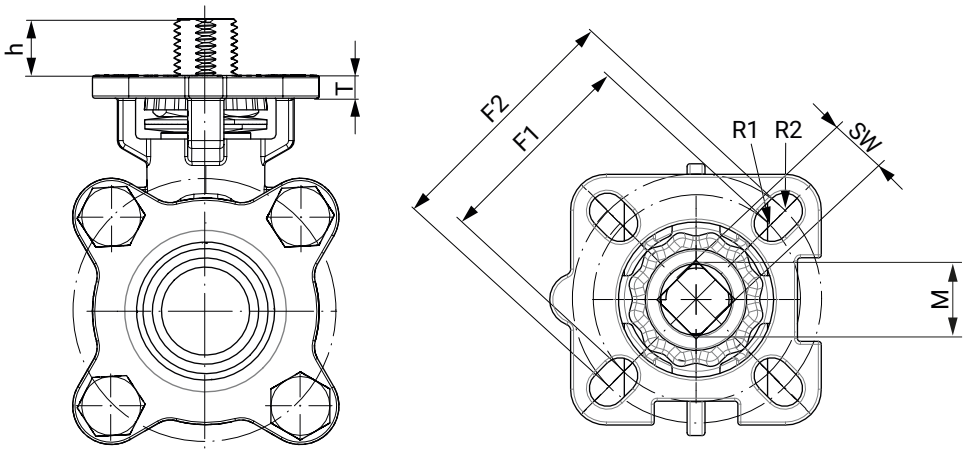
Hand lever

DN	Designation	Weight
DN 8 - 20	**AB22 20D**	0.122
DN 25 - 32	**AB22 32D**	0.165
DN 40 - 50	**AB22 50D**	0.398
DN 65	**AB22 65D**	0.78
DN 80 - 100	**AB22 80D**	0.78

Weights in kg

8 Dimensions

8.1 Actuator flange

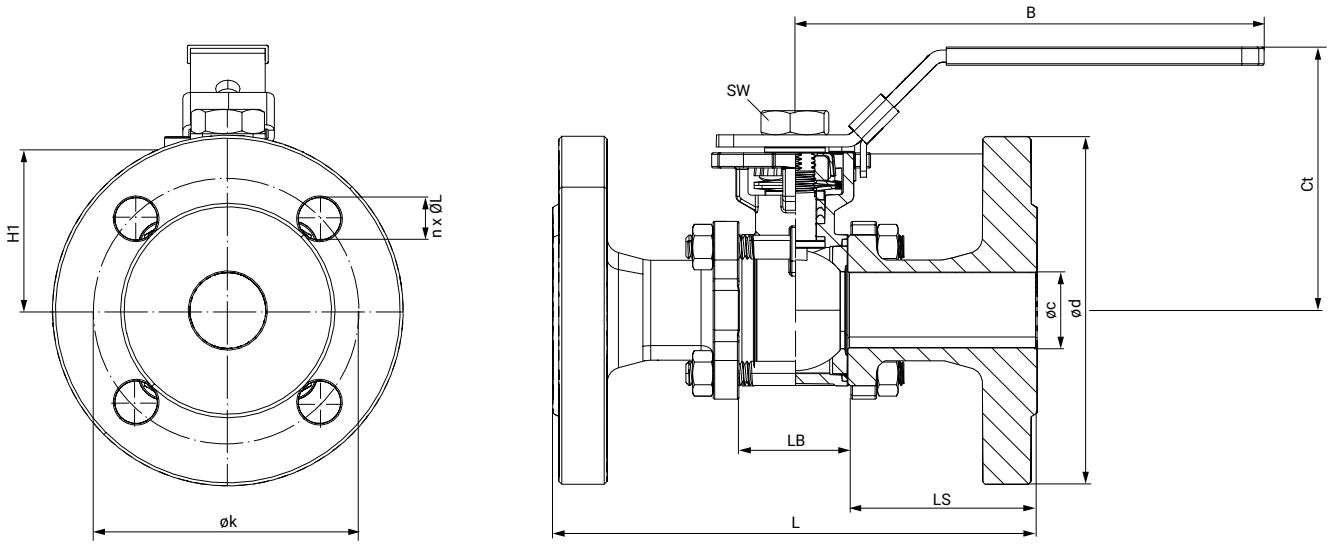


	G	F1	ISO 5211	R1	F2	ISO 5211	R2	SW	h	T	M
8	**1/4“**	36.0	F03	3.0	42.0	F04	3.0	9.0	9.5	5.5	M12
10	**3/8“**	36.0	F03	3.0	42.0	F04	3.0	9.0	9.5	5.5	M12
15	**1/2“**	36.0	F03	3.0	42.0	F04	3.0	9.0	9.5	5.5	M12
20	**3/4“**	36.0	F03	3.0	42.0	F04	3.0	9.0	7.5	5.5	M12
25	**1“**	42.0	F04	3.5	50.0	F05	3.5	11.0	13.0	7.0	M14
32	**1¼“**	42.0	F04	3.5	50.0	F05	3.5	11.0	13.0	6.5	M14
40	**1½“**	50.0	F05	4.5	70.0	F07	3.5	14.0	15.0	7.5	M18
50	**2“**	50.0	F05	4.5	70.0	F07	3.5	14.0	16.0	8.5	M18
65	**2½“**	50.0	F07	4.5	70.0	F10	3.5	17.0	18.0	8.5	M22
80	**3“**	70.0	F07	5.5	102.0	F10	4.5	17.0	18.0	10.5	M22
100	**4“**	102.0	F10	5.5	125.0	F12	4.5	17.0	18.0	10.5	M22

Dimensions in mm

8.2 Ball valve

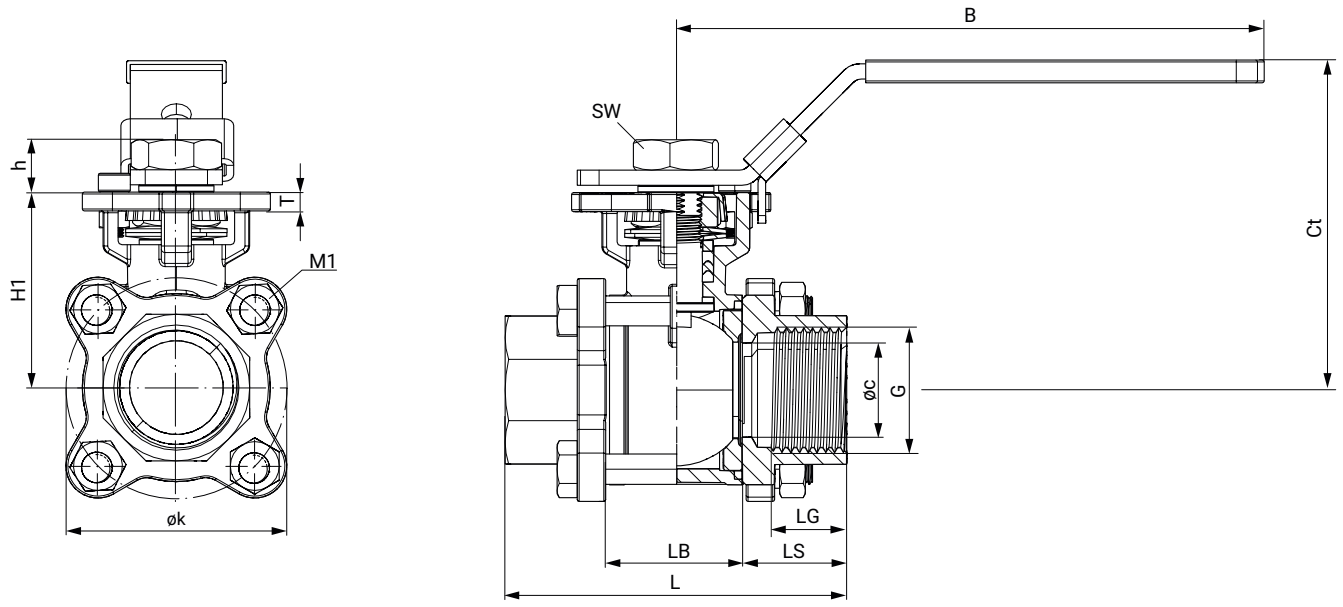
8.2.1 Flange (connection code 8, 11)



DN	Connection code	øc	ød	øk	h	L	LB	LS	H1	n x ØL
15	**11**	15.0	95.0	65.0	9.0	130.0	24.0	53.0	40.5	4 x 14.0
20	**11**	20.0	105.0	75.0	10.5	150.0	29.0	60.5	45.0	4 x 14.0
25	**11**	25.0	115.0	85.0	12.5	160.0	35.0	62.5	52.0	4 x 14.0
32	**11**	32.0	140.0	100.0	12.5	180.0	44.0	68.0	57.0	4 x 18.0
40	**11**	38.0	150.0	110.0	16.0	200.0	53.0	73.5	69.0	4 x 18.0
50	**11**	50.0	165.0	125.0	16.0	230.0	65.0	82.5	77.0	4 x 18.0
65	**11**	65.0	185.0	145.0	15.0	290.0	81.0	104.5	90.0	8 x 18.0
80	**8**	80.0	200.0	160.0	18.0	310.0	96.0	107.0	108.0	8 x 18.0
100	**8**	100.0	220.0/235.0	180.0	18.0	350.0	124.0	113.0	123.0	8 x 18.0

Dimensions in mm

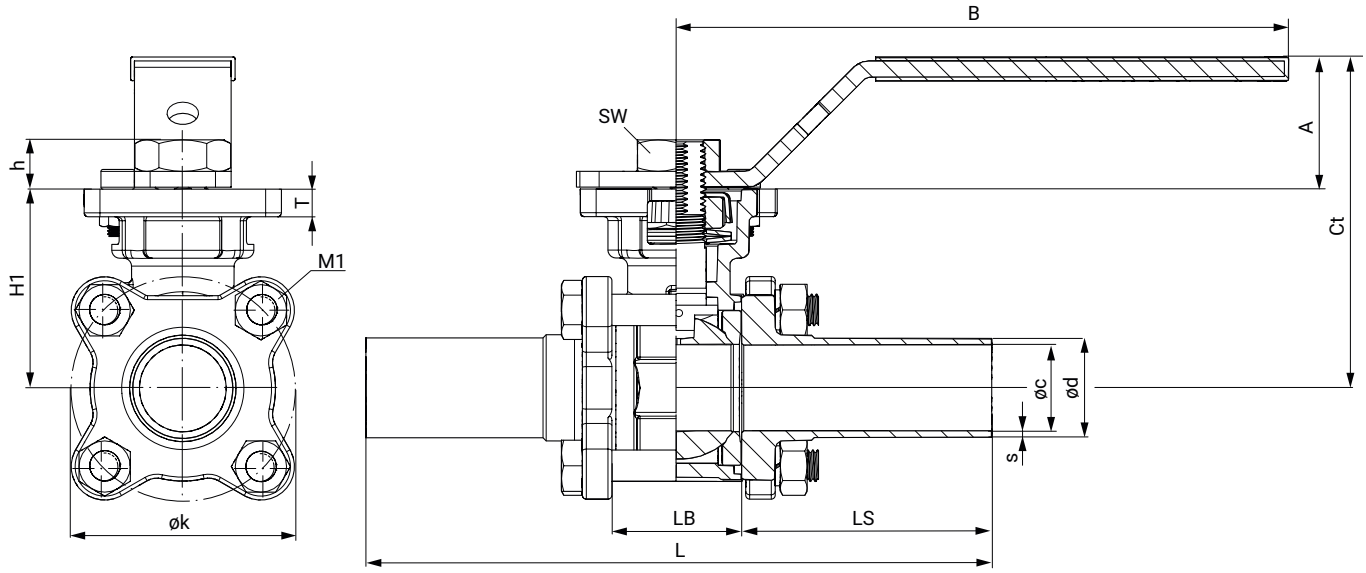
8.2.2 Threaded socket (connection code 1, 31)



DN	G	øc	øk	LG	L	LB	LS	H1	M1	SW	T	B	Ct
8	**1/4“**	10.0	46.0	12.0	55.0	24.0	25.5	40.5	M8	18.0	5.5	110.0	72.0
10	**3/8“**	12.0	46.0	12.0	60.0	24.0	25.5	40.5	M8	18.0	5.5	110.0	72.0
15	**1/2“**	15.0	46.0	16.0	75.0	24.0	25.5	40.5	M8	18.0	5.5	126.0	74.0
20	**3/4“**	20.0	51.0	16.0	80.0	29.0	25.5	45.0	M8	18.0	5.5	126.0	77.0
25	**1“**	25.0	61.0	17.0	90.0	35.0	27.5	52.0	M8	21.0	5.0	155.0	97.0
32	**1¼“**	32.0	73.0	20.0	110.0	44.0	33.0	57.0	M10	21.0	6.5	155.0	97.0
40	**1½“**	38.0	83.0	22.0	120.0	53.0	33.5	69.0	M10	27.0	7.5	192.0	108.0
50	**2“**	49.0	101.0	24.0	140.0	65.0	37.5	77.0	M12	27.0	8.5	192.0	117.0
65	**2½“**	64.0	130.0	28.0	185.0	81.0	52.0	90.0	M12	27.0	8.5	235.0	136.0
80	**3“**	76.0	155.0	32.0	205.0	96.0	54.5	108.0	M14	-	10.0	320.0	148.0
100	**4“**	100.0	187.0	40.0	240.0	124.0	58.0	123.0	M14	-	10.0	320.0	162.0

Dimensions in mm

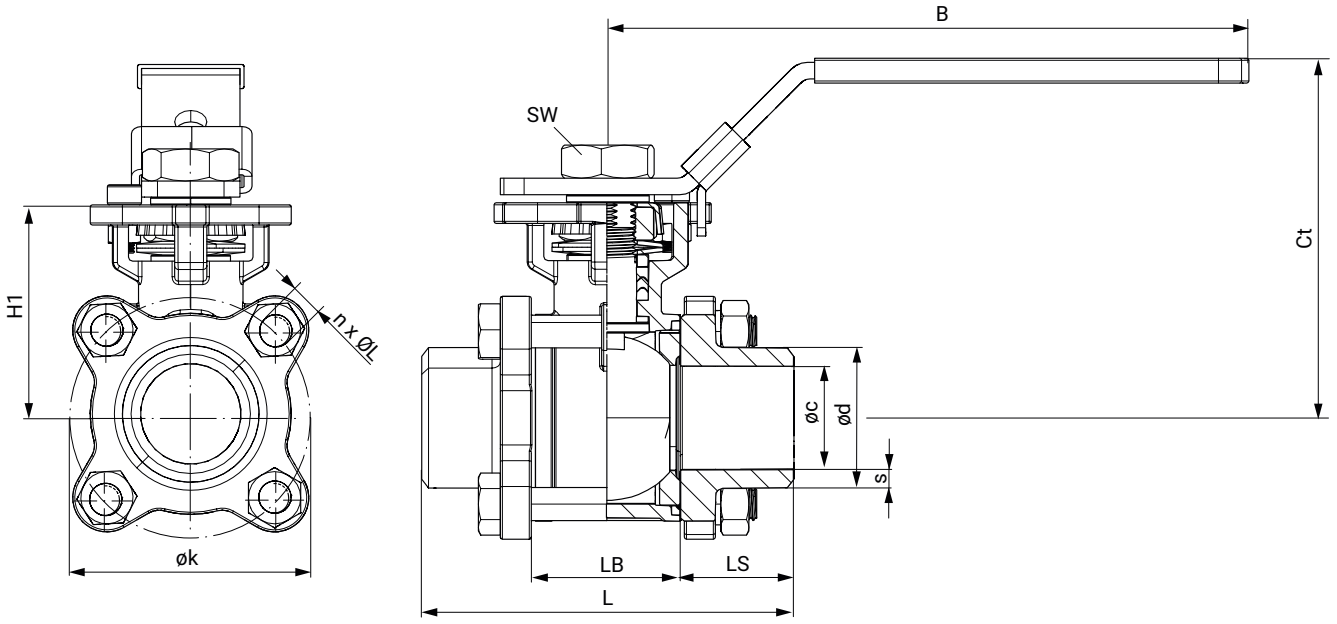
8.2.3 Spigot ASME (connection code 59)



DN	øc	ød	h	øk	L	LB	LS	H1	M1
15	9.4	12.7	8.5	46.0	140.0	25.0	57.5	40.5	M8
20	15.7	19.0	10.5	47.0	146.0	28.0	59.0	43.5	M8
25	22.1	25.4	12.0	56.0	159.0	32.0	63.5	50.5	M8
40	34.8	38.1	14.5	79.0	191.0	48.0	71.5	67.5	M10
50	47.5	50.8	14.5	98.5	216.0	62.0	77.0	75.5	M12
65	60.2	63.5	14.5	126.0	248.0	80.0	84.0	88.0	M12
80	72.9	76.2	17.5	146.0	267.0	90.0	88.5	105.0	M14
100	97.4	101.6	17.5	180.0	318.0	118.0	100.0	120.0	M14

Dimensions in mm

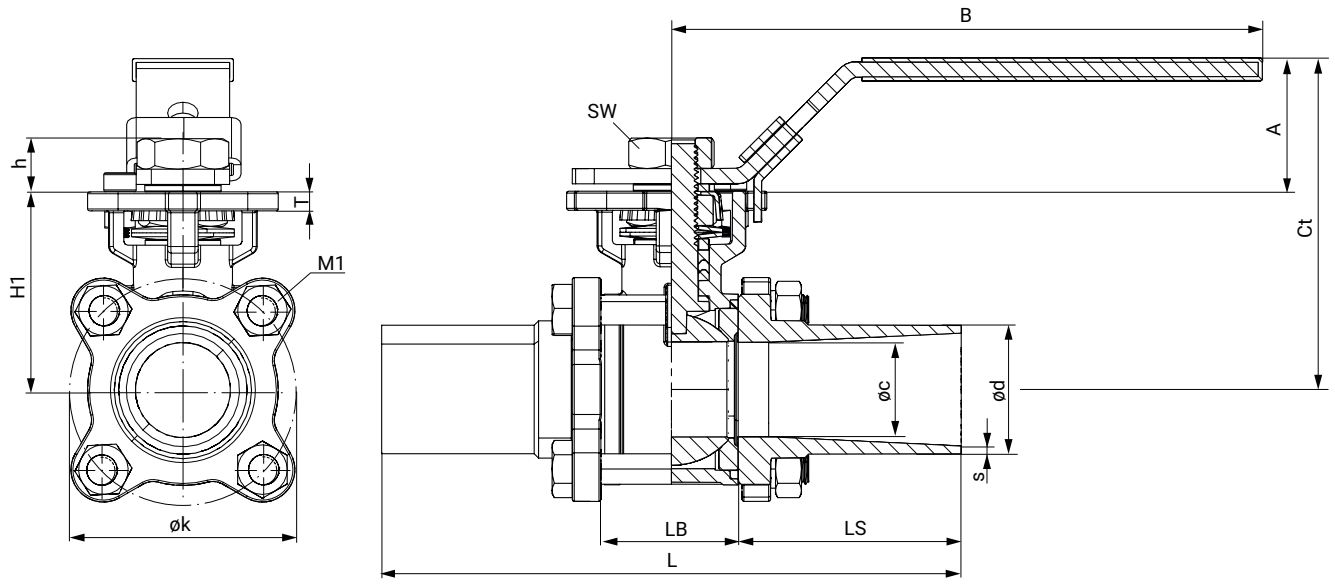
8.2.4 Spigot DIN EN 12627 (connection code 19)



DN	øc	ød	øk	L	LB	LS	H1	M1	Ct	B
8	11.6	16.2	46.0	60.0	24.0	18.0	40.5	M8	72.0	110.0
10	12.7	17.5	46.0	60.0	24.0	18.0	40.5	M8	71.4	125.0
15	15.0	21.7	46.0	75.0	24.0	25.5	40.5	M8	77.0	120.0
20	20.0	27.2	51.0	80.0	29.0	25.5	45.0	M8	81.0	120.0
25	25.0	34.0	61.0	90.0	35.0	27.5	52.0	M8	90.0	140.0
32	32.0	42.7	73.0	110.0	44.0	33.0	57.0	M10	94.5	140.0
40	38.0	58.8	83.0	120.0	53.0	33.5	69.0	M10	104.0	190.0
50	50.0	60.5	101.0	140.0	65.0	37.5	77.0	M12	112.0	190.0
65	65.0	76.3	130.0	185.3	81.0	52.2	90.0	M12	120.0	230.0
80	80.0	89.0	155.0	205.0	96.0	54.5	108.0	M14	132.0	260.0
100	100.0	116.0	187.0	240.0	124.0	58.0	123.0	M14	160.0	300.0

Dimensions in mm

8.2.5 Spigot ISO (connection code 60)



DN	øc	ød	h	øk	L	LB	LS	H1	Ct	B
8	10.3	13.5	9.0	46.0	120.0	24.0	48.0	40.5	72.0	110.0
10	12.0	17.2	9.0	46.0	120.0	24.0	48.0	40.5	71.4	125.0
15	15.0	21.3	9.0	46.0	140.2	24.0	58.0	40.5	77.0	120.0
20	20.0	26.9	10.5	51.0	140.0	29.0	55.5	45.0	81.0	120.0
25	25.0	33.7	12.5	59.0	152.2	35.0	58.5	52.0	90.0	140.0
32	32.0	42.4	12.5	73.0	165.1	44.0	60.5	57.0	94.5	140.0
40	38.0	48.3	16.0	83.0	190.4	53.0	68.5	69.0	104.0	190.0
50	49.0	60.3	16.0	103.0	203.0	65.0	69.0	77.0	112.0	190.0
65	64.0	76.1	15.0	130.0	254.0	81.0	86.5	90.0	120.0	230.0
80	76.0	88.9	18.0	155.0	280.2	96.0	92.0	108.0	132.0	260.0
100	100.0	114.3	18.0	187.0	317.0	124.0	96.5	123.0	160.0	300.0

Dimensions in mm

9 Manufacturer's information

9.1 Delivery

- Check that all parts are present and check for any damage immediately upon receipt.

The product's performance is tested at the factory. The scope of delivery is apparent from the dispatch documents and the design from the order number.

9.2 Packaging

The product is packaged in a cardboard box which can be recycled as paper.

9.3 Transport

1. Only transport the product by suitable means. Do not drop. Handle carefully.
2. After the installation dispose of transport packaging material according to relevant local or national disposal regulations / environmental protection laws.

9.4 Storage

1. Store the product free from dust and moisture in its original packaging.
2. Avoid UV rays and direct sunlight.
3. Do not exceed the maximum storage temperature (see chapter "Technical data").
4. Do not store solvents, chemicals, acids, fuels or similar fluids in the same room as GEMÜ products and their spare parts.
5. Store the ball valves in the "open" position.

10 Installation in piping

10.1 Preparing for installation

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death.
- Depressurize the plant.
- Completely drain the plant.

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns.
- Wear suitable protective gear.
- Completely drain the plant.

⚠ CAUTION

Hot plant components!

► Risk of burns.
- Only work on plant that has cooled down.

⚠ CAUTION

Exceeding the maximum permissible pressure.

► Damage to the product.
- Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ CAUTION

Use as step.

► Damage to the product.
► Risk of slipping-off.
- Choose the installation location so that the product cannot be used as a foothold.
- Do not use the product as a step or a foothold.

NOTICE

Suitability of the product!

► The product must be appropriate for the piping system operating conditions (medium, medium concentration, temperature and pressure) and the prevailing ambient conditions.

NOTICE

Tools

► The tools required for installation and assembly are not included in the scope of delivery.
- Use appropriate, functional and safe tools.

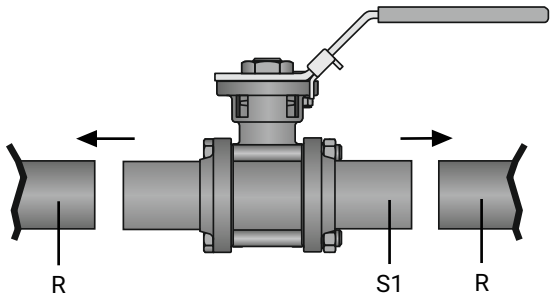
1. Ensure the product is suitable for the relevant application.
2. Check the technical data of the product and the materials.
3. Keep appropriate tools ready.
4. Wear appropriate protective gear, as specified in the plant operator's guidelines.
5. Observe appropriate regulations for connections.
6. Have installation work carried out by trained personnel.
7. Shut off plant or plant component.
8. Secure plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant (or plant component) and let it cool down until the temperature is below the media vaporization temperature and cannot cause scalding.
11. Decontaminate, rinse and ventilate the plant or plant component properly.
12. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
13. Only mount the product between matching aligned pipes (see following chapters).
14. Flow direction and installation position are optional.

10.2 Installation with butt weld spigots

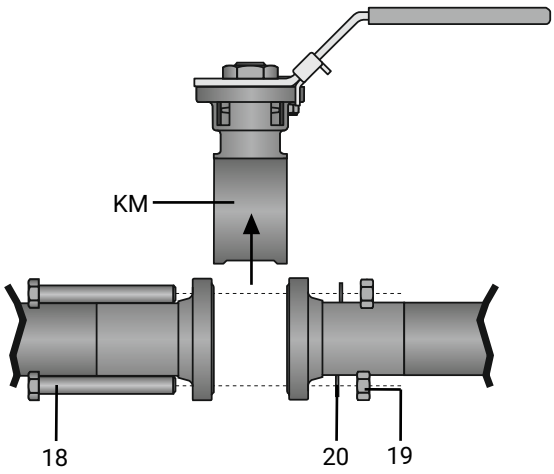
NOTICE

► Adhere to good welding practices!

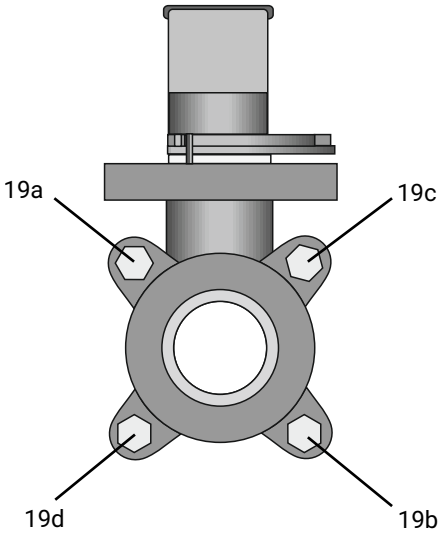
1. **Installation variant:**
   Undo one bolt, remove the other bolts and swivel the centre section aside instead of removing it.



2. Centre and fix butt weld spigots **S1** right and left on piping **R**.



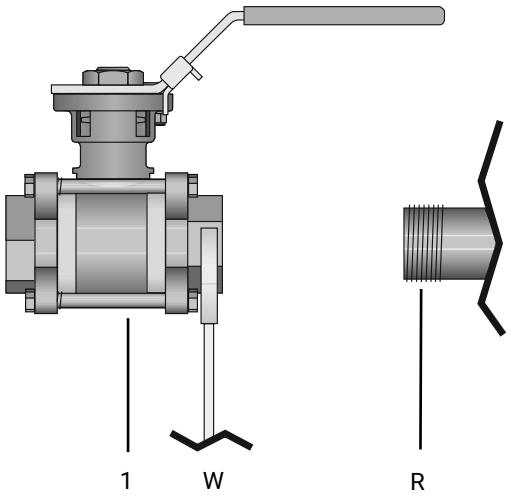
3. Fully unscrew the nuts **19**.
4. Remove the washers **20**.
5. Pull out the bolts **18**.
6. Remove the centre section **KM**.
7. Weld butt weld spigots **S1** right and left to the piping **R**.
8. Allow the butt weld spigots to cool down.
9. Reassemble the ball valve.



10. Tighten nuts **19a - 19d** diagonally, holding them with a wrench.

Nominal size	Torque
DN8	6 – 8
DN10	6 – 8
DN15	6 – 8
DN20	6 – 8
DN25	6 – 8
DN32	13 – 18
DN40	13 – 18
DN50	13 – 18
DN65	25 – 36
DN80	43 – 62
DN100	43 – 62

10.3 Installation with threaded connections

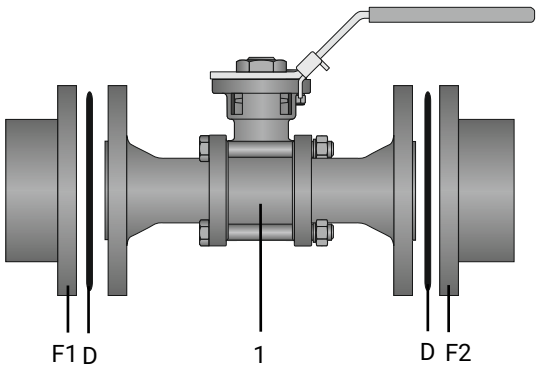


1. Screw ball valve body **1** onto piping **R** using an appropriate thread sealant. The thread sealant is not included in the scope of delivery.
2. Hold in place with open-end wrench **W**.
3. Connect the ball valve body **1** to piping on the other side in a like manner.

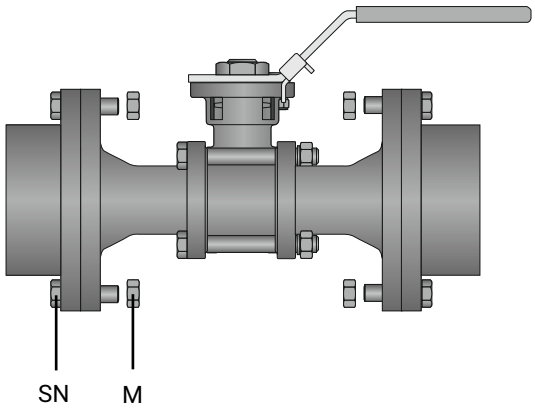
10.4 Installation with flanged connections

NOTICE

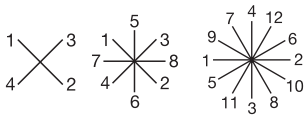
► Observe valid standards for mounting flanges!



1. Ensure sealing surfaces on the mating flanges are clean and undamaged.
2. Only use connector elements made of approved materials!
3. Install the ball valve in the state it is delivered.
4. Carefully align the ball valve body 1 centrally between the pipes with flanges (**F1** and **F2**).
5. Centre the seals **D** accurately. Seals are not included in the scope of delivery.
6. Connect the ball valve flange and the piping flange using appropriate sealing material and matching bolting. Sealing material and bolts are not included in the scope of delivery.



7. Insert bolts **SN** in all holes in the flange.
8. Slightly tighten the bolts **SN** and nuts **M** diagonally.



9. Check the alignment of the piping.
10. Tighten nuts **M** diagonally.

Comply with appropriate regulations for the connections!

10.5 After the installation

- Re-attach or reactivate all safety and protective devices.

11 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns.
● Wear suitable protective gear.
● Completely drain the plant.

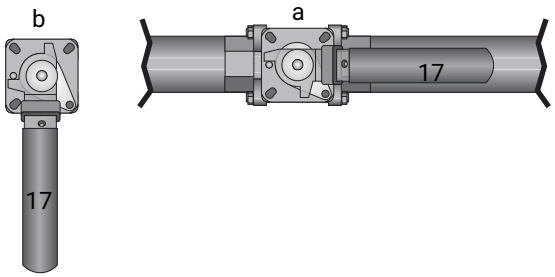
⚠ CAUTION

Leakage

► Emission of dangerous materials.
● Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

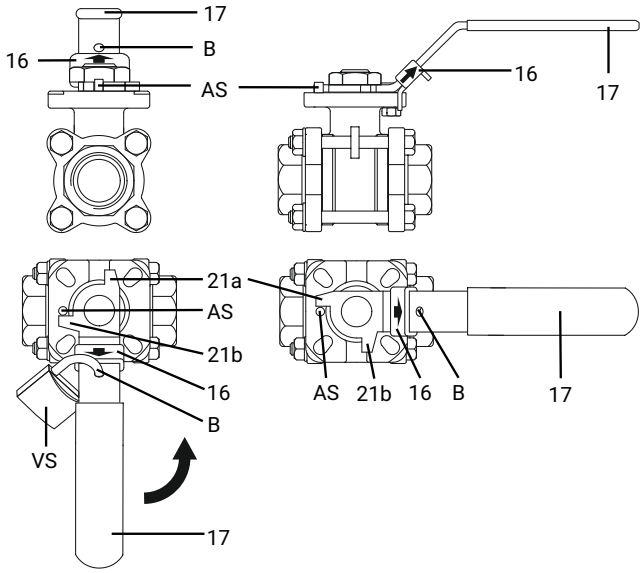
1. Check the tightness and the function of the product (close and reopen the product).
2. Flush the piping system of new plant and following repair work (the product must be fully open).
   ⇨ Harmful foreign matter has been removed.
   ⇨ The product is ready for use.
3. Commission the product.

12 Operation



17	Hand lever
a	Ball valve open
b	Ball valve closed

1. Move hand lever 17 to the desired position.



Ball valve fully open:
The hand lever **17** is located at the travel stop **21a** on the locking stop **AS**.

Ball valve fully closed:
The hand lever **17** is located at the travel stop **21b** on the locking stop **AS**.

NOTICE

► While the valve opening is continuously selectable, these intermediate positions are not lockable.

2. Pull up hand lever locking device **16** such that hand lever **17** can be turned.
3. When the desired end position is reached, push the hand lever locking device **16** downwards and let it engage (only possible if the ball valve is fully open or fully closed). Travel stops **21a** and **21b** are both located at locking stop **AS**.
4. If the ball valve is fully open or fully closed with the hand lever locked in place **17**, the position can be secured on the hand lever **17** using an appropriate lock (e.g. padlock VS) in the bolt hole **B** above the hand lever locking device **16**.

13 Troubleshooting

Error	Possible cause	Troubleshooting
The product doesn't open or doesn't open fully	Hand lever locking device engaged	Disengage hand lever locking device
	Foreign matter in the product	Remove and clean the product
The product doesn't close or doesn't close fully	Hand lever locking device engaged	Disengage hand lever locking device
	Foreign matter in the product	Remove and clean the product
The product leaks between hand lever and valve body	Faulty product	Check the product for potential damage, replace the product if necessary
	Seals faulty	Replace seals
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Flange bolting loose/thread leaking	Retighten flange bolting / reseal threads
	Flange seals faulty	Replace flange seals
Valve body leaks	Valve body leaks or is corroded	Check valve body for damage, replace valve body if necessary

14 Inspection/maintenance

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death.
- Depressurize the plant.
- Completely drain the plant.

⚠ CAUTION

Hot plant components!

► Risk of burns.
- Only work on plant that has cooled down.

⚠ CAUTION

- Servicing and maintenance work must only be performed by trained personnel.
- Do not extend hand lever. GEMÜ shall assume no liability whatsoever for damages caused by improper handling or third-party actions.
- In case of doubt, contact GEMÜ prior to commissioning.

1. Use appropriate protective gear as specified in plant operator's guidelines.
2. Shut off plant or plant component.
3. Secure against recommissioning.
4. Depressurize the plant or plant component.

Ball valves are maintenance-free. No lubrication or routine maintenance of the ball valve shaft is required. The shaft is guided through a PTFE gland packing in the ball valve body. The shaft seal is pretensioned and self-adjusting. However, the operator must carry out regular visual examinations of the ball valves, dependent on the operating conditions and the potential danger in order to prevent leakage and damage.

If there is a leakage at the spindle nut, this can generally be rectified by retightening the spindle nut. However, overtightening the spindle nut must be avoided.

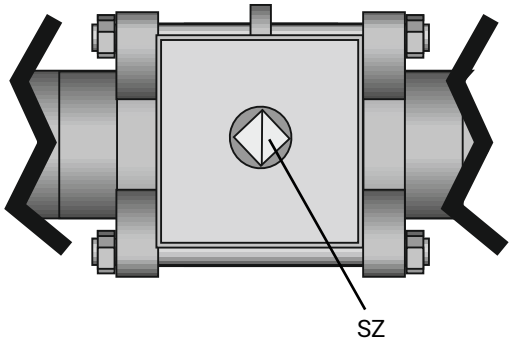
Usually, retightening by between 30° and 60° will be sufficient to rectify the leakage.

14.1 General information regarding hand lever replacement

NOTICE

The following is required for hand lever replacement:

- Allen key



1. Check the position of the ball indicated by the groove **SZ** and compare with position indicator, rotate ball valve to correct position if necessary.

⇨ Groove transverse to piping direction:
Ball valve closed.

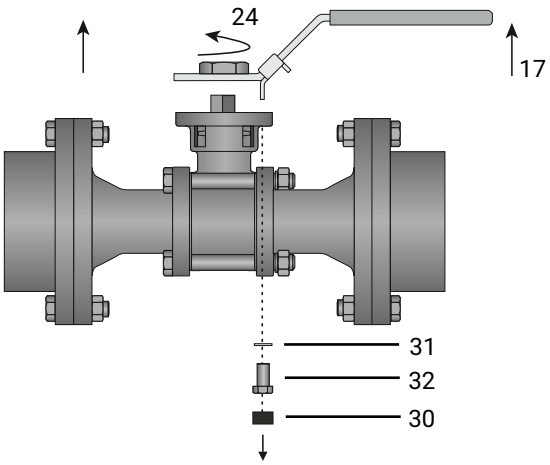
⇨ Groove in piping direction:
Ball valve open.

NOTICE

► For flanged bodies, the hand lever is fitted offset by 90°.

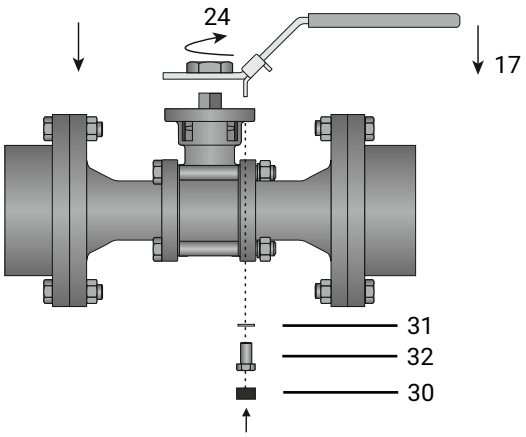
14.1.1 Replacing the hand lever

14.1.1.1 Removing the hand lever



1. Remove the protective caps **30**.
2. Unscrew the hexagon screws **32**.
3. Do not lose the washers **31**.
4. Unscrew the nut **24**.
5. The hand lever **17** can be removed from the ball valve body.

14.1.1.2 Assembling the hand lever



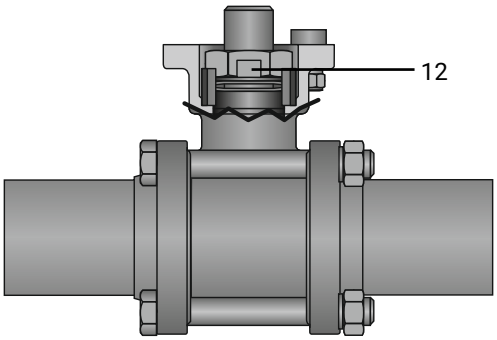
1. Push the new hand lever **17** onto the ball valve body.
2. Turn the hand lever until the screws **32** and nuts **24** can be inserted.
3. Tighten the hand lever with the nut **24**.
4. Tighten the hexagon screws **32** with their washers **31** until hand tight.
5. Diagonally tighten the hexagon screws **32** evenly until they are hand tight.
6. Put the protective caps **30** back on.

14.1.2 Replacing the seals

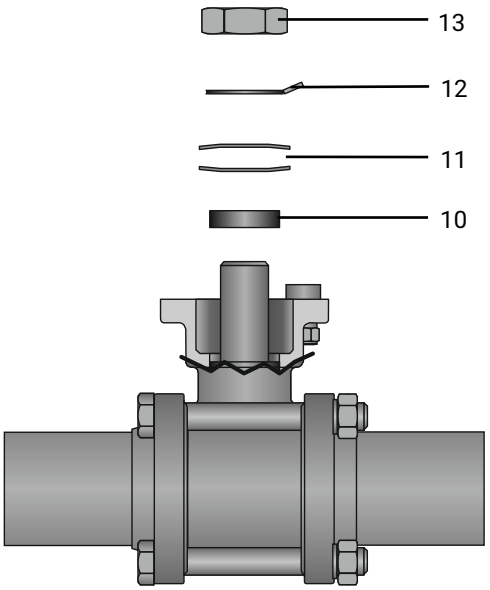
NOTICE

- Only use genuine GEMÜ spare parts.
- When ordering spare parts, specify the complete order number of the ball valve.

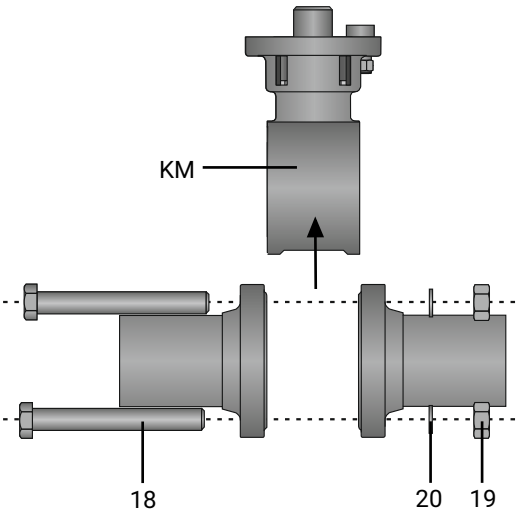
1. Remove the hand lever (see chapter "Removing the hand lever").



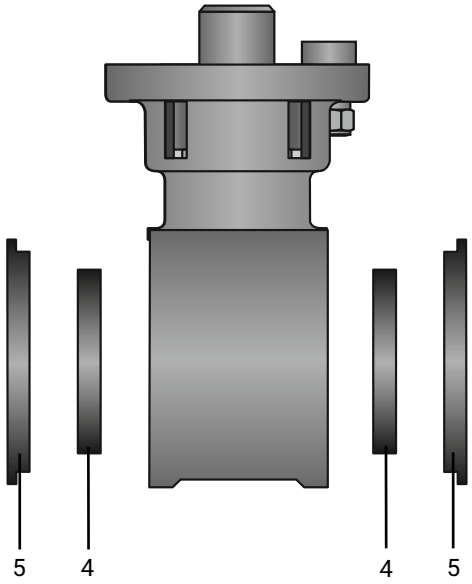
2. Bend the tab **12** of the screw locking device downwards.



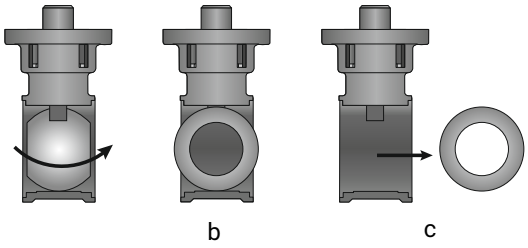
3. Loosen spindle nut **13** and remove.
4. Remove screw locking device **12**.
5. Remove spring washers **11**.
6. Remove stainless steel sleeve **10**.



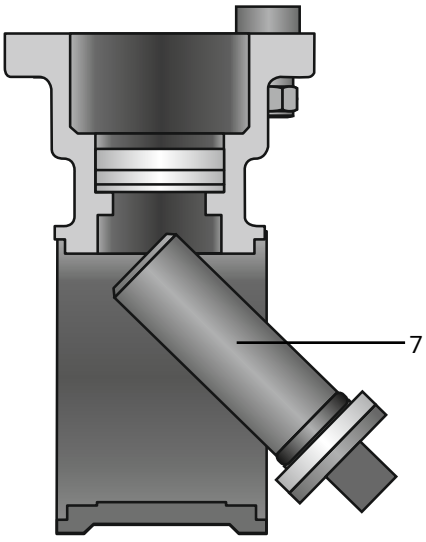
7. Loosen the nuts **19** of the flange bolts **18** of the ball valve and remove with washers **20**.
8. Remove flange bolts **18**.
9. Remove centre section **KM**.



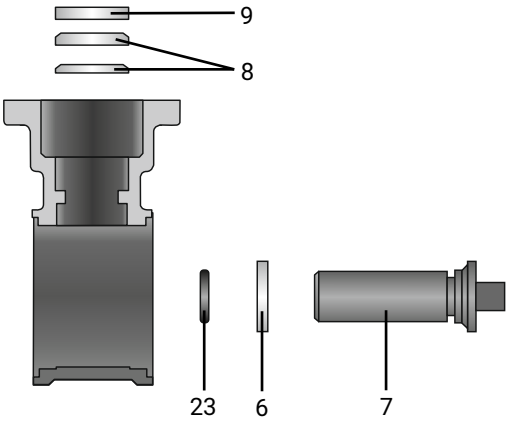
10. Remove sealing washers **5** and seat seal **4** on both sides of the ball valve.



11. Move the ball to the closed position **b**.
12. Remove ball **c**.



13. Carefully press spindle **7** into housing and remove.



14. Remove seals **9** and **8** upwards from the ball valve.

NOTICE

► Seal 8:
DN 8–50: 2 pieces
DN 65–100: 3 pieces

15. Remove O-ring **23** from spindle **7**.

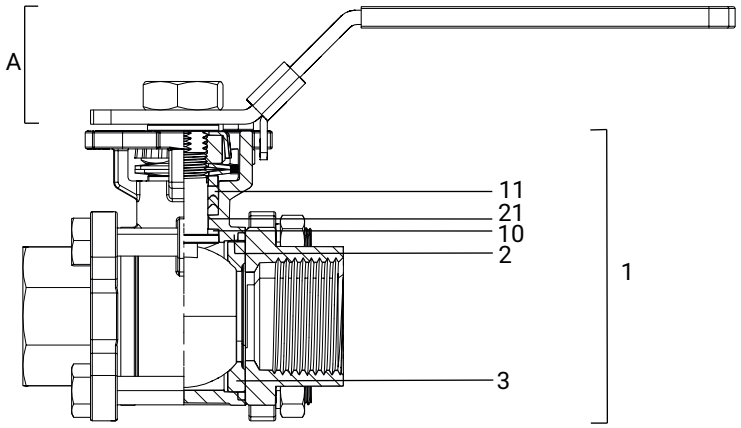
NOTICE

► O-ring **23** is not available for connection type spigots ASME BPE code 59.

16. Remove seal **6** from spindle **7**.
17. Mount the seals and the ball valve in reverse order.

14.2 Spare parts

14.2.1 Spare parts for connection types 1, 8, 11, 19, 31, 60



Item	Name	Order description
1	Ball valve body assembly complete	BB02
2	Housing seal	BB02 DN...SDS D60 5
3	Seat and flange seal	
10	Conical spindle seal	
11	V-ring spindle packing	
21	O-ring	
A	Hand lever complete	AB22 DN...

14.2.2 Spare parts for connection type 59

Item	Name	Order description
1	Ball valve body assembly complete	BB02
2	Housing seal	BB02 DN...SDS D59 5
3	Seat and flange seal	
10	Conical spindle seal	
11	V-ring spindle packing	
21	O-ring	
A	Hand lever complete	AB22 DN...

15 Removal from piping

1. Remove the clamp or screw connections in reverse order to installation.
2. Remove welded or solvent cemented connections using a suitable cutting tool.
3. Observe the safety information and accident prevention regulations.

16 Disposal

1. Pay attention to adhered residual material and gas diffusion from penetrated media.
2. Dispose of all parts in accordance with the disposal regulations/environmental protection laws.

17 Returns

Legal regulations for the protection of the environment and personnel require that the completed and signed return delivery note is included with the dispatch documents. Returned goods can be processed only when this note is completed. If no return delivery note is included with the product, GEMÜ cannot process credits or repair work but will dispose of the goods at the operator's expense.

1. Clean the product.
2. Request a return delivery note from GEMÜ.
3. Complete the return delivery note.
4. Send the product with a completed return delivery note to GEMÜ.

18 Declaration of conformity according to 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

in accordance with 2014/68/EU (Pressure Equipment Directive)

We, GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

declare that the product listed below complies with the safety requirements of the Pressure Equipment Directive 2014/68/EU.

Description of the pressure equipment:	GEMU B22
Notified body:	TÜV Rheinland Industrie Service GmbH
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Conformity assessment procedure:	Module H
Technical standard used:	EN 1983, AD 2000

Note for products with a nominal size ≤ DN 25:
The products are developed and produced according to GEMÜ process instructions and quality standards which comply with the requirements of ISO 9001 and ISO 14001.
According to Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU these products must not be identified by a CE-label.

2020-10-22

Joachim Brien
Head of Technical Department

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Subject to alteration

11.2020 | 88711575