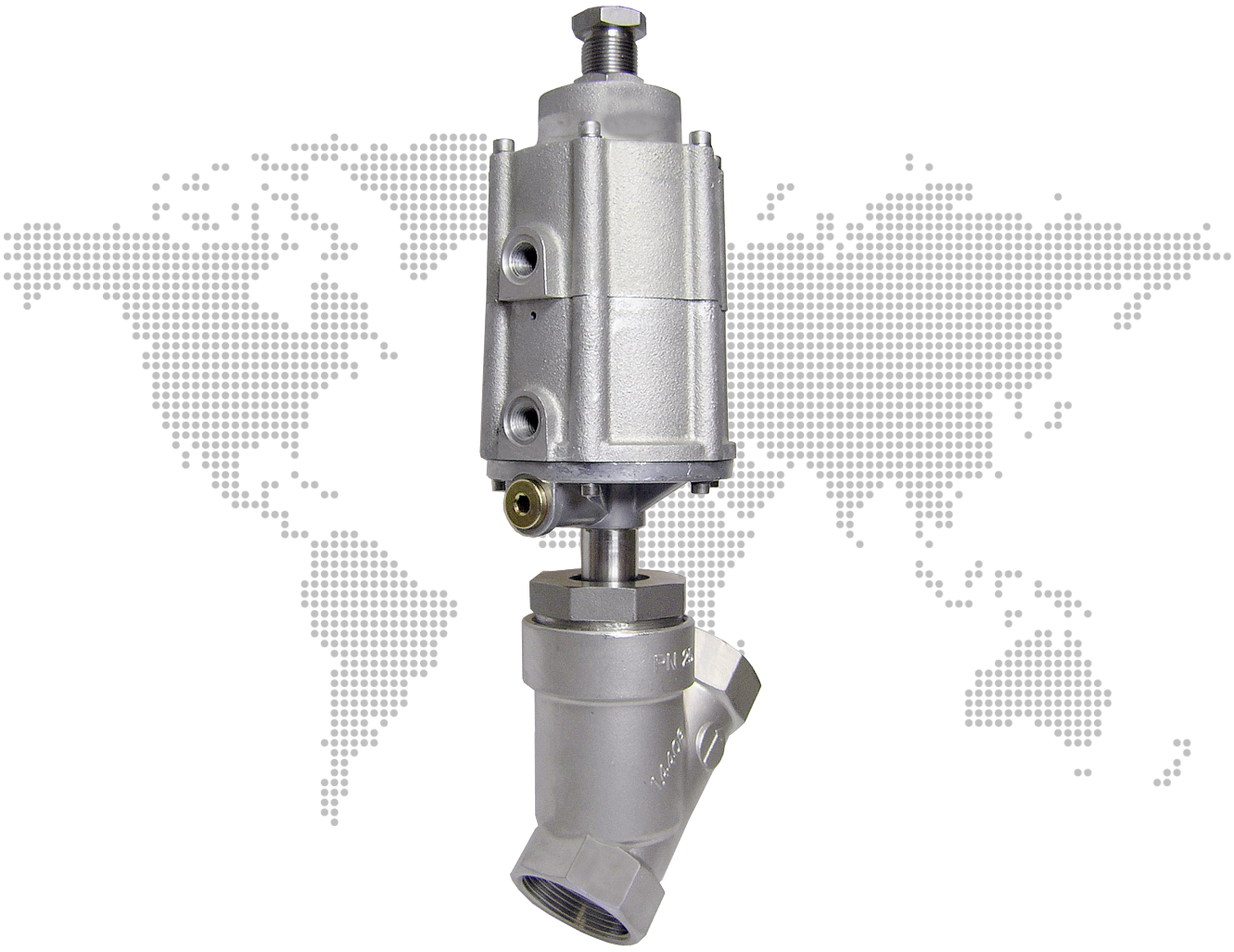
GEMÜ 514Z

Pneumatically operated globe valve with two-stage actuator

EN **Operating instructions**



further information
webcode: GW-514Z

Contents

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.

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!
	Leakage
	The actuator cover is under spring pressure!
	Incorrect combination of actuator and valve body!

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:

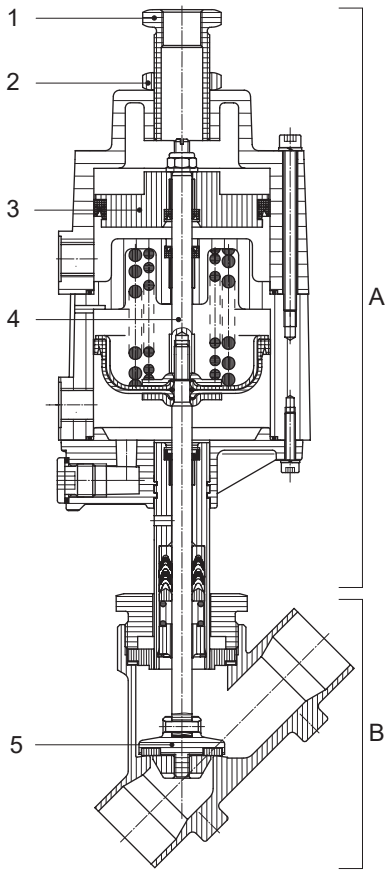
9. Keep this document available at the place of use.
10. Observe the safety information.
11. Operate the product in accordance with this document.
12. Operate the product in accordance with the specifications.
13. Maintain the product correctly.
14. Do not carry out any maintenance work and repairs not 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

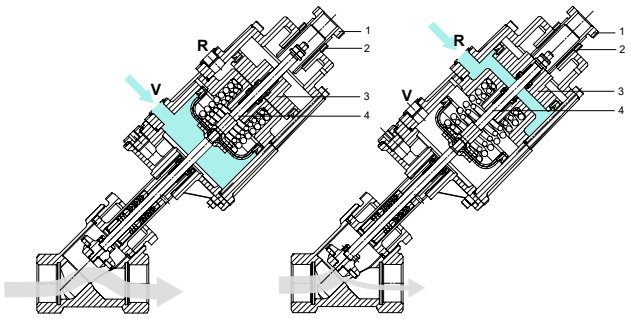


Item	Name	Materials
A	Actuator	-
B	Valve body	Cast bronze; 1.4435 investment casting; 1.4408 investment casting
1	Stroke limiter	1.4305
2	Lock nut	1.4305
3	Piston	Aluminium
4	Spindle	1.4305
5	Seat seal	PTFE

3.2 Description

The GEMÜ 514Z 2/2-way angle seat globe valve has a low maintenance aluminium two-stage double piston actuator and is pneumatically operated. The valve spindle is sealed by a self-adjusting gland packing providing low maintenance and reliable valve spindle sealing even after a long service life. A wiper ring fitted in front of the gland packing protects the seal against contamination and damage.

3.3 Functional description



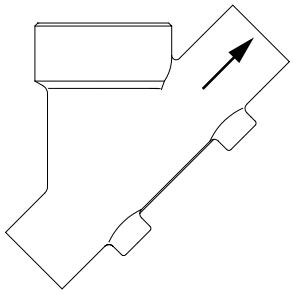
When control pressure (connection V) is applied, the lower actuator piston strokes 100%. The stroke of the upper part of the actuator (connection R), however, can be steplessly limited from 0% to 100% by means of the stroke limiter (item 1) and secured by the lock nut (item 2).

When a stroke limiter is used, the piston (item 3) moves against the stroke limiter (item 1) and flow restriction is possible (connection R).

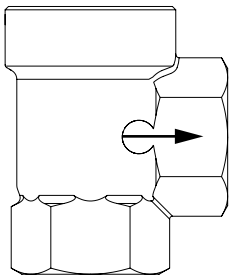
If the lower part of the actuator (connection V) is under control pressure, the valve fully opens, pushing the spindle (item 4) upwards through the upper piston.

3.4 Flow direction

The flow direction is indicated by an arrow on the valve body.



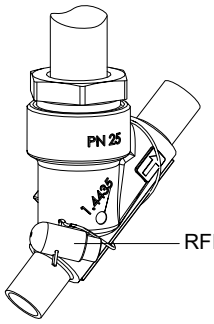
2/2-way body
under the seat



Angle valve body
under the seat

4 GEMÜ CONEXO

In the corresponding design with CONEXO, this product has an RFID transponder for electronic recognition. The position of the RFID transponder can be seen below. The CONEXO pen helps read out information stored in the RFID transponders. The CONEXO app or CONEXO portal is required to view this information.



5 Correct use

⚠ DANGER

Danger of explosion

- ► Risk of severe injury or death.
- ● Do not use the product in potentially explosive zones.
- ● Only use the product in potentially explosive zones confirmed in the declaration of conformity.

⚠ 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 this document.

The product is designed for installation in piping systems and for controlling a working medium.

1. Use the product in accordance with the technical data.
2. Note the supplement acc. to ATEX
3. Please note the flow direction on the valve body.

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
Angle seat globe valve, pneumatically operated, aluminium piston actuator	514

2 DN	Code
DN 15	15
DN 20	20
DN 25	25
DN 32	32
DN 40	40
DN 50	50
DN 65	65
DN 80	80

3 Body configuration	Code
2/2-way body	D
Angle valve body	E

4 Connection type	Code
Spigot	
Spigot DIN	0
Spigot EN 10357 series B, formerly DIN 11850 series 1	16
Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A	17
Spigot DIN 11850 series 3	18
Spigot SMS 3008	37
Spigot ASME BPE	59
Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B	60
Threaded connection	
Threaded socket DIN ISO 228	1
Threaded socket BS 21 Rc, end-to-end dimension ETE DIN 3202-4 series M8	3C
Threaded socket NPT, end-to-end dimension ETE DIN 3202-4 series M8	3D
Threaded spigot DIN ISO 228	9
Flange	
Flange EN 1092, PN 25, form B	13
Flange ANSI Class 150 RF	47

5 Valve body material	Code
1.4435, investment casting	34
1.4408, investment casting	37
1.4435, investment casting	C2
CC499K, cast bronze	9

6 Seat seal	Code
PTFE	5
PTFE, glass fibre reinforced	5G
1.4404	10

7 Control function	Code
Normally closed (NC)	1

8 Actuator version	Code
Two-stage actuator, actuator size 1	1Z
Two-stage actuator, actuator size 2	2Z

9 Type of design	Code
Ra ≤ 0.6 µm (25 µinch) for media wetted surfaces, in accordance with ASME BPE SF2 + SF3 mechanically polished internal	1903
Ra ≤ 0.8 µm (30 µinch) for media wetted surfaces, in accordance with DIN 11866 H3, mechanically polished internal	1904
Ra ≤ 0.4 µm (15 µinch) for media wetted surfaces, in accordance with DIN 11866 H4, ASME BPE SF1 mechanically polished internal	1909
For higher operating temperatures	2023
Spindle seal FPM-PTFE, actuator components suitable for high ambient temperatures	2017
Spindle seal PTFE-PTFE	2013
Without	

10 Special version	Code
Rigid plug fixing, special version for oxygen, maximum medium temperature: 60 °C, media wetted seal materials and auxiliary materials with BAM testing	B
Rigid plug fixing	C
Special version with bellows	F
Without	

11 CONEXO	Code
Without	
Integrated RFID chip for electronic identification and traceability	C

Order example

Order option	Code	Description
1 Type	514	Angle seat globe valve, pneumatically operated, aluminium piston actuator
2 DN	25	DN 25
3 Body configuration	D	2/2-way body
4 Connection type	1	Threaded socket DIN ISO 228
5 Valve body material	9	CC499K, cast bronze
6 Seat seal	5	PTFE
7 Control function	1	Normally closed (NC)
8 Actuator version	1Z	Two-stage actuator, actuator size 1
9 Type of design		Without
10 Special version		Without
11 CONEXO		Without

7 Technical data

7.1 Medium

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

Control medium: Inert gases

Max. permissible viscosity: 600 mm²/s (cSt)
Other versions for lower/higher temperatures and higher viscosities on request.

7.2 Temperature

Media temperature:

Standard:	-10 to 180 °C
Special version:	-20* to 210 °C only with ordering option Seat seal code 5G or 10 and Design 2023 * dependent on body material

Control medium temperature: max. 60°C

Ambient temperature:

Standard:	0 to 60 °C
Special version:	0 to 130 °C only with ordering option Type of design 2017

Storage temperature: 0 to 40 °C

7.3 Pressure

Operating pressure:

DN	Actuator version 1Z piston ø 70 mm	Actuator version 2Z piston ø 120 mm
15	25.0	-
20	20.0	25.0
25	10.0	25.0
32	7.0	16.0
40	4.5	15.0
50	-	10.0
65	-	7.0
80	-	5.0

Pressures in bar

Pressure rating: PN 25

Pressure/temperature correlation:

Connection types code [1]	Material code [2]	Max. allowable operating pressures in bar at temperature in °C					
		RT	100	150	200	250	300
1, 3C, 3D, 9 (bis DN 50)	**9**	16.0	16.0	16.0	13.5	-	-
1, 9 (ab DN 65)	**9**	10.0	10.0	10.0	8.5	-	-
1, 9, 17, 37, 60, 63, 3C, 3D	**37**	25.0	23.8	21.4	18.9	17.5	16.1
0, 16, 17, 18, 37, 59, 60, 65	**34**	25.0	24.5	22.4	20.3	18.2	16.1
13 (DN 15 - DN 50)	**34**	25.0	23.6	21.5	19.8	18.6	17.2
47 (DN 15 - DN 50)	**34**	15.9	13.3	12.0	11.1	10.2	9.7
17, 59, 60	**C2**	25.0	21.2	19.3	17.9	16.8	15.9

The valves may be used to -10 °C
RT = room temperature
All pressures are gauge pressures.

1) **Connection type**
Code 0: Spigot DIN
Code 1: Threaded socket DIN ISO 228
Code 3C: Threaded socket BS 21 Rc,end-to-end dimension ETE DIN 3202-4 series M8
Code 3D: Threaded socket NPT,end-to-end dimension ETE DIN 3202-4 series M8
Code 9: Threaded spigot DIN ISO 228
Code 13: Flange EN 1092, PN 25, form B
Code 16: Spigot EN 10357 series B,formerly DIN 11850 series 1
Code 17: Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Code 18: Spigot DIN 11850 series 3
Code 37: Spigot SMS 3008
Code 47: Flange ANSI Class 150 RF
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B

2) **Valve body material**
Code 34: 1.4435, investment casting
Code 37: 1.4408, investment casting
Code 40: 1.4435 (F316L), forged body
Code C2: 1.4435, investment casting

Control pressure:

DN	Actuator version 1Z	Actuator version 2Z
	piston ø 70 mm	piston ø 120 mm
15	5.5 - 10.0	-
20	5.5 - 10.0	4.5 - 8.0
25	5.5 - 10.0	4.5 - 8.0
32	5.5 - 10.0	4.5 - 8.0
40	5.5 - 10.0	4.5 - 8.0
50	-	5.5 - 8.0
65	-	5.5 - 8.0
80	-	5.5 - 8.0

Pressures in bar

Kv values:

DN	Kv values
15	5.4
20	10.0
25	15.2
32	23.0
40	41.0
50	71.0
65	108.0
80	160.0

Kv values in m³/h

Filling volume:

Actuator version	Piston	Filling volume
1Z	Top	0.07 dm³
	Bottom	0.10 dm³
2Z	Top	0.51 dm³
	Bottom	0.60 dm³

Leakage rate:

Seat seal	Standard	Test procedure	Leakage rate	Test medium
Metal	DIN EN 12266-1	P12	F	Air
PTFE	DIN EN 12266-1	P12	A	Air

Piston diameter:

Actuator version	Piston diameter
1Z	70 mm
2Z	120 mm

7.4 Product compliance

Pressure Equipment Directive: 2014/68/EU

Machinery Directive: 2006/42/EU

Foodstuffs: FDA*

1935*

* For contact with food, the following ordering options must be selected:
- Valve body material code 34, 37, C2
- Design code 2013

7.5 Mechanical data

Weight:

Actuator

DN	Actuator version 1Z	Actuator version 2Z
15	2.4	-
20	2.6	4.7
25	2.8	5.0
32	3.4	5.6
40	3.7	6.5
50	4.4	7.4
65	-	9.5
80	-	10.6

Weights in kg

Valve body

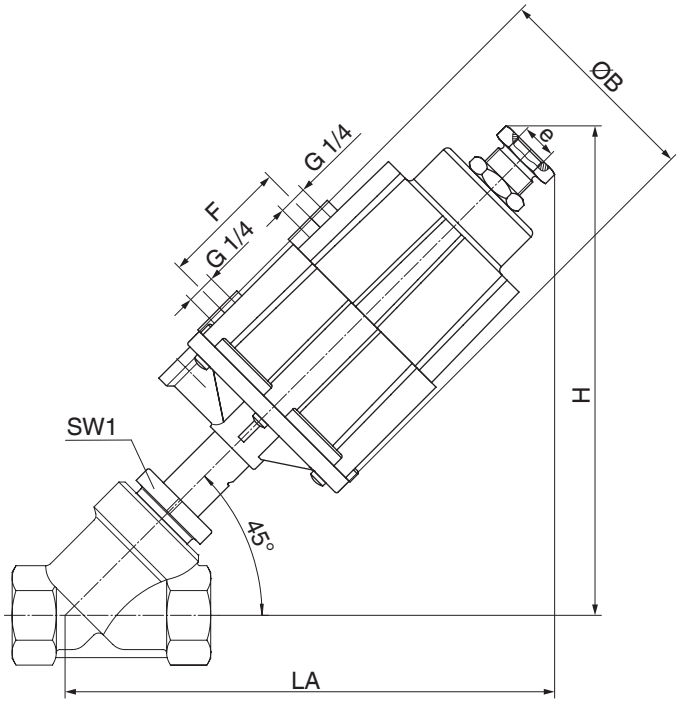
DN	Spigot	Threaded socket	Threaded spigot	Flange
	Connection types code [1)]			
	0, 16, 17, 18, 37, 59, 60	1, 3C, 3D	9	13, 47
15	0.24	0.35	0.31	1.8
20	0.50	0.35	0.50	2.5
25	0.50	0.35	0.65	3.1
32	0.90	0.75	1.00	4.6
40	1.10	0.98	1.30	5.1
50	1.80	1.70	1.80	7.2
65	3.40	3.20	3.40	-
80	4.20	4.10	4.40	-

Weights in kg

1) **Connection type**
Code 0: Spigot DIN
Code 1: Threaded socket DIN ISO 228
Code 3C: Threaded socket BS 21 Rc,end-to-end dimension ETE DIN 3202-4 series M8
Code 3D: Threaded socket NPT,end-to-end dimension ETE DIN 3202-4 series M8
Code 9: Threaded spigot DIN ISO 228
Code 13: Flange EN 1092, PN 25, form B
Code 16: Spigot EN 10357 series B,formerly DIN 11850 series 1
Code 17: Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Code 18: Spigot DIN 11850 series 3
Code 37: Spigot SMS 3008
Code 47: Flange ANSI Class 150 RF
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B

8 Dimensions

8.1 Actuator



8.1.1 Actuator version 1Z

DN	SW 1	H/LA	ø B	e	F
15	36	222	100	M 16 x 1	58
20	41	232	100		
25	46	232	100		
32	55	240	100		
40	40	245	100		
50	75	253	100		

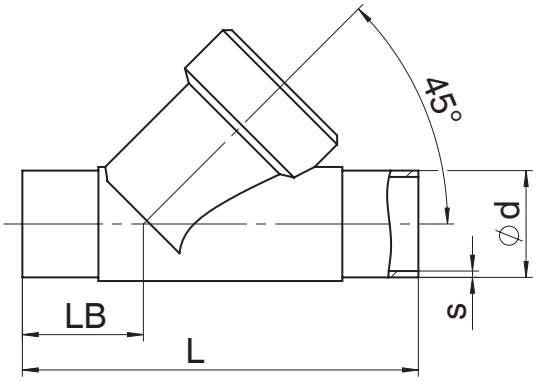
Dimensions in mm

8.1.2 Actuator version 2Z

DN	SW 1	H/LA	ø B	e	F
20	41	332	168	M 22 x 1,5	121
25	46	332			
32	55	340			
40	60	345			
50	75	353			

8.2 Body dimensions

8.2.1 Butt weld spigot, connection types code 0, 16, 17, 18, 37, 59, 60



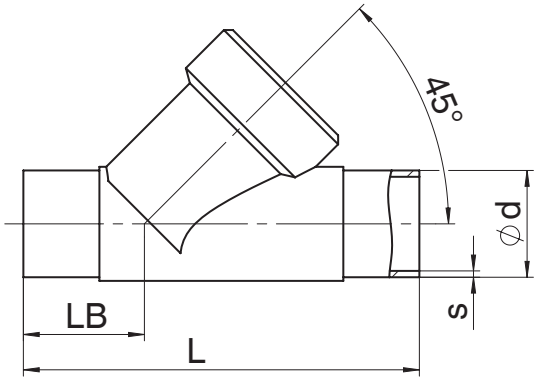
	Connection types code [1]															
			0		16		17		18		37		59		60	
	Material code 34 [2]															
DN	L	LB	ø d	s	ø d	s	ø d	s	ø d	s	ø d	s	ø d	s	ø d	s
15	105.0	35.5	18.0	1.5	18.0	1.0	19.0	1.5	20.0	2.0	-	-	12.70	1.65	21.3	1.6
20	120.0	39.0	22.0	1.5	22.0	1.0	23.0	1.5	24.0	2.0	-	-	19.05	1.65	26.9	1.6
25	125.0	38.5	28.0	1.5	28.0	1.0	29.0	1.5	30.0	2.0	25.0	1.2	25.40	1.65	33.7	2.0
32	155.0	48.0	-	-	34.0	1.0	35.0	1.5	36.0	2.0	-	-	-	-	42.4	2.0
40	160.0	47.0	40.0	1.5	40.0	1.0	41.0	1.5	42.0	2.0	38.0	1.2	38.10	1.65	48.3	2.0
50	180.0	48.0	52.0	1.5	52.0	1.0	53.0	1.5	54.0	2.0	51.0	1.2	50.80	1.65	60.3	2.0

Dimensions in mm

1) **Connection type**
Code 0: Spigot DIN
Code 16: Spigot EN 10357 series B,formerly DIN 11850 series 1
Code 17: Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Code 18: Spigot DIN 11850 series 3
Code 37: Spigot SMS 3008
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B

2) **Valve body material**
Code 34: 1.4435, investment casting

8.2.2 Butt weld spigot, connection types code 17, 37, 59, 60



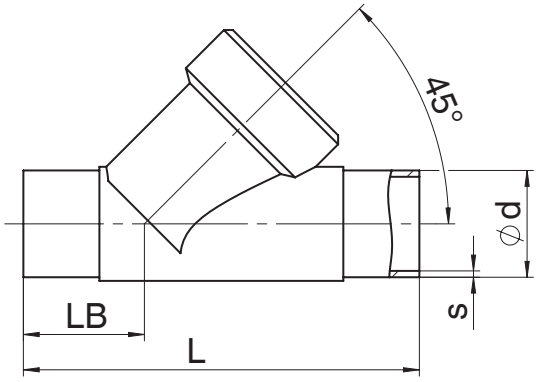
	Connection types code [1]									
			17		37		59		60	
			Material code 37 [2]							
DN	L	LB	ø d	s	ø d	s	ø d	s	ø d	s
15	100.0	33.0	19.0	1.5	-	-	-	-	21.3	1.6
20	108.0	33.0	23.0	1.5	-	-	-	-	26.9	1.6
25	112.0	32.0	29.0	1.5	-	-	-	-	33.7	2.0
32	137.0	39.0	35.0	1.5	-	-	-	-	42.4	2.0
40	146.0	40.0	41.0	1.5	-	-	-	-	48.3	2,.0
50	160.0	38.0	53.0	1.5	-	-	-	-	60.3	2.0
65	290.0	96.0	70.0	2.0	63.5	1.6	63.5	1.65	76.1	2.0
80	310.0	95.0	85.0	2.0	76.1	1.6	76.0	1.65	88.9	2.3

Dimensions in mm

1) **Connection type**
Code 17: Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Code 37: Spigot SMS 3008
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B

2) **Valve body material**
Code 37: 1.4408, investment casting

8.2.3 Butt weld spigot, connection types code 17, 59, 60



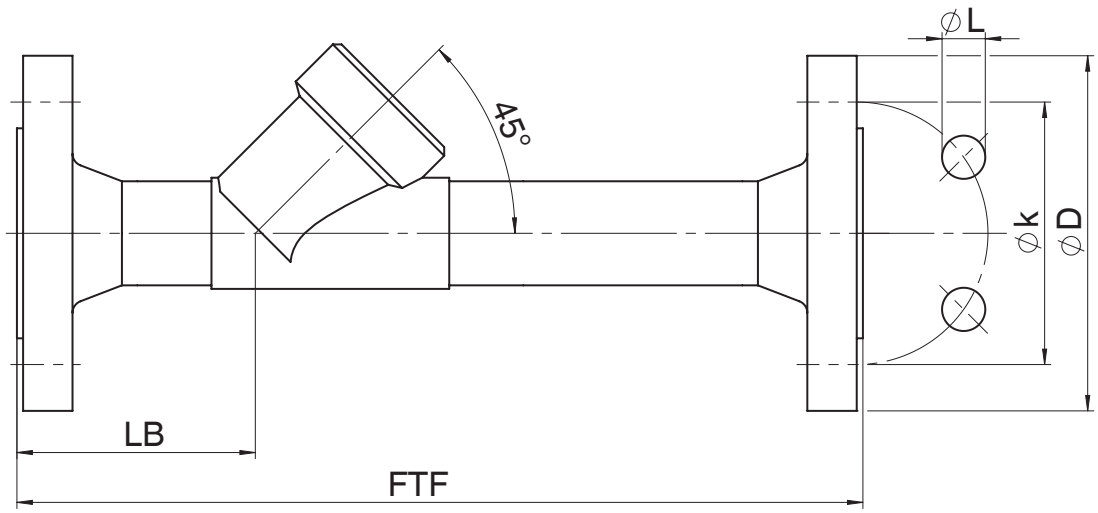
	Connection types code [1]							
			17		59		60	
			Material code C2 [2]					
DN	L	LB	ø d	s	ø d	s	ø d	s
15	105.0	35.5	19.0	1.5	12.70	1.65	21.3	1.6
20	120.0	39.0	23.0	1.5	19.05	1.65	26.9	1.6
25	125.0	39.5	29.0	1.5	25.40	1.65	33.7	2.0
32	155.0	48.0	35.0	1.5	-	1.65	42.4	2.0
40	160.0	47.0	41,0	1.5	38.10	1.65	48.3	2.0
50	180.0	48.0	53.0	1.5	50.80	1.65	60.3	2.0
65	290.0	96.0	70.0	2.0	63.50	1.65	76.1	2.0
80	310.0	95.0	85.0	2.0	76.20	1.65	88.9	2.3

Dimensions in mm

1) **Connection type**
Code 17: Spigot EN 10357 series A (formerly DIN 11850 series 2) / DIN 11866 series A
Code 59: Spigot ASME BPE
Code 60: Spigot ISO 1127 / EN 10357 series C / DIN 11866 series B

2) **Valve body material**
Code C2: 1.4435, investment casting

8.2.4 Flange, connection types code 13, 47



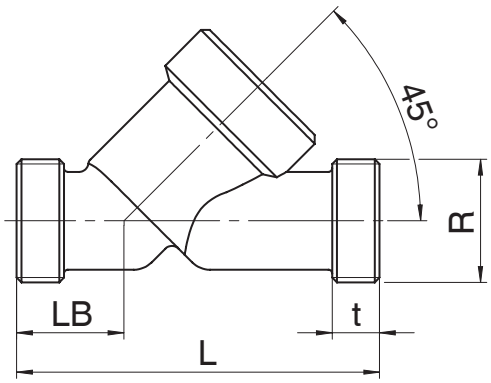
	Connection types code [1]									
	13, 47		13				47			
	Material code 34 [2]									
DN	FTF	LB	ø D	ø L	ø k	n	ø D	ø L	ø k	n
15	210.0	72.0	95.0	14.0	65.0	4	89.0	15.7	60.5	4
20	280.0	78.0	105.0	14.0	75.0	4	98.6	15.7	69.8	4
25	280.0	77.0	115.0	14.0	85.0	4	108.0	15.7	79.2	4
32	310.0	89.0	140.0	18.0	100.0	4	117.3	15.7	88.9	4
40	320.0	91.0	150.0	18.0	110.0	4	127.0	15.7	98.6	4
50	330.0	95.0	165.0	18.0	125.0	4	152.4	19.1	120.7	4

Dimensions in mm

1) **Connection type**
Code 13: Flange EN 1092, PN 25, form B
Code 47: Flange ANSI Class 150 RF

2) **Valve body material**
Code 34: 1.4435, investment casting

8.2.5 Threaded spigot, connection types code 9



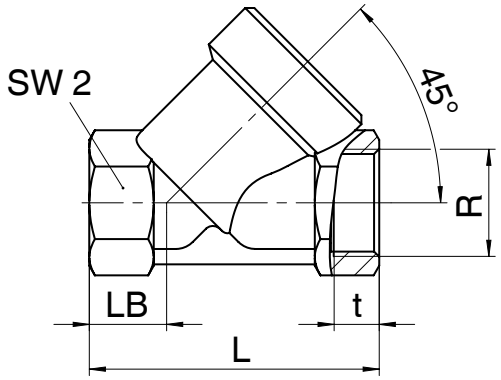
	Connection types code 9 [1]			
	Material code 34 [2]			
DN	L	LB	R	t
15	90.0	25.0	G 3/4	12.0
20	110.0	30.0	G 1	15.0
25	118.0	30.0	G 1¼	15.0
32	130.0	38.0	G 1½	13.0
40	140.0	35.0	G 1¾	13.0
50	175.0	50.0	G 2⅜	15.0
65	216.0	52.0	G 3	15.0
80	254.0	64.0	G 3½	18.0

Dimensions in mm

1) **Connection type**
Code 9: Threaded spigot DIN ISO 228

2) **Valve body material**
Code 34: 1.4435, investment casting

8.2.6 Threaded socket DIN, connection types code 1



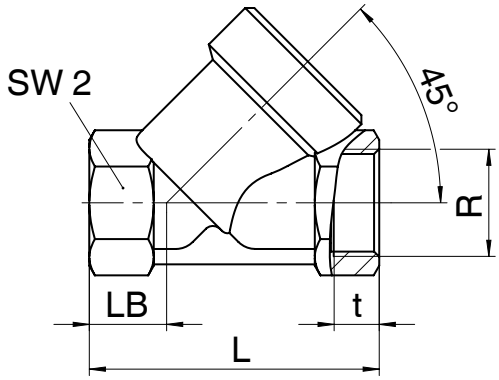
DN	Connection types code 1 [1]									
	Material code [2]									
	9					37				
	L	LB	SW2	R	t	L	LB	SW2	R	t
15	65.0	16.5	27.0	G 1/2	15.0	65.0	16.5	27.0	G 1/2	15.0
20	75.0	17.5	32.0	G 3/4	16.3	75.0	17.5	32.0	G 3/4	16.3
25	90.0	24.0	41.0	G 1	19.1	90.0	24.0	41.0	G 1	19.1
32	110.0	33.0	50.0	G 1¼	21.4	110.0	33.0	50.0	G 1¼	21.4
40	120.0	30.0	55.0	G 1½	21.4	120.0	30.0	55.0	G 1½	21.4
50	150.0	40.0	70.0	G 2	25.7	150.0	40.0	70.0	G 2	25.7
65	190.0	46.0	85.0	G 2½	30.2	190.0	46.0	85.0	G 2½	30.2
80	220.0	50.0	100.0	G 3	33.3	220.0	50.0	100.0	G 3	33.3

Dimensions in mm

1) **Connection type**
Code 1: Threaded socket DIN ISO 228

2) **Valve body material**
Code 9: CC499K, cast bronze
Code 37: 1.4408, investment casting

8.2.7 Threaded socket NPT, connection types code 3C, 3D



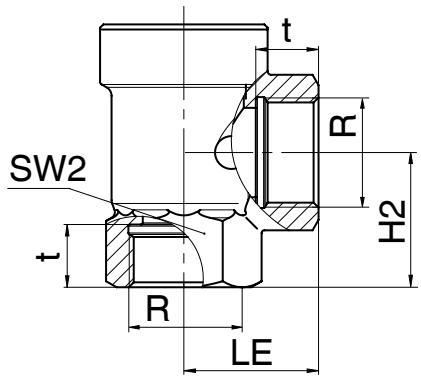
	Connection types code [1]									
	3C					3D				
	Material code [2]									
	37					37				
DN	L	LB	SW2	R	t	L	LB	SW2	R	t
15	65.0	16.5	27.0	Rc 1/2	15.0	65.0	16.5	27.0	1/2" NPT	13.6
20	75.0	17.5	32.0	Rc 3/4	16.3	75.0	17.5	32.0	3/4" NPT	14.1
25	90.0	24.0	41.0	Rc 1	19.1	90.0	24.0	41.0	1" NPT	17.0
32	110.0	33.0	50.0	Rc 1¼	21.4	110.0	33.0	50.0	1¼" NPT	17.5
40	120.0	30.0	55.0	Rc 1½	21.4	120.0	30.0	55.0	1½" NPT	17.3
50	150.0	40.0	70.0	Rc 2	25.7	150.0	40.0	70.0	2" NPT	17.8
65	190.0	46.0	85.0	Rc 2½	30.2	190.0	46.0	85.0	2½" NPT	23.7
80	220.0	50.0	100.0	Rc 3	33.3	220.0	50.0	100.0	3" NPT	25.8

Dimensions in mm

1) **Connection type**
Code 3C: Threaded socket BS 21 Rc,end-to-end dimension ETE DIN 3202-4 series M8
Code 3D: Threaded socket NPT,end-to-end dimension ETE DIN 3202-4 series M8

2) **Valve body material**
Code 37: 1.4408, investment casting

8.2.8 Threaded socket DIN, connection types code 1, 3D, angle valve body



	Connection types code [1]									
	1					3D				
	Material code 37 [2]									
DN	SW2	LE	H2	R	t	SW2	LE	H2	R	t
15	27.0	30.0	30.0	G 1/2	15.0	27.0	30.0	30.0	1/2" NPT	13.6
20	32.0	35.0	37.5	G 3/4	16.3	32.0	35.0	37.5	3/4 " NPT	14.1
25	41.0	41.0	41.0	G 1	19.1	41.0	41.0	41.0	1" NPT	17.0
32	50.0	50.0	48.0	G 1¼	21.4	50.0	50.0	48.0	1¼" NPT	17.5
40	55.0	50.0	55.0	G 1½	21.4	55.0	50.0	55.0	1½" NPT	17.3
50	70.0	60.0	62.0	G 2	25.7	70.0	60.0	62.0	2" NPT	17.8

Dimensions in mm

1) **Connection type**
Code 1: Threaded socket DIN ISO 228
Code 3D: Threaded socket NPT,end-to-end dimension ETE DIN 3202-4 series M8

2) **Valve body material**
Code 37: 1.4408, investment casting

9 Manufacturer's information

9.1 Packaging

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

9.2 Transport

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

9.3 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.

9.4 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.

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 GEMÜ 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. Correctly decontaminate, rinse and ventilate the plant or plant component.
12. Lay piping so that the product is protected against transverse and bending forces, and also from vibrations and tension.
13. Only install the product between matching aligned pipes (see chapters below).
14. Please note the flow direction (see chapter "Flow direction").
15. Please note the installation position (see chapter "Installation position").

10.2 Installation position

The installation position of the product is optional.

10.3 Installation with butt weld spigots

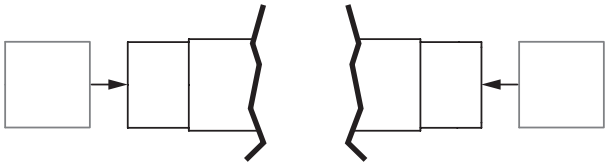


Fig. 1: Butt weld spigots

1. Carry out preparations for installation (see chapter "Preparations for installation").
2. Adhere to good welding practices!
3. Remove actuator **A** (see chapter "Removing the actuator").
4. Weld the body of the product in the piping.
5. Allow butt weld spigots to cool down.
6. Mount actuator **A** (see chapter "Mounting the actuator").
7. Re-attach or reactivate all safety and protective devices.
8. Flush the system.

10.4 Installation with threaded sockets

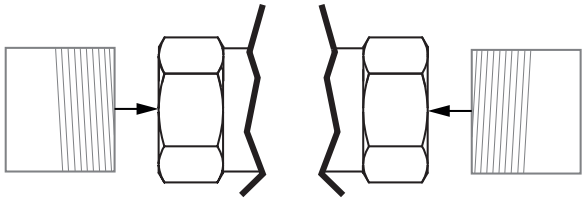


Fig. 2: Threaded socket

NOTICE

Sealing material

► The sealing material is not included in the scope of delivery.
● Only use appropriate sealing material.

1. Keep thread sealant ready.
2. Carry out preparations for installation (see chapter "Preparations for installation").
3. Screw the threaded connections into the pipe in accordance with valid standards.
4. Screw the body of the product onto the piping using appropriate thread sealant.
5. Re-attach or reactivate all safety and protective devices.

10.5 Installation with threaded spigots

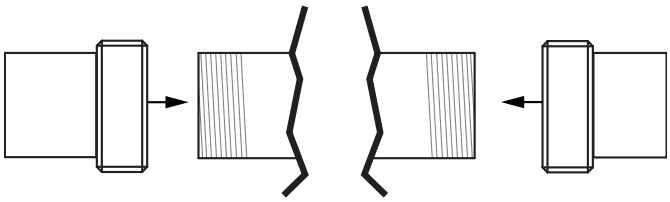


Fig. 3: Threaded spigots

NOTICE

Thread sealant

► The thread sealant is not included in the scope of delivery.
● Only use appropriate thread sealant.

1. Keep thread sealant ready.
2. Carry out preparations for installation (see chapter "Preparations for installation").
3. Screw the pipe into the threaded connections of the valve body in accordance with valid standards; use appropriate thread sealant.
4. Re-attach or reactivate all safety and protective devices.

10.6 Installation with flanged connection

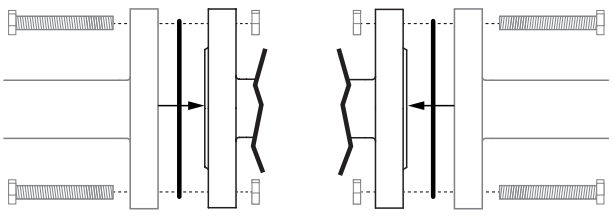


Fig. 4: Flanged connection

NOTICE

Sealing material

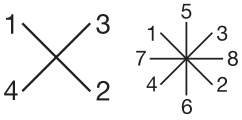
► The sealing material is not included in the scope of delivery.
● Only use appropriate sealing material.

NOTICE

Connector elements

► The connector elements are not included in the scope of delivery.
● Only use connector elements made of approved materials.
● Observe permissible tightening torque of the bolts.

1. Keep sealing material ready.
2. Carry out preparations for installation (see chapter "Preparations for installation").
3. Ensure clean, undamaged sealing surfaces on the connection flanges.
4. Align flanges carefully before installing them.
5. Clamp the product centrally between the piping with flanges.
6. Centre the gaskets.
7. Connect the valve flange and the piping flange using appropriate sealing materials and matching bolting.
8. Use all flange holes.



9. Tighten the bolts diagonally.
10. Re-attach or reactivate all safety and protective devices.

11 Pneumatic connections

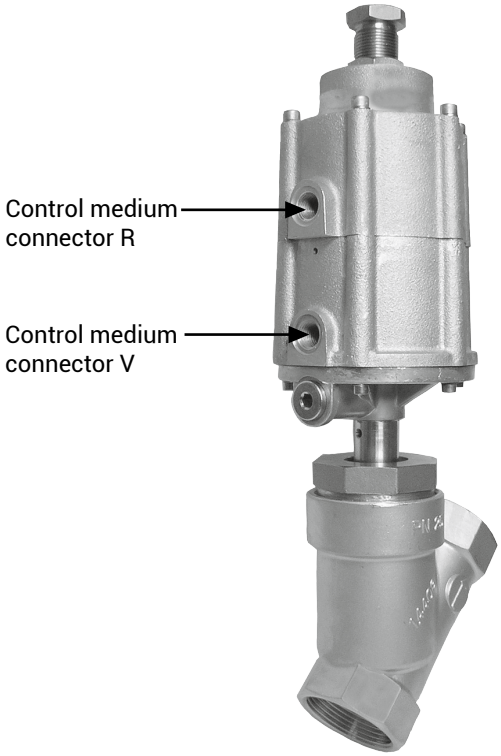
The product has 2 control medium connectors.

11.1 Control function

The following control function is available:

Control function 1 normally closed (NC)

Valve resting position: closed by spring force. For activation of the valve see chapter "Functional description".



Control function	Connectors	
	V	R
1 (NC)	Full stroke	Reduced stroke

11.2 Connecting the control medium

1. Connect the control medium lines tension-free and without any bends or knots.

NOTICE

► The control medium connectors can be rotated through 360°. The position of the control medium connectors is optional.

2. Use appropriate connectors according to the application.

Thread size of the control medium connectors: G1/4

Control function		Connectors
1	Normally closed (NC)	V and R
For connectors V / R see chapter "Control function"		

12 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).

⚠ CAUTION

Cleaning agent

► Damage to the GEMÜ product.
● The plant operator is responsible for selecting the cleaning material and performing the procedure.

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.
4. Commissioning of operators in accordance with the enclosed instructions.

13 Operation

Operate the product according to the control function (see also chapter "Pneumatic connections").

13.1 Control function 1

In its resting position the product is closed by spring force. 2 control medium connectors (V and R) are available.

- Activate the actuator via V and R.

  ⇨ The product opens.

14 Fault clearance

Error	Error cause	Error clearance
Control medium escapes from vent hole and at the stroke limiter	Control piston leaking	Replace actuator and check control medium for impurities
Control medium escapes from leak detection hole	Spindle seal leaking	Replace actuator and check control medium for impurities
Working medium escapes from leak detection hole	Gland packing faulty	Replace actuator
The product doesn't open or doesn't open fully	Control pressure too low (for control function NC)	Operate the product with the control pressure specified in the datasheet
	Pilot valve faulty	Check and replace pilot valve
	Control medium not connected	Connect control medium
	Control piston or spindle seal leaking	Replace actuator and check control medium for impurities
The product leaks downstream (doesn't close or doesn't close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Foreign matter between seat seal and seat	Remove actuator, remove foreign matter, check seat seal for damage and replace seat seal if necessary
	Valve body leaks or is damaged	Check valve body for potential damage, replace valve body if necessary
	Seat seal faulty	Check seat seal for damage and replace seat seal if necessary
	Actuator spring faulty (for control function NC)	Replace actuator
The product leaks between actuator and valve body	Actuator loose	Tighten actuator using wrench surface 2
	Gasket faulty	Check gasket and the respective sealing surfaces for damage and replace parts if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Valve body connection to piping leaks	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
Valve body leaks	Valve body leaks or is corroded	Check valve body for damage, replace valve body if necessary

15 Inspection and maintenance

⚠ WARNING

The equipment is subject to pressure!

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

⚠ WARNING

The actuator cover is under spring pressure!

► Risk of severe injury or death!
● Do not open the actuator.

⚠ CAUTION

Use of incorrect spare parts!

► Damage to the GEMÜ product.
► Manufacturer liability and guarantee will be void.
● Use only genuine parts from GEMÜ.

⚠ CAUTION

Hot plant components!

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

NOTICE

Exceptional maintenance work!

► Damage to the GEMÜ product.
● Any maintenance work and repairs not described in these operating instructions must not be performed without consulting the manufacturer first.

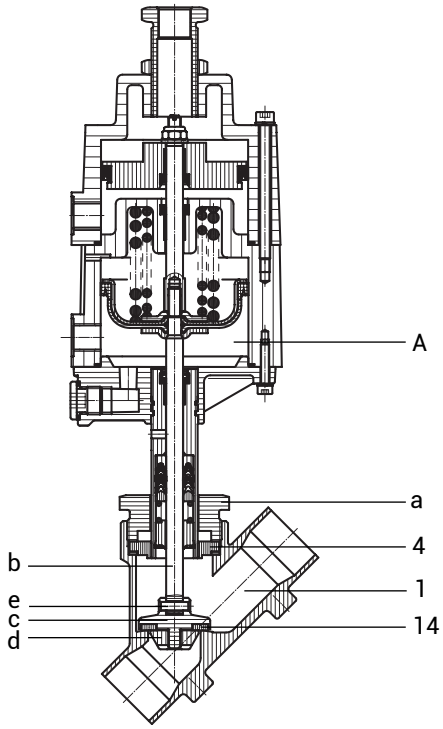
The operator must carry out regular visual examination of the GEMÜ products depending on the operating conditions and the potential danger in order to prevent leakage and damage.

The product also must be disassembled and checked for wear in the corresponding intervals.

1. Have servicing and maintenance work performed by trained personnel.
2. Wear appropriate protective gear as specified in plant operator's guidelines.
3. Shut off plant or plant component.
4. Secure plant or plant component against recommissioning.
5. Depressurize the plant or plant component.
6. Actuate GEMÜ products which are always in the same position four times a year.
7. After removing / installing the GEMÜ product check that the union nut **a** is mechanically secured and re-tighten if necessary.

   ⇨ Seals degrade in the course of time.

15.1 Spare parts



Item	Name	Order description
1	Valve body	K 514...
4	Gasket	514...SVS...Z
14	Seat seal	
A	Actuator	9514 Z... (see order data, section "Actuator size")
a	Union nut	-
b	Spindle	-
c	Valve plug	-
d	Retaining washer	-
e	Pin	-

15.2 Removing the actuator

1. Move the actuator **A** to the open position.
2. Undo union nut **a**.
3. Remove actuator **A** from valve body **1**.
4. Disconnect actuator **A** from the control medium lines.
5. Clean all parts of contamination (do not damage parts during cleaning).
6. Check parts for potential damage, replace if necessary (only use genuine parts from GEMÜ).

15.3 Replacing the seals

NOTICE

Gasket!

- Replace gasket **4** each time the actuator is disassembled/assembled.

1. Remove actuator **A** (see chapter "Removing the actuator").
2. Heat retaining washer **d** to 150 °C.

NOTICE

► Heating makes the thread locking compound easier to remove.

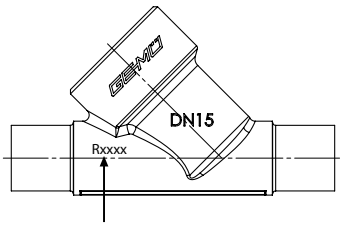
3. Unscrew retaining washer **d** using an appropriate tool.
4. Remove seat seal **14**.
5. Clean all parts of contamination (do not damage parts during cleaning).
6. Place new seat seal **14** in valve plug **c**.
7. Apply appropriate thread locking compound to the thread of valve plug **c**.
8. Position retaining washer **d** on spindle **b** (hold spindle **b** with appropriate tool that will not damage the spindle surfaces) and tighten.
9. Insert new gasket **4** in valve body **1**.
10. Mount actuator **A** (see chapter "Mounting the actuator").

15.4 Mounting the actuator

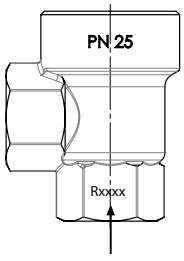
⚠ CAUTION

Incorrect combination of actuator and valve body!

- ► Risk of damage to the actuator and valve body.
- For control valves with a reduced valve seat, make sure that the combination of actuator and valve body is correct.
- Compare the product label of the actuator with the valve body marking.



Valve body marking 2/2-way body



Valve body marking: Angle valve body

Fig. 5: Valve body marking

Actuator product label	Valve body marking
RAxxx	R002
RBxxx	R004
RCxxx	R006
RDxxx	R008
RExxx	R010
RFxxx	R012
RGxxx	R015
RHxxx	R020
RJxxx	R025
RKxxx	R032
RMxxx	R040

1. Move the actuator **A** to the open position.
2. Lubricate the thread of union nut **a** using a suitable lubricant.
3. Place actuator **A** on valve body **1** approx. 90° anticlockwise to the end position of the control medium connectors and screw it in hand tight using union nut **a**.
4. Tighten union nut **a** with an open-end wrench (for torques, see table). This rotates actuator **A** clockwise approx. 90° to the desired position.
5. Move the actuator **A** to the closed position.
6. With the valve fully assembled, check the function and tightness.

Nominal size	Torques [Nm]
DN 10	90
DN 15	90
DN 20	100
DN 25	120
DN 32	120
DN 40	150
DN 50	200
DN 65	260
DN 80	280

16 Removal from piping

1. Remove in reverse order to installation.
2. Deactivate the control medium.
3. Disconnect the control medium line(s).
4. Disassemble the product. Observe warning notes and safety information.

17 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.

18 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.

19 Declaration of Incorporation according to 2006/42/EC (Machinery Directive)

Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II, 1.B for partly completed machinery

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

declare that the following product

Make:	GEMÜ Pneumatically operated angle seat globe valve
Serial number:	from 30.11.2011
Project number:	Sv-Pneum-2011-11
Commercial name:	GEMÜ 514Z

meets the following essential requirements of the Machinery Directive 2006/42/EC:

1.1.3.; 1.1.5.; 1.2.1.; 1.3.; 1.3.2.; 1.3.3.; 1.3.4.; 1.3.7.; 1.3.9.; 1.5.3.; 1.5.5.; 1.5.6.; 1.5.7.; 1.5.8.; 1.5.9..; 1.6.5.

We also declare that the specific technical documentation has been compiled in accordance with part B of Annex VII.

The manufacturer or his authorised representative undertake to transmit, in response to a reasoned request by the national authorities, relevant information on the partly completed machinery. This transmission takes place:

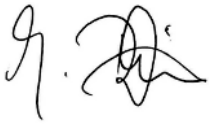
Electronically

Authorised documentation officer	**GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG** **Fritz-Müller-Straße 6-8** **74653 Ingelfingen, Germany**

This does not affect the industrial property rights!

Important note! The partly completed machinery may be put into service only if it was determined, where appropriate, that the machinery into which the partly completed machinery is to be installed meets the provisions of this Directive.

Ingelfingen-Criesbach 29-05-2018



Joachim Brien
Head of Technical Department

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

EU Declaration of Conformity

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

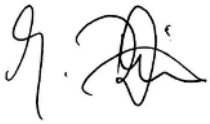
We, GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG
Fritz-Müller-Straße 6-8
74653 Ingelfingen-Criesbach, Germany

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

Description of the pressure equipment:	GEMÜ 514Z
Notified body:	TÜV Rheinland Industrie Service GmbH
Number:	0035
Certificate no.:	01 202 926/Q-02 0036
Conformity assessment procedure:	Modul H
Technical standard used:	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.

Ingelfingen-Criesbach 29-05-2018



Joachim Brien
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