GEMÜ R690

Pneumatically operated diaphragm valve

EN **Operating instructions**

further information
webcode: GW-R690

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.

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!
	Use as an end-of-line valve!
	Actuator top 10 is under spring pressure!
	Breakage of actuator top 10 when the pressure is too high!

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 substances.

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
1	Optical position indicator	PP-H red
2	Actuator	PP- H 30% glass fibre reinforced
3	CONEXO actuator RFID chip (see Conexo information)	
4	Control air connector	Brass
5	Diaphragm	NBR, FKM, EPDM, PTFE / EPDM one-piece, PTFE / EPDM two-piece
6	Valve body	PVC-U, grey ABS PP, reinforced PVDF Inliner PP-H, grey / outliner PP, reinforced Inliner PVDF / outliner PP, reinforced
7	CONEXO diaphragm RFID chip (see Conexo information)	
8	CONEXO body RFID chip (see Conexo information)	

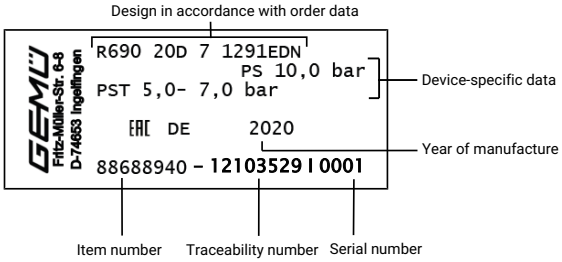
3.2 Description

The GEMÜ R690 2/2-way diaphragm valve has a low maintenance membrane actuator and is pneumatically operated. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available. The high-flow valve body provides compact dimensions at high flow rates.

3.3 Function

The product is designed for use in piping. It controls a flowing medium by being closed or opened by a control medium. The valve has a low maintenance membrane actuator which can be controlled by inert gases. The valve body and the diaphragm are available in various designs as shown in the datasheet.

3.4 Product label



The month of manufacture is encoded in the traceability number and can be obtained from GEMÜ. The product was manufactured in Germany.

4 Correct use

⚠ DANGER

Danger of explosion!

- ► Risk of death or severe injury
- ● Do **not** use the product in potentially explosive zones.

⚠ 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 designed for installation in piping systems and for controlling a working medium.

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

- ● Use the product in accordance with the technical data.

5 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

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
Diaphragm valve, pneumatically operated, plastic membrane actuator	R690

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
DN 100	100

3 Body configuration	Code
2/2-way body	D

4 Connection type	Code
Spigot	
Spigot DIN	0
Spigot for IR butt welding	20
Spigot – inch, for welding or solvent cementing, depending on the body material	30
Body with threaded spigots for unions	7X
Union end	
Union end with insert (socket) – DIN	7
Union end with insert (Rp threaded socket) – DIN	7R
Union end with inch insert – BS (socket)	33
Union end with inch insert – ASTM (socket)	3M
Union end with insert – JIS (socket)	3T
Union end with insert (for IR butt welding) – DIN	78
Flange	
Flange EN 1092, PN 10, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1	4
Flange ANSI Class 125/150 RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D	39

5 Valve body material	Code
PVC-U, grey	1
ABS	4
PP, reinforced	5

5 Valve body material	Code
PVDF	20
Inliner PP-H, grey, outliner PP, reinforced	71
Inliner PVDF/outliner PP, reinforced	75

6 Diaphragm material	Code
Elastomer	
NBR	2
FKM	4
EPDM	17
EPDM	29
PTFE	
PTFE/EPDM one-piece	54
PTFE/EPDM two-piece	5M
Note: The PTFE/EPDM diaphragm (code 5M) is available from diaphragm size 25.	

7 Control function	Code
Normally closed (NC)	1
Normally open (NO)	2
Double acting (DA)	3

8 Actuator version	Code
Actuator size EDL (diaphragm size 20)	EDL
Diaphragm size 20	EDM
Diaphragm size 20	EDN
Actuator size FDL (diaphragm size 25)	FDL
Actuator size FDM	FDM
Actuator size FDN	FDN
Actuator size HDL (diaphragm size 40)	HDL
Actuator size HDM	HDM
Actuator size HDN	HDN
Actuator size JDL	JDL
Actuator size JDM	JDM
Actuator size JDN	JDN
Actuator size MDN (diaphragm size 80)	MDN
Actuator size NDN (diaphragm size 100)	NDN

9 Special version	Code
NSF 61 water approval	N

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

Order codes

Ordering option	Code	Description
1 Type	R690	Diaphragm valve, pneumatically operated, plastic membrane actuator
2 DN	20	DN 20
3 Body configuration	D	2/2-way body
4 Connection type	7	Union end with insert (socket) – DIN
5 Valve body material	1	PVC-U, grey
6 Diaphragm material	17	EPDM
7 Control function	1	Normally closed (NC)
8 Actuator version	EDN	Diaphragm size 20
9 Special version	N	NSF 61 water approval
10 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 diaphragm material.

Control medium: Inert gases

7.2 Temperature

Media temperature:

Valve body material	
PVC-U, grey (code 1)	10 — 60 °C
ABS (code 4)	-10 — 60 °C
PP, reinforced (code 5)	5 – 80 °C
PVDF (code 20)	-10 — 80 °C
Inliner PP-H grey / outliner PP, reinforced (code 71)	5 – 80 °C
Inliner PVDF / outliner PP, reinforced (code 75)	-10 — 80 °C

Ambient temperature:

Valve body material	
PVC-U, grey (code 1)	10 — 50 °C
ABS (code 4)	-10 — 50 °C
PP, reinforced (code 5)	5 — 50 °C
PVDF (code 20)	-10 — 50 °C
Inliner PP-H grey / outliner PP, reinforced (code 71)	5 — 50 °C
Inliner PVDF / outliner PP, reinforced (code 75)	-5 — 50 °C

Control medium temperature: 0 — 40 °C

Storage temperature: 0 — 40 °C

7.3 Pressure

Operating pressure:

MG	DN	NPS	Actuator size*	Control function	Diaphragm materials	
					Elastomer	PTFE
20	**15, 20, 25**	**1/2", 3/4", 1"**	**EDL**	1	0 - 3	0 - 3
			EDM	1	0 - 6	0 - 6
			EDN	1	0 - 10	0 - 10
			EDN	2, 3	0 - 10	0 - 10
25	**32**	**1 ¼"**	**FDL**	1	0 - 3	0 - 3
			FDM	1	0 - 6	0 - 6
			FDN	1	0 - 10	0 - 10
			FDN	2, 3	0 - 10	0 - 10
40	**40, 50**	**1 ½", 2"**	**HDL**	1	0 - 4	0 - 4
			HDM	1	0 - 6	0 - 6
			HDN	1	0 - 10	0 - 10
			HDN	2, 3	0 - 10	0 - 10
50	**65**	**2 ½"**	**JDL**	1	0 - 3	0 - 3
			JDM	1	0 - 6	0 - 6
			JDN	1	0 - 10	0 - 10
			JDN	2, 3	0 - 10	0 - 10
80	**80**	**3"**	**MDN**	1, 2, 3	0 - 8	0 - 6
100	**100**	**4"**	**NDN**	1, 2, 3	0 - 6	0 - 4

MG = diaphragm size
* Actuator sizes _DL, _DM with weaker spring set for operating the system with low wear on the diaphragm and for vacuum applications.
All pressures are gauge pressures. Operating pressure values were determined with static operating pressure applied on one side of a closed valve. Sealing at the valve seat and atmospheric sealing is ensured for the given values.
Information on operating pressures applied on both sides and for high purity media on request.

Pressure rating: PN 10

Pressure/temperature correlation:

Valve body material		Temperature in °C (valve body)											
Materials	Code	-10	±0	5	10	20	25	30	40	50	60	70	80
PVC-U	**1**	-	-	-	10,0	10,0	10,0	8,0	6,0	3,5	1,5	-	-
ABS	**4**	10,0	10,0	10,0	10,0	10,0	10,0	8,0	6,0	4,0	2,0	-	-
PP	**5**	-	-	10,0	10,0	10,0	10,0	8,5	7,0	5,5	4,0	2,7	1,5
PP-H	**71**	-	-	10,0	10,0	10,0	10,0	8,5	7,0	5,5	4,0	2,7	1,5
PVDF	**20**	10,0	10,0	10,0	10,0	10,0	10,0	9,0	8,0	7,1	6,3	5,4	4,7
PVDF	**75**	10,0	10,0	10,0	10,0	10,0	10,0	9,0	8,0	7,1	6,3	5,4	4,7

Data for extended temperature ranges on request. Please note that the ambient temperature and media temperature generate a combined temperature at the valve body which must not exceed the above values.

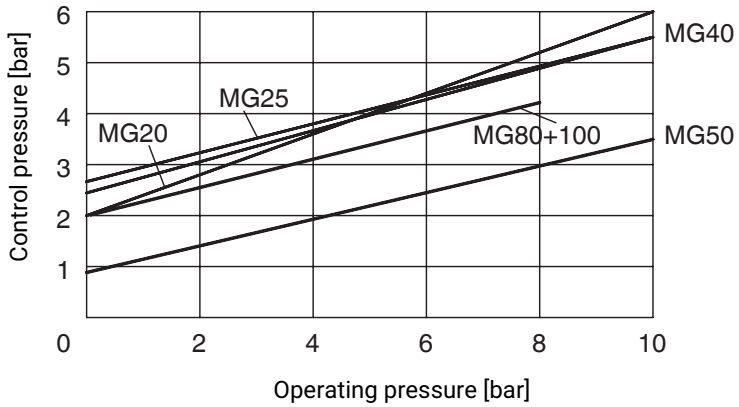
Control pressure:

MG	DN	NPS	Actuator size	Control function	Control pressure*
20	**15, 20, 25**	**1/2“, 3/4“, 1“**	**EDL**	1	3.0 - 7.0
			EDM	1	3.8 - 7.0
			EDN	1	5.0 - 7.0
			EDN	2, 3	max. 6.0
25	**32**	**1 ¼“**	**FDL**	1	2.5 - 6.0
			FDM	1	3.8 - 6.0
			FDN	1	5.0 - 7.0
			FDN	2, 3	max. 5.5
40	**40, 50**	**1 ½“, 2“**	**HDL**	1	3.0 - 7.0
			HDM	1	3.8 - 6.0
			HDN	1	5.0 - 7.0
			HDN	2, 3	max. 5.5
50	**65**	**2 ½“**	**JDL**	1	3.0 - 6.0
			JDM	1	3.8 - 6.0
			JDN	1	5.5 - 7.0
			JDN	2, 3	max. 5.0
80	**80**	**3“**	**MDN**	1	5.0 - 7.0
			MDN	2	max. 5.0
			MDN	3	max. 4.5
100	**100**	**4“**	**NDN**	1	5.5 - 7.0
			NDN	2	max. 5.0
			NDN	3	max. 4.5

MG = diaphragm size
*For required control pressure depending on operating pressure see diagram

Control pressure characteristic DN 15 - 100 (EPDM, FPM)

Control function 2 and 3



The control pressure depending on the prevailing operating pressure, as shown in the diagram, is intended as a guide for operating the system with low wear on the diaphragm.

Kv values:

MG	DN	Kv values
20	**15**	6.0
	20	10.0
	25	12.0
25	**32**	20.0
40	**40**	42.0
	50	46.0
50	**65**	70.0
80	**80**	120.0
100	**100**	189.0

MG = diaphragm size, Kv values in m³/h
Kv values determined acc.to DIN EN 60534 standard, inlet pressure 5 bar, Δp 1 bar, PVC-U valve body and soft elastomer diaphragm.
The Kv values for other product configurations (e.g. other diaphragm or body materials) may differ. In general, all diaphragms are subject to the influences of pressure, temperature, the process and their tightening torques. Therefore the Kv values may exceed the tolerance limits of the standard.
The Kv value curve (Kv value dependent on valve stroke) can vary depending on the diaphragm material and duration of use.

Filling volume:

Diaphragm size 20	0.10 dm³
Diaphragm size 25	0.20 dm³
Diaphragm size 40	0.55 dm³
Diaphragm size 50	1.06 dm³
Diaphragm size 80	2.50 dm³
Diaphragm size 100	2.50 dm³

7.4 Product conformity

Pressure Equipment Directive: 2014/68/EU

Food: FDA*
Regulation (EC) No. 1935/2004
Regulation (EC) No. 10/2011*

EAC: TR CU 010/2011

Drinking water: NSF/ANSI*

* depending on version and/or operating parameters

7.5 Materials

Materials:

Diaphragm material	O-ring material
PTFE	FKM
NBR	EPDM
FKM	FKM
EPDM	EPDM

7.6 Mechanical data

Weight:

Actuator

MG	Actuator size	Control function	Weight
20	**EDL, EDM, EDN**	1	0.7
	EDL, EDM, EDN	2 + 3	0.5
25	**FDL, FDM, FDN**	1	1.6
	FDL, FDM, FDN	2 + 3	1.0
40	**HDL, HDM, HDN**	1	3.5
	HDL, HDM, HDN	2 + 3	2.0
50	**JDL, JDM, JDN**	1	5.7
	JDL, JDM, JDN	2 + 3	3.8
80	**MDN**	1	11.3
	MDN	2 + 3	8.1
100	**NDN**	1	11.5
	NDN	2 + 3	9.4

MG = diaphragm size, weight in kg

Valve body

MG	DN	Spigot		Union end				Flange
		Connection type code						
		0, 30	20	3P, 7, 7R	33	3M, 3T	78	4, 39
20	**15**	0.12	0.10	0.17	0.24	0.26	0.27	0.67
	20	0.13	0.12	0.21	0.28	0.30	0.36	0.84
	25	0.16	0.14	0.26	0.33	0.38	0.37	1.28
25	**32**	0.22	0.18	0.40	0.70	0.73	0.63	1.89
40	**40**	0.50	0.40	0.73	0.83	0.93	1.13	2.36
	50	0.57	0.47	1.00	1.40	1.50	1.60	3.08
50	**65**	0.92	3.57	-	-	-	-	3.20
80	**80**	4.00	3.30	-	-	-	-	6.70
100	**100**	4.40	4.00	-	-	-	-	8.20

MG = diaphragm size
Weights in kg

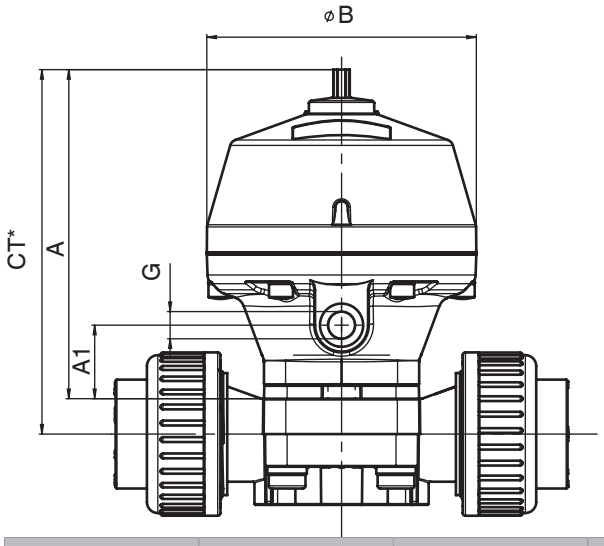
Installation position: Optional

Flow direction: Optional

8 Dimensions

8.1 Actuator dimensions

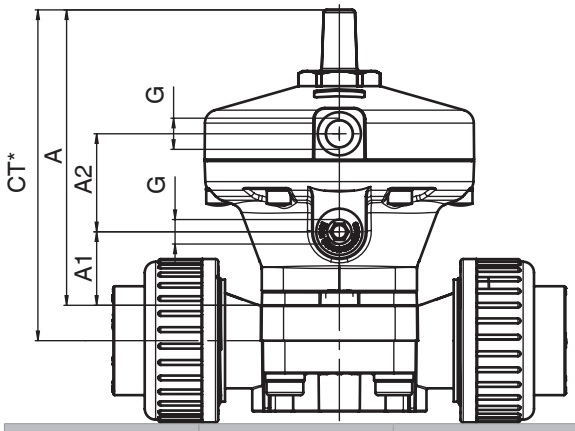
8.1.1 Actuator - Control function 1



MG	DN	Actuator size	Ø B	A	A1	G
20	**15 – 25**	EDL, EDM, EDN	100.0	119.0	27.0	G 1/4
25	**32**	FDL, FDM, FDN	130.0	145.0	28.0	G 1/4
40	**40 – 50**	HDL, HDM, HDN	170.0	198.0	52.0	G 1/4
50	**65**	JDL, JDM, JDN	211.0	245.0	90.0	G 1/4
80	**80**	MDN	260.0	317.0	127.0	G 1/4
100	**100**	NDN	260.0	349.0	149.0	G 1/4

Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

8.1.2 Actuator - Control function 2 and 3

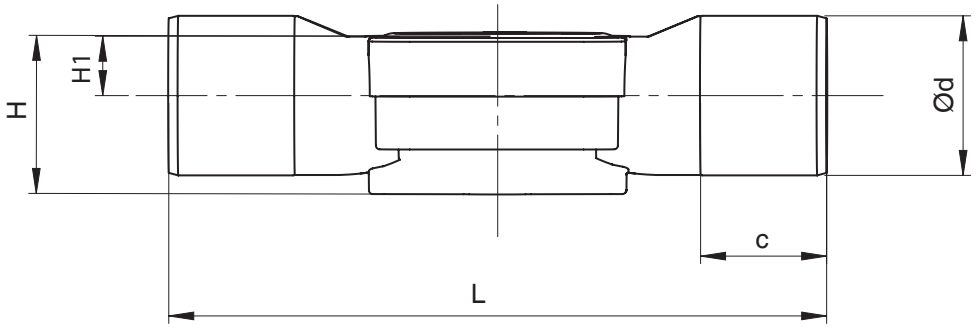


MG	DN	Actuator size	A	A1	A2	G
20	**15 – 25**	EDL, EDM, EDN	109.0	27.0	36.0	G 1/4
25	**32**	FDL, FDM, FDN	123.0	28.0	46.0	G 1/4
40	**40 – 50**	HDL, HDM, HDN	163.0	52.0	55.0	G 1/4
50	**65**	JDL, JDM, JDN	206.0	90.0	48.0	G 1/4
80	**80**	MDN	270.0	127.0	41.0	G 1/4
100	**100**	NDN	307.0	149.0	46.0	G 1/4

Dimensions in mm
MG = diaphragm size
* CT = A + H1 (see body dimensions)

8.2 Body dimensions

8.2.1 Spigot DIN/inch (code 0, 30)



Connection type spigot DIN (code 0) [1], body material PVC-U (code 1), PP (code 5), PVDF (code 20), inliner/outliner (code 71, 75) [2]

MG	DN	NPS	c			ød	H			H1	L
			Material				Material				
			1	5, 20	71, 75		1	5, 20	71, 75		
20	**15**	**1/2"**	16.0	-	18.0	20.0	36.0	-	36.0	10.0	124.0
	20	**3/4"**	19.0	-	19.0	25.0	38.0	-	38.0	12.0	144.0
	25	**1"**	22.0	-	22.0	32.0	39.0	-	39.0	13.0	154.0
25	**32**	**1¼"**	32.0	-	32.0	40.0	41.0	-	41.0	15.0	174.0
40	**40**	**1½"**	35.0	-	26.0	50.0	63.2	-	63.2	23.2	194.0
	50	**2"**	38.0	-	33.0	63.0	63.2	-	63.2	23.2	224.0
50	**65**	**2½"**	46.0	46.0	-	75.0	78.8	78.8	-	38.8	284.0
80	**80**	**3"**	51.0	51.0	-	90.0	117.0	117.0	-	62.0	300.0
100	**100**	**4"**	61.0	61.0	-	110.0	140.0	140.0	-	75.0	340.0

Connection type spigot - inch (code 30) [1], body material PVC-U (code 1), ABS (code 4) [2]

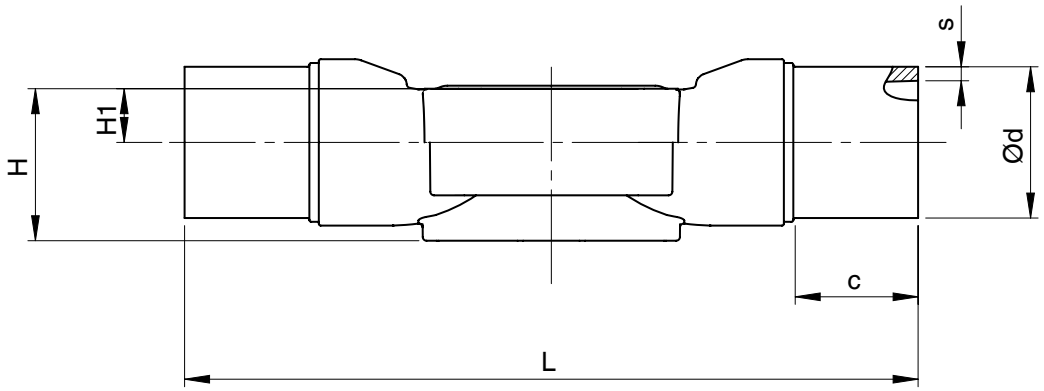
MG	DN	NPS	c	ød	H	H1	L
20	**15**	**1/2"**	24.0	21.4	36.0	10.0	141.0
	20	**3/4"**	27.0	26.7	38.0	12.0	144.0
	25	**1"**	30.0	33.6	39.0	13.0	154.0
25	**32**	**1¼"**	33.0	42.2	41.0	15.0	174.0
40	**40**	**1½"**	35.0	48.3	63.2	23.2	194.0
	50	**2"**	40.0	60.3	63.2	23.2	224.0
50	**65**	**2½"**	46.0	73.0	78.8	38.8	284.0
80	**80**	**3"**	51.0	88.9	117.0	62.0	300.0
100	**100**	**4"**	61.0	114.3	140.0	75.0	340.0

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 0: Spigot DIN
Code 30: Spigot – inch, for welding or solvent cementing, depending on the body material

2) **Valve body material**
Code 1: PVC-U, grey
Code 4: ABS
Code 5: PP, reinforced
Code 20: PVDF
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.2.2 Spigot IR (code 20)



Connection type spigot IR (code 20) [1], body material inliner/outliner (code 71, 75) [2]

MG	DN	NPS	c	ød	H	H1	L	s	
								Material	
								71	75
20	**15**	**1/2"**	33.0	20.0	36.0	10.0	154.0	1.9	1.9
	20	**3/4"**	33.0	25.0	38.0	12.0	154.0	2.3	1.9
	25	**1"**	33.0	32.0	39.0	13.0	154.0	2.9	2.4
25	**32**	**1¼"**	33.0	40.0	41.0	15.0	194.0	3.7	2.4
40	**40**	**1½"**	33.0	50.0	63.2	23.2	194.0	4.6	3.0
	50	**2"**	33.0	63.0	63.2	23.2	224.0	5.8	3.0

Connection type spigot IR (code 20) [1], body material PVDF (code 20) [2]

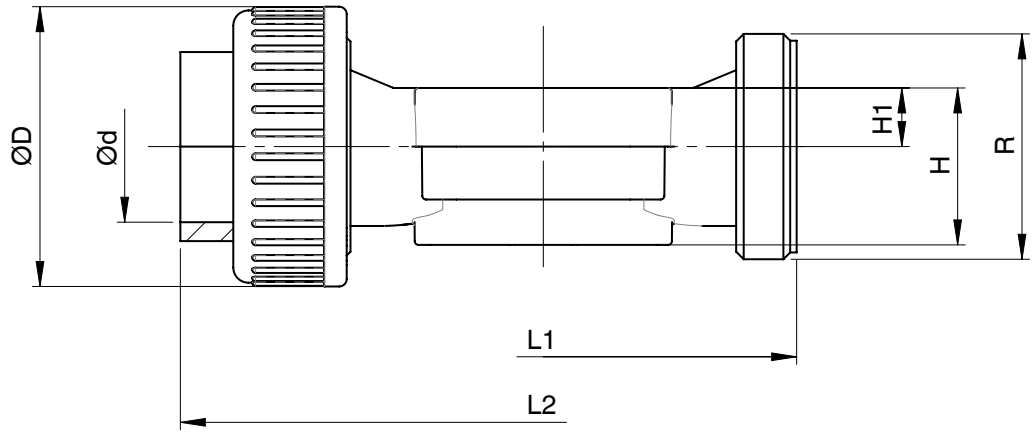
MG	DN	NPS	c	ød	H	H1	L	s
50	**65**	**2½"**	43.0	75.0	78.8	38.8	284.0	3.6
80	**80**	**3"**	51.0	90.0	117.0	62.0	300.0	4.3
100	**100**	**4"**	59.0	110.0	140.0	75.0	340.0	5.3

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 20: Spigot for IR butt welding

2) **Valve body material**
Code 20: PVDF
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.2.3 Union end DIN (code 7)



Connection type union end (code 7) [1], body material PVC-U (code 1), ABS (code 4), inliner/outliner (code 71, 75) [2], diaphragm sizes 20 – 40

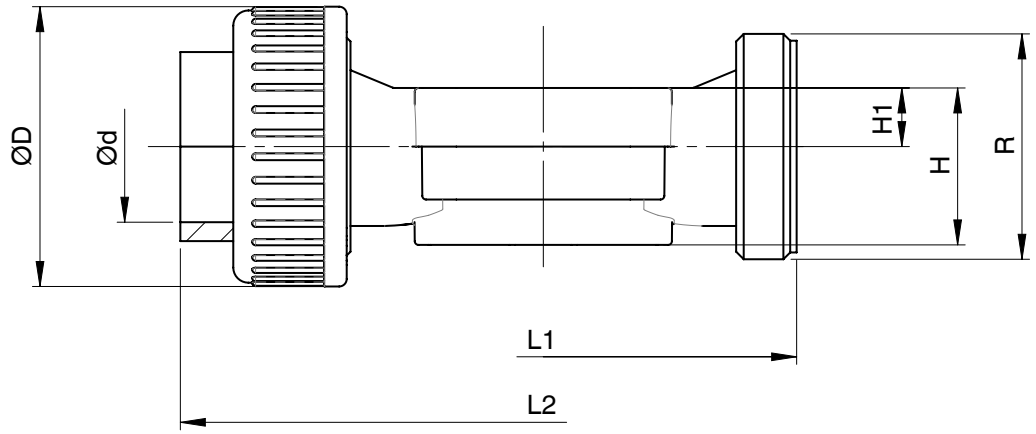
MG	DN	NPS	ød	øD	H	H1	L1	L2				R
								Material				
								1	4	71	75	
20	**15**	**1/2"**	20.0	43.0	36.0	10.0	108.0	146.0	150.0	143.0	146.0	G 1
	20	**3/4"**	25.0	53.0	38.0	12.0	108.0	152.0	156.0	146.0	150.0	G 1¼
	25	**1"**	32.0	60.0	39.0	13.0	116.0	166.0	170.0	158.0	162.0	G 1½
25	**32**	**1¼"**	40.0	74.0	41.0	15.0	134.0	192.0	196.0	181.0	184.0	G 2
40	**40**	**1½"**	50.0	83.0	63.2	23.2	154.0	222.0	222.0	207.0	210.0	G 2¼
	50	**2"**	63.0	103.0	63.2	23.2	184.0	266.0	266.0	245.0	248.0	G 2¾

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 7: Union end with insert (socket) – DIN

2) **Valve body material**
Code 1: PVC-U, grey
Code 4: ABS
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.2.4 Union end inch (code 33, 3M, 3T)



Connection type union end inch (code 33, 3M, 3T) [1], body material PVC-U (code 1) [2], diaphragm sizes 20 - 40

MG	DN	NPS	ød			øD		H	H1	L1	L2			R	
			Connection type								Connection type				
			33	3M	3T	33, 3M	3T				33	3M	3T	33, 3M	3T
20	**15**	**1/2"**	21.4	21.4	22.0	43.0	53.0 *	36.0	10.0	108.0	146.0	158.0	152.0	G 1	G 1¼ *
	20	**3/4"**	26.8	26.7	26.0	53.0	53.0	38.0	12.0	108.0	152.0	164.0	152.0	G 1¼	G 1¼
	25	**1"**	33.6	33.5	32.0	60.0	60.0	39.0	13.0	116.0	166.0	180.0	166.0	G 1½	G 1½
25	**32**	**1¼"**	42.3	42.2	38.0	74.0	74.0	41.0	15.0	134.0	192.0	204.0	192.0	G 2	G 2
40	**40**	**1½"**	48.3	48.3	48.0	83.0	83.0	63.2	23.2	154.0	222.0	230.0	222.0	G 2¼	G 2¼
	50	**2"**	60.4	60.4	60.0	103.0	103.0	63.2	23.2	184.0	264.0	266.0	266.0	G 2¾	G 2¾

Connection type BS (code 33) [1], body material ABS (code 4) [2]

MG	DN	NPS	ød	øD	H	H1	L1	L2	R
20	**15**	**1/2"**	21.4	43.0	36.0	10.0	108.0	150.0	G 1
	20	**3/4"**	26.8	53.0	38.0	12.0	108.0	156.0	G 1¼
	25	**1"**	33.6	60.0	39.0	13.0	116.0	170.0	G 1½
25	**32**	**1¼"**	42.3	74.0	41.0	15.0	134.0	198.0	G 2
40	**40**	**1½"**	48.3	83.0	63.2	23.2	154.0	220.0	G 2¼
	50	**2"**	60.4	103.0	63.2	23.2	184.0	264.0	G 2¾

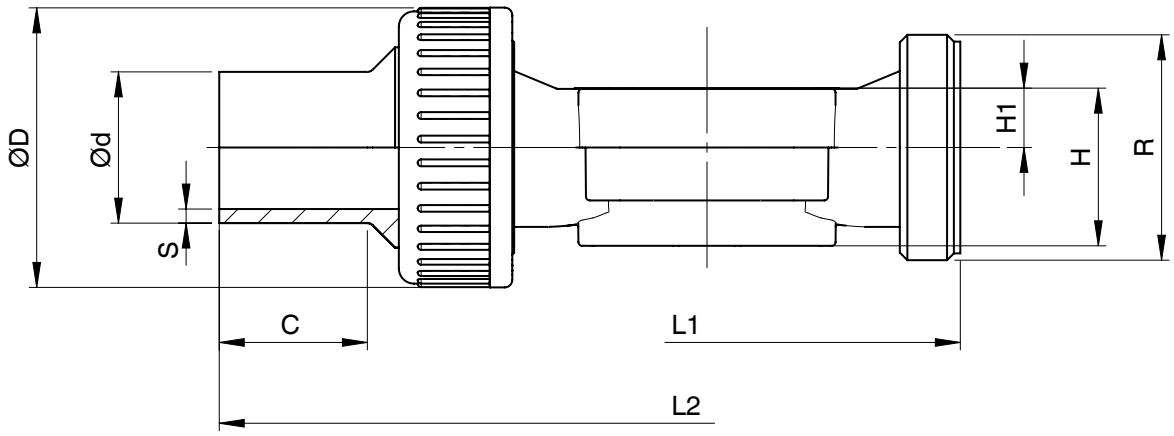
Dimensions in mm
MG = diaphragm size

* Insert requires valve body DN 20

1) **Connection type**
Code 33: Union end with inch insert – BS (socket)
Code 3M: Union end with inch insert – ASTM (socket)
Code 3T: Union end with insert – JIS (socket)

2) **Valve body material**
Code 1: PVC-U, grey
Code 4: ABS

8.2.5 Union end DIN, IR butt welding (code 78)



Connection type union end DIN, IR butt welding (code 78)[1], body materials inliner/outliner (code 71, 75)[2]

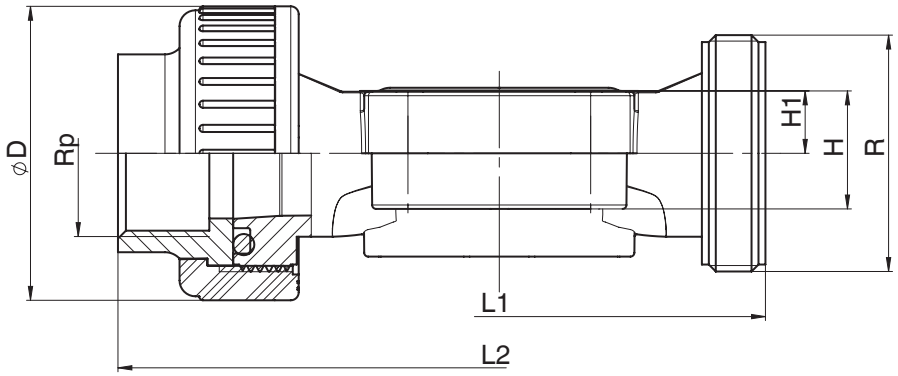
MG	DN	NPS	c	ød	øD	H	H1	L1	L2	R	s	
											Material	
											71	75
20	**15**	**1/2"**	36.0	20.0	43.0	36.0	10.0	108.0	214.0	G 1	1.9	1.9
	20	**3/4"**	37.0	25.0	53.0	38.0	12.0	108.0	220.0	G 1¼	2.3	1.9
	25	**1"**	39.0	32.0	60.0	39.0	13.0	116.0	234.0	G 1½	2.9	2.4
25	**32**	**1¼"**	39.0	40.0	74.0	41.0	15.0	134.0	258.0	G 2	3.7	2.4
40	**40**	**1½"**	43.0	50.0	83.0	63.2	23.2	154.0	284.0	G 2¼	4.6	3.0
	50	**2"**	43.0	63.0	103.0	63.2	23.2	184.0	320.0	G 2¾	5.8	3.0

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 78: Union end with insert (for IR butt welding) – DIN

2) **Valve body material**
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.2.6 Union end Rp (code 7R)



Connection type union end Rp (code 7R), NPT (code 3P) [1], body material PVC-U (code 1) [2]

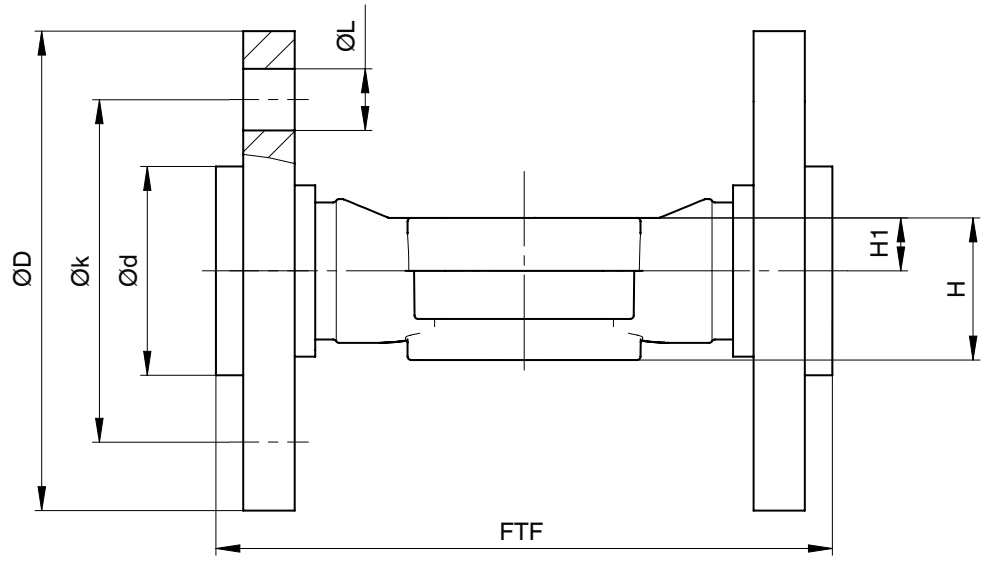
MG	DN	NPS	øD	H	H1	L1	L2	R	Rp/NPT
20	**15**	**1/2"**	43.0	36.0	10.0	108.0	146.0	G 1	1/2
	20	**3/4"**	53.0	38.0	12.0	108.0	152.0	G 1¼	3/4
	25	**1"**	60.0	39.0	13.0	116.0	166.0	G 1½	1
25	**32**	**1¼"**	74.0	41.0	15.0	134.0	192.0	G 2	1¼
40	**40**	**1½"**	83.0	63.2	23.2	154.0	222.0	G 2¼	1½
	50	**2"**	103.0	63.2	23.2	184.0	266.0	G 2¾	2

Dimensions in mm
MG = diaphragm size

1) **Connection type**
Code 7R: Union end with insert (Rp threaded socket) – DIN
Code 3P: Union end with insert (NPT threaded socket)

2) **Valve body material**
Code 1: PVC-U, grey

8.2.7 Flange EN (code 4)



Connection type flange EN (code 4) [1], body material PVC-U (code 1) [2]

MG	DN	NPS	ød	øD	FTF	H	H1	øk	øL	n
20	**15**	**1/2"**	34.0	95.0	130.0	36.0	10.0	65.0	14.0	4
	20	**3/4"**	41.0	105.0	150.0	38.0	12.0	75.0	14.0	4
	25	**1"**	50.0	115.0	160.0	39.0	13.0	85.0	14.0	4
25	**32**	**1¼"**	61.0	140.0	180.0	41.0	15.0	100.0	18.0	4
40	**40**	**1½"**	73.0	150.0	200.0	63.2	23.2	110.0	18.0	4
	50	**2"**	90.0	165.0	230.0	63.2	23.2	125.0	18.0	4
50	**65**	**2½"**	106.0	185.0	290.0	78.8	38.8	145.0	18.0	4
80	**80**	**3"**	125.0	200.0	310.0	117.0	62.0	160.0	18.0	8
100	**100**	**4"**	150.0	220.0	350.0	140.0	75.0	180.0	18.0	8

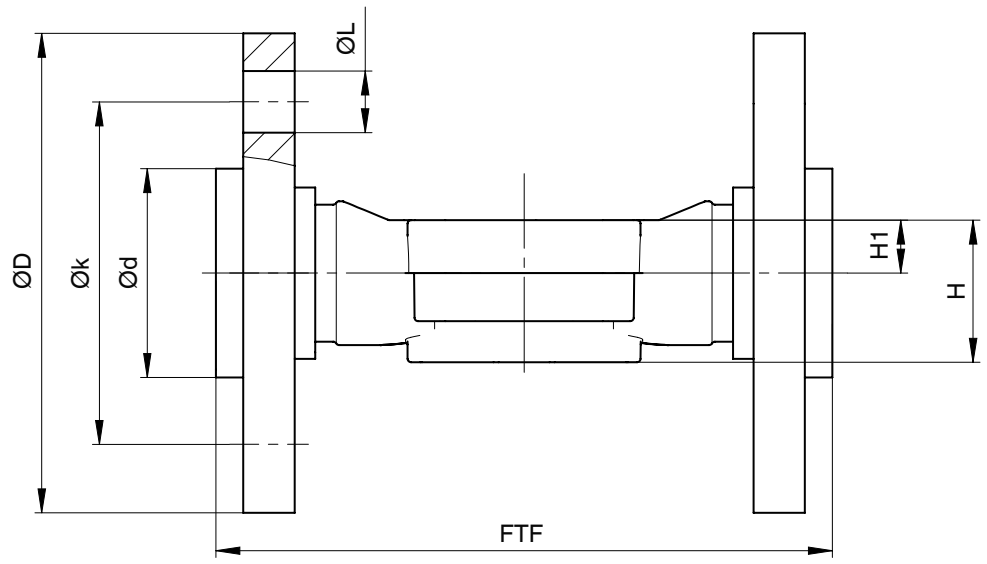
Connection type flange EN (code 4) [1], body materials PP (code 5), PVDF (code 20) [2]

MG	DN	NPS	ød		øD	FTF	H	H1	øk	øL	n
			Material								
			5	20							
50	**65**	**2½"**	122.0	120.0	185.0	290.0	78.8	38.8	145.0	18.0	4
80	**80**	**3"**	138.0	125.0	200.0	310.0	117.0	62.0	160.0	18.0	8
100	**100**	**4"**	158.0	150.0	220.0	350.0	140.0	75.0	180.0	18.0	8

Dimensions in mm
MG = diaphragm size
n = number of bolts

1) **Connection type**
Code 4: Flange EN 1092, PN 10, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1

2) **Valve body material**
Code 1: PVC-U, grey
Code 5: PP, reinforced
Code 20: PVDF



Connection type flange EN (code 4) [1], body material inliner/outliner (code 71, 75) [2]

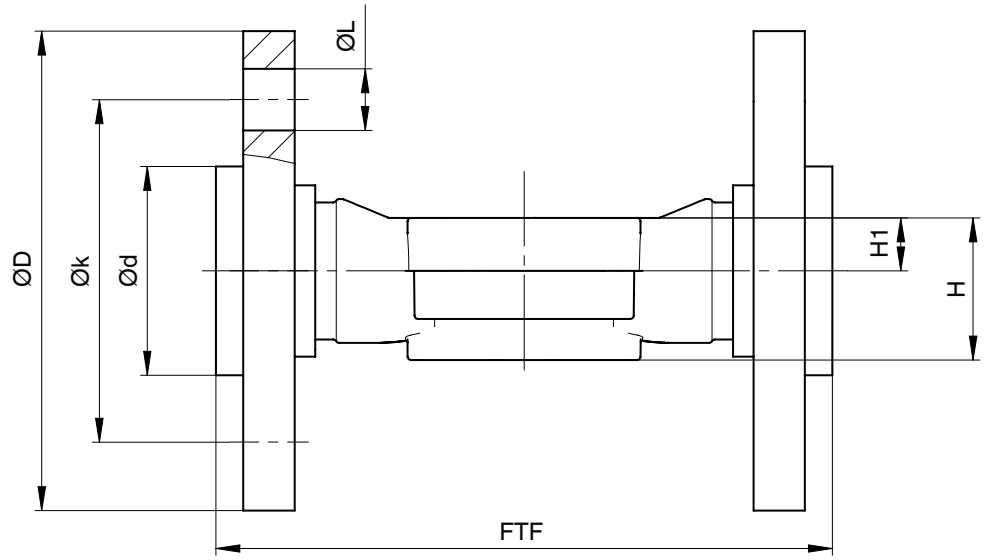
MG	DN	NPS	ød	øD	FTF	H	H1	øk	øL	n
20	**15**	**1/2"**	45.0	95.0	130.0	36.0	10.0	65.0	14.0	4
	20	**3/4"**	58.0	105.0	150.0	38.0	12.0	75.0	14.0	4
	25	**1"**	68.0	115.0	160.0	39.0	13.0	85.0	14.0	4
25	**32**	**1¼"**	78.0	140.0	180.0	41.0	15.0	100.0	18.0	4
40	**40**	**1½"**	88.0	150.0	200.0	63.2	23.2	110.0	18.0	4
	50	**2"**	102.0	165.0	230.0	63.2	23.2	125.0	18.0	4

Dimensions in mm
MG = diaphragm size
n = number of bolts

1) **Connection type**
Code 4: Flange EN 1092, PN 10, form B, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1

2) **Valve body material**
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.2.8 Flange ANSI Class (code 39)



Connection type flange ANSI (code 39)[1], body material PVC-U (code 1)[2]

MG	DN	NPS	ød	øD	FTF	H	H1	øk	øL	n
20	**15**	**1/2"**	34.0	95.0	130.0	36.0	10.0	60.0	16.0	4
	20	**3/4"**	41.0	105.0	150.0	38.0	12.0	70.0	16.0	4
	25	**1"**	50.0	115.0	160.0	39.0	13.0	79.0	16.0	4
25	**32**	**1¼"**	61.0	140.0	180.0	41.0	15.0	89.0	16.0	4
40	**40**	**1½"**	73.0	150.0	200.0	63.2	23.2	98.0	16.0	4
	50	**2"**	90.0	165.0	230.0	63.2	23.2	121.0	19.0	4
50	**65**	**2½"**	106.0	185.0	290.0	78.8	38.8	140.0	19.0	4
80	**80**	**3"**	125.0	200.0	310.0	117.0	62.0	152.0	19.0	4
100	**100**	**4"**	150.0	229.0	350.0	140.0	75.0	190.0	19.0	8

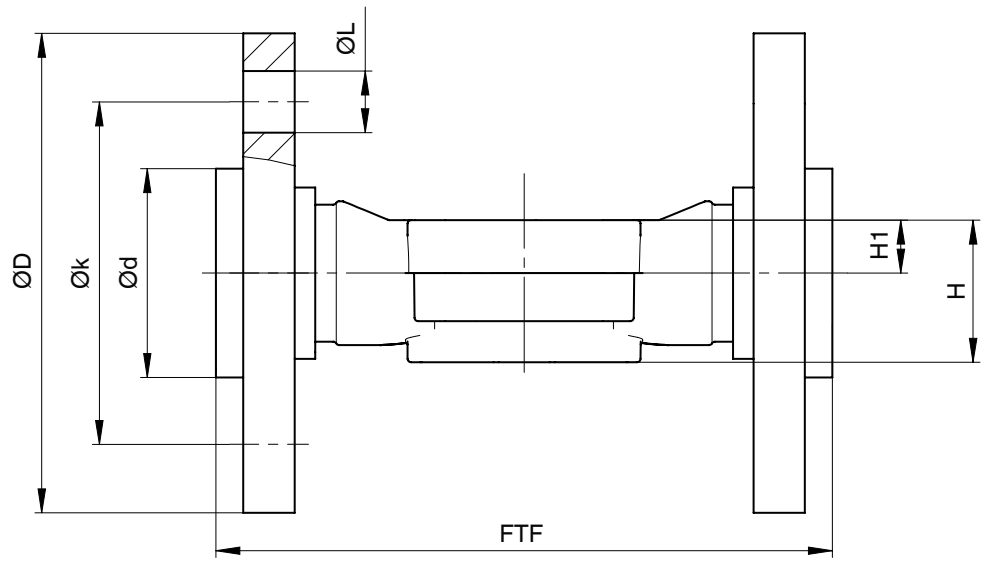
Connection type flange ANSI (code 39)[1], body material PP (code 5), PVDF (code 20)[2]

MG	DN	NPS	ød		øD	FTF	H	H1	øk	øL	n
			Material								
			5	20							
50	**65**	**2½"**	122.0	120.0	185.0	290.0	78.8	38.8	140.0	19.0	4
80	**80**	**3"**	133.0	125.0	200.0	310.0	117.0	62.0	152.0	19.0	4
100	**100**	**4"**	158.0	150.0	229.0	350.0	140.0	75.0	190.0	19.0	8

Dimensions in mm
MG = diaphragm size
n = number of bolts

1) **Connection type**
Code 39: Flange ANSI Class 125/150 RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D

2) **Valve body material**
Code 1: PVC-U, grey
Code 5: PP, reinforced
Code 20: PVDF



Connection type flange ANSI (code 39)[1], inliner/outliner body material (code 71, 75)[2]

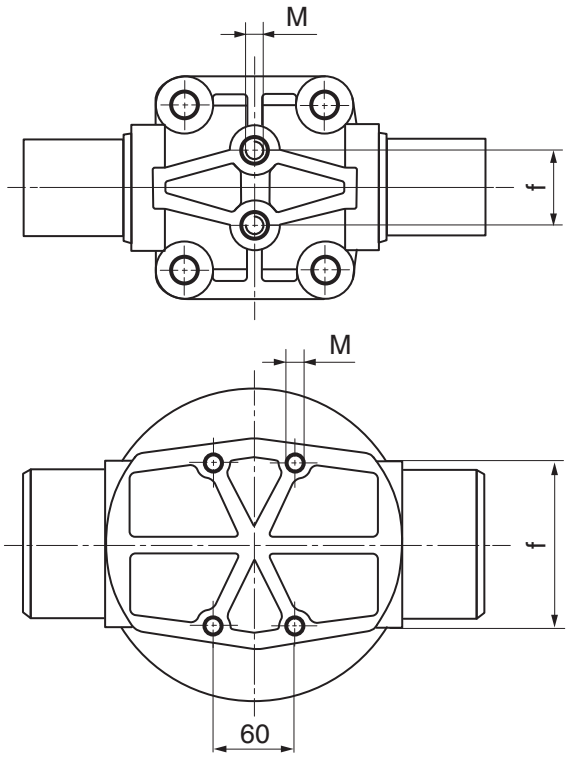
MG	DN	NPS	ød	øD	FTF	H	H1	øk	øL	n
20	**15**	**1/2"**	45.0	95.0	130.0	36.0	10.0	60.0	16.0	4
	20	**3/4"**	54.0	105.0	150.0	38.0	12.0	70.0	16.0	4
	25	**1"**	63.0	115.0	160.0	39.0	13.0	79.0	16.0	4
25	**32**	**1¼"**	73.0	140.0	180.0	41.0	15.0	89.0	16.0	4
40	**40**	**1½"**	82.0	150.0	200.0	63.2	23.2	98.0	16.0	4
	50	**2"**	102.0	165.0	230.0	63.2	23.2	121.0	19.0	4

Dimensions in mm
MG = diaphragm size
n = number of bolts

1) **Connection type**
Code 39: Flange ANSI Class 125/150 RF, face-to-face dimension FTF EN 558 series 1, ISO 5752, basic series 1, length only for body configuration D

2) **Valve body material**
Code 71: Inliner PP-H, grey, outliner PP, reinforced
Code 75: Inliner PVDF/outliner PP, reinforced

8.3 Valve body mounting



MG	DN	M Connection code 0, 4, 7, 7R, 20, 33, 39, 3M, 3T, 78	M Connection code 30	f
20	15 – 25	M6	M6 *	25.0
25	32	M6	M6 *	25.0
40	40 - 50	M8	M8 *	44.5
50	65	M8	M8 *	44.5
80	80	M12	1/2“ **	100.0
100	100	M10	3/4“ **	120.0

Dimensions in mm, MG = diaphragm size

* Inch thread on request

** Metric thread on request

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.

10 Installation in piping

10.1 Preparing for installation

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. Comply with appropriate regulations for the connections.
6. Installation work must be performed by trained personnel.
7. Shut off the plant or plant component.
8. Secure the plant or plant component against recommissioning.
9. Depressurize the plant or plant component.
10. Completely drain the plant or plant component and allow it to 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 vibrations and tension.
13. Only install the product between matching aligned pipes (see chapters below).
14. Pay attention to the installation position (see "Installation position" chapter).

⚠ WARNING

Corrosive chemicals!

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

⚠ CAUTION

Hot plant components!

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

⚠ CAUTION

Leakage

► Emission of dangerous materials.

● Provide precautionary measures against exceeding the maximum permitted pressures caused by pressure surges (water hammer).

⚠ 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).

⚠ WARNING

The equipment is subject to pressure!

► Risk of severe injury or death

● Depressurize the plant.

● Completely drain the plant.

⚠ 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.

10.2 Installation position

The installation position of the product is optional.

10.3 Installation with butt weld spigots

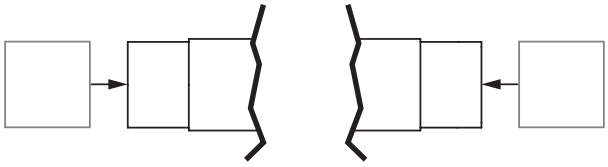


Fig. 1: Butt weld spigots

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

10.4 Installation with union ends

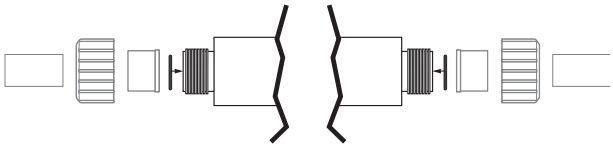


Fig. 2: Union end with insert

NOTICE

► The solvent cement is not included in the scope of delivery.

● Only use suitable solvent cement!

1. Keep solvent cement ready.
2. Carry out preparations for installation (see chapter "Preparations for installation").
3. Adhere to good welding practices!
4. Screw the threaded connections into the piping in accordance with valid standards.
5. Unscrew the union nut from the body of the product.
6. Reinsert the O-ring if necessary.
7. Push the union nut over the piping.
8. Connect the insert with the piping by solvent cementing/welding.
9. Screw the union nut back onto the body of the product.
10. Connect the other side of the body of the product with the piping in the same way.
11. Reactivate all safety and protective devices.

10.5 Installation with flanged connection

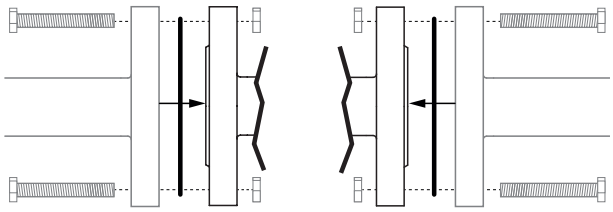


Fig. 3: Flanged connection

NOTICE

Sealing material

► The sealing material is not included in the scope of delivery.

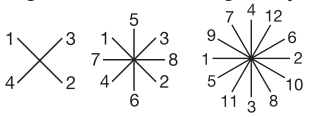
● Only use appropriate sealing material.

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 "Preparing 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.

10.6 After the installation

NOTICE

Diaphragms set in the course of time.

► Leakage
● After disassembly/assembly of the product, check that the bolts and nuts on the body are tight and retighten if required.
● Retighten the bolts and nuts at the very latest after the first sterilization process.

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

11 Pneumatic connections

11.1 Control functions

The following control functions are available:

Control function 1

Normally closed (NC):

Valve resting position: closed by spring force. Activation of the actuator (connector 2) opens the valve. When the actuator is vented, the valve is closed by spring force.

Control function 2

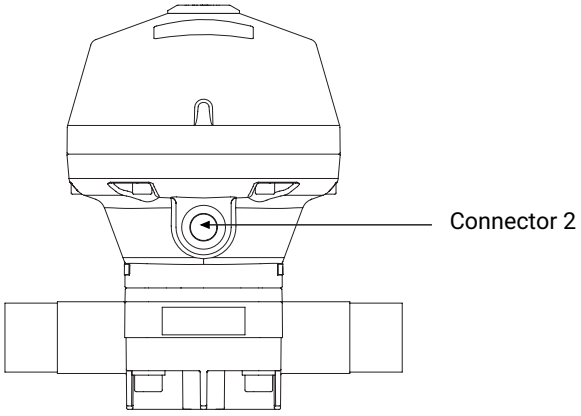
Normally open (NO):

Valve resting position: opened by spring force. Activation of the actuator (connector 4) closes the valve. When the actuator is vented, the valve is opened by spring force.

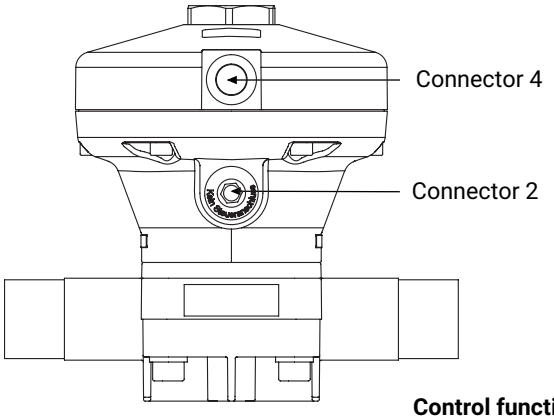
Control function 3

Double acting (DA):

Valve resting position: no defined normal position. The valve is opened and closed by activating the respective control medium connectors (connector 2: open / connector 4: close).



Control function 1



Control function 2 +3

Control function	Control medium connector 2 (open)	Control medium connector 4 (close)
1 (NC)	+	-
2 (NO)	–	+
3 (DA)	+	+

+ = available

– = not available

11.2 Connecting the control medium

The product has 2 control medium connectors.

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

12 Commissioning

⚠ WARNING

Corrosive chemicals!

► Risk of caustic burns

● Wear appropriate 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

Use as an end-of-line valve!

► Damage to the GEMÜ product

● When using the GEMÜ product as an end-of-line valve, a mating flange must be fitted.

⚠ 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 actuators 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.

1. Activate the actuator via control medium connector 2.

   ⇨ The product opens.

2. Vent the actuator via control medium connector 2.

   ⇨ The product closes.

13.2 Control function 2

In its resting position the product is opened by spring force.

1. Activate the actuator via control medium connector 4.

   ⇨ The product closes.

2. Vent the actuator via control medium connector 4.

   ⇨ The product opens.

13.3 Control function 3

In its resting position the product has no defined normal position.

1. Activate the actuator via control medium connector 2.

   ⇨ The product opens.

2. Activate the actuator via control medium connector 4.

   ⇨ The product closes.

14 Troubleshooting

Error	Error cause	Troubleshooting
Control medium escaping from vent hole* in the actuator cover for control function NC or control medium connector 2* for control function NO	Actuator membrane* faulty	Replace the actuator
Control medium escaping from leak detection hole	Spindle seal leaking	Replace actuator and check control medium for impurities
Working medium escaping from leak detection hole	Diaphragm faulty	Replace product
Control medium escaping to the outside at the actuator membrane*	Connecting bolts between actuator cover and base loose	Retighten bolts professionally diagonally
The product does not open or does not 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
	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Actuator spring faulty (for control function NO)	Replace the actuator
The product is leaking downstream (does not close or does not close fully)	Operating pressure too high	Operate the product with operating pressure specified in datasheet
	Control pressure too low (for control function NO and control function DA)	Operate the product with the control pressure specified in the datasheet
	Foreign matter between shut-off diaphragm and valve body	Remove the actuator, remove foreign matter, check diaphragm and valve body for potential damage, replace damaged parts if necessary
	Valve body leaking or damaged	Check valve body for potential damage, replace valve body if necessary
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace the shut off diaphragm if necessary
	Actuator spring faulty (for control function NC)	Replace actuator
The product is leaking between actuator and valve body	Shut-off diaphragm incorrectly mounted	Remove the actuator, check the diaphragm mounting, replace the shut-off diaphragm if necessary
	Bolting between valve body and actuator loose	Tighten bolting between valve body and actuator
	Shut-off diaphragm faulty	Check shut-off diaphragm for potential damage, replace the shut-off diaphragm if necessary
	Actuator/valve body damaged	Replace actuator/valve body
Connection between valve body and piping leaking	Incorrect installation	Check installation of valve body in piping
	Threaded connections / unions loose	Tighten threaded connections / unions
	Sealing material faulty	Replace sealing material
Valve body leaking	Valve body leaking or corroded	Check valve body for damage, replace valve body if necessary

* see chapter "Spare parts"

15 Inspection and 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.

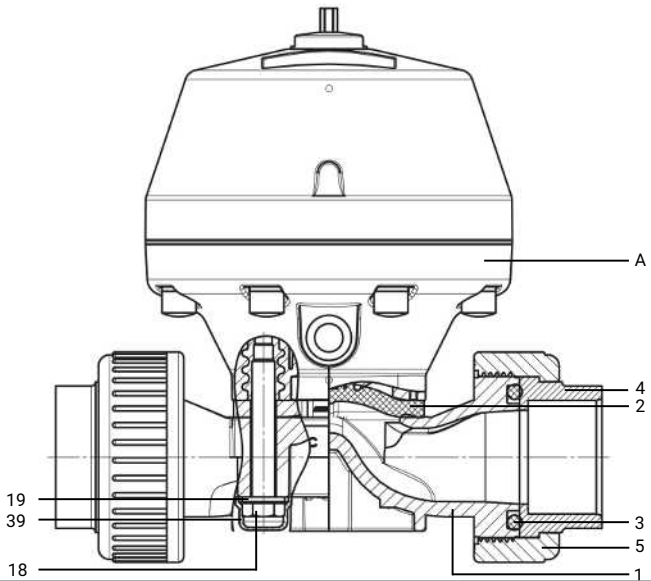
⚠ CAUTION

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

The operator must carry out regular visual examination of the valves dependent on the operating conditions and the potential danger in order to prevent leakage and damage. The valve also has to be disassembled in corresponding intervals and checked for wear (see "Fitting/removing spare parts").

15.1 Spare parts



Item	Name	Order designation
A	Actuator	A690
1	Body	B690
2	Diaphragm	Code 2 Code 4 Code 17 Code 29 Code 54 Code 5M
18, 19	Screw connection kit	R690 S30

15.2 Fitting/removing spare parts

15.2.1 Valve disassembly (removing actuator from body)

1. Move the actuator **A** to the open position.
2. Remove the actuator **A** from the valve body **1**.
3. Move the actuator **A** to the closed position.

NOTICE

Important:

► Clean all parts of contamination (do not damage the parts during cleaning) following removal. Check parts for potential damage; replace if necessary (only use genuine parts from GEMÜ).

15.2.2 Removing the diaphragm

NOTICE

► Before removing the diaphragm, please remove the actuator, see "Valve disassembly (removing actuator from body)".

1. Pull out the diaphragm.
2. Clean all parts of remains of product and contaminants. Do not scratch or damage parts during cleaning!
3. Check all parts for potential damage.
4. Replace damaged parts (only use genuine parts from GEMÜ).

15.2.3 Mounting the diaphragm

15.2.3.1 General information

NOTICE

► Mount the correct diaphragm that suits the valve (suitable for medium, medium concentration, temperature and pressure). The diaphragm is a wearing part. Check the technical condition and function of the valve before commissioning and during the whole duration of use. Carry out checks regularly and determine the check intervals in accordance with the conditions of use and/or the regulatory codes and provisions applicable for this application.

NOTICE

► If the diaphragm is not screwed into the adapter far enough, the closing force is transmitted directly onto the diaphragm pin and not via the compressor. This will cause damage and early failure of the diaphragm and thus leakage of the valve. If the diaphragm is screwed in too far, perfect sealing at the valve seat will not be achieved. The function of the valve is no longer ensured.

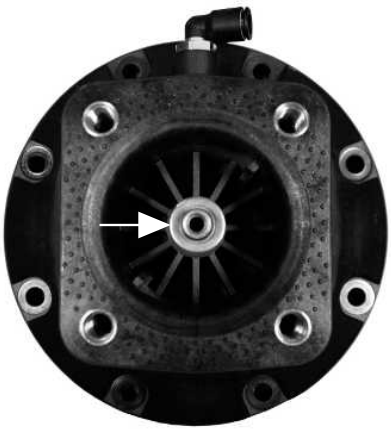
NOTICE

► Incorrectly mounted diaphragm may cause valve leakage/emission of medium. In this case remove the diaphragm, check the complete valve and diaphragm and reassemble again proceeding as described above.

The compressor is loose on all diaphragm sizes.

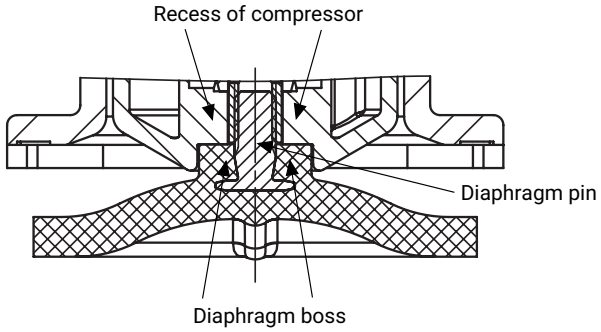
Compressor and actuator flange seen from below:

1. With diaphragm size 25 + 40: Place the washer (arrow) loosely on the actuator spindle.



2. Place the compressor loosely on the washer, fit the grooves into the guides (arrows).

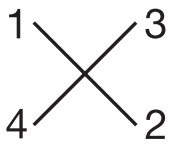
15.2.3.2 Mounting a concave diaphragm



1. Move the actuator **A** to the closed position.
2. With diaphragm size 25 + 40: Place the washer loosely on the actuator spindle. Place the compressor loosely on the washer, fit the recesses into the guides (see chapter "General information").
3. Check if the compressor fits closely in the guides.
4. Manually screw the new diaphragm into the compressor tightly.
5. Check if the diaphragm boss fits closely in the recess of the compressor.
6. If it is difficult to screw it in, check the thread, replace damaged parts (only use genuine parts from GEMÜ).
7. When clear resistance is felt, turn back the diaphragm anticlockwise until its bolt holes are in correct alignment with the bolt holes of the actuator.

15.2.4 Mounting the actuator on the valve body

1. Move the actuator **A** to the open position.
2. Position the actuator **A** with the mounted diaphragm **2** on the valve body **1**, take care to align the compressor weir and valve body weir (see sectional drawings).
3. Insert and tighten the bolts **18** with washers **19** by hand (hand tight only).
4. Move the actuator **A** to the closed position.
5. Fully tighten the bolts **18** diagonally.



6. Put the protective caps **39** back on.
7. Ensure that the diaphragm **2** is compressed evenly (approx. 10-15 %, visible by an even bulge to the outside).
8. Check tightness of completely assembled valve.

NOTICE

► Service and maintenance:
Diaphragms set in the course of time. After valve disassembly / assembly check that the bolts **18** on the body are tight and retighten as necessary.

9. Ensure even compression of the diaphragm (approx. 10 to 15%).

   ⇨ Even compression is detected by an even bulge to the outside.
   Please note: For a code 5M diaphragm (convex diaphragm), the PTFE diaphragm face and the EPDM backing diaphragm must be positioned level with and parallel to the valve body.

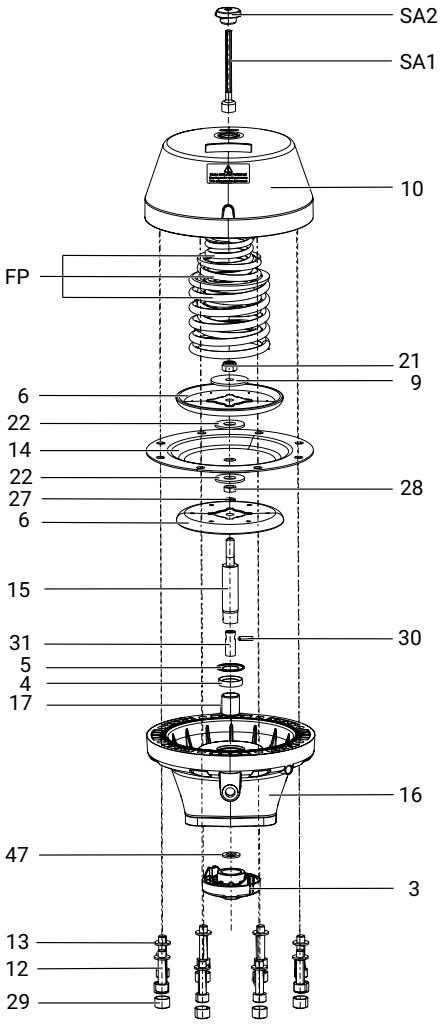
16 Removal from piping

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.

17.1 Disassembly for disposal for control function 1



⚠ WARNING

Actuator top 10 is under spring pressure!

► Risk of severe injury or death!

● Only open the actuator under a press.

NOTICE

Important

► The bolts **12** between actuator top **10** and actuator base **16** are inserted from above for diaphragm size 50, for diaphragm sizes 20, 25 and 40 from below.

1. Separate the actuator from the control medium.
2. Remove the protective cap **SA2**.
3. Remove the optical position indicator **SA1**.
4. Remove the protective caps **29**.
5. Clamp the actuator in a press.

⚠ CAUTION

Breakage of actuator top 10 when the pressure is too high!

► Only use minimum required pressure.

6. Undo and remove the bolts **12** together with the washers **13** between the actuator top **10** and the actuator base **16**.
7. Slowly release the press.
8. Remove actuator top **10**.
9. Remove spring set **FP**.

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 EU Declaration of Incorporation according to the EC Machinery Directive 2006/42/EC, Annex II B

EU Declaration of Incorporation

according to the EC Machinery Directive 2006/42/EC, Annex II B

We, the company

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

hereby declare under our sole responsibility that the below-mentioned product complies with the relevant essential health and safety requirements in accordance with Annex I of the above-mentioned Directive.

Product:	GEMÜ R690
Product name:	Pneumatically operated diaphragm valve
The following essential health and safety requirements of the EC Machinery Directive 2006/42/EC, Annex I have been applied or adhered to:	1.1.2.; 1.1.3.; 1.1.5.; 1.3.2.; 1.3.4.; 1.3.7.; 1.3.8.; 1.5.1.; 1.5.13.; 1.5.2.; 1.5.4.; 1.5.6.; 1.5.7.; 1.5.8.; 1.6.1.; 1.6.3.; 1.6.5.; 1.7.1.; 1.7.1.1.; 1.7.2.; 1.7.3.; 1.7.4.; 1.7.4.1.; 1.7.4.2.; 1.7.4.3.
The following harmonized standards (or parts thereof) have been applied:	EN ISO 12100:2010

We also declare that the specific technical documents have been created in accordance with part B of Annex VII.

The manufacturer undertakes to transmit relevant technical documents on the partly completed machinery to the national authorities in response to a reasoned request. This communication takes place electronically.

This does not affect the industrial property rights.

The partly completed machinery may be commissioned only if it has been determined, if necessary, that the machinery into which the partly completed machinery is to be installed meets the provisions of the Machinery Directive 2006/42/EC.

M. Barghoorn
Head of Global Technics

Ingelfingen, 22/08/2023

20 EU Declaration of Conformity in accordance with 2014/68/EU (Pressure Equipment Directive)

EU Declaration of Conformity

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

We, the company	GEMÜ Gebr. Müller Apparatebau GmbH & Co. KG Fritz-Müller-Strasse 6–8 74653 Ingelfingen-Criesbach, Germany

hereby declare under our sole responsibility that the below-mentioned product complies with the regulations of the above-mentioned Directive.

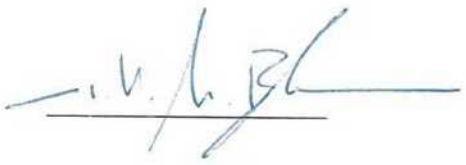
Product:	GEMÜ R690
Product name:	Pneumatically operated diaphragm valve
Notified body:	TÜV Rheinland Industrie Service GmbH Am Grauen Stein 1 51105 Cologne, Germany
ID number of the notified body:	0035
No. of the QA certificate:	01 202 926/Q-02 0036
Applied conformity assessment procedure(s):	Module H
The following harmonized standards (or parts thereof) have been applied:	EN ISO 16138:2006/A1:2019

Information for products with a nominal size ≤ DN 25:

The products are developed and produced according to GEMÜ's in-house process instructions and standards of quality 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-marking.

Other applied technical standards / Remarks:

- AD 2000



M. Barghoorn
Head of Global Technics

Ingelfingen, 07/09/2023

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