

## High Purity diaphragm valve, plastic

### Construction

The GEMÜ 690HP diaphragm valve has a low maintenance membrane actuator which can be controlled by air or inert gases. Normally Closed (NC), Normally Open (NO) and Double Acting (DA) control functions are available. All medium wetted parts and the actuator housing are made of high-grade plastic materials which can be selected to suit the application.

### Features

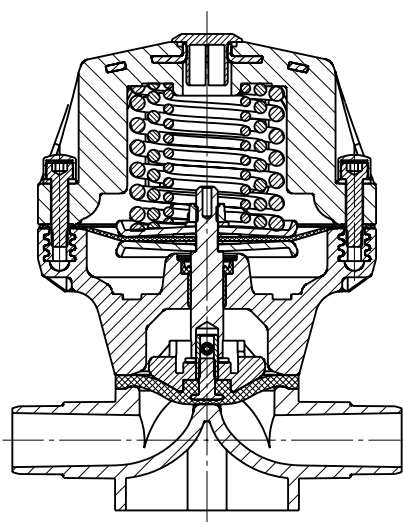
- Suitable for inert and corrosive\* liquid and gaseous media, particularly high purity media
- All medium wetted parts and the housing are made of high-grade plastic
  - Valve body: PFA inliner/PVDF outliner (carbon-filled) or PVDF, depending on the connection
  - Diaphragm material: PTFE/EPDM
- Control connection positioned in-line with flow direction as standard, thus installable in restricted spaces
- Manufactured under cleanroom conditions

### Advantages

- Compact, lightweight construction and high performance
- High  $K_v$  value
- Minimal deadleg
- Proven long life membrane actuator
- Leak detection hole
- Simple diaphragm replacement
- Optional accessories
  - Electrical position indicators with microswitches or proximity switches
  - Positioners and process controllers

\* see information on working medium on page 2

Sectional view



**Technical data**

**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.

**Working medium temperature**

Valve body PVDF -10 to 80 °C  
Dependent on the operating pressure

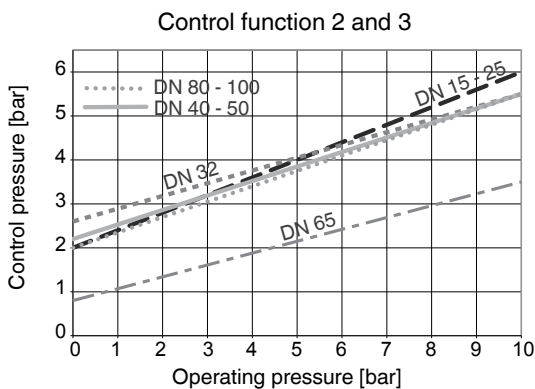
**Ambient temperature**

Valve body PVDF -5 to 50 °C

**Control / operating pressure [bar]**

DN	NPS	Operating pressure		Control pressure	
		Diaphragm		Control function	
		EPDM/FPM	PTFE	1	2 and 3
15-25	1/2" - 1"	0 - 10	0 - 6	4.5 - 7.0	max. 6.0
32-50	1 1/4" - 2"	0 - 10	0 - 6	4.5 - 7.0	max. 5.5
65	2 1/2"	0 - 10	0 - 6	5.5 - 7.0	max. 5.0
80	3"	0 - 8	0 - 6	5.0 - 7.0	max. 5.5
100	4"	0 - 6	0 - 4	5.5 - 7.0	max. 5.5

**Control pressure characteristic**



The above values are valid for both flow directions. 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.

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.

**Control medium**

Inert gases  
Max. permissible temperature of control medium 40 °C  
Filling volume (control function 1)  
DN 15 - 25 0.17 dm<sup>3</sup>  
DN 32 - 40 0.38 dm<sup>3</sup>  
DN 50 1.10 dm<sup>3</sup>  
DN 65 - 100 2.50 dm<sup>3</sup>

**Kv values / Weight - 2/2-way valves**

DN	Kv value [l/min]	Weight [kg]
15	93	0.7
20	137	0.7
25	175	0.7
32	300	1.4
40	417	1.4
50	767	2.4
65	1300	7.3
80	2000	7.3
100	3150	9.0

**Kv values - T valves**

DN2	DN1	Kv value	DN2	DN1	Kv value
Pipe	Spigot	[l/min]	Pipe	Spigot	[l/min]
15	15	80	50	40	505
20	15	82	50	50	540
20	20	114	65	32	340
25	15	83	65	50	550
25	20	117	80	15	87
25	25	148	80	20	132
32	15	85	80	25	145
32	25	153	80	32	327
32	32	385	80	40	441
40	15	87	80	50	552
40	20	122	100	15	87
40	25	150	100	20	132
40	40	500	100	25	145
50	15	93	100	32	327
50	20	133	100	40	441
50	25	157	100	50	552
50	32	397			

Kv values determined acc.to IEC 534 standard, inlet pressure 6 bar, Δp 1 bar, PVC-U valve body and soft elastomer diaphragm.

**Pressure / temperature correlation for plastic**

Temperature in °C (plastic body)	-20	-10	±0	5	10	20	25	30	40	50	60	70	80
Valve body material	Permissible operating pressure in bar												
PVDF Code 20	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.0	8.0	7.0	6.3	5.4	4.7

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

**Order data**

Body configuration	Code
2/2-way	D
T body	T

Connection	Code
Spigots DIN for socket solvent cementing/welding	0
Spigots for IR butt welding	20
Spigots for IR butt welding, BCF	28

Valve body material	Code
PVDF	20

Diaphragm material	Code
PTFE/EPDM, one-piece	54
PTFE/EPDM, two-piece	5M
PTFE/EPDM (available until 01.12.2020)	52
PTFE/EPDM (available until 01.06.2020)	5E

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

Actuator size	Code
Actuator size 1/N (DN 15-25)	1/N
Actuator size 2/N (DN 32,40)	2/N
Actuator size 3/N (DN 50)	3/N
Actuator size 4/N (DN 65-80)	4/N
Actuator size 5/N (DN 100)	5/N

**Additional order data for T valves**

DN 2 (main)	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*

\* only connection 2 code 20

Connection 2	Code
Spigots for IR butt welding	20
Spigots for IR butt welding, BCF	28

High Purity version	Code
High Purity	HP

Order example	690	20	D	20	20	54	1	2/N	-	-	HP
Type	690										
Nominal size		20									
Body configuration (code)			D								
Connection (code)				20							
Valve body material (code)					20						
Diaphragm material (code)						54					
Control function (code)							1				
Actuator size (code)								2/N			
T body: DN 2 (main) (code)									-		
T body: Connection 2 (code)										-	
Version (code)											HP

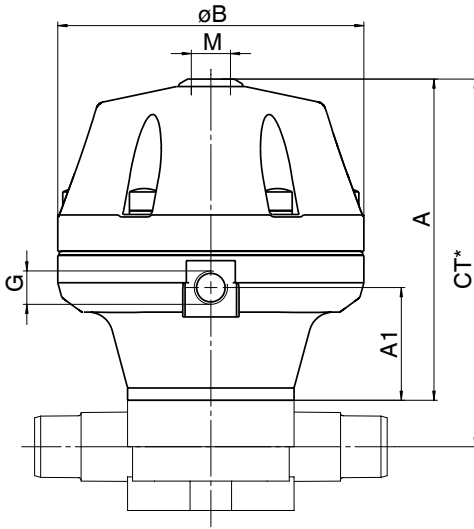
**Overview of valve bodies for GEMÜ 690HP**

Body configuration	2/2-way		T body
	20	28	28
Nominal size	65 - 100	15 - 50	15 - 50
Diaphragm material (code)	52 / 5E*	52 / 5E	5E

\* DN 15 - 50

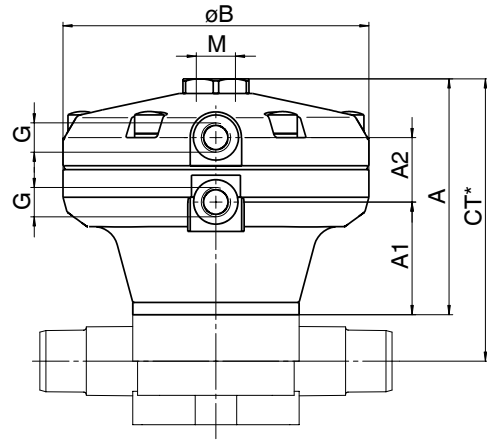
Actuator dimensions [mm]

Control function 1



Control function 2 and 3

\* CT = A + H1 (see body dimensions)

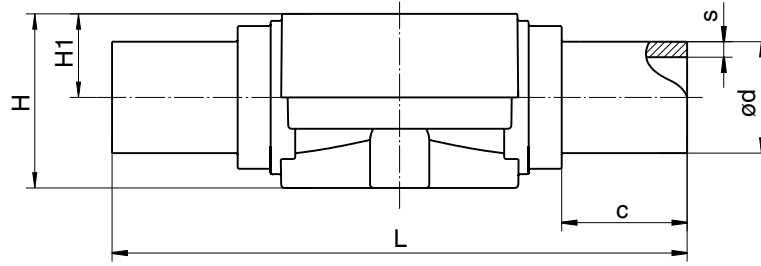


DN	øB	A	A1	G	M
15 - 25	125	131	47	G 1/4	M16x1
32 - 40	155	177	75	G 1/4	M16x1
50	210	215	90	G 1/4	M16x1
65 - 80	260	280	127	G 1/4	M22x1.5
100	260	307	149	G 1/4	M22x1.5

DN	ø B	A	A1	A2	G	M
15 - 25	125	98	47	27	G 1/4	M16x1
32 - 40	155	135	75	27	G 1/4	M16x1
50	210	164	90	29	G 1/4	M16x1
65 - 80	260	226	127	41	G 1/4	M22x1.5
100	260	263	149	46	G 1/4	M22x1.5

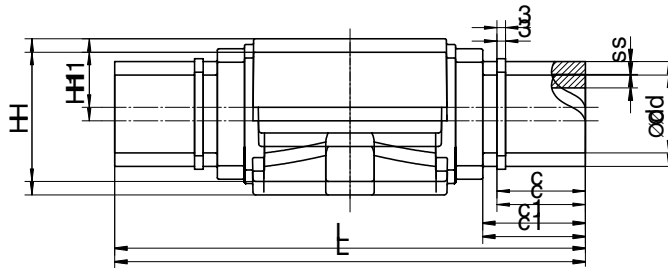
Body dimensions - 2/2-way valves [mm]

Spigots for IR butt welding, connection code 20



DN	L	H	H1	ød	s	c	Weight [kg]
15	154	36,0	10,0	20	1,9	33	0,10
20	154	38,0	12,0	25	1,9	33	0,12
25	154	39,0	13,0	32	2,4	33	0,14
32	174	41,0	15,0	40	2,4	33	0,18
40	194	63,2	23,2	50	3,0	33	0,40
50	224	63,2	23,2	63	3,0	33	0,47
65	284	117,0	62,0	75	3,6	43	3,57
80	300	117,0	62,0	90	4,3	51	3,30
100	340	140,0	75,0	110	5,3	59	4,00

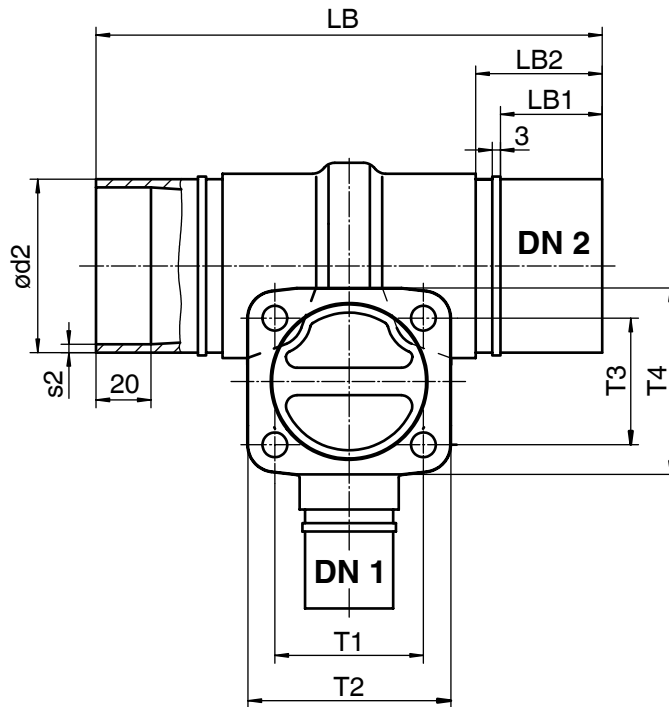
Spigots for IR butt welding, BCF, connection code 28



DN	L	H	H1	ød	c	c1	s	Weight [kg]
15	154	50	24	20	31	37	1.9	0.24
20	154	50	24	25	31	37	1.9	0.25
25	154	50	24	32	31	37	2.4	0.26
32	194	74	34	40	40	46	2.4	0.65
40	194	74	34	50	40	46	3.0	0.66
50	224	82	42	63	40	46	3.0	1.10

Body dimensions - T valves [mm]

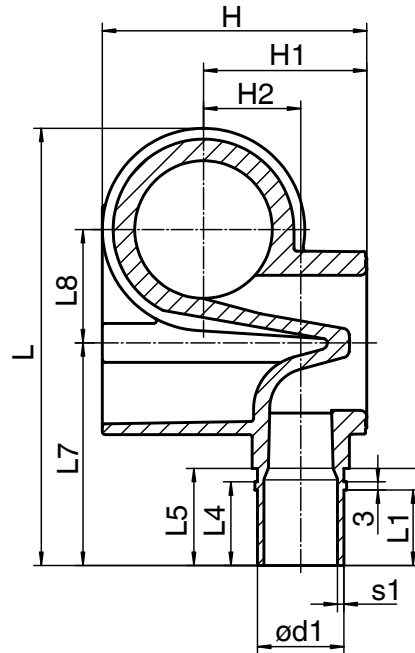
Spigots for IR butt welding, BCF, connection code 28



DN2 Pipe	DN1 Spigot	ø d2	s2	LB	LB1	Lb2	T1	T2	T3	T4
15	15	20	1.9	166	28	36	54	74	46	68
20	15	25	1.9	166	28	36	54	74	46	68
25	15	32	2.4	166	28	36	54	74	46	68
32	15	40	2.4	184	37	46	54	74	46	68
40	15	50	3.0	184	37	46	54	74	46	68
50	15	63	3.0	184	37	46	54	74	46	68
80	15	90	4.3	196	-	51	54	74	46	68
20	20	25	1.9	166	28	36	54	74	46	68
25	20	32	2.4	166	28	36	54	74	46	68
40	20	50	3.0	184	37	46	54	74	46	68
50	20	63	3.0	184	37	46	54	74	46	68
80	20	90	4.3	196	-	51	54	74	46	68
25	25	32	2.4	166	28	36	54	74	46	68
32	25	40	2.4	194	37	46	54	74	46	68
40	25	50	3.0	194	37	46	54	74	46	68
50	25	63	3.0	194	37	46	54	74	46	68
65	25	75	3.6	196	-	46	54	74	46	68
80	25	90	4.3	196	-	51	54	74	46	68
32	32	40	2.4	194	37	46	54	74	46	68
50	32	63	3.0	235	37	46	82	128	78	110
65	32	75	3.6	254	-	46	82	128	78	110
80	32	90	4.3	254	-	51	82	128	78	110
40	40	50	3.0	194	37	46	82	74	78	68
50	40	63	3.0	235	37	46	82	128	78	110
80	40	90	4.3	254	-	51	82	128	78	110
50	50	63	3.0	235	37	46	82	128	78	110
65	50	75	3.6	254	-	46	82	128	78	110
80	50	90	4.3	254	-	51	82	128	78	110
100	32	110	5.3	274	-	62	82	128	78	110
100	40	110	5.3	274	-	62	82	128	78	110
100	50	110	5.3	274	-	62	82	128	78	110

Body dimensions - T valves [mm]

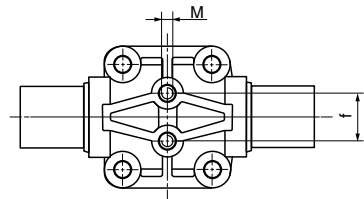
Spigots for IR butt welding, BCF, connection code 28



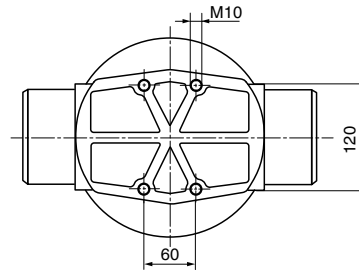
DN2 Pipe	DN1 Spigot	ø d1	s1	L	L1	L2	L4	L5	L7	L8	H	H1	H2
15	15	20	1.9	130	28	36	32	36	83	25	63	42	17
20	15	20	1.9	130	28	36	32	36	83	25	63	42	17
25	15	20	1.9	130	28	36	32	36	83	25	63	42	17
32	15	20	1.9	140	28	36	32	36	83	30	75	42	24
40	15	20	1.9	163	28	36	32	36	83	42	98	60	36
50	15	20	1.9	163	28	36	32	36	83	42	98	60	36
80	15	20	1.9	186	28	36	32	36	83	51	127	75	50
20	20	25	1.9	130	28	36	32	36	83	25	63	42	17
25	20	25	1.9	130	28	36	32	36	83	25	63	42	17
40	20	25	1.9	163	28	36	32	36	83	42	98	60	36
50	20	25	2.4	163	28	36	32	36	83	42	98	60	36
80	20	25	2.4	186	28	36	32	36	83	51	127	75	50
25	25	32	2.4	130	28	36	32	36	83	25	63	42	17
32	25	32	2.4	140	28	36	32	36	83	30	75	49	24
40	25	32	2.4	163	28	36	32	36	83	42	98	60	36
50	25	32	2.4	163	28	36	32	36	83	42	98	60	36
65	25	32	2.4	186	28	36	32	36	83	51	127	75	50
80	25	32	2.4	186	28	36	32	36	83	51	127	75	50
32	32	40	2.4	205	37	46	35	46	118	47	107	67	30
50	32	40	2.4	205	37	46	35	40	118	47	107	67	30
65	32	40	2.4	226	37	46	35	40	118	56	140	88	50
80	32	40	2.4	226	37	46	35	40	118	56	140	88	50
40	40	50	3.0	205	37	46	35	46	118	47	107	67	30
50	40	50	3.0	205	37	46	35	40	118	47	107	67	30
80	40	50	3.0	226	37	46	35	40	118	56	140	88	50
50	50	63	3.0	205	37	46	40	46	118	47	107	67	30
65	50	63	3.0	226	37	46	33	40	118	56	140	88	50
80	50	63	3.0	226	37	46	33	40	118	56	140	88	50
100	32	40	2.3	238	37	46	40	46	137	45	133	77	39
100	40	50	3.0	238	37	46	40	46	137	45	133	77	39
100	50	63	3.0	238	37	46	40	46	137	45	133	77	39

Valve body mounting dimensions [mm]

DN	M	f
15 - 25	M6	25.0
32	M6	25.0
40 - 50	M8	44.5
65	M8	44.5
80	M12	100.0
100	see drawing	



DN 15 - 80



DN 100

Compensating/mounting plates



GEMÜ 1041

Pilot valve



GEMÜ 334  
Pilot solenoid valve  
Plastic

For further plastic diaphragm valves, accessories and other products, please see our Product Range catalogue and Price List. Contact GEMÜ.

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