

GEMÜ®

Ball Valve, Metal - Sanitary

Construction

GEMÜ 740, 741 and 748 are 3-piece 2/2-way metal ball valves with top flange in sizes 1/2" to 4" (DN 15 to DN 100). They are particularly suitable for sanitary/hygienic applications. The top flange enables the operators to be exchanged at any time.

GEMÜ 740 is manually operated and has a plastic sleeved hand lever.

GEMÜ 741 is operated by a low maintenance, pneumatic piston actuator in single acting (spring return) or double acting design. The actuator has a robust Alodur coated aluminium housing. An integral optical position indicator as standard.

GEMÜ 748 has a low maintenance electric actuator with a powerful DC motor. The reduction gear in the motor, consisting of a threaded spindle with a lever, provides the rotation through 90°. The actuator has an optical position indicator and a manual override as standard.

Features

- Suitable for inert, corrosive*, liquid and gaseous media and steam
- The ball valves comply with the safety requirements of Annex I of the European Pressure Equipment Directive 97/23/EC (PED) for fluids of groups 1 and 2
- Suitable according to TA Luft (German Clean Air Act)
- Suitable for vacuum applications
- Optional ATEX version available
- Very low surface roughness - internal 0.6 µm
- Reworked welds for a minimal deadleg valve body and smooth surfaces

*see information on working medium on page 3



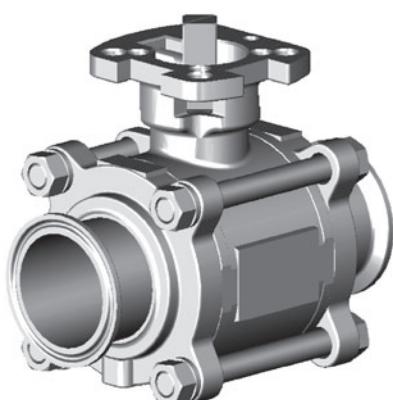
GEMÜ 740



GEMÜ 741



3D - illustration



GEMÜ 748

GEMÜ®
740, 741, 748

Product description

Specifications

Nominal sizes: 1/2" – 4"

Connection options:

- Butt weld spigots DIN 11850
- Spigots ASME BPE *
- Spigots EN ISO 1127
- Clamps ASME BPE *

Valve body material: CF3M (316L) investment casting

Ball material: CF3M (316L)

Seal material: PTFE, TFM™ (FDA compliant)

Surface finish: Internal 0.6µm polished, electropolished external
FDA compliant to FDA 21 CFR 177.1550

Max. operating pressure: 63 bar

Max. perm. operating temperature: 180°C

CIP and SIP cleaning possible.

* with full-flow bore

Dyneon TFM* 1600 PTFE

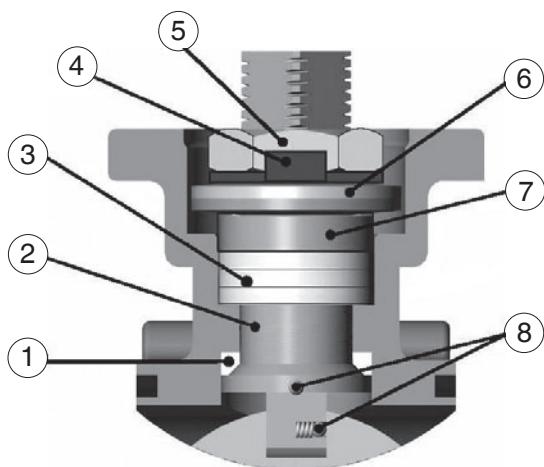
TFM™ is a modified PTFE, also called 2nd generation PTFE. It has the same chemical and heat resistance as conventional PTFE but a considerably lower melt viscosity which leads to a much better fusion of the chips during the sintering process. Better fusion results in a smoother surface which substantially reduces the torque.

Features:

- Very smooth surface
- Reduced cold flow properties
- Very low deformation under load
- Significantly improved surface properties
- Small pore volume
- Almost universal chemical resistance

* TFM is a registered trademark of Dyneon

The spindle seal system



① Spindle seal (PTFE)

② Valve spindle (316L)

③ V-rings (PTFE)

④ Lock washer (1.4301)

⑤ Spindle nut (1.4301)

⑥ Spring washers (1.4301)

⑦ Stainless steel bush (1.4301)

⑧ Antistatic device (1.4401)

Long service life due to triple spindle seal, TA-Luft compliant

1. Conical spindle seal: The seal ① arranged at an angle of 45° effectively prevents the leakage of medium when operating the spindle.
2. Machined spindle surface ② : reduces the friction force of the spindle making it very smooth-running and low wear.
3. V-rings: When compressed, three V-rings expand sideways and prevent the leakage of the medium..
4. Lock washer: Prevents the loosening of the spindle nut during operation.
5. Spindle nut: fixes the entire spindle system.
6. Spring washers: compress the gland packing to prevent leakage of medium.
7. Stainless steel bush: equally distributes the force on the packing.
8. Antistatic device: between spindle/ball and spindle/body.

Cavity filled PTFE seat 5C

The cavity filled seat made of PTFE is designed to minimise the cavity around the ball. Media remaining in the deadlegs of a valve are undesirable for example in food production. These deposits accumulate and contaminate the entire process. The cavity filled seat also enables easier cleaning of the valve.



740,741,748

GEMÜ®

General technical data

Working medium

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

Maximum permissible pressure of the working medium
see diagram
(for water and non-hazardous media to which the body material is resistant)

Maximum permissible operating temperature 180 °C

Maximum permissible ambient temperature 60 °C

Control medium (only GEMÜ 741)

Control pressure 6 - 8 bar

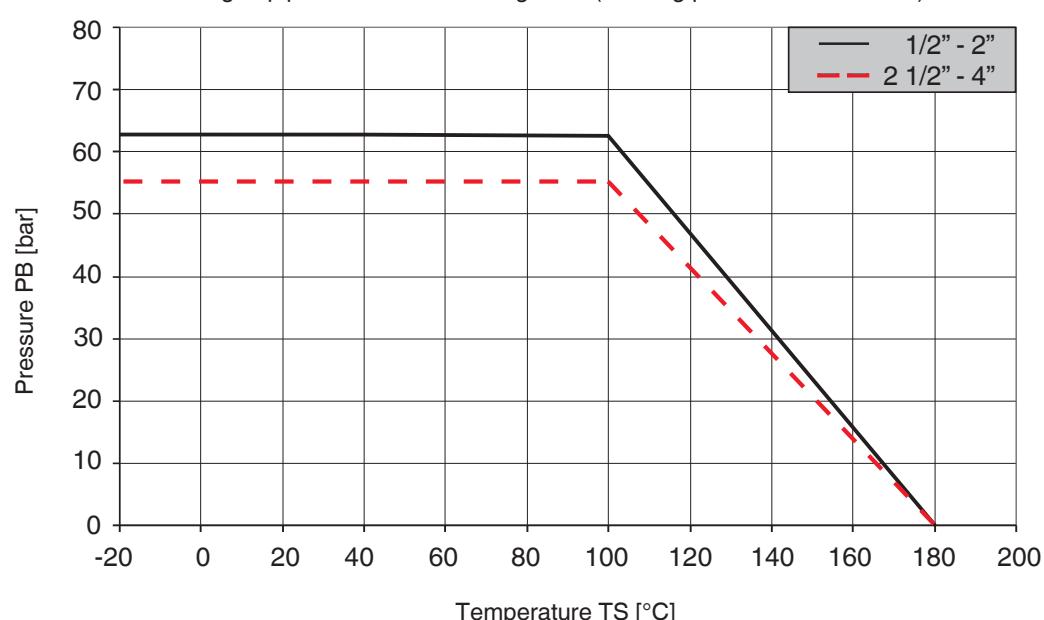
Max. perm. temperature of control medium 60 °C

Nominal size DN	NPS	Torque* [Nm]		Kv values [m³/h]	Weight [kg]		
		Seal material			Ball valve without operator		
		TFM™, Code 5T	PTFE, Code 5C		Clamps ASME BPE	Spigots ASME BPE	
15	1/2"	9	10	12.0	0.76	0.71	
20	3/4	10	12	38.6	0.87	0.91	
25	1"	16	17	69.5	1.44	1.26	
40	1 1/2"	36	40	184.5	3.29	3.24	
50	2"	44	48	351.8	4.57	3.59	
65	2 1/2"	91	98	560.2	9.46	9.90	
80	3"	104	111	840.8	12.91	13.19	
100	4"	117	124	1578.7	20.33	21.13	

* incl. 30% safety margin

Pressure-temperature diagram

according to pipe class of the welding ends (housing pressure max. 63 bar)



Order data - GEMÜ 740 - manually operated

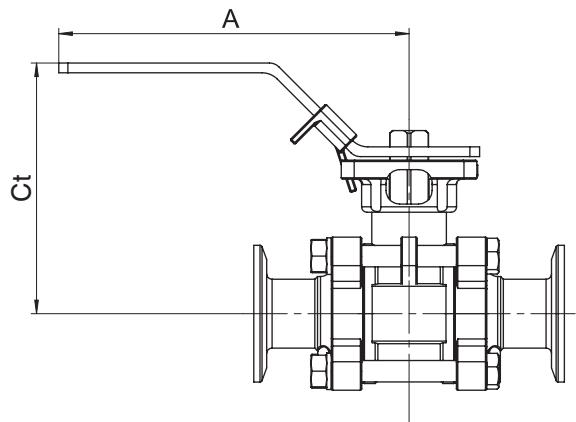
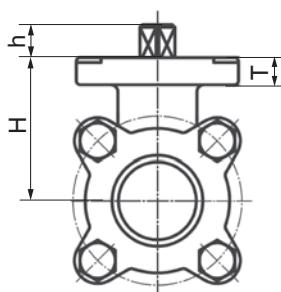
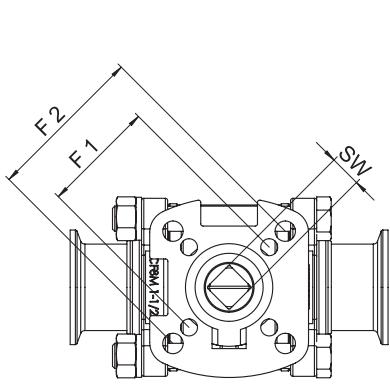
Type	Code	Connection	Code
Ball valve with hand lever	740	Butt weld spigots DIN 11850, series 2	17
Nominal size	Code	Spigots ASME BPE	59
DN 15	1/2"	Spigots EN ISO 1127	60
DN 20	3/4"	Clamps ASME BPE	80
DN 25	1"		
DN 40	1 1/2"		
DN 50	2"		
DN 65	2 1/2"		
DN 80	3"		
DN 100	4"		
Body configuration*	Code	Valve body material	Code
Straight through (2/2-way)	D	CF3M (316L), body (investment cast), Ball (316L)	C1
* Multi-port design on request			
Control function	Code	Seat material	Code
Manually operated with lockable hand lever	L	TFM™ (modified PTFE, FDA compliant) up to max. 180°C (also for steam up to max. 8 bar)	5T
		PTFE, (FDA-compliant) cavity filled seat	5C
Special version	Code		
ATEX	X		

Order example	740	15	D	60	C1	5T	L	-
Type (code)	740							
Nominal size (code)		15						
Body configuration (code)			D					
Connection (code)				60				
Valve body material (code)					C1			
Seat material (code)						5T		
Control function (code)							L	
Special version (Code)								-

Note: Wearing parts kit - order code: SP.K715-DN... (dependent on nominal size) contains replacement parts for the spindle seal and seat: Conical spindle seal (PTFE), V-ring spindle packing (PTFE), seat and flange gasket (PTFE)

Body dimensions [mm]

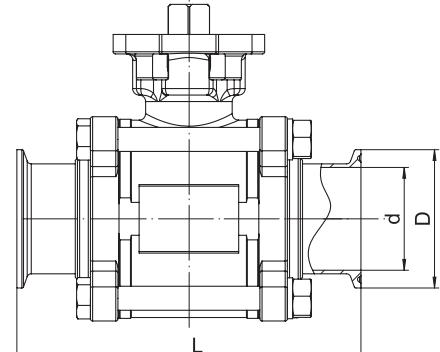
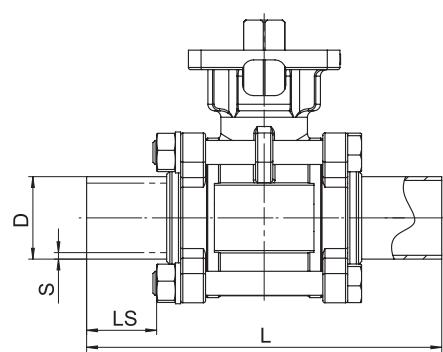
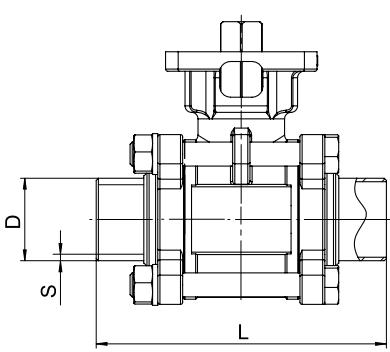
DN	All versions							GEMÜ 740			
	Top flange							Hand lever			
	F1		F2		SW	H	h ±0,5	T	A		
15	F03	36	Ø6x4	F04	Ø6x4	9	42.1	6.4	5	139	77
20	F03	36	Ø6x4	F04	Ø6x4	9	48.0	6.9	5	139	83
25	F04	42	Ø6x4	F05	Ø7x4	11	56.6	11.2	7	165	96
40	F05	50	Ø7x4	F07	Ø9x4	14	77.5	14.2	10	215	127
50	F05	50	Ø7x4	F07	Ø9x4	14	85.2	14.2	10	215	134
65	F07	70	Ø9x4	F10	Ø11x4	17	108.7	17.1	10	300	167
80	F07	70	Ø9x4	F10	Ø11x4	17	117.7	18.1	10	370	176
100	F07	70	Ø9x4	F10	Ø11x4	17	132.6	17.1	10	370	192



Top flange

GEMÜ 740 Hand lever

DN	Spigots							Clamp							
	DIN 11850 series 2 Code 17			ASME BPE Code 59			ISO Code 60			ASME BPE Code 80					
	L	D	S	L	D	S	L	LS	D	S	L	D	d		
15	140.2	19	1.5	139.8	12.7	1.65	140.2	38.2	21.3	1.6	89.1	25.0	9.4		
20	140.0	23	1.5	146.0	19.0	1.63	140.0	36.3	26.9	1.6	101.6	25.0	15.8		
25	152.2	29	1.5	158.7	25.4	1.60	152.2	38.6	33.7	2.0	114.5	50.5	22.1		
40	190.4	41	1.5	190.6	38.1	1.60	190.4	44.3	48.3	2.0	140.0	50.5	34.8		
50	203.0	53	1.5	216.0	50.8	1.65	203.0	45.3	60.3	2.0	159.0	64.0	47.5		
65	254.0	70	2.0	247.6	63.5	1.60	254.0	52.0	76.1	2.0	174.0	77.5	60.2		
80	280.2	85	2.0	266.8	76.2	1.60	280.2	55.1	88.9	2.3	193.2	91.0	72.9		
100	317.0	104	2.0	317.6	101.6	2.10	317.0	58.5	114.3	2.3	226.0	119.0	97.4		



Butt weld spigots code 17

Spigots ASME/ISO code 59, 60

Clamps ASME BPE Code 80

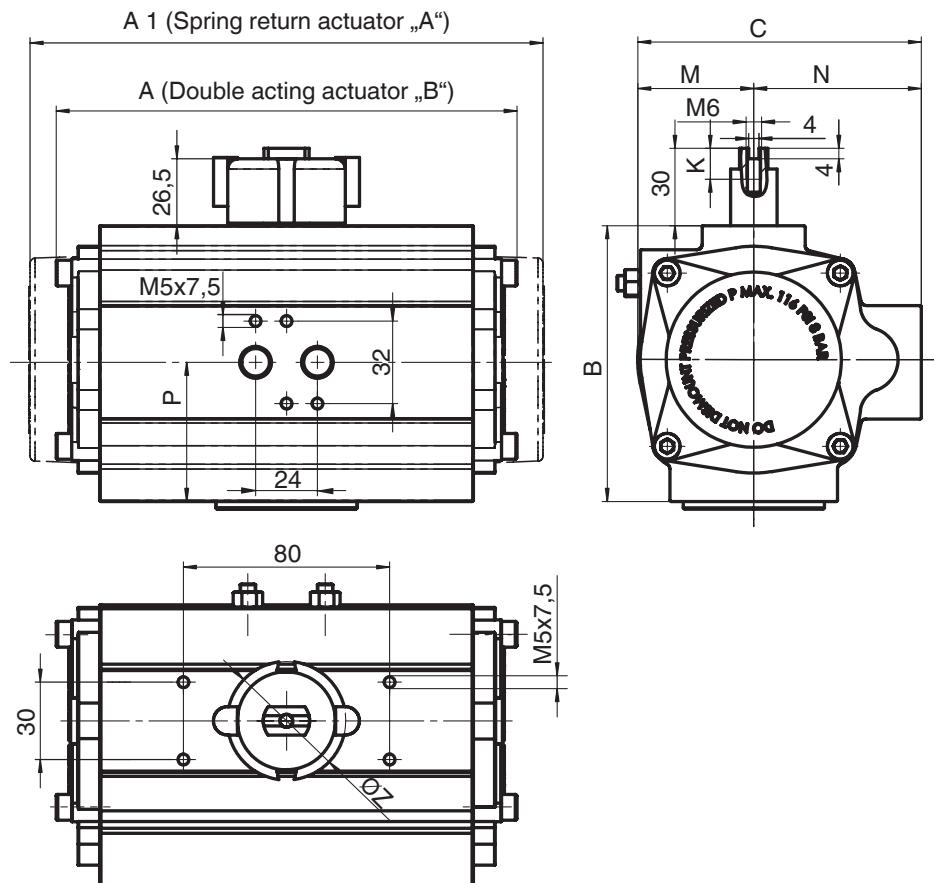
Order data - GEMÜ 741 - pneumatically operated

Type	Code	Actuator size		Code					
Ball valve with pneumatic actuator	741								
Nominal size	Code								
DN 15 1/2"	15	DN	Single acting SC						
DN 20 3/4"	20	DN 15	SC0015U 8 F04NS11A	SU01KO0					
DN 25 1"	25	DN 20	SC0030U 6 F04NS11A	SU03KO0					
DN 40 1 1/2"	40	DN 25	SC0060U 6 F05F07NS14A	SU06KP0					
DN 50 2"	50	DN 40	SC0150U 6 F07F10NS17A	SU15KC0					
DN 65 2 1/2"	65	DN 50	SC0220U 6 F07F10NS22A	SU22KD0					
DN 80 3"	80	DN 65	SC0220U 6 F07F10NS22A	SU22KD0					
DN 100 4"	100	DN 80	SC0300U 6 F07F10NS22A	SU30KD0					
		DN 100	SC0450U 6 F10F12NS27A	SU45KG0					
Body configuration*	Code								
Straight through (2/2-way)	D								
* Multi-port design on request									
Connection	Code								
Butt weld spigots DIN 11850, series 2	17								
Spigots ASME BPE	59								
Spigots EN ISO 1127	60								
Clamps ASME BPE	80								
Valve body material	Code								
CF3M (316L), body (investment cast)									
CF3M (316L), ball	C1								
Seat material	Code								
TFM™ (modified PTFE, FDA compliant) up to max. 180°C (also for steam up to max. 8 bar)	5T								
PTFE, (FDA-compliant) cavity filled seat	5C								
Control function	Code								
Normally closed (NC)	1								
Normally open (NO)	2								
Double acting (DA)	3								
Special version		Code							
ATEX		X							
Order example	741	15	D	59	C1	5T	1	SU01PO0	-
Type (Code)	741								
Nominal size (Code)		15							
Body configuration (Code)			D						
Connection (Code)				59					
Valve body material (Code)					C1				
Seat material (Code)						5T			
Control function (Code)							1		
Actuator size (Code)								SU01PO0	
Special version (Code)									-

Note: Wearing parts kit - order code: SP.K715-DN... (dependent on nominal size) contains replacement parts for the spindle seal and seat: Conical spindle seal (PTFE), V-ring spindle packing (PTFE), seat and flange gasket (PTFE)

Actuator dimensions - GEMÜ 741 - pneumatically operated

Actuator ADA/ASR [mm]

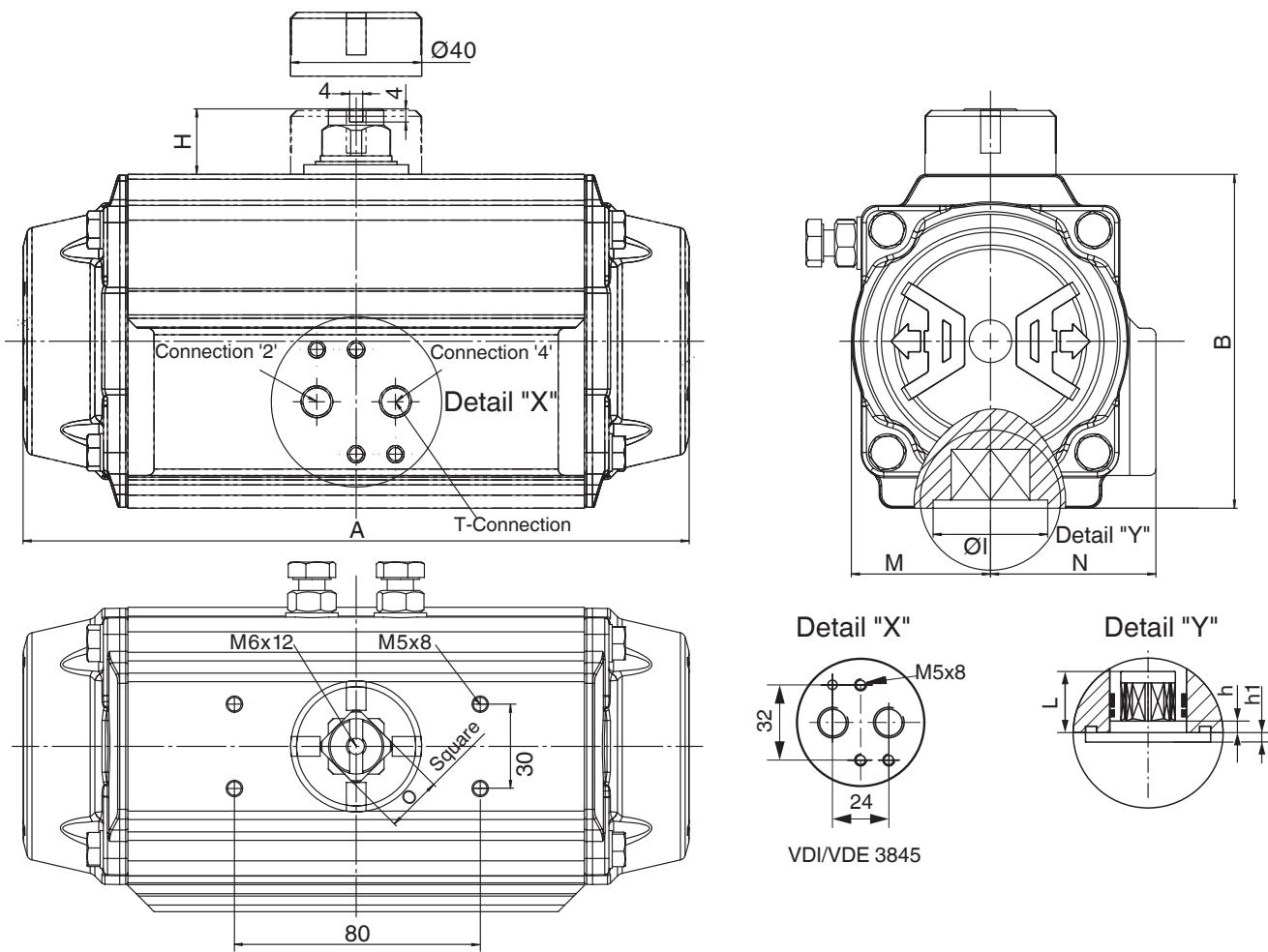


ADA/ASR	0020	0040	0080	0130	0200	0300	0500
ISO 5211	F04	F04	F05/F07	F05/F07	F07/F10	F07/F10	F10
Square Air connector	11	11	17	17	17	22	22
A	G ¹ / ₄						
A1	145	158	177	196	225	273	304
B	163	195	217	258	299	348.5	397
C	66	85	107	117	135	182	169
K	76	91	111	122	135.5	152.5	173
M	9	9	12	15	15	16	17
N	28	35	45	51	57	66.5	77
P	48	56	66	71	78	86	96
ØZ	46	46	46	46	46	54	64
Weight [kg]							
ADA	1.4	2.1	3.0	3.8	5.6	8.5	11.2
ASR	1.5	2.3	3.7	4.8	7.3	10.8	15.4

Stroke limiter on request

Actuator dimensions - GEMÜ 741 - pneumatically operated

Actuator DR/SC [mm]



Typ	0015U	0030U	0060U	0100U	0150U	0220U	0300U	0450U
ISO Flange	F04	F04/05	F05/07	F05/07	F07/10	F07/10	F07/10	F10/12
Square	11	14	14	17	17	22	22	27
Air Connector	G 1/8	G 1/8	G 1/8	G 1/8	G 1/4	G 1/4	G 1/4	G 1/4
A	136.0	153.5	203.5	241.0	259.0	304.0	333.0	394.5
B	69.0	85.0	102.0	115.0	127.0	145.0	157.0	177.0
H	20	20	20	20	20	30	30	30
$\varnothing I$	30	35	35	40	55	55	55	70
M	29.0	36.0	42.5	49.5	55.5	64.0	69.5	80.0
N	43.0	48.5	50.5	56.5	63.0	72.0	77.0	86.0
O	11	11	17	17	17	27	27	27
h	0.5	0.5	0.5	1.5	1.5	1.5	1.5	1.5
h1	1.5	2.0	2.0	1.5	2.0	2.0	2.0	3.0
L	11	11	19	19	19	19	25	32
Weight [kg]								
DR	1.0	1.6	2.7	3.8	5.4	8.4	10.2	14.5
SC	1.1	1.7	3.2	4.4	6.5	9.8	12.6	18.1

Stroke limiter on request

Technical data - GEMÜ 748 - motorized

Travel range	
Nominal travel range	90°
Max. travel range	93°
Setting range limit switch Min.	-2 to 12°
Setting range limit switch Max.	76 to 91°

Protection class to EN 60529
IP 65

Manual override
with Allen key SW3

Permissible temperatures	
Ambient temperature	-10 to +60 °C
Storage temperature	-20 to +60 °C

Weight	
Supply voltage 12V / 24V	970 g
Supply voltage 100-250V	1200 g

Correlation Actuator / Ball valve type 748								
Ball valve			Adapter required	Actuator version				
DN	Flange type	SW		1015 15 Nm	2015 15 Nm	2070 70 Nm	4100 100 Nm	4200 200 Nm
15	F04	9	no	X	X	-	-	-
20	F04	9	no	X	X	-	-	-
25	F05	11	no	-	-	X	-	-
40	F07	14	no	-	-	X	-	-
50	F07	14	no	-	-	X	-	-
65	F10	17	yes	-	-	X	-	-
80	F10	17	no	-	-	-	X	-
100	F10	17	no	-	-	-	-	X

Actuator materials				
Actuator version	1015	2015	2070	4100, 4200
Housing base	PP (30% glass reinforced)	PP (30% glass reinforced)	ABS	Aluminium
Housing cover	PPO (10% glass reinforced)	PP (30% glass reinforced)	ABS	Aluminium
Optical position indicator	PPR natural	PPR natural	PPR natural	PMMA

Note: For connection and wiring diagrams for motorized GEMÜ actuators see data sheet

Actuator version code 1015, 2015, - Data sheet GEMÜ 9428
 Actuator version code 2070, 4100, 4200 - Data sheet GEMÜ 9468

Technical data - GEMÜ 748 - motorized

Correlation Actuator version (torque) / Voltage-frequency

Voltage/Frequency	B1 12V DC	C1 24V DC	B4 12V AC	C4 24V AC	G4 120V AC	L4 230V AC	O4 100-250V AC
Actuator version	1015 (15 Nm)	X	X	-	-	-	-
	2015 (15 Nm)	-	-	X	X	-	X
	2070 (70 Nm)	-	X	-	X	X	-
	4100 (100 Nm)	-	X	-	X	X	-
	4200 (200 Nm)	-	X	-	X	X	-

Correlation Actuator version (torque) / Functional module

Functional module	A0	AE	AP	E2	E1	00	0E	0P
Actuator version	1015 (15 Nm)	X	X	-	-	-	-	-
	2015 (15 Nm)	X	X	-	-	-	-	-
	2070 (70 Nm)	X	X	X	X	X	X	X
	4100 (100 Nm)	X	X	X	X	X	X	X
	4200 (200 Nm)	X	X	X	X	X	X	X

Power consumption [W]

Voltage/ Frequency	B1 12V DC		C1 24V DC		B4 12V AC		C4 24V AC		G4 120V AC		L4 230V AC		O4 100-250V AC	
Functional module	A0,AE,AP E1,E2	00,0E OP												
Actuator version	1015	24	-	24	-	-	-	-	-	-	-	-	-	-
	2015	-	-	-	-	24	-	24	-	-	-	-	-	30
	2070	-	-	96	63	-	-	-	63	160	-	161	-	-
	4100	-	-	96	105	-	-	-	140	160	105	161	130	-
	4200	-	-	96	90	-	-	-	110	160	90	161	105	-

Electrical connection

Actuator version	1015, 2015			2070, 4100, 4200						
Supply voltages	12V / 24V		100 - 250V	24V, 120V, 230V						
Functional module	A0,AE			A0,AE, AP	00,0E, OP	E1	E2			
Control input voltage	Motor voltage		20 - 250V AC/DC	24 - 250V AC/DC	Motor voltage	0 ... 10V	-			
Control input current	-		typ. 1 mA	typ. 1 mA	0/4 ... 20 mA					
Rating	Continuously rated		rated 40%	Continuously rated						
Connection	Cable connection PG 13.5		Hirschmann plug type N6RFFS11	Flange plug Binder 692/693						
Cable diameter	7.5 ... 12.5 mm		7 ... 9 mm	max. 8 mm						
Max. cross section of wire	1.5 mm ²		1.5 mm ²	0.75 mm ²						
Recommended connection cable	5x1 mm ²		1 connector (standard): 7x1 mm ²	7x1 mm ²						
Overload protection	Motor protective system by customer		Integrated stall and overload protection plus excess current release T 1A 5x20 mm	Motor protective system by customer						

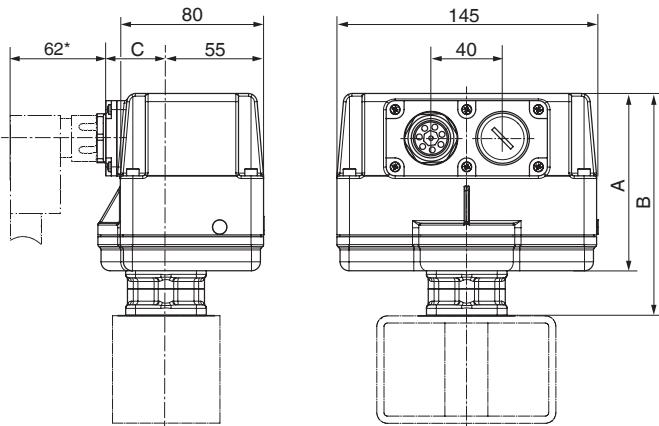
Order data - GEMÜ 748 - motorized

Type	Code	Voltage/Frequency	Code						
Ball valve with motorized actuator	748	12 V DC	B1						
Nominal size	Code	Functional module	Code						
DN 15 1/2"	15	OPEN / CLOSE control with relay, not reversible	00						
DN 20 3/4"	20	OPEN / CLOSE control with 2 additional potential-free limit switches, with relay, not reversible	0E						
DN 25 1"	25	OPEN / CLOSE control with potentiometer output, with relay, not reversible	0P						
DN 40 1 1/2"	40	Standard OPEN/CLOSE control	A0						
DN 50 2"	50	OPEN/CLOSE control with 2 additional potential-free limit switches	AE						
DN 65 2 1/2"	65	AOPEN/CLOSE control with potentiometer output	AP						
DN 80 3"	80	Control module for external set value 0-10V DC	E1						
DN 100 4"	100	Control module for external set value 0/4-20 mA	E2						
Body configuration*	Code	Actuator version	Code						
Straight through (2/2-way)	D	Torque 15 Nm, operating time 11 sec; planetary gear; supply voltage B1/C1	1015						
* Multi-port design on request		Torque 15 Nm, operating time 11 sec; planetary gear; supply voltage B4/C4/O4	2015						
Connection	Code	Torque 70 Nm, operating time 15 sec; supply voltage C1/C4/G4/L4	2070						
Butt weld spigots DIN 11850, series 2	17	Torque 100 Nm, operating time 20 sec; supply voltage C1/C4/G4/L4	4100						
Spigots ASME BPE	59	Torque 200 Nm, operating time 16 sec; supply voltage C1/C4/G4/L4	4200						
Spigots EN ISO 1127	60								
Clamps ASME BPE	80								
Valve body material	Code								
CF3M (316L), body (investment cast)	C1								
CF3M (316L), ball									
Seat material	Code								
TFM™ (modified PTFE, FDA compliant) up to max. 180°C (also for steam up to max. 8 bar)	5T								
PTFE, (FDA-compliant) cavity filled seat	5C								
Order example	748	25	D	60	C1	5T	C1	A0	1015
Type (Code)	748								
Nominal size (Code)		25							
Body configuration (Code)			D						
Connection (Code)				60					
Valve body material (Code)					C1				
Seat material (Code)						5T			
Voltage/Frequency (Code)							C1		
Functional module (Code)								A0	
Actuator version (Code)									1015

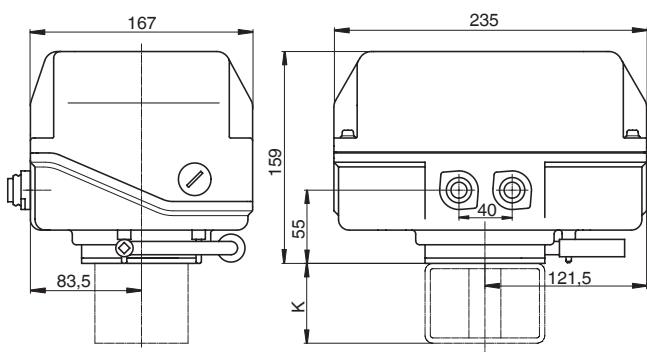
Note: Wearing parts kit - order code: SP.K715-DN... (dependent on nominal size) contains replacement parts for the spindle seal and seat: Conical spindle seal (PTFE), V-ring spindle packing (PTFE), seat and flange gasket (PTFE)

Actuator dimensions - GEMÜ 748 - motorized

Actuator version 1015, 2015



Actuator version 2070

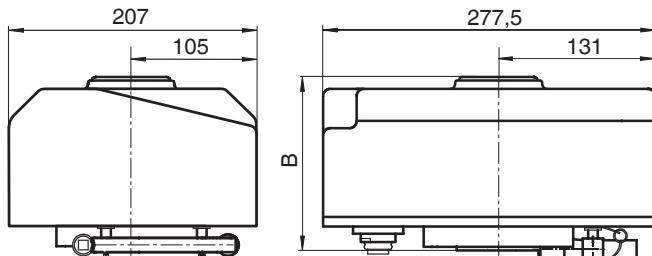


Voltages	ISO 5211	SW square drive socket	A	B	C	K
12 V, 24 V	F04 / F05	9	69	94	34	60
100 - 250 V			99	124	38	60

* Standard with supply voltage code O4

DN	ISO 5211 without mounting bracket	SW square drive socket	K
15, 20	F04	9	-
40, 50	F07	14	-
80, 100	F10	17	-
with mounting bracket			
25	F05	11	60
65	F10	17	76

Actuator version 4100, 4200

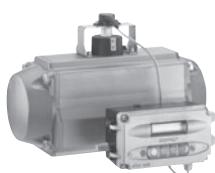


Functional module	ISO 5211	SW square drive socket	B
00, 0E, 0P	F07 + F10	17 / 22	146
A0, AE, AP, E2, E1			201

Instrumentation for quarter turn valves



GEMÜ ES2
Electrical position indicator
on pneumatic actuator



GEMÜ 1435 ePos
Intelligent positioner
on pneumatic actuator



GEMÜ 1436 cPos
Intelligent positioner and process
controller on pneumatic actuator



GEMÜ 4221
Combi switchbox with
integrated pilot valve on
pneumatic actuator

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

GEMÜ® VALVES, MEASUREMENT
AND CONTROL SYSTEMS