

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.

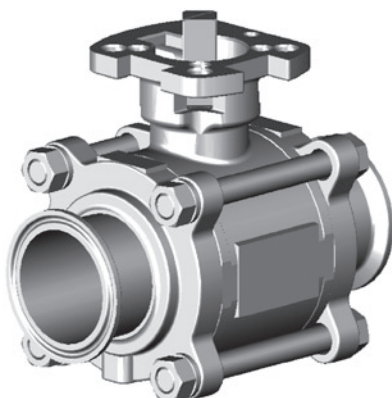
Features

- 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)
- Optional ATEX version available
- Very low internal surface roughness
- Reworked welds for a minimal deadleg valve body and smooth surfaces
- Full flow bore (connection code 59 and 80)

*see information on working medium on page 3



3D - illustration



GEMÜ 740



GEMÜ 741



GEMÜ 748

Product description

Specifications

Nominal sizes: ½" – 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

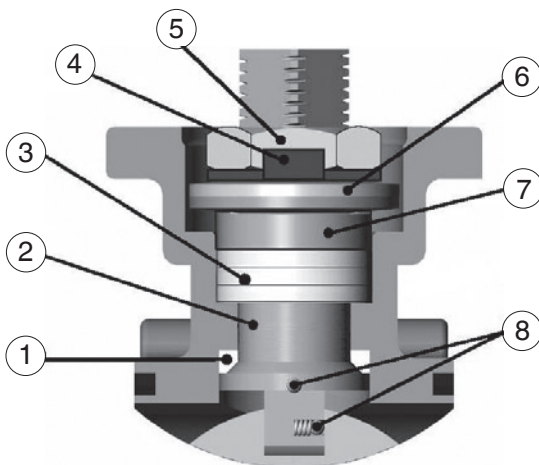
TFM™ is a modified PTFE, also called 2nd generation PTFE. It has the same chemical and heat resistance as conventional PTFE but a considerably lower melt viscosity which leads to a much better fusion of the chips during the sintering process. Better fusion results in a smoother surface which substantially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



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.

- | | |
|------------------------|---------------------------------|
| ① Spindle seal (PTFE) | ⑤ Spindle nut (1.4301) |
| ② Valve spindle (316L) | ⑥ Spring washers (1.4301) |
| ③ V-rings (PTFE) | ⑦ Stainless steel bush (1.4301) |
| ④ Lock washer (1.4301) | ⑧ Antistatic device (1.4401) |

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.



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

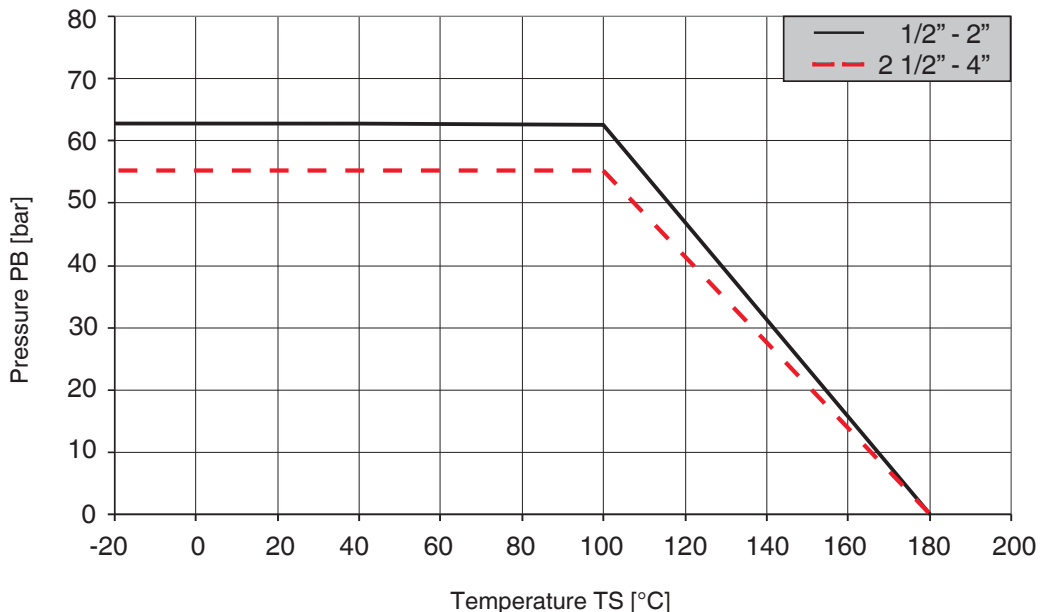
Max. perm. temperature of control medium 60 °C

Nominal size DN	NPS	Torque* [Nm]		Kv values [m ³ /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
Ball valve with hand lever	740

Nominal size	Code
DN 15 1/2"	15
DN 20 3/4"	20
DN 25 1"	25
DN 40 1 1/2"	40
DN 50 2"	50
DN 65 2 1/2"	65
DN 80 3"	80
DN 100 4"	100

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), Ball (316L)	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
Manually operated with lockable hand lever	L

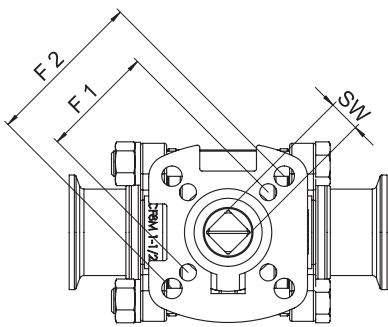
Special version	Code
ATEX	X

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)								-

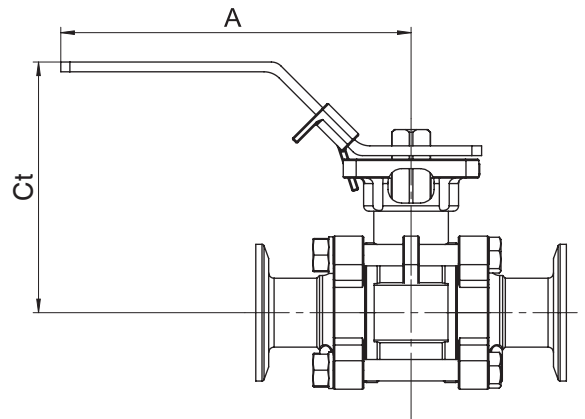
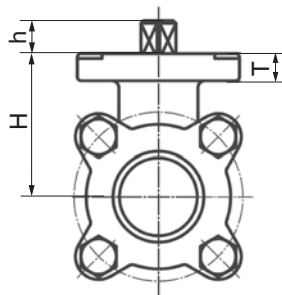
Note: Wearing parts kit - order code: SP.K715-DN... (dependent on nominal size) contains replacement parts for the spindle seal and seat: Conical spindle seal (PTFE), V-ring spindle packing (PTFE), seat and flange gasket (PTFE)

Body dimensions [mm]

All versions										GEMÜ 740	
DN	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

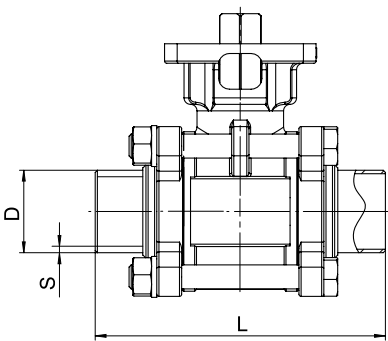


Top flange

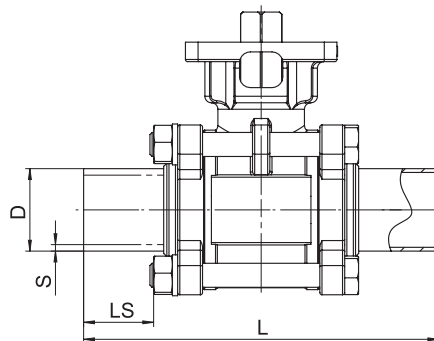


GEMÜ 740 Hand lever

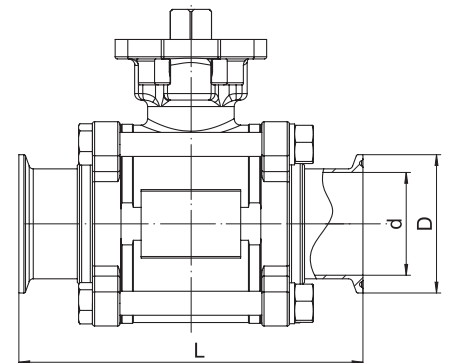
DN	Spigots										Clamp		
	DIN 11850 series 2 Code 17			ASME BPE Code 59			ISO Code 60				ASME BPE Code 80		
	L	D	S	L	D	S	L	LS	D	S	L	D	d
15	140.2	19	1.5	139.8	12.7	1.65	140.2	38.2	21.3	1.6	89.1	25.0	9.4
20	140.0	23	1.5	146.0	19.0	1.63	140.0	36.3	26.9	1.6	101.6	25.0	15.8
25	152.2	29	1.5	158.7	25.4	1.60	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
Ball valve with pneumatic actuator	741

Nominal size	Code
DN 15 1/2"	15
DN 20 3/4"	20
DN 25 1"	25
DN 40 1 1/2"	40
DN 50 2"	50
DN 65 2 1/2"	65
DN 80 3"	80
DN 100 4"	100

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

Actuator size		Code
DN	Single acting SC	
DN 15	SC0015U 6 F04NS11A	SU01KO0
DN 20	SC0030U 6 F04NS11A	SU03KO0
DN 25	SC0060U 6 F05F07NS14A	SU06KP0
DN 40	SC0150U 6 F07F10NS17A	SU15KC0
DN 50	SC0220U 6 F07F10NS22A	SU22KD0
DN 65	SC0220U 6 F07F10NS22A	SU22KD0
DN 80	SC0300U 6 F07F10NS22A	SU30KD0
DN 100	SC0450U 6 F10F12NS27A	SU45KG0
	Double acting DR	
DN 15	DR0015U F04NS11A	DU01AO0
DN 20	DR0015U F04NS11A	DU01AO0
DN 25	DR0030U F05F07NS14A	DU03AP0
DN 40	DR0060U F05F07NS17A	DU06AC0
DN 50	DR0100U F05F07NS17A	DU10AC0
DN 65	DR0100U F05F07NS17A	DU10AC0
DN 80	DR0150U F07F10NS22A	DU15AD0
DN 100	DR0220U F07F10NS22A	DU22AD0
	Single acting ASR	
DN 15	ASR0020 S08 F04YS14/S11A	A002FA0
DN 20	ASR0020 S08 F04YS14/S11A	A002FA0
DN 25	ASR0040 S14 F05YS14/S11A	A004KB0
DN 40	ASR0080 S14 F05707YS17/S11A	A008KC0
DN 50	ASR0130 S14 F05F07YS17/S14A	A013KC0
DN 65	ASR0200 S14 F07F10YS17/S14A	A020KE0
DN 80	ASR0300 S14 F07F10YS22A	A030KD0
DN 100	ASR0500 S14 F10YS22A	A050KF0
	Double acting ADA	
DN 15	ADA0020 F04YS11A	B002AA0
DN 20	ADA0020 F04YS11A	B002AA0
DN 25	ADA0020 F04YS11A	B002AA0
DN 40	ADA0080 F05F07YS17/S14A	B008AB0
DN 50	ADA0080 F05F07YS17/S14A	B008AC0
DN 65	ADA0130 F05F07YS17/S14A	B013AC0
DN 80	ADA0200 F07F10YS17/S14A	B020AE0
DN 100	ADA0300 F07F10YS22A	B030AD0

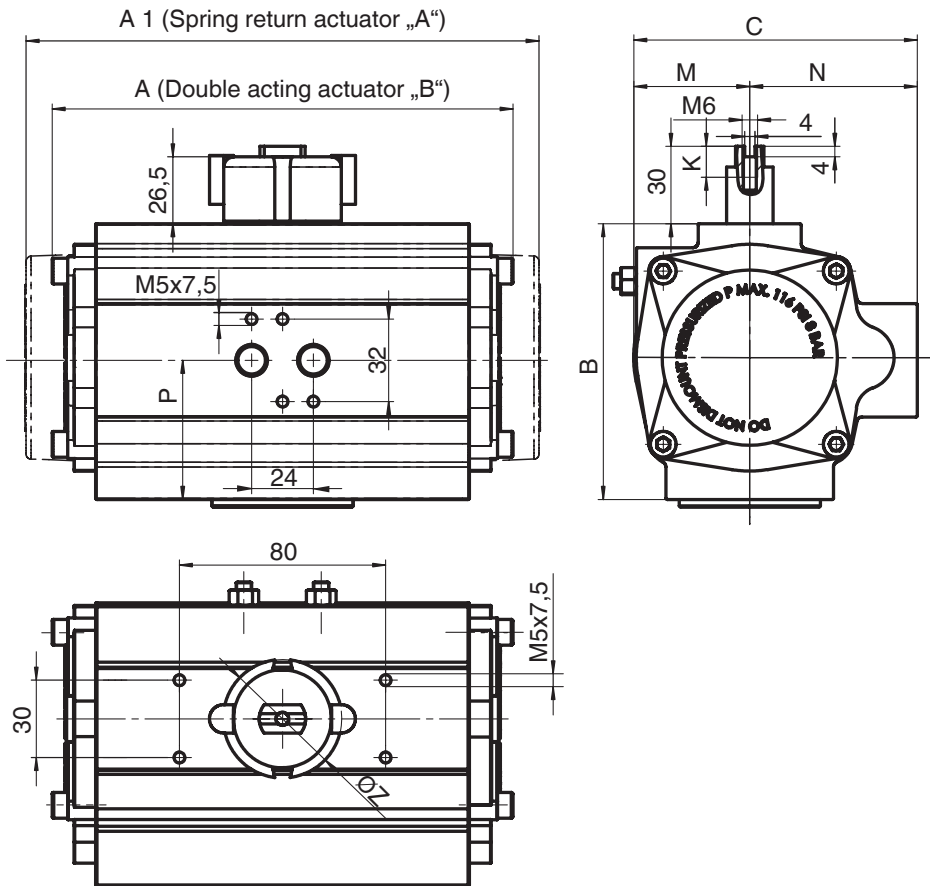
Special version	Code
ATEX	X

Order example	741	15	D	59	C1	5T	1	S001KB0	-
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)								S001KB0	
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]

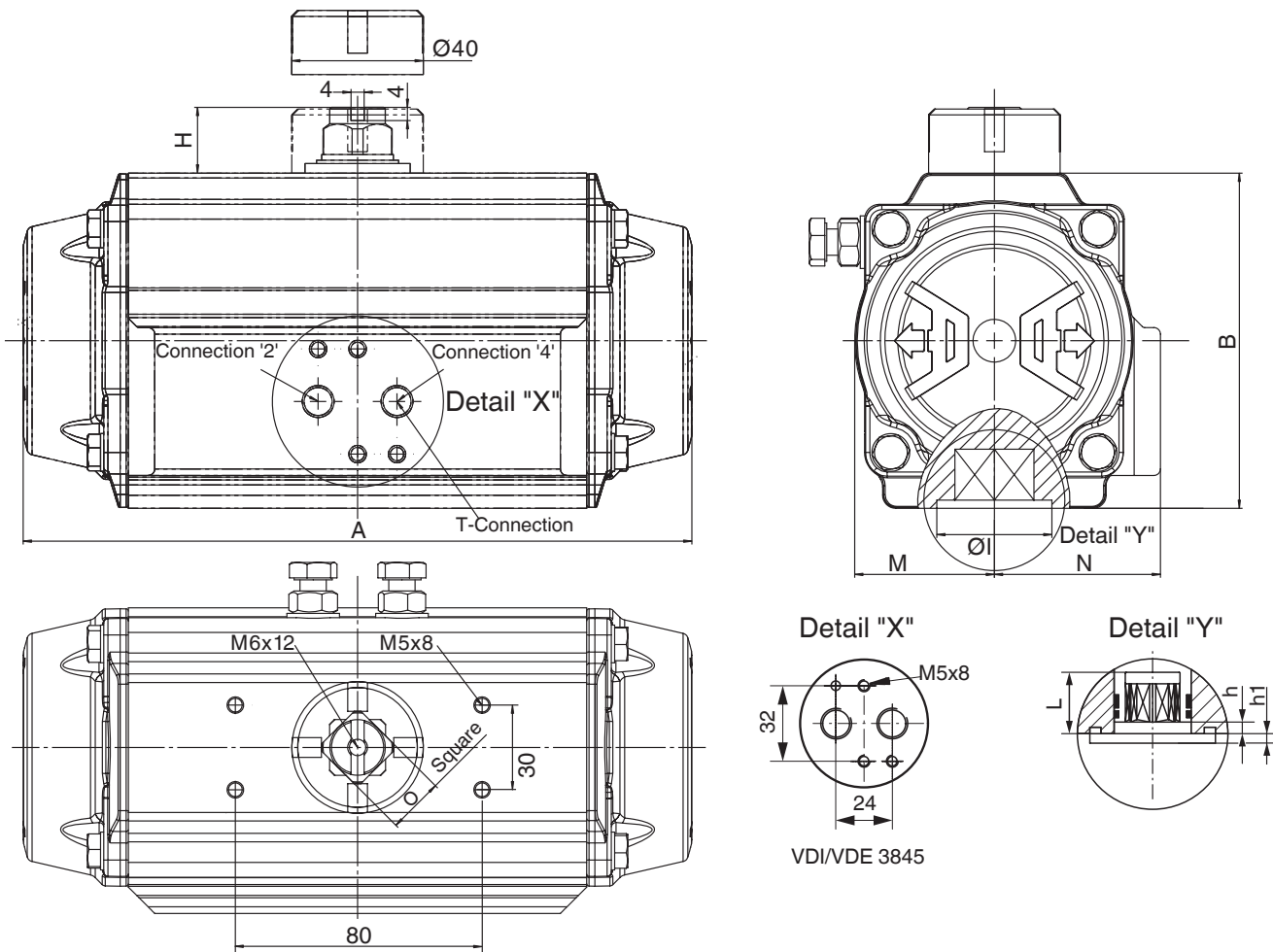


ADA/ASR	0020	0040	0080	0130	0200	0300	0500
ISO 5211	F04	F04	F05/F07	F05/F07	F07/F10	F07/F10	F10
Square	11	11	17	17	17	22	22
Air connector	G¼	G¼	G¼	G¼	G¼	G¼	G¼
A	145	158	177	196	225	273	304
A1	163	195	217	258	299	348.5	397
B	66	85	107	117	135	182	169
C	76	91	111	122	135.5	152.5	173
K	9	9	12	15	15	16	17
M	28	35	45	51	57	66.5	77
N	48	56	66	71	78	86	96
P	34	45	55	60	70	80	85
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
Ø 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	X	-
	4100 (100 Nm)	-	X	-	X	X	X	-
	4200 (200 Nm)	-	X	-	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	X
	4100 (100 Nm)	X	X	X	X	X	X	X	X
	4200 (200 Nm)	X	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 0P	A0,AE,AP E1,E2	00,0E 0P	A0,AE,AP E1,E2	00,0E 0P	A0,AE,AP E1,E2	00,0E 0P	A0,AE,AP E1,E2	00,0E 0P	A0,AE,AP E1,E2	00,0E 0P	A0,AE,AP E1,E2	00,0E 0P
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, 0P	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
Ball valve with motorized actuator	748

Nominal size	Code
DN 15 1/2"	15
DN 20 3/4"	20
DN 25 1"	25
DN 40 1 1/2"	40
DN 50 2"	50
DN 65 2 1/2"	65
DN 80 3"	80
DN 100 4"	100

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)	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

Voltage/Frequency	Code
12V DC	B1
12V AC 50/60Hz	B4
24V DC	C1
24V AC 50/60Hz	C4
120V AC 50/60Hz	G4
100-250V AC 50/60Hz	O4
230V AC 50/60Hz	L4

Functional module	Code
OPEN / CLOSE control with relay, not reversible	00
OPEN / CLOSE control with 2 additional potential-free limit switches, with relay, not reversible	0E
OPEN / CLOSE control with potentiometer output, with relay, not reversible	0P
Standard OPEN/CLOSE control	A0
OPEN/CLOSE control with 2 additional potential-free limit switches	AE
AOPEN/CLOSE control with potentiometer output	AP
Control module for external set value 0-10V DC	E1
Control module for external set value 0/4-20 mA	E2

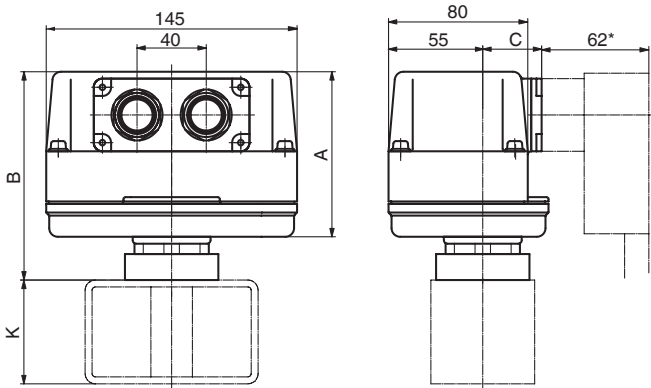
Actuator version	Code
Torque 15 Nm, operating time 11 sec; planetary gear; supply voltage B1/C1	1015
Torque 15 Nm, operating time 11 sec; planetary gear; supply voltage B4/C4/O4	2015
Torque 70 Nm, operating time 15 sec; supply voltage C1/C4/G4/L4	2070
Torque 100 Nm, operating time 20 sec; supply voltage C1/C4/G4/L4	4100
Torque 200 Nm, operating time 16 sec; supply voltage C1/C4/G4/L4	4200

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: SPK715-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

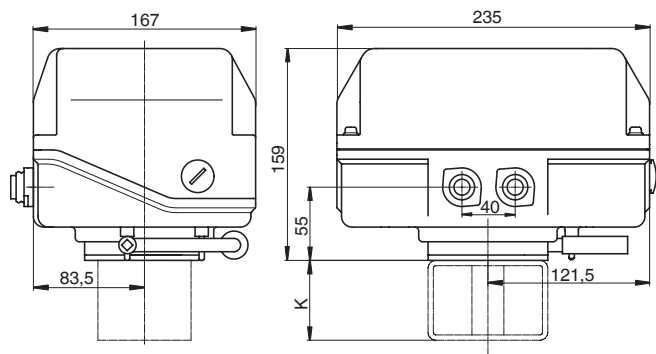
Actuator version 1015, 2015



Voltages	ISO 5211	SW square drive socket	A	B	C	K
12V, 24V	F04 / F05	9	69	94	34	60
100V - 250V			95	120	38	60

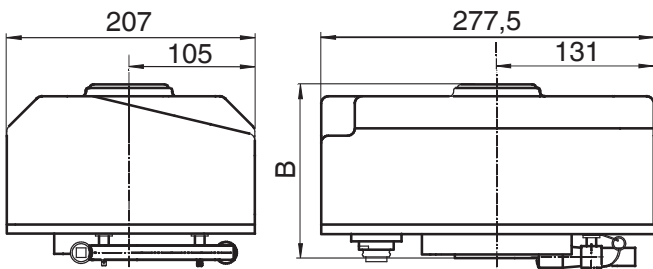
* Standard with supply voltage code O4

Actuator version 2070



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

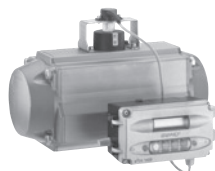


Functional module	ISO 5211	SW square drive socket	B
00, 0E, 0P	F07 + F10	17 / 22	146
A0, AE, AP, E2, E1			201

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

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