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GEA HYGIENIC BUTTERFLY VALVES

Legal notice
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for the U.S. dairy market

Hygienic Valve Technology

Efficiency delivering perfect results
Hygienic valves from GEA form the core component of matrix-piped process plants. Thanks to a pioneering valve concept that sets standards for its flexibility, as well as the latest control and automation functions, our valves offer manufacturers maximum product safety and process reliability.

All GEA hygienic valves are designed to be efficient and costeffective for their particular applications, leading to sustainable operation and considerable savings potential.

GEA valve technology controls flow processes
Our hygienic valve technology ensures safe, efficient processes wherever sensitive liquid products are manufactured. In food production, the classic application areas range from milk processing (milk, yogurt, cheese ...) to liquid foods (sauces and pastes, instant products, baby food ...) and on to the brewing of beer and production of beverages. Further significant areas are biotechnology and pharmaceuticals, as well as care products and cleaning agents / detergents.

Regardless of the sector, the application or production specifications: Our hygienic valve technology is sure to meet the demands of our users.

Hygienic solutions for every task
Additional components in our portfolio are available to optimize the design of any process plant – from pigging systems for the recovery of valuable products, process connections, and expansion compensators for offsetting thermal stress, to tank safety systems for securing and cleaning tanks and containers.

Supported by our Research and Development Department we regularly launch new, technologically mature products on the markets. Our customers have high standards, which we continuously and systematically meet.

Hygienic Classes for Valves

Increasing variety of products, longer production cycles and changing market conditions are all factors that make the conception of new installations more complex for producers. Additionally, there are higher expectations from the consumers as well as stricter regulations for producers and products. Therefore, engineers have many things to consider when creating suitable solutions for their customers. Our goal is to equip your installation with components that fit your product and your market. To better assist you, we have set up a guideline for choosing the right hygienic component technology according to the Association of German Food Processing Machinery and Packaging Machinery (VDMA).

The hygienic classes can be described by microbiological, physicochemical as well as the resulting organoleptic properties of the product. An important indicator for the classification is its desired shelf-life. The classification is based on the desired characteristics of the final product. Contamination risks and the ability to detect them are important factors for corresponding component designs.

Soft drink (still)*
MSL: several months
pH-value: > 4.5

Ice tea (still)*
MSL: > 12 months
pH-value: > 4.5

Babyfood / Nutrition*
MSL: several months
pH-value: > 4.5

UHT milk / UHT cream*
MSL: > 3 months
pH-value: > 4.5

Fruite juice*
MSL: several months
pH-value: ≤ 4.5

Ice tea (still)*
MSL: > 6 months
pH-value: ≤ 4.5

Fruit yogurt, heat-treated**
MSL: > 5 weeks
pH-value: ≤ 4.5

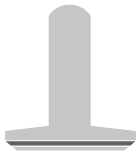
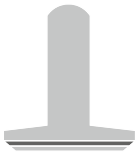
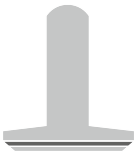
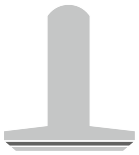
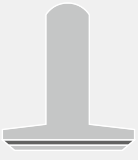
ESL milk**
MSL: 21–45 days
pH-value: > 4.5

Wine*
MSL: > 1 year
pH-value: ≤ 4.5

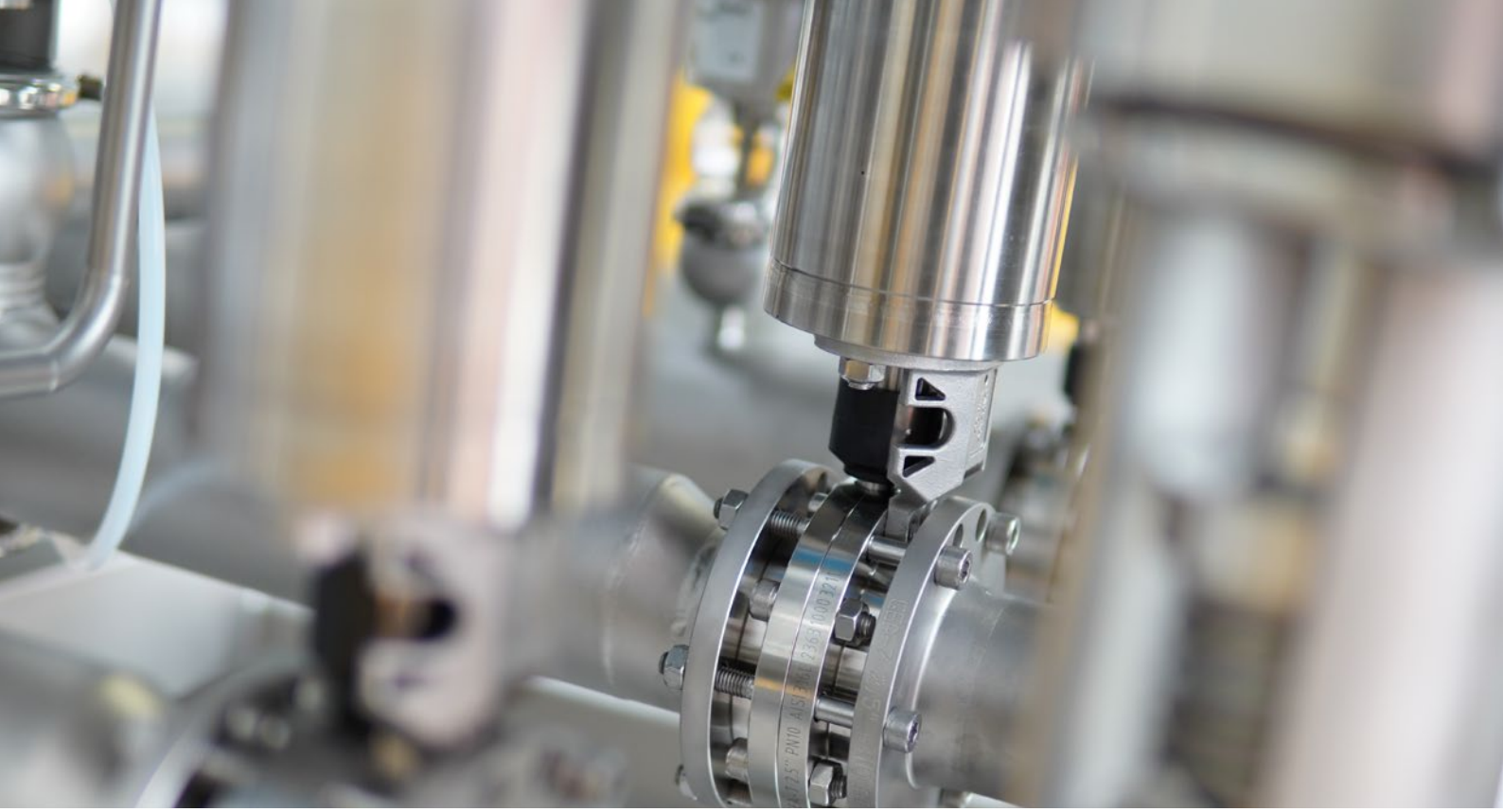
Beer*
MSL: > 6 months
pH-value: ≤ 4.5

Fruit yogurt / Natural yogurt**
MSL: 2–4 weeks
pH-value: ≤ 4.5

Fresh milk**
MSL: 7–10 days
pH-value: > 4.5

	Storage	Preparation	Preservation	Bottling
Aseptic (V)	 Seat valves	 Seat valves	 Stainless steel bellow	 Stainless steel bellow
UltraClean (IV)	 Seat valves	 Seat valves	 Diaphragm and stem diaphragm	 Diaphragm and stem diaphragm
Hygienic (I-III)	 Butterfly valves	 Seat valves	 Seat valves	 Seat valves

* unchilled
** chilled
MSL: Minimum Shelf Life



GEA Hygienic Butterfly Valves

Flexibly customizable shut-off solutions

GEA Butterfly Valves offer a range of suitable valve variants for all applications. They are cost-effective shut-off elements on valve blocks, panels and pipe fences for gentle product guiding and low-effort cleaning operation.

The modular design of the butterfly valves scores with a small variety of parts and uniform connections for all hygienic GEA valves. An advantage is the problem-free replacement or combination of components as well as economically optimized stocking and supply of spare parts.

Hygienic Butterfly Valves

Hygienic Leakage Butterfly Valves

1 Control and feedback system
Each control top enables intelligent valve control for easy commissioning and increased safety in the process sequence. Detectable valve positions make a decisive contribution to optimal system operation. All common connection types and control systems are available for technical communication in the plant.

2 Actuator
A variety of actuator options is available to fulfill different tasks of the valve. Suitable solutions for Ex applications are available as well. In addition, the pneumatically driven actuators feature a standard interface for fitting a control and feedback system. The internal air piping reduces risks of failure, as no external air hoses are required.

3 Butterfly valve bodies
Numerous variants are available and can be combined with each other:

- different flange types
- different sealing materials

Selection Matrix

Catalogs
Hygienic Valve Technology

Catalogs
Hygienic Pump Technology

Catalogs
Aseptic Valve Technology

Catalogs
Cleaning Technology

GEA VARIVENT®
seat valves

GEA Butterfly valves

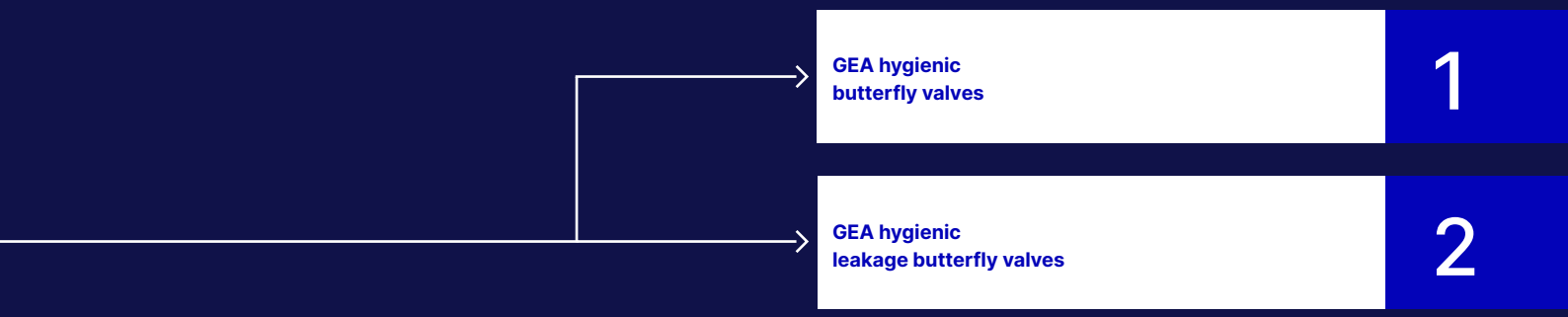
GEA VARIVENT®
special application valves

GEA VARITOP®
tank safety systems

GEA VARINLINE® / GEA VARICOMP®
process connections and
expansion compensators

GEA VARICOVER®
product recovery systems

GEA Valve automation –
control and feedback systems


GEA hygienic
butterfly valves
1
GEA hygienic
leakage butterfly valves
2

1 GEA HYGIENIC BUTTERFLY VALVES

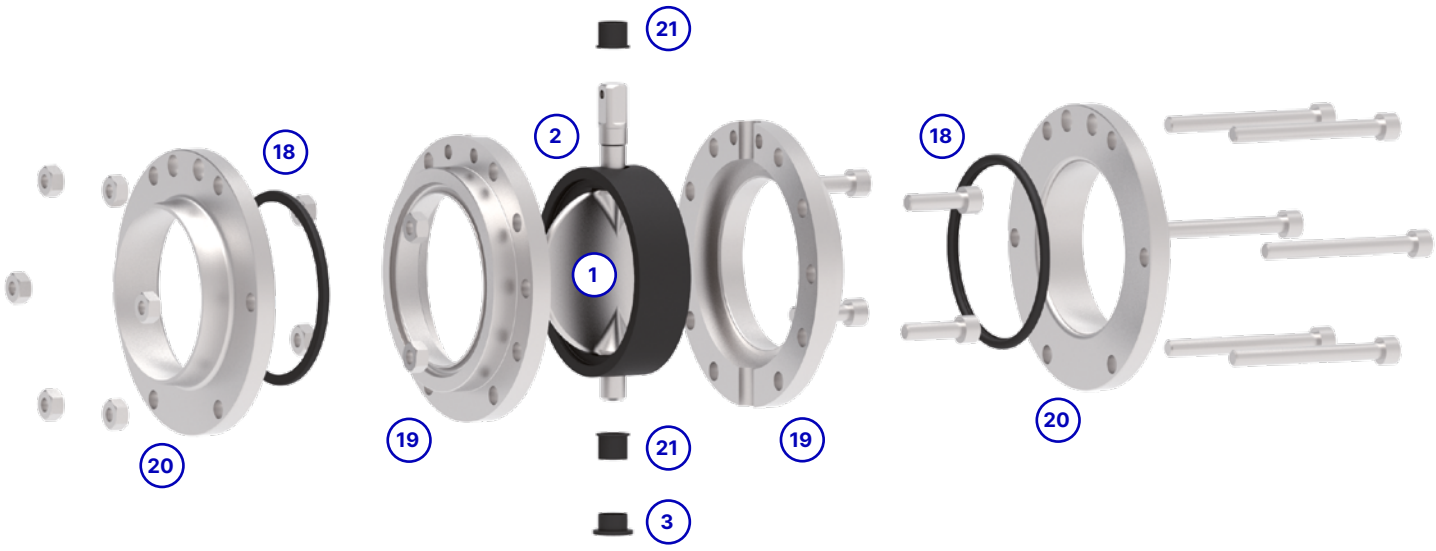
Overview

Butterfly Valve
GEA Hygienic Butterfly Valves offer the benefits of good hygienic design, higher ease of assembly, shorter assembly and maintenance times and thus higher production uptimes.

The Butterfly Valves are characterized by their hygienic design without dome and sump. The product flow meets little liquid resistance, product areas drain automatically and cleaning proceeds efficiently.

Significant product features
Robust valve disk
Low switching torque
One-piece flange design
Selection of 2 metallic product wetted materials
Product wetted parts in AISI 304 (1.4301) or AISI 316L (1.4404)
Vacuum-proof

Overview



1 Butterfly valve disk
2 Butterfly valve gasket
3 Plug
18 VARIVENT® O-ring
19 Body flanges (intermediate flange with O-ring groove)
20 Welding flange (outside flange)
21 Bearings

Pneumatic actuators
For narrow mounting situations and low air consumption the pneumatic actuators have been made even more compact. The gap-free design ensures optimum cleanability and fulfils highest demands to hygiene.

Torque maximum towards both end positions enable application on both normally closed and normally open valves. Metallic stops ensure exact disk positioning. There are air-to-spring and air-to-air variants.

The integrated T.VIS® interface also safely accommodates optional accessories – booster cylinder, two-position stop and limit stop. The internal pneumatic system reduces the risk of failures, being without external tubing.

All actuators are by default applicable for Ex zones. Compliance of any electric accessories with Ex regulations must be ensured.

Features
Compact, hygienic design
Metallic stops
Torque maxima towards both end positions
Air-to-spring and air-to-air variants available
Integrated T.VIS® interface
2 actuator dimensions available • DN 15 to DN 100 and ½" OD to 4" OD • DN 125 and DN 150

Actuator bracket
The new actuator bracket can be mounted to the flanges more easily because of its one-sided design and integrated threads for the mounting screws.

Two integrated proximity switch holders are located at a 45° angle above one of the two flanges. Turning the bracket 180° places the switches above the other side. This means one side of the valve is always free from structures mounted on top, thus allowing free access to male flanges, for example.

The proximity switches are plugged into half-open holders on the side, which allows easy mounting since the counter nuts only need to be loosened, not removed.

Overview

Intermediate flange variant
The actuator is mounted on the inner flanges, as a result of which the valve insert can be removed conveniently without the actuator having to be dismantled first. Apertures in the outer flanges allow the actuator to be mounted or changed at any time without removing the valve from the process line.

The advantage of the intermediate flange variant is the easier maintenance. It is possible to dismantle the inner flange including the disc and the gasket when the butterfly valve is welded in the pipeline.

The additional intermediate flange seals are built in the proven VARIVENT® seal design.

Technical advantages hygienic butterfly valve 788
Simple valve servicing
Actuator exchange at the valve in the piping
Intermediate flange seals built in the proven VARIVENT® seal design

Gaskets
The vacuum-proof gasket offers maximum stability and service life. The double-sided valve disk bearing provides a defined seal compression and lowest switch torque. Each nominal size between DN 25 and DN 150, or 1" OD and 4" OD, has its own seal seat geometry. Gaskets of nominal sizes DN 15, DN 20 and ½" OD and ¾" OD are based on the geometry of the 1" OD valve.

Gaskets with decisive advantages
Low torque
Double-sided valve disk bearing
Long service-life
Vacuum-proof
Selection of FDA-compliant seal materials • EPDM • FKM • HNBR • VMQ

Selection of dimensions and connection fittings

Flange variant

Code	Connection fittings	Nominal diameter									
		DN 15	DN 20	DN 25	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150
8	Intermediate flange	•	•	•	•	•	•	•	•	•	•
1	Welded flange	•	•	•	•	•	•	•	•	•	•
2	Male flange (DIN 11851)			•	•	•	•	•	•	•	•
4	Liner (DIN 11851)			•	•	•	•	•	•	•	•
3	Clamp flange Standard seal outline: DIN 32676 Standard inside diameter: DIN 11866 series A			•	•	•	•	•	•		
5	Tank flange			•	•	•	•	•	•		

Flange variant

Code	Connection fittings	Nominal diameter							
		OD ½"	OD ¾"	OD 1"	OD 1 ½"	OD 2"	OD 2 ½"	OD 3"	OD 4"
8	Intermediate flange	•	•	•	•	•	•	•	•
1	Welded flange	•	•	•	•	•	•	•	•
2	Male flange (based on DIN 11851)			•	•	•	•	•	•
2	Male flange (SMS 1146)			•	•	•	•	•	•
4	Clamp flange Liner (based on DIN 11851)			•	•	•	•	•	•
3	Clamp flange Standard seal outline: DIN 32676 / ISO 2852 Standard inside diameter: DIN 11866 series C			•	•	•	•	•	•

8 (788)

1 (711)

2 (722)

4 (714)

3 (733)

5 (751)

Technical Characteristics

Pipe classes
Dimensions of weld connections comply with the following standards:
- Metric: Outside diameter acc. to DIN 11850, series II, DIN 11866, series A
- Inch OD: Outside diameter acc. to BS 4825
- Inch SMS: Outside diameter acc. to SMS 1146

Surfaces
Product wetted surfaces are by default finished to $R_a \leq 0.8$ µm. Higher-quality surfaces finished to $R_a \leq 0.4$ µm are optionally available.

Non product wetted surfaces (flanges) are metal blank.

Materials
Product wetted parts of the GEA Hygienic Butterfly Valves are built in AISI 304 (1.4301) or AISI 316L (1.4404). Other materials are available on request, e.g. for applications handling aggressive media.

For detailed information regarding properties of the materials consult the material properties table.

Test report and inspection certificate
Flanges and disks of the Hygienic Butterfly Valves are available with test report 2.2 or inspection certificate 3.1 in compliance with EN 10204 (on request).

Seal materials
Product wetted seals are EPDM (default), HNBR, FKM or VMQ.

Mixing components of our seal materials are included in the FDA “White List”.

The resistance of the sealing material depends on the type and temperature of the medium conveyed. The contact time can negatively affect the service life of the seals.

For detailed information regarding properties of the seal materials consult the seal material properties table.

Conditions for operation
Butterfly Valves can be operated at ambient temperatures from 0 to 45 °C (32 to 113 °F). The Hygienic Butterfly Valves can be operated in outdoor areas. However, they need to be protected from frost in those areas or must be de-iced before switching.

GEA Hygienic Butterfly Valves must be mounted stress-free. Horizontal lateral forces, e.g. thermal pipe elongation, cannot be compensated from the valve, which makes damages to the valve a possibility. In such cases, suitable measures to compensate the elongation are recommended, such as using a VARICOMP® expansion compensator.

The clearance required for mounting and demounting a GEA Hygienic Butterfly Valve is listed together with the respective technical data and dimensions.

Control air

The control air pressure is for air / spring actuators min. 4.8 bar, max. 8 bar and for air / air actuators min. 4.0 bar and max. 8.0 bar. For lower control air pressure, a booster cylinder can be applied. The quality of the control air must comply with the requirements acc. to ISO 8573-1:2010:

ISO 8573-1:2010	
Particle content	Quality class 6
	Particle size max. 5 µm
	Particle density max. 5 mg/m3
Water content	Quality class 4
	Max. dew point 3 °C
	For operation locations in higher regions or at low ambient temperatures, the dew point must be re-calculated accordingly.
Oil content	Quality class 3
	Max. 1 mg oil for 1 m³ air, ideally oil-free

Operating pressure

The valves are vacuum proof up to 0.05 bar (abs). The maximum product pressure for which the valves can be configured is 10 bar.

Actuator selection

The modular concept of the GEA Hygienic Butterfly Valves allows for a variety of actuator variants to be fitted. Different manual and pneumatic actuators are available.

The pneumatic actuators are optimized for long-term operation and are maintenance-free. To prevent damages in the pipe-work, the closing speed of the pneumatic actuators can be reduced per air throttle.

For partial opening or closure an optional limit stop and a two-position stop are available.

Feedback signal

Proximity switches of M12×1 size indicate the positions “open” and/or “closed”. The actuator bracket for pneumatic actuators has two sensor casings, an optional and retro-fittable proximity switch holder is available for standard manual actuators.

All pneumatic actuators can be fitted with the proven T.VIS® control top with all options.

Technical Characteristics

Material properties

GEA Hygienic Butterfly Valves are available in the nominal size 1" to 4" OD, on request also made of special materials.

						Main alloy elements in % by mass			
Material number	Short name			Similar materials	PREN***	Cr (Chrome)	Ni (Nickel)	Mo (Molybdenum)	C max. (Carbon)
AISI 304* and**	X5CrNi18-10	1.4301	BS 304S15	SS2332	18	17.5–19.5	8.0–10.5	–	0.07
AISI 316L**	X2 CrNiMo 17-12-2	1.4404	BS 316S11	SS2348	25	16.5–18.5	10.0–13.0	2.0–2.5	0.03
1.4410	X2 CrNiMoN 22-5-3	SAF 2507®	–	SS2328	39	24.0–26.0	6.0–8.0	3.0–4.5	0.03
AL-6XN®	–	–	–	–	43	20.0–22.0	23.5–25.5	6.0–7.0	0.03
2.4602	NiCr21Mo14W HASTELLOY C-22	–	–	–	69	20.0–22.5	Rest	12.5–14.5	0.01

* Standard material for components not in contact with the product

** Standard material for components in contact with the product (other materials available on request)

*** Pitting Resistance Equivalent Number = %Cr + 3.3 × (%Mo + 0.5 W) + 20N

Seal material properties

Seal material			EPDM	FKM	HNBR	VMQ
General application temperature*			−40 to 135 °C −40 to 275 °F	−10 to 200 °C 14 to 392 °F	−25 to 140 °C −13 to 284 °F	−50 to 200 °C −58 to 392 °F
Medium	Concentration	At permitted operating temperature				
Alkali	≤ 3 %	up to 80 °C	+	o	+	o
	≤ 5 %	up to 40 °C	+	o	o	o
	≤ 5 %	up to 80 °C	+	–	–	o
	> 5 %		o	–	–	o
Inorganic acid**	≤ 3 %	up to 80 °C	+	+	+	o
	≤ 5 %	up to 80 °C	o	+	o	o
	> 5 %	up to 100 °C	–	+	–	o
Water		up to 80 °C	+	+	+	+
		up to 100 °C	+	+	+	o
Steam		up to 135 °C	+	o	o	o
Steam, approx. 30 min		up to 150 °C	+	o	–	o
Hydrocarbons/fuels			–	+	o	–
Products containing grease	≤ 35 %		+	+	+	o
	> 35 %		–	+	+	o
Oils			–	+	+	o

Other applications on request

* The general resistance of the material does not correspond to the maximum possible operating temperature.

** Inorganic acids are, for example, hydrochloric acid, nitric acid, sulphuric acid

\+ = Good resistance

O = Reduced service life

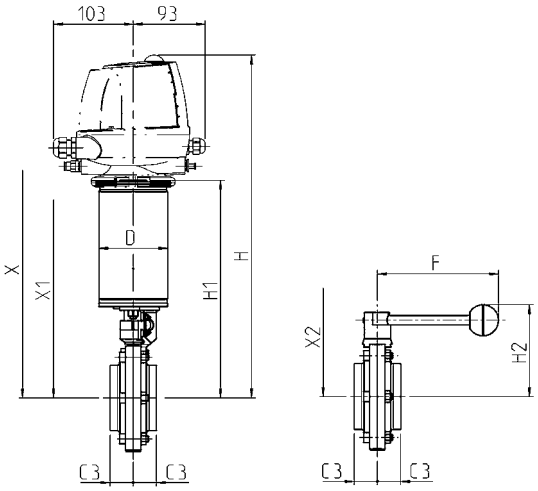
– = Not resistant

Certificates
The butterfly valves have been demonstrated to offer trouble-free and efficient cleaning ability in independent and standardized cleaning tests.

ATEX certificates, CRN, EAC and other additional certificates are available on request for the GEA hygienic butterfly valves . The butterfly valves comply with the EC Machinery Directive 2006/42/EC and are equiped with the CE mark. They also fulfill the EN ISO 12100:2010 standard for the safety of machinery.

Due to their refined design, the butterfly valves also meet the essential health and safety requirements of the EC Pressure Equipment Directive 2014/68/EU. The valves can come into contact with food. They comply with Regulation (EC) No. 1935/2004 of the European Parliament and Council.

Weld Connection / Weld Connection 711



Technical data of the standard version

Product wetted materials	AISI 316L
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Actuator		Dimensions				Clearance			Flange width	Valve	
Nominal width	Ø [mm]	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	Screws* [mm]	X [mm]	X1 [mm]	X2 [mm]	C3 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 15	19 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	10.0	0.7
DN 20	23 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	12.0	0.7
DN 25	29 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	21.0	0.6
DN 40	41 × 1.5	90	116	418.5	256.5	86.5	30	438.5	276.5	106.5	25	72.0	0.8
DN 50	53 × 1.5	90	116	427.0	265.0	95.0	30	447.0	285.0	115.0	25	130.0	1.2
DN 65	70 × 2.0	90	116	434.5	272.5	103.0	30	454.5	292.5	123.0	25	250.0	1.5
DN 80	85 × 2.0	90	160	440.5	278.5	114.5	30	460.5	298.5	134.5	30	340.0	2.0
DN 100	104 × 2.0	114	160	456.5	294.5	128.0	30	476.5	314.5	148.0	30	750.0	2.5
DN 125	129 × 2.0	114	220	472.0	310.0	146.0	40	492.0	330.0	166.0	35	1,100.0	5.4
DN 150	154 × 2.0	114	220	486.0	324.0	159.0	45	506.0	344.0	180.0	40	1,800.0	6.9
OD ½"	12.7 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	3.5	0.8
OD ¾"	19.05 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	10.0	0.8
OD 1"	25.4 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	25	23.0	0.7
OD 1 ½"	38.1 × 1.6	90	116	420.0	258.0	88.0	30	440.0	278.0	108.0	25	87.0	0.8
OD 2"	50.8 × 1.6	90	116	428.0	266.0	96.0	30	448.0	286.0	116.0	25	170.0	1.1
OD 2 ½"	63.5 × 1.6	90	116	436.5	274.5	105.0	30	456.5	294.5	125.0	25	240.0	1.5
OD 3"	76.2 × 1.6	90	160	444.0	282.0	118.0	30	464.0	302.0	138.0	30	400.0	1.8
OD 4"	101.6 × 2.0	114	160	454.0	292.0	130.5	30	474.0	312.0	150.5	30	880.0	2.8

* Thread length

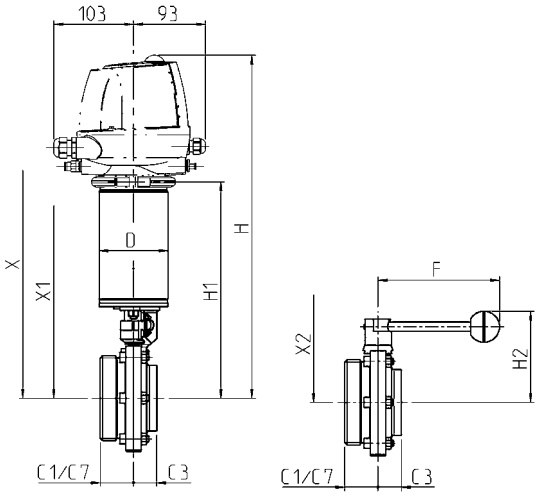
Position	Description of the order code					
1	**Valve type**					
	7	Butterfly Valve				
2	**Flange connection**					
	11	Weld connection / weld connection				
3	**Pipe standard**					
	0	OD	1	DN		
4	**Nominal size**					
	012	OD ½"	015	DN 15		
	075	OD ¾"	020	DN 20		
	010	OD 1"	025	DN 25		
	112	OD 1 ½"	040	DN 40		
	200	OD 2"	050	DN 50		
	212	OD 2 ½"	065	DN 65		
	300	OD 3"	080	DN 80		
	400	OD 4"	100	DN 100		
			125	DN 125		
			150	DN 150		
5	**Product wetted material**					
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)
6	**Product wetted gasket material**					
	0	EPDM			2	FKM
	1	HNBR			6	VMQ
7	**Actuator type**					
	0	Manual actuator			5	Manual actuator stepless
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator
8	**Air connection**					
	0	Without				
	1	Metric (only for actuator type 2)				
	2	Inch (only for actuator type 2)				
	3	Metric with air throttle (only for actuator type 2)				
	4	Inch with air throttle (only for actuator type 2)				
9	**Fail position of valve**					
	0	Closed				
	1	Open				
	2	Air-to-air (actuator types 1 and 2 only)				
10	**Accessiors**					
	0	Without				
	1	Extension piece +80 mm				
	3	Limit stop (actuator types 1 and 2 only)				
	4	With centric borehole				
	5	Two-position stop (actuator type 2 only)				
	7	Booster cylinder (actuator types 1 and 2 only)				
	8	Waterproof actuator (actuator types 1 and 2 only)				
	9	LoTo DISK LOCK				
	X	Multiple selection				
11	**Product wetted surface***					
	0	0.8 µm				
	1	0.4 µm				
12	**Certificates**					
	0	Without				
	1	Test report 2.2				
	2	Inspection certificate 3.1				
	3	Certificates 2.2 and 3.1				
13	**ATEX approval**					
	0	Without				
	1	With (actuator types 1 and 2 only)				
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)				

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13		
Code	7	1	1		-						-					-					+	Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.

Male / Weld Connection 721



Technical data of the standard version

Product wetted materials	AISI 316L*
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE** FDA

* Butterfly valves in the nominal sizes SMS are only available in AISI 316L.
** The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C1 [mm]	C3 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	35	25	21	0.8
DN 40	41 × 1.5	Rd 65 × ⅙"	90	116	418.5	256.5	86.5	438.5	276.5	106.5	35	25	72	1.1
DN 50	53 × 1.5	Rd 78 × ⅙"	90	116	427.0	265.0	95.0	447.0	285.0	115.0	35	25	130	1.5
DN 65	70 × 2.0	Rd 95 × ⅙"	90	116	434.5	272.5	103.0	454.5	292.5	123.0	38	25	250	1.9
DN 80	85 × 2.0	Rd 110 × ¼"	90	160	440.5	278.5	114.5	460.5	298.5	134.5	43	30	340	2.5
DN 100	104 × 2.0	Rd 130 × ¼"	114	160	456.5	294.5	128.0	476.5	314.5	148.0	43	30	750	3.2
DN 125	129 × 2.0	Rd 160 × ¼"	114	220	472.0	310.0	146.0	492.0	330.0	166.0	55	35	1,100	6.8
DN 150	154 × 2.0	Rd 190 × ¼"	114	220	486.0	324.0	159.0	506.0	344.0	180.0	80	40	1,800	9.0
OD 1"	25.4 × 1.6	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	47	25	23	0.8
OD 1 ½"	38.1 × 1.6	Rd 65 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	47	25	87	1.0
OD 2"	50.8 × 1.6	Rd 78 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	48	25	170	1.4
OD 2 ½"	63.5 × 1.6	Rd 95 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	50	25	240	1.9
OD 3"	76.2 × 1.6	Rd 104 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	55	30	400	2.2
OD 4"	101.6 × 2.0	Rd 130 × ¼"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	60	30	880	3.5

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C7 [mm]	C2 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
SMS 1"	25.4 × 1.6	Rd 40 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	36	25	23	0.8
SMS 1 ½"	38.1 × 1.6	Rd 60 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	41	25	87	1.0
SMS 2"	50.8 × 1.6	Rd 70 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	41	25	170	1.4
SMS 2 ½"	63.5 × 1.6	Rd 85 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	45	25	240	1.9
SMS 3"	76.2 × 1.6	Rd 98 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	45	30	400	2.2
SMS 4"	101.6 × 2.0	Rd 132 × ⅙"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	56	30	880	4.2

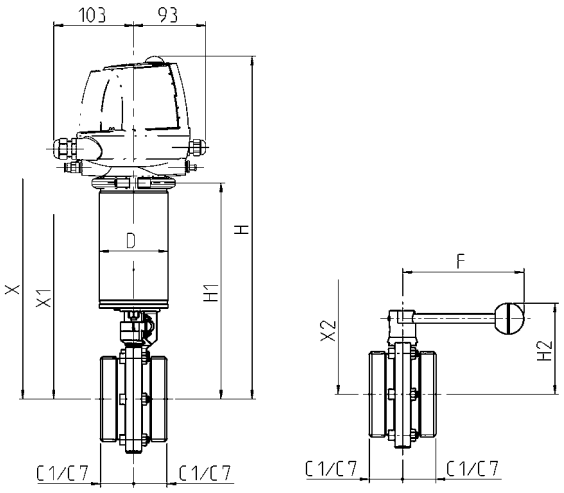
Position	Description of the order code							
1	**Valve type**							
	7	Butterfly Valve						
2	**Flange connection**							
	21	Male / Weld Connection						
3	**Pipe standard**							
	0	OD	1	DN	7	SMS		
4	**Nominal size**							
	010	OD 1"	025	DN 25	010	OD 1"		
	112	OD 1 ½"	040	DN 40	112	OD 1 ½"		
	200	OD 2"	050	DN 50	200	OD 2"		
	212	OD 2 ½"	065	DN 65	212	OD 2 ½"		
	300	OD 3"	080	DN 80	300	OD 3"		
	400	OD 4"	100	DN 100	400	OD 4"		
			125	DN 125				
			150	DN 150				
5	**Product wetted material**							
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)		
6	**Product wetted gasket material**							
	0	EPDM			2	FKM		
	1	HNBR*			6	VMQ*		
7	**Actuator type**							
	0	Manual actuator			5	Manual actuator stepless		
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)		
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator		
8	**Air connection**							
	0	Without						
	1	Metric (only for actuator type 2)						
	2	Inch (only for actuator type 2)						
	3	Metric with air throttle (only for actuator type 2)						
	4	Inch with air throttle (only for actuator type 2)						
9	**Fail position of valve**							
	0	Closed						
	1	Open						
	2	Air-to-air (actuator types 1 and 2 only)						
10	**Accessiors**							
	0	Without						
	1	Extension piece +80 mm						
	3	Limit stop (actuator types 1 and 2 only)						
	4	With centric borehole						
	5	Two-position stop (actuator type 2 only)						
	7	Booster cylinder (actuator types 1 and 2 only)						
	8	Waterproof actuator (actuator types 1 and 2 only)						
	9	LoTo DISK LOCK						
	X	Multiple selection						
11	**Product wetted surface****							
	0	0.8 µm						
	1	0.4 µm						
12	**Certificates**							
	0	Without						
	1	Test report 2.2						
	2	Inspection certificate 3.1						
	3	Certificates 2.2 and 3.1						
13	**ATEX approval**							
	0	Without						
	1	With (actuator types 1 and 2 only)						
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)						

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	2	1		-						-					-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* For SMS dimensions the seal ring G is not part of the delivery.
** A surface finish report is available on request.

Male / Male 722



Technical data of the standard version

Product wetted materials	AISI 316L*
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE** FDA

* Butterfly valves in the nominal sizes SMS are only available in AISI 316L.
** The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe		Actuator		Dimensions			Clearance			Flange width	Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C1 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	35	21	1.0
DN 40	41 × 1.5	Rd 65 × ⅙"	90	116	418.5	256.5	86.5	438.5	276.5	106.5	35	72	1.3
DN 50	53 × 1.5	Rd 78 × ⅙"	90	116	427.0	265.0	95.0	447.0	285.0	115.0	35	130	1.8
DN 65	70 × 2.0	Rd 95 × ⅙"	90	116	434.5	272.5	103.0	454.5	292.5	123.0	38	250	2.4
DN 80	85 × 2.0	Rd 110 × ¼"	90	160	440.5	278.5	114.5	460.5	298.5	134.5	43	340	3.1
DN 100	104 × 2.0	Rd 130 × ¼"	114	160	456.5	294.5	128.0	476.5	314.5	148.0	43	750	3.9
DN 125	129 × 2.0	Rd 160 × ¼"	114	220	472.0	310.0	146.0	492.0	330.0	166.0	55	1,100	8.1
DN 150	154 × 2.0	Rd 190 × ¼"	114	220	486.0	324.0	159.0	506.0	344.0	180.0	80	1,800	11.0
OD 1"	25.4 × 1.6	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	47	23	0.9
OD 1 ½"	38.1 × 1.6	Rd 65 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	47	87	1.1
OD 2"	50.8 × 1.6	Rd 78 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	48	170	1.6
OD 2 ½"	63.5 × 1.6	Rd 95 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	50	240	2.2
OD 3"	76.2 × 1.6	Rd 104 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	55	400	2.6
OD 4"	101.6 × 2.0	Rd 130 × ¼"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	60	880	4.2

	Pipe		Actuator		Dimensions			Clearance			Flange width	Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C1 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
SMS 1"	25.4 × 1.6	Rd 40 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	36	23	0.9
SMS 1 ½"	38.1 × 1.6	Rd 60 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	41	87	1.1
SMS 2"	50.8 × 1.6	Rd 70 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	41	170	1.6
SMS 2 ½"	63.5 × 1.6	Rd 85 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	45	240	2.2
SMS 3"	76.2 × 1.6	Rd 98 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	45	400	2.6
SMS 4"	101.6 × 2.0	Rd 132 × ⅙"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	56	880	5.6

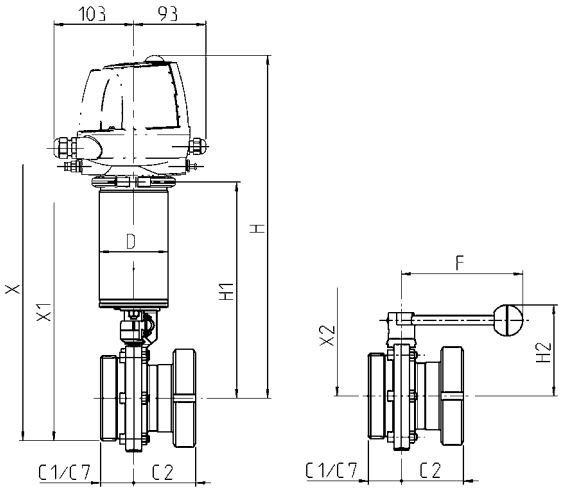
Position	Description of the order code							
1	**Valve type**							
	7	Butterfly Valve						
2	**Flange connection**							
	22	Male / Male						
3	**Pipe standard**							
	0	OD	1	DN	7	SMS		
4	**Nominal size**							
	010	OD 1"	025	DN 25	010	OD 1"		
	112	OD 1 ½"	040	DN 40	112	OD 1 ½"		
	200	OD 2"	050	DN 50	200	OD 2"		
	212	OD 2 ½"	065	DN 65	212	OD 2 ½"		
	300	OD 3"	080	DN 80	300	OD 3"		
	400	OD 4"	100	DN 100	400	OD 4"		
			125	DN 125				
			150	DN 150				
5	**Product wetted material**							
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)		
6	**Product wetted gasket material**							
	0	EPDM			2	FKM		
	1	HNBR*			6	VMQ*		
7	**Actuator type**							
	0	Manual actuator			5	Manual actuator stepless		
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)		
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator		
8	**Air connection**							
	0	Without						
	1	Metric (only for actuator type 2)						
	2	Inch (only for actuator type 2)						
	3	Metric with air throttle (only for actuator type 2)						
	4	Inch with air throttle (only for actuator type 2)						
9	**Fail position of valve**							
	0	Closed						
	1	Open						
	2	Air-to-air (actuator types 1 and 2 only)						
10	**Accessiors**							
	0	Without						
	1	Extension piece +80 mm						
	3	Limit stop (actuator types 1 and 2 only)						
	4	With centric borehole						
	5	Two-position stop (actuator type 2 only)						
	7	Booster cylinder (actuator types 1 and 2 only)						
	8	Waterproof actuator (actuator types 1 and 2 only)						
	9	LoTo DISK LOCK						
	X	Multiple selection						
11	**Product wetted surface****							
	0	0.8 µm						
	1	0.4 µm						
12	**Certificates**							
	0	Without						
	1	Test report 2.2						
	2	Inspection certificate 3.1						
	3	Certificates 2.2 and 3.1						
13	**ATEX approval**							
	0	Without						
	1	With (actuator types 1 and 2 only)						
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)						

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	2	2		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* For SMS dimensions the seal ring G is not part of the delivery.
** A surface finish report is available on request.

Male / Liner 724



Technical data of the standard version

Product wetted materials	AISI 304
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C1 [mm]	C2* [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	35	47	21	1.2
DN 40	41 × 1.5	Rd 65 × ⅙"	90	116	418.5	256.5	86.5	438.5	276.5	106.5	35	51	72	1.6
DN 50	53 × 1.5	Rd 78 × ⅙"	90	116	427.0	265.0	95.0	447.0	285.0	115.0	35	53	130	2.2
DN 65	70 × 2.0	Rd 95 × ⅙"	90	116	434.5	272.5	103.0	454.5	292.5	123.0	38	57	250	3.2
DN 80	85 × 2.0	Rd 110 × ¼"	90	160	440.5	278.5	114.5	460.5	298.5	134.5	43	67	340	4.2
DN 100	104 × 2.0	Rd 130 × ¼"	114	160	456.5	294.5	128.0	476.5	314.5	148.0	43	74	750	5.5
DN 125	129 × 2.0	Rd 160 × ¼"	114	220	472.0	310.0	146.0	492.0	330.0	166.0	55	69	1,100	9.9
DN 150	154 × 2.0	Rd 190 × ¼"	114	220	486.0	324.0	159.0	506.0	344.0	180.0	80	77	1,800	13.5
OD 1"	25.4 × 1.6	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	47	47	23	1.0
OD 1 ½"	38.1 × 1.6	Rd 65 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	47	51	87	1.4
OD 2"	50.8 × 1.6	Rd 78 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	48	53	170	1.9
OD 2 ½"	63.5 × 1.6	Rd 95 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	50	57	240	2.8
OD 3"	76.2 × 1.6	Rd 104 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	55	67	400	3.3
OD 4"	101.6 × 2.0	Rd 130 × ¼"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	60	74	880	5.3

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve	
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C1 [mm]	C2* [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
SMS 1"	25.4 × 1.6	Rd 40 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	36	47	23	1.0
SMS 1 ½"	38.1 × 1.6	Rd 60 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	41	51	87	1.4
SMS 2"	50.8 × 1.6	Rd 70 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	41	53	170	1.9
SMS 2 ½"	63.5 × 1.6	Rd 85 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	45	57	240	2.8
SMS 3"	76.2 × 1.6	Rd 98 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	45	67	400	3.3
SMS 4"	101.6 × 2.0	Rd 132 × ⅙"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	56	56	880	6.0

* Flange width C2 measures from center line to liner end

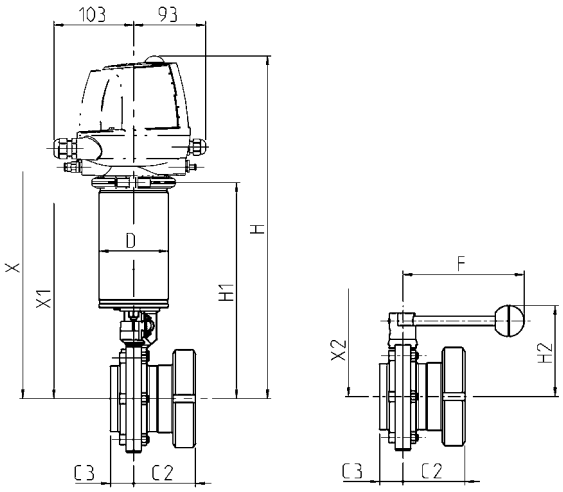
Position	Description of the order code							
1	**Valve type**							
	7	Butterfly Valve						
2	**Flange connection**							
	24	Male / Liner						
3	**Pipe standard**							
	0	OD	1	DN	7	SMS		
4	**Nominal size**							
	010	OD 1"	025	DN 25	010	OD 1"		
	112	OD 1 ½"	040	DN 40	112	OD 1 ½"		
	200	OD 2"	050	DN 50	200	OD 2"		
	212	OD 2 ½"	065	DN 65	212	OD 2 ½"		
	300	OD 3"	080	DN 80	300	OD 3"		
	400	OD 4"	100	DN 100	400	OD 4"		
			125	DN 125				
			150	DN 150				
5	**Product wetted material**							
	1	AISI 316L (1.4404)						
6	**Product wetted gasket material**							
	0	EPDM			2	FKM		
	1	HNBR*			6	VMQ*		
7	**Actuator type**							
	0	Manual actuator			5	Manual actuator stepless		
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)		
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator		
8	**Air connection**							
	0	Without						
	1	Metric (only for actuator type 2)						
	2	Inch (only for actuator type 2)						
	3	Metric with air throttle (only for actuator type 2)						
	4	Inch with air throttle (only for actuator type 2)						
9	**Fail position of valve**							
	0	Closed						
	1	Open						
	2	Air-to-air (actuator types 1 and 2 only)						
10	**Accessiors**							
	0	Without						
	1	Extension piece +80 mm						
	3	Limit stop (actuator types 1 and 2 only)						
	4	With centric borehole						
	5	Two-position stop (actuator type 2 only)						
	7	Booster cylinder (actuator types 1 and 2 only)						
	8	Waterproof actuator (actuator types 1 and 2 only)						
	9	LoTo DISK LOCK						
	X	Multiple selection						
11	**Product wetted surface****							
	0	0.8 µm						
	1	0.4 µm						
12	**Certificates**							
	0	Without						
	1	Test report 2.2						
	2	Inspection certificate 3.1***						
	3	Certificates 2.2 and 3.1***						
13	**ATEX approval**							
	0	Without						
	1	With (actuator types 1 and 2 only)						
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)						

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	2	4		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* For SMS dimensions the seal ring G is not part of the delivery.
** A surface finish report is available on request.
*** A certificate 3.1 is only available for the material AISI 316L and only for DN nominal sizes.

Weld Connection / Liner 714



Technical data of the standard version

Product wetted materials	AISI 304
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C3 [mm]	C2* [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	47	21	0.9
DN 40	41 × 1.5	Rd 65 × ⅙"	90	116	418.5	256.5	86.5	438.5	276.5	106.5	25	51	72	1.3
DN 50	53 × 1.5	Rd 78 × ⅙"	90	116	427.0	265.0	95.0	447.0	285.0	115.0	25	53	130	1.9
DN 65	70 × 2.0	Rd 95 × ⅙"	90	116	434.5	272.5	103.0	454.5	292.5	123.0	25	57	250	2.8
DN 80	85 × 2.0	Rd 110 × ¼"	90	160	440.5	278.5	114.5	460.5	298.5	134.5	30	67	340	3.6
DN 100	104 × 2.0	Rd 130 × ¼"	114	160	456.5	294.5	128.0	476.5	314.5	148.0	30	74	750	4.9
DN 125	129 × 2.0	Rd 160 × ¼"	114	220	472.0	310.0	146.0	492.0	330.0	166.0	35	69	1,100	8.5
DN 150	154 × 2.0	Rd 190 × ¼"	114	220	486.0	324.0	159.0	506.0	344.0	180.0	40	77	1,800	11.5
OD 1"	25.4 × 1.6	Rd 52 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	47	23	0.9
OD 1 ½"	38.1 × 1.6	Rd 65 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	25	51	87	1.2
OD 2"	50.8 × 1.6	Rd 78 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	25	53	170	1.7
OD 2 ½"	63.5 × 1.6	Rd 95 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	25	57	240	2.4
OD 3"	76.2 × 1.6	Rd 104 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	30	67	400	2.9
OD 4"	101.6 × 2.0	Rd 130 × ¼"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	30	74	880	4.6

	Pipe		Actuator		Dimensions			Clearance			Flange width		Valve
Nominal width	Ø [mm]	Thread	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C3 [mm]	C2* [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
SMS 1"	25.4 × 1.6	Rd 40 × ⅙"	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	47	23	0.9
SMS 1 ½"	38.1 × 1.6	Rd 60 × ⅙"	90	116	420.0	258.0	88.0	440.0	278.0	108.0	25	51	87	1.2
SMS 2"	50.8 × 1.6	Rd 70 × ⅙"	90	116	428.0	266.0	96.0	448.0	286.0	116.0	25	53	170	1.7
SMS 2 ½"	63.5 × 1.6	Rd 85 × ⅙"	90	116	436.5	274.5	105.0	456.5	294.5	125.0	25	57	240	2.4
SMS 3"	76.2 × 1.6	Rd 98 × ⅙"	90	160	444.0	282.0	118.0	464.0	302.0	138.0	30	67	400	2.9
SMS 4"	101.6 × 2.0	Rd 132 × ⅙"	114	160	454.0	292.0	130.5	474.0	312.0	150.5	30	74	880	4.6

* Flange width C2 measures from center line to liner end

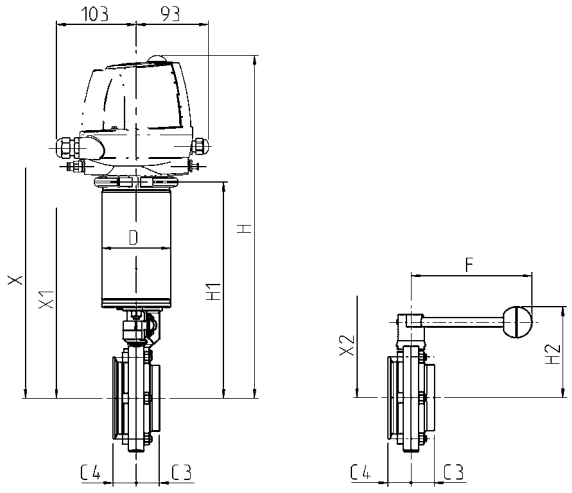
Position	Description of the order code					
1	**Valve type**					
	7	Butterfly Valve				
2	**Flange connection**					
	14	Weld connection / liner				
3	**Pipe standard**					
	0	OD	1	DN	7	SMS
4	**Nominal size**					
	010	OD 1"	025	DN 25	010	OD 1"
	112	OD 1 ½"	040	DN 40	112	OD 1 ½"
	200	OD 2"	050	DN 50	200	OD 2"
	212	OD 2 ½"	065	DN 65	212	OD 2 ½"
	300	OD 3"	080	DN 80	300	OD 3"
	400	OD 4"	100	DN 100	400	OD 4"
			125	DN 125		
			150	DN 150		
5	**Product wetted material**					
	1	AISI 316L (1.4404)				
6	**Product wetted gasket material**					
	0	EPDM			2	FKM
	1	HNBR			6	VMQ
7	**Actuator type**					
	0	Manual actuator			5	Manual actuator stepless
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator
8	**Air connection**					
	0	Without				
	1	Metric (only for actuator type 2)				
	2	Inch (only for actuator type 2)				
	3	Metric with air throttle (only for actuator type 2)				
	4	Inch with air throttle (only for actuator type 2)				
9	**Fail position of valve**					
	0	Closed				
	1	Open				
	2	Air-to-air (actuator types 1 and 2 only)				
10	**Accessiors**					
	0	Without				
	1	Extension piece +80 mm				
	3	Limit stop (actuator types 1 and 2 only)				
	4	With centric borehole				
	5	Two-position stop (actuator type 2 only)				
	7	Booster cylinder (actuator types 1 and 2 only)				
	8	Waterproof actuator (actuator types 1 and 2 only)				
	9	LoTo DISK LOCK				
	X	Multiple selection				
11	**Product wetted surface***					
	0	0.8 µm				
	1	0.4 µm				
12	**Certificates**					
	0	Without				
	1	Test report 2.2				
	2	Inspection certificate 3.1**				
	3	Certificates 2.2 and 3.1**				
13	**ATEX approval**					
	0	Without				
	1	With (actuator types 1 and 2 only)				
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)				

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	1	4		-						-					-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.
** A certificate 3.1 is only available for the material AISI 316L and only for DN nominal sizes.

Clamp Flange / Weld Connection 731



Technical data of the standard version

Standard seal outline	DN	DIN 32676
	OD	DIN 32676 / ISO 2852
Standard inside diameter	DN	DIN 11866, series A
	OD	DIN 11866, series C
Product wetted materials		AISI 304
Non product wetted materials		AISI 304
Product wetted gasket material		EPDM
Ambient temperature		0 to 45 °C
Control air pressure		4.8 to 8 bar
Max. product pressure		10 bar
Product wetted surface		R_a 0.8 µm
Non product wetted surface		Metal blank
Manual actuator		Manual actuator with ball head
Pneumatic actuator		Air-to-spring
Compliance / Certificates		CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Actuator		Dimensions			Clearance			Flange width		Valve	
Nominal width	Ø [mm]	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C3 [mm]	C4 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	40	21	0.8
DN 40	41 × 1.5	90	116	418.5	256.5	86.5	438.5	276.5	106.5	25	30	72	0.9
DN 50	53 × 1.5	90	116	427.0	265.0	95.0	447.0	285.0	115.0	25	30	130	1.2
DN 65	70 × 2.0	90	116	434.5	272.5	103.0	454.5	292.5	123.0	25	30	250	1.7
DN 80	85 × 2.0	90	160	440.5	278.5	114.5	460.5	298.5	134.5	30	30	340	2.1
DN 100	104 × 2.0	114	160	456.5	294.5	128.0	476.5	314.5	148.0	30	30	750	2.6
OD 1"	25.4 × 1.6	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	40	23	0.9
OD 1 ½"	38.1 × 1.6	90	116	420.0	258.0	88.0	440.0	278.0	108.0	25	30	87	0.8
OD 2"	50.8 × 1.6	90	116	428.0	266.0	96.0	448.0	286.0	116.0	25	30	170	1.2
OD 2 ½"	63.5 × 1.6	90	116	436.5	274.5	105.0	456.5	294.5	125.0	25	30	240	1.5
OD 3"	76.2 × 1.6	90	160	444.0	282.0	118.0	464.0	302.0	138.0	30	30	400	1.9
OD 4"	101.6 × 2.0	114	160	454.0	292.0	130.5	474.0	312.0	150.5	30	30	880	3.0

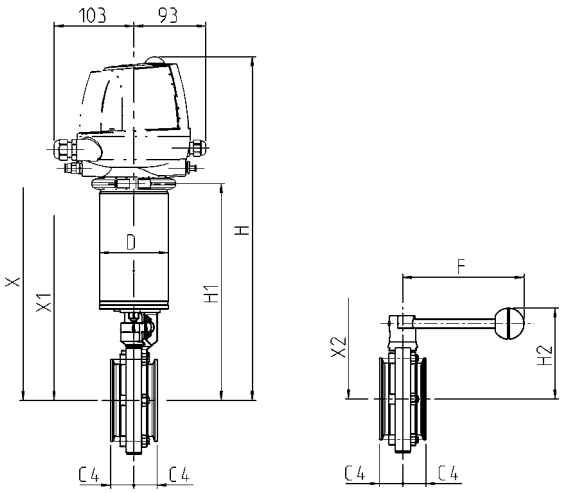
Position	Description of the order code					
1	**Valve type**					
	7	Butterfly Valve				
2	**Flange connection**					
	31	Clamp flange / clamp flange				
3	**Pipe standard**					
	0	OD	1	DN		
4	**Nominal size**					
	010	OD 1"	025	DN 25		
	112	OD 1 ½"	040	DN 40		
	200	OD 2"	050	DN 50		
	212	OD 2 ½"	065	DN 65		
	300	OD 3"	080	DN 80		
	400	OD 4"	100	DN 100		
			125	DN 125		
			150	DN 150		
5	**Product wetted material**					
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)
6	**Product wetted gasket material**					
	0	EPDM			2	FKM
	1	HNBR			6	VMQ
7	**Actuator type**					
	0	Manual actuator			5	Manual actuator stepless
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator
8	**Air connection**					
	0	Without				
	1	Metric (only for actuator type 2)				
	2	Inch (only for actuator type 2)				
	3	Metric with air throttle (only for actuator type 2)				
	4	Inch with air throttle (only for actuator type 2)				
9	**Fail position of valve**					
	0	Closed				
	1	Open				
	2	Air-to-air (actuator types 1 and 2 only)				
10	**Accessiors**					
	0	Without				
	1	Extension piece +80 mm				
	3	Limit stop (actuator types 1 and 2 only)				
	4	With centric borehole				
	5	Two-position stop (actuator type 2 only)				
	7	Booster cylinder (actuator types 1 and 2 only)				
	8	Waterproof actuator (actuator types 1 and 2 only)				
	9	LoTo DISK LOCK				
	X	Multiple selection				
11	**Product wetted surface***					
	0	0.8 µm				
	1	0.4 µm				
12	**Certificates**					
	0	Without				
	1	Test report 2.2				
	2	Inspection certificate 3.1				
	3	Certificates 2.2 and 3.1				
13	**ATEX approval**					
	0	Without				
	1	With (actuator types 1 and 2 only)				
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)				

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	3	1		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.

Clamp Flange / Clamp Flange 733



Technical data of the standard version

Standard seal outline	DN	DIN 32676
	OD	DIN 32676 / ISO 2852
Standard inside diameter	DN	DIN 11866, series A
	OD	DIN 11866, series C
Product wetted materials		AISI 304
Non product wetted materials		AISI 304
Product wetted gasket material		EPDM
Ambient temperature		0 to 45 °C
Control air pressure		4.8 to 8 bar
Max. product pressure		10 bar
Product wetted surface		R_a 0.8 µm
Non product wetted surface		Metal blank
Manual actuator		Manual actuator with ball head
Pneumatic actuator		Air-to-spring
Compliance / Certificates		CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Actuator	Dimensions			Clearance			Flange width	Valve	
Nominal width	Ø [mm]	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C4 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	90	116	415.0	253.0	83.0	435.0	273.0	103.0	40	21	1.0
DN 40	41 × 1.5	90	116	418.5	256.5	86.5	438.5	276.5	106.5	30	72	0.9
DN 50	53 × 1.5	90	116	427.0	265.0	95.0	447.0	285.0	115.0	30	130	1.3
DN 65	70 × 2.0	90	116	434.5	272.5	103.0	454.5	292.5	123.0	30	250	1.9
DN 80	85 × 2.0	90	160	440.5	278.5	114.5	460.5	298.5	134.5	30	340	2.3
DN 100	104 × 2.0	114	160	456.5	294.5	128.0	476.5	314.5	148.0	30	750	2.7
OD 1"	25.4 × 1.6	90	116	415.0	253.0	83.0	435.0	273.0	103.0	40	23	1.1
OD 1 ½"	38.1 × 1.6	90	116	420.0	258.0	88.0	440.0	278.0	108.0	30	87	0.9
OD 2"	50.8 × 1.6	90	116	428.0	266.0	96.0	448.0	286.0	116.0	30	170	1.3
OD 2 ½"	63.5 × 1.6	90	116	436.5	274.5	105.0	456.5	294.5	125.0	30	240	1.6
OD 3"	76.2 × 1.6	90	160	444.0	282.0	118.0	464.0	302.0	138.0	30	400	2.0
OD 4"	101.6 × 2.0	114	160	454.0	292.0	130.5	474.0	312.0	150.5	30	880	3.1

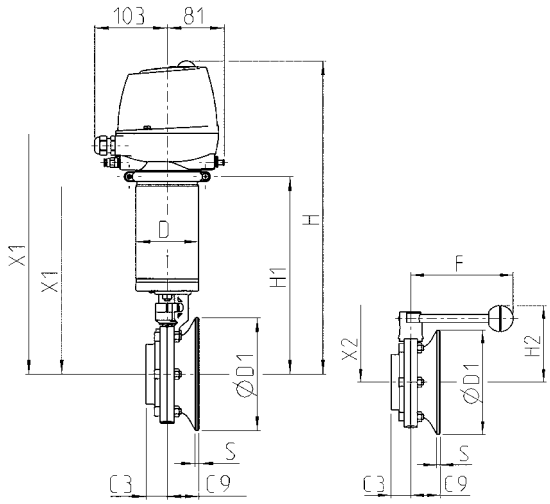
Position	Description of the order code					
1	**Valve type**					
	7	Butterfly Valve				
2	**Flange connection**					
	33	Clamp flange / weld connection				
3	**Pipe standard**					
	0	OD	1	DN		
4	**Nominal size**					
	010	OD 1"	025	DN 25		
	112	OD 1 ½"	040	DN 40		
	200	OD 2"	050	DN 50		
	212	OD 2 ½"	065	DN 65		
	300	OD 3"	080	DN 80		
	400	OD 4"	100	DN 100		
			125	DN 125		
			150	DN 150		
5	**Product wetted material**					
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)
6	**Product wetted gasket material**					
	0	EPDM			2	FKM
	1	HNBR			6	VMQ
7	**Actuator type**					
	0	Manual actuator			5	Manual actuator stepless
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator
8	**Air connection**					
	0	Without				
	1	Metric (only for actuator type 2)				
	2	Inch (only for actuator type 2)				
	3	Metric with air throttle (only for actuator type 2)				
	4	Inch with air throttle (only for actuator type 2)				
9	**Fail position of valve**					
	0	Closed				
	1	Open				
	2	Air-to-air (actuator types 1 and 2 only)				
10	**Accessiors**					
	0	Without				
	1	Extension piece +80 mm				
	3	Limit stop (actuator types 1 and 2 only)				
	4	With centric borehole				
	5	Two-position stop (actuator type 2 only)				
	7	Booster cylinder (actuator types 1 and 2 only)				
	8	Waterproof actuator (actuator types 1 and 2 only)				
	9	LoTo DISK LOCK				
	X	Multiple selection				
11	**Product wetted surface***					
	0	0.8 µm				
	1	0.4 µm				
12	**Certificates**					
	0	Without				
	1	Test report 2.2				
	2	Inspection certificate 3.1				
	3	Certificates 2.2 and 3.1				
13	**ATEX approval**					
	0	Without				
	1	With (actuator types 1 and 2 only)				
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)				

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	3	3		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.

Tank Flange / Weld Connection 751



Technical data of the standard version

Product wetted materials	AISI 316 L
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Tank connection	Actuator		Dimensions			Clearance			Flange width		Valve		
Nominal width	Ø [mm]	Ø D1 [mm]	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C3 [mm]	C9 [mm]	Wall thickness tank S (max.) [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 25	29 × 1.5	120	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	45	5	21.0	0.6
DN 40	41 × 1.5	120	90	116	418.5	256.5	86.5	438.5	276.5	106.5	25	45	5	72.0	0.8
DN 50	53 × 1.5	120	90	116	427.0	265.0	95.0	447.0	285.0	115.0	25	45	5	130.0	1.2
DN 65	70 × 2.0	154	90	116	434.5	272.5	103.0	454.5	292.5	123.0	25	45	5	250.0	1.5
DN 80	85 × 2.0	160	90	160	440.5	278.5	114.5	460.5	298.5	134.5	30	45	5	340.0	2.0
DN 100	104 × 2.0	160	114	160	456.5	294.5	128.0	476.5	314.5	148.0	30	45	5	750.0	2.5
OD 1"	25.4 × 1.6	120	90	116	415.0	253.0	83.0	435.0	273.0	103.0	25	45	5	23.0	0.7
OD 1 ½"	38.1 × 1.6	120	90	116	420.0	258.0	88.0	440.0	278.0	108.0	25	45	5	87.0	0.8
OD 2"	50.8 × 1.6	120	90	116	428.0	266.0	96.0	448.0	286.0	116.0	25	45	5	170.0	1.1
OD 2 ½"	63.5 × 1.6	154	90	116	436.5	274.5	105.0	456.5	294.5	125.0	25	45	5	240.0	1.5
OD 3"	76.2 × 1.6	160	90	160	444.0	282.0	118.0	464.0	302.0	138.0	30	45	5	400.0	1.8
OD 4"	101.6 × 2.0	160	114	160	454.0	292.0	130.5	474.0	312.0	150.5	30	45	5	880.0	2.8

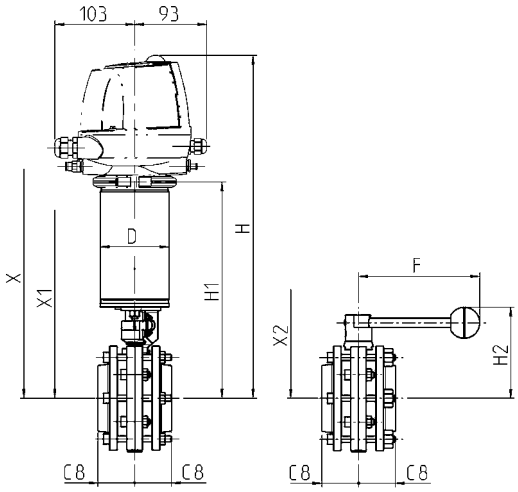
Position	Description of the order code			
1	**Valve type**			
	7	Butterfly Valve		
2	**Flange connection**			
	51	Clamp flange / weld connection		
3	**Pipe standard**			
	0	OD	1	DN
4	**Nominal size**			
	010	OD 1"	025	DN 25
	112	OD 1 ½"	040	DN 40
	200	OD 2"	050	DN 50
	212	OD 2 ½"	065	DN 65
	300	OD 3"	080	DN 80
	400	OD 4"	100	DN 100
5	**Product wetted material**			
	2	AISI 316L (1.4404)		
6	**Product wetted gasket material**			
	0	EPDM	2	FKM
	1	HNBR	6	VMQ
7	**Actuator type**			
	0	Manual actuator	5	Manual actuator stepless
	1	Pneumatic for T.VIS®	6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders	9	Without actuator
8	**Air connection**			
	0	Without		
	1	Metric (only for actuator type 2)		
	2	Inch (only for actuator type 2)		
	3	Metric with air throttle (only for actuator type 2)		
	4	Inch with air throttle (only for actuator type 2)		
9	**Fail position of valve**			
	0	Closed		
	1	Open		
	2	Air-to-air (actuator types 1 and 2 only)		
10	**Accessiors**			
	0	Without		
	1	Extension piece +80 mm		
	3	Limit stop (actuator types 1 and 2 only)		
	4	With centric borehole		
	5	Two-position stop (actuator type 2 only)		
	7	Booster cylinder (actuator types 1 and 2 only)		
	8	Waterproof actuator (actuator types 1 and 2 only)		
	9	LoTo DISK LOCK		
	X	Multiple selection		
11	**Product wetted surface***			
	0	0.8 µm		
	1	0.4 µm		
12	**Certificates**			
	0	Without		
	1	Test report 2.2		
	2	Inspection certificate 3.1		
	3	Certificates 2.2 and 3.1		
13	**ATEX approval**			
	0	Without		
	1	With (actuator types 1 and 2 only)		
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)		

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	5	1		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.

Intermediate Flange Variant 788



Technical data of the standard version

Product wetted materials	AISI 304
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Actuator		Dimensions				Clearance			Flange width	Valve	
Nominal width	Ø [mm]	ØD [mm]	F [mm]	H [mm]	H1 [mm]	H2 [mm]	Screws* [mm]	X [mm]	X1 [mm]	X2 [mm]	C8 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 15	19 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	10.0	1.6
DN 20	23 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	12.0	1.6
DN 25	29 × 1.5	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	21.0	1.5
DN 40	41 × 1.5	90	116	418.5	256.5	86.5	30	438.5	276.5	106.5	47.5	72.0	1.8
DN 50	53 × 1.5	90	116	427.0	265.0	95.0	30	447.0	285.0	115.0	47.5	130.0	2.4
DN 65	70 × 2.0	90	116	434.5	272.5	103.0	30	454.5	292.5	123.0	47.5	250.0	3.2
DN 80	85 × 2.0	90	160	440.5	278.5	114.5	30	460.5	298.5	134.5	47.5	340.0	3.8
DN 100	104 × 2.0	114	160	456.5	294.5	128.0	30	476.5	314.5	148.0	47.5	750.0	4.7
DN 125	129 × 2.0	114	220	472.0	310.0	146.0	40	492.0	330.0	166.0	55.0	1,100.0	8.7
DN 150	154 × 2.0	114	220	486.0	324.0	159.0	45	506.0	344.0	180.0	60.0	1,800.0	12.2
OD ½"	12.7 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	3.5	1.6
OD ¾"	19.05 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	10.0	1.6
OD 1"	25.4 × 1.6	90	116	415.0	253.0	83.0	30	435.0	273.0	103.0	47.5	23.0	1.6
OD 1 ½"	38.1 × 1.6	90	116	420.0	258.0	88.0	30	440.0	278.0	108.0	47.5	87.0	1.7
OD 2"	50.8 × 1.6	90	116	428.0	266.0	96.0	30	448.0	286.0	116.0	47.5	170.0	2.3
OD 2 ½"	63.5 × 1.6	90	116	436.5	274.5	105.0	30	456.5	294.5	125.0	47.5	240.0	3.1
OD 3"	76.2 × 1.6	90	160	444.0	282.0	118.0	30	464.0	302.0	138.0	47.5	400.0	3.5
OD 4"	101.6 × 2.0	114	160	454.0	292.0	130.5	30	474.0	312.0	150.5	47.5	880.0	5.3

* Thread length

Position	Description of the order code					
1	**Valve type**					
	7	Butterfly Valve				
2	**Flange connection**					
	88	Intermediate flange variant				
3	**Pipe standard**					
	0	OD	1	DN		
4	**Nominal size**					
	012	OD ½"	015	DN 15		
	075	OD ¾"	020	DN 20		
	010	OD 1"	025	DN 25		
	112	OD 1 ½"	040	DN 40		
	200	OD 2"	050	DN 50		
	212	OD 2 ½"	065	DN 65		
	300	OD 3"	080	DN 80		
	400	OD 4"	100	DN 100		
			125	DN 125		
			150	DN 150		
5	**Product wetted material**					
	1	AISI 304 (1.4301)			2	AISI 316L (1.4404)
6	**Product wetted gasket material**					
	0	EPDM			2	FKM
	1	HNBR			6	VMQ
7	**Actuator type**					
	0	Manual actuator			5	Manual actuator stepless
	1	Pneumatic for T.VIS®			6	Manual actuator with scissors handle (up to OD 4"/DN 100)
	2	Pneumatic incl. 2 proximity switch holders			9	Without actuator
8	**Air connection**					
	0	Without				
	1	Metric (only for actuator type 2)				
	2	Inch (only for actuator type 2)				
	3	Metric with air throttle (only for actuator type 2)				
	4	Inch with air throttle (only for actuator type 2)				
9	**Fail position of valve**					
	0	Closed				
	1	Open				
	2	Air-to-air (actuator types 1 and 2 only)				
10	**Accessiors**					
	0	Without				
	1	Extension piece +80 mm				
	3	Limit stop (actuator types 1 and 2 only)				
	4	With centric borehole				
	5	Two-position stop (actuator type 2 only)				
	7	Booster cylinder (actuator types 1 and 2 only)				
	8	Waterproof actuator (actuator types 1 and 2 only)				
	9	LoTo DISK LOCK				
	X	Multiple selection				
11	**Product wetted surface***					
	0	0.8 µm			1	0.4 µm
12	**Certificates**					
	0	Without			2	Inspection certificate 3.1
	1	Test report 2.2			3	Certificates 2.2 and 3.1
13	**ATEX approval**					
	0	Without				
	1	With (actuator types 1 and 2 only)				
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0, 5 or 6)				

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4				5		6	7	8	9		10	11	12	13	
Code	7	8	8		-					-						-					+ Code for control and feedback systems, see catalog GEA Valve Automation

* A surface finish report is available on request.

GEA Hygienic Butterfly Valves Actuators

Hand-operated GEA Hygienic Butterfly Valves are not covered by the ATEX Directive. The so-called manufacturer's declaration on the non-relevance of ATEX 2014/34/EU applies here. Manual butterfly valves can therefore be used without any concerns in the ATEX areas.

Manual actuator

Material	AISI 304 and phenolic resin (ball head)

Dimensions

Nominal size	OD / SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Length of lever		116 mm	160 mm	220 mm
Weight		0.3 kg	0.4 kg	0.4 kg
Article No.		224-001054	224-001055	224-001056

With the stepless actuator it is possible to adjust the butterfly valve disk at any possible position. It can be loosened and tightened by hand via turning the knob. The stepless manual actuator is also available in a lockable variant.

Manual actuator stepless

Material	AISI 304

Dimensions

Nominal size	OD / SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Length of lever		109 mm	154 mm	154 mm
Weight		0.6 kg	0.6 kg	0.6 kg
Stepless handle		224-000235	224-000236	224-000237
Stepless handle lockable		224-001709	224-001710	224-001711

GEA Hygienic Butterfly Valves Actuators

The scissors handle allows the user to adjust the butterfly valve disk at several posistions. Through the gear wheel the disk can be set every 15°.

Manual actuator scissors handle

Material	AISI CF-8

Dimensions

Nominal size	OD / SMS	½"–2 ½"	3"–4"
	DN	15–65	80–100
Length of lever		162 mm	162 mm
Weight		0.5 kg	0.5 kg
Article No.		224-000544	224-000545

Pneumatic actuator with and without T.VIS®

Actuator type	Air-to-spring	Air-to-air
Material	AISI 304	AISI 304
Ambient temperature	0 to 45 °C	0 to 45 °C
Control air pressure	4.8 to 8 bar	4.0 to 8 bar
Surface	Metal blank	Metal blank

Dimensions

Nominal size	OD/SMS	½"–2 ½"	3"	4"	
	DN	15–65	80	100	125–150
Ø Cylinder pipe	Air-to-spring	88.9 mm	88.9 mm	114.3 mm	114.3 mm
	Air-to-air	88.9 mm	88.9 mm	88.9 mm	88.9 mm
Diameter connection plate (use without T.VIS®)		97 mm	97 mm	97 mm	97 mm
Height		223 mm	223 mm	223 mm	223 mm
Weight	Air-to-spring	3.5 kg	3.5 kg	5.3 kg	5.3 kg
	Air-to-air	2.9 kg	2.9 kg	2.9 kg	2.9 kg
Article No.	Air-to-spring	224-001816	224-001818	224-001823	224-001821
	Air-to-air	224-001817	224-001819	224-001819	224-001820

GEA Hygienic Butterfly Valves Actuators

The waterproof actuator is used in moisture-prone areas and minimized the risk of water entering the actuator. Hoses for control air supply as well as exhaust air during switching can be directly connected to the actuator. The exhaust air hose (Ø 6/4 mm) leads to a dry area so that no water can enter the actuator. This solution can be helpful, for example, if the valve is cleaned directly from a very short distance with a high-pressure cleaner.

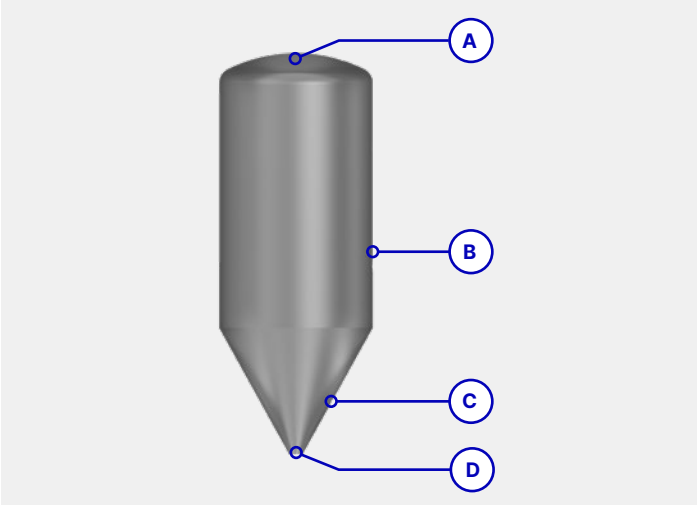
Pneumatic actuator with and without T.VIS® waterproof

Actuator type	Air-to-spring
Material	AISI 304
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	½"–2 ½"	OD 3"
	DN	15 – 65	DN80
Ø Cylinder pipe	Air-to-spring	88.9 mm	88.9 mm
Diameter connection plate (use without T.VIS®)		97 mm	97 mm
Height		223 mm	223 mm
Weight	Air-to-spring	3.5 kg	3.5 kg
Article No.	Air-to-spring (Use with T.VIS®)	224-001783	224-001990
	Air-to-spring (Use without T.VIS®)	224-001782	224-200014

GEA Hygienic Butterfly Valves
Tank Flanges

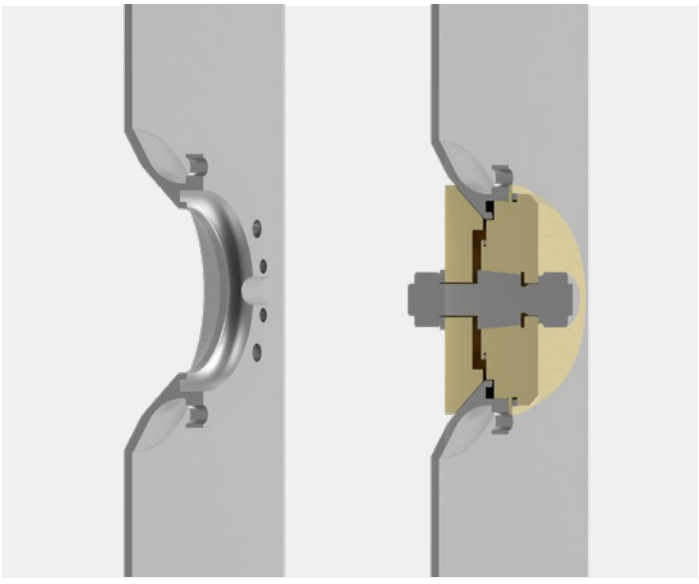


Installation position

To achieve a shut-off with the smallest possible gap, the disk contour is integrated into the tank flange. The butterfly valve can thus be installed directly on tanks with a maximum wall thickness of 5 mm in a wide variety of positions. Depending on the installation situation, the necessary space for the actuator and the control and feedback system must be taken into account.

Installation position at the tank	Suitable position for the butterfly valve tank flange
A	•
B	•
C	•
D	•

GEA Hygienic Butterfly Valves
Tank Flanges



Welding device

The butterfly valve tank flanges are welded into the vessel wall or the vessel bottom with a welding jig to protect against distortion. Since the different heat introduction when welding may cause deformation of the flanges and thereby leaks, the flange with the installed welding jig must be allowed to cool off to 30 °C. All conditions required for welding (such as insert gas, cooling, welding additive) can be taken from the welding instructions.

Technical data

Nominal size	Article no. butterfly valve tank flanges	Material in contact with product	Welding device		Welding instructions
			Standard	For rent	
DN 25	224-001690	AISI 316L	229-104.56	229-104.64	224RLI013137EN
DN 40	224-001691	AISI 316L	229-104.58	229-104.65	224RLI013137EN
DN 50	224-001692	AISI 316L	229-104.40	229-104.66	224RLI013137EN
DN 65	224-001693	AISI 316L	229-104.61	229-104.67	224RLI013137EN
DN 80	224-001694	AISI 316L	229-104.35	229-104.68	224RLI013137EN
DN 100	224-001695	AISI 316L	229-104.41	229-104.69	224RLI013137EN
OD 1"	224-001794	AISI 316L	229-104.55	229-104.70	224RLI013137EN
OD 1½"	224-001795	AISI 316L	229-104.57	229-104.71	224RLI013137EN
OD 2"	224-001796	AISI 316L	229-104.59	229-104.72	224RLI013137EN
OD 2½"	224-001797	AISI 316L	229-104.60	229-104.73	224RLI013137EN
OD 3"	224-001798	AISI 316L	229-104.62	229-104.74	224RLI013137EN
OD 4"	224-001799	AISI 316L	229-104.63	229-104.75	224RLI013137EN

The different connection positions on the tank make it necessary to adapt the contour of the welded joint from the inside of the tank. Please refer to the tables below for the minimum tank diameter required for the adaption.

Nominal size of the Valve		**Minimum tank diameter**			
		Wall thickness tank [mm]			
		2	3	4	5
DN 25	OD 1"	1,250	1,850	1,850*	1,850*
DN 40	OD 1½"	1,250	1,850	1,850*	1,850*
DN 50	OD 2"	1,250	1,850	1,850*	1,850*
DN 65	OD 2½"	2,000	3,000	3,000*	3,000*
DN 80	OD 3"	2,150	3,250	3,250*	3,250*
DN 100	OD 4"	2,150	3,250	3,250*	3,250*

* 0.5 –1 mm internal projection at the critical welding area

GEA Hygienic Butterfly Valves Accessories

Extension piece

If the pipeline must be insulated together with the butterfly valve the actuator interface can be relocated to the outside. The extension piece is suitable for all types of actuator and relocates the actuator outwards by 80 mm.

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Height		80 mm	80 mm	80 mm
Weight		0.8 kg	0.8 kg	0.8 kg
Article No.		224-001241	224-001242	224-001243

Limit stop

The mechanically adjustable limit stop is used to limit the stroke length of a butterfly valve. Both the opening and the closing stroke can be adjusted individually and separately.

When retrofitting the limit stop to an existing butterfly valve, a clamping connection with the article no. 221-507.06 is required and must be ordered additionally, as well as two air connections, article no. 933-176 (metric) or 933-173 (inch).

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Height		182 mm	182 mm	182 mm
Weight		1.5 kg	1.5 kg	1.5 kg
Article No.		224-001249	224-001249	224-001249

GEA Hygienic Butterfly Valves Accessories

Limit stop for control and feedback system

The mechanically adjustable limit stop is used to limit the stroke length of a butterfly valve. Both the opening and the closing stroke can be adjusted individually and separately. This variant includes the T.VIS® connection for mounting a control and feedback system.

When retrofitting the limit stop to an existing butterfly valve with control and feedback system, a clamping connection with the article no. 221-507.06 is required and must be ordered additionally, as well as an air connection, article no. 933-176 (metric) or 933-173 (inch). The article no. of the necessary switch bar is 221-589.104 (for T.VIS® M20 and A15).

In addition a locking screw, article no. 221-643.19 and an O-ring, article no. 930-005, are required and must also be ordered.

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD / SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Height (without T.VIS®)		103 mm	103 mm	103 mm
Weight		1.7 kg	1.7 kg	1.7 kg
Article No.		224-001250	224-001250	224-001250

Two-position stop

Using a two-position stop, a pneumatically controlled valve can be driven – in addition to the opened and closed position – into one partial opening position with individually adjustable mechanical stop. Actuation is accomplished through a second air connection. The installation of a control and feedback system on the two-position stop is not possible.

When retrofitting the 2-position-stop to an existing butterfly valve, a clamping connection with the article no. 221-507.06 is required and must be ordered additionally, as well as two air connections, article no. 933-475 (metric) or 933-979 (inch).

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD / SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Height		225 mm	225 mm	225 mm
Weight		3.3 kg	3.3 kg	3.3 kg
Article No.		224-001017	224-001017	224-001017

GEA Hygienic Butterfly Valves Accessories

Booster cylinder

The booster cylinder is used for enlarging the piston surface area that allows to open or close the valve with a lower air pressure. The booster cylinder can only be used with the air / spring actuator.

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	½"–2 ½"	3"–4"	
	DN	15–65	80–100	125–150
Height		182 mm	182 mm	182 mm
Weight		1.5 kg	1.5 kg	1.5 kg
Requested control air pressure (min.)		3 bar/44 psi	3 bar/44 psi	3 bar/44 psi
Requested control air pressure (max.)		4 bar/58 psi	4 bar/58 psi	4 bar/58 psi
Article No.		224-001258	224-001258	224-001258

LoTo DISK LOCK

The LockOut-TagOut (LoTo) device is used to ensure a safe maintenance and commissioning of process plants. Energy sources will be locked and visually marked to prevent the unintentional movement of the valve.

The DISK LOCK is available for all nominal sizes of GEA Hygienic butterfly valves. By means of a pin fixture, the valve can be locked either in the open or in the closed position.

One solution for manual and pneumatic valves
Lockable in open or closed position
Use for manual (incl. scissors & stepless handle) and pneumatic valves
Available for all nominal sizes
Easy-to-apply pin fixture
Retrofittable
For insulated pipelines: Extension with LoTo available

GEA Hygienic Butterfly Valves Options

Typical application and description
If no alternative identification option is selected, the pneumatically activated valves are always provided with a nameplate for clear identification (option /52*). All key information required for clear allocation of the valve, as well as technical data, is specified on the nameplate. The plate is glued onto the actuator. If the required identification number is specified, this is allocated to the valve by means of a separate sticker on the actuator or control and feedback system.

Key data contained	
Valve type	
Serial number	
Materials in contact with the product	Metallic material / seal material
Air supply pressure	Min./Max. [bar/psi]
Product pressure	[bar/psi]
Approvals	

Option /50*

Option /51*

Option /50* – engraved labeling plate cpl. for system identification number
In addition to the nameplate, the option /50 consists of an engraved labeling plate attached either to the bracket or to the handle using a key ring.

Option /51* – metal labeling plate US version cpl.
The engraved labeling plate is attached either to the bracket or to the handle using a key ring. Additional information can be recorded as well as the TAG number, customer designation and the valve type. In addition, pneumatic valves are identified with a nameplate.

* The option number is added to the end of the order code.

Centric borehole through the butterfly valve disk
The butterfly valve is optionally available with a borehole for use as a restrictor. For this, the customer must specify a desired bore diameter from 2 mm diameter. Depending on the nominal size, restictors with a diameter of up to 110 mm are available.

Combination of two options
GEA Hygienic Butterfly Valves are also available with a combination of two options. The following combinations are technically feasible.

Nr.	Features
13	Extension piece / Limit stop
14	Extension piece / Centric borehole
15	Extension piece / 2-position-stop
17	Extension piece / Booster cylinder
18	Extension piece / Waterproof actuator
19	Extension piece / LoTo DISK LOCK
34	Limit stop / Centric borehole
45	Centric borehole / 2-position-stop
47	Centric borehole / Booster cylinder
48	Centric borehole / Waterproof actuator
49	Centric borehole / LoTo DISK LOCK
79	Booster cylinder / LoTo DISK LOCK
89	Waterproof actuator / LoTo DISK LOCK

The order code shows a combination of extensions as follows:
7111-1002-0000-X000/19

2 GEA HYGIENIC LEAKAGE BUTTERFLY VALVES

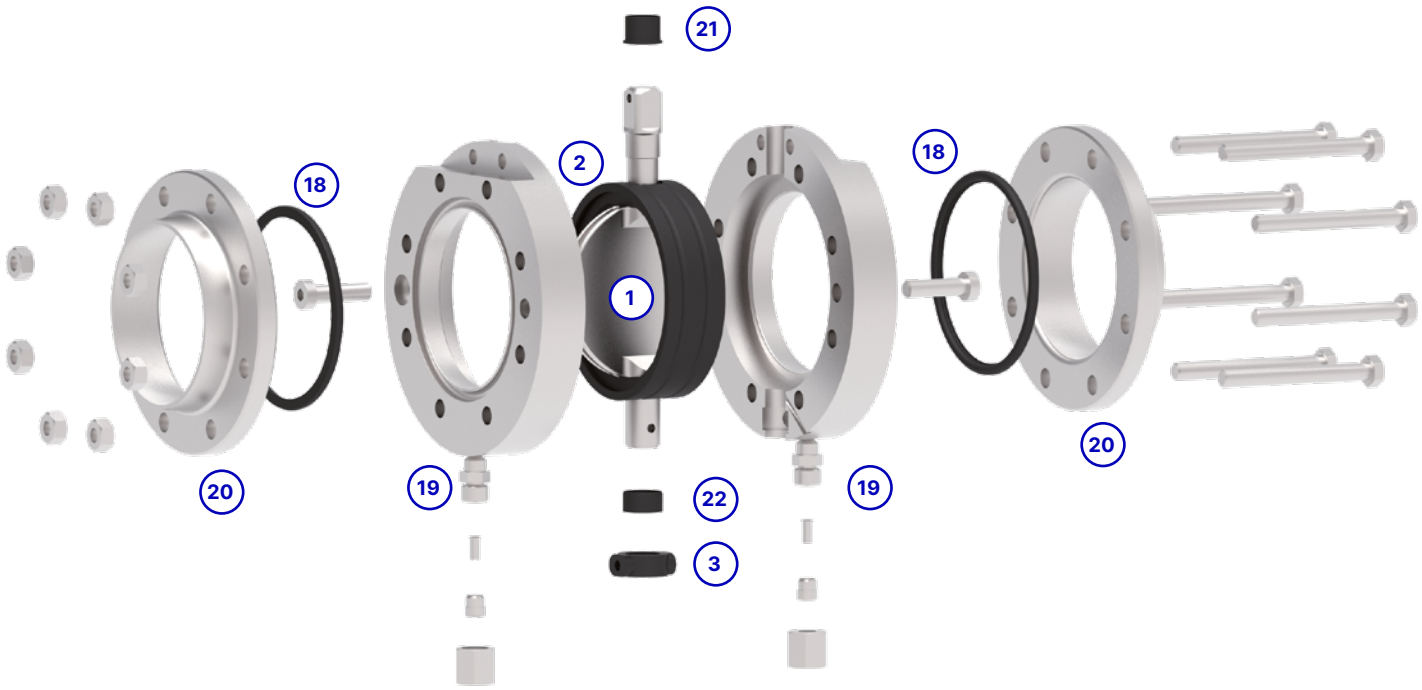
Overview

Leakage Butterfly Valve

The GEA Hygienic Leakage Butterfly Valve offers another valve variant for the mixproof separation of media. Highly functional, CIP/SIP-enabled and easy to service, this valve supplies continuous safety to production processes. In order to minimize switching losses, the rotating valve disk enforces the mechanical opening or closing of drain ports, depending on the valve position.

Significant product features
Valve disk made from solid material
Compact build
Minimum switching loss
Optimum cleanability
Simple and safe leakage indication
Only one product wetted seal
Hygienically placed drain paths
Product wetted parts in 316L (1.4404)
Intermediate flange seals in proven VARIVENT® seal design
Long service life, high productivity in process
Vacuum-proof

Overview

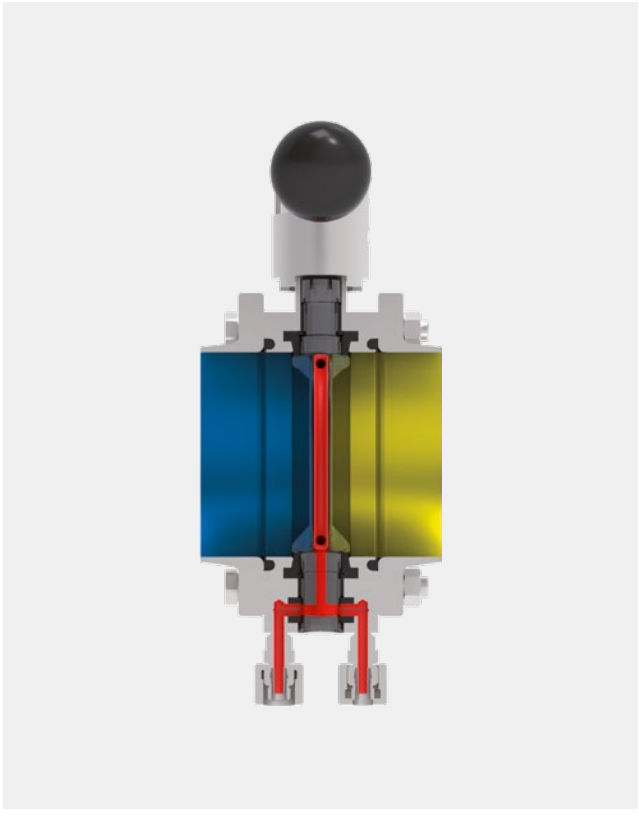


1 Butterfly valve disk
2 Butterfly valve gasket
3 Radial seal
18 VARIVENT® O-ring
19 Body flanges (intermediate flange with O-ring groove)
20 Welding flange (outside flange)
21 Upper bearing
22 Lower bearing

Application examples
CIP systems
Flush-out processes
Water management
Use as CIP return valve in a valve matrix

The Leakage Butterfly Valves are characterized by their hygienic design without dome and sump, offering all before mentioned advantages.

Mixproof separation of the two product areas, when the valve disk is closed, is achieved through two peripheral sealing edges with the leakage cavity between them.



Mixproof product area separation with the leakage cavity open to the atmosphere so any leakage becomes visible immediately.

The leakage cavity itself drains automatically and is designed in such a way that it can be flushed, from one drain port to the other, without dead areas or short-cuts. With little resources applied, products are successfully and completely flushed out, for optimum cleanability.

Upon closing of the valve disk the drain ports are opened. Remaining product from the switching operation can drain, and be flushed out, immediately after switching.

Upon opening of the valve disk the drain ports are automatically closed and reliably prevent product loss.

Specially positioned leakage apertures allow immediate detection of any leakage between the two seals.

Overview

Pneumatic actuators
For narrow mounting situations and low air consumption the pneumatic actuators have been made even more compact. The gap-free design ensures optimum cleanability and fulfils highest demands to hygiene.

Torque maximum towards both end positions enable application on both normally closed and normally open valves. Metallic stops ensure exact disk positioning. There are air-to-spring and air-to-air variants.

The integrated T.VIS® interface also safely accommodates optional accessories – booster cylinder, two-position stop and limit stop. The internal pneumatic system reduces the risk of failures, being without external tubing.

All actuators are by default applicable for Ex zones. Compliance of any electric accessories with Ex regulations must be ensured.

Features
Compact, hygienic design
Metallic stops
Torque maxima towards both end positions
Air-to-spring and air-to-air variants available
Integrated T.VIS® interface

Actuator bracket
The new actuator bracket can be mounted to the flanges more easily because of its one-sided design and integrated threads for the mounting screws.

Two integrated proximity switch holders are located at a 45 ° angle above one of the two flanges. Turning the bracket 180 ° places the switches above the other side. This means one side of the valve is always free from structures mounted on top, thus allowing free access to male flanges, for example.

The switches are plugged into half-open holders on the side, which allows for easy mounting since the counter nuts only need to be loosened, not removed.

Gaskets

The vacuum-proof gasket offers maximum stability and service life. The double-sided valve disk bearing provides a defined seal compression and lowest switch torque.

Gaskets with decisive advantages
Low torque
Double-sided valve disk bearing
Long service-life
Vacuum-proof
FDA-approved EPDM seal material

Selection of dimensions and connection fittings

Flange variant

Code	Connection fittings	Nominal size			
		DN 50	DN 65	DN 80	DN 100
8	Intermediate flange V	•	•	•	•

Flange variant

Code	Connection fittings	Nominal size			
		OD 2"	OD 2½"	OD 3"	OD 4"
8	Intermediate flange V	•	•	•	•

Technical Characteristics

Pipe classes
Dimensions of weld connections comply with the following standards:
- Metric: Outside diameter acc. to DIN 11850, series II, DIN 11866, series A
- Inch OD: Outside diameter acc. to BS 4825

Surfaces
Product wetted surfaces are by default finished to $R_a \leq 0.8$ µm. Higher-quality surfaces finished to $R_a \leq 0.4$ µm are optionally available.

Non product wetted surfaces (flanges) are metal blank.

Materials
Product wetted parts of the Leakage Butterfly Valves are built in AISI 304 (1.4301). Other materials are available on request, e.g. for applications handling aggressive media.

For detailed information regarding properties of the materials consult the material properties table.

Test report and inspection certificate
Flanges and disks of the GEA Hygienic Leakage Butterfly Valves are available with test report 2.2 or material inspection certificate 3.1 in compliance with EN 10204 (on request).

Seal materials
Product wetted seals are EPDM.

Mixing components of our seal materials are included in the FDA “White List”.

The resistance of the sealing material depends on the type and temperature of the medium conveyed. The contact time can negatively affect the service life of the seals.

For detailed information regarding properties of the seal materials consult the seal material properties table.

Conditions for operation
GEA Hygienic Leakage Butterfly Valves can be operated at ambient temperatures from 0 to 45 °C (32 to 113 °F). The Butterfly Valves can be operated in outdoor areas. However, they need to be protected from frost in those areas or must be defrosted before switching.

GEA Hygienic Leakage Butterfly Valves must be mounted stress-free. Horizontal lateral forces, e.g. thermal pipe elongation, cannot be compensated from the valve, which makes damages to the valve a possibility. In such cases, suitable measures to compensate the elongation are recommended, such as using a VARICOMP® expansion compensator.

The clearance required for mounting and demounting a GEA Hygienic Leakage Butterfly Valve is listed together with the respective technical data and dimensions.

Control air

The control air pressure is min. 4.8 bar, max. 8 bar. For lower control air pressure, a booster cylinder can be applied. The quality of the control air must comply with the requirements acc. to ISO 8573-1:2010:

ISO 8573-1:2010	
Particle content	Quality class 6
	Particle size max. 5 µm
	Particle density max. 5 mg/m³
Water content	Quality class 4
	Max. dew point 3 °C
	For operation locations in higher regions or at low ambient temperatures, the dew point must be re-calculated accordingly.
Oil content	Quality class 3
	Max. 1 mg oil for 1 m³ air, ideally oil-free

Operating pressure

The valves are vacuum proof up to 0.05 bar (abs). The maximum product pressure for which the valves can be configured is 10 bar.

Actuator selection

The modular concept of the GEA Hygienic Leakage Butterfly Valves allows for a variety of actuator variants to be fitted. Different manual and pneumatic actuators are available.

The pneumatic actuators are optimized for long-term operation and are maintenance-free. To prevent damages in the pipe-work, the closing speed of the pneumatic actuators can be reduced per air throttle.

Feedback signal

Proximity switches of M12×1 size indicate the positions “open” and/or “closed”. The actuator bracket for pneumatic actuators has two sensor casings, an optional and retro-fittable proximity switch holder is available for standard manual actuators.

All pneumatic actuators can be fitted with the proven T.VIS® control top with all options.

Technical Characteristics

Material properties

						Main alloy elements in % by mass			
Material number	Short name		Similar materials		PREN*	Cr (Chrome)	Ni (Nickel)	Mo (Molybdenum)	C max. (Carbon)
AISI 316L**	X2 CrNiMo 17-12-2	1.4404	BS 316S11	SS2348	25	16.5–18.5	10.0–13.0	2.0–2.5	0.03

* Pitting Resistance Equivalent Number = % Cr + 3.3 × (% Mo + 0.5 W) + 20 N

** Standard material for components in contact with the product (other materials available on request)

Seal material properties

Seal material			**EPDM**
General application temperature*			−40 to 135 °C −40 to 275 °F
Medium	Concentration	At permitted operating temperature	
Alkali	≤ 3 %	up to 80 °C	+
	≤ 5 %	up to 40 °C	+
	≤ 5 %	up to 80 °C	+
	> 5 %		o
Inorganic acid**	≤ 3 %	up to 80 °C	+
	≤ 5 %	up to 80 °C	o
	> 5 %	up to 100 °C	–
Water		up to 100 °C	+
Steam		up to 135 °C	+
Steam, approx. 30 min		up to 150 °C	+
Hydrocarbons / fuels			–
Products containing grease	≤ 35 %		+
	> 35 %		–
Oils			–

Other applications on request

* The general resistance of the material does not correspond to the maximum possible operating temperature.

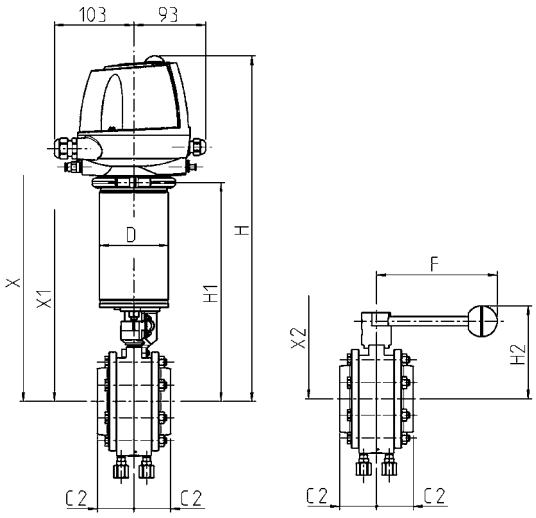
** Inorganic acids are, for example, hydrochloric acid, nitric acid, sulphuric acid

+ = Good resistance

O = Reduced service life

– = Not resistant

Intermediate Flange Variant 988



Technical data of the standard version

Product wetted materials	AISI 316L
Non product wetted materials	AISI 304
Product wetted gasket material	EPDM
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Max. product pressure	10 bar
Product wetted surface	R_a 0.8 µm
Non product wetted surface	Metal blank
Manual actuator	Manual actuator with ball head
Pneumatic actuator	Air-to-spring
Compliance / Certificates	CE* FDA

* The CE-marking is valid for a Butterfly Valve with pneumatic actuator.

	Pipe	Actuator		Drain port connection (PTFE)	Dimensions			Removal space			Flange width	Valve	
Nominal width	Ø [mm]	ØD [mm]	F [mm]	Ø [mm]	H [mm]	H1 [mm]	H2 [mm]	X [mm]	X1 [mm]	X2 [mm]	C2 [mm]	Kvs [m³/h]	Weight (without actuator) [kg]
DN 50	53 × 1.5	90	160	¾	432	268	107	520	360	130	47.5	121	4.0
DN 65	70 × 2.0	90	160	¾	441	277	116	520	360	139	47.5	277	5.0
DN 80	85 × 2.0	114	220	¾	448	284	123	535	380	146	47.5	490	5.9
DN 100	104 × 2.0	114	220	¾	461	297	136	550	390	159	47.5	715	8.3
OD 2"	50.8 × 1.6	90	160	¾	432	268	107	520	360	130	47.5	128	4.0
OD 2 ½"	63.5 × 1.6	90	160	¾	441	277	116	520	360	139	47.5	230	5.1
OD 3"	76.2 × 1.6	114	220	¾	448	284	123	535	380	146	47.5	409	6.1
OD 4"	101.6 × 2.0	114	220	¾	461	297	136	550	390	159	47.5	834	8.3

Position	Description of the order code			
1	**Valve type**			
	9	Leakage Butterfly Valve		
2	**Flange connection**			
	88	Intermediate flange variant		
3	**Pipe standard**			
	0	OD	1	DN
4	**Nominal size**			
	200	OD 2"	050	DN 50
	212	OD 2 ½"	065	DN 65
	300	OD 3"	080	DN 80
	400	OD 4"	100	DN 100
5	**Product wetted material**			
	2	AISI 316L (1.4404)		
6	**Product wetted gasket material**			
	0	EPDM		
7	**Actuator type**			
	0	Manual actuator		
	1	Pneumatic for T.VIS®		
	2	Pneumatic incl. 2 proximity switch holders		
	9	Without actuator		
8	**Air connection**			
	0	Without		
	1	Metric (only for actuator type 2)		
	2	Inch (only for actuator type 2)		
	3	Metric with air throttle (only for actuator type 2)		
	4	Inch with air throttle (only for actuator type 2)		
9	**Fail position of valve**			
	0	Closed		
10	**Accessiors**			
	0	Without		
	1	Extension piece +80 mm		
	7	Booster cylinder (actuator types 1 and 2 only)		
	9	LoTo DISK LOCK		
	X	Combination of two extensions		
11	**Product wetted surface***			
	0	0.8 µm		
	1	0.4 µm		
12	**Certificates**			
	0	Without		
	1	Test report 2.2		
	2	Inspection certificate 3.1		
	3	Certificates 2.2 and 3.1		
13	**ATEX approval**			
	0	Without		
	1	With (actuator types 1 and 2 only)		
	2	Manual butterfly valve for use in ATEX range (only for actuator type 0)		

The code is composed as following, depending on the chosen configuration:

Position	1	2		3		4			5		6	7	8	9		10	11	12	13	+ Code for control and feedback systems, see catalog GEA Valve Automation
Code	9	8	8		-				2	-	0			0	-					

* A surface finish report is available on request.

GEA Hygienic Leakage Butterfly Valves Actuators

Hand-operated GEA Hygienic Leakage Butterfly Valves are not covered by the ATEX Directive. The so-called manufacturer's declaration on the non-relevance of ATEX 2014/34/EU applies here. Manual leakage butterfly valves can therefore be used without any concerns in the ATEX areas.

Manual actuator

Material	AISI 304 and phenolic resin (ball head)

Dimensions

Nominal size	OD / SMS	2"–2 ½"	3"–4"
	DN	50–65	80–100
Length of lever		160 mm	220 mm
Weight		0.4 kg	0.4 kg
Article No.		224-001055	224-001056

Pneumatic actuator for T.VIS®

Material	AISI 304
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Surface	Metal blank
Actuator type	Air-to-spring

Dimensions

Nominal size	OD / SMS	2"–2 ½"	3"–4"
	DN	50–65	80–100
Ø		88.9 mm	114.3 mm
Height		223 mm	223 mm
Weight		3.5 kg	5.3 kg
Article No.	Pneumatic actuator for T.VIS®	224-001822	224-001821

GEA Hygienic Leakage Butterfly Valves Actuators

Pneumatic actuator

Material	AISI 304
Ambient temperature	0 to 45 °C
Control air pressure	4.8 to 8 bar
Surface	Metal blank
Actuator type	Air-to-spring

Dimensions

Nominal size	OD/SMS	2"–2 ½"	3"–4"
	DN	50–65	80–100
Ø Cylinder pipe		88.9 mm	114.3 mm
Ø Connecting plate		97 mm	97 mm
Height		223 mm	223 mm
Weight		3.5 kg	5.3 kg
Article No.	Pneumatic actuator	224-0018822	224-001821

GEA Hygienic Leakage Butterfly Valves Accessories

Extension piece

If the pipeline must be insulated together with the butterfly valve the actuator interface can be relocated to the outside. The extension piece is suitable for all types of actuator and relocates the actuator outwards by 80 mm.

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	2"–2 ½"	3"–4"
	DN	50–65	80–100
Height		80 mm	80 mm
Weight		0.8 kg	0.8 kg
Article No.		224-001608	224-001243

GEA Hygienic Leakage Butterfly Valves Accessories

Booster cylinder
The booster cylinder is used for enlarging the piston surface area that allows to open the valve with a lower air pressure.

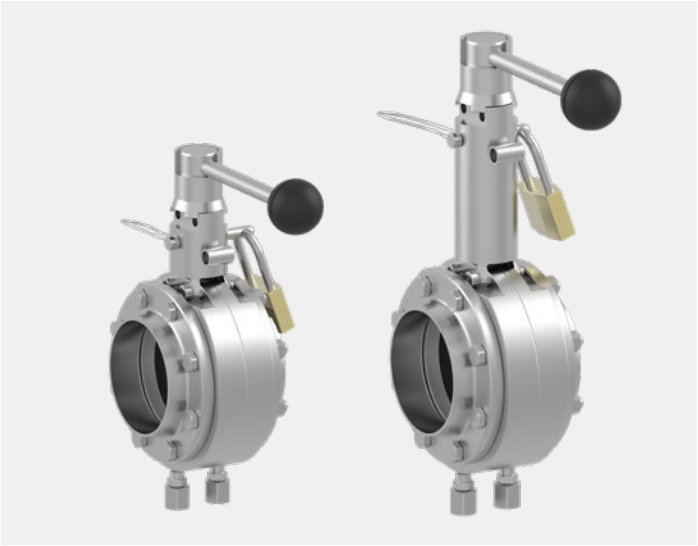
When retrofitting the booster cylinder to an existing leakage butterfly valve, a clamping connection with the article no. 221-507.11 is also required and must be ordered additionally.

Technical data

Material	AISI 304
Surface	Metal blank

Dimensions

Nominal size	OD/SMS	2"–2 ½"	3"–4"
	DN	50–65	80–100
Height		95 mm	95 mm
Weight		2.3 kg	2.3 kg
Requested control air pressure (min.)		3 bar/44 psi	3 bar/44 psi
Requested control air pressure (max.)		4 bar/58 psi	4 bar/58 psi
Article No.		224-001258	224-001258



LoTo DISK LOCK

The LockOut-TagOut (LoTo) device is used to ensure a safe maintenance and commissioning of process plants. Energy sources will be locked and visually marked to prevent the unintentional movement of the valve.

The DISK LOCK is available for all nominal sizes of GEA Hygienic Leakage butterfly valves. By means of a pin fixture, the valve can be locked either in the open or in the closed position.

One solution for manual and pneumatic valves
Lockable in open or closed position
Available for all nominal sizes
Leichte Stiftbefestigung
Retrofittable
For insulated pipelines: Extension with LoTo available

GEA Hygienic Leakage Butterfly Valves Options

Option /50*

Option /51*

Typical application and description

If no alternative identification option is selected, the pneumatically activated valves are always provided with a nameplate for clear identification (option /52*). All key information required for clear allocation of the valve, as well as technical data, is specified on the nameplate. The plate is glued onto the actuator. If the required identification number is specified, this is allocated to the valve by means of a separate sticker on the actuator or control and feedback system.

Key data contained	
Valve type	
Serial number	
Materials in contact with the product	Metallic material / seal material
Air supply pressure	Min./Max. [bar/psi]
Product pressure	[bar/psi]
Approvals	

Option /50* – engraved labeling plate cpl. for system identification number

In addition to the nameplate, the option /50 consists of an engraved labeling plate attached either to the bracket or to the handle using a key ring.

Option /51* – metal labeling plate US version cpl.

The engraved labeling plate is attached either to the bracket or to the handle using a key ring. Additional information can be recorded as well as the TAG number, customer designation and the valve type. In addition, pneumatic valves are identified with a nameplate.

* The option number is added to the end of the order code.

GEA Valve Automation – Control and Feedback Systems

Valve automation for increased process reliability, efficiency and flexibility

GEA's hygienic valve technology sets the standards for reliable, safe and permanently efficient liquid processes. Leading-edge control and automation options enable operators to achieve optimum control and monitoring of the valve – thereby realizing state-of-the-art, highly flexible operating and automation concepts.

The key component is the latest generation of GEA control tops with reliable, ground-breaking control and feedback technology. Mechanical valve components and a control top specified for the particular application together to form a finely tuned valve unit capable of realizing advanced system concepts and enhancing process options.

The control top – integral part of the valve unit

The control top facilitates optimized production and cleaning processes with less expenditure on staff, energy and time. Valve functions can be automatically and continuously monitored, recorded, evaluated and if necessary, corrected. Detectable valve positions make a crucial contribution towards the achievement of optimum system operation. This ensures adherence to a smooth process flow, while also achieving the utmost in product safety.

Special priority is given to sustainability in intelligent valve control: Thanks to the selectable LEFF® function integrated in the T.VIS® A-15, up to 90 percent of cleaning agents can be saved by an optimized and PLC-independent pulsing of the valve discs during the cleaning process.

The economical air guidance in the control top and the integrated solenoid valves with low power intake minimize energy consumption as well as the demand for compressed air and the number of hose connections.

In addition, the control top offers the best protection to components against adverse ambient conditions such as moisture, dust, liquids of any kind, vibrations and other mechanical impact.

Modern plant communication at the threshold to industry 4.0

The control tops in the current GEA range can be configured for all common types of connection and control systems to make future-oriented, pioneering automation functions possible. For example, users can ensure early digital integration of their system control setup in Industry 4.0 environments by way of the modern IO-Link technology. Digital exchange of data enables central setting of component parameters and lossless information transfer.

Diagnostic data from the valve can be processed and displayed in central control unit of the plant. The options even extend to networking the system controller with the company's ERP system for optimized resource utilization.

Easy start-up

Thanks to pre-configurable system parameters and a fully automatic SETUP, the installation for digital valve control is easy even also without extensive technical knowledge. Regional requirements, application-specific certificates (UL/CSA/PMO/EX) and other individual specifications can be provided as needed.

As a true pioneer with decades of experience in the development of valves and control tops for all processes, GEA offers the perfect symbiosis of mechanical and electronic engineering, largely with standardized components. Extensive tests and countless valve units installed around the world have continuously proved the reliability and cost-effectiveness for the user, always ensuring maximum safety of operation.

Recommended control and feedback systems for GEA butterfly valves

The T.VIS® M-20 offers an attractively priced basic version of control and feedback technology for GEA Hygienic Butterfly Valves and GEA Hygienic Leakage Butterfly Valves with optimum adaptation to process conditions.

The T.VIS® M-20 is equipped with reliable and robust control electronics, containing the proven path measurement system of the T.VIS® A-15 as an on-board version. The control top is available for all types of communication such as 24VDC and AS-i. A fully automatic, intelligent Quick-SETUP function takes over the commissioning of the valve, including the self-learning initialisation of the feedback signals, within seconds without the need for specially trained staff.

The T.VIS® A-15 offers extended functional scope and greater ease of operation. Besides the established types of communication, this control top also features the groundbreaking IO-Link technology, which allows users to set the parameters for components centrally in the system via digital data exchange and transfer all process data loss-free. Thanks to a fully automatic SETUP, commissioning can be quickly and easily carried out by means of the push buttons fitted on the hood. Additional functions such as the selection of different tolerance bands, signal attenuation round off the T.VIS® A-15.

Especially for GEA Hygienic Leakage valves, the T.VIS® A-15 provides the optimum solution, guaranteeing efficient processes and lower operating costs.

For control applications the T.VIS® P-15 positioner in combination with an air-spring actuator provides a cost-efficient alternative to conventional control valves with diaphragm actuators. The valve can be moved to any position.

Regional requirements for feedback must be observed for use in potentially explosive atmospheres. The T.VIS® E-20 therefore has almost all globally required certifications for secondary explosion protection and can be used in zones 1 and 21. The T.VIS® A-15 is certified in accordance with the Directive Class 1 / Div. 2 in compliance with the regulations in place for the North American market.

GEA Valve Automation – Control and Feedback Systems INK, INH

INK – Proximity switch holder with bracket for 2 proximity switches M12×1

The proximity switch holder with bracket can be used as an alternative to feedback systems if a control top is not desired above the actuator. The holders are integral parts of the bracket for the pneumatic actuator. The order code INK allows for a choice of proximity switches to be ordered for the valve.

Technical data	
Material	AISI 304
Surface	Metal blank

INH – Proximity switch holder for manual actuator for 2 proximity switches M12×1

This clip-on bracket can be installed in two horizontal positions and two vertical positions, thereby offering up to 8 different configurations for proximity switches of size M12×1. The holders are integral parts of the optional bracket for the manual actuator. The order code INH allows for a choice of proximity switches to be ordered for the valve.

Technical data	
Material	PA12

INK,INH order code

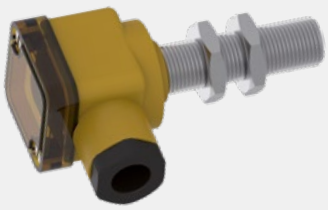
Position	Description of the order code	
1	**Feedback location**	
	INK.	Proximity switch holder with bracket for 2 proximity switches M12×1 (only actuator type 2)
	INH.	Proximity switch holder for manual actuator for 2 proximity switches M12×1 (only actuator type 0)
2	**Feedback**	
	0	Without
	1	1 feedback
	2	2 feedbacks
3	**Type of switch**	
	0	Without
	B	NI 24 V DC 3-wire PNP M12×1 with terminal chamber (Article No. 505-088)
	F	NI 24 V DC 2-wire M12×1 with terminal chamber (Article No. 505-104)
	E	NI NAMUR M12×1 with terminal chamber (Article No. 505-085)
	X	NI 24 V DC 3-wire opened with terminal chamber (Article No. 505-089)
	S	NI 24 V DC 3-wire PNP M12×1 with connector (Article No. 505-096)

The code is composed as following, depending on the chosen configuration:

Position	1	2	3
Code			

GEA Valve Automation – Control and Feedback Systems Proximity Switches

External proximity switches M12×1 for mounting on the actuator (INA) or in the lantern (LAT).



Electrical connection by wiring in the terminal chamber

Technical data

Protection class	IP67
Operating voltage	10–30 V DC
Material	PA 12/VA
Permitted ambient temperature	–25 to +85 °C

Proximity switch M12×1 for INA, LAT without T.VIS®	Nominal switching distance	Article no.
2-wire (terminal chamber)	2 mm	505-104
3-wire PNP (terminal chamber)	3 mm	505-088
3-wire PNP (Connector M12×1)	4 mm	505-096
4-wire NPN/changeover contact (terminal chamber)	3 mm	505-105

Electrical connection by M12×1 connector

Technical data

Protection class	IP67
Operating voltage	7.5–30 V DC
Material	316L/PEEK
Permitted ambient temperature	–20 to +55 °C

Proximity switch M12×1 for Valves with T.VIS® and LAT	Nominal switching distance	Article no.
2-wire/NAMUR (Connector M12×1)	4 mm	505-098
2-wire/NAMUR (Connector M12×1)	2 mm	505-102

Technical data

Protection class	IP67
Operating voltage	8.2 V DC nom.
Material	Brass, chrome-plated / PA12
Permitted ambient temperature	–25 to +70 °C
Marking	Ex II 2 G EEx ia IIC T6

Proximity switch M12×1 for SES, INA and LAT	Nominal switching distance	Article no.
2-wire/NAMUR (terminal chamber)	2 mm	505-085

GEA Valve Automation – Control and Feedback Systems Adaptation

Switch bars and adapters

The following components are required for subsequent installation of a control and feedback system on a butterfly valve:

GEA Hygienic Butterfly Valve

	T.VIS® M-20	T.VIS® A-15	T.VIS® P-15	T.VIS® E-20
Switch bar	224-001696	224-001696	224-001696	224-001697

GEA Hygienic Leakage Butterfly Valve

	T.VIS® M-20	T.VIS® A-15	T.VIS® E-20
Switch bar	224-001696	224-001696	224-001697

Switch bar
224-001697
for T.VIS® E-20

Switch bar
224-001696
for T.VIS® A-15/T.VIS® P-15/
T.VIS® M-20

GEA Valve Automation – Control and Feedback Systems Additional Options

LoTo AIR LOCK

The AIR LOCK is independend of the nominal size. With this solution, either the air connection on the actuator or control top is locked. Hence, pneumatic actuation is no longer possible. This solution is not designed to withstand water hammers.

Locks the air connection to the control top or actuator
Prevents movement of actuator
Not water hammer proof
Does not stay at the valve permanently (only needed when locking the valve)

The same solution for all valve types & nominal sizes
Suitable for straight & angled air connections
Only difference: separation in metric & imperial

AIR LOCK order code

Position	Description of the order code	
1	**Basic type**	
	HV_LoTo	For hygienic valves
2	**LoTo type**	
	AL	AIR LOCK
3	**Valve family**	
	M	Metric
	Z	Imperial

The code is composed as following, depending on the chosen configuration:

Position	1	2	3
Code			

Sample Composition of the Order Code

Valve selection

Position	Description of the order code for the standard version			
1	**Valve type**			
	7	Butterfly Valve		
2	**Flange connection**			
	11	Weld connection / weld connection		
3	**Pipe standard**			
	0	OD	1	DN
4	**Nominal size**			
	012	OD ½"	015	DN 15
	075	OD ¾"	020	DN 20
	010	OD 1"	025	DN 25
	112	OD 1 ½"	040	DN 40
	200	OD 2"	050	DN 50
	212	OD 2 ½"	065	DN 65
	300	OD 3"	080	DN 80
	400	OD 4"	100	DN 100
			125	DN 125
			150	DN 150
5	**Product wetted material**			
	1	AISI 304 (1.4301)		
	2	AISI 316L (1.4404)		
6	**Product wetted gasket material**			
	0	EPDM		
	1	HNBR		
	2	FKM		
	6	VMQ		
7	**...**			

Feedback system selection

Position		Description of the order code for the standard version	
1		**Location of feedback**	
	🔍	TM20	Control top T.VIS® M-20
2		**Control top type**	
		N	Without solenoid valve
	🔍	P	1 solenoid valve Y1
		R	1 solenoid valve Y1 (retro-fittable: Y2, Y3)
		I	2 solenoid valves Y1, Y2 (retro-fittable: Y3)
		J	2 solenoid valves Y1, Y3 (retro-fittable: Y2)
		L	3 solenoid valves Y1, Y2, Y3
3		**Feedback**	
	🔍	8	2 digital feedbacks
4		...	

Example for a complete order code, comprising valve and feedback system:

Position	1	2		3		4			5		6	7	8	9		10	11	12	13	
Code	7	1	1	0 🔍	-	1 🔍	1 🔍	2 🔍	1 🔍	-	0 🔍	1 🔍	0 🔍	0 🔍	-	0 🔍	0 🔍	0 🔍	0 🔍	+

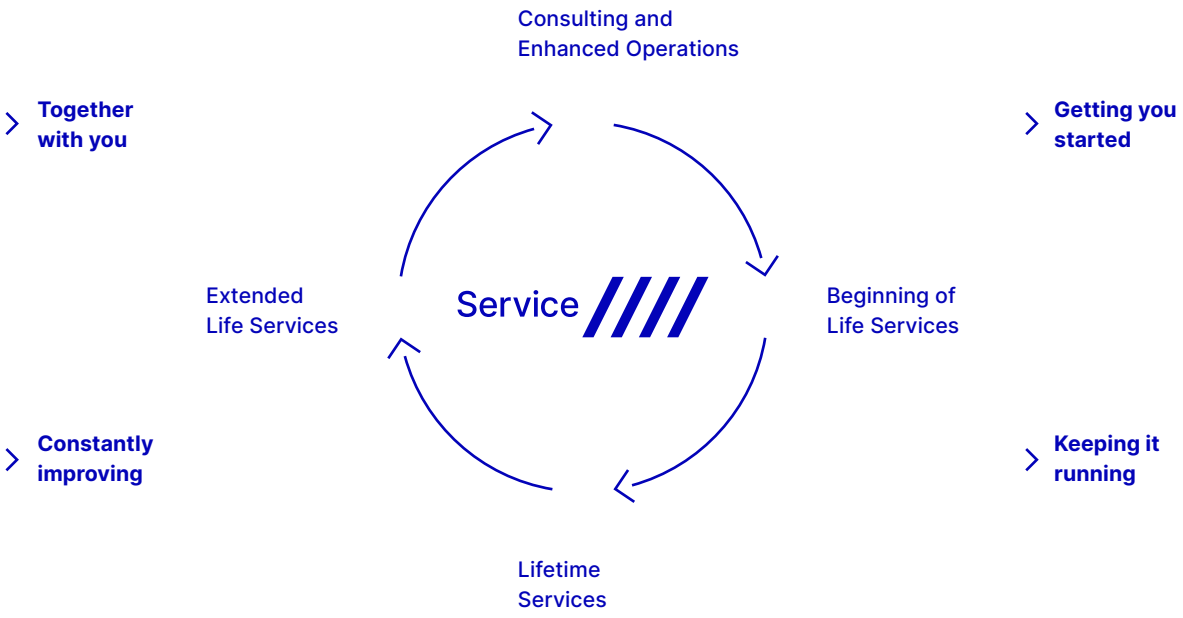
Position	1	2	3	4	5	6		Options						
Code	TM20	P 🔍	8 🔍	B 🔍	A 🔍	M 🔍	-							

The description of the order code for valves with control and feedback system is given in the catalog GEA Valve Automation.

Our service package for dependable valve technology

With a tailored service concept, you can extend the service life of your hygienic valve technology. Professional services and original spare parts from GEA help to ensure maximum system availability and security, smooth operation and precise process execution.

Our service specialists are here to help you in every phase of system utilization – from the initial process concept and throughout the entire performance period to advising on your best strategies for the future.



Beginning of life services
We draw on our decades of experience to support you in configuring your system and providing extensive employee training. Our consultations and training sessions take place in our Competence Centre in Büchen or, upon request, at your premises.

Lifetime services
We optimize your spare parts logistics by using our modular component system and our extensive service network. Preventive maintenance programmes based on comprehensive data, routine troubleshooting and efficient repair logistics keep downtimes to a minimum.

Extended life services
When upgrades are available to enhance your system, you benefit from our continuing advances in hygienic valve technology. We offer extensive advice and consultation.

Consulting and enhanced operations
Working in partnership with you, we support your enduring success and develop service strategies and Service Level Agreements for a profitable future operation.

Description of Certificates

3-A		3-A Sanitary Standards, Inc. (3-A SSI) is an independent, non-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries.
24/7 PMO VALVE 2.0® NON-STOP PRODUCTION		24/7 PMO VALVE® is a registered trade mark of GEA Tuchenhagen GmbH. It describes double-seat valves that have been authorized for use in PMO-regulated systems for carrying out the seat lift in order to clean the leakage chamber while the other pipeline is carrying product. This grants system operators the possibility of cleaning all valve components in contact with the product in parallel with the production process. In this way, the valves permit uninterrupted production on a 24/7 basis.
AS-i		Actuator Sensor interface. BUS system for the lowest field level.
ATEX		Atmosphères Explosibles. ATEX comprises the directives of the European Union in the area of explosion protection. Complies with the applicable requirements of ATEX directives: 2014/34/EU.
CCCEx		Complies with the applicable requirements of CCCEx directives in China.
cCSAus		Test of a product by CSA according to applicable safety standards in Canada and the USA.
CE		Conformité Européenne. By affixing the CE mark, the manufacturer confirms that the product complies with the European directives 765/2008 applicable to the specific product.
CSA		Canadian Standards Association. A non-governmental Canadian organization which issues standards as well as checking and certifying the safety of products. It is now globally active.
cULus		Test of a product by UL according to applicable safety standards in Canada and the USA.
DeviceNet		BUS system of the ODVA organization for complex communication on various field levels.
EG 1935/2004*		Materials in contact with the product used in valves from GEA Tuchenhagen GmbH are in accordance with EC regulation 1935/2004. This defines a general framework for materials and objects intended to come into contact with foodstuffs.
EHEDG		The guidelines drawn up by the European Hygienic Engineering and Design Group serve to implement food safety. The aim of the organisation is to improve compliance with the hygienic design of components and technical expertise in the industry. This also includes the ease of cleaning the equipment.
FDA		Food and Drug Administration. US supervisory authority for foodstuffs and pharmaceuticals. This authority issues approvals and certificates for products and materials that are used in the foodstuffs and pharmaceuticals industries.
IECEx		IECEx: International Electrotechnical Commission System for Certification to Standards Relating to Equipment for Use in Explosive Atmospheres. Complies with the applicable requirements according to IECEx directives.
ODVA		ODVA is a worldwide association comprising leading automation companies. It develops network protocols and standards in the joint interests of its members, which are used for the international interoperability of production systems.
TÜV		Technischer Überwachungs-Verein. The German TÜV is a private company which carries out technical safety checks as prescribed in national legislation or regulations.
UKCA		UK Conformity Assessed. By affixing the UKCA marking, the manufacturer confirms that the product complies with the product-specific applicable UK regulations.
UKEx		UKEx includes the guidelines for Great Britain. Complies with applicable requirements acc. UKEx Directive: UKSI 2016: 1107.
UL		Underwriters Laboratories. An organization founded in the USA for checking and certifying products and their safety.

* not possible for HNBR

Abbreviations and Terms

Abbreviation	Explanation
°C	Degrees Celsius, unit of measurement for temperature
°F	Degrees Fahrenheit, unit of measurement for temperature
3-A	Standard of 3-A Sanitary Standards, Incorporated (3-A SSI)
3D	Three-dimensional
A	Ampere, unit of measurement of current intensity or Output, term used in automation
AC	Alternating Current
ADI free	All elastomer compounds are free of animal-derived ingredients
AISI	American Iron and Steel Institute, association of the American steel industry
ANSI	American National Standards Institute, American body for standardizing industrial processes
approx.	approximately
AS-i	Actuator Sensor interface, standard for fieldbus communication
ASME	American Society of Mechanical Engineers, professional association of mechanical engineers in the USA
ASME-BPE	Standard of the ASME's – bioprocessing equipment association
ATEX	Atmosphères Explosibles, synonymous with the directives of the European Union for potentially explosive areas
bar	Unit of measurement for pressure. All pressure values [barg/psig] refer to positive pressure [bar_g/psi_g], unless specifically stated otherwise.
bar_g	Unit of measurement for pressure relative to atmospheric pressure
CAN	Controller Area Network; asynchronous serial bus system
CE	Conformité Européenne, administrative symbol for the free movement of industrial products
CIP	Cleaning In Place, designates a process for cleaning technical process systems.
CRN	The Canadian Registration Number is issued by a Canadian Jurisdiction and covers pressurized components. The authorization is needed to operate these components in Canada.
CSA	Canadian Standards Association, a non-governmental Canadian Standardization organization
dB	Decibel, one tenth of a bel, named after Alexander Graham Bell and used for identifying levels and dimensions
DC	Direct Current
DIN	Deutsches Institut für Normung e. V. Standardization organization in the Federal Republic of Germany, DIN = synonym for standards issued by the organization
DIP	Dual Inline Package, design of a switch
DN	Diameter Nominal, DIN nominal width
Device Net	Network system used in the automation industry to interconnect control devices for data exchange
E	Input, term used in automation
EAC	Certification of technical confirmity from the customs union of Russia/Balarus/Kazakhstan
EG No. 1935/2004	Regulation of the European Parliament which lays down common rules for materials which come, or may come, into contact with food, either directly or indirectly.
EHEDG	European Hygienic Engineering and Design Group. Consortium of equipment manufacturers, food industries, research institutes as well as public health authorities
EN	European standard, rules of the European Committee for Standardization
EPDM	Ethylene propylene diene rubber, acronym acc. to DIN/ISO 1629
Ex	Synonym for ATEX
FB	Feedback
FDA	Food and Drug Administration, official foodstuffs monitoring in the United States
FEM calculation	Finite Element Method; calculation process for simulating solids
FKM	Fluorinated rubber, acronym acc. to DIN/ISO 1629
H	Henry, unit of measurement for inductance
HNBR	Hydrated acrylonitrile butadiene rubber, acronym acc. to DIN / ISO 1629
Hz	Hertz, unit of frequency named after Heinrich Hertz
I	Formula symbol for electrical current
IEC	International Electrotechnical Commission, international standardization organization for electrical and electronic engineering
IP	Ingress Protection / International Protection, index of protection class acc. to IEC 60529
IPS	Iron Pipe Size, American pipe dimension
ISA	International Society of Automation, international US organization of the automation industry

Abbreviations and Terms

Abbreviation	Explanation
ISO	International Organization for Standardization, international organization that produced international standards, ISO = synonym for standards from the organization
kg	Kilogram, unit of measurement for weight
Kv	The Kv value corresponds to the water flow rate through a valve (in m^3/h) at a pressure differential of 0.98 bar and a water temperature of 5 °C to 30 °C.
Kvs	The Kv values of a valve at nominal stroke (100 % opening) is designated the Kvs value
L	Conductive
LED	Light-Emitting Diode
LEFF®	Function of the T.VIS® valve informations system for cyclical pulsing during the lifting process; Low-Emission Flip Flop
LoTo	Abbreviation for lockout – tagout, is an occupational health and safety procedure in which all energies of systems that could be dangerous for employees are isolated, interlocked and marked
mm	Millimeter, unit of measurement for length
M	Metric, system of units based on the meter or Mega, one million times a unit
m^3/h	Cubic meters per hour, unit of measurement for volumetric flow
max.	Maximum
NAMUR	Standardization working association for measuring and control technology in the chemical industry, synonym for the interface type of the organization, especially for potentially explosive atmospheres
NC	Normally Closed; valve or solenoid valve control which is closed in idle status
NO	Normally Open; valve or solenoid valve control which is open in idle status
NOT-element	Logic element, NOT gate
NPN	Signal transmission against reference potential, current-consuming
NPT	National Pipe Thread, US thread standard for self-sealing pipe fittings
OD	Outside Diameter, pipe dimension
ODVA	Open DeviceNet Vendor Association, global association for network standards
PA 12/L	Polyamide
Pg	Armoured thread
PMO	Pasteurized Milk Ordinance
PN	Nominal pressure for pipeline systems according to EN 1333, rated pressure in bar at room temperature (20 °C)
PNP	Signal transmission against reference potential, current-supplying
Pressure Equipment Directive 2014/68/EU	Directive of the European Parliament and the Council Directive for layout and conformity evaluation for pressure equipment and assemblies with a maximim pressure (PS) of more than 0.5 bars.
PPO	Polyphenylene oxide, thermoplastic material
PS	Maximum permitted operating pressure at which the components can operate safely at maximum allowable temperature (TS)
psi	Unit of measurement for pressure, pound-force per square inch, 1 psi = 6894.75 Pa. All pressure values [bar/psi] refer to positive pressure [bar_g/psi_g], unless specifically stated otherwise.
psi_g	Unit of measurement for pressure relative to atmospheric pressure
PV	Solenoid valve
R_a in µm	Average roughness value, describes the roughness of a technical surface
International Protection-Code IP67, IP66, IP69	Classifies and rates the degree of protection provided against intrusion dust, accidental contact, and water
SET-UP	Self-learning installation, the SET-UP procedure carries out all necessary settings for generating messages during commissioning and maintenance.
SIP	Sterilization in Place, refers to a process for cleaning technical process systems
SMS	Svensk Mjölk Standard, Scandinavian pipe dimension
SW	Indicates the size of a tool spanner, “Schlüsselweite”
TA-Luft VDI 2440	If a product is certified according to TA Luft it meets the requirements for proof of high grade performance according to TA Luft of 1.0× 10-4 mbar x l / (s x m) at service conditions under the VDI guideline 2440. The product will hence be tested for tightness.
TEFASEP® gold	Brand name for GEA's proprietary valve seat seal (hard sealing)
T.VIS®	GEA Tuchenhagen valve information system, control top system from GEA Tuchenhagen

Abbreviation	Explanation
TS	Maximum permitted operating temperature
UL	Underwriters Laboratories, a certification organization established in the USA
USP Class VI	The United States Pharmacopeial Convention (USP) is a scientific nonprofit organization that sets standards to help protecting public health. Class VI administer tests and impacts of material and their substances on animal and human tissues.
UV	Ultraviolet, ultraviolet radiation is a wavelength of light
V	Volt, unit of measurement for voltage
VARICOMP®	Pipe expansion compensator from GEA Tuchenhagen
VMQ	High-polymer vinyl methyl polysiloxane, silicone rubber, MVQ = synonym
W	Watt, unit of measurement for power
Y	Control air connection for the working cylinder, designation from pneumatic systems
µ	Micro, one millionth of a unit
Ω	Ohm, the unit of electrical resistance named after Georg Simon Ohm

CAD Files

Typical application and description
You can receive two-dimensional and/or three-dimensional drawing files of our components for making your piping planning. For this purpose, please send us your specific request, stating the particular order code and the required drawing format. The required files will then be individually prepared for you.

Available drawing formats:

	Format	Name
2D formats	drw	Native Pro/E
	igs (2D)	IGS file
	dxf	AutoCAD drawing exchange
	pdf (2D)	Adobe Acrobat document
	tif	TIFF (plot)
3D formats	asm	Native Pro/E
	igs (3D)	IGS file
	pdf (3D)	Adobe Acrobat document
	stp	STP file
	bmp (3D)	Bitmap image
	jpg (3D)	JPEG image
	tif (3D)	TIFF image
	sat	Standard ACIS

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Hygienic Butterfly Valve
GEA Hygienic Butterfly Valves

Hygienic Leakage Butterfly Valve
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