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GEA D-TEC®

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CONTENTS

GEA D-tec®
Shut-off valve

GEA D-tec®
Tank bottom valve

GEA D-tec®
Divert valve

GEA Aseptomag®
Double-chamber valve

GEA Aseptomag®
Leakage valve

GEA VESTA®
Shut-off valve

GEA D-tec®
Double-chamber valve

Aseptic Valve Technology

Efficiency delivering perfect results
Aseptic 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 aseptic valves are designed to be efficient and cost-effective for their particular applications, leading to sustainable operation and considerable savings potential.

GEA valve technology controls flow processes
Aseptic valves face exceptionally high demands within UltraClean and Aseptic processes. As product and process safety has the highest priority within these applications, our valves are equipped with a hermetic sealing element to avoid any ingress of microorganisms into a sterile process. With our three different valve lines, we provide the perfect component for all kind of applications and personal preferences. You can be assured that they all provide highest quality in terms of hygienic design and sustainability.

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

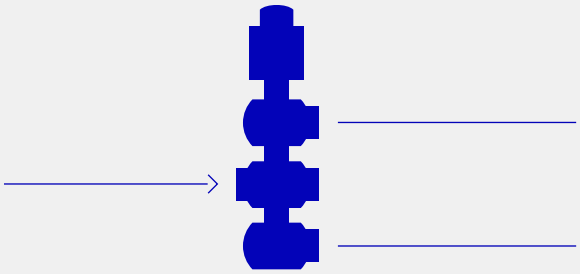
Solutions for every task
The three valve lines distinguish themselves via the hermetic sealing concept. The Aseptomag® valve line is based on stainless steel bellows technology, whereas the D-tec® valve line uses stem diaphragm technology to hermetically seal the sterile process pipe against the atmosphere. Both valve lines are mainly used for dairy, beverage and food applications. The VESTA® valve line bases on PTFE bellows technology and is a true asset for applications in the pharmaceutical, biotech and cosmetics industry.

Valves – Setting the Course of the Process

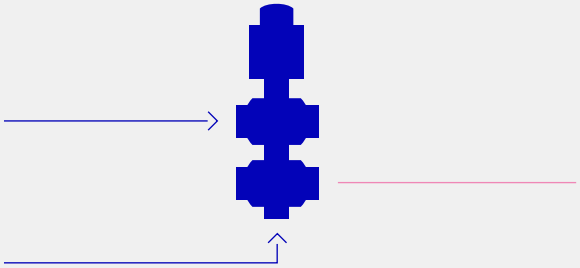
Shut-off valves type N/DV
Single-seat valves are used for simple shut-off in aspetic applications.

The valves impress with their ease of operation and flexibility. In order to avoid pressure shocks, separate versions are designed in the GEA D-tec® module for different directional flows.

Tank bottom valves type N/DV
Single-seat tank bottom valves are used for the monitored control of fluids at tank applications. The valves are an ideal fit for UltraClean applications but can also be operated aseptically.



Divert valve to distribute products

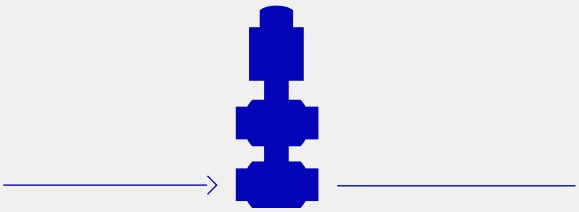


Divert valve to merge products

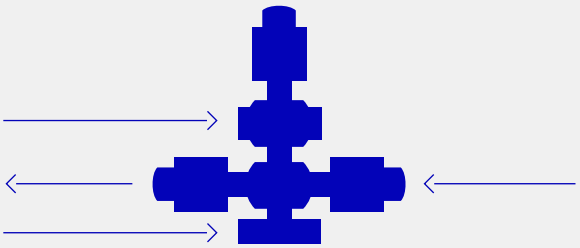
Divert valves type W/DV
Divert valves direct a liquid medium into the right path.

Different types of application include the distribution of a liquid into two channels and the merging of channels in blending processes. Versions supplied by GEA are designed for different directional flows.

Control valves type P/DV
Control valves are used for the exact setting and control of parameters such as flow, pressure, temperature, or filling level in processing plants. An electro-pneumatic positioner enables the exact setting of the valve stem by controlling the pneumatic actuator. The D-tec® stem diaphragm prevents the ingress of microorganism from the atmosphere into the product and thus increases product and process safety.



Double-chamber valves type D/DV
Double-chamber valves are designed for secure separation of incompatible products at pipe junctions, perfect for UltraClean applications and also aseptic operation. Their stem diaphragms provide enhanced protection against environmental contamination, ensuring microbial stability. While suitable for aseptic processes, their primary focus is on UltraClean applications in the food, beverage, and dairy industries. They meet the highest hygiene standards such as EHEDG and 3-A. Thanks to their hermetically sealing stem diaphragms, D-tec® valves improve product quality and shelf-life, particularly in UltraClean applications.



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

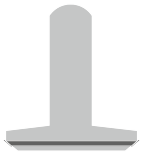
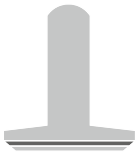
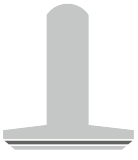
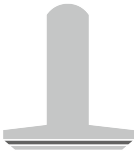
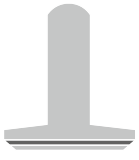
ESL milk**
MSL: 21–45 days
pH-value: > 4.5

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 D-tec® Retrofittable System

D-tec® stem diaphragm technology
The inert D-tec® stem diaphragm material provides excellent characteristics with regards to form stability, temperature and chemical resistance. Through the innovative connection between valve stem and diaphragm, the integrated rotary disconnection of internal assembly and actuator (minimizes mechanical stress at the diaphragm) and the maintenance-friendly design, D-tec® valve technology contributes to low Total Cost of Ownership and efficient plant operation.

Another important feature for high operational safety is the reliable leakage detection in the event of a ruptured diaphragm. For this, D-tec® valves offer dedicated leakage paths behind each hermetic sealing element.

GEA D-tec®
shut-off valve type N/DV

1 Control and feedback system
D-tec® divert valves can be equipped with T.VIS® control tops M-15 and A-15. They enable seamless integration of the valves into an automated processing plant.

2 Actuator
The actuator size, which is chosen based on process and installation requirements, contributes to low air and energy consumption. Depending on the valve operation, various actuator options are available and the valve can be ideally adapted to customer requirements. The actuator includes an interface to mount a T.VIS® control top onto the valve and the internal air supply reduces the risk of failures with external hoses.

3 Lantern
The lantern connects actuator and product-wetted parts and simultaneously prevents the system from heat transfer between these two valve sections. The lantern has an important supporting and clamping function for the D-tec® stem diaphragm and is furthermore designed for a safe and easy visual detection of leakages.

4 Internal assembly
The hermetically sealing D-tec® stem diaphragm is the key element of a D-tec® valve. It is characterized by a very long service life, high dimensional stability with temperature resilience and cleanability. D-tec® shut-off valves can be equipped with a soft-sealing (i.e. EPDM) or a hard-sealing (TEFASEP® gold) valve seat seal.

5 Housing
The height of the dead-space-free housing exactly corresponds to the diameter of the connection pipeline and therewith avoids domes and sumps. Numerous housing combinations are available with either clamped or welded seats.

GEA D-tec®
double-chamber valve type D/DV

1 Feedback units
D-tec® double-chamber valves can be either equipped with open feedback units or T.VIS® control tops by default. The degree of automation at the valve can be adapted to customer needs by means of using one, two or three independent control tops.

2 Actuator
The main valve is equipped with two actuators by default. The main actuator is used to move the valve from its normally closed fail-safe position to the fully open position by applying pressurized air to the internal air supply. The lifting actuator on the other hand is used to lift the two valve seats of the main valve independently during CIP or SIP.

3 Lantern
The lantern connects the lift actuator with the product-wetted parts and simultaneously prevents the system from heat transfer between these two valve sections. The lantern has an important supporting and clamping function for the upper D-tec® stem diaphragm and is furthermore designed for a safe and easy visual detection of leakages.

4 Internal assembly
The hermetically sealing D-tec® stem diaphragm is the key element of every D-tec® valve. It is characterized by a very long service life, high dimensional stability with temperature resilience and cleanability. The internal assembly of a D-tec® double-chamber valve includes two valve seat seals by default which can be equipped with soft-sealing (i.e. EPDM) or hard-sealing (TEFASEP® gold) materials. The lower valve seat corresponds with the nominal width of the valve.

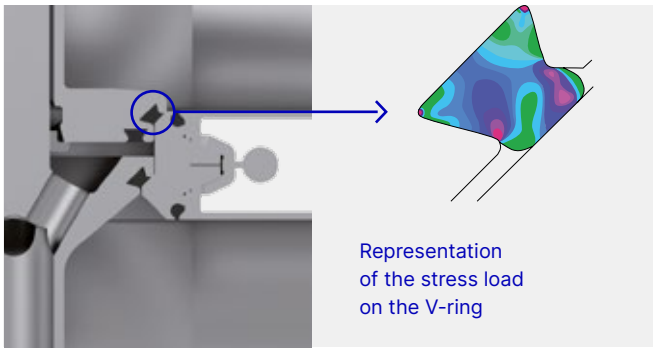
5 Housing
Housings for D-tec® double-chamber valves are available with three or four connection ports. The valves are produced with standard butt-weld connections suitable for orbital welding by default. Mixed connection port sizes as well as various pipe connections are available upon request.

6 Side valves
The sterile chamber includes an inlet and an outlet valve by default. The fail-safe position (NC or NO) of both side valves can be chosen independently from each other. The outlet can be equipped with integrated temperature probe which enables temperature measuring in the sterile chamber. In addition, the outlet can be configured with a divert valve to directly apply a sterile media also to the drain side of the valve.

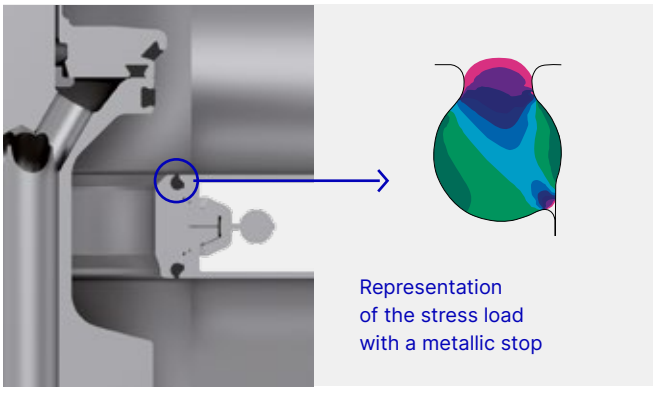
Aseptic Valves Technical Characteristics

D-tec® aseptic valves offer reliable function, are suitable for CIP / SIP, easy to maintain and represent a significant factor in consistent product quality. Low operating, maintenance and servicing costs ensure economical system productivity.

The D-tec® system has a modular structure, which means it offers a high level of flexibility. The result is economic efficiency for the system operator, optimized stock keeping and low-cost spare parts production due to the reduced diversity of parts.



Representation of the stress load on the V-ring



Representation of the stress load with a metallic stop

Modular system

- Greater flexibility because of the ability to adapt rapidly to process changes
- High economic efficiency
- Low spare part stocks

Aseptic design

- Lower risk of contaminating the end product
- Maximum efficiency in cleaning
- Lower CIP costs

Sealing according to the D-tec® principle

The aseptic valves are characterized by special seal technology. A metallic stop results in defined seal deformation, ensuring long seal life. This allows for more time to pass between required maintenance services with the process system, thereby allowing for continuous production and shorter downtimes. The special groove shape in the valve disc makes sure the seal has a secure hold at all times up to a pressure differential of 10 bar during switching. The seal geometry was optimized using FEM calculations.

Seals

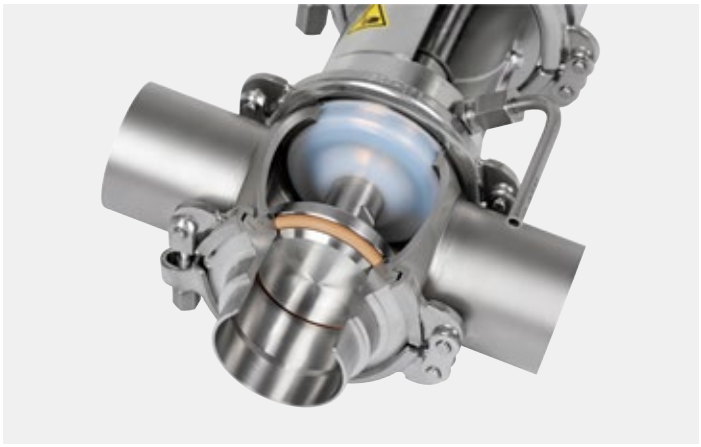
- Long operating time
- Vacuum-proof
- Selection of FDA-compliant seal materials
  - EPDM
  - FKM
  - FFKM
  - HNBR
  - TEFASEP® gold

TEFASEP® gold

TEFASEP® gold valve seat seals are designed to meet all requirements for hard-sealing concepts, from traditional applications with simple hot cleaning to high-end applications with demanding sterilization-in-place processes.

The hard, stable material compound performs well not only because of its high temperature and chemical resistance, but its robustness also prevents the cold flow known from other thermoplasts and, as a result, contributes significantly to process stability. Together with the valve design, the material ensures a minimum contact surface between the housing and the seal, which, in turn, increases the cleanability of the process system.

The material meets the international standards of the FDA (21 CFR § 177.1550), the EC (1935/2004 and 10/2011) and the 3A standard (numbers 20–24). Additionally, TEFASEP® gold complies with USP standards (USP Class IV – 121 °C) and is thus also applicable in pharmaceutical and biotech applications.



Available nominal widths for valve series

Nominal width	DN	25	40	50	65	80	100
	OD	1"	1 ½"	2"	2 ½"	3"	4"
Valve type							
D-tec®							
Shut-off valve type N/DV		•	•	•	•	•	•
Tank bottom valve type N/DV		•	•	•	•	•	•
Divert valve type W/DV		•	•	•	•	•	•
Control valve type P/DV			•	•	•	•	•
Double-chamber valve type D/DV			•	•	•	•	•

Aseptic Valves Technical Characteristics

Pipe classes
Standard D-tec® valve housings are supplied with welding ends, although the valves can be delivered with various connection fittings as an option.

The dimensions of the welding ends comply with the following standards:

Metric		Inch		
DIN	Outside diameter according to DIN 11866, series A	OD IPS	Outside diameter based on ASME-BPE-a-2004, DIN 11866, series C	Outside diameter according to IPS schedule 5
25	29.0 × 1.50	1"	25.4 × 1.65	
40	41.0 × 1.50	1 ½"	38.1 × 1.65	
50	53.0 × 1.50	2"	50.8 × 1.65	60.3 × 2.00
65	70.0 × 2.00	2 ½"	63.5 × 1.65	
80	85.0 × 2.00	3"	76.2 × 1.65	88.9 × 2.30
100	104.0 × 2.00	4"	101.6 × 2.11	114.3 × 2.30

Surfaces
The standard roughness for surfaces in contact with the product are $R_a \leq 0.8$ µm.

Higher-quality surfaces are an available option (see section 7).

Housing surfaces not in contact with the product as well as the lanterns are matt blasted as standard. Alternatively the housings are available with a ground outer surface.

The lanterns of the D-tec® valves have a bright surface. All actuators of the D-tec® valves also have a bright surface.

Materials
Components in contact with the product are produced from 1.4404 (AISI 316L), while those not in contact with the product are made from 1.4301 (AISI 304). Other materials, e.g. for use when handling aggressive fluids, are available on request.

For detailed information about the properties of the materials, refer to the material properties table.

Test report and inspection certificate
Optionally, the valve housings and internal components can be supplied with a test report 2.2 or an inspection certificate 3.1 acc. to EN 10204.

If 3.1 inspection certificates are required, please notify us of this when you place the order.

Seal materials
Seals in contact with the product are EPDM (standard), FKM as well as HNBR, FFKM and TEFASEP® gold (on request; not available for all valve types). NBR material is used for seals not in contact with the product. Other materials for seals in contact with the product are available on request. EPDM will be supplied if no seal material is specified in the orders.

The mixing constituents of our seal materials EPDM and FKM are contained in the FDA White List. In this the sealings are in accordance with FOOD and DRUG (FDA) guidelines 21 CFR Part 177.2600 or 21 CFR 177.1550: “Rubber articles intended for repeated use”.

The resistance of the seal material depends on the nature and temperature of the product being transported. The contact time with certain products can negatively affect the service life of seals.

For detailed information about the properties of the seal materials, refer to the seal material properties table.

Material properties

						Main alloy elements in % by mass			
Material number	Short name			Similar materials	PREN***	Cr (Chrome)	Ni (Nickel)	Mo (Molybdenum)	C max. (Carbon)
1.4301*	X5CrNi18-10	AISI 304	BS 304S15	SS2332	18	17.5–19.5	8.0–10.5	–	0.07
1.4404**	X2 CrNiMo 17-12-2	AISI 316L	BS 316S11	SS2348	25	16.5–18.5	10.0–13.0	2.0–2.5	0.03
1.4435	X2 CrNiMo 18-14-3	AISI 316L	BS 316S11	SS2353	27	17.0–19.0	12.5–15.0	2.5–3.0	0.03
1.4462	X2 CrNiMoN 22-5-3	2205	BS 318S13	SS2377	37	21.0–23.0	4.5–6.5	2.5–3.5	0.03
1.4410	X2 CrNiMoN 25-7-4	SAF 2507®	–	SS2328	39	24.0–26.0	6.0–8.0	3.0–4.5	0.03
1.4529	X1 NiCrMoCuN 25-20-7	AISI 926	–	–	42	19.0–21.0	24.0–26.0	6.0–7.0	0.02
AL-6XN®	–	–	–	–	43	20.0–22.0	23.5–25.5	6.0–7.0	0.03
1.4539	X1 NiCrMoCu 25-20-5	AISI 904L	BS 904S13	SS2562	35	19.0–21.0	24.0–26.0	4.0–5.0	0.02
2.4602	NiCr21Mo14W HASTELLOY C-22	–	–	–	69	20.0–22.5	Rest	12.5–14.5	0.01
2.4819	NiMo16Cr15W HASTELLOY C-276	N 10276	–	–	75	14.5–16.5	Rest	15.0–17.0	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	FFKM	Tefasep® Gold
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	−10 to 230 °C 14 to 446 °F	−80 to 200 °C −112 to 392 °F
Medium	Concentration	At permitted operating temperature					
Alkali	≤ 3 %	up to 80 °C	+	o	+	+	+
	≤ 5 %	up to 40 °C	+	o	o	+	+
	≤ 5 %	up to 80 °C	+	–	–	+	+
	> 5 %		o	–	–	+	+
Inorganic acid**	≤ 3 %	up to 80 °C	+	+	+	+	+
	≤ 5 %	up to 80 °C	o	+	o	+	+
	> 5 %	up to 100 °C	–	+	–	+	+
Water		up to 100 °C	+	+	+	+	+
Steam		up to 135 °C	+	o	o	+	+
Steam, approx. 30 min		up to 150 °C	+	o	–	–	+
		up to 160 °C	–	–	–	–	+
Hydrocarbons/fuels			–	+	o	+	+
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

Aseptic Valves Technical Characteristics

Housing connections

Two alternative housing connections are available: the clamped connection (standard) and the fixed housing connection. The clamped housing selection permits a flexible choice of port orientation.

The advantage of the welded housing connection is that no seals at the seat ring are needed. As a result, the service work during maintenance of the valves is reduced.

Also mix-matched housing combinations are available on request – both with clamped and fixed housing connection, depending on the valve type.

Clamped housing connection: Seat ring clamped by clamping connection

Fixed housing connection: Housing and seat ring welded (welding housing)

Installation

D-tec® valves must be installed without stresses. Lateral forces such as expansion of the pipelines due to heat cannot be compensated in the valve, as a result valve damages are possible. In such cases, we recommend taking measures to compensate for the expansion, such as by using the VARICOMP® expansion compensator.

The required clearance for installing and removing a D-tec® valve is specified in the particular technical data and dimensional sheet.

Recommended flow direction

If possible, the valves should close against the flow direction in order to avoid water hammer.

Ambient conditions

Ambient temperatures	
D-tec® (with connection 0)	0 °C to 45 °C
	32 °F to 113 °F

The valves can also be used outdoors. However, in these application areas they must be protected against icing, or else de-iced before switching or lifting. In addition, the particular requirements on the control and feedback system must be taken into account in this case.

The product or operating temperature depends on the seal material and can be seen in the seal material properties table.

Air supply

The valve actuators are configured for operation with min. 4 bar and max. 8 bar air pressure. The standard actuator sizes are configured for an air supply pressure of min. 6 bar (with a product pressure of 5 bar). The quality of the air supply must meet the requirements of ISO 8573-1:2010.

ISO 8573-1:2010	
Solid 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
	A correspondingly different dew point is required for applications at high altitude or with low ambient temperatures.
Oil content	Quality class 3
	Max. 1 mg oil per 1 m³ air, preferably oil-free

Operating pressure
As standard, the valves are configured for a product pressure up to max. 5 bar (all-round). Upon request, individual valve types can be supplied with the nominal pressure level of PS20. It should be noted in this case, however, that when switching the valve, the pressure differential between the upper and lower housing is only allowed to be 10 bar.

Actuator types
The modular structure of D-tec® valves makes it possible to equip them with different actuator types. As standard, the valves are supplied with a pneumatic actuator with spring return.

The pneumatic actuators are configured for long-term operation, and are maintenance-free. Optionally, additional actuator types are available.

Feedback
In the control top
See catalog GEA Valve Automation

In the lantern (LAT)
Proximity switches of size M12×1 can detect the positions "open" and/or "closed". In double-seat valves with lift actuator, it is also possible to detect the upper valve disc stroke in the lantern by means of a proximity switch (see catalog GEA Valve Automation).

For detecting the end positions by proximity switches in these valves, it is recommended to use the proximity switch holder (INA) on the actuator (see catalog GEA Valve Automation).

Certificates
Aseptic valves in the GEA D-tec® family meet the requirements of the European Hygienic Engineering and Design Group (EHEDG) as well as those of 3-A Sanitary Standards, Inc. (3-A SSI).

Numerous valves have been demonstrated to offer trouble-free and efficient cleaning ability not only in accordance with the above guidelines, but also in independent and standardized cleaning tests.

ATEX certificates, CRN, EAC and other additional certificates are available on request for many GEA D-tec® valves and for other hygienic valves and components in the GEA portfolio.

GEA D-tec® valves comply with the EC Machinery Directive 2006/42/EC and bear the CE mark. They also fulfill the EN ISO 12100:2010 standard for the safety of machinery.

Due to their refined design, D-tec® valves also meet the essential health and safety requirements of the EC Pressure Equipment Directive 2014/68/EU.

GEA D-tec® valves can come into contact with food. They comply with Regulation (EC) No. 1935/2004 of the European Parliament and Council.

Selection Matrix

Catalogs
Hygienic Valve Technology

Catalogs
Hygienic Pump Technology

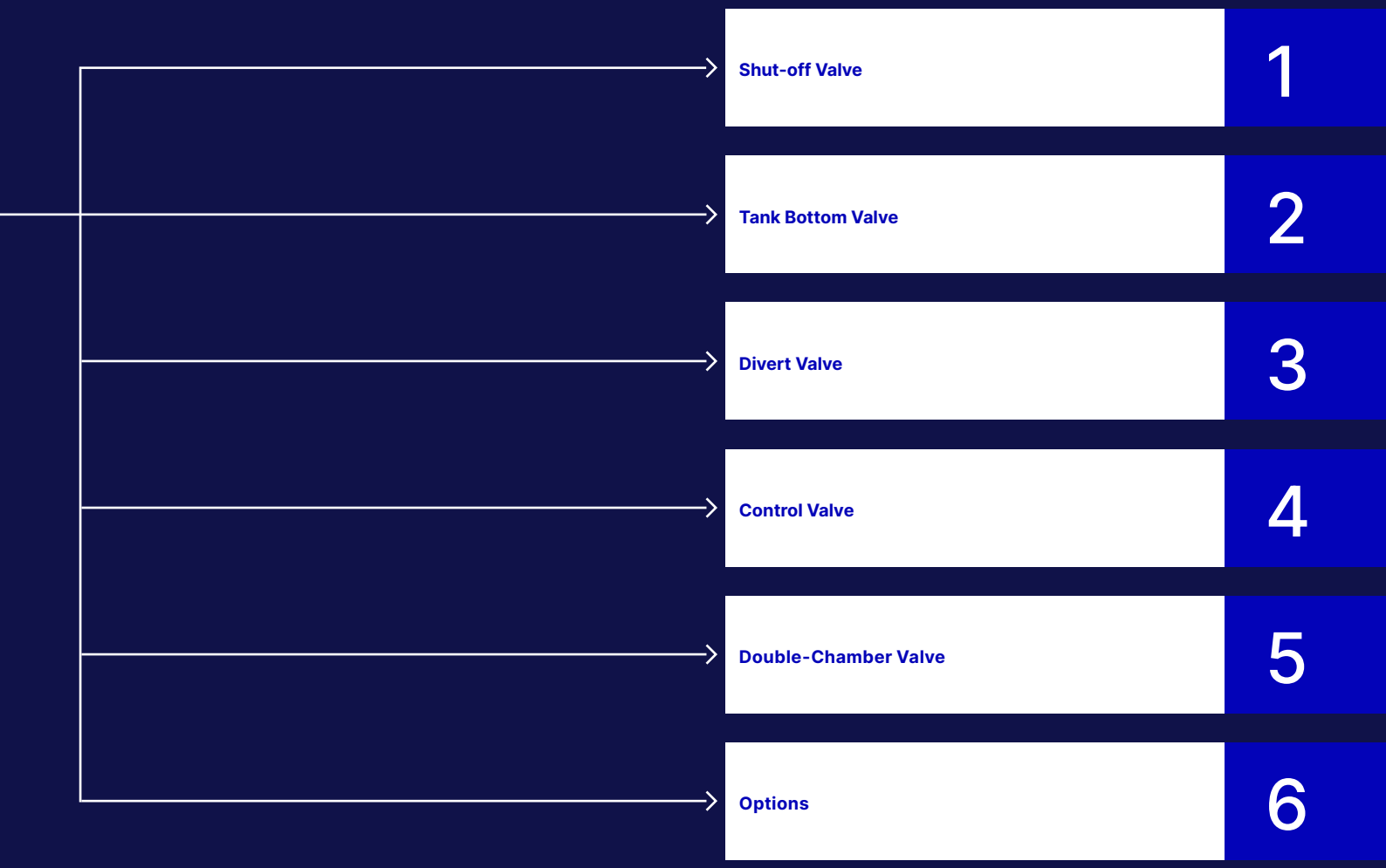
Catalogs
Aseptic Valve Technology

Catalogs
Cleaning Technology

Aseptomag®
Aseptic Valves and Components

D-tec®
Aspetic Valves for UltraClean Applications

VESTA®
Sterile Valves


Shut-off Valve
1
Tank Bottom Valve
2
Divert Valve
3
Control Valve
4
Double-Chamber Valve
5
Options
6

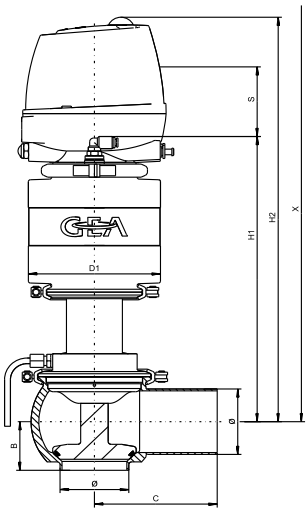
1 SHUT-OFF VALVE

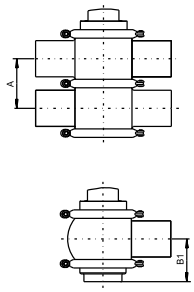
GEA D-tec®

Overview

Aseptic single-seat shut-off valves are used for the controlled opening and closing of pipelines in UltraClean and Aseptic processing plants. D-tec® single-seat shut-off valves are used for the controlled opening and closing of pipelines. The valves are an ideal fit for UltraClean applications but can also be operated aseptically.

D-tec® Shut-off Valve Type N/DV





Loose seat ring

Technical data of the standard version

Recommended flow direction		Against the closing direction
Material	Housing	1.4404 (AISI 316L)
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301 (AISI 304)
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for 30 min
Air supply pressure		6 bar (87 psi)
Product pressure		5 bar (73 psi)
Surface in contact with the product		$R_a \leq 0.8$ µm
External housing surface		Matt blasted
Control and feedback system		Connection 0 (without control top)
Actuator type		Pneumatic actuator air/spring
Connection fittings		Welding end
Identification		Adhesive ID tag
Valve seat version		Clamped or welded seat ring

	Pipe				Housing	Actuator	Dimensions			Valve	
Nominal width	Ø [mm]	A [mm]	B [mm]	B1 [mm]	C [mm]	D1 [mm]	H1 [mm]	H2 [mm]	Clearance X [mm]	Stroke S [mm]	Weight [kg]
DN 25	29.0 × 1.50	50.0	31	58	90	99	248	412	493	10	7
DN 40	41.0 × 1.50	62.0	39	64	90	110	293	457	558	17	9
DN 50	53.0 × 1.50	74.0	41	70	90	110	299	463	578	17	9
DN 65	70.0 × 2.00	96.0	52	83	125	135	307	471	619	25	13
DN 80	85.0 × 2.00	111.0	60	90	125	135	314	478	649	25	14
DN 100	104.0 × 2.00	130.0	70	100	125	170	358	522	722	30	20
OD 1"	25.4 × 1.65	46.0	29	56	90	99	246	410	485	10	7
OD 1 ½"	38.1 × 1.65	59.0	39	62	90	110	291	455	553	17	9
OD 2"	50.8 × 1.65	71.5	42	68	90	110	297	461	575	17	9
OD 2 ½"	63.5 × 1.65	90.0	54	80	125	135	304	468	612	25	13
OD 3"	76.2 × 1.65	103.0	54	86	125	135	310	474	631	25	13
OD 4"	101.6 × 2.11	127.5	69	99	125	170	357	521	718	30	20

Position	Description of the order code for the standard version											
1	**Valve type**											
	N	D-tec® shut-off valve										
2	**Housing combinations**											
	A	B	C	E	L	T						
												
3	**Supplement to the valve type**											
	/DV	D-tec® stem diaphragm (hermetic sealing)										
4/5	**Nominal width (upper housing/lower housing)**											
	DN 25	OD 1"										
	DN 40	OD 1 ½"										
	DN 50	OD 2"										
	DN 65	OD 2 ½"										
	DN 80	OD 3"										
	DN 100	OD 4"										
6	**Actuator type**											
	S	Air / Spring										
7	**Non-actuated position**											
	Z	Spring-to-close (NC)										
	A	Spring-to-open (NO)										
8	**Standard configuration with 6 bar air supply pressure for 5 bar product pressure (higher pressures on request)**											
	Actuator (spring-to-close)		Actuator (spring-to-open)				For nominal widths					
	AA		AA				DN 25, OD 1"					
	BB		BA				DN 40, DN 50, OD 1 ½", OD 2"					
	CD		CB				DN 65, DN 80, OD 2 ½", OD 3"					
	DF		DD				DN 100, OD 4"					
9	**Valve seat version**			Housing combination								
				A	B	C	E	L	T			
	L0	Loose seat ring / Clamp connection		•	•	•	•	•	•			
	V0	Fixed vertical port						•	•			
	V1	Welded seat ring / Port orientation 90°		•	•	•	•					
	V2	Welded seat ring / Port orientation 180°		•	•	•	•					
	V3	Welded seat ring / Port orientation 270°			•							
10	**Housing and valve seat sealing (valve disc soft sealing)*1**											
	1	Housing seal EPDM (O-ring), valve seat seal EPDM (V-ring)										
	2	Housing seal FKM (O-ring), valve seat seal FKM (V-ring)										
	3	Housing seal HNBR (O-ring), valve seat seal HNBR (V-ring)										
	6	Housing seal VMQ (O-ring), valve seat seal see position 13										
11	**Surface quality of the housing**											
	2	Inside R_a ≤ 0.8 µm, outside matt blasted										
12	**Connection fittings**											
	N	Welding end										
13	**Valve seat sealing (valve disc hard sealing)**											
	/07	Valve seat seal Tefasep® gold (O-ring)*2										
14	**Accessories**											
	/52	Adhesive ID tag										
+												
15–19	**Air connection / Control and feedback system**											
	00000M	Metric for air hose Ø 6/4 mm										
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)										
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation										

*1 Valve disc hard sealing must be configured with position 13
*2 Valve disc hard sealing available in combination with EPDM or VMQ housing sealing

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	14		15 to 19				
Code	N		/DV	-	/	-	S		-		-		-		2	N		/52	+					

For options differing from the standard version, please refer to the GEA Valve Automation catalog.

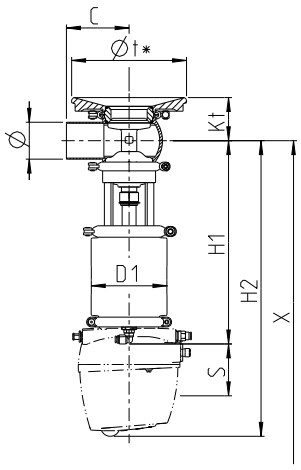
2 TANK BOTTOM VALVE

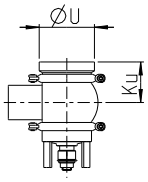
GEA D-tec®

Overview

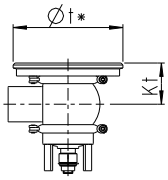
Aseptic and UltraClean tank bottom valves are used to shut off pipelines at a tank. Our valve range covers everything from single-seat to mixproof shut-off tank bottom valves. D-tec® single-seat tank bottom valves are used for the monitored control of fluids at tank applications. The valves are an ideal fit for UltraClean applications but can also be operated aseptically.

D-tec® Tank Bottom Valve Type N/DV





Housing connection U



Housing connection T

Technical data of the standard version

Recommended flow direction		Against the closing direction
Material	Housing	1.4404 (AISI 316L)
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301 (AISI 304)
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for 30 min
Air supply pressure		6 bar (87 psi)
Product pressure		5 bar (73 psi)
Surface in contact with the product		$R_a \leq 0.8$ µm
External housing surface		Matt blasted
Control and feedback system		Connection 0 (without control top)
Actuator type		Pneumatic actuator air/spring
Connection fittings		Welding end
Identification		Adhesive ID tag
Valve seat version		Clamped seat ring

	Pipe	Housing	Actuator	Dimensions			Housing connection U		Housing connection T		Valve	
Nominal width	Ø [mm]	C [mm]	D1 [mm]	H1 [mm]	H2 [mm]	Clearance X [mm]	Ku [mm]	Øu [mm]	Kt [mm]	Øt* [mm]	Stroke S [mm]	Weight [kg]
DN 25	29.0 × 1.50	90.0	99	294	423	508	50.0	70 × 2.0	49.0	145	16	7
DN 40	41.0 × 1.50	90.0	110	335	464	549	56.0	85 × 2.0	55.5	165	18	9
DN 50	53.0 × 1.50	90.0	110	341	470	555	62.0	85 × 2.0	61.5	165	30	9
DN 65	70.0 × 2.00	125.0	135	352	481	626	78.0	114 × 2.5	76.0	200	30	14
DN 80	85.0 × 2.00	125.0	135	360	489	634	85.5	114 × 2.5	83.5	200	30	15
DN 100	104.0 × 2.00	125.0	170	399	528	673	95.0	154 × 2.0	92.5	225	30	21
OD 1"	25.4 × 1.65	90.0	99	292	421	506	48.0	70 × 2.0	47.0	145	12	7
OD 1 ½"	38.1 × 1.65	90.0	110	337	466	551	54.5	85 × 2.0	54.0	165	18	9
OD 2"	50.8 × 1.65	90.0	110	343	472	557	60.8	85 × 2.0	60.3	165	30	9
OD 2 ½"	63.5 × 1.65	125.0	135	356	485	630	75.0	114 × 2.5	73.0	200	31	14
OD 3"	76.2 × 1.65	125.0	135	363	492	637	81.5	114 × 2.5	79.5	200	29	14
OD 4"	101.6 × 2.11	125.0	170	401	530	675	93.8	154 × 2.0	91.3	225	30	21

* The maximum wall thickness of the tank can be 8 mm.

Position	Description of the order code for the standard version		
1	**Valve type**		
	N	D-tec® Single-seat bottom valve	
2	**Housing combinations**		
	F*1 	D*1 	
3	**Supplement to the valve type**		
	/DV	D-tec® stem diaphragm (hermetic sealing)	
4	**Nominal width**		
	DN 25	OD 1"	
	DN 40	OD 1 ½"	
	DN 50	OD 2"	
	DN 65	OD 2 ½"	
	DN 80	OD 3"	
	DN 100	OD 4"	
5	**Actuator type**		
	S	Air / Spring	
6	**Non-actuated position**		
	Z	Spring-to-close (NC)	
	A	Spring-to-open (NO)	
7	**Standard configuration with 6 bar air supply pressure for 5 bar product pressure (higher pressures on request)*2**		
	Actuator (spring-to-close)	Actuator (spring-to-open)	For nominal widths
	AA	AA	DN 25, OD 1"
	BB	BA	DN 40, DN 50, OD 1 ½", OD 2"
	CD	CB	DN 65, DN 80, OD 2 ½", OD 3"
	DF	DD	DN 100, OD 4"
8	**Valve seat version housing**		
	L0	Loose seat ring / Clamp connection	
9	**Housing and valve seat sealing (valve disc soft sealing)*3**		
	1	Housing seal EPDM (O-ring), valve seat seal EPDM (V-ring)	
	2	Housing seal FKM (O-ring), valve seat seal FKM (V-ring)	
	3	Housing seal HNBR (O-ring), valve seat seal HNBR (V-ring)	
	6	Housing seal VMQ (O-ring), valve seat seal see position 13	
10	**Surface quality of the housing**		
	2	Inside R_a ≤ 0.8 µm, outside matt blasted	
11	**Connection fittings**		
	N	Welding end	
12	**Valve seat sealing (valve disc hard sealing)**		
	/07	Valve seat seal Tefasep® gold (O-ring)*4	
13	**Accessories**		
	/T	Housing connection T	
	/U	Housing connection U	
	/52	Adhesive ID tag	
+			
14–19	**Air connection / Control and feedback system**		
	00000M	Metric for air hose Ø 6/4 mm	
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)	
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation	

*1 Optionally with housing connection flange U or housing connection flange T (see position 13)
*2 Standard configuration for hard-sealing valve disc may deviate
*3 Valve disc hard sealing must be configured with position 12
*4 Valve disc hard sealing available in combination with EPDM or VMQ housing sealing

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		14 to 19						
Code	N		/DV	-		-	S		-		-	L0	-		2	N			+							

For options differing from the standard version, please refer to the GEA Valve Automation catalog.

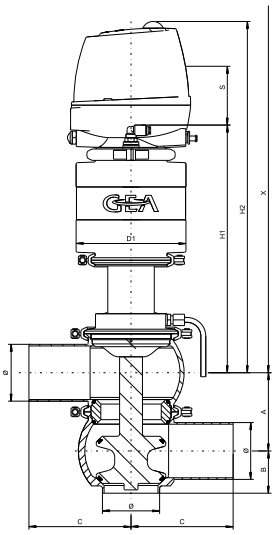
3 DIVERT VALVE

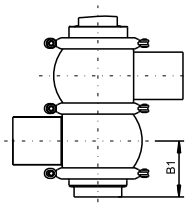
GEA D-tec®

Overview

Aseptic divert valves are used for divert functions in UltraClean and Aseptic processing plants. D-tec® divert valves are used for divert functions in processing plants. The valves are an ideal fit for UltraClean applications but can also be operated aseptically.

D-tec® Divert Valve Type W/DV





Loose seat ring

Technical data of the standard version

Recommended flow direction		Against the closing direction
Material	Housing	1.4404 (AISI 316L)
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301 (AISI 304)
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for 30 min
Air supply pressure		6 bar (87 psi)
Product pressure		5 bar (73 psi)
Surface in contact with the product		$R_a \leq 0.8$ µm
External housing surface		Matt blasted
Control and feedback system		Connection 0 (without control top)
Actuator type		Pneumatic actuator air/spring
Connection fittings		Welding end
Identification		Adhesive ID tag
Valve seat version		Clamped or fixed vertical port

	Pipe				Housing	Actuator	Dimensions			Valve	
Nominal width	Ø [mm]	A [mm]	B [mm]	B1 [mm]	C [mm]	D1 [mm]	H1 [mm]	H2 [mm]	Clearance X [mm]	Stroke S [mm]	Weight [kg]
DN 25	29.0 × 1.50	50.0	31	58.0	90	99	248	412	593	8	8
DN 40	41.0 × 1.50	62.0	39	64.0	90	135	293	457	682	14	12
DN 50	53.0 × 1.50	74.0	41	70.0	90	135	299	463	726	14	12
DN 65	70.0 × 2.00	96.0	52	83.0	125	170	337	501	841	22	19
DN 80	85.0 × 2.00	111.0	60	90.5	125	170	344	508	901	22	20
DN 100	104.0 × 2.00	130.0	70	100.0	125	210	358	522	982	25	28
OD 1"	25.4 × 1.65	46.0	29	56.0	90	99	246	410	577	8	8
OD 1 ½"	38.1 × 1.65	59.0	39	62.5	90	135	291	455	671	14	12
OD 2"	50.8 × 1.65	71.5	42	69.0	90	135	297	461	718	14	12
OD 2 ½"	63.5 × 1.65	90.0	54	80.0	125	170	334	498	822	22	19
OD 3"	76.2 × 1.65	103.0	54	86.5	125	170	340	504	867	22	19
OD 4"	101.6 × 2.11	127.5	69	99.0	125	210	357	521	973	25	28

Position	Description of the order code for the standard version											
1	**Valve type**											
	W	D-tec® divert valve										
2	**Housing combinations**											
	K	V	P	O	W	Y	X	Z	U	M	N	G
												
3	**Supplement to the valve type**											
	/DV	D-tec® stem diaphragm (hermetic sealing)										
4/5	**Nominal width (upper housing/lower housing)**											
	DN 25	OD 1"										
	DN 40	OD 1 ½"										
	DN 50	OD 2"	IPS 2"									
	DN 65	OD 2 ½"										
	DN 80	OD 3"	IPS 3"									
	DN 100	OD 4"	IPS 4"									
6	**Actuator type**											
	S	Air / Spring										
7	**Non-actuated position**											
	Z	Spring-to-close (NC)										
	A	Spring-to-open (NO)										
8	**Standard configuration with 6 bar air supply pressure for 5 bar product pressure (higher pressures on request)**											
	Actuator (spring-to-close)	Actuator (spring-to-open)	For nominal widths									
	AA	AA	DN 25, OD 1"									
	CB	CB	DN 40, DN 50, OD 1 ½", OD 2", IPS 2"									
	DD	DD	DN 65, DN 80, OD 2 ½", OD 3", IPS 3"									
	EF	EF	DN 100, OD 4", IPS 4"									
9	**Valve seat version**		Housing combination									
			K	V	P	O	W	Y	X	Z	U	M	N	G
	L0	Loose seat ring / Clamp connection	•	•	•	•	•	•	•	•	•	•	•	•
	V0	Fixed vertical port	•	•	•	•								
10	**Housing and valve seat sealing (valve disc soft sealing)*1**											
	1	Housing seal EPDM (O-ring), valve seat seal EPDM (V-ring)										
	2	Housing seal FKM (O-ring), valve seat seal FKM (V-ring)										
	3	Housing seal HNBR (O-ring), valve seat seal HNBR (V-ring)										
	6	Housing seal VMQ (O-ring), valve seat seal see position 13										
11	**Surface quality of the housing**											
	2	Inside R_a ≤ 0.8 µm, outside matt blasted										
12	**Connection fittings**											
	N	Welding end										
13	**Valve seat sealing (valve disc hard sealing)**											
	/07	Valve seat seal Tefasep® gold (O-ring)*2										
14	**Accessories**											
	/52	Adhesive ID tag										
+												
15–19	**Air connection / Control and feedback system**											
	00000M	Metric for air hose Ø 6/4 mm										
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)										
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation										

*1 Valve disc hard sealing must be configured with position 13
*2 Valve disc hard sealing available in combination with EPDM or VMQ housing sealing

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	14		15 to 19				
Code	W		/DV	-	/	-	S		-		-		-		2	N		/52	+					

For options differing from the standard version, please refer to the GEA Valve Automation catalog.

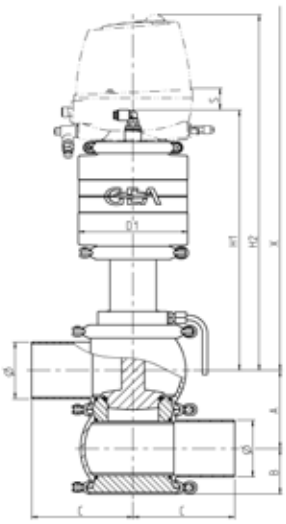
4 CONTROL VALVE

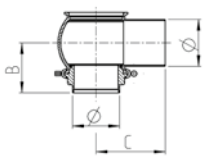
GEA D-tec®

Overview

Aseptic single-seat control valves are used for the exact setting and control of parameters such as flow, pressure, temperature, or filling level in UltraClean and Aseptic processing plants. D-tec® control valves are used for the exact setting and control of parameters such as flow, pressure, temperature, or filling level in processing plants.

D-tec® Control Valve Type P/DV



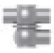
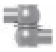
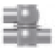
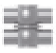


Loose seat ring

Technical data of the standard version

Recommended flow direction		Against the closing direction
Material	Housing	1.4404 (AISI 316L)
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301 (AISI 304)
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for 30 min
Air supply pressure		6 bar (87 psi)
Product pressure		5 bar (73 psi)
Surface in contact with the product		$R_a \leq 0.8$ µm
External housing surface		Matt blasted
Control and feedback system		Positioner T.VIS® P-15
Actuator type		Pneumatic actuator air/spring
Connection fittings		Welding end
Identification		Adhesive ID tag
Valve seat version		Clamped seat ring

	Pipe			Housing	Actuator	Dimensions			Valve	
Nominal width	Ø [mm]	A [mm]	B [mm]	B1 [mm]	C [mm]	D1 [mm]	H1 [mm]	H2 [mm]	Clearance X [mm]	Stroke S [mm]	Weight [kg]
DN 40	41.0 × 1.50	62.0	39	64	90	100	293	457	528	15	9
DN 50	53.0 × 1.50	74.0	41	70	90	110	299	463	578	15	9
DN 65	70.0 × 2.00	96.0	52	83	125	135	307	471	619	15	13
DN 80	85.0 × 2.00	111.0	60	90	125	135	314	478	649	15	14
DN 100	104.0 × 2.00	130.0	70	100	125	170	358	522	722	30	20
OD 1 ½"	38.1 × 1.65	59.0	39	62	90	100	291	455	553	15	9
OD 2"	50.8 × 1.65	71.5	42	68	90	110	297	461	575	15	9
OD 2 ½"	63.5 × 1.65	90.0	54	80	125	135	304	468	612	15	13
OD 3"	76.2 × 1.65	103.0	54	86	125	135	301	474	631	15	13
OD 4"	101.6 × 2.11	127.5	69	99	125	170	357	521	718	30	20

Position	Description of the order code for the standard version	
1	**Valve type**	
	P	D-tec® control valve
2	**Housing combinations**	
	A  B  C  E  L  T 	
3	**Supplement to the valve type**	
	F/DV	Equal-percentage characteristic curve, D-tec® stem diaphragm (hermetic sealing)
4/5	**Nominal width (upper housing/lower housing)**	
	DN 40	OD 1 ½"
	DN 50	OD 2"
	DN 65	OD 2 ½"
	DN 80	OD 3"
	DN 100	OD 4"
6	**Actuator type**	
	S	Air / Spring
7	**Non-actuated position**	
	Z	Spring-to-close (NC)
	A	Spring-to-open (NO)
8	**Control cone seal**	
	M	Metallic (without V-ring)
	W	Soft sealing (with V-ring)
	H	Hard sealing (O-ring TEFASEP® gold)
9	**Kvs-value**	

Nominal width	Kvs-value	6.3	10	16	25	35	60	80	100	160
DN 40, OD 1 ½"		•	•	•	•					
DN 50, OD 2"				•	•	•				
DN 65, OD 2 ½"						•	•			
DN 80, OD 3"						•	•	•		
DN 100, OD 4"									•	•

Position	Description	
10	**Standard configuration with 6 bar air supply pressure for 5 bar product pressure (higher pressures on request)**	

Nominal width	Actuator (spring-to-close)									Actuator (spring-to-open)								
Kvs-value	6.3	10	16	25	35	60	80	100	160	6.3	10	16	25	35	60	80	100	160
DN 40, OD 1 ½"	AA		BB							AA		BA						
DN 50, OD 2"			BB									BA						
DN 65, OD 2 ½"					BB	CD								BA	CA			
DN 80, OD 3"					BB	CD	DF							BA	CA			
DN 100, OD 4"								DF	EG								BA	CA

Position	Description	
11	**Valve seat version**	
	L0	Clamped seat ring / clamp connection
12	**Housing and valve seat sealing (valve disc soft sealing)*1**	
	1	Housing seal EPDM (O-ring), valve seat seal EPDM (V-ring)
	2	Housing seal FKM (O-ring), valve seat seal FKM (V-ring)
	3	Housing seal HNBR (O-ring), valve seat seal HNBR (V-ring)
	6	Housing seal VMQ (O-ring), valve seat seal see position 13
13	**Surface quality of the housing**	
	2	Inside R_a ≤ 0.8 µm, outside matt blasted
14	**Connection fittings**	
	N	Welding end
15	**Valve seat sealing (valve disc hard sealing)**	
	/07	Valve seat seal Tefasep® gold (O-ring)*2
16	**Accessories**	
	/52	Adhesive ID tag
+		
17–22	**Control and feedback system**	
	TP15XXX	See order code for positioner T.VIS® P-15

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	14	15	16		17 to 22					
Code	P		F/DV	-	/	-	S		-			-		-	L0	-		2	N		/52	+	TP15	I		P	A	

For options differing from the standard version, please refer to the GEA Valve Automation catalog.

*1 Valve disc hard sealing must be configured with position 15
*2 Valve disc hard sealing available in combination with EPDM or VMQ housing sealing

1 2 3 4 5 6

5 DOUBLE-CHAMBER VALVE

GEA D-tec®

Overview

UltraClean double-seat valves are used for the mixproof shut-off of incompatible products at pipe junctions in processing plants. The moving valve stems are sealed by hermetic sealing elements and depending on the required level of product safety, the area between the two product lines is either executed as a leakage area or as a sterile barrier.

The double-chamber valve represents a special version of the double-seat valve, in which the leakage chamber is designed as a sterile chamber and hermetically separated from the environment by means of two side valves.

Overview

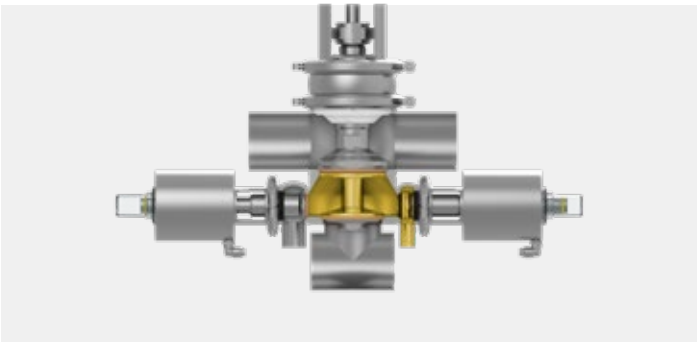
Design characteristics
The D-tec® double-chamber valve is based on a modular structure and consists of six main components. The heart of the valve is the internal assembly incorporating two stem diaphragms which enable the safe separation of product area and atmosphere.

The one-piece housing is designed for optimum flow characteristics and includes the valve seats as well as the pipe connections for the inlet and outlet valves, which shield the sterile chamber from the environment. All valve seats can be activated independently, whereas the single seat lift functionality for the main valve is provided by a lift actuator. By applying pressurized air to the internal air supply of the main actuator, the valve can be put in fully open position.

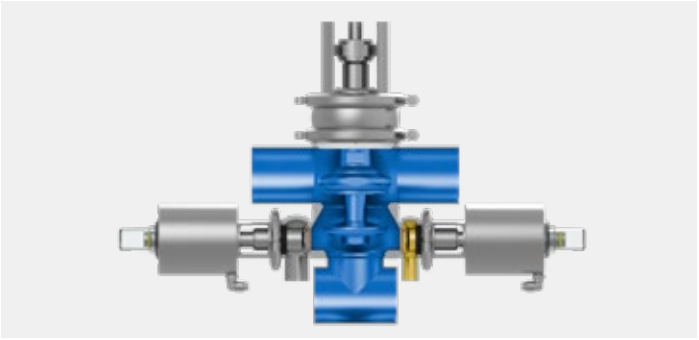
D-tec® double-chamber valves can be executed with soft-sealing V-rings (i.e. EPDM) or hard-sealing O-rings made of TEFASEP® gold. In addition, the side valves can be ideally adapted to process requirements by means of different fail-safe positions as well as an integrated temperature probe in the outlet valve.

For seamless process integration, the valve can be operated with T.VIS® control tops in various executions. Depending on customer needs, D-tec® double-chamber valves can be equipped with one, two or three control tops.

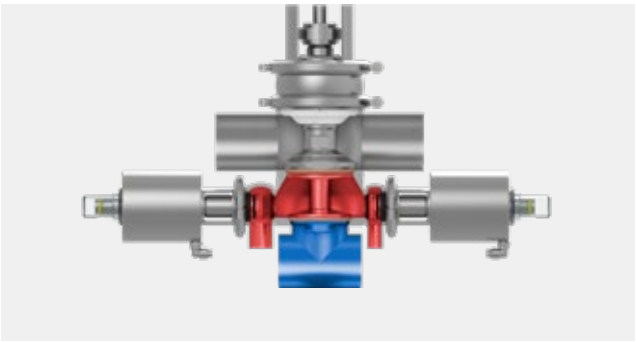
The independent activation of main and side valves enables the ideal adaptation of the function method to the particular process:



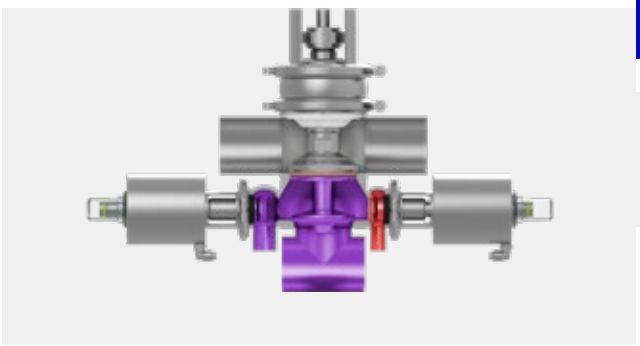
1. Basic position/non-activated position
Safe media separation by means of applied condensate barrier



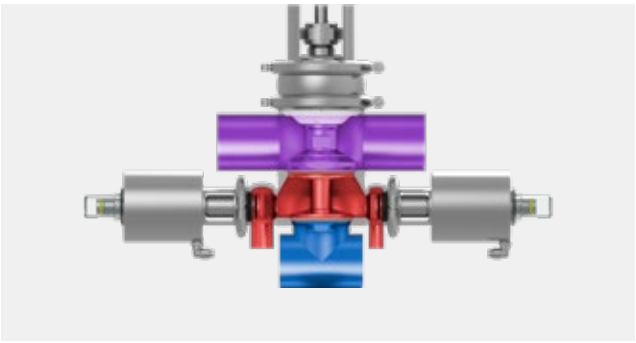
2. Production
Product transfer through the valve housing



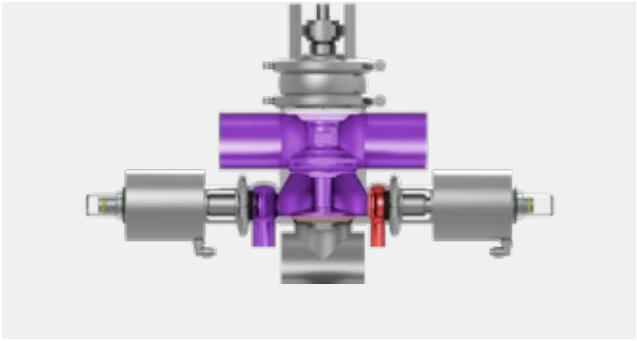
3. Flushing/sterilization of the sterile chamber
Steam is introduced via the inlet valve and drained via the outlet valve



5. CIP cleaning valve seat A
Drainage of the lower seat flushing via the outlet valve. The lower seat is activated in a cyclical manner

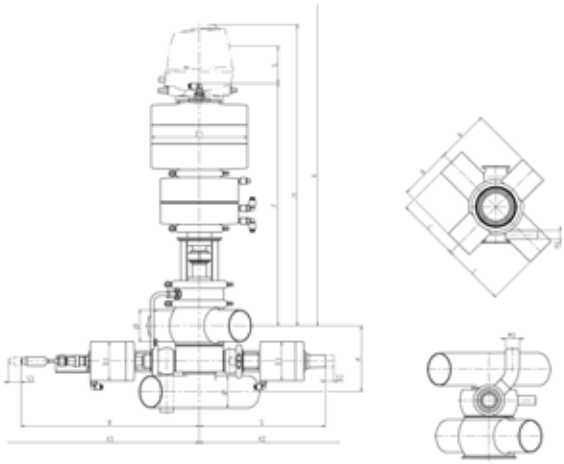


4. Media separation
Product is secured against cleaning media by means of an active steam barrier



6. CIP cleaning valve seat B
Drainage of the upper seat flushing via the outlet valve. The upper seat is activated in a cyclical manner

D-tec® Double-Chamber Valve Type D/DV



Technical data of the standard version – soft-sealing		
Recommended flow direction		Against the closing direction
Material	Housing	1.4404 (AISI 316L)
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301 (AISI 304)
Ambient temperature		0 to 45 °C (32 °F to 113 °F)
Operating temperature		Max. 135 °C (275 °F)
Sterilization temperature		Max. 150 °C (302 °F) for 30 min
Air supply pressure		6 bar (87 psi)
Product pressure		6 bar (87 psi)
Surface in contact with the product		$R_a \leq 0.8$ µm
External housing surface		Ground
Control and feedback system		Connection 0 (without control top)
Actuator type		Pneumatic actuator air/spring, single seat lift
Connection fittings		Welding end
Identification		Adhesive ID tag
Valve seat version		One-piece housing

	Pipe			Housing	Actuator	Dimensions			Valve	
Nominal width	Ø [mm]	A [mm]	B [mm]	C [mm]	D1 [mm]	F [mm]	H [mm]	Clearance X [mm]	Stroke S [mm]	Weight [kg]
DN 40	41.0 × 1.50	113	125	150	169	493.0	622.0	698	24	32.5
DN 50	53.0 × 1.50	126	125	150	169	499.0	628.0	710	24	33.0
DN 65	70.0 × 2.00	144	125	150	209	507.0	636.0	726	24	40.2
DN 80	85.0 × 2.00	159	125	150	209	514.5	643.5	741	24	40.8
DN 100	104.0 × 2.00	184	125	170	209	569.5	689.5	802	29	45.6
OD 1 ½"	38.1 × 1.65	109	125	150	169	493.0	622.0	698	24	32.4
OD 2"	50.8 × 1.65	123	125	150	169	499.0	628.0	710	24	32.9
OD 2 ½"	63.5 × 1.65	136	125	150	209	507.0	636.0	726	24	39.8
OD 3"	76.2 × 1.65	150	125	150	209	514.5	643.5	741	24	40.2
OD 4"	101.6 × 2.11	181	125	170	209	569.5	689.5	802	29	45.6

Position	Description of the order code				
1	**Valve type**				
	D	D-tec® double-chamber valve			
2	**Housing combinations**				
	C	E			
					
3	**Supplement to the valve type**				
	L/DV	With lifting actuator, D-tec® stem diaphragm (hermetic sealing)			
4/5	**Nominal width (upper housing/lower housing)**				
	DN 40	OD 1 ½"			
	DN 50	OD 2"			
	DN 65	OD 2 ½"			
	DN 80	OD 3"			
	DN 100	OD 4"			
6	**Actuator type**				
	S	Air / Spring			
7	**Non-actuated position**				
	Z	Spring-to-close (NC)			
8	**Standard configuration with 6 bar air supply pressure for 6 bar product pressure (higher pressures on request)**				
	Actuator (spring-to-close)		/Lifting actuator		For nominal widths
	DFDV		/CLBDV		DN 40, DN 50, OD 1 ½", OD 2"
	EGDV		/DLBDV80		DN 65, DN 80, OD 2 ½", OD 3"
	EHDV		/DLBDV100		DN 100, OD 4"
9	**Valve seat version**		Housing combination		
			C	E	
	V1	Welded seat ring / port orientation 90°	•	•	
10	**Double disc and valve seat sealing (valve disc soft sealing)**[*1]				
	1	Double disc seal EPDM (O-ring), valve seat seal EPDM (V-ring)			
	2	Double disc seal FKM (O-ring), valve seat seal FKM (V-ring)			
11	**Surface quality of the housing**				
	2	Inside Ra ≤ 0.8 µm, outside ground			
12	**Connection fittings**				
	N	Welding end			
13	**Valve seat sealing (valve disc hard sealing)**				
	/07	Valve seat seal Tefasep® gold (O-ring)[*2]			
14	**Accessories**				
	/52	Adhesive ID tag			
	/3A	Valve according to 3-A design guidelines			
+					
15–19	**Air connection / Control and feedback system**				
	00000M	Metric for air hose Ø 6/4 mm			
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)			
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation			

[*1] Valve disc hard sealing must be configured with position 13
[*2] Valve disc hard sealing available in combination with EPDM double disc sealing

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	14		15 to 19				
Code	D		L/DV	-	/	-	S	Z	-		-	V1	-		3	N		/52	+					

For options differing from the standard version, please refer to the GEA Valve Automation catalog.

D-tec® Double-Chamber Valve Type D/DV

Position	Description of the order code	
100	**Valve type inlet valve**	
	N	Hygienic shut-off valve
101	**Nominal width inlet pipe connection**[*1]	
	DN 15	Pipe connection to inlet valve DN 15
	OD ¾"	Pipe connection to inlet valve OD ¾"
102	**Actuator type**	
	S	Air/Spring
103	**Non-actuated position**	
	Z	Spring-to-close (NC)
	A	Spring-to-open (NO)
104	**Piston rod sealing**[*2]	
	E	EPDM
	F	FKM
105	**Valve seat sealing**[*2]	
	1	EPDM (V-ring)
	2	FKM (V-ring)
	/07	TEFASEP® gold (O-ring)
106	**Accessories**	
	/52	Adhesive ID tag
+		
107–111	**Air connection / Control and feedback system**[*3]	
	00000M	Metric for air hose Ø 6/4 mm
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation

[*1] Selection dependent on main valve, mix of different piping standards not possible
[*2] Selection dependent on main valve, mix of materials with soft-sealing, product-wetted seals not possible
[*3] Control top can be configured to control both, inlet and outlet valve

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

Position	100		101		102	103		104	105	106		107 to 111				
Code	N	-		-	S		-			/52	+					

Position	Description of the order code	
200	**Valve type outlet valve**	
	N	Hygienic shut-off valve
	W	Hygienic divert valve
201	**Nominal width outlet pipe connection**[*1]	
	DN 25	Pipe connection to outlet valve DN 25
	OD 1"	Pipe connection to outlet valve OD 1"
202	**Actuator type**	
	S	Air/Spring
203	**Non-actuated position**	
	Z	Spring-to-close (NC)
	A	Spring-to-open (NO)
204	**Piston rod sealing**[*2]	
	E	EPDM
	F	FKM
205	**Valve seat sealing**[*2]	
	1	EPDM (V-ring)
	2	FKM (V-ring)
206	**Options outlet valve**[*3]	
	/0	Without temperature probe
	/2	Integrated temperature probe with measuring transducer (4–20mA / 0–200 °C)
	/6	Integrated temperature probe without measuring transducer (PT100)
207	**Accessories**	
	/52	Adhesive ID tag
	/KP	Temperature probe with calibration protocol
+		
208–212	**Air connection / Control and feedback system**[*3]	
	00000M	Metric for air hose Ø 6/4 mm
	00000Z	Inch for air hose Ø OD ¼" (6.35 / 4.35 mm)
	XXXXX	Order code for different control and feedback systems see catalog GEA Valve Automation

[*1] Selection dependent on main valve, mix of different piping standards not possible
[*2] Selection dependent on main valve, mix of materials with soft-sealing, product-wetted seals not possible
[*3] Control top can be configured to control both, inlet and outlet valve

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

Position	200		201		202	203		204	205	206	207		208 to 212				
Code		-		-	S		-				/52	+					

6 OPTIONS

GEA D-tec®

Available Options

GEA D-tec® Overview

D-tec® stem diaphragm valves are characterized by a higher safety protection against contamination from the environment and, thus, warrant microbial stability of the product over the whole process. Although D-tec® valves are fundamentally suited for aseptic processes, we see the main focus with this valve lines in UltraClean applications in the food, beverage and dairy industry. The valves meet the highest hygienic standards required, such as EHEDG and 3-A standards.

Thanks to the hermetically sealing stem diaphragm D-tec® valves contribute to higher product quality and longer product shelf-life as often demanded with UltraClean applications. The innovative connection between valve stem and stem diaphragm minimizes mechanical stress of the diaphragm during switching operations. The D-tec® stem diaphragm sets standards for the service life at proven temperature resilience and cleanability.

The D-tec® valve line is based on the VARIVENT® valve line and offers many advantages because of this – e.g. a high level of flexibility in terms of valve configuration. The result: Economic efficiency for the system operator and optimized stock handling due to reduced diversity of parts at proven quality.

All of our D-tec® valves can be equipped with T.VIS® control tops. They integrate and combine our valves into the automated process plant.

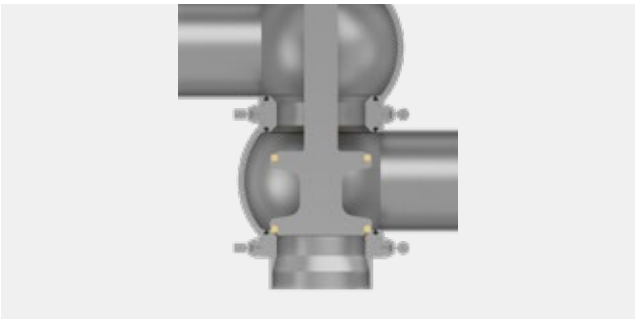
UltraClean applications
The most relevant product parameter for UltraClean applications is shelf-life. It is mostly determined by the pH-value and the aw-value of the product. In addition, sensory properties need to be considered as well as the logistical chain of distribution. One of the advantages of UltraClean processing is the reduced quantity of preservatives needed for maintaining the shelf-life of the product.

Application examples
- Brewery industry – Beer and mixed beer beverages
- (e.g. pure yeast cultivation and connection of sterile tanks and filling machines after sterilization)
- Beverage industry – Water-based mixed beverages (e.g. soft drinks, fruit juice and fruit-based beverages, concentrates, beverages with pulp)
- Dairy industry – Milk-based and lactic acid-fermented products (e.g. ESL milk, dessert products, crystallizing products such as lactose)
- Food and beverage industry – Sauces and delicacies (e.g. manufacture of basic fruit ingredients, incl. particulates such as nuts)

GEA D-tec® at a glance

- Hermetic sealing by stem diaphragm – ideal for UltraClean applications
- Innovative connection between valve stem and diaphragm minimizes mechanical stress at the diaphragm during switching operations
- Integrated rotary disconnection of valve insert and actuator
- High operational safety due to reliable leakage detection in the event of a ruptured diaphragm
- Maintenance-friendly design enables reduced plant downtimes
- Modular principle allows simple conversion, e.g. from hard- to soft-sealing
- Reduced air wiring effort due to internal air supply
- Based on proven VARIVENT® philosophy

Options – Seal Materials
TEFASEP® gold



Typical application and description

TEFASEP® gold easily copes with sterilization processes at temperatures up to 160 °C and can also handle abrasive and aggressive media without any problems which is essential for pharmaceutical or biotechnological applications. The hard, stable material compound is impressive not only because of its chemical resistance but its robustness also prevents the cold flow familiar with other thermoplastics and as a result contributes significantly to process stability. Together with the valve design, the material ensures a minimum contact surface between the housing and the seal which, in turn, increases the cleaning capability of the process system.

Unlike an elastomer seal, the thermoplastic uniquely requires a cleaning cycle of 80 °C. As a result the O ring adjusts to the valve seat and seals the system hermetically. The new TEFASEP® gold differs from the well approved TEFASEP® gasket for GEA Aseptomag valves by its bronze-golden color.

Available nominal widths

Metric	DN	25–100
Inch OD	OD	1"–4"

Available valve types

Single-seat valves with shut-off function	N*
Single-seat valves with divert function	W*
Mixproof valves with shut-off function	–
Mixproof valves with shut-off function and seat lifting	–
Mixproof valves with divert function	–
Tank bottom valves	N*

* Only available with standard or manual actuator

Technical data

Operating temperature	–10 °C to 160 °C (14 °F to 320 °F)
Product pressure	maximum 6 bar (87 psi)
Certificates	FDA (21 CFR § 177.1550), European Union (EG 1935/2004, EG 10/2011), 3-A-Standard (Number 20 to 24), USP-Standards (USP Class IV – 121 °C)

Incorporation of the option in the order code and example

Position	Description of the order code for options
13	Seat gasket; product touched
	/07 TEFASEP® gold (FDA)

Position	1	2	3		4/5		6	7		8		9		10	11	12	13		14 to 19					
Code	N	E		-	DN 80/80	-	S	Z	-	CD	-	L0	-	1	2	N	/07	+	0	0	0	0	0	M

Options – Supplement to the Valve Type VARIVENT® Conversion Kit D-tec® for Shut-off Valves

Available nominal widths

Metric	DN	25–100
Inch OD	OD	1"–4"

Available valve types

Single-seat valves with shut-off function	N
Single-seat valves with divert function	–
Mixproof valves with shut-off function	–
Mixproof valves with shut-off function and seat lifting	–
Mixproof valves with divert function	–
Tank bottom valves	N

Typical application and description

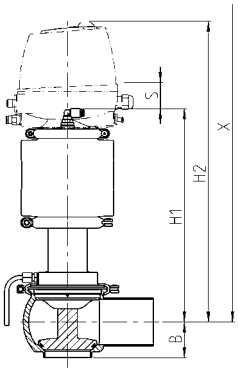
From Hygienic to UltraClean – D-tec® conversion kit for VARIVENT®

The D-tec® conversion kit makes it possible to convert existing systems from a hygienic stem diaphragm sealing to the D-tec® diaphragm for achieving UltraClean production conditions. Using components that prevent exchange with the exterior atmosphere simplifies the production of demanding and sensitive products and advances product shelf life.

D-tec® valves are used especially in the food, beverages, biotech and dairy industries.

Product versions with 3-A certificate are optionally available.

Please contact GEA Aseptomag AG if you are planning new aseptic applications!



Order numbers of conversion kit + seal set

	Housing		Dimensions		Valve	Article number*			
Nominal width	B [mm]	H1 [mm]	H2 [mm]	X [mm]	Stroke S [mm]	conversion kit	Seal set (material)		
							EPDM	FKM	HNBR
DN 25	31	248	412	493	10	221-743.01	221-741.01	221-741.05	221-741.09
DN 40	39	293	457	558	17	221-743.02	221-741.02	221-741.06	221-741.10
DN 50	41	299	463	578	17	221-743.03	221-741.02	221-741.06	221-741.10
DN 65	52	307	471	619	25	221-743.04	221-741.03	221-741.07	221-741.11
DN 80	60	314	478	649	25	221-743.05	221-741.03	221-741.07	221-741.11
DN 100	70	358	522	722	30	221-743.06	221-741.04	221-741.08	221-741.12
OD 1"	29	246	410	485	10	221-743.07	221-741.01	221-741.05	221-741.09
OD 1 ½"	39	291	455	553	17	221-743.08	221-741.02	221-741.06	221-741.10
OD 2"	42	297	461	575	17	221-743.09	221-741.02	221-741.06	221-741.10
OD 2 ½"	54	304	468	612	25	221-743.10	221-741.03	221-741.07	221-741.11
OD 3"	54	310	474	631	25	221-743.11	221-741.03	221-741.07	221-741.11
OD 4"	69	357	521	718	30	221-743.12	221-741.04	221-741.08	221-741.12

* For every conversion kit a suitable seal set must be included in the order.

Options – Supplement to the Valve Type VARIVENT® Conversion Kit D-tec® for Divert Valves

Available nominal widths		
Metric	DN	25–100
Inch OD	OD	1"–4"

Available valve types	
Single-seat valves with shut-off function	–
Single-seat valves with divert function	W
Mixproof valves with shut-off function	–
Mixproof valves with shut-off function and seat lifting	–
Mixproof valves with divert function	–
Tank bottom valves	–

Typical application and description

From Hygienic to UltraClean – D-tec® conversion kit for VARIVENT®

The D-tec® conversion kit makes it possible to convert existing systems from a hygienic stem diaphragm sealing to the D-tec® diaphragm for achieving UltraClean production conditions. Using components that prevent exchange with the exterior atmosphere simplifies the production of demanding and sensitive products and advances product shelf life.

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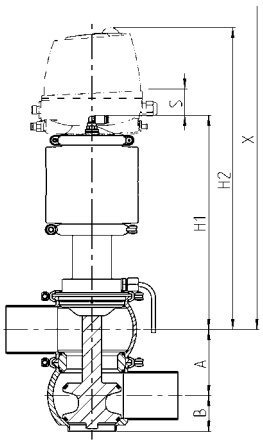
Product versions with 3-A certificate are optionally available.

Please contact GEA Aseptomag AG if you are planning new aseptic applications!



Order numbers of conversion kit + seal set

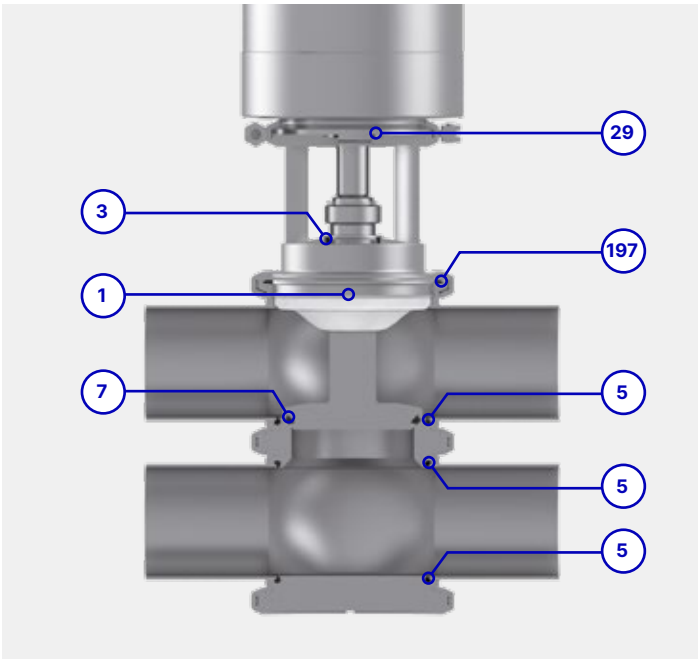
	Housing		Dimensions			Valve		Article number*		
Nominal width	B [mm]	A [mm]	H1 [mm]	H2 [mm]	X [mm]	Stroke S [mm]	conversion kit	Seal set (material)		
								EPDM	FKM	HNBR
DN 25	31	50.0	248	412	593	8	221-744.01	221-742.01	221-742.05	221-742.09
DN 40	39	62.0	293	457	682	14	221-744.02	221-742.02	221-742.06	221-742.10
DN 50	41	74.0	299	463	726	14	221-744.03	221-742.02	221-742.06	221-742.10
DN 65	52	96.0	337	501	841	22	221-744.04	221-742.03	221-742.07	221-742.11
DN 80	60	111.0	344	508	901	22	221-744.05	221-742.03	221-742.07	221-742.11
DN 100	70	130.0	358	522	982	25	221-744.06	221-742.04	221-742.08	221-742.12
OD 1"	29	46.0	246	410	577	8	221-744.07	221-742.01	221-742.05	221-742.09
OD 1 ½"	39	59.0	291	455	671	14	221-744.08	221-742.02	221-742.06	221-742.10
OD 2"	42	71.5	297	461	718	14	221-744.09	221-742.02	221-742.06	221-742.10
OD 2 ½"	54	90.0	334	498	822	22	221-744.10	221-742.03	221-742.07	221-742.11
OD 3"	54	103.0	340	504	867	22	221-744.11	221-742.03	221-742.07	221-742.11
OD 4"	69	127.5	357	521	973	25	221-744.12	221-742.04	221-742.08	221-742.12

* For every conversion kit a suitable seal set must be included in the order.

Options – Seal Sets
D-tec® Shut-Off Valves

Valves with valve disc soft sealing
The illustration of a single-seat valve D-tec® type N/DV shown here represents an example of the configuration of a seal set for a shut-off valve with valve disc soft sealing.

Chiefly, a seal set consists of all of the seals for the particular valve that come in contact with the product. The precise components of all seal sets and information about maintenance can be found in the associated operating instructions.



Components of a seal set, taking the example of the D-tec® type N/DV

1 D-tec® diaphragm
3 O-ring
5 O-ring
7 V-ring
29 O-ring
197 O-ring

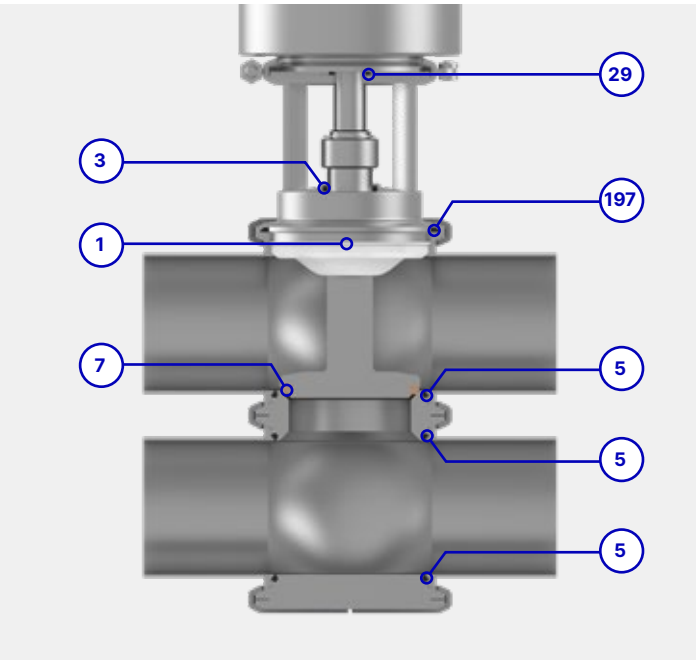
Seal set for shut-off valve D-tec® type N/DV with valve disc soft sealing

Nominal width		D-tec® diaphragm	EPDM	FKM	HNBR
DN	OD	Article number	Article number	Article number	Article number
25	1"	221-004957	221-741.01	221-741.05	221-741.09
40/50	1 ½"/2"	221-004956	221-741.02	221-741.06	221-741.10
65/80	2 ½"/3"	221-004955	221-741.03	221-741.07	221-741.11
100	4"	221-004958	221-741.04	221-741.08	221-741.12

Valves with valve disc hard sealing

The illustration of a single-seat valve D-tec® type N/DV shown here represents an example of the configuration of a seal set for a shut-off valve with valve disc hard sealing.

Chiefly, a seal set consists of all of the seals for the particular valve that come in contact with the product. The precise components of all seal sets and information about maintenance can be found in the associated operating instructions.



Components of a seal set, taking the example of the D-tec® type N/DV

1 D-tec® diaphragm
3 O-ring
5 O-ring
7 O-ring
29 O-ring
197 O-ring

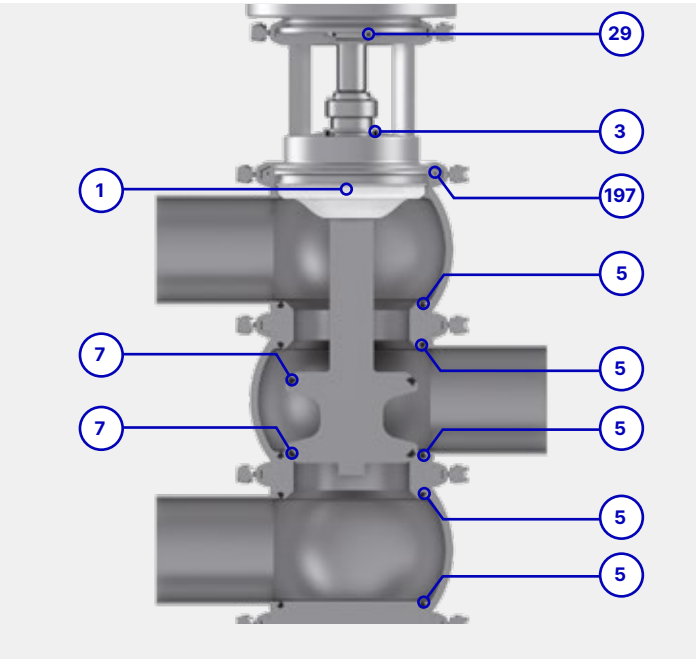
Seal set for shut-off valve D-tec® type N/DV with valve disc hard sealing

Nominal width		D-tec® diaphragm	TEFASEP® gold/EPDM	TEFASEP® gold/ VMQ
DN	OD	Article number	Article number	Article number
25	1"	221-004957	221-741.13	221-741.17
40/50	1 ½"/2"	221-004956	221-741.14	221-741.18
65/80	2 ½"/3"	221-004955	221-741.15	221-741.19
100	4"	221-004958	221-741.16	221-741.20

Options – Seal Sets
D-tec® Divert Valves

Valves with valve disc soft sealing
The illustration of a single-seat valve D-tec® type W/DV shown here represents an example of the configuration of a seal set for a shut-off valve with valve disc soft sealing.

Chiefly, a seal set consists of all of the seals for the particular valve that come in contact with the product. The precise components of all seal sets and information about maintenance can be found in the associated operating instructions.



Components of a seal set, taking the example of the D-tec® type W/DV

1 D-tec® diaphragm
3 O-ring
5 O-ring
7 V-ring
29 O-ring
197 O-ring

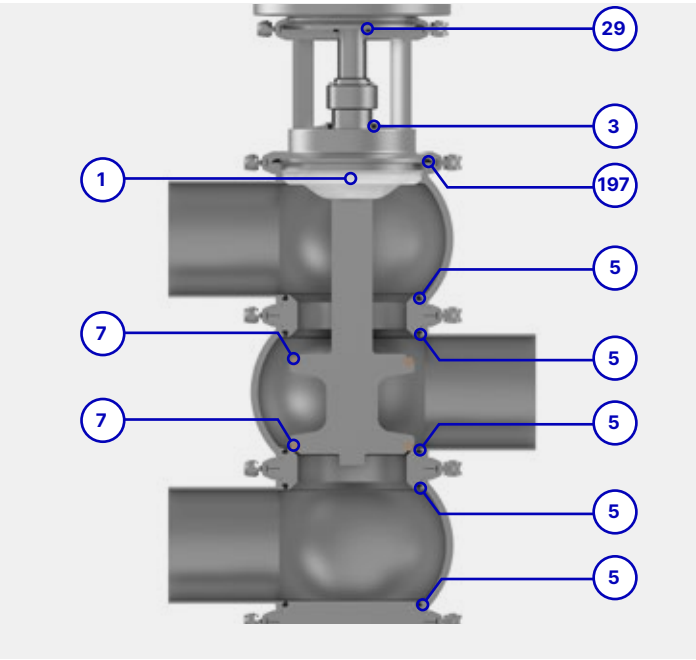
Seal set for divert valve D-tec® type W/DV with valve disc soft sealing

Nominal width		D-tec® diaphragm	EPDM	FKM	HNBR
DN	OD	Article number	Article number	Article number	Article number
25	1"	221-004957	221-742.01	221-742.05	221-742.09
40/50	1 ½"/2"	221-004956	221-742.02	221-742.06	221-742.10
65/80	2 ½"/3"	221-004955	221-742.03	221-742.07	221-742.11
100	4"	221-004958	221-742.04	221-742.08	221-742.12

Valves with valve disc hard sealing

The illustration of a single-seat valve D-tec® type W/DV shown here represents an example of the configuration of a seal set for a shut-off valve with valve disc hard sealing.

Chiefly, a seal set consists of all of the seals for the particular valve that come in contact with the product. The precise components of all seal sets and information about maintenance can be found in the associated operating instructions.



Components of a seal set, taking the example of the D-tec® type W/DV

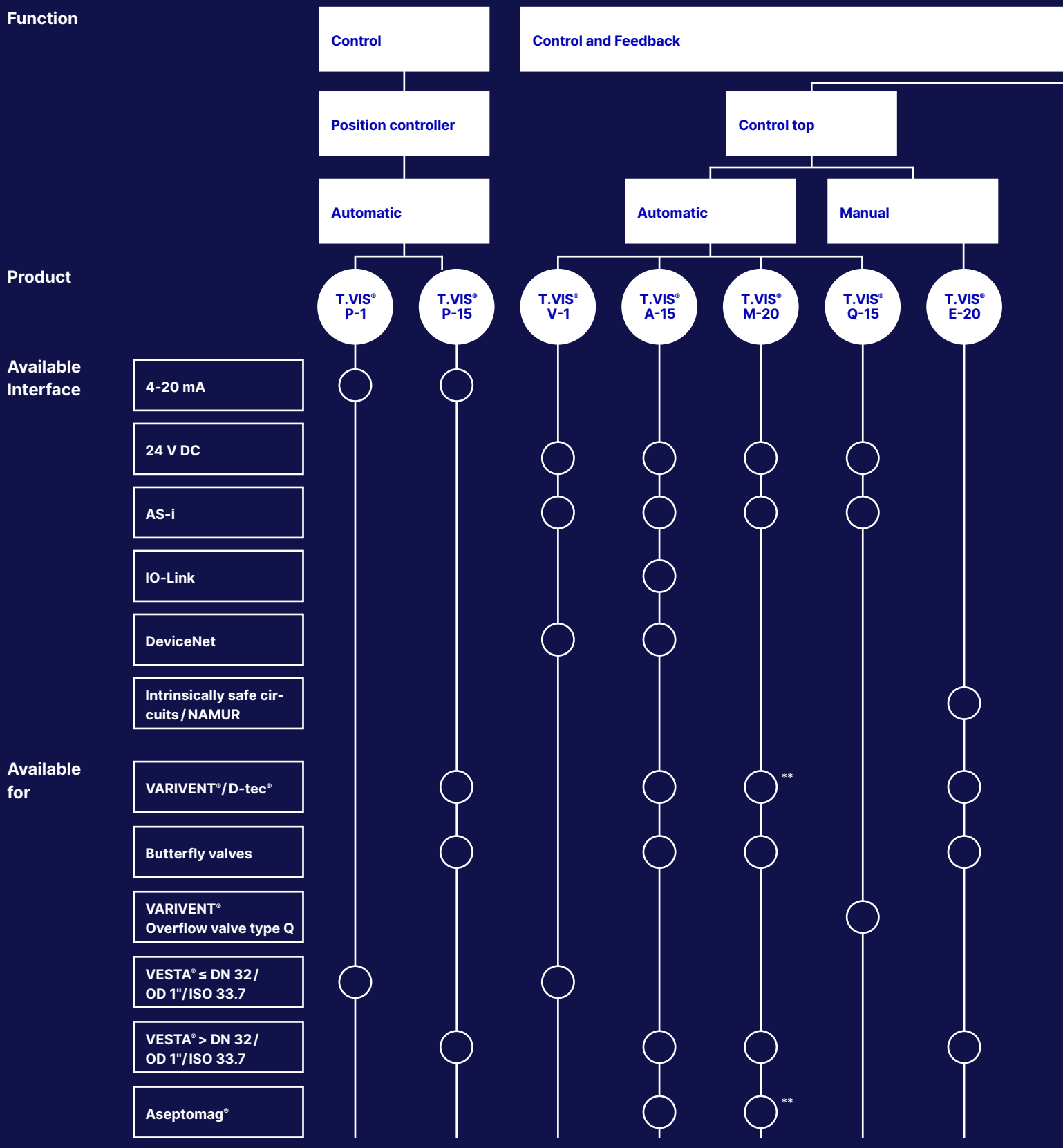
1 D-tec® diaphragm
3 O-ring
5 O-ring
7 O-ring
29 O-ring
197 O-ring

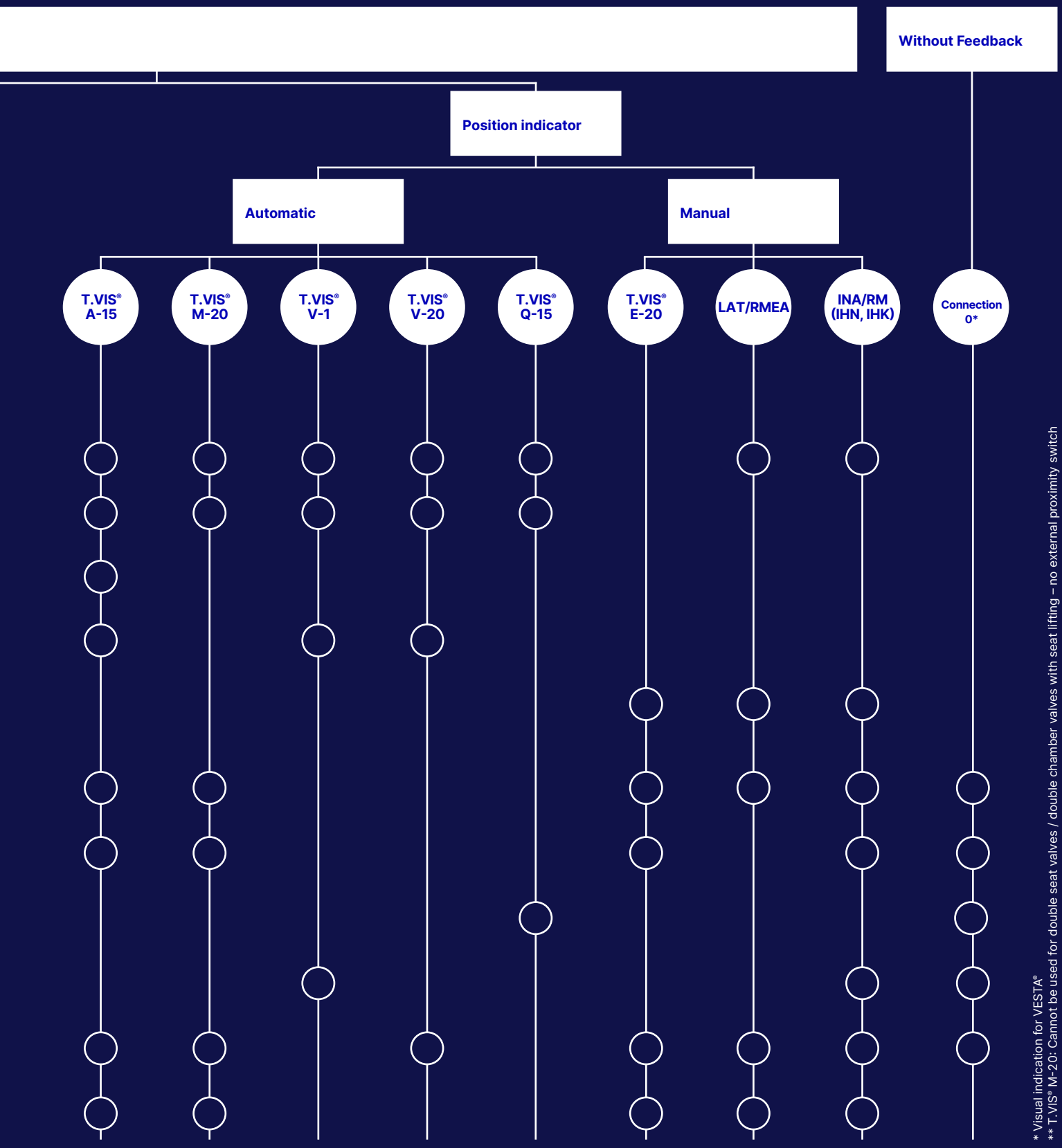
Seal set for divert valve D-tec® type W/DV with valve disc hard sealing

Nominal width		D-tec® diaphragm	TEFASEP® gold/EPDM	TEFASEP® gold/ VMQ
DN	OD	Article number	Article number	Article number
25	1"	221-004957	221-742.13	221-742.17
40/50	1 ½"/2"	221-004956	221-742.14	221-742.18
65/80	2 ½"/3"	221-004955	221-742.15	221-742.19
100	4"	221-004958	221-742.16	221-742.20

Selection Matrix of Control and Feedback Systems

for Valves with Pneumatic Actuator



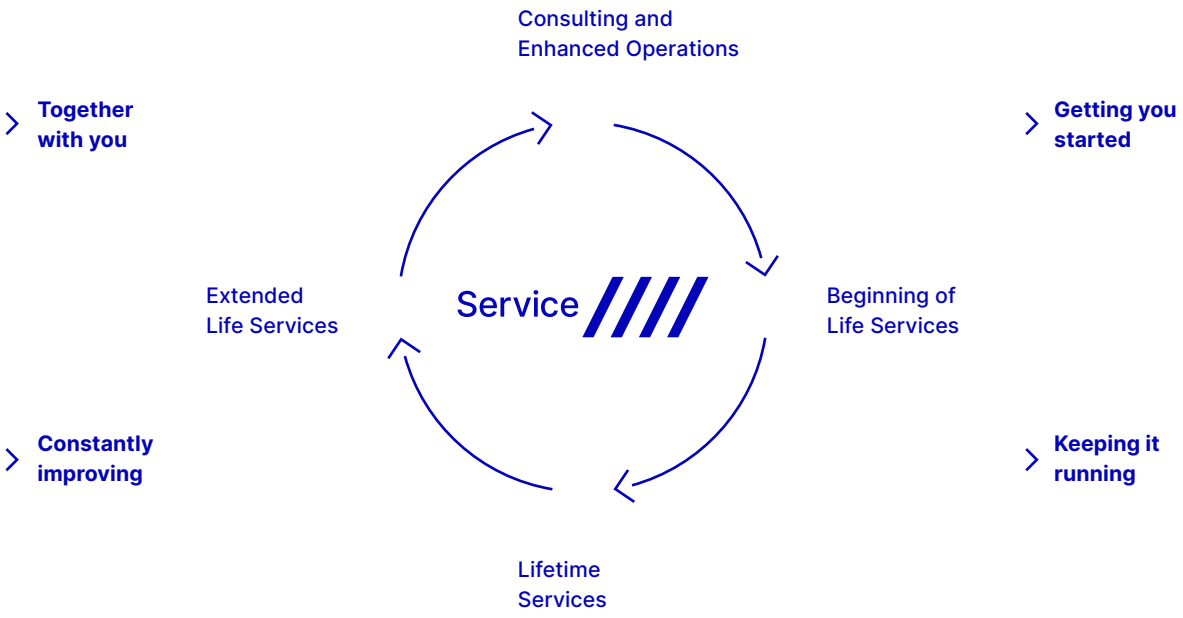


* Visual indication for VESTA®
** T.VIS® M-20: Cannot be used for double seat valves / double chamber valves with seat lifting – no external proximity switch

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 are aimed at ensuring food safety. The goal of the organization is to improve compliance with the hygienic design of components and to promote technical expertise in the industry, particularly with regard to the cleanability of systems and 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
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
TS	Maximum permitted operating temperature
UL	Underwriters Laboratories, a certification organization established in the USA

Abbreviation	Explanation
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

General Sales Terms and Condition of Delivery

Please note
All our sales and/or services are exclusively subject to our valid terms and conditions of sale and/or service applicable in the respective country of business, which can be found on our internet platform: www.gea.com.

If not available or if you otherwise wish to receive such terms and conditions directly from us, please contact us and we of course will send you the applicable version of our terms and conditions for the envisaged business.

Divert Valve
GEA D-tec®

Shut-off Valve
GEA D-tec®

Double Chamber Valve
GEA D-tec®

Control Valve
GEA D-tec®

Tank Bottom Valve
GEA D-tec®

GEA Tuchenhagen GmbH
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21514 Büchen, Germany

gea.com/flowcomponents