D-tec® Valve Technology – Order Code

Control Valve P/DV

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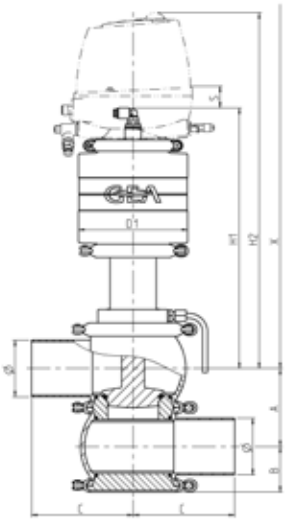
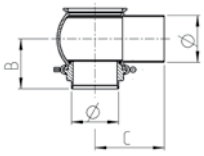
Technical data of the standard version		
Recommended flow direction	Against the closing direction	
Material	Housing	1.4404/AISI 316L
	Diaphragm	D-tec®
	Valve seat seal	EPDM
	Housing seal	EPDM
	Not in contact with the product	1.4301/AISI 304
Ambient temperature	0 to 45 °C (32 to 113 °F)	
Operating temperature	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	Matte 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	





Loose 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]	Extension 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
1	**Valve type** P D-tec® control valve
2	**Housing combinations** 
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": • •
10	**Standard configuration with 6 bar air supply pressure for 5 bar product pressure (higher pressures on request)** **Nominal width** / **Kvs-value**: 6.3 · 10 · 16 · 25 · 35 · 60 · 80 · 100 · 160 **Actuator (spring-to-close)** DN 40, OD 1 ½": AA BB DN 50, OD 2": BB DN 65, OD 2 ½": BB CD DN 80, OD 3": BB CD DF DN 100, OD 4": DF EG **Actuator (spring-to-open)** DN 40, OD 1 ½": AA BA DN 50, OD 2": BA DN 65, OD 2 ½": BA CA DN 80, OD 3": BA CA DN 100, OD 4": CA DB
11	**Valve seat version** L0 Clamped seat ring / clamp connection
12	**Housing and valve seat sealing (valve disc soft sealing)*2** 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 15
13	**Surface quality of the housing** 2 Inside $R_a \leq 0.8$ µm, outside matte blasted (DN, OD)
14	**Connection fittings** N Welding end
15	**Valve seat sealing (valve disc hard sealing)** /07 Valve seat seal TEFASEP® gold (O-ring)*3
16	**Accessories** /52 Adhesive ID tag
+	
17–22	**Control and feedback system*1** 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	

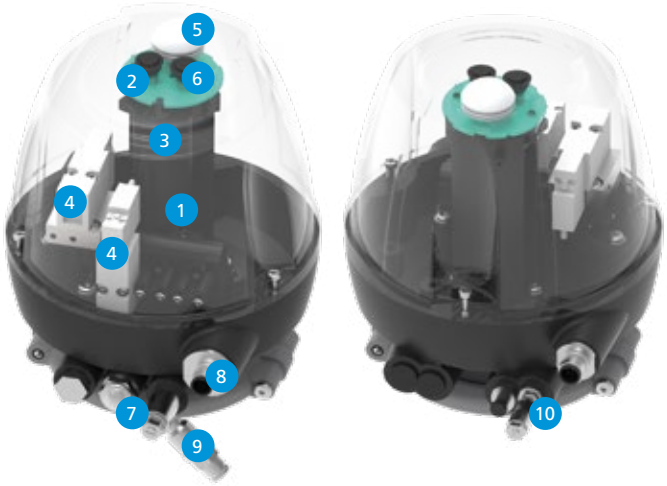
*1 Further options see catalogue hygienic valves and components, register 4 and 7
*2 Valve disc hard sealing must be configured with position 15
*3 Valve disc hard sealing available in combination with EPDM or VMQ housing sealing

Concept

The positioner T.VIS® P-15 represents a low-cost alternative to proven positioners. The controller is equipped with a highly precise path measuring system and can move to any valve position between the taught open/close positions in combination with an air-spring actuator.

The T.VIS® P-15 is characterized not only by its performance but also by its ease of operation and outstanding price/performance ratio.

Standard variant



1. Pneumatic block
2. Control unit
3. Path measuring system
4. Solenoid valves
5. LED lighting
6. 2 push buttons
7. Exchangeable filter
8. M12 plug connection
9. Supply air throttle
10. Exhaust air throttle

Features
Automatic initialization
Simple and safe operation
Manual operation of the process valve
Valve status display by LED
Open/close position feedback (optional)
Selectable dead band (control hysteresis)
High-quality pneumatic fittings
High potential for cost reduction
Standard protection class IP66

Structure

The T.VIS® P-15 is equipped with a precise path measuring system for detecting its position.

The necessary wiring for control and feedback is configured using M12 plug connections that can be accessed externally.

The control top can be opened for this.

Operation and configuration of the T.VIS® P-15 takes place either by the two push buttons mounted on the cap or, with the cap removed, via the buttons below. The push buttons are secured electronically against inadvertent or incorrect operation, while in operating mode.

The T.VIS® P-15 is equipped with adjustable supply and exhaust air throttles as standard, through which the control quality can be adjusted individually.

Position control

The T.VIS® P-15 position controller works with an integrated microprocessor which contains the software for operation, visualization as well as intelligent position detection and evaluation. When a nominal value is specified (4 – 20 mA), e.g. by the PLC, the process valve can be set to any required position. The push buttons on the cap also make it possible to specify a nominal value manually, in order to set the process valve to the required position. The position is detected using a position transducer and is automatically controlled using two integrated solenoid valves. The position of the cone can also be permanently evaluated using the analog actual value output, as well as, three binary outputs in the PLC.

Setting

Automatic – following unlocking, simply pressing the two buttons on the cap of the T.VIS® P-15 starts the initialization process which runs fully automatically. There is no need to open the position controller for this purpose, resulting in particularly quick, easy and safe commissioning of the position controller (on average < 1 minute).

Immediately after the setup, end position tolerances, control hysteresis and control settings can be set.

Visualization

LED display:
- green
- yellow
- red
- blue
- blue flashing

Feedback

- Standard: valve position 0 – 100 %, opening amount (4 – 20 mA)
- Option: additionally 24 V DC feedback signals for open/close position and error output

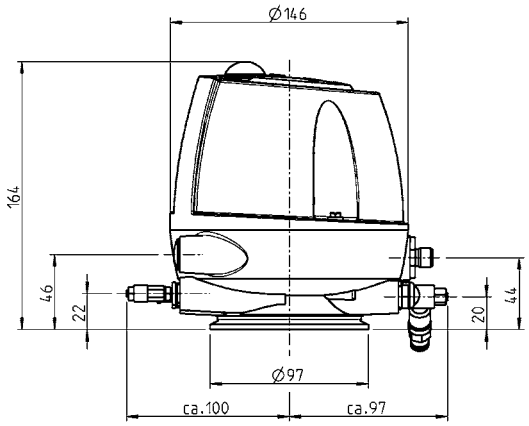
Service Mode

Activation of the main stroke, which may be required in VARIVENT® Control Valves Type P with closed (non-actuated) position for valve maintenance, is performed using the service mode that can be activated by the buttons. At the same time, all feedbacks are stopped (warning to the system control). Furthermore, input signals from the control room are not implemented by the T.VIS®, in order to protect the employee.

Field of application

In addition to use on VARIVENT® control valves of type P, the T.VIS® P-15 can also be used on VARIVENT® and ECOVENT® seat valves and T-smart disc valves to control the valve disc position. Opening the valves to specific intermediate positions makes it possible to influence the hydraulic characteristics of the system.

Technical data of the standard version		
Position detection	Path measuring system	
Housing material	PA 12/L	
Ambient temperature	–20 to +55 °C	
Air supply	Pressure range	2 to 8 bar
	Standard	acc. to ISO 8573-1:2010
	Solid content	Quality class 6
	Water content	Quality class 4
	Oil content	Quality class 3
Dimensions of air connections	Metric 6/4 mm, inch 6.35/4.31 mm (¼")	
Protection class	IP66 (powerful water jet)	
Sound pressure level via exhaust air throttle	Max. 72 dB	
Visualization	LED (green, yellow, red, blue)	



Type of interface	24 V DC programmable
Supply	
Supply voltage U_V	24 V DC (+20 %, –12.5 %)
No-load current	($I_{T.VIS}$) ≤ 20 mA
Maximum current consumption	$\sum_I$ = ($I_{T.VIS}$ + I_{PV}) = 60 mA ± 10 % (without optional outputs)
Maximum residual ripple	5 %
Inputs	
Control voltage max. 28.8 V DC	High = ≥ 13 V DC Low = ≤ 6 V DC
Pilot current	≤ 10 mA
Outputs	
Output voltage	High = U_V – ≤ 5 % Low = ≤ 5 V
Max. Ampacity	200 mA short circuit-proof
Switching frequency	(ohmic + inductive loads ≤ 25 mH) 2 Hz
Operating current	Internal solenoid valve (I_{PV}) 35 … 45 mA
Analog input	Setpoint 4–20 mA/0–100 % stroke
Analog output	Actual value 4–20 mA/0–100 % stroke
Load	Max. 600 Ω

Position	Description of the order code	
17	**Feedback location**	
	TP15	Control top T.VIS® P-15
18	**Control top type**	
	I	2 solenoid valves
19	**Feedback**	
	4	T.VIS® P-15 (with analog module)
	5	T.VIS® P-15 (with analog module + 2 feedbacks/error output)
20	**Type of interface**	
	P	24 V DC programmable
21	**Solenoid valve**	
	A	24 V DC, 0.85 W
22	**Screw connection (with analog module)**	
	J	Metric air connection, 5-pin M12 plug, A-coded With feedback code 5: additional M12 plug B-coded inclusive
	P	Inch air connection, 5-pin M12 plug, A-coded With feedback code 5: additional M12 plug B-coded inclusive
	IMPORTANT: Please also order the appropriate connection sockets as well.	
	Options (multiple selection possible)	
	/22	5-pin connection socket for screw connection A-coded IP67 (article no. 508-963) 5-pin connection socket for screw connection B-coded IP67 (article no. 508-964)
	/67	Protection class IP67 (temporary immersion)
	/69k	Protection class IP69k (high pressure spray down, no control buttons on the cap)
	/UC	Certification UL/CSA

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

Position	17	18	19	20	21	22	Options			
Code	TP15	I		P	A					

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