



KIESELMANN

FLUID PROCESS GROUP

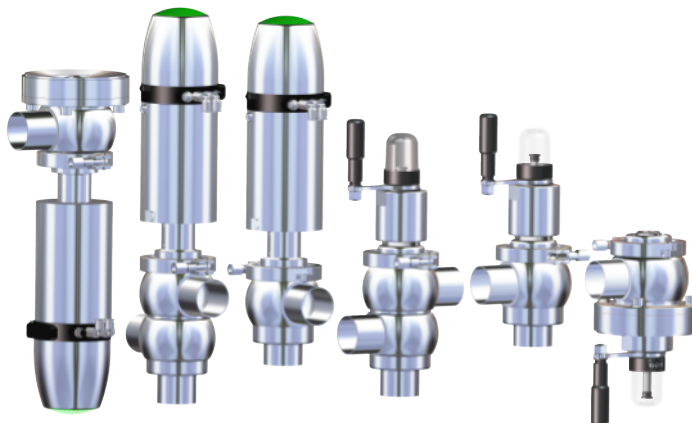
Translation of the original

Operating instruction

KI-DS Single seat valves

pneumatic und manual operation

Inclined seat valve:	5501, 5502
Angle valve:	5505, 5506
T-valve:	5507, 5508
Cross valve:	5511, 5512
Two-way-changeover valve:	5513, 5514
Two-way-changeover valve:	5515, 5516
Loop valve:	5517, 5518
Tank outlet valve:	5527, 5528



KIESELMANN GmbH

Paul-Kieselmann-Str. 4-10
D - 75438 Knittlingen

 +49(0) 7043 371-0 •  +49(0) 7043 371-125
www.kieselmann.de • info@kieselmann.de

Copyright: © KIESELMANN FLUID PROCESS GROUP

Table of contents

1 General informations	4
1.1 Informations for your safety	4
1.2 Marking of security instructions	4
1.3 General designated use	4
1.4 Personnel	4
1.5 Modifications, spare parts, accessories	5
1.6 General instructions	5
2 Safety instructions	6
2.1 Intended use	6
2.2 General notes	6
2.3 General safety instructions	6
3 Delivery, transport and storage	8
3.1 Delivery	8
3.2 Transport	8
3.3 Storage	8
4 Specification	9
4.1 Modular system	9
4.2 Valve types	10
5 Function and operation	11
5.1 Description of function	11
5.2 Valve basic position:	12
5.3 Control system and position indicator	13
5.4 Pneumatic valve activation	14
6 Commissioning, service and maintenance	15
6.1 Commissioning	15
6.1.1 Installation instructions	15
6.1.2 General welding guidelines	15
6.1.3 ATEX - Guidelines	15
6.2 Maintenance	16
6.3 Cleaning	16
7 Technical data	17
7.1 Operating pressure	18
8 Disassembly and assembly	20
8.1 Valves with manual operating	20
8.2 Valves with pneumatic operation	23
8.3 Tank outlet valve	26
8.4 Assembly	27
9 Drawings and dimensions	29
9.1 Drawings	29
9.2 Dimensions	31
9.3 Control units	35
10 Wearing parts	36
10.1 Wearing parts list	36
10.2 Wear parts kit	38
11 Classification	40
11.1 Structure of Order Number	40
12 Appendix	42
12.1 Declaration of incorporation	42

1 General informations

1.1 Informations for your safety

We are pleased that you have decided for a high-class KIESELMANN GmbH product. With correct application and adequate maintenance, our products provide long time and reliable operation.






Before installation and initiation, please carefully read this instruction manual and the security advices contained in it. This guarantees reliable and safe operation of this product and your plant respectively. Please note that an incorrect application of the process components may lead to great material damages and personal injury.

In case of damages caused by non observance of this instruction manual, incorrect initiation, handling or external interference, guarantee and warranty will lapse!

Our products are produced, mounted and tested with high diligence. However, if there is still a reason for complaint, we will naturally try to give you entire satisfaction within the scope of our warranty. We will be at your disposal also after expiration of the warranty. In addition, you will also find all necessary instructions and spare part data for maintenance in this instruction manual. If you don't want to carry out the maintenance by yourself, our KIESELMANN GmbH - service team will naturally be at your disposal.

1.2 Marking of security instructions

Hints are available in the chapter "safety instructions" or directly before the respective operation instruction. The hints are highlighted with a danger symbol and a signal word. Texts beside these symbols have to be read and adhered to by all means. Please continue with the text and with the handling at the valve only afterwards.

Symbol	Signal word	Meaning
	DANGER	Imminent danger which will result severe personal injury or death.
	WARNING	Imminent danger which may result severe personal injury or death.
	CAUTION	Dangerous situation which may cause slight personal injury or material damages.
	NOTICE	An harmful situation which may result in damages of the product itself or of adjacent vicinity.
	INFORMATION	Marks application hints and other information which is particularly useful.

1.3 General designated use

The fitting is designed exclusively for the purposes described below. Using the fitting for purposes other than those mentioned is considered contrary to its designated use. KIESELMANN GmbH cannot be held liable for any damage resulting from such use. The risk of such misuse lies entirely with the user. The prerequisite for the reliable and safe operation of the fitting is proper transportation and storage as well as competent installation and assembly. Operating the fitting within the limits of its designated use also involves observing the operating, inspection and maintenance instructions.

1.4 Personnel

Personnel entrusted with the operation and maintenance of the tank safety system must have the suitable qualification to carry out their tasks. They must be informed about possible dangers and must understand and observe the safety instructions given in the relevant manual. Only allow qualified personnel to make electrical connections.

1.5 Modifications, spare parts, accessories

Unauthorized modifications, additions or conversions which affect the safety of the fitting are not permitted. Safety devices must not be bypassed, removed or made inactive. Only use original spare parts and accessories recommended by the manufacturer.

1.6 General instructions

The user is obliged to operate the fitting only when it is in good working order. In addition to the instructions given in the operating manual, please observe the relevant accident prevention regulations, generally accepted safety regulations, regulations effective in the country of installation, working and safety instructions effective in the user's plant.

2 Safety instructions

2.1 Intended use

The Single seat valve is used in the beverage and food industry, in pharmaceutical, bio-engineering, as well as in chemical engineering.

Inclined seat valves, Angle valves, T-valves, Cross valves, Loop valves and Tank outlet valves are used as manually or pneumatically controlled Shut-off valves, Change-over valves are used as Multi-port valves in industrial installations.

2.2 General notes



NOTICE - observe the operating instructions

To avoid danger and damage, the fitting must be used in accordance with the safety instructions and technical data contained in the operating instructions.



NOTICE

All data are in line with the current state of development. Subject to change as a result of technical progress.

2.3 General safety instructions



⚠ WARNING

Risk of injury by moving parts

Do not grab into the valve when the actuator is pressurized. Limbs can be crushing or amputating.

- Remove the control air line before dismantling.
- Ensure that the actuator is unpressurized.



⚠ WARNING

Risk of injury by moving parts

When dismantling the clamp coupling, the spring preloaded valve insert (air open - spring close) may incur serious injuries by jumping out of the housing.

- First pneumatically open the valve before disassembling the clamp coupling, so that up-stroke the piston.
- Dismount the valve insert.
- Remove the control air line at valve insert.

⇒ Ensure that the actuator is unpressurized.



⚠ WARNING

Risk of injury by outflowing medium

Dismantling the valve or valve assemblies from the plant can cause injuries.

- Medias flowing through the leakage drain outlet are to be drained off without splashing into a discharge arrangement.
- Carry the dismantling only if when the plant has been rendered pressure-less and free of liquid and gas.



⚠ WARNING

ATEX - Guidelines

If the valve or the plant is operated in a potentially explosive atmosphere, the valid ATEX directive of the EC and the installation instructions in this operating manual must be observed.

**⚠ CAUTION**

When mounting the clamps, the max. torque must not be exceeded.
(see technical data)

**⚠ CAUTION**

To avoid air leaking, only use pneumatic connection parts that have an O-ring seal facing the even surface.

**⚠ CAUTION**

Before starting the system, the entire pipeline system must be thoroughly cleaned.

**⚠ CAUTION**

Steps should be taken to ensure that no external forces are exerted on the fitting.

3 Delivery, transport and storage

3.1 Delivery

- Immediately after receipt check the delivery for completeness and transport damages.
- Remove the packaging from the product.
- Retain packaging material, or expose of according to local regulations.

3.2 Transport



CAUTION

Risk of injury and damage to the product

During the transport the generally acknowledged rules of technology, the national accident prevention regulations and company internal work and safety regulations must be observed.

3.3 Storage



NOTICE

Damage to the product due to improper storage!

Observe storage instructions
avoid a prolonged storage



INFORMATION









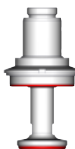


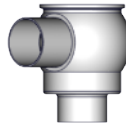
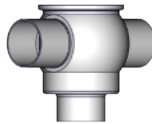
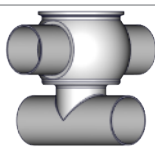
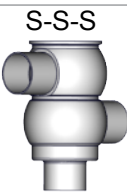
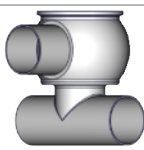
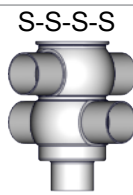
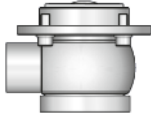
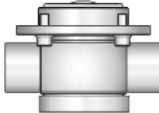
Recommendation for longer storage

We recommend regularly checking the product and the prevailing storage conditions during long storage times.

- To avoid damage to seals and bearings,
 - products up to DN 125 / OD 5 inch should be stored horizontally for maximum 6 months.
 - products larger than DN 125 / 5 inch, should be stored in the upright position with the actuator on top.
- Don't store any objects on the products.
- Protect the products for wetness, dust and dirt.
- The product should be stored in a dry and well ventilated room at a constant temperature (optimal indoor temperature: 25 °C ±5 ; indoor humidity data 70% ±5%).
- Protect seals, bearings and plastic parts for UV light and ozone.

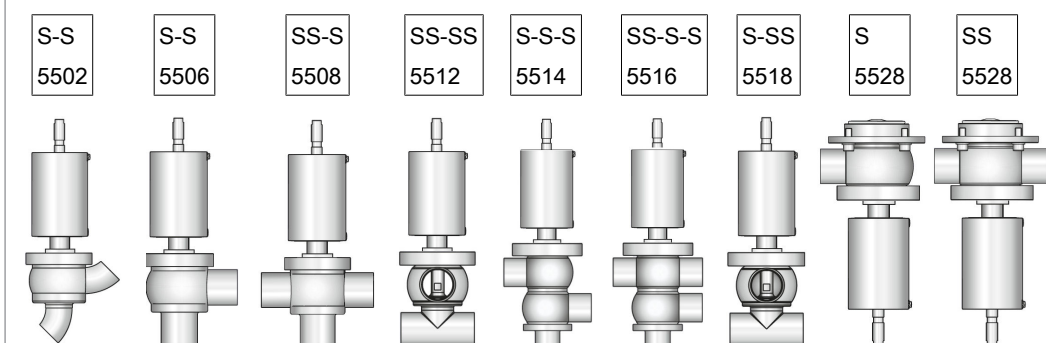
4 Specification

4.1 Modular system

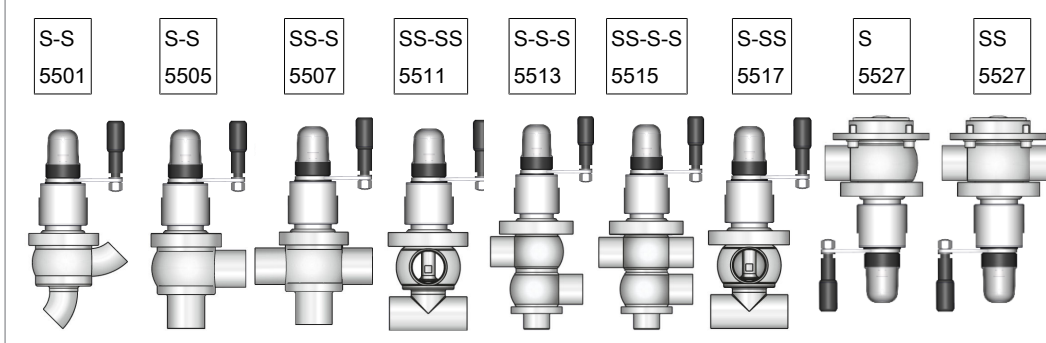
KI-Top control head		feedback unit
		
Stainless steel hood	Transparent hood	Feedback unit with finger guard (E)
Actuator manual	Actuator pneumatical	
		
		
Manual operation	ø104	ø129
	ø167	ø230
Valve inserts		
		
for Angle valves		for Two way valves
HNBR, EPDM, FKM		
Valve housing		
		
Inclined seat valve	Angle valve	t-valve
		
cross valve		Loop valve
	Two-way-changeover valve	
	S	SS
		
	Tank outlet valve	

4.2 Valve types

Actuator pneumatical



Actuator manual



5 Function and operation

5.1 Description of function

Valve function:	<ul style="list-style-type: none"> Inclined seat valve, Angle valve, T-valve, Cross valve, Loop valve, Tank outlet valve <ul style="list-style-type: none"> Shut off fluid media in pipelines (see Fig.A and B) Changeover valve <ul style="list-style-type: none"> Control fluid media in pipelines (see Fig.A and B)
Operation:	<ul style="list-style-type: none"> pneumatic operation by a lift drive (air/spring or air/air) manual operation by a crank-handle (open ☺ / close ☻)
Activation:	<ul style="list-style-type: none"> Pneumatically over a 3/2-way solenoid valve (see "Pneumatic valve activation")

Description of function - Lift actuator

Normally closed (NC) Basic position: Valve close	
pneum. operated	→ opens the valve
<u>undivided</u> pneum. operated	→ spring force closes the valve

normal open (NO) Basic position: Valve open	
pneum. operated	→ valve "CLOSE"
<u>undivided</u> pneum. operated	→ spring force opens the valve

double acting (DA) Basic position: not defined¹	
pneum. operated	→ opens the valve
<u>undivided</u> pneum. operated	→ valve "CLOSE"

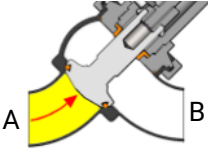
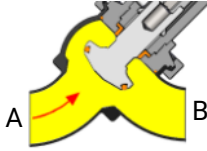
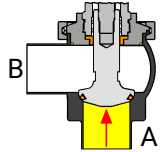
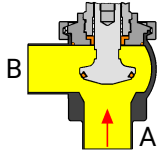
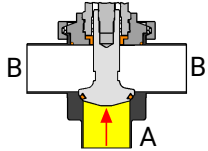
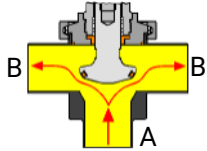
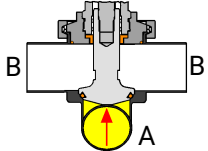
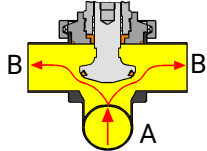
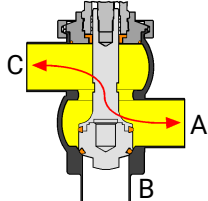
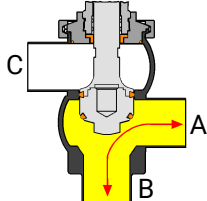
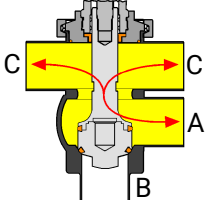
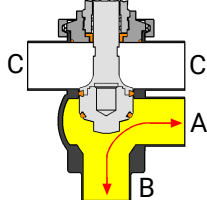
1. The valve position is not defined in case of decrease of pressure in the compressed air line.

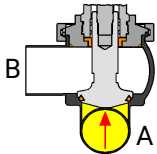
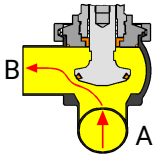
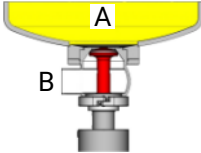
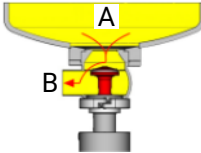
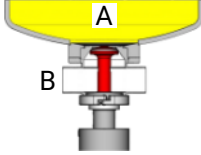
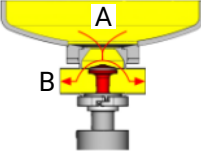
5.2 Valve basic position:



INFORMATION

- Actuator AIR/AIR : Valve assemblies with double acting actuators will fall into an un-defined stroke position.
- Actuator AIR/SPRING: The basic position of the valve is closed or opened depending on the kind of actuator.

Basic position: Kind of actuation:	Valve closed Normally closed (NC)	Valve open Normally open (NO)
Type: 5502 S-S Inclined seat valve	 Line A - B closed	 Line A - B open
Type: 5506 S-S Angle valve	 Line A - B closed	 Line A - B open
Type: 5508 SS-S t-valve	 Line A - B closed	 Line A - B open
Type: 5512 SS-SS cross valve	 Line A - B closed	 Line A - B open
Type: 5514 S-S-S Changeover valve	 Line A - B closed Line A - C open	 Line A - B open Line A - C closed
Type: 5516 SS-S-S Changeover valve	 Line A - B closed Line A - C open	 Line A - B open Line A - C closed

Basic position: Kind of actuation:	Valve closed Normally closed (NC)	Valve open Normally open (NO)
Type: 5518 S-SS Loop valve	 Line U - A closed	 Line U - A open
Type: 5528 S Tank outlet valve	 Line A - B closed	 Line A - B open
Type: 5528 SS Tank outlet valve	 Line U - AB closed	 Line U - AB open

5.3 Control system and position indicator



Feedback unit -optional-

Optionally, modular valve control head systems can be installed to the actuator for reading and actuating valve positions. The standard version is a closed system with SPS or ASI-bus switch-on electronics, and integrated 3/2-way solenoid valves. For tough operating conditions we recommend employing a high-grade steel cover.

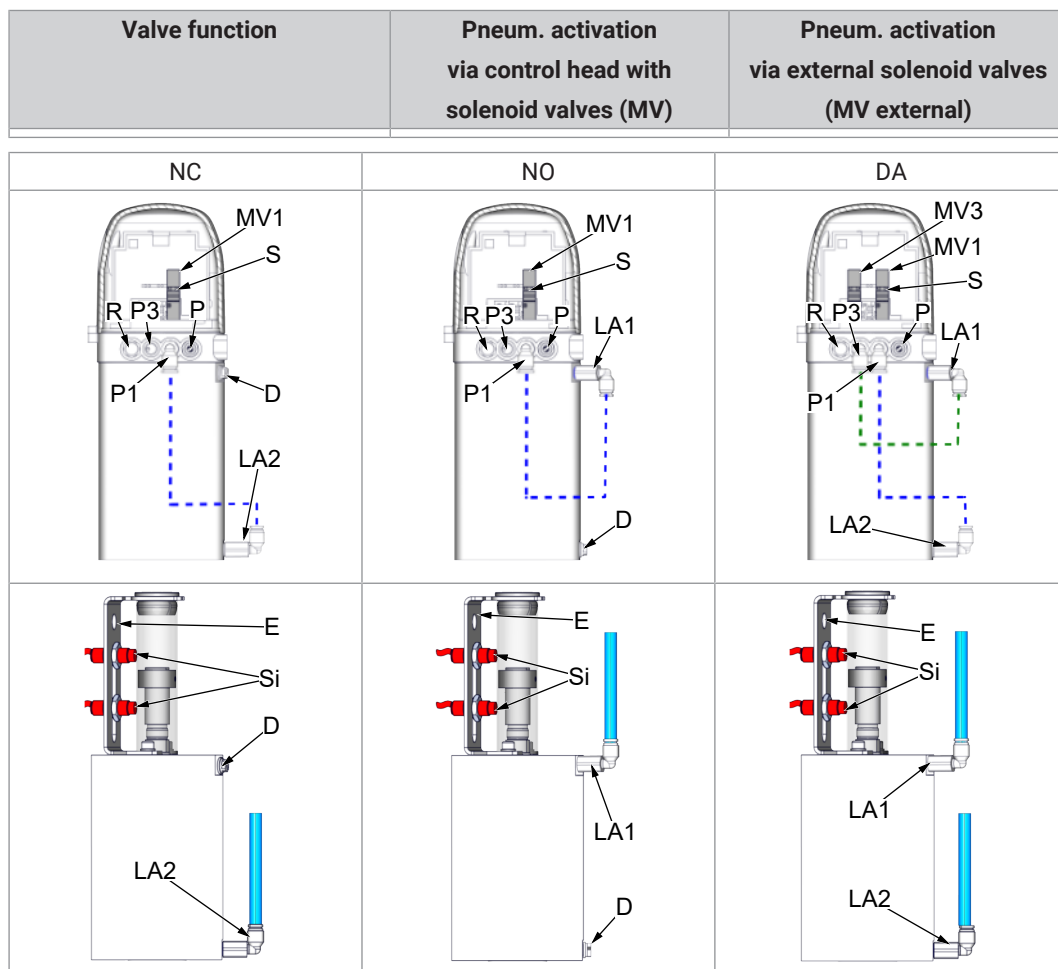


Feedback unit with finger guard -optional-

For the acquisition of the valve positions over inductive initiators (Sensors), a feedback unit is mounted on the actuation. The enquiry takes place over the position of the piston rod.

5.4 Pneumatic valve activation

MV = solenoid valve
 R = de-aeration, sound absorber
 P = compressed-air inlet
 LA = air supply
 S = Slide switch for manual operation of the solenoid valve
 Si = Sensor inductive
 E = sensor mounting



Antriebsart: normal closed (NC)

Valve OPEN by pressurised air	control air feed P → MV1 → P1/LA2	control air feed ext. MV → LA2
Valve CLOSED by spring tension	de-aeration LA2/P1 → MV1 → R	de-aeration LA2 → ext. MV

Kind of actuator: air open - air close (DA)

Valve OPEN by pressurised air	control air feed P → MV1 → P1/LA2	control air feed ext. MV → LA2
Valve CLOSED by pressurised air	control air feed P → MV3 → P3/LA1	control air feed ext. MV → LA1

Kind of actuator: normal open (NO)

Valve OPEN by spring tension	de-aeration P1/LA1 → MV1 → R	de-aeration LA1 → ext. MV
Valve CLOSED by pressurised air	control air feed P → MV1 → P1/LA1	control air feed ext. MV → LA1

6 Commissioning, service and maintenance

6.1 Commissioning

6.1.1 Installation instructions

Fitting position

- The installation position is without importance.



NOTICE

If installed horizontally, some minor residual liquids will remain in the ball-shape of the housing.

6.1.2 General welding guidelines

Sealing elements integrated in weld components must generally be removed prior to welding. To prevent damage, welding should be undertaken by certified personnel (EN ISO 9606-1). Use the TIG (Tungsten Inert Gas) welding process.



CAUTION

Damage and injuries due to high temperature supply

To avoid a distortion of the components, all welding parts must be welded to stress-relieved.

Allow all components to cool before assembling.



NOTICE

Damage due to impurities

Impurities can cause damage to the seals and seals area.

Clean inside areas prior to assembly.

6.1.3 ATEX - Guidelines

For valves or plants/installations that are operated in the ATEX area, sufficient bonding (grounding) must be ensured (see valid ATEX Guidelines EG).

6.2 Maintenance



RECOMMENDATION

Replacement of seals


To achieve optimal maintenance cycles, the following points must be observed!

- When replacement of seals, all product-contacting seals should be replaced.
- Only original spare parts may be installed.

Maintenance interval

The maintenance intervals depend on the operating conditions "temperature, temperature-intervals, medium, cleaning medium, pressure and opening frequency". We recommend replacing the seals 1-year cycle. The user, however should establish appropriate maintenance intervals according to the condition of the seals.

Lubricant recommendation

	EPDM; HNBR; NBR; FKM; k-flex	-	Klüber Paraliq GTE703*
	Silicone	-	Klüber Sintheso pro AA2*
	Thread	-	Interflon Food*
*) It is only permitted to use approved lubricants, if the respective fitting is used for the production of food or drink. Please observe the relevant safety data sheets of the manufacturers of lubricants.			

Maintenance - Lift actuator

The actuator is maintenance-free and non-removable.

6.3 Cleaning

Cleaning of the inner housing is performed with the pipe cleaning system.

7 Technical data

Model:	KI-DS Single seat valves	
Valve size:	DIN: DN25 - DN100 Inch: 1" - 4"	
Connections:	weld-on end	
Temperature range:	Ambient temperature: Operating temperature: Sterilization temperature:	+4 to +45°C (air) +0 to +95°C (medium dependent) HNBR +120°C (SIP 30 min) EPDM +140°C (SIP 30 min) FKM +110°C (SIP 30 min)
Pressure nominal (bar):	PN16	
Leak rate:	A (DIN EN 12266-1)	
Control air:	<u>Control air pressure:</u> to DN 65 2½ 5,5 - 8,0 bar from DN 80 / 3" 6,0 - 8,0 bar	<u>Quality of control air:</u> ISO 8573-1 : 2001 quality class 3
Materials: (in product contact)	Stainless steel:	1.4404 / AISI316L
	Surfaces:	Ra < 0,8µm metallic bright, e-polished
	Sealing material:	EPDM (FDA) HNBR (FDA) FKM (FDA)

Torques

DN	25	40	50	65	80	100
Inch	1	1½	2	2½	3	4
Clamp coupling (Nm):	15	15	15	25	25	55

7.1 Operating pressure

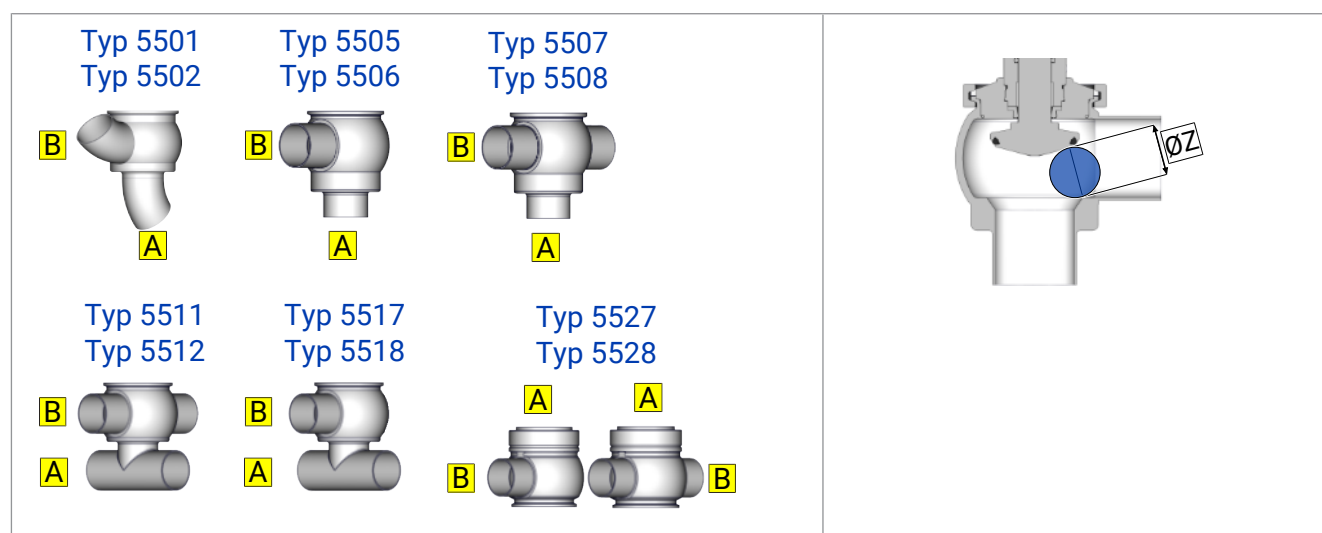
Operating pressure for valves with manual operating

DN Inch	25 1	40 1½	50 2	65 2½	80 3	100 4
Kind of actuator	crank handle	crank handle	crank handle	crank handle	crank handle	crank handle
	A B C	A B C	A B C	A B C	A B C	A B C
Valves with manual operating	10	10	10	10	10	10

Operating pressure for valves with pneumatic operating

Nominal diameter	stroke	ØZ	Operating direction	Opening pressures / closing pressures [bar]								KVS	
				Size of actuator (ØA)								A → B	B → A
				ø104		ø129		ø167		ø230		m³/h	m³/h
	mm	mm		A	B	A	B	A	B	A	B		
DN 25	18	13	NC ↓	10,5	10,7	15,3	16	-	-	-	-	21	24
OD 1"	14	11	NO ↑	8,4	11,3	13,6	16	-	-	-	-		
DN 40	30	24,5	NC ↓	8,2	12,3	12,0	16	-	-	-	-	43	47
OD 1½"	26,5	22	NO ↑	6,0	14,1	12,1	16	-	-	-	-		
DN 50	24	15,8	NC ↓	6,0	9,0	9,8	13,8	16	16	-	-	82	77
OD 2"	21,5	13,6	NO ↑	6,5	8,0	9,7	13,7	16	16	-	-		
DN 65	24	15,2	NC ↓	-	-	6,0	8,0	12,5	12,4	-	-	145	138
OD 2½"	18	10,6	NO ↑	-	-	6,0	8,0	9,9	15,3	-	-		
DN 80	28,5	19,0	NC ↓	-	-	-	-	9,0	8,7	13,5	16	200	212
OD 3"	28,5	19	NO ↑	-	-	-	-	6,3	11,2	13,6	16		
DN 100	28,5	18,2	NC ↓	-	-	-	-	6,0	5,6	9,2	12,7	274	299
OD 4"	26	16,2	NO ↑	-	-	-	-	4,2	7,3	9,2	12,3		

Table 1 *) Control air pressure: 5,5 bar



Operating pressure for pneumatic changeover valves

Nominal width	stroke	Operating direction	Opening pressures / closing pressures [bar] Size of actuator (ØA)												KVS	
			Ø104			Ø129			Ø167			Ø230			A → B	A → C
			A	B	C	A	B	C	A	B	C	A	B	C	m³/h	m³/h
DN 25 OD 1"	21	LÖ-FS ↓	8.0	8.9	6.8	13.8	15.5	10.3	-	-	-	-	-	-	23	15
	17	FÖ-LS ↑	8.3	8.6	7.1	13.3	13.7	12.1	-	-	-	-	-	-		
DN 40 OD 1½"	28.5	LÖ-FS ↓	8.0	7.7	6.8	13.8	13.4	10.3	-	-	-	-	-	-	46	35
	25.5	FÖ-LS ↑	7.8	7.4	7.1	12.5	11.6	12.1	-	-	-	-	-	-		
DN 50 OD 2"	34	LÖ-FS ↓	8.0	7.0	6.8	13.8	12.1	10.3	-	-	-	-	-	-	67	55
	31.5	FÖ-LS ↑	7.4	6.6	7.1	11.9	10.3	12.1	-	-	-	-	-	-		
DN 65 OD 2½"	31	LÖ-FS ↓	-	-	-	8.7	7.1	6.5	16.1	15.0	10.2	-	-	-	126	83
	25.5	FÖ-LS ↑	-	-	-	8.8	7.2	6.6	13.6	10.6	14.1	-	-	-		
DN 80 OD 3"	31	LÖ-FS ↓	-	-	-	-	-	-	7.1	7.5	5.3	11.1	12.3	12.0	194	140
	28.5	FÖ-LS ↑	-	-	-	-	-	-	7.2	7.5	5.4	14.7	16.4	8.5		
DN 100 OD 4"	34	LÖ-FS ↓	-	-	-	-	-	-	6.9	5.5	5.3	11.1	9.2	12.2	260	166
	34	FÖ-LS ↑	-	-	-	-	-	-	7.0	5.5	5.4	13.5	11.4	9.4		

Typ 5513
Typ 5514

Typ 5515
Typ 5516

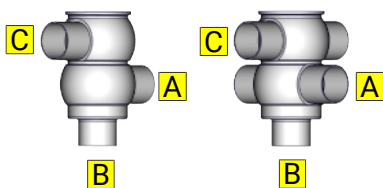





Table 2 *) Control air pressure: 5,5 bar

8 Disassembly and assembly

8.1 Valves with manual operating

Mounting tools

T1		Combination wrench-Set	SW 8 - SW 24	-
T10		Joint -pin wrench	Pin Ø6	8027000065-000
T35		Pin punch	Ø 5 mm	-

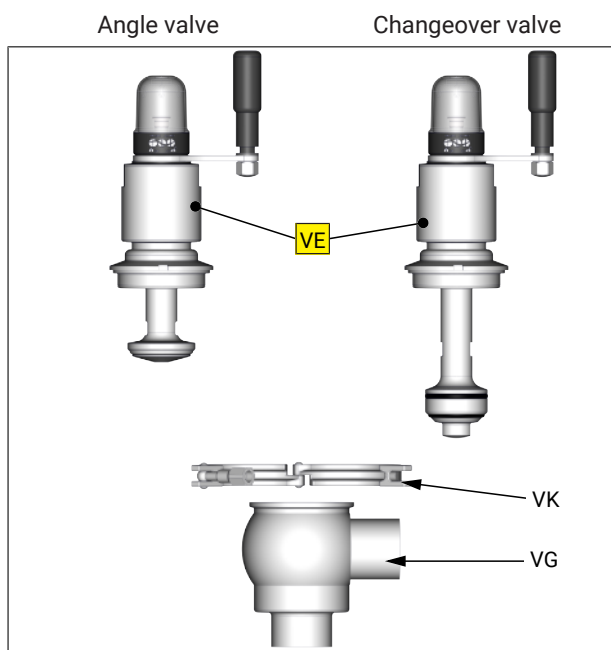


NOTICE

All screw connections have right-handed threads.

Assembly valve insert

- Unscrew the clamp coupling (VK).
- Dismount the valve insert (VE) out of the housing.

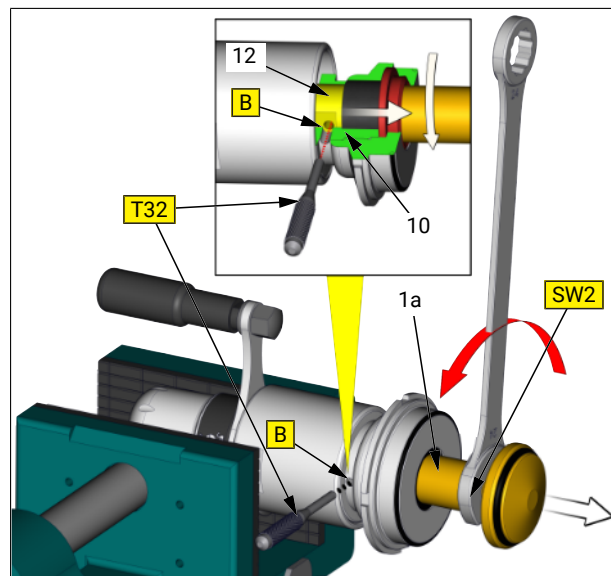


Replacement wear parts

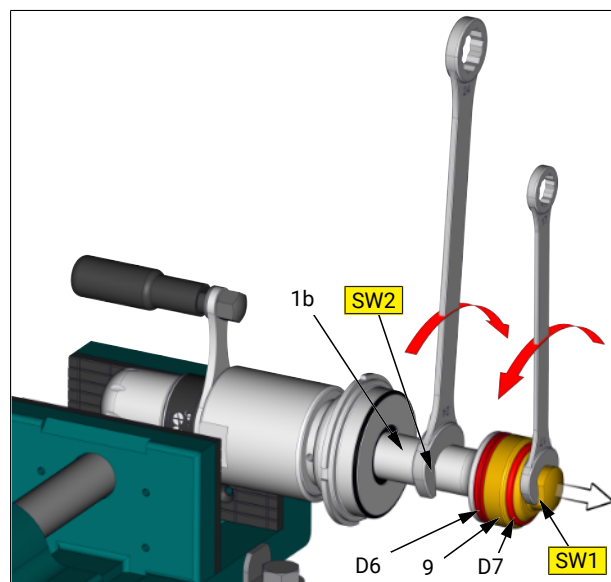
- Unscrew the piston (1a) from spindle (12) (SW2).
Counter with a pin punch (T32) at the bore hole (B, Ø5mm).

- **NOTICE!**

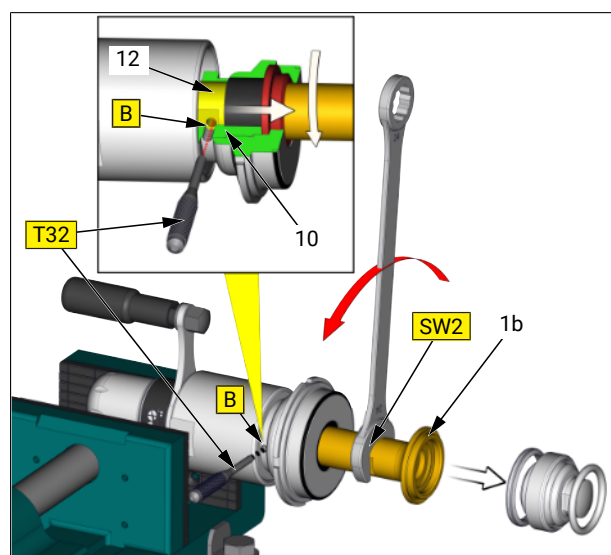
The holes (B) in the housing (10) and the spindle (12) must be aligned so that the pin punch (T32) can be inserted into the spindle (12).



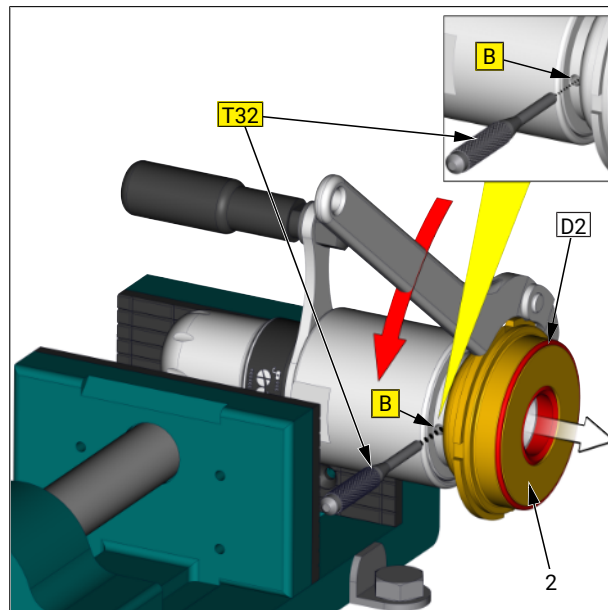
- **Changeover valve:**
Unscrew the piston plate (9) from piston (1b) (SW1/SW2).
- Remove seal (D6).



- **Changeover valve:**
Unscrew the piston (1b) from spindle (12) (SW2).
Counter with a pin punch (T32) at the bore hole (B, Ø5mm).



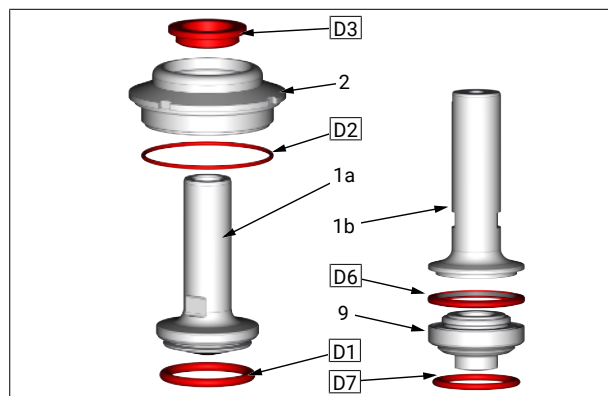
- Unscrew the insert (2) from the housing (10), using a hook wrench (T10).







- Remove O-ring (D1), (D2), (D7), seal (D6) and shaft seal (D3).

NOTICE!

- Puncture the O-ring (D1) and (D7) with a needle and remove them carefully from the groove of piston.



8.2 Valves with pneumatic operation

T1		Combination wrench-Set	SW 8 - SW 24	-
T10		Joint -pin wrench	Pin Ø6	8027000065-000
T11		Hinged hook wrench	DN25 - DN100 90/155 V2A	8028025100-020
T12		Joint face wrench	Pin Ø6 40-80 MM	8028340080-000



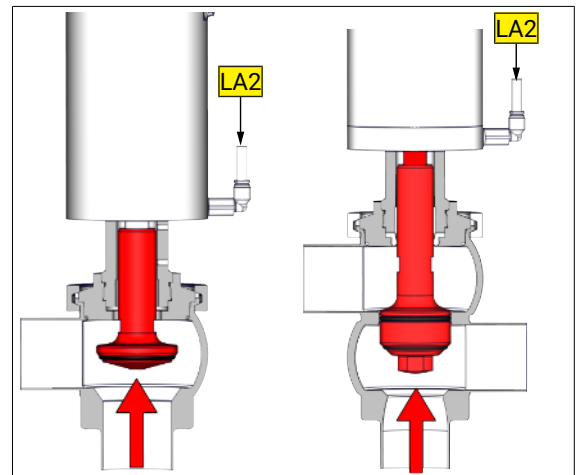
NOTICE

All threaded joint have right-hand thread.

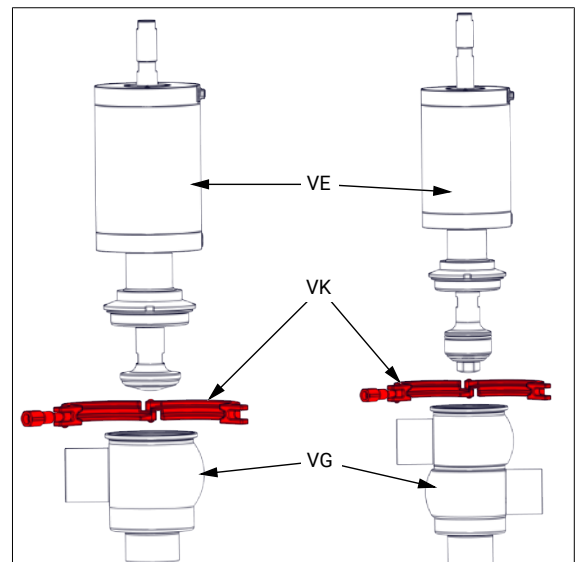
Unscrew and remove control air, steam resp. cleaning lines and electrical lines, complete feedback unit or control head.

Assembly valve insert

- Connect compressed air to LA2 and pressurize the actuator with air.
 - The piston retracts.

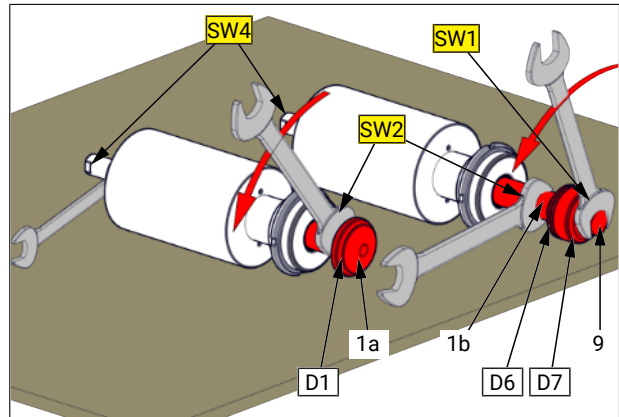


- Unscrew the clamp coupling (VK).
- Remove the complete valve insert with the upper shaft seal (D1) from the housing (VG).
- Disconnect compressed air at LA2 and depressurize the drive - The valve piston move in.
 - The valve piston returns to the basic position.

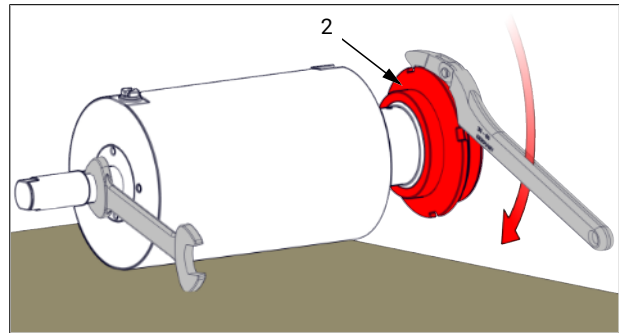


Replacement wear parts - Valve insert (VE)

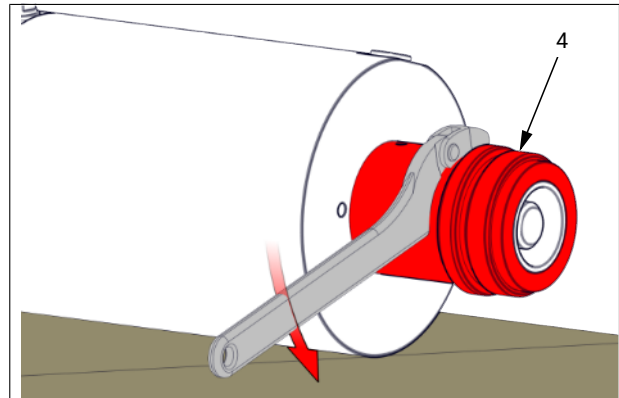
- **Changeover valve:** Unscrew the piston plate (9) from piston (1b) (SW1/SW2).
- Remove seal (D7) and O-ring (D6).
- Unscrew the piston (1a) resp. (1b) from spindle (6) (SW2/SW4).
- Remove O-ring (D1).



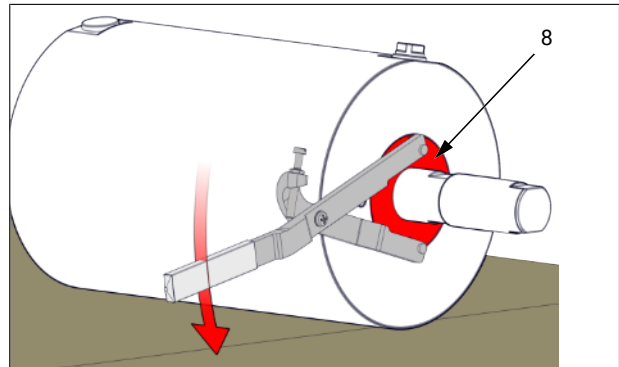
- Unscrew the insert (2) from the lantern (4) (use a hook wrench).
- Remove O-ring (2) and seal (D3).

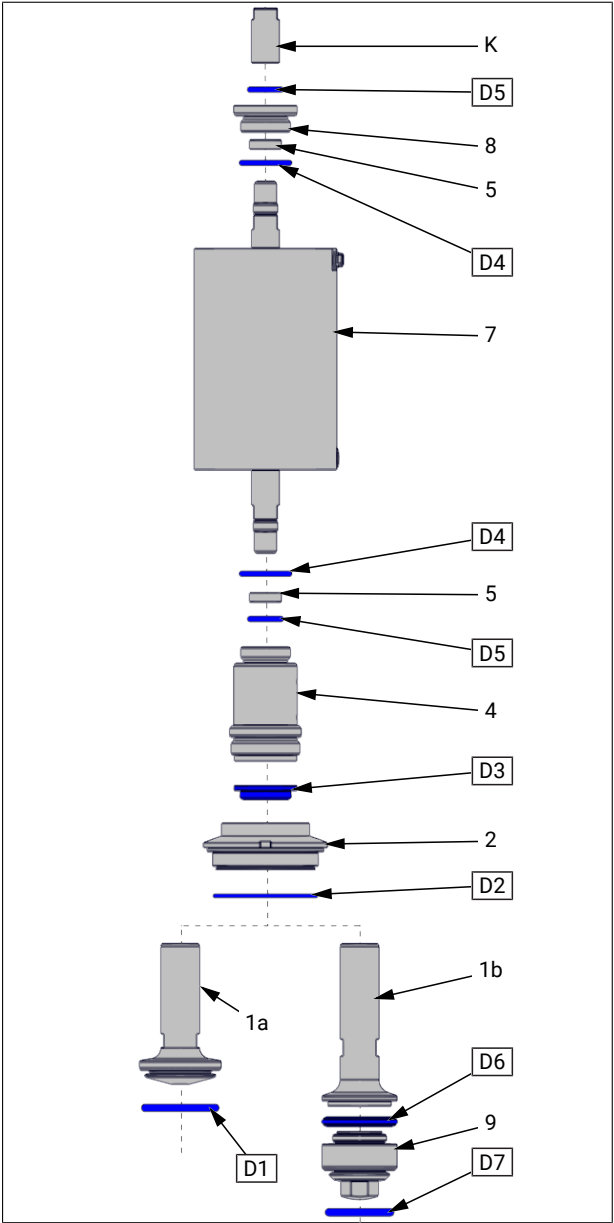


- Unscrew the lantern (4) from the actuator (7) (use a hook wrench).
- Remove the O-rings (D4) and (D5) from lantern (4).



- Unscrew the insert (8) from the actuator (7) (use a hook wrench).
- Remove the O-rings (D4) and (D5).

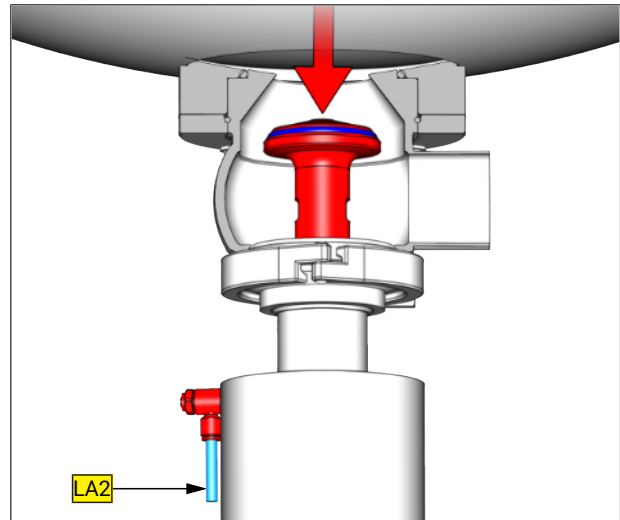




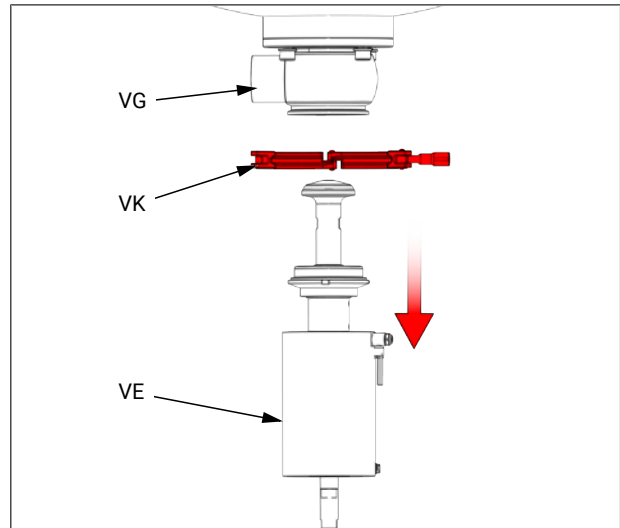
8.3 Tank outlet valve

Assembly valve insert

- Connect compressed air to LA2 and pressurize the actuator with air.
 - The piston retracts.



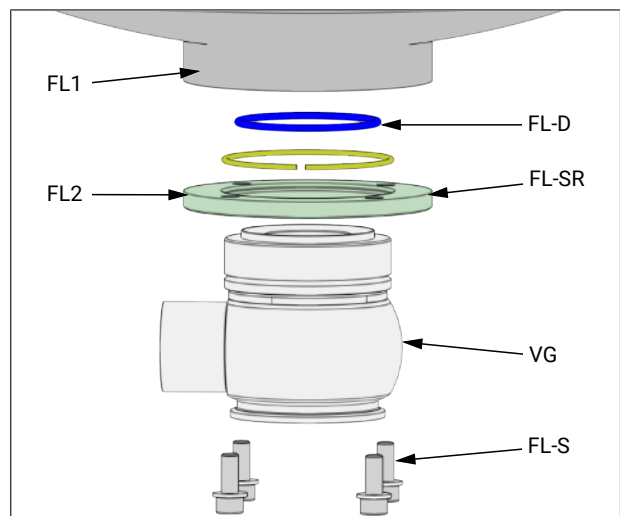
- Unscrew the clamp coupling (VK).
- Remove the complete valve insert with the upper shaft seal (D1) from the housing (VG).
- Disconnect compressed air at LA2 and depressurize the drive - The valve piston move in.
 - The valve piston returns to the basic position.



Replacement wear parts - Valve housing (VG)

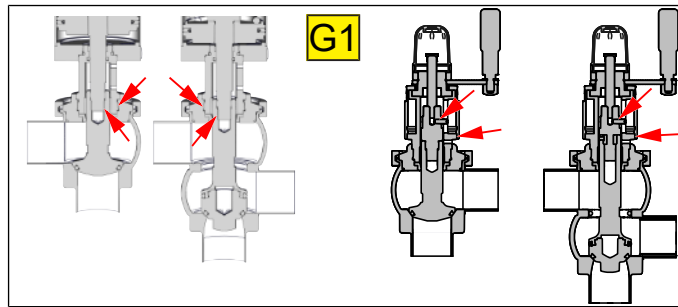
- Unscrew the screw (FL-S).
- Remove valve housing (VG) with flange (FL2) and O-ring (FI-D).
- Dismantling circlip ring (FL-SR) and flange (FL2) from the housing (VG).

NOTICE! Information for the "Disassembly of the valve insert" can be found under Tank outlet valve [► 26]



8.4 Assembly

- Mount the threaded connection (G1) with Screw retention detachable (e.g. Loctite 243) .



- Before installation, thoroughly clean and slightly lubricate mounting areas and running surfaces.
- Assemble in reverse order.



NOTICE

Alternately press and roll the O-rings into the groove with round body.

Performance test

- Check the function according to the specified performance data in the operating state.



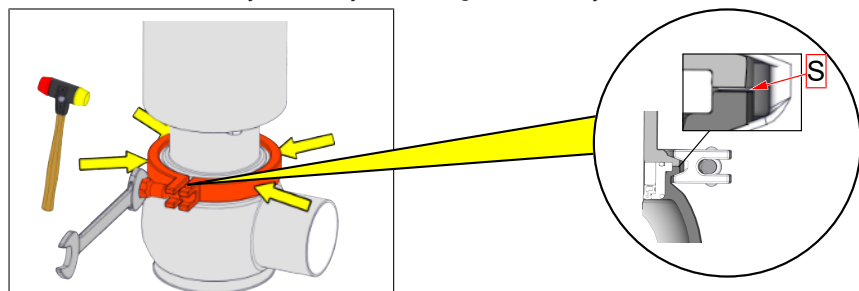
NOTICE

During assembly, the following points must be observed!

Carefully fit in the complete valve insert into the casing. When fitting the valve insert and running surfaces onto the piston, do not damage.

➤ Mounting clamp coupling


- For mounting the clamp coupling, please note that it continuously fits form locking to the inclinations of the casing and the lantern/casing bottom.
- The centring of the retaining clamp during tightening can be accomplished with a slight beat (please use a soft-head hammer) on the extent of the retaining clamp.
- When tightening the clamp coupling, please pay attention to the turning moment and the gap size 'S' ($\leq 0,4\text{mm}$) between the components.
- Check valve functions by manually activating the 3/2-way solenoid valves after assembly!



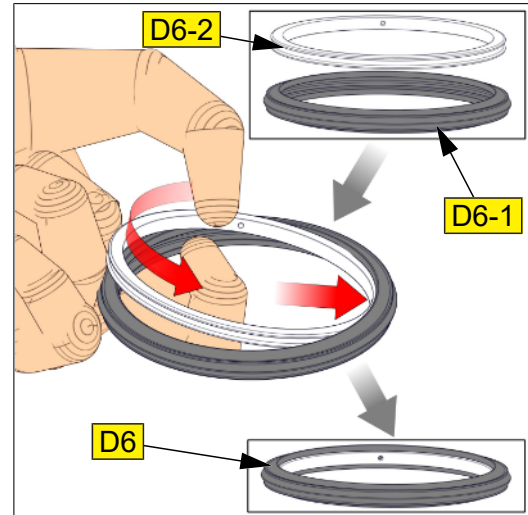
Torques

DN	25	40	50	65	80	100
Inch	1	1½	2	2½	3	4
Clamp coupling (Nm):	15	15	15	25	25	55

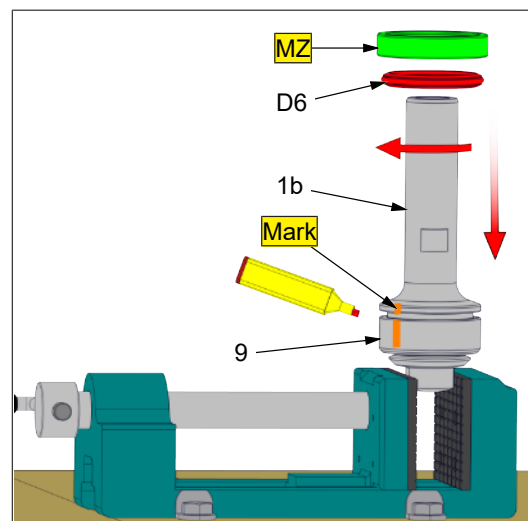
Mounting seal (D6)

	Centring ring MZ	DN 25/40/50	5620 050 025-020
		DN65	5620 065 025-020
		DN80	5620 080 025-020
		DN100	5620 100 025-020

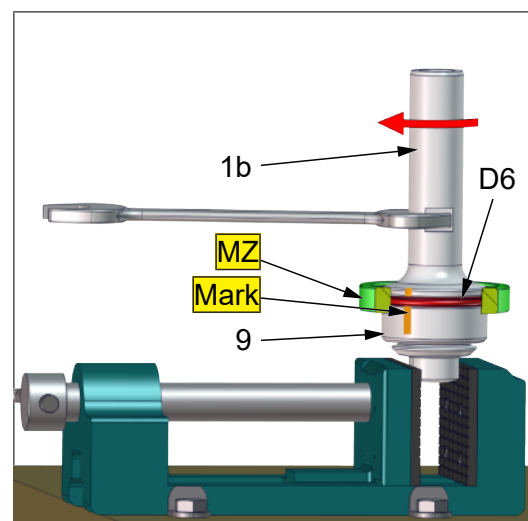
- Install the support ring (D4-2) in the seal jacket (D4-1).



- Clamp piston plate (9) in a vice. Screw together the piston (1b) and piston plate (9) to the metal limit stop by hand.
- Make a colored mark at the piston surfaces.
- After then, unscrew the piston (1b) again.



- Slide the seal (D6) onto the piston (1b).
- Screw together again the piston (1b) into the piston plate (9) by hand.
- Position the centre ring (MZ) on seal (D6).
- Screw up the piston (1b) to the final limit mark.



9 Drawings and dimensions

9.1 Drawings

Angle valves, Two way valves

K = Cap

VE = Valve insert manual

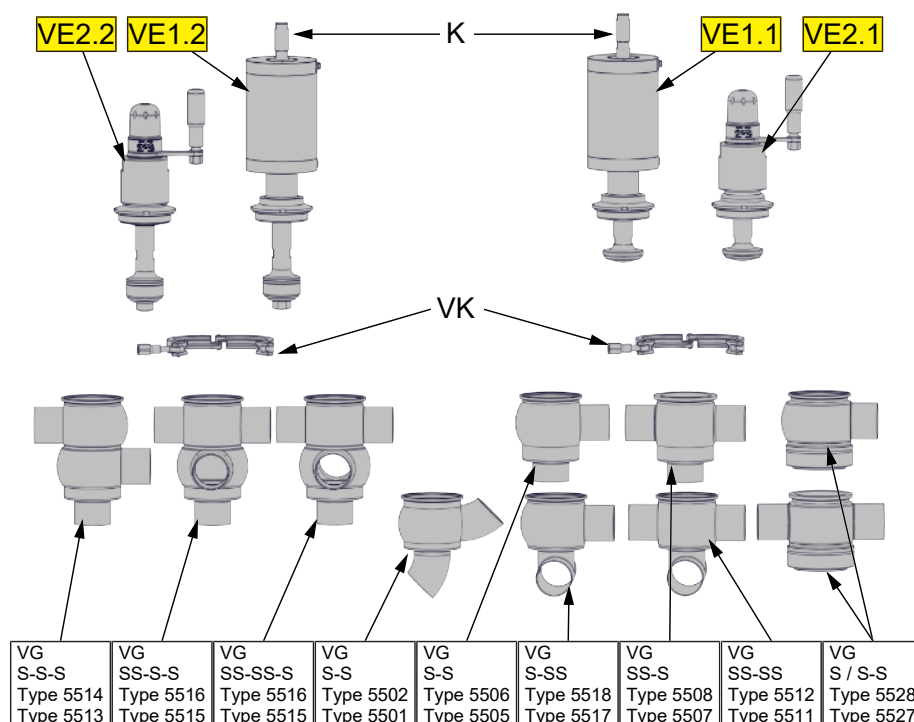
- 1.1 = Eckventil/Angle valve
- 1.2 = Changeover valve

VE = Valve insert pneumtical

- 2.1 = Angle valve
- 2.2 = Changeover valve

VK = Clamp coupling

VG = Valve housing



Tank outlet valve

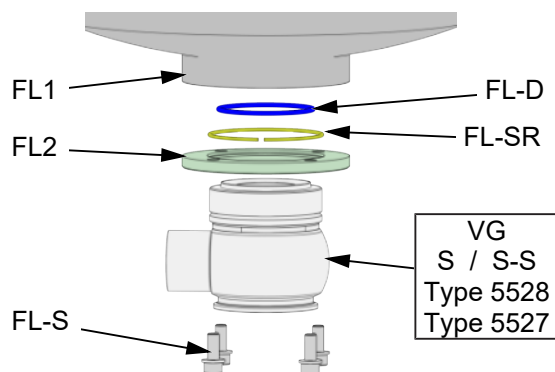
FL1 = Tank flange¹

FL2 = Housing flange

FL-D = O-ring¹

FL-S = Screw

FL-SR = Retaining ring



Valve inserts (VE)**manual operation DN50**

- Insert for angle valves Type: 5505
- Insert for changeover valves Type: 5513

pneumatical DN50

- Insert for angle valves Type: 5506
- Insert for changeover valves Type: 5514

1 = Piston

- a = Angle valve
- b = Changeover valve

2 = Insert

3 = Bearing bush

4 = Lantern

5 = Bearing bush

6 = Spindle

7 = Actuator

8 = Insert - lantern

9 = Piston plate

10 = Housing

11 = Set screw

12 = Spindle

13 = Guide nut

14 = Housing body

15 = Plain bearing

16 = Adapter

17 = Cap

18 = Crank handle

19 = Hood

D1 = O-ring

D2 = O-ring

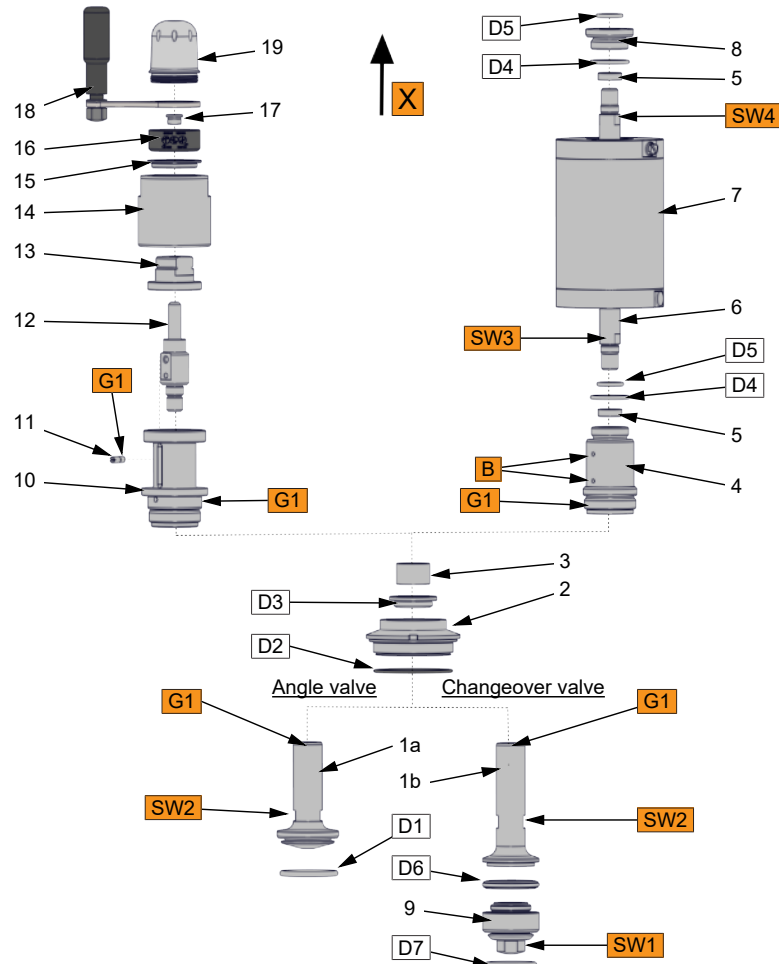
D3 = Shaft seal

D4 = O-rings

D5 = O-rings

D6 = Seal

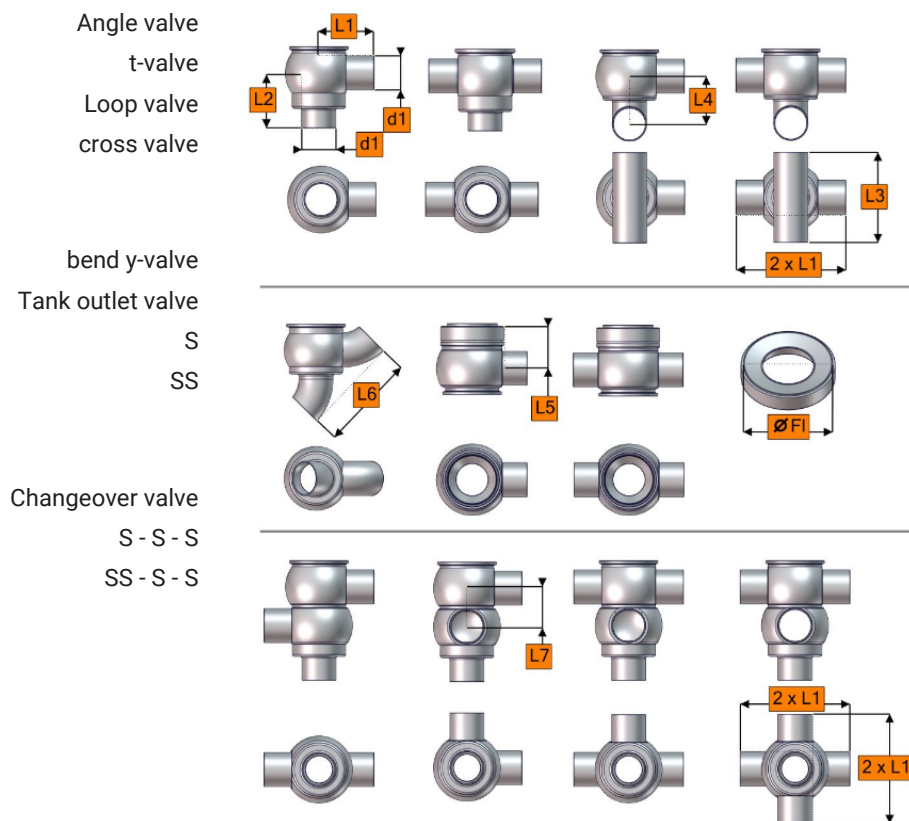
D7 = O-ring



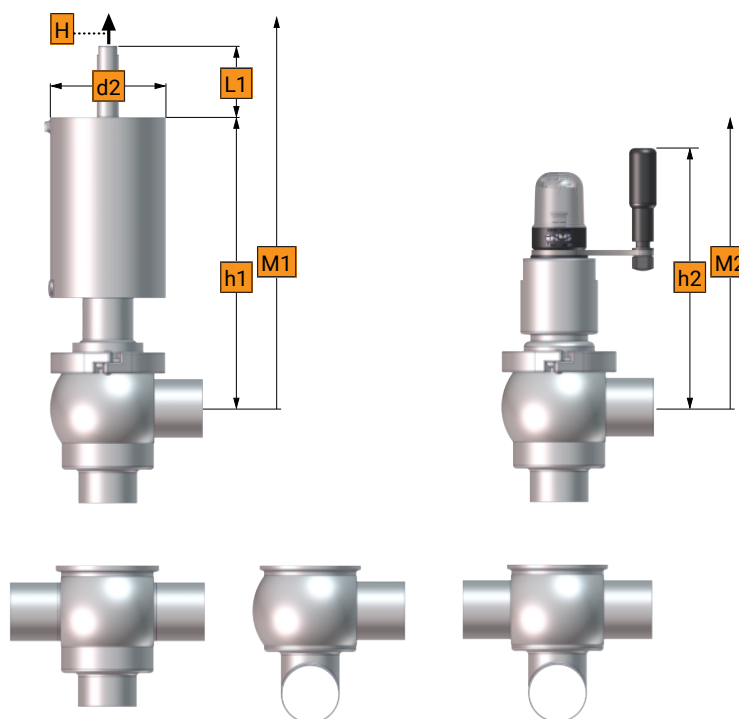
Nominal width	Wrench size					Hinged hook wrench		Joint face wrench	
	SW1	SW2	SW3	SW4	SW5	Form A (hook)	Form B (pin)	D 40-80mm	Pin Ø5 / Ø6
DN 25 / 1"	19	24	17	17	11	Form A DN 25-100: 8028025100-020 Form A DN125: 8028025150-020 Form B (to 2015) Ø4: 8027000060-000 Form B (from 2015) Ø6: 8027000065-000		Ø4 (to 2015)8028340085-000 Ø6 (from 2015)8028340080-000	
DN 40/ 1½"	24								
DN 50 / 2"	24								
DN 65 / 2½"	36								
DN 80 / 3"	27								
DN 100 / 4"	27								
DN 125 / 5"	27								

9.2 Dimensions

Housing



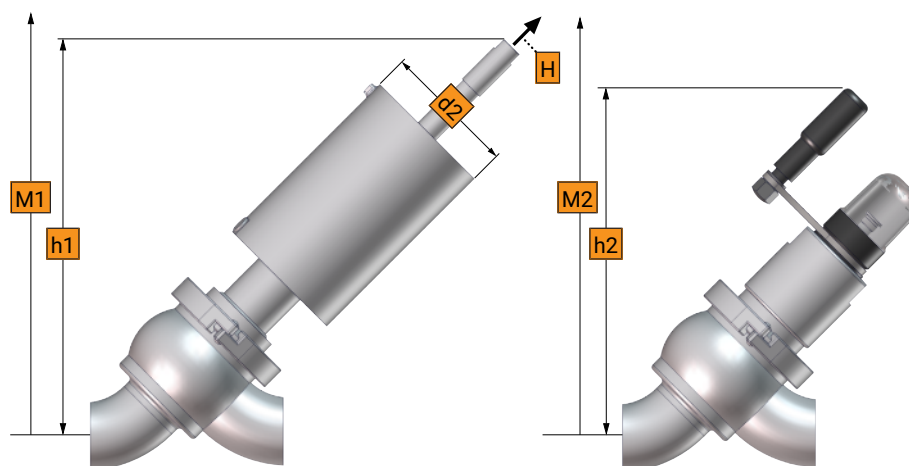
Nominal diameter	d1	L1	L2	L3	L4	L5	L6	L7	ø FI
DN 25 1 Inch	Ø 29 x 1,5 Ø25.4x1.65	75	75	100	57	70.5	126	36 32	ø 100
DN 40 1½ Inch	Ø 41 x 1,5 Ø31.8x1.65	85	85	120	66	70.5	138	48 45	ø 125
DN 50 2 Inch	Ø 53 x 1,5 Ø50,8 x 1,65	85	85	140	74.5	69.5	150	60 57.5	ø 138
DN 65 2½ Inch	Ø 70 x 2,0 Ø63,5 x 1,65	105	105	160	96	78.5	185	76 70	ø 165
DN 80 3 Inch	Ø 85 x 2,0 Ø76,1 x 2,0	115	115	180	122	101.5	219	91 83	ø 176
DN 100 4 Inch	Ø 104 x 2,0 Ø101,6 x 2,0	130	130	200	144	120	247	110 108	ø 209
DN 125 5 Inch	Ø 129 x 2,0 Ø 127 x 2,0	-	-	-	-	-	-	- -	ø 238

Angle valve, T-valve, Loop valve, Cross valve

Nominal width	d2	h1	h2	M1 ¹	M2	L1		H (stroke)	
				Size when completed		NC	NO	pneum.	manual
DN 25	ø 104	249	221	~ 440	~ 260	82	93	18	14
1 Inch		248	219	~ 440	~ 260	86	93	14	10
DN 40	ø 104	255	227	~ 460	~ 265	70	93	30	25
1½ Inch		253.5	225	~ 460	~ 265	73,5	93	26.5	22.5
DN 50	ø 104	261	233	~ 480	~ 290	69	93	24	26
2 Inch		260.5	232	~ 480	~ 290	61.5	93	21.5	23.5
DN 65	ø 129	269	241	~ 515	~ 325	69	93	24	26
2½ Inch		266	238	~ 515	~ 320	75	93	18	20
DN 80	ø 167	276.5	248	~ 540	~ 340	64.5	93	28.5	30.5
3 Inch		272.5	244	~ 540	~ 330	64.5	93	28.5	21.5
DN 100	ø 167	286	258	~ 565	~ 375	64.5	93	28.5	30.5
4 Inch		285	257	~ 565	~ 370	67	93	26	28
DN 125	-	-	-	-	-	-	-	-	-
5 Inch									

Valves that do not meet the catalogue standards, can lead to dimensional deviations.

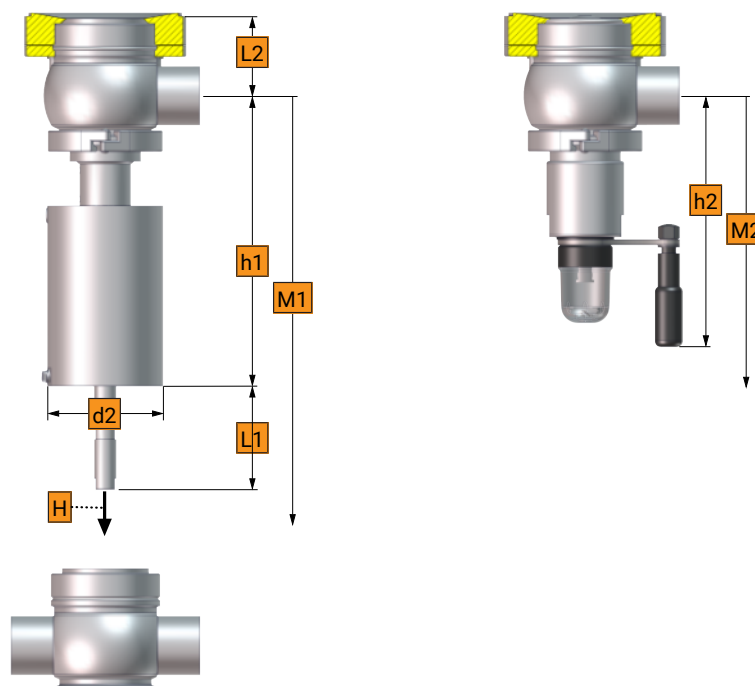
1. Installation dimension M1 are incl. control head or feedback unit

Inclined seat valve

Nominal width	d2	h1		h2	M1 ¹	M2	H (stroke)	
		NC	NO				pneum.	manual
DN 25	ø 104	277	291	260	~ 330	~ 290	18	14
1 Inch		280	291	258	~ 330	~ 290	14	10
DN 40	ø 104	275	298	268	~ 370	~ 300	30	25
1½ Inch		278	298	266	~ 370	~ 300	26.5	22.5
DN 50	ø 104	282	305	277	~ 390	~ 320	24	26
2 Inch		275	305	276	~ 390	~ 320	21.5	23.5
DN 65	ø 129	298	321	295	~ 440	~ 355	24	26
2½ Inch		304	321	292	~ 435	~ 350	18	20
DN 80	ø 167	311	338	315	~ 450	~ 380	28.5	30.5
3 Inch		311	338	311	~ 440	~ 370	28.5	21.5
DN 100	ø 167	330	357	325	~ 500	~ 430	28.5	30.5
4 Inch		332	357	324	~ 495	~ 425	26	28
DN 125	-	-	-	-	-	-	-	-
5 Inch								

Valves that do not meet the catalogue standards, can lead to dimensional deviations.

1. Installation dimension M1 are incl. control head or feedback unit.

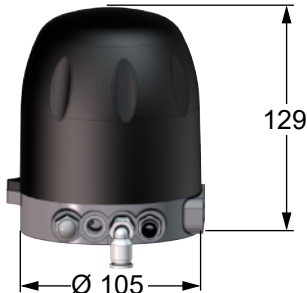
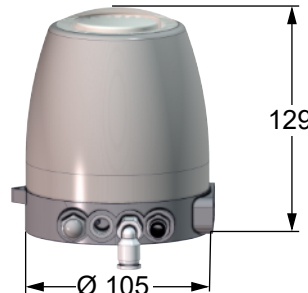
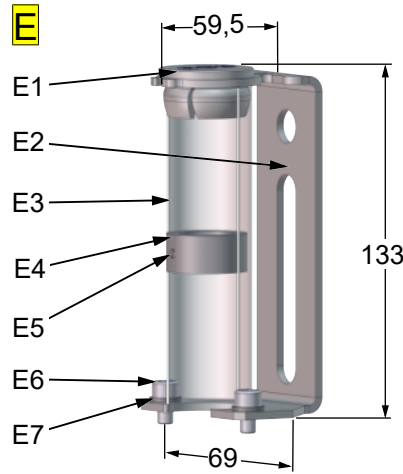
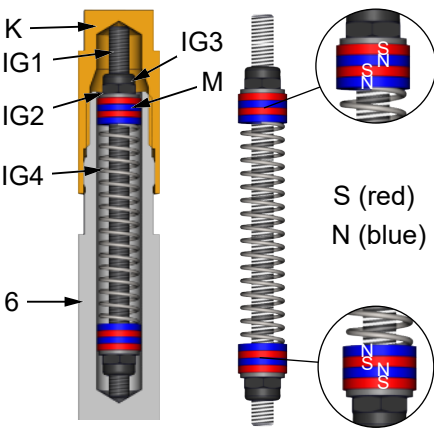
Tank outlet valve

Nominal width	d2	h1	h2	M1 ¹	M2	L1		H (stroke)	
				Size when completed		NC	NO	pneum.	manual
DN 25	ø 104	249	221	~ 490	~ 260	82	93	18	14
1 Inch		248	219	~ 490	~ 260	86	93	14	10
DN 40	ø 104	255	227	~ 500	~ 265	70	93	30	25
1½ Inch		253,5	225	~ 500	~ 265	73,5	93	26,5	22,5
DN 50	ø 104	261	233	~ 510	~ 290	69	93	24	26
2 Inch		260,5	232	~ 510	~ 290	61,5	93	21,5	23,5
DN 65	ø 129	269	241	~ 550	~ 325	69	93	24	26
2½ Inch		266	238	~ 550	~ 320	75	93	18	20
DN 80	ø 167	276,5	248	~ 580	~ 340	64,5	93	28,5	30,5
3 Inch		272,5	244	~ 580	~ 330	64,5	93	28,5	21,5
DN 100	ø 167	286	258	~ 630	~ 375	64,5	93	28,5	30,5
4 Inch		285	257	~ 630	~ 370	67	93	26	28
DN 125	-		-	-	-	-	-	-	-
5 Inch									

Valves that do not meet the catalogue standards, can lead to dimensional deviations.

1. Installation dimension M1 are incl. control head or feedback unit.

9.3 Control units

Control head KI-TOP	
with plastic hood - transparent	with stainless steel hood
	
Feedback unit with finger guard (E)	
<ul style="list-style-type: none"> • E1 = Cap • E2 = Angle bracket • E3 = Shell transparent • E4 = Set collar • E5 = Headless pin • E6 = Allen screw • E7 = Flat washer 	
Pulse generator (IG)	
<ul style="list-style-type: none"> • IG1 = Rod • IG2 = Disc • IG3 = Nut • IG4 = Spring • K = Cap • M = Magnet • 6 = Spindle 	

10 Wearing parts

10.1 Wearing parts list

DN 25 - DN 50 / 1 Inch - 2 Inch

Pos.	Material	pce.	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2Inch
3	XSM	1x	Bearing bush 8050 028 020-156		
5	XSM	1x	Bearing 8050 020 007-156		
13	NBR	1x	Scraper ring 2330 028 007-055		
D1			O-ring		O-ring
	EPDM	1x	2304 041 035-159		2304 044 053-159
	HNBR	1x	2304 041 035-157		2304 044 053-157
	FKM	1x	2304 041 035-178		2304 044 053-178
D2			O-ring		
	EPDM	1x	2304 069 026-159		
	HNBR	1x	2304 069 028-050		
	FKM	1x	2304 069 026-251		
D3	EPDM	1x	Seal 5506 050 009-054		
	HNBR	1x	Seal 5506 050 009-050		
	FKM	1x	Seal 5506 050 009-251		
D4	NBR	2x	O-ring 2304 030 035-055		
D5	HNBR	2x	O-ring 2304 019 035-171		
D6	EPDM		Seal		
	- complete	1x	5621 055 025-084		
	- Jacket	1x	5621 055 026-084		
	- Support ring	1x	5621 055 027-020		
	HNBR		Seal		
	- complete	1x	5621 055 025-171		
	- Jacket	1x	5621 055 026-171		
	- Support ring	1x	5621 055 027-020		
	FKM		Seal		
	- complete	1x	5621 055 025-251		
	- Jacket	1x	5621 055 026-251		
	- Support ring	1x	5621 055 027-020		
D7			O-ring		
	EPDM	1x	2304 038 053-170		
	HNBR	1x	2304 038 053-171		
	FKM	1x	2304 038 053-178		
FL-D			O-ring	O-ring	O-ring
	EPDM	1x	2304 057 035-054	2304 063 053-170	2304 075 040-054
	HNBR/NBR	1x	2304 057 035-050	2304 063 053-050	2304 075 040-055

Seal (D6) = New version with support ring

DN 65 - DN 100 / 2½ Inch - 3 Inch

Pos.	Material	pce.	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4Inch
3	XSM	1x	Bearing bush 8050 028 020-156		
5	XSM	1x	Bearing 8050 020 007-156		
13	NBR	1x	Scraper ring 2330 028 007-055		
D1			O-ring	O-ring	O-ring
	EPDM	1x	2304 053 053-159	2304 069 053-159	2304 088 053-159
	HNBR	1x	2304 053 053-157	2304 069 053-157	2304 088 053-157
	FKM	1x	2304 053 053-178	2304 069 053-178	2304 088 053-178
D2			O-ring	O-ring	O-ring
	EPDM	1x	2304 082 026-159	2304 098 035-159	2304 117 035-159
	HNBR	1x	2304 082 026-050	2304 098 035-050	2304 117 035-050
	FKM	1x	2304 082 026-051	2304 098 035-051	2304 117 035-051
D3	EPDM	1x	Seal 5506 050 009-054		
	HNBR	1x	Seal 5506 050 009-050		
	FKM	1x	Seal 5506 050 009-251		
D4	NBR	2x	O-ring 2304 030 035-055		
D5	HNBR	2x	O-ring 2304 019 035-171		
D6	EPDM		Seal	Seal	
	- complete	1x	5621 065 025-084	5621 100 025-084	
	- Jacket	1x	5621 065 026-084	5621 100 026-084	
	- Support ring	1x	5621 065 027-020	5621 100 027-020	
	HNBR		Seal	Seal	
	- complete	1x	5621 065 025-171	5621 100 025-171	
	- Jacket	1x	5621 065 026-171	5621 100 026-171	
	- Support ring	1x	5621 065 027-020	5621 100 027-020	
	FKM		Seal	Seal	
	- complete	1x	5621 065 025-251	5621 100 025-251	
	- Jacket	1x	5621 065 026-251	5621 100 026-251	
	- Support ring	1x	5621 065 027-020	5621 100 027-020	
D7			O-ring	O-ring	O-ring
	EPDM	1x	2304 047 053-170	2304 069 053-159	2304 083 050-069
	HNBR	1x	2304 047 053-171	2304 069 053-157	2304 083 050-157
	FKM	1x	2304 047 053-178	2304 069 053-178	2304 083 050-178
FL-D			O-ring	O-ring	O-ring
	EPDM	1x	2304 090 040-170	2304 102 050-159	2304 133 053-159
	HNBR/NBR	1x	2304 090 040-050	2304 102 050-050	2304 133 053-050

Seal (D6) = New version with support ring

10.2 Wear parts kit

Angle valve Type: 5505, 5506, 5507, 5508, 5511, 5512

Seals (D1), (D2), (D3)

	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2Inch
HNBR	5506 025 990-050	5506 040 990-050	5506 050 990-050
EPDM	5506 025 990-054	5506 040 990-054	5506 050 990-054
FKM	5506 025 990-251	5506 040 990-251	5506 050 990-251

	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4Inch
HNBR	5506 065 990-050	5506 080 990-050	5506 100 990-050
EPDM	5506 065 990-054	5506 080 990-054	5506 100 990-054
FKM	5506 065 990-251	5506 080 990-251	5506 100 990-251

Two way valves Type: 5513, 5514, 5515, 5516

Seals (D2), (D3), (D6), (D7)

	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2Inch
HNBR	5514 050 990-050	5514 050 990-050	5514 050 990-050
EPDM	5514 050 990-054	5514 050 990-054	5514 050 990-054
FKM	5514 050 990-251	5514 050 990-251	5514 050 990-251

	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4Inch
HNBR	5514 065 990-050	5514 080 990-050	5514 100 990-050
EPDM	5514 065 990-054	5514 080 990-054	5514 100 990-054
FKM	5514 065 990-251	5514 080 990-251	5514 100 990-251

Seal (D6) without support ring

Tank outlet valve Typ: 5527, 5528

Seals (D1), (D2), (D3), (D6)

	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2Inch
HNBR	5528 050 990-050	5528 050 990-050	5528 050 990-050
EPDM	5528 050 990-054	5528 050 990-054	5528 050 990-054
FKM	5528 050 990-251	5528 050 990-251	5528 050 990-251

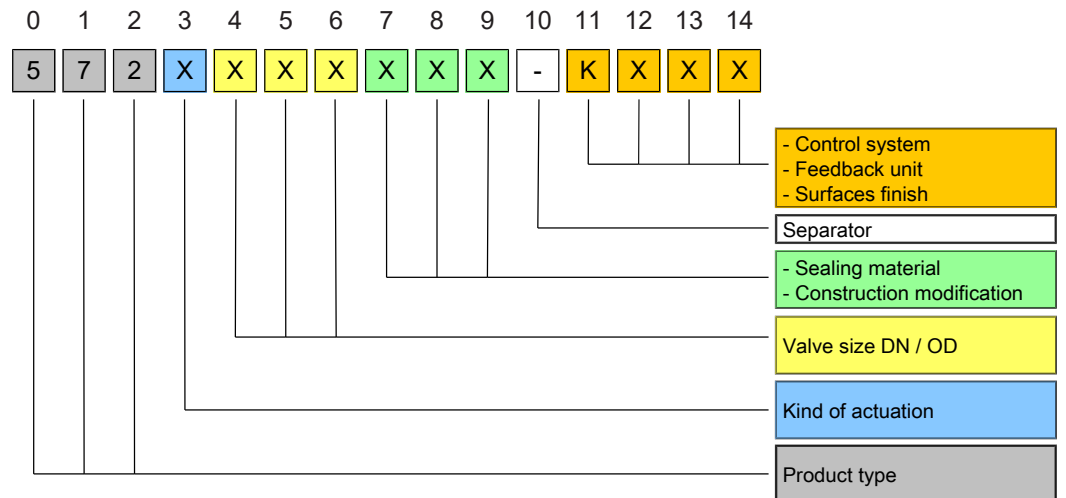
	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4Inch
HNBR	5528 065 990-050	5528 080 990-050	5528 100 990-050
EPDM	5528 065 990-054	5528 080 990-054	5528 100 990-054
FKM	5528 065 990-251	5528 080 990-251	5528 100 990-251

Pos.	Material	pce.	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2Inch
FL1	1.4404 AISI316L	1x	5727 025 001-040	5727 040 001-040	5727 050 001-040
FL-D			O-ring	O-ring	O-ring
	EPDM	1x	2304 057 035-054	2304 063 053-170	2304 075 040-054
	HNBR/NBR	1x	2304 057 035-050	2304 063 053-050	2304 075 040-055

Pos.	Material	pce.	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4Inch
FL1	1.4404 AISI316L	1x	5727 065 001-040	5727 080 001-040	5727 100 001-040
FL-D			O-ring	O-ring	O-ring
	EPDM	1x	2304 090 040-170	2304 102 050-159	2304 133 053-159
	HNBR/NBR	1x	2304 090 040-050	2304 102 050-050	2304 133 053-050

11 Classification

11.1 Structure of Order Number



Product name

55xx xxx xxx-xxxx

Type: 55xx Single seat valves KI-DS

Housing type / Kind of actuation

55xx xxx xxx-xxxx

Type	Housing type	Kind of actuation	2	3
5501	S-S Inclined seat valve	manual	0	1
5502		pneumatical	0	2
5505	S-S Angle valve	manual	0	5
5506		pneumatical	0	6
5507	SS-S T-valve	manual	0	7
5508		pneumatical	0	8
5511	SS-SS Cross valve	manual	1	1
5512		pneumatical	1	2
5513	S-S-S Changeover valve	manual	1	3
5514		pneumatical	1	4
5515	SS-S-S Changeover valve	manual	1	5
5516		pneumatical	1	6
5517	S-SS Loop valve	manual	1	7
5518		pneumatical	1	8
5527	S Tank outlet valve	manual	2	7
	SS Tank outlet valve	manual	2	7
5528	S Tank outlet valve	pneumatical	2	8
	SS Tank outlet valve	pneumatical	2	8

Valve size DN/OD

55xx xxx xxx-xxxx

DN	4	5	6	OD	4	5	6
DN 25	0	2	5	OD 1"	0	2	6
DN 40	0	4	0	OD 1 1/2"	0	3	8
DN 50	0	5	0	OD 2"	0	5	1
DN 65	0	6	5	OD 2 1/2"	0	6	4
DN 80	0	8	0	OD 3"	0	7	6
DN 100	1	0	0	OD 4"	1	0	1
DN 125	1	2	5	OD 5"	1	2	7
DN 150	1	5	0	OD 6"	1	5	2

Material of seal & Design modification

55xx xxx xxx-xxxx

Material of seals & Design modifica						
Type	Housing	Variations of actuation	Seal	7	8	9
5501, 5502	S-S	Normally closed (NC)	EPDM	0	3	0
5505, 5506	S-S		HNBR	0	3	5
5507, 5508	SS-S		FKM	0	3	4
5511, 5512	SS-SS	Normally open (NO)	EPDM	1	3	0
5513, 5514	S-SS		HNBR	1	3	5
5515, 5516	S-S-S		FKM	1	3	4
5517, 5518	SS-S-S	air open - air close (DA)	EPDM	3	3	0
5527; 5528	S		HNBR	3	3	5
			FKM	3	3	4
5527, 5528	SS	Normally closed (NC)	EPDM	2	3	0
			HNBR	2	3	5
			FKM	2	3	4

Separator

55xx xxx xxx-xxxx

- KIESELMANN Valve

Control system and position indication , External surface

55xx xxx xxx-xxxx

Control system and position indicator	11	12	13	14
Control head SPS (old version)	5	x	x	
Control head ASi-Bus (old version)	6	x	x	
Control head KI-Top SPS	K	5	x	x
Control head KI-Top ASi-Bus	K	6	x	x
Feedback unit	11	12	13	14
Feedback unit with finger guard (5630 005 025-000)	7	5	0	
External surface	11	12	13	14
Valve without control system	0	2	0	
External surface: AISI304, blank				
Valve without control system	0	2	1	
External surface AISI304, E-polished				
Valve without control system	0	4	1	
External surface AISI316L, E-polished				

12 Appendix

12.1 Declaration of incorporation



Declaration of incorporation

Translation of the original

Manufacturer / authorised representative:

KIESELMANN GmbH

Paul-Kieselmann-Str. 4-10
75438 Knittlingen
Germany

Authorised representative:

Achim Kauselmann

(for compiling technical documents)

Paul-Kieselmann-Str. 4-10
75438 Knittlingen
Germany

<u>Product name</u>	<u>Function</u>
pneum. Lift actuators	Stroke movement
pneum. Rotary actuators	Rotary movement
Ball valves	Media cutoff
Butterfly valves	Media cutoff
Single seat valves	Media cutoff
Flow control valves	Control of liquefied media
Throttle valve	Control of liquefied media
Overflow valve	Definition of fluid pressure
Double seat valve	Media separation
Bellow valves	Sampling of liquids
Sampling valves	Sampling of liquids
Two way valves	Media cutoff
Tankdome fitting	Prevention of overpressure and vacuum, Tank cleaning
Safety valve	Prevention of overpressure

The manufacturer hereby states that the above product is considered as an incomplete machine in the sense defined in the Directive 2006/42/EC on Machinery. The above product is exclusively intended to be installed into a machine or an incomplete machine. The said product does not yet conform to all the relevant requirements defined in the Directive on Machinery referred to above for this reason.

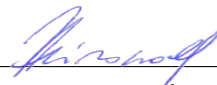
The specific technical documents listed in Appendix VII, Part B, have been prepared. The Authorized Agent empowered to compile technical documents may submit the relevant documents if such a request has been properly justified.

Commissioning of an incomplete machine must not only be carried out if it has been determined that the respective machine into which the incomplete machine is to be installed conforms to the regulations set out in the Directive on Machinery referred to above.

The above product conforms to the requirements of the directives and harmonized standards specified below:

- Directive 2014/68/EU
- DIN EN ISO 12100 Safety of machinery

Knittlingen, 21.07.2017


 i.V. Uwe Heisswolf
 Head of Development