KIESELMANN
FLUID PROCESS GROUP

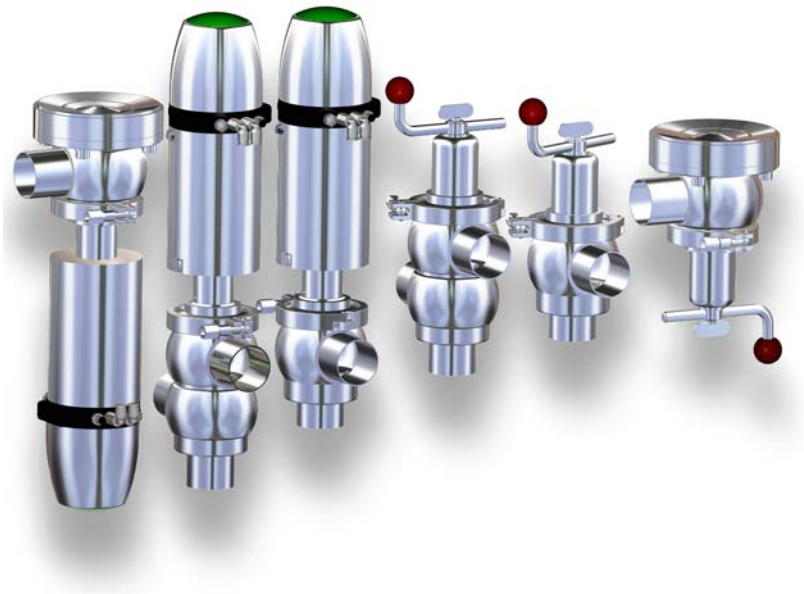
Operating instructions

- Translation of the original -

KI-DS - Single seat valves

pneumatic and manual operation

Type:
5501, 5502 Inclined seat valves
5505, 5506 Angle valves
5507, 5508 T-valves
5511, 5512 Cross valves
5513, 5514 Changeover valves S-S-S
5515, 5516 Changeover valves SS-S-S
5517, 5518 Loop valves
5527, 5528 Tank outlet valves



English **GBR**

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1. General information

1.1 Information for your safety

We are pleased that you have decided for a high-class KIESELMANN 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 service team will naturally be at your disposal.

1.2 Marking of security instructions in the operating manual

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.
	**ATTENTION**	An harmful situation which may result in damages of the product itself or of adjacent vicinity.
	**NOTICE**	Marks application hints and other information which is particularly useful.

1.3 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 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

Single seat valves are used in food and beverage as well as in pharmaceutical, biotechnological and chemical industries.

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 as Multi-port valves in industrial installations.

2.2 General safety instructions

ATTENTION

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

WARNING

- Danger of crushing or amputating limbs.
  Do not reach into the valve housing when in pneumatic mode.
- Dismantling the valve or valve assemblies from the plant can cause injuries from fluids or gases flowing out.
  Dismantle the valve or valve assembly only when the plant has been rendered pressure-less and free of liquid and gas.
- The spring preloaded valve insert (air open - spring close) may incur serious injuries by jumping out of the housing.
  Pneumatically open the valve before disassembling the clamp coupling, so that upstroke the piston in direction “X“ (Fig. B1 / page 14).
- For valves or plants/installations that are operated in a ATEX area, must be considered the valid ATEX Guidelines EG and the Installation instructions (page 10).

CAUTION

- To avoid air leaking, only use pneumatic connection parts that have an o-ring seal facing the even surface.
- When mounting the clamps, the max. torque must not be exceeded (see technical data).
- Steps should be taken to ensure that no external forces are exerted on the fitting.

2.3 General notes

NOTICE

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

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

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

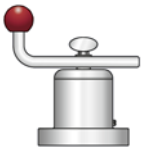
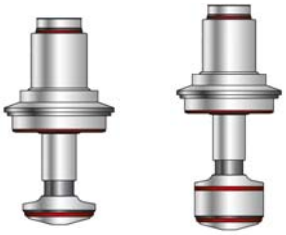
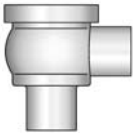
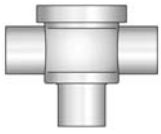
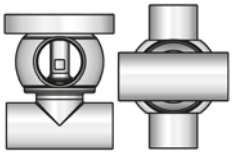
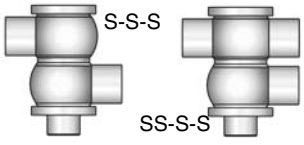
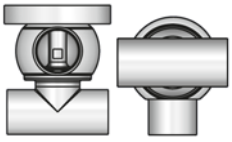
ATTENTION
- Damage to the product due to improper storage!
  - Observe storage instructions.
  - avoid a prolonged storage.

NOTICE
- KIESELMANN recommend regularly checking the product and the prevailing storage conditions during long storage times.
- The following points must be observed, to ensure the optimum function of the sealing elements, bearings and electronic components.

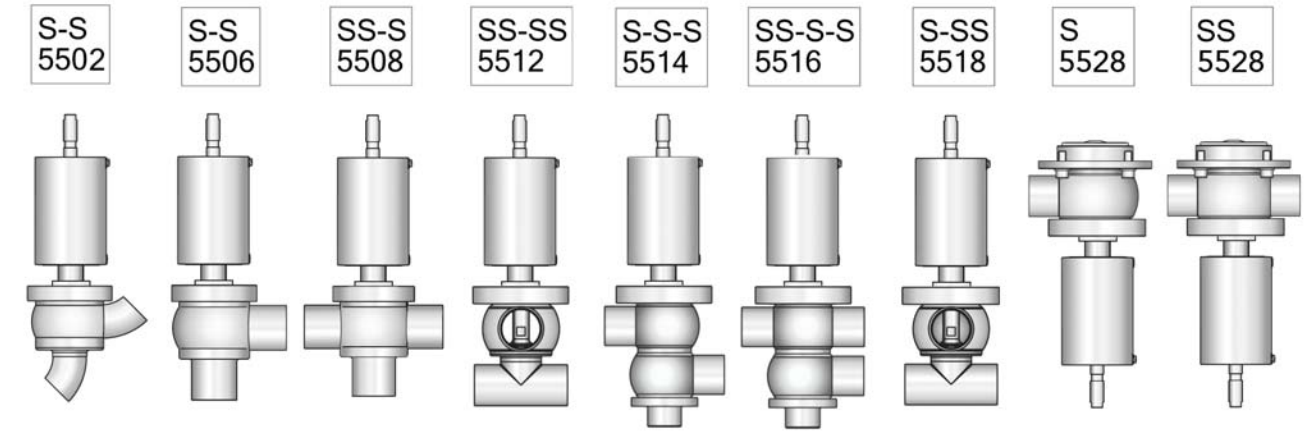
- To avoid damage to seals and bearings,
  - products up to DN 125 / OD 5 inch should be stored horizontally for maximum 6 months.
  - products larger than DN 125 / 5 inch, should be stored in the upright position with the actuator on top.
- Don't store any objects on the products.
- Protect the products 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. Pack them in black plastic bags. We recommend using polyethylene packaging (minimum thickness of 0.075 mm). Don‘t use PVC.

4. Valve types

4.1 Modular system

KI-TOP Control head		Feedback unit
 Stainless steel hood	 Transparent, acid-proof hood	 with finger guard
Actuators		
 manual actuator	 Ø 104	 Ø 129
	 Ø 167	 Ø 230
Valve insert		
for Angle valves	 HNBR, EPDM	for Change-over valves
Valve housings		
 Inclined seat valve	 Angle valve	 T-valve
 Cross valve	 Change-over valve	 Loop valve
S  SS Tank outlet valve		

Valves with pneumatic actuator



Valves with manual actuator

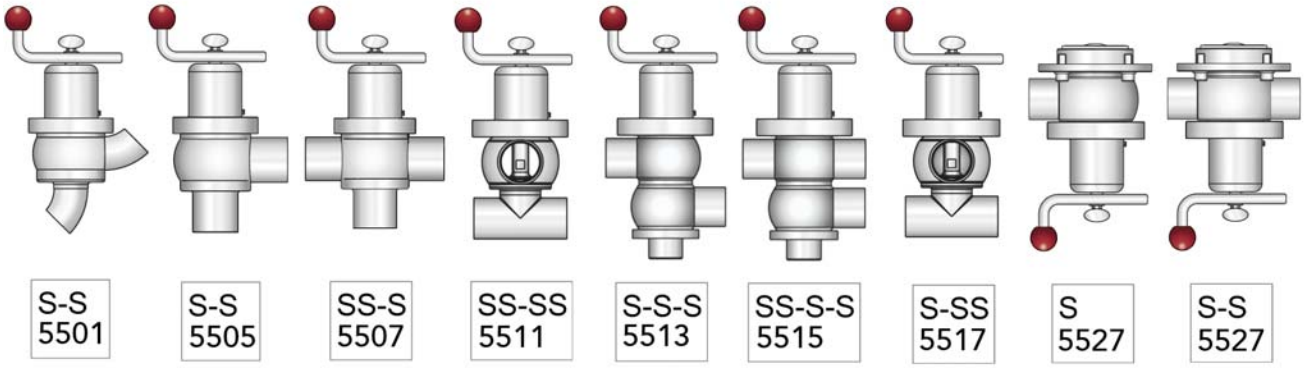


Fig. 4 - 1

5. Function and operation

5.1 Description of function

• Function of valve:	• Inclined seat valve, Angle valve, T-valve, Cross valve, Loop valve, Tank outlet valve - Shut off fluid media in pipelines (see Fig.A and B) • Change-over valve - Control fluid media in pipelines (see Fig.A and B)
• Operation:	• pneumatic operation by a lift drive (air/spring; air/air) • manual operation by a crank-handle (open ↺ / close ↻)
• Activation:	• Pneumatically over a 3/2-way solenoid valve (see “Pneumatic valve actuation” on page 10.)

➤ Description of function - Lift actuator

• **air open - spring close (NC) Basic position: Valve close (Fig.A-I - A-IX)**	
▶ pneum. operated	⇨ opens the valve
▶ not pneum. operated	⇨ spring force closes the valve

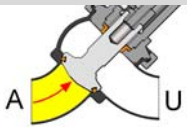
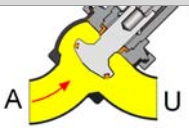
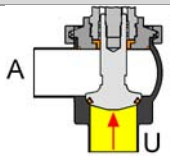
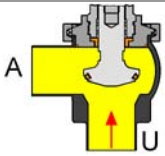
• **spring open - air close (NO) Basic position: Valve open (Fig.B-I - B-IX)**	
▶ pneum. operated	⇨ closes the valve
▶ not pneum. operated	⇨ spring force opens the valve

• **air open - air close (DA) Basic position: no defined**[1]	
▶ pneum. operated	⇨ opens the valve
▶ pneum. operated	⇨ closes the valve

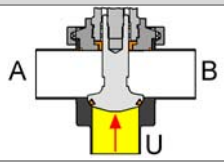
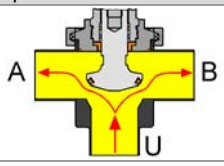
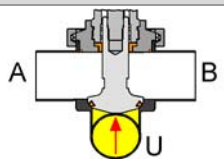
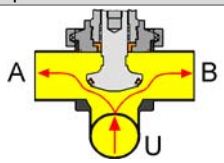
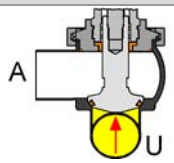
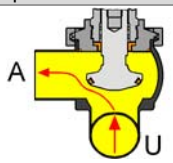
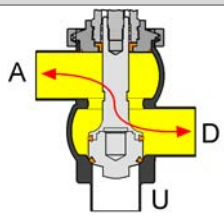
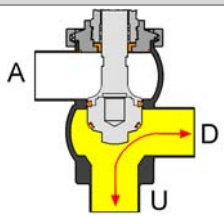
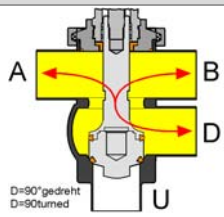
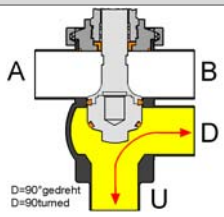
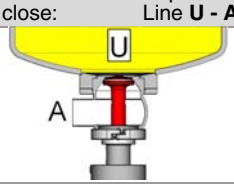
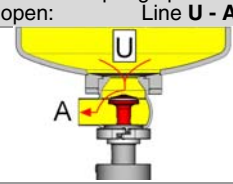
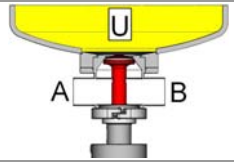
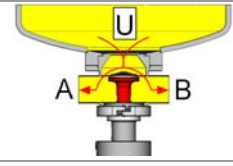
1. *The valve position is undefined at pressure drop of air supply.*

5.2 Basic position for pneum. operation valves

NOTICE
- Actuator AIR/AIR : Valve assemblies with double acting actuators will fall into an undefined stroke position.
- Actuator AIR/SPRING: In case of an air supply failure valve assemblies with spring return actuators will fall into the default stroke position (Normally closed or Normally open).

	Basic position: Normally closed (NC) kind of actuator: air open - spring close spring close: Line **U - A** closed	Basic position: Normally open (NO) kind of actuator: spring open - air close spring open: Line **U - A** open
S-S Inclined seat valve Type:5502	 Fig. A - I	 Fig. B - I
S-S Angle valve Type:5506	 Fig. A - II	 Fig. B - II

Pfeile = Fließwege
Gelb = Medium A
Weiß = Medium B

SS-S **T-valve** **Type:5508**	**Basic position: Normally closed (NC)** kind of actuator: air open - spring close spring close: Line **U - AB** closed  Fig. A - III	**Basic position: Normally open (NO)** kind of actuator: spring open - air close spring open: Line **U - AB** open  Fig. B - III
SS-SS **Cross valve** **Type:5512**	**Basic position: Normally closed (NC)** kind of actuator: air open - spring close spring close: Line **U - AB** closed  Fig. A - IV	**Basic position: Normally open (NO)** kind of actuator: spring open - air close spring open: Line **U - AB** open  Fig. B - IV
S-SS **Loop valve** **Type:5518**	**Basic position: Normally closed (NC)** kind of actuator: air open - spring close spring close: Line **U - A** closed  Fig. A - V	**Basic position: Normally open (NO)** kind of actuator: spring open - air close spring open: Line **U - A** open  Fig. B - V
S-S-S **Change-over valve** **Type:5514**	**Basic position: air open - spring close** air open: Line **U - D** closed spring close: Line **A - D** open  Fig. A - VI	**Basic position: spring open - air close** spring open: Line **U - D** open air close: Line **A - D** closed  Fig. B - VI
SS-S-S **Change-over valve** **Type:5516**	**Basic position: air open - spring close** air open: Line **U - D** closed spring close: Line **AB - D** open  Fig. A - VII	**Basic position: spring open - air close** spring open: Line **U - D** open air close: Line **AB - D** closed  Fig. B - VII
S **Tank outlet valve** **Type:5528**	**Basic position: Normally closed (NC)** kind of actuator: air open - spring close spring close: Line **U - A** closed  Fig. A - VIII	**Basic position: Normally open (NO)** kind of actuator: spring open - air close spring open: Line **U - A** open  Fig. B - VIII
SS **Tank outlet valve** **Type:5528**	**Basic position: Normally closed (NC)** kind of actuator: air open - spring close spring close: Line **U - AB** closed  Fig. A - IX	**Basic position: Normally open (NO)** kind of actuator: spring open - air close spring open: Line **U - AB** open  Fig. B - IX

Arrows = Flow line

Yellow = Medium A
White = Medium B

5.3 Pneumatic valve actuation

➤ Actuator: air open - spring close (NC)

Valve function	Pneum. activation by solenoid valves in the control unit	Pneum. activation by external solenoid valves
Valve “OPEN“	control air feed P ➟ MV1 ➟ P1/LA2 Valve is opening by control air	control air feed external MV ➟ LA2 Valve is opening by control air
Valve “CLOSED“	de-aeration LA2/P1 ➟ MV1 ➟ R Valve is closing by spring	de-aeration LA ➟ ext. MV Valve is closing by spring

➤ Actuator: spring open - air close (NO)

Valve function	Pneum. activation by solenoid valves in the control unit	Pneum. activation by external solenoid valves
Valve “CLOSED“	control air feed P ➟ MV1 ➟ P1/LA1 Valve is closing by control air	control air feed external MV ➟ LA1 Valve is closing by control air
Valve “OPEN“	de-aeration P1/LA1 ➟ MV1 ➟ R Valve is opening by spring	de-aeration LA1 ➟ ext. MV Valve is opening by spring

➤ Actuator: air open - air close (DA)

Valve function	Pneum. activation by solenoid valves in the control unit	Pneum. activation by external solenoid valves
Valve “OPEN“	control air feed P ➟ MV1 ➟ P1/LA1 Valve is opening by control air	control air feed external MV ➟ LA1 Valve is opening by control air
Valve “CLOSED“	control air feed P ➟ MV3 ➟ P3/LA2 Valve is closing by control air	control air feed ext. MV ➟ LA2 Valve is closing by control air

MV = solenoid valve
R = de-aeration, sound absorber
P = compressed-air inlet (control unit)
LA = compressed air inlet (actuation)
S = slide switch - manual control (solenoid valves)

E= Sensor mounting
LA = air connection
Si= Sensors inductive

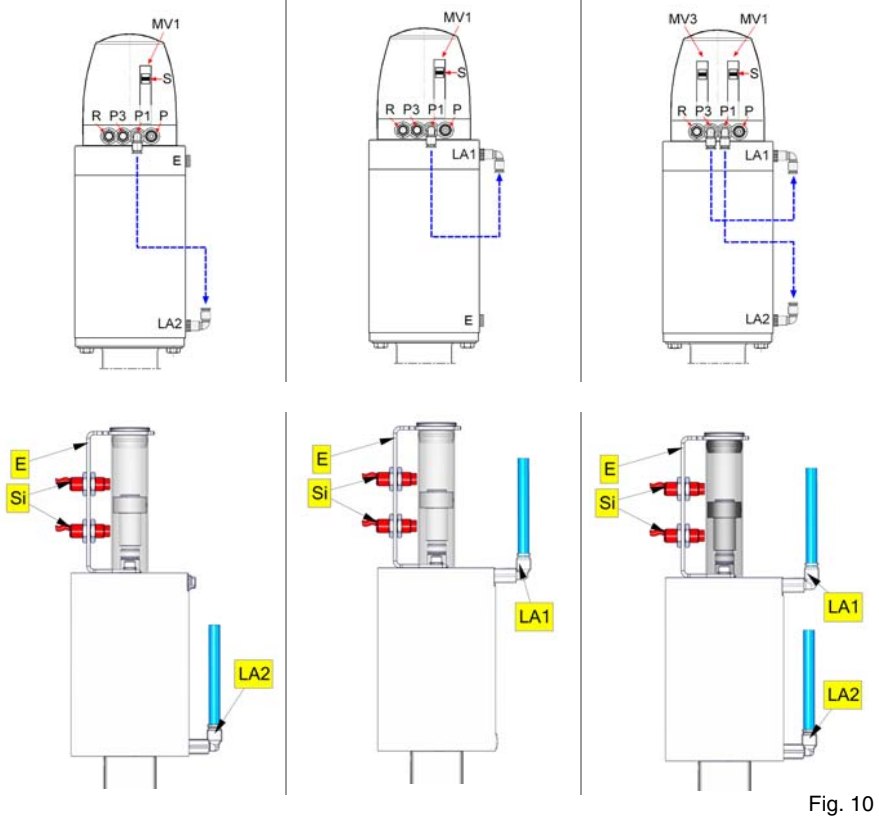


Fig. 10

5.4 Control system and feedback unit

➤ Control head -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.

5.5 Installation instructions

Preferably install the Single seat valve vertically. Install the connection lines in such a way as to permit the liquids to drain freely out of the housing.

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

Valves with welded ends that serve as connecting members can be directly welded to the piping.

➤ 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 (EN287). Use the TIG (Tungsten Inert Gas) welding process.

NOTICE
- Impurities can cause damage to the seals and seals area. Clean inside areas prior to assembly.
- To avoid a distortion of the components, all welding parts must be welded to stress-relieved.

➤ 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).

5.6 Service and maintenance

➤ Service

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

NOTICE		**Lubricant recommendation**
EPDM; Viton; k-flex; NBR; HNBR	⇨	Klüber Paraliq GTE703*
Silicone	⇨	Klüber Sintheso pro AA2*
Thread	⇨	Interflon Food Grease*

**) 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.*

➤ Actuator

The actuator is maintenance-free and non-removable.

➤ Cleaning

Cleaning of the upper and lower valve chambers is performed with the pipe cleaning system.

5.7 *Technical data*

Model:	Single seat valves - manual and pneumatic operation
Valve size::	DN 25 - DN 100 DN 1 Inch- DN 4 Inch
Connections:	Welding end DIN EN10357
Temperature range:	- Ambient temperature: +4° - +45°C - Product temperature: +0° - +95°C medium dependent - Sterilization temperature: EPDM +140°C short time (30min) HNBR +130°C short time (30min)
Control air pressure:	DN 25 - DN 65 / DN 1“ - DN 2½“ = min. 5,5 bar DN 80 - DN 100 / DN 3“ - DN 4“ = min. 6,0 bar
Pressure Nominal (bar):	PN16
Quality of control air:	ISO 8573-1 : 2001 Güteklasse 3

Material:	**in product contact**	**not in product contact**
Stainless steel:	1.4404 / AISI316L	1.4301 / AISI304 1.4305 / AISI303
Surfaces:	RA ≦0,8µm	metallisch blank, e-pol.
Seal:	EPDM (FDA) HNBR (FDA)	HNBR

		Nominal diameter DN						
Tightening moment: *(Retaining clamp)*	DIN INCH	25 1	40 1½	50 2	65 2½	80 3	100 4	125 5
Torque:	Nm	15	15	15	25	25	55	-

➤ Operating Pressure

manual operating

DIN INCH	25 1	40 1½	50 2	65 2½	80 3	100 4	125 5
Actuator	Hand wheel	Hand wheel	Hand wheel	Hand wheel	Hand wheel	Hand wheel	Hand wheel

	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
manual operating		10			10			10			10			10			10			-	

pneumatic operating

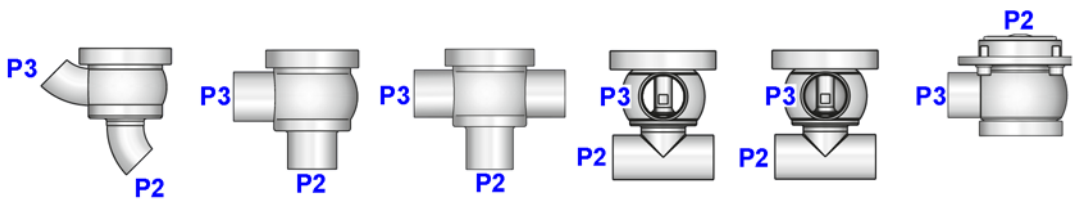
DIN INCH	25 1	40 1½	50 2	65 2½	80 3	100 4	125 5
Standard - Actuator	Ø104	Ø104	Ø104	Ø129	Ø167	Ø167	-
Actuator	Ø129	Ø129	Ø129	Ø167	Ø230	Ø230	-

pneum. Single seat valves: *Typ: 5502, 5506, 5508, 5512, 5518, 5528*	P2	P3	P2	P3	P2	P3	P2	P3	P2	P3	P2	P3	P2	P3
air open / spring close	9,5	10,5	8,0	12	6,0	9,0	6,0	8,0	9,0	8,7	6,0	5,6	-	-
	16	16	12,7	16	9,8	13,8	12,5	12,4	13,5	16	9,2	12,7	-	-
spring open / air close	9,5	11	7,5	12	6,5	8,0	6,0	8,0	6,3	11,2	4,2	7,3	-	-
	12,6	16	12,6	16	9,7	13,7	9,9	15,3	13,6	16	9,2	12,3	-	-
air open / air close	9,5	11	8,0	12	6,5	9,0	6,0	8,0	9,0	11,2	12,0	13,7	-	-
	16	16	12,7	16	9,8	13,8	12,5	15,3	13,6	16	16,0	16,0	-	-

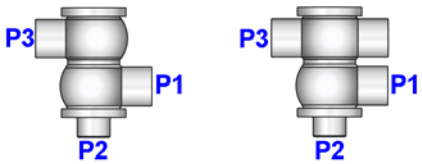
pneum. Change-over valves *Typ: 5514 - 5516*	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3	P1	P2	P3
air open / spring close	8,0	8,9	6,8	8,0	7,7	6,8	8,0	7,0	6,8	8,7	7,1	6,5	7,1	7,5	5,3	6,9	5,5	5,3	-	-	-
	13,8	15,5	10,3	13,8	13,4	10,3	13,8	12,1	10,3	16	15,0	10,2	11,1	12,3	12	11,1	9,2	12,2	-	-	-
spring open / air close	8,3	8,6	7,1	7,8	7,4	7,1	7,4	6,6	7,1	8,8	7,2	6,6	7,2	7,5	5,4	6,0	4,4	6,4	-	-	-
	13,3	13,7	12,1	12,5	11,6	12,1	11,9	10,3	12,1	13,6	10,6	14,1	14,7	16	8,5	13,5	11,4	9,4	-	-	-
air open / air close	8,3	8,9	7,1	8,0	7,7	7,1	8,0	7,0	7,1	8,8	7,2	6,6	7,2	7,5	5,4	6,9	5,5	6,4	-	-	-
	13	15,5	12,1	13,8	13,4	12,1	13,8	12,1	12,1	16	15	14,1	14,7	16	12	13,5	11,4	12,2	-	-	-

- Values in bar (up to max. valve pressure PN = 16 bar)
- at control air pressure 5,5 - 6,0 bar

Single seat valves:
Typ: 5501 - 5502
5505 - 5506
5507 - 5508
5511 - 5512
5517 - 5518
5527 - 5528



Change-over valves:
Typ: 5513 - 5516



6. Disassembly / Assembly

6.1 Valve with manual operation

NOTICE
- All threaded joint have right-hand thread.

A1 ⇨
- Unscrew the clamp coupling (VK).
- Dismount the valve insert (VE2) out of the housing (VG).

➤ Disassembly

Replacement of seals

A2 ⇨
- Unscrew the thumb screw (19). Remove the crank handle (17), washer (15) and (16).

A3 ⇨
- Changeover valve Type 5513 / 5515 ⇨ Unscrew the piston plate (9) from the piston (1b) via spanner flat (SW1/SW2). Remove O-Ring (D7) and seal (D6).
- Unscrew piston (1a) resp. (1b) ouf of the spindle (11) via (SW2/SW5). Remove O-Ring (D1).

A4/5 ⇨
- Unscrew the insert (2) from the lantern (4) (use a hook wrench). Remove the O-Ring (D2) and seal (D3).

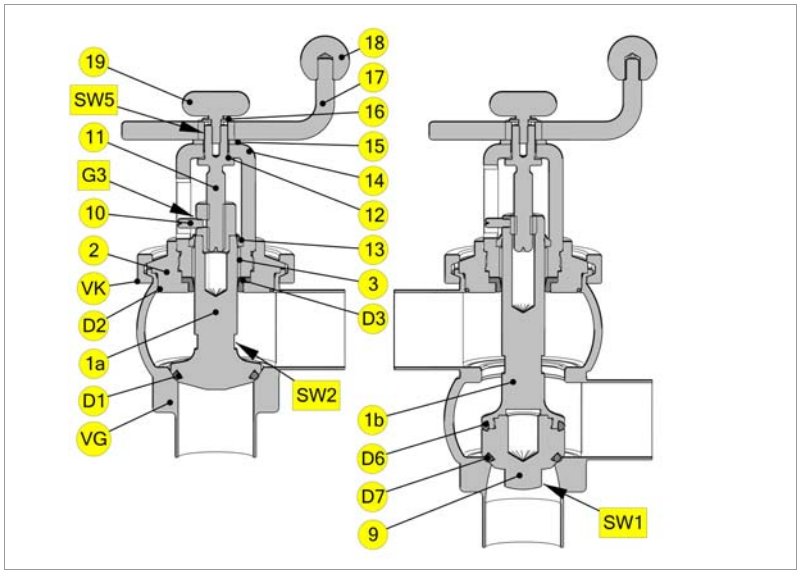
NOTICE
- Puncture the seal (D1) and (D7) at the centre with a pointed tool and remove them carefully from the groove.
- Bearing bush (3) and the scraper ring (13) do not need to be removed for a seal change. The races are not included in the seal set. If they are worn, please order them with the seals (see wearing parts set).

➤ Assembly

- Thoroughly clean and slightly lubricate mounting areas and running surfaces.

NOTICE
- Mount seal (D6) with the mounting tool centre ring M1.
- (see “Assembly seal D6” on page 17)
- Alternately press and roll the seal (D1) and (D7) into the groove with round body.

- Thread connection (G3) assembly with ⓘ ***removeable screw retention (e.g. Loctite 243)***
- Assemble in reverse order.
- Check the valve function.



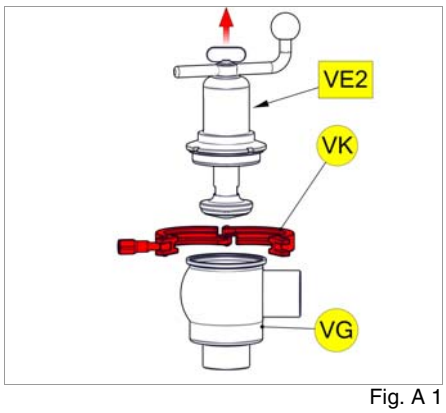


Fig. A 1

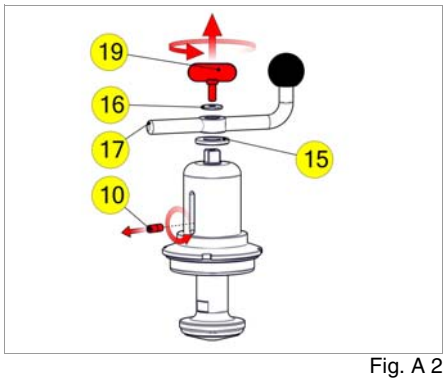


Fig. A 2

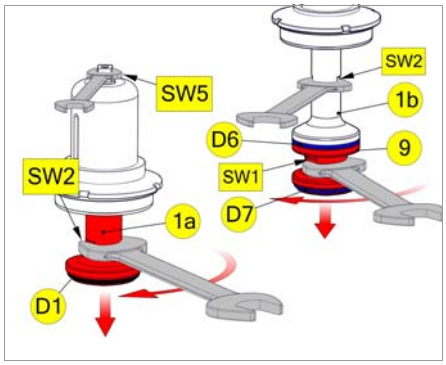


Fig. A 3

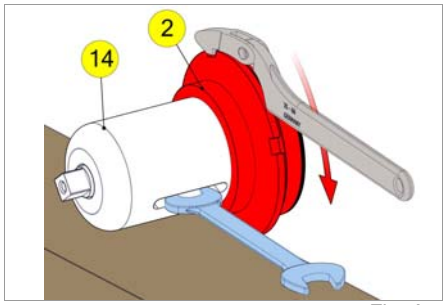


Fig. A 4

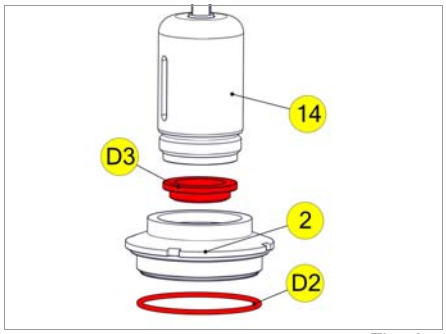


Fig. A 5

6.2 Valve with pneum. operation

NOTICE
All threaded joint have right-hand thread.
- Unscrew and remove control air, steam resp. cleaning lines and electrical lines, complete sensor mounting or control head.

Remove pneum. valve insert (NC)

B1 ⇨ • Charge the valve at connection LA2 with compressed air - the piston retracts.

B2 ⇨ • Unscrew the clamp coupling (VK). Dismount the valve insert (VE1) out of the housing (VG).

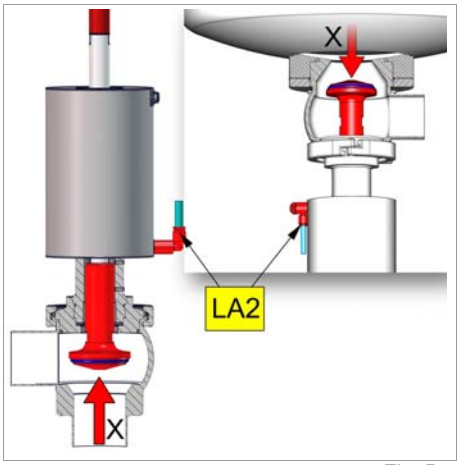


Fig. B 1

Remove pneum. valve insert (NO) (DA)

B2 ⇨ • Unscrew the clamp coupling (VK). Dismount the valve insert (VE1) out of the housing (VG).

➤ Disassembly

Replacement of seals

B3 ⇨ • Changeover valve Type 5514 / 5516 ⇨ Unscrew the piston plate (9) from the piston (1d) via spanner flat (SW1/SW2). Remove O-Ring (D7) and seal (D6).
- Unscrew piston (1c) resp. (1d) ouf of the spindle (6) via (SW2/SW4). Remove O-Ring (D1).

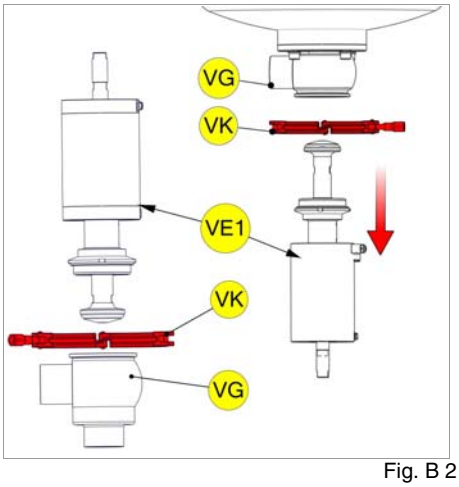


Fig. B 2

NOTICE
- Puncture the seal (D1) and (D7) at the centre with a pointed tool and remove them carefully from the groove.

B4/7 ⇨ • Unscrew the insert (2) from the lantern (4) (use a hook wrench).Remove the O-Ring (D2) and seal (D3).

NOTICE
- Bearing bush (3) and (5) and O-Rings (D4) and (D5) do not need to be removed for a seal change. The races are not included in the seal set. If they are worn, please order them with the seals (see wearing parts set).

B5/7 ⇨ • Unscrew the lantern (4) from the actuator (7) (use a pin wrench at hole B) and remove lantern from the spindle (6). Dismantle O-Rings (D4) and (D5).

B6/7 ⇨ • Unscrew insert (8) from the actuator (7) (use a pin type face wrench).
- Dismantle O-Rings (D4) and (D5).

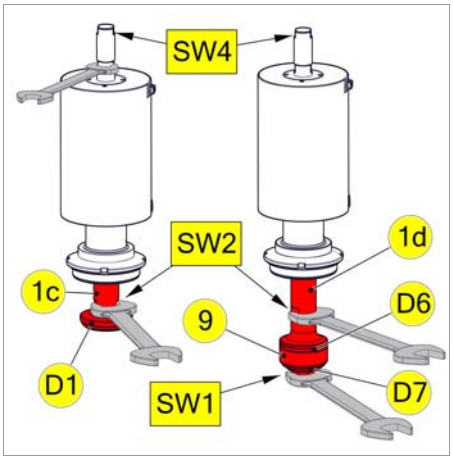


Fig. B 3

➤ Assembly

- Thoroughly clean and slightly lubricate mounting areas and running surfaces.

NOTICE
- Mount seal (D6) with the mounting tool centre ring M1.
(see “Assembly seal D6” on page 17)
- Alternately press and roll the seal (D1) and (D7) into the groove with round body.

- Thread connection (G1) and (G2) assembly with ⓘ ***removeable screw retention (e.g. Loctite 243)***
- Assemble in reverse order.
- Check the valve function.

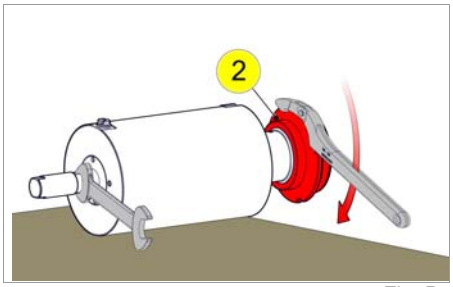


Fig. B 4

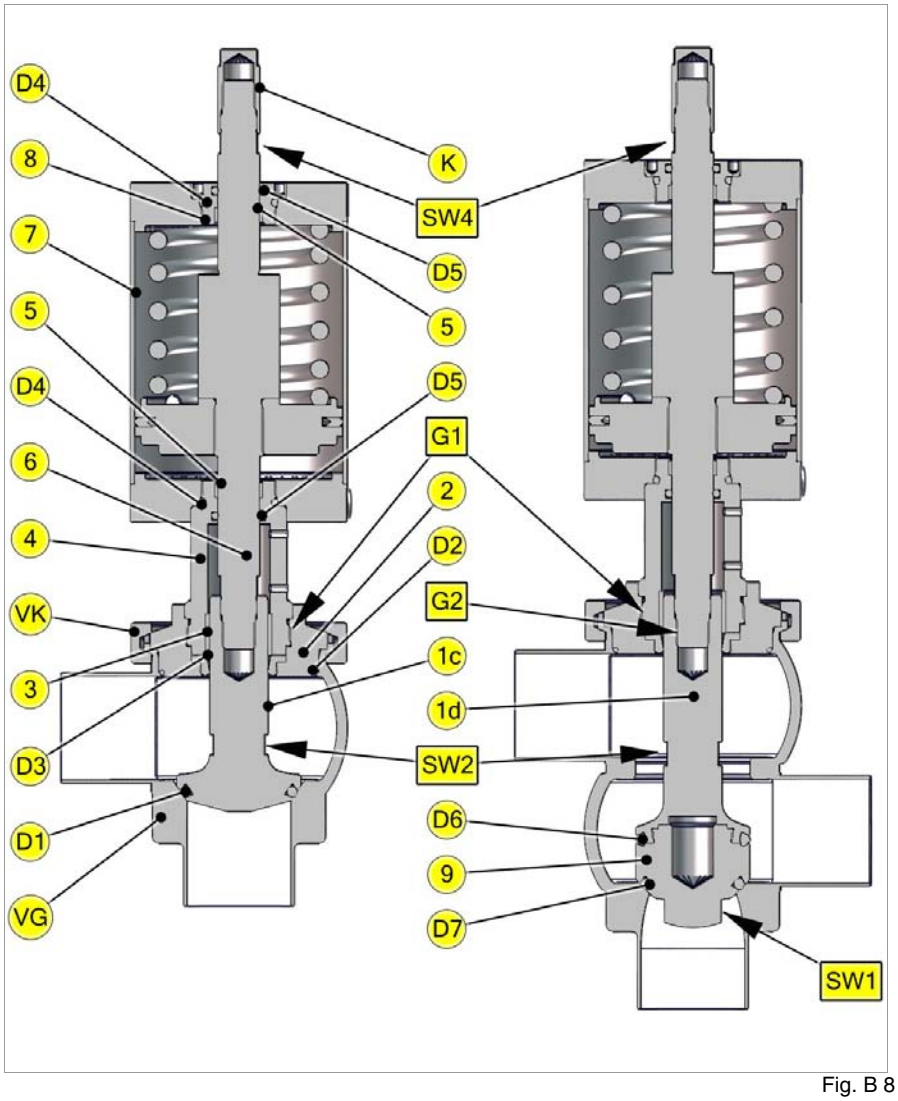


Fig. B 8

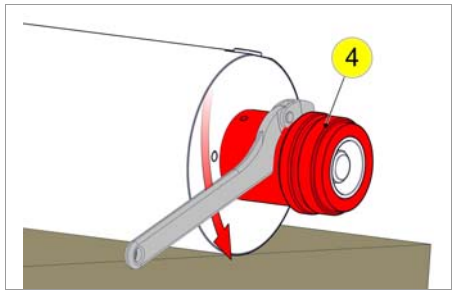


Fig. B 5

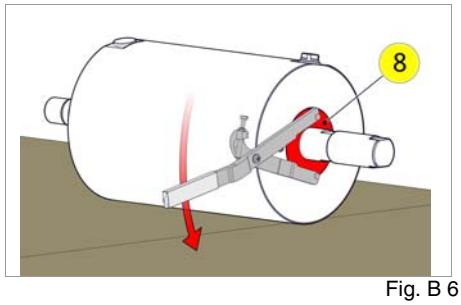


Fig. B 6

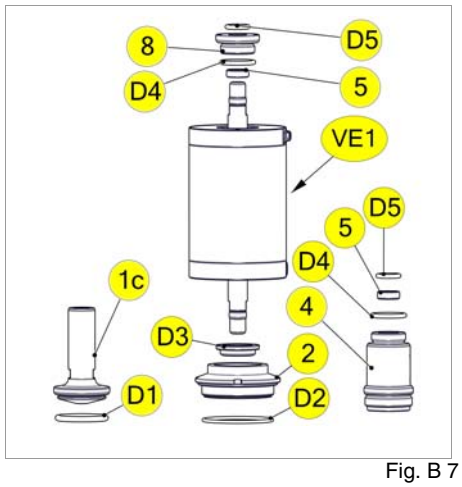


Fig. B 7

6.3 Tank outlet valve

➤ Replacement the seal (FL-D)

C1 ⇨
- Unscrew the screws (FL-S).
- Remove valve housing (VG) with flange (FL2) and O-ring (FL-D).
- Remove the retaining ring (FL-SR) and remove the flange (FL2 from the housing (VG).

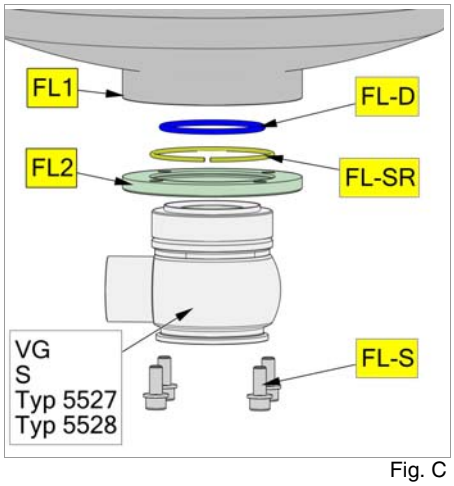


Fig. C 1

6.4 Assembly seal D6

➤ Mounting tools

	**M1** **Centre ring**	DN25/40/50 DN65 DN80 DN100	5620 050 025-020 5620 065 025-020 5620 080 025-020 5620 100 025-020

D1 ⇨ • Install the backup ring (D2-2) in the seal jacket (D4-1).

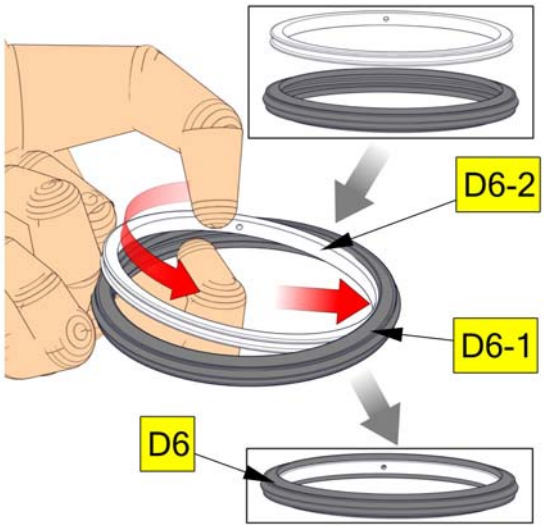


Fig. D 1

D2 ⇨ • Clamp the piston plate (9) into the vice.
Screw inn the piston (1d) into the piston plate (9) till to the metal limit stop by hand.

Make a coloured mark at the piston surfaces.
After then, unscrew the piston (1d) again.

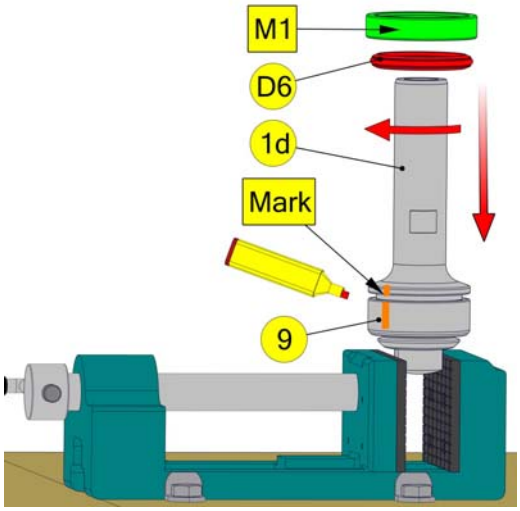


Fig. D 2

D3 ⇨ • Push the seal (D6) of the piston plate (9).
Screw together the piston (1d) and the piston plate (9).

Position the centre ring (M1) on seal (D6).
Screw up the piston (1d) to the final limit mark with a wrench.

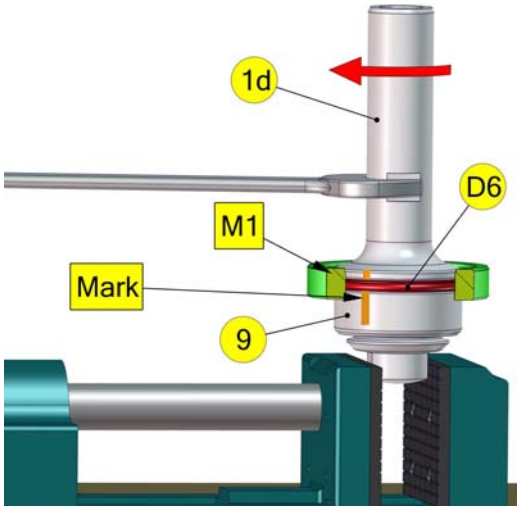


Fig. D 3

7. Drawings and Dimensions

K = Cap
VE1.1 = Valve insert pneumatical Angle valves
VE1.2 = Valve insert pneumatical Change-over valves
VE2.1 = Valve insert manual Angle valves
VE2.2 = Valve insert manual Change-over valves
VK = Clamp coupling
VG = Valve housing

6 = Spindle
A1.1 = Control head with stainless cap and 360° flashing light
A1.2 = Control head with plastic cap
IG = Position indication
IG1 = Threaded rod
IG2 = Disc
IG3 = Nut
IG4 = Spring
M = Magnet

E = Sensor mounting with finger guide
E1 = Sensor bracket
E2 = Switch cam
E3 = Setscrew
E4 = Screw
E5 = Disk
E6 = Sleeve transparent
E7 = Cover

FL1 = Tank flange (not included in the delivery)
FL2 = Housing flange
FL-D = O-Ring (not included in the delivery)
FL-S = Screw
FL-SR = Retaining ring

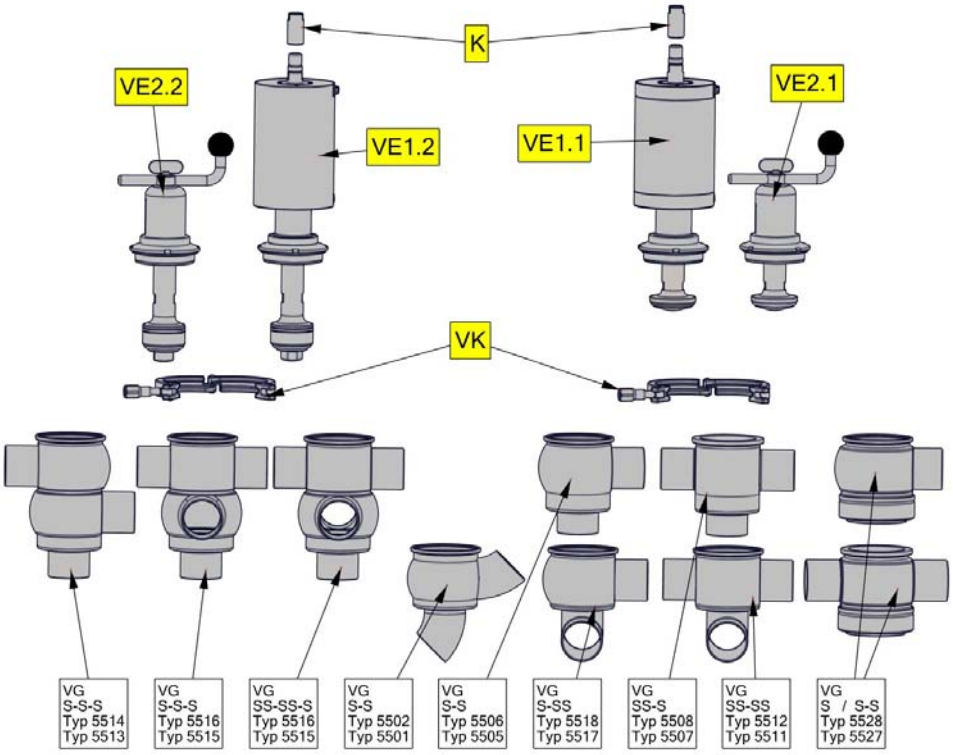


Fig. 7 - 2

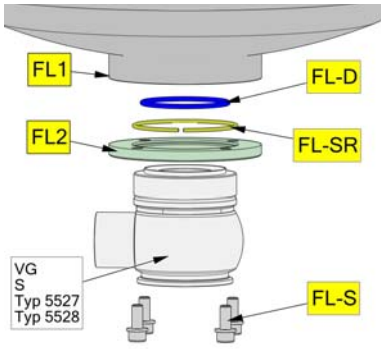


Fig. 7 - 3

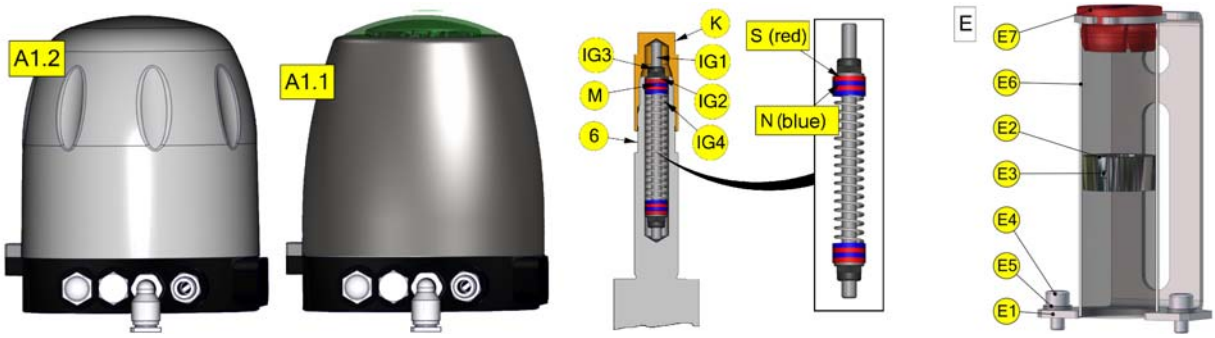


Fig. 7 - 4

➤ Valve insert (VE)

Illustration: **manual operation** - Angle valve insert 5505 050 020-041 - Change over valve insert 5513 050 020-041

pneumatic operation (air open / spring close) - Angle valve insert 5506 050 020-041 - Change over valve insert 5514 050 020-041

1a = Piston Angle valve - manual
1b = Piston Changeover valve - manual
1c = Piston Angle valve - pneumatic
1d = Piston Changeover valve - pneumatic
2 = Insert
3 = Bearing bush
4 = Lantern
5 = Bearing bush
6 = Spindle
7 = Actuator
8 = Insert- Lantern
9 = Piston rod
10 = Setscrew
11 = Spindle
12 = Bearing bush
13 = Scraper ring
14 = Housing cover
15 = Disc
16 = Disc
17 = Crank handle
18 = Spherical button
19 = Thumb screw

D1 = O-Ring
D2 = O-Ring
D3 = Seal
D4 = O-Ringe
D5 = O-Ringe
D6 = Seal
D7 = O-Ring

B = Bore
G1 - G3 = Thread connection locking with lock nut detachable (e.g. Loctite 243)
G4 = Thread connection locking with lock nut high-strength (e.g. Loctite 2701)

SW = Wrench size

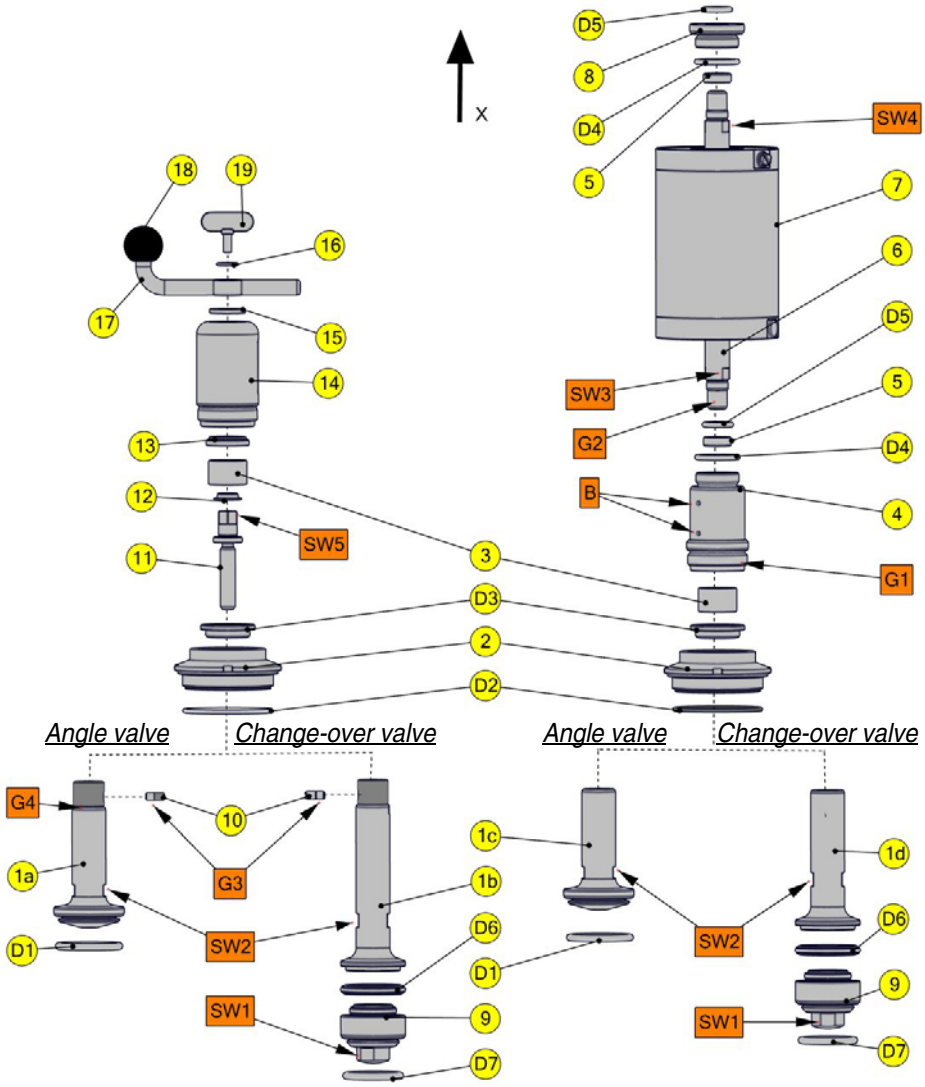


Fig. 7 - 5

DN = Nominal pipe size
SW = Wrench size

	SW1	SW2	SW3	SW4	SW5	adjustable hook or pin wrench type A pin wrench type B hook wrench	adjustable pin type face wrench D40-80mm pin ø5 / ø6
DN 25 / 1 inch	19	24	17	17	11	Form A DN25-100: 8028 025 100-020 DN125: 8028 125 150-020 Form B (to 2015) ø4: 8027 000 060-000 (from 2015) ø6: 8027 000 065-000	ø5 (to 2015) 8028 340 085-000 ø6 (from 2015) 8028 340 080-000
DN 40 / 1½ inch	24						
DN 50 / 2 inch	24						
DN 65 / 2½ inch	36						
DN 80 / 3 inch	27						
DN 100 / 4 inch							
DN 125 / 5 inch							

7.1 Dimensions

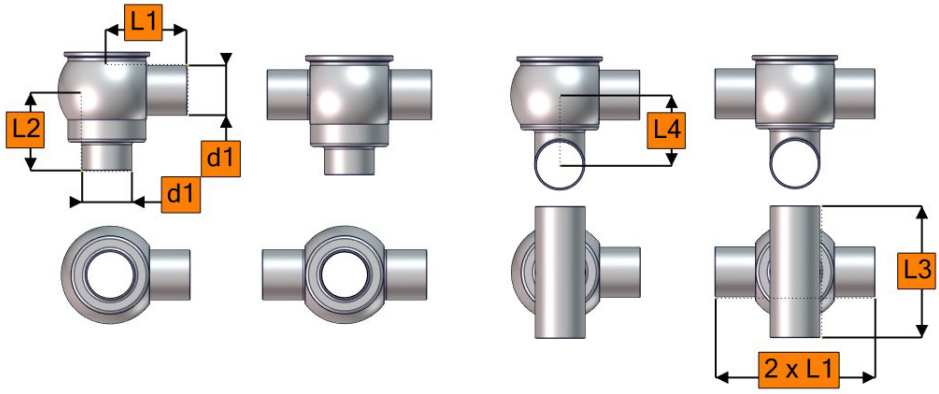
➤ Housing (VG)

Angle valve

T-valve

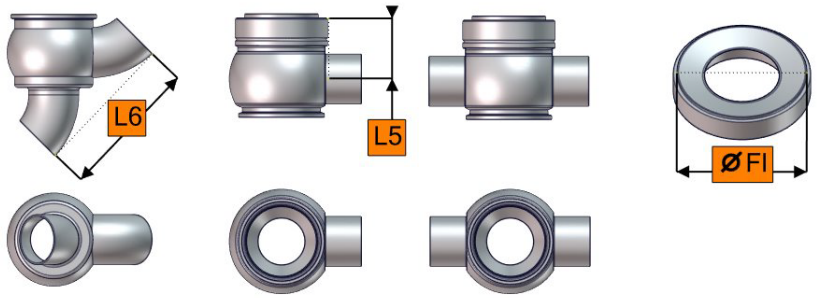
Loop valve

Cross valve



Inclined seat valve

Tank outlet valve
S
SS



Change-over valve
S - S - S
SS - S - S

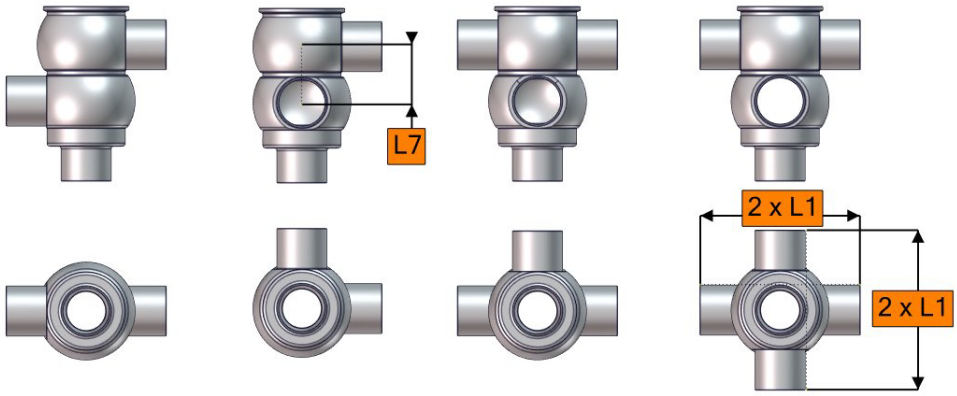


Fig. 7 - 6

DN	d1	d3	L1	L2	L3	L4	L5	L6	L7	Ø Fl
25 1 Inch	ø 29 x 1,5 ø 25,4 x 1,65	ø 100	75	75	100	57	70,5	126	36 32	ø 100
40 1½ Inch	ø 41 x 1,5 ø 38,1 x 1,65	ø 125	85	85	120	66	70,5	138	48 45	ø 125
50 2 Inch	ø 53 x 1,5 ø 50,8 x 1,65	ø 138	85	85	140	74,5	69,5	150	60 57,5	ø 138
65 2½ Inch	ø 70 x 2,0 ø 63,5 x 1,65	ø 165	105	105	160	96	78,5	185	76 70	ø 165
80 3 Inch	ø 85 x 2,0 ø 76,1 x 2,0	ø 176	115	115	180	122	101,5	219	91 83	ø 176
100 4 Inch	ø 104 x 2,0 ø 101,6 x 2,0	ø 209	130	130	200	144	120	247	110 108	ø 209
125 5 Inch	ø 129 x 2,0 ø 127 x 2,0	-	-	-	-	-	-	-	-	ø 238

➤ Control system and feedback unit

- Control head KI-Top transparent
- Control head KI-Top stainless steel
- Feedback unit

Fig. 7 - 7

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

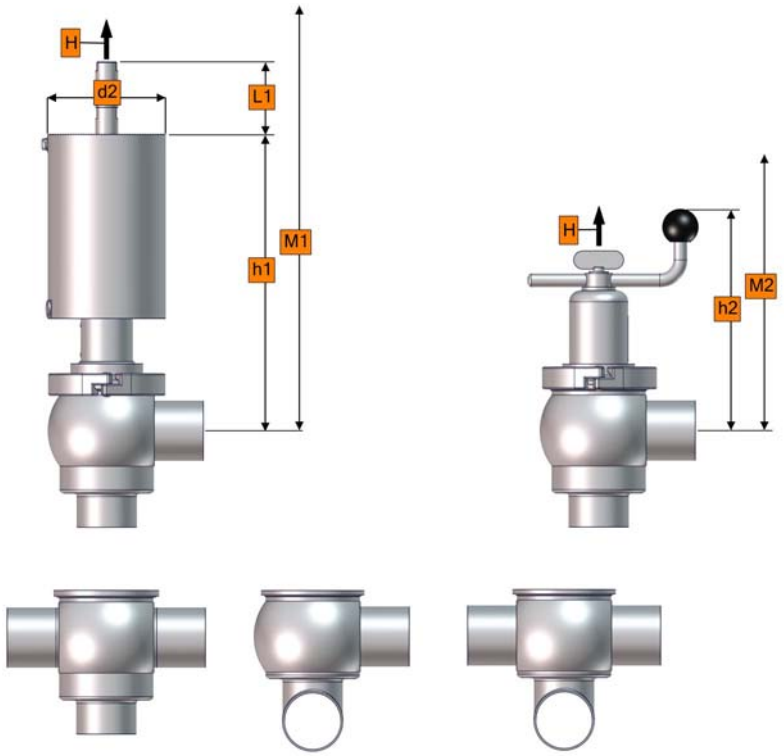


Fig. 7 - 8

DN	d2	h1	h2	M1[1]	M2	L1		H (stroke)	
				Installation dimension		NO	NC	pneum.	manual
25 1 Inch	ø 104	249 248	184	~440	~240	82 86	93 93	11 7	14 10
40 1½ Inch	ø 104	255 253,5	190	~460	~255	70 73,5	93 93	23 19,5	25 22,5
50 2 Inch	ø 104	261 260,5	196	~480	~280	69 61,5	93 93	24 21,5	26 23,5
65 2½ Inch	ø 129	269 266	204	~515	~310	69 75	93 93	24 18	26 20
80 3 Inch	ø 167	276,5 272,5	211	~540	~310	64,5 64,5	93 93	28,5 28,5	30,5 21,5
100 4 Inch	ø 167	286 285	221	~565	~370	64,5 67	93 93	28,5 26	30,5 28
125 5 Inch	-	-	-	-	-	-	-	-	-

Valves that do not meet the catalogue standards, can lead to dimensional deviations.
air open - spring closed = NC; air closed - spring open = NO

1. *Installation dimension M1 are incl. control head or end sensor mounting*

➤ Inclined seat valve

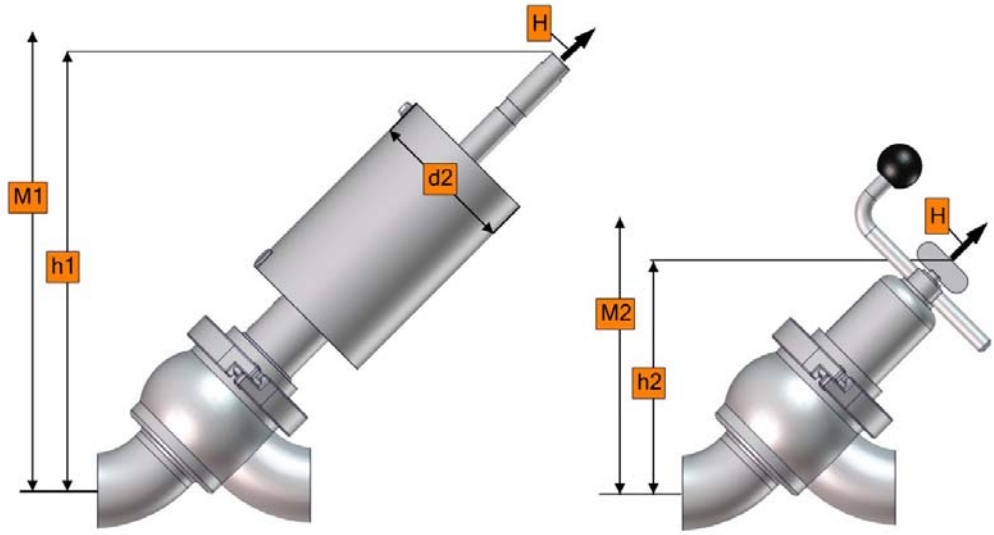


Fig. 7 - 9

DN	d2	h1		h2	M1[1]	M2	H (stroke)	
		lö-fs	ls-fö		Installation dimension		pneum.	manual
25 1 Inch	ø 104	277 -	291 -	147 -	~330	~266	11 7	14 10
40 1½ Inch	ø 104	275 -	298 -	153 -	~370	~281	23 19,5	25 22,5
50 2 Inch	ø 104	282 -	305 -	160 -	~390	~299	24 21,5	26 23,5
65 2½ Inch	ø 129	298 -	321 -	177 -	~440	~331	24 18	26 20
80 3 Inch	ø 167	311 -	338 -	193 -	~450	~358	28,5 28,5	30,5 21,5
100 4 Inch	ø 167	330 -	357 -	212 -	~500	~394	28,5 26	30,5 28
125 5 Inch	-	-	-	-	-	-	-	-

Valves that do not meet the catalogue standards, can lead to dimensional deviations.
air open - spring closed = NC; air closed - spring open = NO

1. *Installation dimension M1 are incl. control head or end sensor mounting*

➤ Tank outlet valve

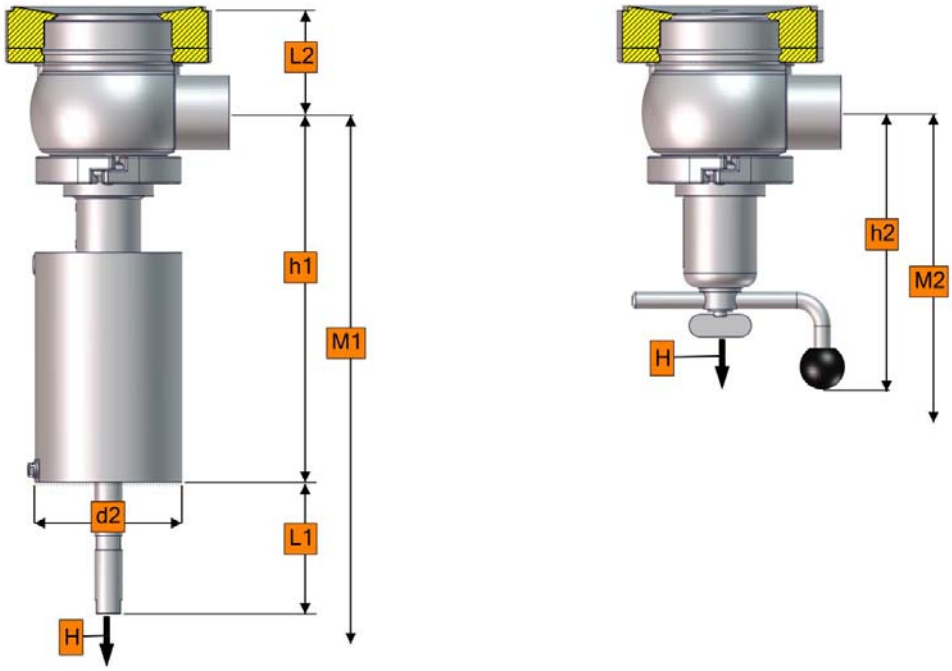


Fig. 7 - 10

DN	d2	h1	h2	M1[1]	M2	L1		L2	H (stroke)	
				Installation dimension		NO	NC		pneum.	manual
25 1 Inch	ø 104	249 -	185 -	~490	~355	82 -	93 -	72 -	11 -	14 -
40 1½ Inch	ø 104	255 -	189,5 -	~500	~365	70 -	93 -	73 -	23 -	25 -
50 2 Inch	ø 104	261 -	195 -	~510	~380	69 -	93 -	71,5 -	24 -	26 -
65 2½ Inch	ø 129	269 -	204 -	~550	~425	69 -	93 -	81 -	24 -	26 -
80 3 Inch	ø 167	276,5 -	211,5 -	~580	~485	64,5 -	93 -	105 -	28,5 -	30,5 -
100 4 Inch	ø 167	286 -	221 -	~630	~545	64,5 -	93 -	125 -	28,5 -	30,5 -
125 5 Inch	-	-	-	-	-	-	-	-	-	-

Valves that do not meet the catalogue standards, can lead to dimensional deviations.
air open - spring closed = NC; air closed - spring open = NO

1. *Installation dimension M1 are incl. control head or end sensor mounting*

8. Wearing parts

8.1 Wearing parts

Pos.	Material	Stk.	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2 Inch	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4 Inch
3	XSM	1x	Bearing bush 8050 028 020-156					
5	XSM	2x	Bearing bush 8050 020 007-156					
13	NBR	1x	Scraper ring 2330 028 007-055					
D1	EPDM HNBR	1x	O-Ring 2304 041 035-159 2304 041 035-157		O-Ring 2304 044 053-159 2304 044 053-157	O-Ring 2304 053 053-159 2304 053 053-157	O-Ring 2304 069 053-159 2304 069 053-157	O-Ring 2304 088 053-159 2304 088 053-157
D2	EPDM HNBR	1x	O-Ring 2304 069 026-159 2304 069 028-050			O-Ring 2304 082 026-159 2304 082 026-050	O-Ring 2304 098 035-159 2304 098 035-050	O-Ring 2304 117 035-159 2304 117 035-050
D3	EPDM HNBR	1x	Seal 5506 050 009-054 Seal 5506 050 009-050					
D4	NBR	2x	O-Ring 2304 030 035-055					
D5	HNBR	2x	O-Ring 2304 019 035-171					
D6	EPDM complete seal jacket backup ring	1x	Seal **5621 055 025-084** 5621 055 026-084 5621 055 027-020			Seal **5621 065 025-084** 5621 065 026-084 5621 065 027-020	Seal **5621 100 025-084** 5621 100 026-084 5621 100 027-020	
	HNBR complete seal jacket backup ring	1x	Seal **5621 055 025-171** 5621 055 026-171 5621 055 027-020			Seal **5621 065 025-171** 5621 065 026-171 5621 065 027-020	Seal **5621 100 025-171** 5621 100 026-171 5621 100 027-020	
D7	EPDM HNBR	1x	O-Ring 2304 038 053-159 2304 038 053-171			O-Ring 2304 047 053-170 2304 047 053-171	O-Ring 2304 069 053-159 2304 069 053-157	O-Ring 2304 083 050-069 2304 083 050-157
FL-D	EPDM HNBR/NBR	1x	O-Ring 2304 057 035-054 2304 057 035-050	O-Ring 2304 063 053-170 2304 063 053-050	O-Ring 2304 075 040-054 2304 075 040-055	O-Ring 2304 090 040-170 2304 090 040-050	O-Ring 2304 102 050-159 2304 100 050-050	O-Ring 2304 133 053-159 2304 133 053-050

Seal (6) with backup ring

8.2 Wearing kits

➤ **Angle valve Type: 5505, 5506, 5507, 5508, 5511, 5512**
Seals (D1), (D2), (D3)

	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2 Inch	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4 Inch
HNBR	5506 025 990-050	5506 040 990-050	5506 050 990-050	5506 065 990-050	5506 080 990-050	5506 100 990-050
EPDM	5506 025 990-054	5506 040 990-054	5506 050 990-054	5506 065 990-054	5506 080 990-054	5506 100 990-054

➤ **Change-over valve Type: 5513, 5514, 5515, 5516**
Seals (D2), (D3), (D6), (D7)

	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2 Inch	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4 Inch
HNBR	5514 050 990-050			5514 065 990-050	5514 080 990-050	5514 100 990-050
EPDM	5514 050 990-054			5514 065 990-054	5514 080 990-054	5514 100 990-054

Seal (D6) without backup ring

➤ Tank outlet valve Type: 5527 und 5528

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

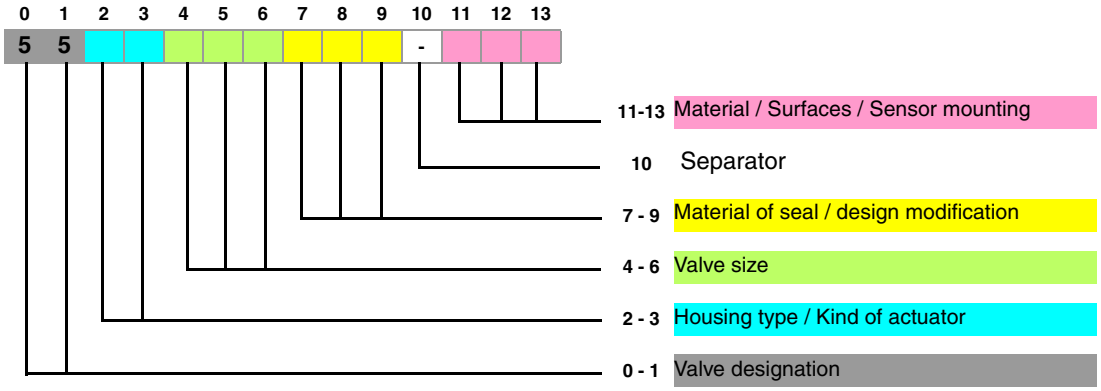
	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2 Inch	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4 Inch
HNBR	5528 025 990-050	5528 040 990-050	5528 050 990-050	5528 065 990-050	5528 080 990-050	5528 100 990-050
EPDM	5528 025 990-054	5528 040 990-054	5528 050 990-054	5528 065 990-054	5528 080 990-054	5528 100 990-054

Welding flange FL1

Pos.	Material	Stk.	DN 25 1 Inch	DN 40 1½ Inch	DN 50 2 Inch	DN 65 2½ Inch	DN 80 3 Inch	DN 100 4 Inch
FL1	1.4404 AISI316L	1x	5727 025 001-040	5727 040 001-040	5727 050 001-040	5727 065 001-040	5727 080 001-040	5727 100 001-040
FL-D	EPDM HNBR/NBR	1x	O-Ring 2304 057 035-054 2304 057 035-050	O-Ring 2304 063 053-170 2304 063 053-050	O-Ring 2304 075 040-054 2304 075 040-055	O-Ring 2304 090 040-170 2304 090 040-050	O-Ring 2304 102 050-159 2304 100 050-050	O-Ring 2304 133 053-159 2304 133 053-050

9. Classification

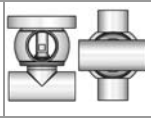
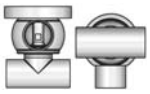
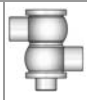
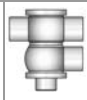
9.1 Structure of Order Number



➤ **0 - 1 Valve designation** **55**xx xxx xxx - xxx

Typ 55xx Single seat valve KI-DS

➤ **2 - 3 Housing type / Kind of actuator**

	S-S	S-S	SS-S	SS-SS	S-SS	S-S-S	SS-S-S	S SS
manual	Type:55**01**	Type:55**05**	Type:55**07**	Type:55**11**	Type:55**17**	Type:55**13**	Type:55**15**	Type:55**27**
pneumatic	Typ:e55**02**	Type:55**06**	Type:55**08**	Type:55**12**	Type:55**18**	Type:55**14**	Type:55**16**	Type:55**28**
								

➤ **4 - 6 Valve size** 55xx **XXX** xxx - xxx

025 =	DN 25	065 =	DN 65	026 =	DN 1"	064 =	DN 2½"
040 =	DN 40	080 =	DN 80	038 =	DN 1½"	076 =	DN 3"
050 =	DN 50	100 =	DN 100	051 =	DN 2"	101 =	DN 4"

➤ **7 - 9 Material of seals / Design modification** 55xx xxx **XXX** - xxx

Seals in product contact:		- EPDM	- HNBR
Modification:	Kind of actuator: - air open - spring close	55xx DN **030**-xxx	55xx DN **035**-xxx
	- spring open - air close	55xx DN **130**-xxx	55xx DN **135**-xxx
	- air open - air close	55xx DN **330**-xxx	55xx DN **335**-xxx

➤ **11 - 12 Material / Surfaces / Sensor mounting** 55xx xxx xxx - **XXX**

020	1.4301 / AISI304	- bright turned	**040**	1.4404 / AISI316L	- bright turned
021	1.4301 / AISI304	- E-polished	**041**	1.4404 / AISI316L	- E-polished
022	1.4301 / AISI304	- glass-bead blasted	**042**	1.4404 / AISI316L	- glass-bead blasted

Article number	Control system and feedback unit A1.1, A1.2, E
55xx DN xxx **-041**	Valve without Sensor mounting
55xx DN xxx **-750**	Valve with Sensor mounting (5630 005 000-020)
55xx DN xxx **-6xx**	Control head ASi-Bus
55xx DN xxx **-K6xx**	Control head KI-Top ASi-Bus
55xx DN xxx **-5xx**	Control head SPS
55xx DN xxx **-K5xx**	Control head KI-Top SPS

DN - Nominal diameter e.g. 55xx 050 030-041

KIESELMANN
FLUID PROCESS GROUP

Declaration of incorporation

Translation of the original

Manufacturer / authorised representative:

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

Authorised representative,
for compiling technical documents:

Achim Kauselmann
Documentation / Development
KIESELMANN GmbH

Product	**Function**
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 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, 14. 11. 2017

i.V. Uwe Heisswolf
Head of Development