guth ventile
FLUID PROCESS GROUP

Guth Ventiltechnik GmbH
Horstring 16
D - 76829 Landau
☎ +49 (0) 6341 5105-0
Fax: +49 (0) 6341 5105-85
www.guth-vt.de
sales@guthventiltechnik.de

Operating Instructions
Translation of the original

562x 100 8xx-K604

Double seat valve DN100

piggable / rinsable EPDM / HNBR
with control head KI-Top ASi-Bus ES/ABSL

ak 19.3.03 / 5.10.17

❒ Valve Types

EPDM 5623 100 830-xxx S - SS
5624 100 830-xxx SS - SS
HNBR 5623 100 820-xxx S - SS
5624 100 820-xxx SS - SS

S - SS SS - SS

❒ Field of application

The piggable double seat valve is suitable for use as a leak-proof shut-off valve in plants in the food and beverage, in pharmaceutical, biotechnological and chemical industries.

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.

❒ Safety Instructions

DANGER
- Danger of crushing or amputating limbs.
  Do not reach into the valve housing when in pneumatic mode.
- When removing the valve or valve components from the system, there is a danger of injury from escaping liquids or gases.
  Only dismantle when you are absolutely sure that the system is depressurized and free of liquids and gases.
- Danger of scalding and burns to parts of your body from liquids escaping from the leakage drain.
  The splash protection fixtures must always be attached to the leakage drain.
- The actuation can be dismantled.
  Danger of injury by prestressed pressure spring. Observe separate installation instructions.
  We recommend having the manufacturer do the maintenance work required for the actuation.

ATTENTION
- 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).

❒ Function

The valve is opened from bottom to top by means of control air, and is closed from top to bottom by means of spring power without any loss of product. The upper and lower valve chambers are separated during infeed in a leak-proof fashion with two, independently closed valve discs when different media flow through the valve. Leakage which occurs due to damaged valve disc seals is discharged into the atmosphere without pressure via the leakage outlet.

The lower valve case can be cleaned with the pipework.

NOTE
During the pigging process, the valve mustn't be opened and the lower valve disk mustn't be lifted respectively, because these functions obstruct the pig passage.

When selecting the pig type, please note that the pig has a double sealing design with the distance dimension "A" (fig. 3). We recommend to apply the product 7079.

❒ Installation instructions

During installation or production processes avoid effects of external force on the housing.

The double seat valve must be installed vertically with the actuator at the upwards. Liquid must be able to flow freely from the valve housing and the leakage chamber.

NOTE
The valve is closed by spring pressure. An additional pneumatic boosting of the closing pressure is prohibited on account of the damage that may ensue.

❒ 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 (DIN ISO 9606-1).
- Use the TIG (tungsten inert gas) welding process.

NOTE
Impurities can cause damage to the seals. Clean inside areas prior to assembly.

❒ Special features valve control

Optionally, modular valve control 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.

❒ Maintenance

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.

❒ Cleaning

Cleaning of the housing is performed with the pipe cleaning system. As part of the cleaning program, the leakage chamber and the drain pipe can be cleaned by cycling the valve discs. The valve disc shaft is also cleaned when the upper valve disc is cycled.

Alternatively, the leakage chamber and the shaft of the upper valve disk can be cleaned by means of the external rinsing connection (ESP). For cleaning the shaft, the upper valve disk has to be lifted.

Leakage Chamber Cleaning Parameters [1)]

Cleaning step	Aerate Valve Disc	Rinse Qua.
Pre-Rinse		clocking at top 7,5 m³/h clocking at bottom 4,5 m³/h (3bar)
80° C Wash	3 times, 5 sec. ea.	
Intermediate Rinse	2 times, 5 sec. ea.	
Acid	3 times, 5 sec. ea.	
Final Rinse	2 times, 5 sec. ea.	

1) Recommended for the Beverage Industry

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❒ Technical data

Model:	double seat valve piggable
Valve size:	DN 100
Connection:	welding end DN 100 DIN EN 10357
Torque:	Retaining clamp DN100: max. 55Nm
Temperature:	+95°C medium dependent
Operating pressures:	operating pressure = 6 bar cleaning pressure = 4 bar
Vacuum:	1,5 x 10^{-6} mbar $^{L}/_{S}$ (test pressure 0,5 mbar)
Control air pressure:	5,0 - 8,0 bar
Quality of control air:	ISO 8573-1 : 2001 quality class 3

Material:	**in product contact**	**not in product contact**
Stainless steel:	1.4404 / ASI316L	1.4301 / ASI304
Surface:	RA 0,8µm	RA 1,5 - 2,5µm E-pol.
Seal:	EPDM (FDA)140°SIP HNBR (FDA)130°SIP	NBR

KV-values:	Direction of Flow		(m³/h)
	through-flow at top	⇔	380
	through-flow at bottom	⇔	390
	from bottom to top	⇗	155
	from top to bottom	⇙	150

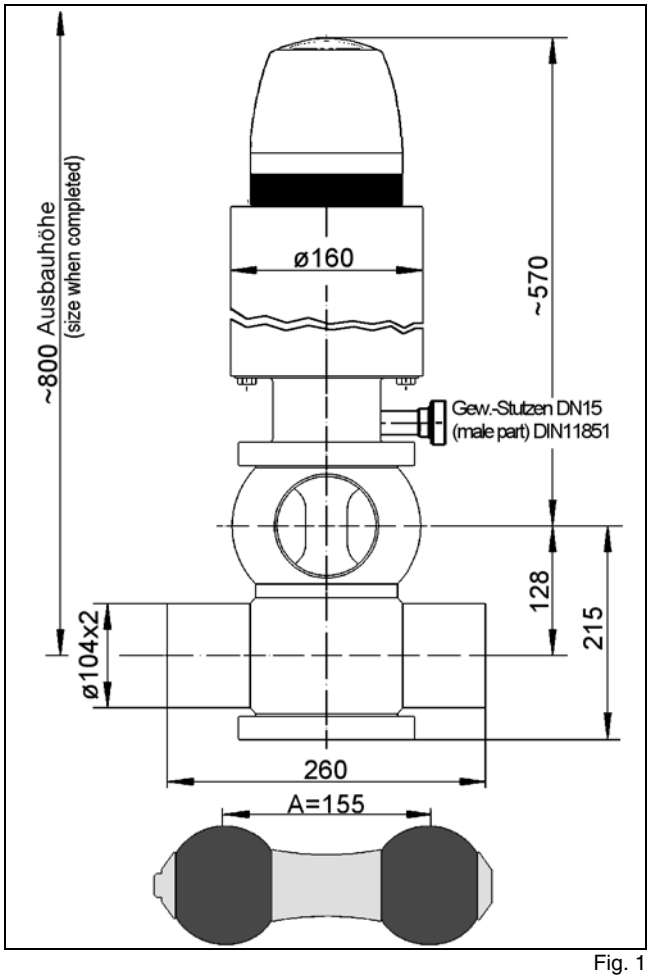


Fig. 1

❒ Pneumatic valve actuation

Valve function	Pneum. control ➟ with integrated MV in control unit	Pneum. control ➟ with external MV
valve "OPEN"	control air feed ➟ P ➟ MV1 ➟ LA1	control air feed ➟ ext.MV ➟ LA1
valve "CLOSE"	de-aeration ➟ LA1 ➟ MV1 ➟ R valve is closing by spring	de-aeration ➟ LA1 ➟ ext.MV valve is closing by spring
cycle lower piston (clean leakage chamber)	OPEN = control air feed ➟ P ➟ MV2 ➟ LA2 Direct coupling	OPEN = control air feed ➟ ext.MV ➟ P ➟ LA2 Direct coupling
	CLOSE = de-aeration ➟ LA2 ➟ MV2 ➟ R valve is closing by spring	CLOSE = de-aeration ➟ LA2 ➟ P ➟ ext.MV valve is closing by spring
cycle lower piston (clean leakage chamber and clean shaft)	OPEN = control air feed ➟ P ➟ MV3 ➟ LA3	OPEN = control air feed ➟ ext.MV ➟ LA3
	CLOSE = de-aeration ➟ LA3 ➟ MV3 ➟ R valve is closing by spring	CLOSE = de-aeration ➟ LA3 ➟ ext.MV valve is closing by spring

MV = 3/2 solenoid valve LA = compressed-air inlet (actuation)
R = de-aeration, sound absorber P = compressed-air inlet (control unit)

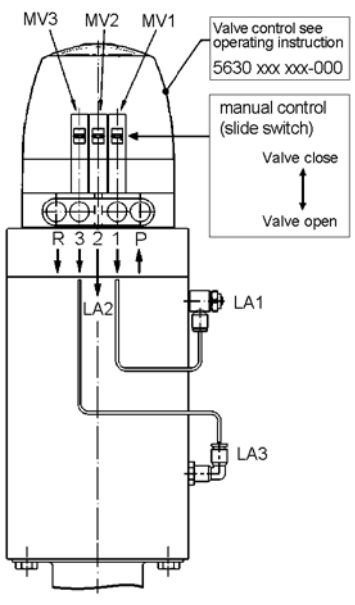
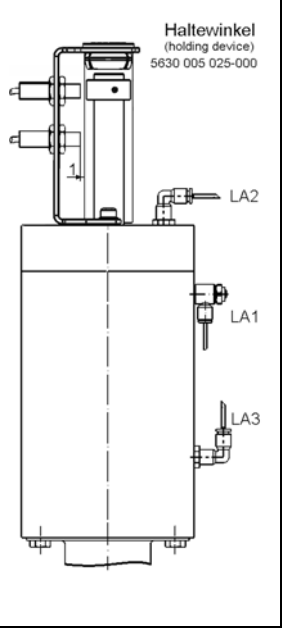
with control unit and solenoid valve	pneum. control external
	

Fig. 2 Fig. 3

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❒ Disassembly and assembly

Istalling to / Removing from the Pipe System

NOTE
All threaded joint have right-hand thread.

Disassembly

- Unscrew and remove control air and electrical lines, complete repeater mechanism and control head, steaming and cleaning lines.
- Unscrew the upper retaining clamp (30).
- Remove pneumatic valve insert (20) along with insert (15) from the top of the housing.

➢ Removing in product contact wearing parts

- We recommend to use for the assembly / disassembly the assembling tool kit. **stock number: 5670.100.100-000**

Mounting lever	Insert	Mounting plate
Socket spanner	Eccentric ring	Hook wrench

- Unscrew the lower retaining clamp (30).
- Remove the housing bottom (1).
- Unscrew the lower piston (4) from the upper piston (11).
- Take off the split washer (12).
- Clamp the mounting plate into the vice.
- Unscrew hexagon screw (18)(4x).
- Push lantern (17) in direction “X“ until the hole (C) is freely visible.
- Unscrew the piston (11) with a headed wrench (SW), counter with a hook wrench at the hole (C).
- Push the insert (15) off of the piston (11) away from the valve disc.
- According to execution position the piston (11) about the holes (B)(2x) (in the piston plate) with the retention pin (Fig.4).
- Unscrew the piston (11) with the assembly lever or headed wrench (SW) from the upper piston plate (2).
- Remove the seal (9) and the O-Ring (8) and (10).
- Dismount the valve lift stop (19) in direction “X“.
- Dismantle the seals: Pos.(3)(3x), Pos.(6), Pos.(14), Pos.(27), Pos.(28), Pos.(29)(2x), Pos.(31).

NOTE
Puncture the seals item (6) and item (8) at the centre with a pointed tool and remove them carefully from the groove.

Assemble

- Assemble in reverse order.
- Thoroughly clean and slightly lubricate mounting areas and running surfaces.

NOTE
- Fit valve insert carefully into the casing. When fitting the valve insert and running surfaces onto the piston, do not damage.
- The casing cover (1) is positioned position dependent with a cylindrical pin in the casing (5).

➢ Assemble Seal (9)

- Screw in piston plate (2) without seal to the metal limit stop in the piston (11) and make a coloured mark (Fig. 5).
- Screw out the piston plate (2) of the piston (11).
- Push the seal (9) into the piston (11) and screw the piston plate (2) into the piston (11) by hand.
- Position the eccentric ring on the seal (9) (Fig. 4).
- Clamp the mounting plate into the vice and fix the piston plate (2) (see Fig. 4).
- Position the mounting lever (see Fig. 4) and screw the piston (11) up to the final limit mark (Fig.5).

Lubricants

EPDM; FKM; k-flex	Klüber Paraliq GTE 703
NBR; HNBR; Silicone	Klüber Paraliq GB 363
Thread	Teflongrease Interflon

NOTE
Check valve functions by manually activating the 3/2-way solenoid valves after assembly.

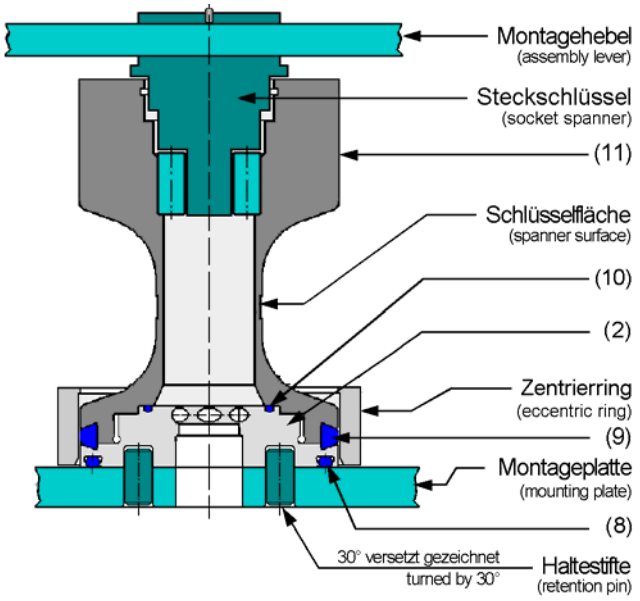

Fig. 4

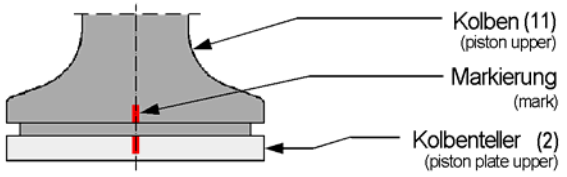

Fig. 5

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❒ Spare parts list

Item	Designation	in product contact seals	
		EPDM	HNBR
	Valve S - SS	5623 100 830-041	5623 100 820-041
	Valve SS - SS	5624 100 830-041	5624 100 820-041
1	Casing cover 1.4404	5623 100 825-040	
2	Piston plate 1.4404	5621 100 006-040	
3	O-Ring (3x) Ø117x3,5	2304 117 035-159	2304 117 035-050
4	Piston bottom 1.4404	5622 100 824-040	
5	Housing 1.4404	S - SS 5623 100 821-041 SS - SS 5624 100 821-041	
6	O-Ring Ø88,27x5,33	2304 088 053-084	2304 088 053-157
7	Plain bearing XSM	8050 020 007-156	
8	O-Ring Ø85,32x3,53	2304 085 035-159	2304 085 035-157
9	Seal	5621 100 010-084	5621 100 010-157
10	O-Ring EPDM	2304 036 020-170	
11	Piston 1.4404	5621 100 007-040	
12	Split washer DIN127	8072 008 001-020	
13	Threaded bolt M6x30 1.4301	8112 008 030-020	
14	Seal	5622 100 010-069	5622 100 010-050
15	Insert 1.4404	5622 100 005-040	
16	Bearing bush PTFE	5622 100 006-053	
17	Lantern 1.4301	5624 100 512-021	
18	Hexagon screw M8x16 (4x) 1.4301	8106 008 016-020	
19	Valve lift stop 1.4305	5622 100 009-220	
20	Pneum. Actuator	5620 100 000-021	
21	Puls generator kompl.	5620 100 005-K000	
22	O-Ring Ø12x2 NBR	2304 012 020-055	
23	Position indication red	5622 100 058-151	
24	Cap 1.4305	5622 100 071-220	
25	One-way restrictor	8218 001 020-000	
26	Rapid action hose coupling R1/8	8217 000 004-000	
27	O-Ring Ø46x2,5 NBR	2304 046 025-055	
28	O-Ring Ø91,67x3,53 EPDM	2304 092 035-159	
29	O-Ring Ø40,87x3,53 (2x) EPDM	2304 041 035-159	
30	Retaining clamp (2x)	2122 125 100-020	
31	O-Ring Ø16x2 EPDM	2304 016 020-170	
32	Screwed socket	5624 100 514-020	
33	Control head KI-Top ASIBus ES/ABSL	5631 203 010-000	
❒	Valve insert compl.	5620 100 830-041	5620 100 820-041
○	Seal kit	5620 100 839-000	5620 100 829-000

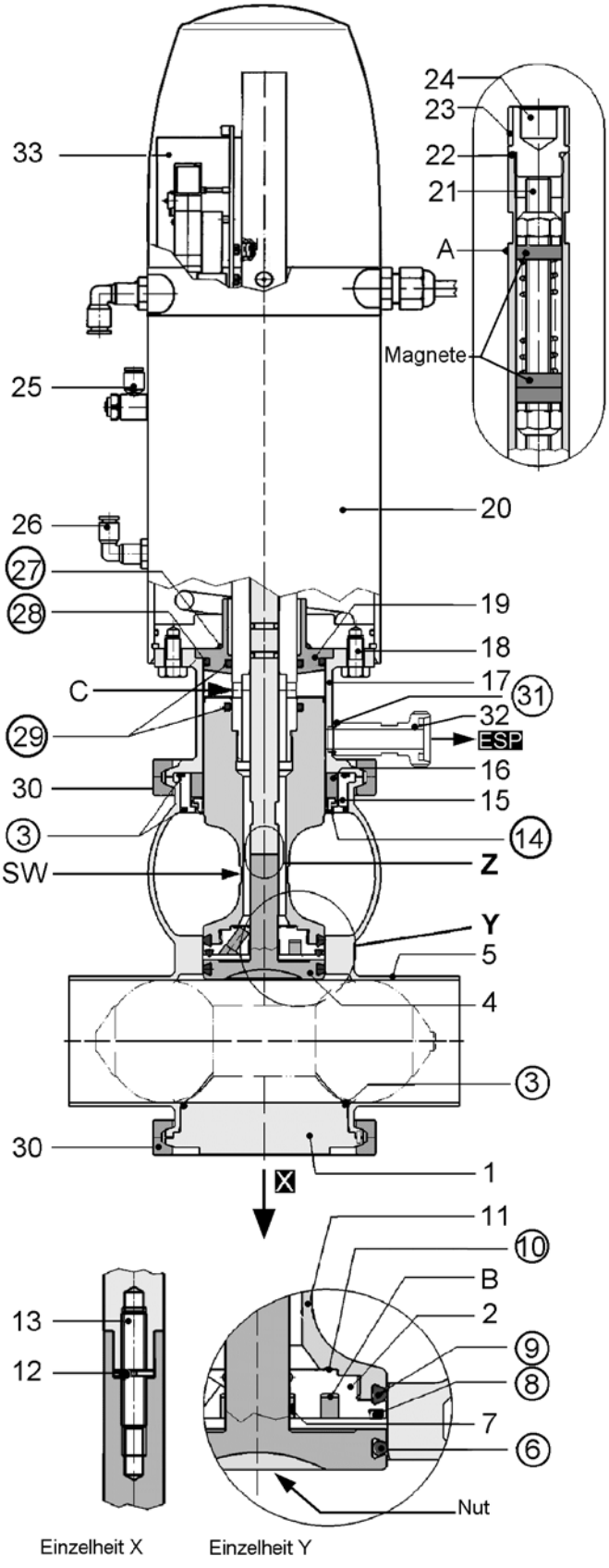

Fig. 6