



KIESELMANN
FLUID PROCESS GROUP

Operating instructions

- Translation of the original -

Control head ASi-Bus ES/ABSL
5630 xxx 010-000
with platine V4.x

for Double seat valve
Single seat valve
Butterfly valve
Ball valve



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2. 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.

3. Marking of safety 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 may cause severe personal injury or death.
	ATTENTION	Dangerous situation which may cause slight personal injury or material damages.
	NOTE	Marks application hints and other information which is particularly useful.

4. Variants of control heads ASi-Bus ES/ABSL

4.1 Double seat valve (pneum. Lifting valve)

Valve function	Electrical connection	Solenoid valves	Article No.
without lifts	Plug M12 4-pin Socket plug M12 5-pin	1 solenoid valve	5630 201 010-000
with upper seat lift		2 solenoid valves	5630 202 010-000
with lower seat lift		2 solenoid valves	5630 206 010-000
with upper + lower seat lift		3 solenoid valves	5630 203 010-000

4.2 Single seat valve (pneum. Lifting valve)

Valve function	Electrical connection	Solenoid valves	Article No.
air open / spring closed air closed / spring open	Plug M12 4-pin Socket plug M12 5-pin	1 solenoid valve	5630 501 010-000
air closed / air open		2 solenoid valves	5630 502 010-000

4.3 Butterfly valve / Ball valve (pneum. Rotary valve)

Valve function	Electrical connection	Solenoid valves	Article No.
air open / spring closed air closed / spring open	Plug M12 4-pin Socket plug M12 5-pin	1 solenoid valve	5630 801 010-000
air closed / air open		2 solenoid valves	5630 802 010-000

5. Safety instructions

5.1 Field of application

The control heads are used to pilot valves of production systems of the beverage and foodstuff industry, pharmaceutical industry, bio-technology, and chemical industry.

They contain the complete actuator, sensory, and electronic technology for connection and integration to up-dated and efficient control systems.

5.2 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.



DANGER

- The personnel responsible for the service and maintenance is instructed to carefully read and follow this operating manual and to maintain the prescribed technical data. The manufacturer will not be liable for any damages caused by improper use or handling.
- Make sure that the prevailing requirements of accident prevention and safety for electrical appliances are complied with during the maintenance and repair works.
- Never carry out electrical connections while the system is under energized.



ATTENTION

- Danger of injury by destruction of the housing cap, if the spindle cap is screwed in into the pulse generator not completely (see Fig. 2 /Page 9). The spindle cap must be screwed in up to metallic limit stop on the pulse generator.

5.3 General notes



NOTE

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

6. Function

The control head has been constructed in a modular system. Depending on the performance the pneumatic (three solenoid valves at maximum) and the electric control module with 2 position response synchros (hall sensors on the board) have been integrated into the control head.

6.1 Description of function

The valve positions are displayed electrically (DUO - LED) and directly at the control head. The valve positions "OPEN" and "CLOSED" are in addition displayed mechanically.

For robust operating conditions we recommend the use of the option stainless cab.

A pressure relieve valve serves as a pressure reduction in case of air leakages. The electric connection is carried out via a electrical connection plug or a flat cable adapter at the control head. As a protection against external influences, the cab can be leaded (only possible in the version - plastic cab)

7. Maintenance

The control head is maintenance-free. However, it is recommended to check the density of the air connections at fixed intervals, The air pressure escapes at air leakages through a pressure control valve into the open air.

8. Installation informations

8.1 Installation instructions

Generally the assembly and disassembly of the control head must occur de-energized.

9. Initial operation

- Adjust the valve functions at the valve selector switch (D). (Tab. 2, page 7)
- Connect power supply. (see "Electrical installation" on page 7)
- Connect the control air pipe Ø 6x1 to the connection (17). (Fig. 7 /Page 14)
- Connect the compressed-air pipe Ø 6x1 to the connection (11). (Fig. 7 /Page 14)
- Check the pneumatic components for air leakages.
- Check the valve functions by activating manually the solenoid valves (20a). The manual activator is provided as slide switch at the front side of the solenoid valves (20a).

10. Power supply / valve control

10.1 Standard variant

The power supply to the control board is taken from the 30V supply that lies close to the bus. All extra components that can be switched on the control board are supplied directly via the bus and/or internally generated voltage 24V DC. The valves are also controlled directly on the control board. Transient diodes protect the electronics against voltages that are too high and peak voltages.

10.2 ES variant (plug P5)

In the ES variant, an additional 24V power supply for the solenoid valve is required. This voltage is fed into the control board via a separate plug (P5). The internal power supply of the solenoid valves is then cut off over the switch (E).

10.3 Switch-over Standard / ES (selector switch E)

In the back of the committee there is a counter with 2 positions. With this counter can be put whether the committee should be pursued in the standard way or in the ES way. Encoding takes place from the Kieselmann society. The counter is sealed after the choice. A suitable mark of the type of the management is indicated on the frame.

10.4 JTAG Interface (plug P1)

The control board is equipped with a JTAG interface that allows the processor to be equipped with new firmware at any time. Via this interface, the firmware on the control board can be changed easily and at any time with a handheld programmer. Other solutions with the existing hardware are then easier to realise.

10.5 External inputs 1 (plug P4) and 2 (plug P3)

There are two input channels for processing external signals that can be brought onto the control board by inductive or capacitive sensors. The connectable sensors are also supplied via the control board with 24V.

10.6 Valve interface (plug F)

The interface for the connection of a maximum of 3 solenoid valves is integrated on the control board. The solenoid valves are inserted with the air distribution block onto the control board and screwed as one complete unit within the TOP.

11. Electrical installation

11.1 Electrical connection of the control head

> Plug 4-pin (14A)

- The electrical connection of the ASI-Bus control head occurs through a plug 4-pin (LUMBERG PRSFM4). (see Tab.1 Pin assignment)

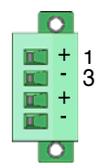
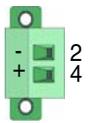
> Socket plug 5-pin (14C)

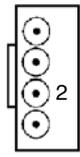
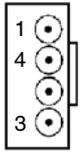
- The electrical connection of the ASI-Bus control head occurs through a plug socket 5-pin (LUMBERG PRKFM5). (see Tab.1 Pin assignment)

> Electrical connection on the board

- The installation of power cables from the plugs to the board is carried out by the manufacturer.

11.2 Terminal pin assignment

Plug (14A)	Pin No.	Colour code	Assignment	Plug	
				P2	P5
	1	braun brown	Inputsignal Bus ASI (+)		
	2	weiß white	ext. voltage ES 24 Volt (-)		
	3	blau blue	Inputsignal Bus ASI (-)		
	4	schwarz black	ext. voltage ES 24 Volt (+)		

Socket plug (14C)	Pin No.	Colour code	Assignment	Plug	
				P3	P4
	1	braun brown	24 Volt (+)		
	2	weiß white	Sensor control line 2		
	3	blau blue	GND		
	4	schwarz black	Sensor control line 1		
	5	grün/gelb green/yellow	-		

Tab. 1

11.3 LED Indication of slave status / Selector switch (D)

LED 1 Green	LED 2 Red	Descriptions
off	off	No main voltage present
on	off	Correct operation
off	on	No data exchange
Flashing	on	Incorrect slave address
Flashing	Alternating flash with LED1	Hardware error actuator/sensor
off	Flashing	Overload

LED3 - LED 6	
LED 3 Green	External input 2
LED 4 Green	External input 1
LED 5 Red	Valve closed
LED 6 Green	Valve open
LED 5 / LED 6	Flashing alternately indicates Valve in motion / error

Selector switch (D) functions	
	
0	= Double seat valve with both lifts
1	= Double seat valve without lifts
2	= Double seat valve with upper lift only
3	= Not used
4	= Single seat valve air open/spring closed air closed/spring open
5	= Single seat valve air open/air close
6	= Not used
7	= Double seat valve with inverse both lift
8	= Butterfly / Ball valve air open/spring closed
9	= Butterfly / Ball valve air open/air closed
A	= Butterfly / Ball valve air closed/spring open
C	= reserved KIESELMANN
D	= reserved KIESELMANN
E-F	= Not used

Tab. 2

11.4 Electrical connection design of control head ASI-Bus ES/ABSL

- D = Valve selector switch for valve type
see Tab.1
- E = Selector switch: Position 1 Standard
Position 2 ES-mode
- F = Plug
electrical connection for solenoid valve (MV)
- P1 = JTAG Interface (Onbord programming)
- P2 = Plug ASI-Bus
24V (+) braun/brown
GND (-) blau/blue
- P3 = Plug - External input 2
Sensor control line weiß/white
- P4 = Plug - External input 1 schwarz/black
24V (+) braun/brown
GND (-) blau/blue
- P5 = Plug - External voltage for solenoid valve (ES)
24V (+) schwarz/black
24V (-) weiß/white

- LED1= ASI-Bus Status
LED2= ASI-Bus Status
LED3= External input 2
LED4= External input 1
LED5= Actuator Status closed
LED6= Actuator Status open

- 7 = Housing
14A = Plug M12 4-pin
14B = Compression gland M12
14C = M12Plug M12 5-pin
15 = Seal
16 = Signboard (optional)

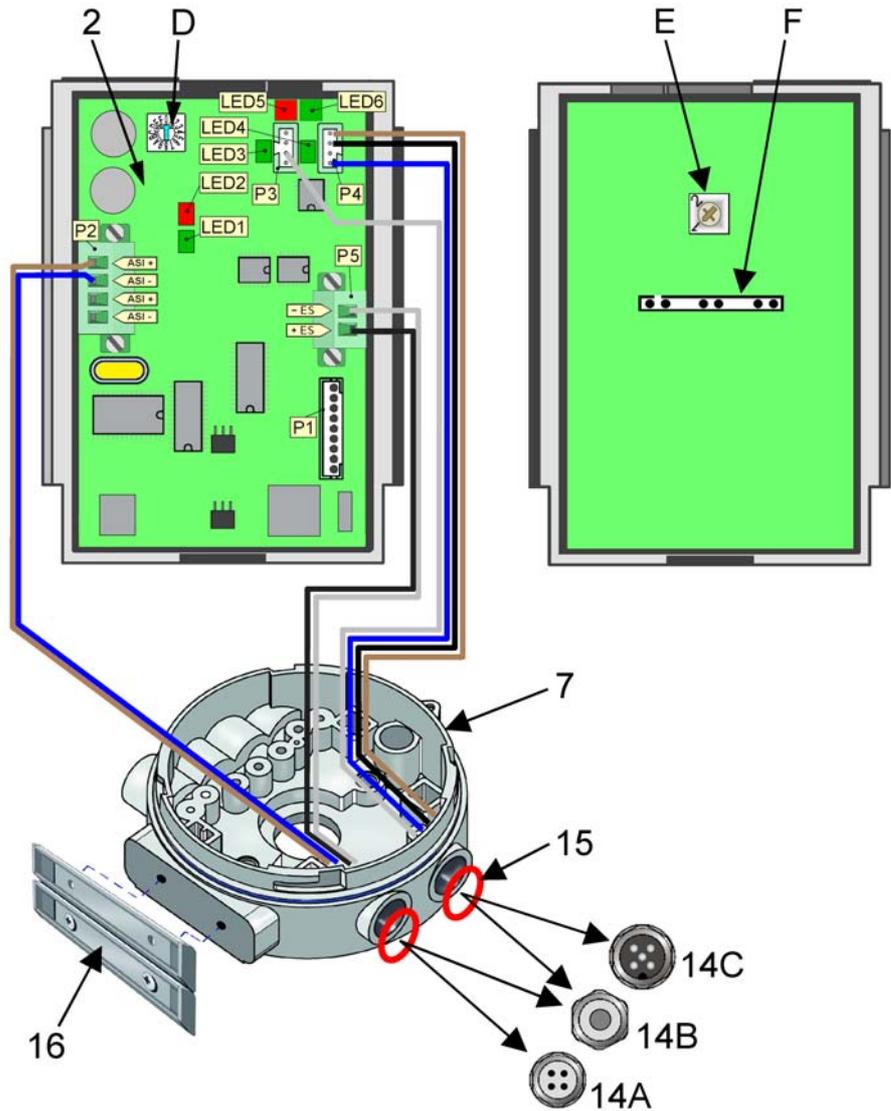


Fig. 1

12. Position control and position indication

12.1 Lifting valve

The repeat signal message 'valve opened' or 'valve closed' occurs contactless through the magnet field of the pulse initiator's toric magnets at coverage of the Hall sensors on the board.



NOTE

The installation position of the pulse generator is characterized by a marking in the spindle. The distances of the measures "A" and "B" are valve-specifically and adjusted by the factory. These must not be adjusted.

Valve Position Indicator

> ELECTRICAL - through the DUO - LED on the board

- valve "OPEN" = Signal DUO-LED GREEN
- valve "CLOSED" = Signal DUO-LED RED

> MECHANICAL - Lifting position of spindle

- valve "OPEN" = Valve position indicator - green
- valve "CLOSED" = Valve position indicator - red

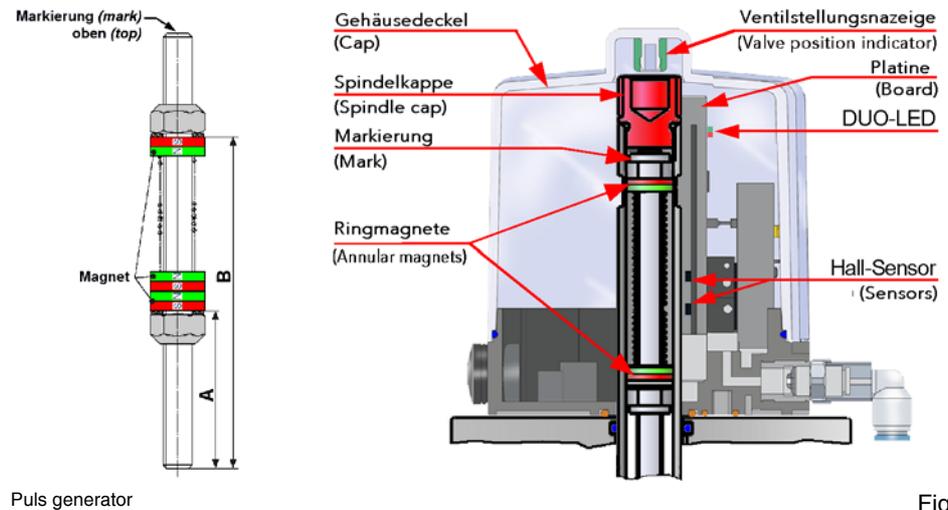


Fig. 2

12.2 Rotary valve

The stop position feedback signal valve "OPEN" or "CLOSED" is carried out contactlessly over the magnetic field of the bar magnets in the pulse generator during overlap with the hall sensors on the printed circuit board.

Valve Position Indicator

➤ ELECTRICAL - through the DUO - LED on the board

- valve "OPEN"= Signal DUO-LED GREEN
- valve "CLOSED"= Signal DUO-LED RED

➤ MECHANICAL - through the position of the spindle

- valve "OPEN"= Valve position indicator points in flow direction
- valve "CLOSED"= Valve position indicator points crosswise in flow direction

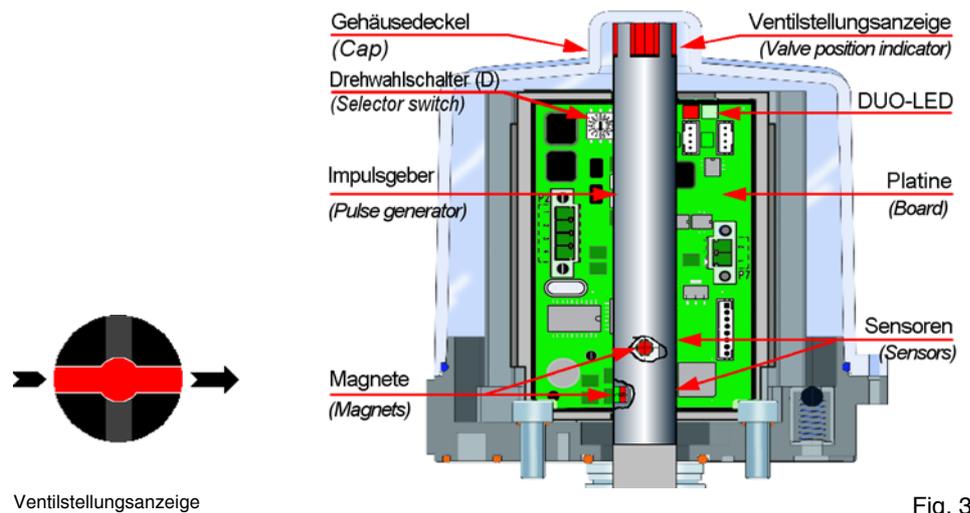


Fig. 3

13. Electrical and pneumatical piloting ASi-Bus ES/ABSL



NOTE

- Connect power supply and connect control air. Check valve functions.

13.1 Valve piloting - Double seat valve

Valve selector switch position (D)	Valve function	Solenoid valve (MV)
4	Valve without lifts	MV 1
5	Valve with upper lift	MV1 / MV3
0	Valve with lower lift	MV1 / MV2
0	Valve with upper and lower lift	MV1 / MV2 / MV3

Valve function	Solenoid valve (MV)	Pneum. connection	Bit-assignment						LED-signal	
			INPUT		OUTPUT				LED 5 Red	LED 6 Green
			Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0		
Valve closed	-	-	0	0			0	1	closed	-
Valve open	MV 1	P1 - LA1	1	1			1	0	-	open
Lower seat lift	MV 2	P2 - LA2	0	1			0	1	closed	-
Upper seat lift	MV 3	P3 - LA3	1	0			0	1	closed	-

- MV = Solenoid valve
- MV1 = Main valve actuation
- MV2 = Lower seat lift
- MV3 = Upper seat lift
- R = Exhaust via silencer
- P = Compressed air supply
- P1 = Air supply at the control head - main valve actuation
- P2 = Air supply at the control head - lower seat lift direct via control head base to LA2
- P3 = Air supply at the control head - upper seat lift
- LA1 = Air supply at the actuator - main valve actuation
- LA2 = Air supply at the actuator - lower seat lift direct via control head base from P2
- LA3 = Air supply at the actuator - upper seat lift
- S = MV slide switch manual operation - up for valve OPEN - down for valve CLOSED

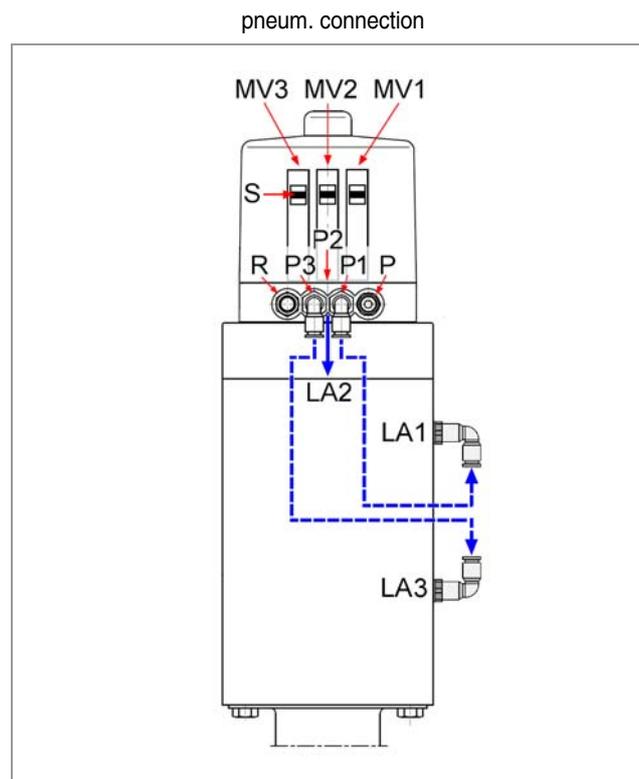


Fig. 4

13.2 Valve piloting - Lifting valve

Valve selector switch position (D)	Valve function	Solenoid valve (MV)
4	air open / spring closed	MV 1
4	air closed / spring open	MV 1
5	air open / air closed	MV1 / MV3

Valve function	Solenoid valve (MV)	Pneum. connection	Bit-assignment						LED-signal	
			INPUT		OUTPUT				LED-signal	
			Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0	LED 5 Red	LED 6 Green
Valve closed	MV3	P3 - LA1 P1 - LA1	0	0			0	1	closed	-
Valve open	MV1	P1 - LA3	1	1			1	0	-	open

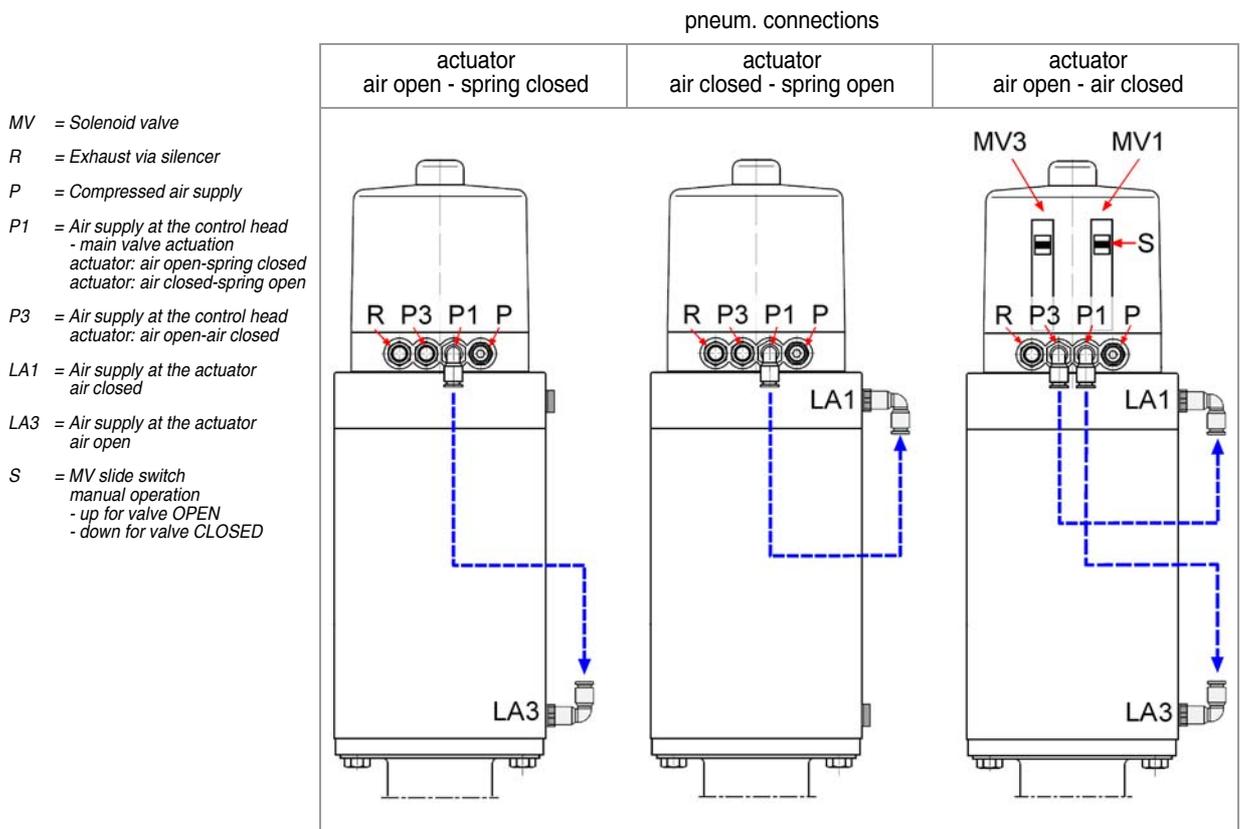
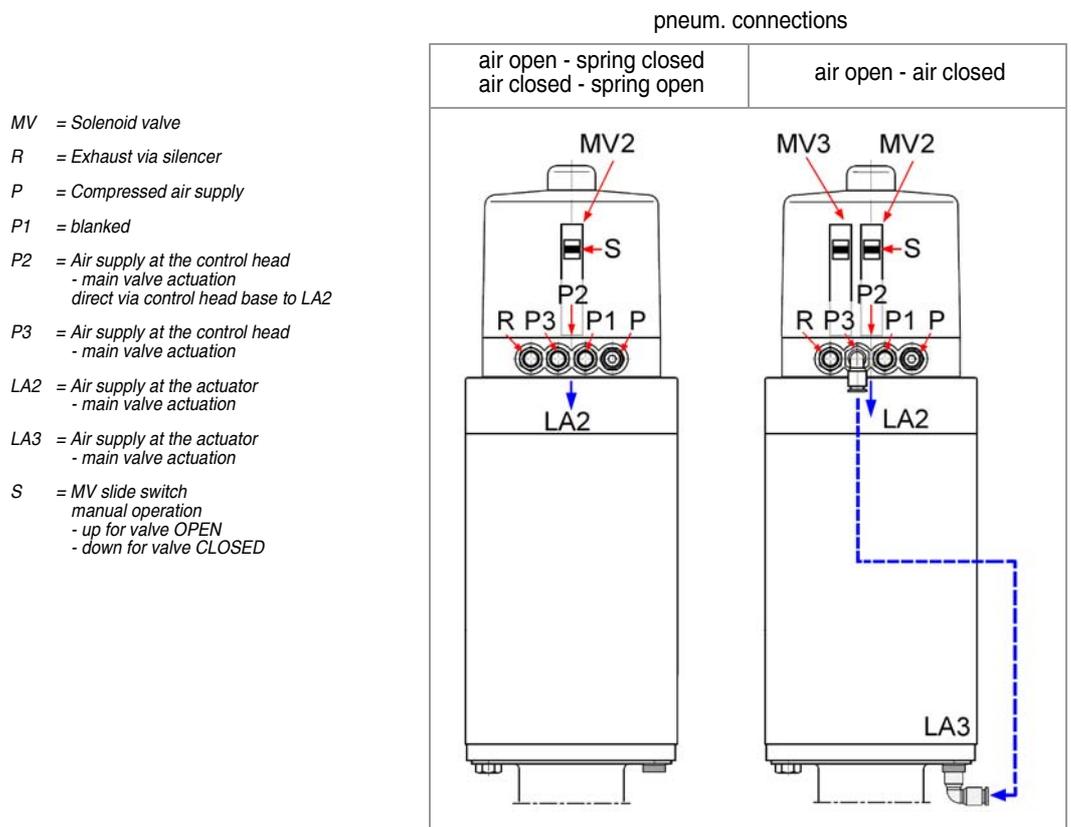


Fig. 5

13.3 Valve piloting - Rotary valve

Valve selector switch position (D)	Valve function	Solenoid valve (MV)
8	air open / spring closed	MV 2
A	air closed / spring open	MV 2
9	air open / air closed	MV2 / MV3

Valve function	Solenoid valve (MV)	Pneumatic connection	Bit-assignment						LED-signal	
			INPUT		OUTPUT				LED 5 Red	LED 6 Green
			Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0		
Valve closed	MV2 MV3	P2 - LA2 P3 - LA3	0	0			0	1	closed	-
Valve open	MV2	P2 - LA2	0	1			1	0	-	open



- MV = Solenoid valve
- R = Exhaust via silencer
- P = Compressed air supply
- P1 = blanked
- P2 = Air supply at the control head
- main valve actuation
direct via control head base to LA2
- P3 = Air supply at the control head
- main valve actuation
- LA2 = Air supply at the actuator
- main valve actuation
- LA3 = Air supply at the actuator
- main valve actuation
- S = MV slide switch
manual operation
- up for valve OPEN
- down for valve CLOSED

13.4 Bit-assignment external input

external input		Bit-assignment						LED-signal	
		INPUT		OUTPUT				LED 3	LED 4
		Bit 1	Bit 0	Bit 3	Bit 2	Bit 1	Bit 0		
Input 1	inaktive	-	-	0	-	-	-	-	-
	aktive	-	-	1	-	-	-	-	ON
Input 2	inaktive	-	-	-	0	-	-	-	-
	aktive	-	-	-	1	-	-	ON	-

14. Disassembly and assembly

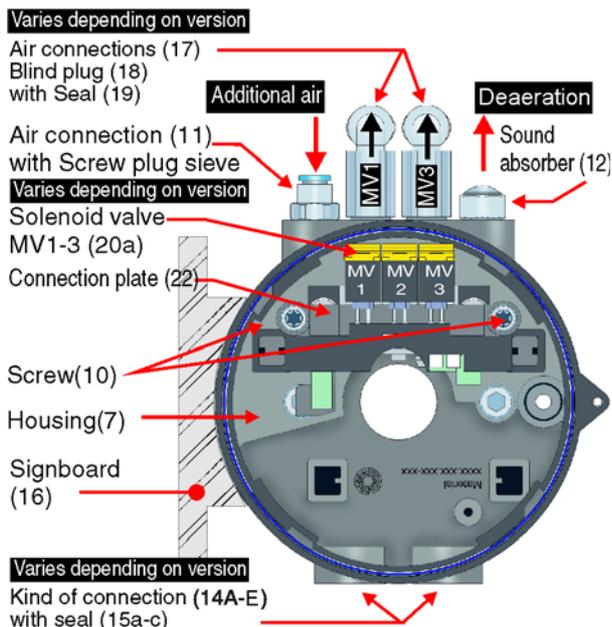
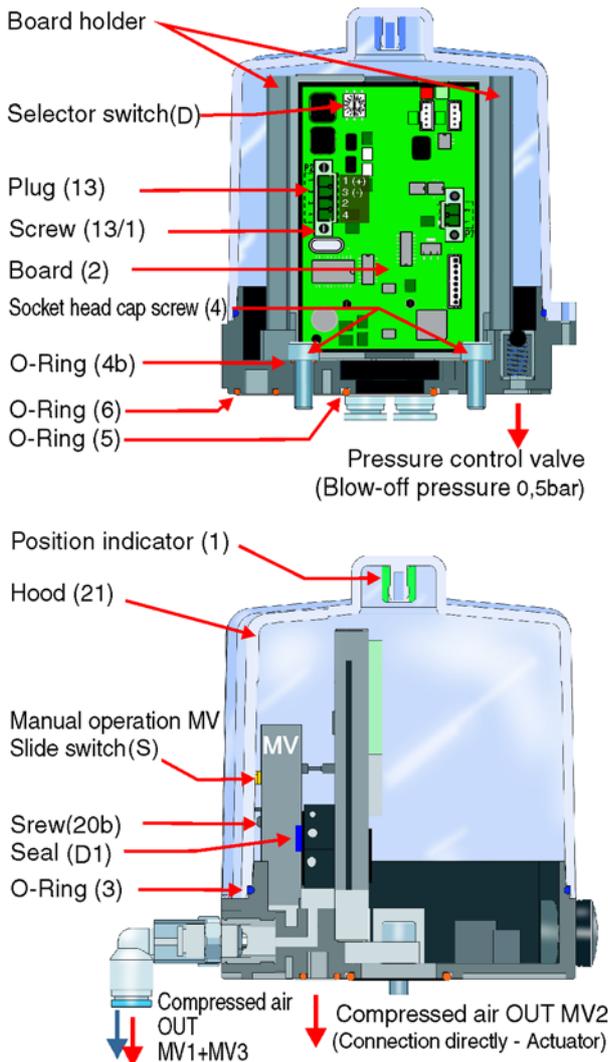


Fig. 7

14.1 Disassembly

- Disconnect the compressed-air pipe, control air pipe and electrical lines from the control head.
- Unlock the cab (21) by rotary movement and lift it (bayonet socket).

1) - when replacing the valve actuator

- Remove the control head base plate by unscrewing the screws (4a)(2x).
- Remove the complete control head and cover it with the cap (21).
- Dismantle the valve actuator.

2) - of the board (2) and connection plate (22)

- Disconnect the compressed-air pipe, control air pipe and electrical lines from the control head.
- Unlock the cap (21) by rotary movement and lift it (bayonet socket).
- Screw off the screws (13/1)(2x) and pull the multi - plug (13) off the board (2).
- Screw off the TORX screws (10)(2x) (use key T20).
- Push the board holder slightly to the outside and remove it with the connection plate (22).

i NOTE

- O-rings (8)(5x) and O-ring (9)(1x) are fixed on the bottom side of the connecting plate (22). Check the positioning and quantity before you install them. (see Fig. connecting plate Item. 22).

- Disconnect the board (2) from the connecting plate (22).

3) - the solenoid valves (20a)

- Carry out the disassemble analogue - Disassembly / Assembly 2).
- Unscrew the recessed head screws (20b)(2x) and remove the solenoid valve (20a) with seal (D1) - (use a crosstip screwdriver PH100).

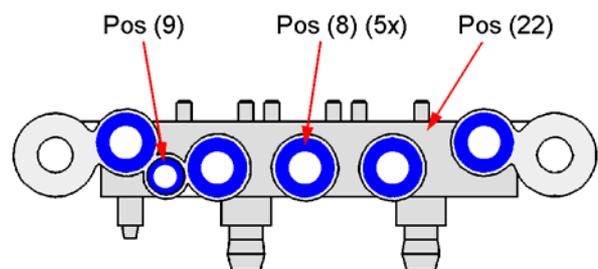
14.2 Assembly

- Assemble in reverse order.

i NOTE

Assembling instruction of the solenoid valves

- Insert the seal (D1) into the guide pins in such a manner that the bore hole with the heel is located on top of left side.
- Position the solenoid valve (20a) through the guide pins and fasten it with recessed head screws (20b)(2x).
- ATTENTION: Fasten these screws (20b)(2x) evenly at first on top left side and then at bottom right side.



Connecting plate Item. 22

15. Spare parts list

Item.	Article No.	Designation	Dimension	Material
1	5630 000 004-152	Position indicator	-----	ABS gn
2	5630 200 012-000	Board ASI-Bus AB-Slave	-----	-----
3	2304 094 023-158	O-Ring	ø94x2,3	MVQ bl 65
4	a) 8095 006 016-020	Socket head cap screw DIN912 (2x)	M6x16	1.4301 / AISI 304
	b) 2304 006 012-078	O-Ring	ø6x1,2	FKM
5	2304 025 025-055	O-Ring	ø25x2,5	NBR sw 70°Sh.
6	2304 044 020-055	O-Ring	ø44x2	NBR sw 70°Sh.
7	5630 001 011-000	Housing complete	-----	-----
8	2304 003 020-055	O-Ring (5x)	ø3x2	NBR sw 70°Sh.
9	2304 002 015-055	O-Ring	ø2x1,5	NBR sw 70°Sh.
10	8091 040 014-000	Screw EJOT, WN 1451 (2x)	K40x14	-----
11	a) 8216 000 002-000	Plug-type connector straight (standard)	RA 1/8"	-----
	b) 8216 000 002-450	Plug-type connector straight stainless steel (optional)	RA 1/8"	1.4436 / AISI316
	c) 8219 000 010-000	Screw plug sieve	G1/8" MW42	Ms
12	8219 003 018-047	Sound absorber TYP 441/22613	G1/8"	1.4401 / AISI 316
13	8615 126 080-000	Connector strip Phoenix Contact MC1,5 incl. screw (13/1)	4-polig	-----
14	A) 8615 126 060-040	Plug LUMBERG PRSFM4	M12 / 4pin	1.4404 / AISI 316L
	B) 8615 039 008-101	Compression gland	M16x1,5	PA6.6 sw
	C) 8615 126 070-040	Socket plug LUMBERG PRKFM5	M12 / 5pin	1.4404 / AISI 316L
	-	-	-	-
15	a) 2304 012 025-170	O-Ring for item.(14A)+(14C)	ø12x2,5	EPDM sw 70°Sh.
	b) 2304 010 025-170	O-Ring for item.(14B)	ø10x2,5	EPDM sw 70 Sh.
	-	-	-	-
16	8619 022 020-000	Signboard (optional)	-----	Platte= PA6.6
17	a) 8217 000 004-000	Rapid action hose coupling slewable (standard)	G1/8"	-----
	b) 8217 000 007-000	Rapid action hose coupling slewable stainless steel (optional)	Ø6x1	1.4436 / AISI316
	c) 8216 000 002-450	Plug-type connector straight stainless steel (optional)	RA 1/8"	1.4436 / AISI316
18	8230 002 018-015	Blind plug	G1/8"	CuZu40PB2
19	2320 051 000-082	Seal	ø13xø10x1,5	PVC ws
20	a) 8210 005 001-000	3/2-way-solenoid valve pressure range=2.5-8 bar	DN 2.5 24 VDC	-----
	b) 8091 040 015-000	Screw EJOT ((2x) for every solenoid valve)	15x19	-----
21	a) 5630 000 002-094	Cap transparent (Standard)	-----	MABS
	b) 5630 000 110-032	Cap stainless steel (optional)	-----	1.4301 / AISI 304
22	a) 5630 001 013-000	Connection plate complete - Lifting valve	1MV position 1	plate = PA6.6
	b) 5630 002 013-000	Connection plate complete - Lifting valve	2MV position 1+3	plate = PA6.6
	c) 5630 003 013-000	Connection plate complete - Lifting valve	2MV position 1+2	plate = PA6.6
	d) 5630 004 013-000	Connection plate complete - Lifting valve	2MV position 1+2+3	plate = PA6.6
	e) 5630 601 013-000	Connection plate complete - Rotary valve	2MV position 1	plate = PA6.6
	f) 5630 602 013-000	Connection plate complete - Rotary valve	2MV position 1+3	plate = PA6.6
23	5630 600 010-000	Pulse generator	-----	ABS

Article No.	Variants of control heads	Spare part allocation according to spare part list (MV = solenoid valve)						
5630 201 010-000	Plug 4-pin and socket plug 5-pin	1 - 10	11a + c	12 - 13	14 A + C	15a	16 - 21	22a = MV 1
5630 202 010-000								22b = MV 1+3
5630 206 010-000								22c = MV 1+2
5630 203 010-000								22d = MV 1+2+3
5630 501 010-000	Plug 4-pin and socket plug 5-pin	1 - 10	11a + c	12 - 13	14 A + C	15a	16 - 21	22a = MV 1
5630 502 010-000								22b = MV 1+3
5630 801 010-000	Plug 4-pin and socket plug 5-pin	1 - 10	11a + c	12 - 13	14 A + C	15a	16 - 21	22e = MV 1
5630 802 010-000								22f = MV 1+3

16. Technical data

Bus-system:	-	Control of valve position
Principle of effectiveness:	-	1 - 62 AB-Slave
Function of evaluation:	-	-10°C to +50°C
Range of address:	-	II (Control head with cap transparent) I (Control head with cap stainless steel)
Operating temperature:	-	IP 67 (Control head with cap transparent) IP 65 (Control head with cap stainless steel)
Appliance classes: according to DIN EN61140 (VDE 0140-1)	-	22 - 30V DC
International protection rating: according to DIN EN60529		80 mA
Distribution voltage:	-	Control of valve position
max. current consumption:	-	1 - 62 AB-Slave
Cable connection - control head:	-	Plug (14A); compression gland for daisy chain ASi (14B); Socket plug (14C)
Positioning sensor:	-	2 Hall-effect Sensors
Control air pressure:	-	2,5 - 8,0 bar
Air quantity passed:	-	140l/min. (6bar)
Weight:	-	0,5 kg
electr. magn. compatibility:	-	Test report FS/57.00/1147.9903
Display at site:	-	Mechanical valve indication and by LED. LED-Bus display
Quality of control air:	-	ISO 8573-1 : 2001 quality class 3

Material:	• Housing:	-	ABS - 6F
	• Cap:	-	Standard: ABS-transparent Optional: 1.4301-(stainless steel)
	• Seal:	-	EPDM; NBR; Viton®

17. Fault clearance

FAULT	POSSIBLE REASONS	MEASURES
<ul style="list-style-type: none"> Valve does not open 	<ul style="list-style-type: none"> External compressed air supply is not connected sufficiently or not connected at all Compressed air supply between control head and valve is interrupted or not connected Magnetic valve defect. Electronic trigger is interrupted 	<ul style="list-style-type: none"> Make sure that the operating pressure required by the valve fits closely at the external compressed air supply. (for that purpose please apply the pressure instructions of the valve producer) Check air control lines exchange magnetic valve Check the triggers of the magnetic valves
<ul style="list-style-type: none"> Valve does not close 	<ul style="list-style-type: none"> Magnetic valves are defect or the electronic or pneumatic trigger is disturbed This is caused by the valve e.g. foreign particles between the sealing surfaces, drive defect, etc. 	<ul style="list-style-type: none"> Check the triggers of the magnetic valves Switch valve manually in order to check the valve function Clean valve housing