

Operating Manual

DELTA CU3 Direct Connect

Control Unit



Read and understand this manual prior to operating or servicing this product.

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1. Information

Symbols

The following symbols are used in the operating manual.



Attention : Indicates information which, if not followed, could result in danger to your health or to the functionality of the machine.



Note : Indicates important additional information, tips and recommendations.

2. Safety instructions

Important Information



Always read the manual before using the Control Unit.

2.1 General

To ensure that the device functions correctly and will have a long service life, please comply with the information in these operating instructions, as well as with the operating conditions and the permissible ranges that are specified in the data sheets of the Control Head for Process Valves.

- When planning the application of the device, and during its operation, observe the general technical rules!
- Installation and maintenance work may only be carried out by specialist staff using the correct tools!
- Observe the relevant accident prevention and safety regulations applicable for electrical equipment while operating and maintaining the device!
- Always switch off the electrical power supply before carrying out any works on the system!
- Note that piping or valves must not be removed from a system that is under pressure!
- Take suitable measures to prevent unintentional operation or impermissible impairment.
- Following an interruption of the electrical or pneumatic supply, ensure a defined and controlled re-start of the process!
- If the instructions are ignored, no liability will be accepted from our side, and the guarantee on the device and its accessories will also become invalid!

2. Safety instructions

2.2 Welding

In general, it is recommended to avoid welding work in process plant if the Control Units are already installed and electrically connected.

But if welding is absolutely necessary, always earth close to the welding area.

2.3 Connecting terminals

For connecting cable to the terminals at the electronic module only use short wire and ferrules without plastic collar!

2.4 Guarantee conditions

This document does not contain any agreement to provide a guarantee. We refer to our general Selling and Business Conditions. The precondition for the guarantee is the correct use of the device in compliance with the specified application conditions.



Attention !

This guarantee only applies to the Control Unit.
No liability will be accepted, however, for consequential damage of any kind that could arise from the failure or malfunction of the device.

3. General description

The control unit has an electronic module which scans the position of the valve and provides the information as signals which are compatible with most control systems.



There is a solenoid valve within the control system. The solenoid valve which is electrically activated, controls the compressed air. The solenoid valve is equipped with a throttling system for supply and exhaust air, which makes it possible to decrease the opening and closing speed of the valve.

The control unit for DELTA DA3+ is available with 3 solenoid valves. The control unit for DELTA DE3 has 1 solenoid valve. See fig. 1-1 and 1-2

The control unit has LEDs which give a visual indication of the valve position, solenoid status and operating voltage.

Connections for air and power supply are placed at the control unit together with a valve which cuts off the air supply for removal of the control unit. The control unit can be removed by release of a quick-acting coupling. This permits fast servicing of the valve.

The whole control unit is encapsulated, and all the cable and air entries are sealed so that the control unit is classified IP 67 / Nema 4x.

3.1 Description of electronic module

The solenoid valve and feed-back signals are controlled by an electronic module. The electronic module can accept various signal inputs so that different voltages can be freely chosen, AC or DC. See 3.2

The electronic module is divided into three sections:

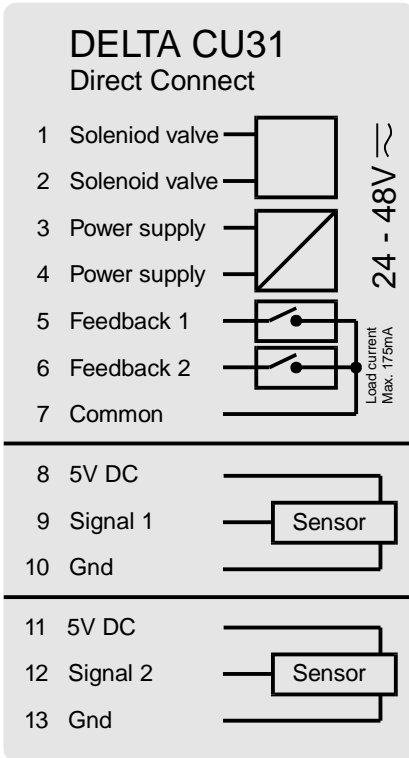
- solenoid valve control
- power supply to electronics
- feedback for activated and not-activated valve position

The three sections are fully isolated electrically, so different types of earthing and voltage supplies can be used for the individual sections if required.

Sensors for activated and not-activated valve position consist of 2 build-in Hall sensors or 2 external proximity sensors for DA3+ and DE3 valve. Feedback output with relay contact (AC/DC). See 5.

3. General description

Fig. 1-1



3.2 Electronic module, 1 solenoid valve

The electronics ensure that the power consumption is as low as possible by varying the output as required. The signal, to the solenoid is not switched direct through, but via an inbuilt conditioner to increase the power consumption.



To control the solenoid the electronic module sends a start impuls with an initial voltage, after a few msec. as the voltage will be lowered to keep the solenoid controlled.

Instantaneous power is required for activation of the valve but thereafter the power is reduced to a minimum.
See 5. Technical data

The electronic module can be rated with the following voltages:

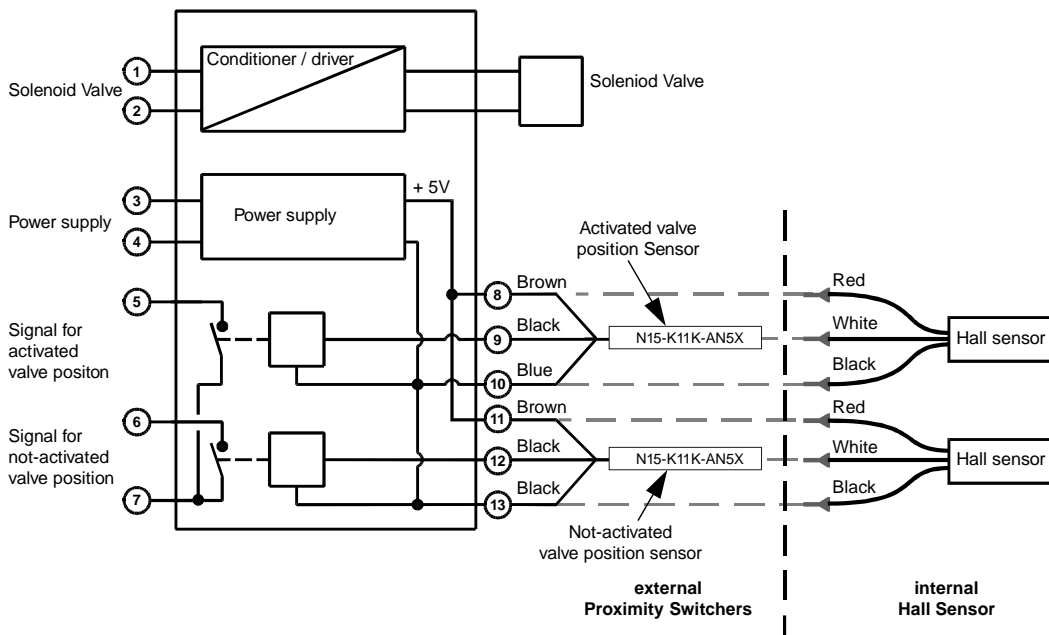
Signal to solenoid valve:
Terminal 1 and 2: 24 - 48 V, AC or DC±10%

Power supply to electronic module:
Terminal 3 and 4: 24 - 48V, AC / DC±10%

Signal for activated valve position:
Terminal 5 and 7: Solid state relay contact max. 48V AC/DC max. 175mA

Signal for not-activated valve position:
Terminal 6 and 7: Solid state relay contact max. 48V AC/DC max. 175mA

Wiring diagram:



3. General description

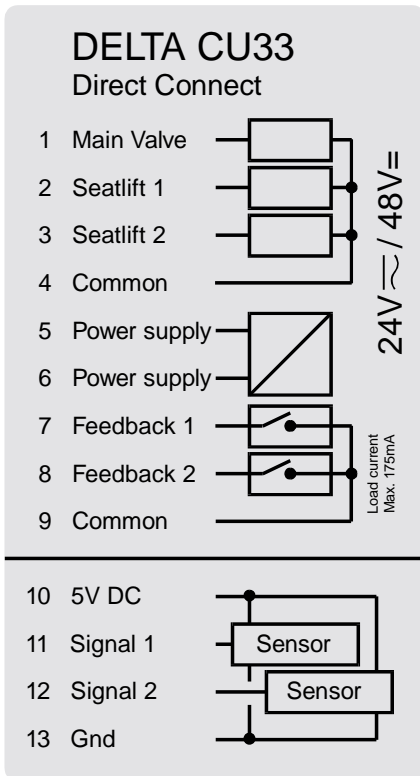
3.3 Electronic module, 3 solenoid valves

The electronics ensure that the power consumption is as low as possible by varying the output as required. The signal, to the solenoid is not switched direct through, but via an inbuilt conditioner to increase the power consumption.



To control the solenoid the electronic module sends a start impuls with an initial voltage, after a few msec. as the voltage will be lowered to keep the solenoid controlled.

Fig. 1-2



Instantaneous power is required for activation of the valve but thereafter the power is reduced to a minimum.
See 5. Technical data

The electronic module can be rated with the following voltages:

Signal to solenoid valve:

- Main solenoid: Terminal 1 and 4: 24 - 48V DC±10%, 24V AC±10%
- Lower seatlift: Terminal 2 and 4: 24 - 48V DC±10%, 24V AC±10%
- Upper seatlift: Terminal 3 and 4: 24 - 48V DC±10%, 24V AC±10%

Power supply to electronic

- module: Terminal 5 and 6: 24 - 48V DC±10%, 24V AC±10%

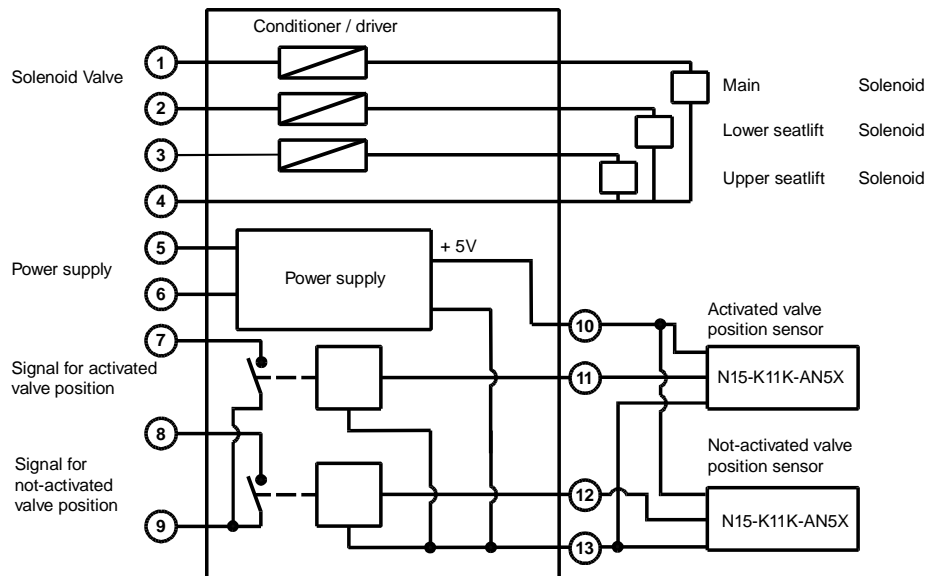
Signal for activated

- valve position: Terminal 7 and 9: Solid state relay contact max. 48V AC/DC max. 175mA

Signal for not-activated

- valve position: Terminal 8 and 9: Solid state relay contact max. 48V AC/DC max. 175mA

Wiring diagram:



3. General description

3.4 Solenoid Valve

The solenoid valve is equipped with a manual override. Two throttling seat valves provide the facility to change the opening and closing speed. Please note that the throttling valve controlling the inlet and outlet air must never be completely closed. An air-filter inside the tower protects the solenoid valve against dust. See also section 4.2., 4.3 and 4.8 for details.



Air supply for solenoid valves.
Air supply pressure: 6 - 8bar
Important see chapter technical data

3.5 NOT element

The closing force of the air actuator can be increased with additional compressed air by installing a logical NOT element which directs the compressed air via a pressure reducing valve to the spring side of the actuator.

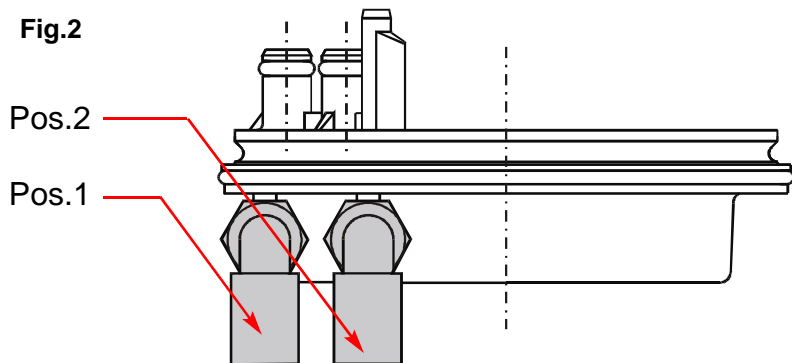
3.6 Adapter

The complete control unit is composed of a control unit top and an adapter unit. The adapter unit consists of an adaptor and an actuator screw and these are different from valve to valve. Since the control unit can be installed to different types of valve, different adapter units are necessary. It is the different types of valve which determine the adaptor unit to be combined with the control unit top.
Section 7. spare parts shows which adapter unit is used with which valve.

3.6.1 Adapter for single seat valves

The adapter for DELTA SW4, M4, SD4 shown on figure 2 is fitted with two air connectors for 6x1 mm air hose.

Pos. 1 air supply to open valve
Pos. 2 exhaust air / using a Control Unit with NOT element, the compressed air of the NOT element is directed to the pressure reducing valve at the actuator (closing force of actuator can be increased).



3.6.2 Adapter for butterfly valves & double seat ball valves

The adapter for DELTA SV/SVS1F and DELTA DKR2 valves has an internal air connection. Two blind plugs are in pos. 1 and pos. 2.

3. General description

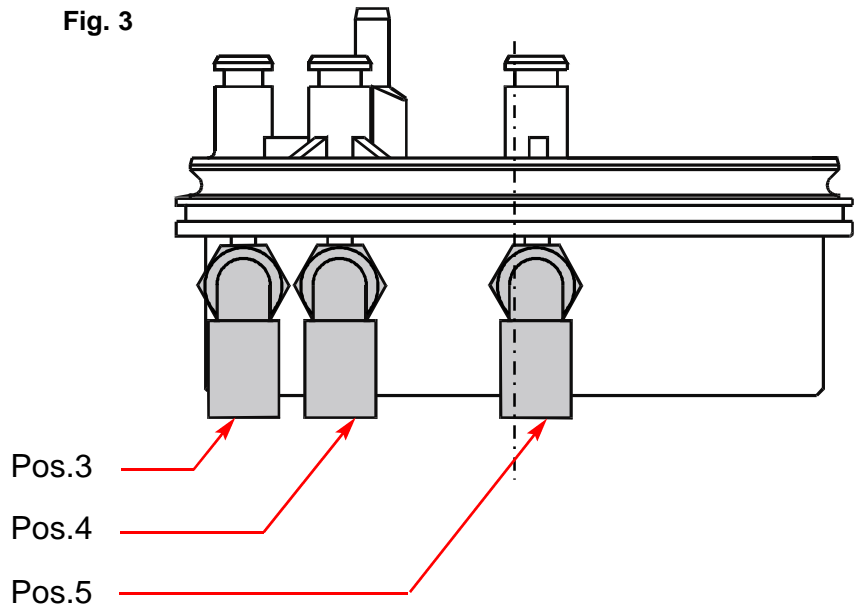
3.6.3 Adapter for mixproof valves

The adapter shown in figure 3 is for the double seat valve DELTA DA3+ and DE3. It is either equipped with one (for DELTA DE3 with one solenoid valve) or three air connectors (for DELTA DA3+ with three solenoids).

If fitted with one air connector pos. 4 and 5 are closed with a blind plug.

- Pos. 3 air supply to open valve
- Pos. 4 air supply to lift lower seat
- Pos. 5 air supply to lift upper seat

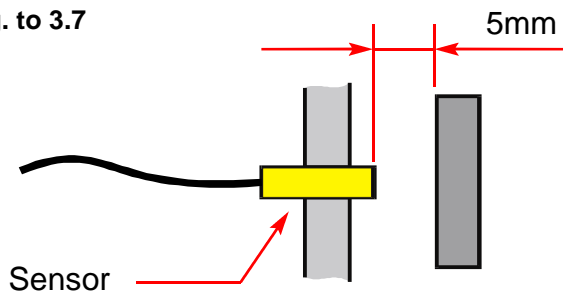
Fig. 3



3.7 External sensor

A 5V DC NPN sensor must be used (APV Products supply)
Operating distance: 5 mm.

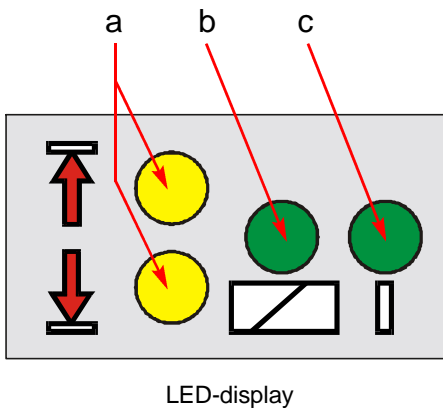
Fig. to 3.7



3.8 Air connections / elbow unions

The elbow unions for the control unit and adapter have a cylindrical thread. For their replacement against other unions, take care that the new union has a cylindrical thread.

4. Functional description



4.1 LED indication (Pos. 2)

There are four LEDs which have the following functions:

- a) Valve position. The LED lights up for valve at activated position and valve at not-activated position. This is used to provide information during operation and to set the position sensors. Please note 4.5
- b) Lights up when there is a signal to the solenoid valve.
- c) Indicates whether a supply voltage is available to the electronics.

4.2 Throttling function (Pos. 3a and 3b)

The inlet and outlet air can be adjusted at the solenoid valve by the two throttling valves (pos. 3a / IN and pos. 3b. / OUT). By turning the screws in anticlockwise direction, the inlet or outlet air is throttled. The required adjustment must be determined by the operator himself. Please note that the throttling valve controlling the inlet and outlet air must never be completely closed.

4.3 Manual activation of the solenoid valve (Pos. 4)

The solenoid valve can be activated manually by turning the handle placed on the top of the solenoid valve. This is used for adjusting the Hall sensor or for by-passing the control system to activate the valve.

4.4 Removal of control unit from valve (Pos. 5)

The control unit is released by turning the ribbed ring from the "lock" to the "un-lock" symbol. Then the control unit can be easily lifted off. Removal of the control unit shuts off the air supply.

4.5 Adjustment of feed-back position (Pos. 6)

After dismantling of the CU, check that the position of the Hall sensors are properly adjusted.

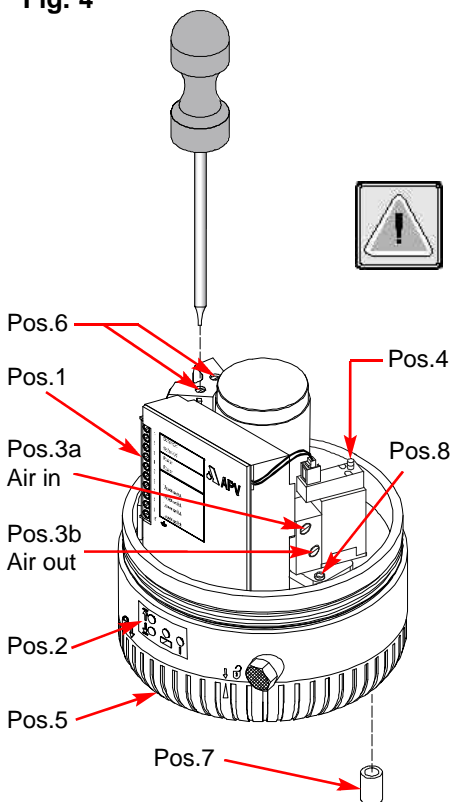
The procedure is as follows:

The Hall sensors must be adjusted to transmit a signal for activated valve position and not-activated valve position respectively. In this case it is an advantage to use manual activation (Pos. 4).

Turn the adjustment screws (Pos. 6) up/down until the correct LED just lights up. Check that it is in fact the correct LED that lights up. To allow for small fluctuations, turn the adjustment screws two revolutions in the direction in which the LED remains lit.


Control unit for DELTA DA3+ and DE3 valves are fitted with external proximity switches - no need of adjustment.


Fig. 4




4. Functional description

4.5.1 DELTA SW4, M4, SD4 in normally closed (NC) position.

The Hall sensor for activated valve position is fitted on screw in groove marked 


The Hall sensor for not-activated valve position is fitted on screw in groove marked 


The LED for activated valve sensor is marked 

The LED for not-activated valve sensor is marked 




4.5.2 DELTA SW4, M4 in normally open position (NO). DELTA DA3+, DE3, DELTA SV/SVS and DELTA DKR 2 in normally open (NO) and closed (NC) position.

The Hall sensor for activated valve position is fitted on screw in groove marked 

The Hall sensor for not-activated valve position is fitted on screw in groove marked 

The LED for activated valve sensor is marked 

The LED for not-activated valve sensor is marked 

4.6 Pressure relief valve (Pos. 7)

The pressure relief valve ensures that no pressure builds up in the cap.

4.7 Removal of the electronic box (pos. 1)

The electronic box can be removed by loosening two screws. One screw is placed between the two guides for the Hall sensors, and the other is placed on the right side of the electronic box. Remove the cable (plug) from the solenoid valve. During assembly it should be secured, that the wires for the hall sensors are not tangled, preventing them from sliding up and down unobstructed in the wire tracks.

4.8 Removal of solenoid valve (pos. 8)



Remove the cable (plug) from the solenoid valve. Loosen the 2 screws which are fixing the solenoid valve, manifold and gasket. During assembly it is to be ensured, that the gasket is positioned very precisely between the edges at the manifold. The torque for the 2 screws for the solenoid valve is **1,3 Nm, max. 1,6 Nm.**

5. Technical data

5.1 General technical data

Ambient temperature: -20°C to + 70°C

Enclosure rating: IP 67

CE: EMC 89/336/EEC

Control air : quality acc. to DIN/ISO 8573-1

- **solid particel content :** quality class 3,
maximum number of particels per m³
10 000 of size 0,5µm < d < 1,0µm
500 of size 1,0µm < d < 5,0µm
- **water content :** quality class 4,
max. pressure dew point +3°C
(for installations at lower temperatures
or higher altitudes additional measures
must be considered to reduce the
pressure dew point accordingly)
- **oil content :** quality class 1,
max. 0,01mg/m³
(the used oil must be compatible with
Polyurethan elastomer materials)

5.2 Technical data electronic module



- Solenoid Driver

Supply (Terminal 1+2)

a. Electronic module

1 Solenoid: 24 - 48V AC / DC±10%,

b. Electronic module

3 Solenoids: 24 - 48V DC±10%,
24V AC±10%

Current consumption for 24V DC:

Inrush current max 800mA in 15mSec,

Pull in current max 100mA for max 200mSec

Holding current Typical 30mA, max 35mA

Current consumption for 48V DC:

Inrush current max 1300mA in 10mSec,

Pull in current max 50mA for max 200mSec

Holding current Typical 16mA, max 20mA

Current consumption for 24V AC:

Inrush current max 800mA in 30mSec, (peak current)

Pull in current max 250mA for max 200mSec (peak current)

Holding current Typical 100mA, (peak current)

Current consumption for 48V AC:

Inrush current max 1600mA in 30mSec, (peak current)

Pull in current max 200mA for max 200mSec (peak current)

Holding current Typical 160mA, (peak current)

5. Technical data

5.2.1 Power supply for unit

Supply (Terminal 3+4)



a. Electronic module

1 Solenoid: 24 - 48V AC / DC \pm 10%

b. Electronic module

3 Solenoids: 24 - 48V DC \pm 10%,
24V AC \pm 10%

2 Hall sensors mounted and one sensor active.

Current consumption for 24V DC:

Inrush current max 1800mA in 2 mSec,
Current continuous Typical 15mA, max 25mA

Current consumption for 48V DC:

Inrush current max 3000mA in 1mSec,
Current continuous Typical 10mA, max 15mA

Current consumption for 24V AC:

Inrush current max 1600mA in 30mSec, (peak current)
Current continuous Typical 75mA, (peak current)

Current consumption for 48V AC:

Inrush current max 2500mA in 30mSec, (peak current)
Current continuous Typical 200mA, (peak current)

5.2.2 Feedback contact

(Terminal 5 + 6 + 7)

Feedback is a DC/AC solid state relay function.

max. ON resistance 25 ohm

min. OFF resistance 500 ohm

max. current: 175mA

max. 48V AC/DC

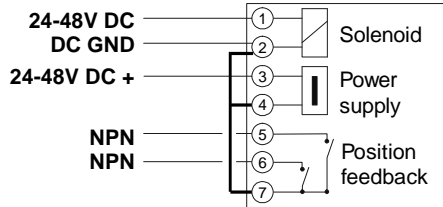
Right to make changes reserved

6. Wiring examples

DELTA CU3

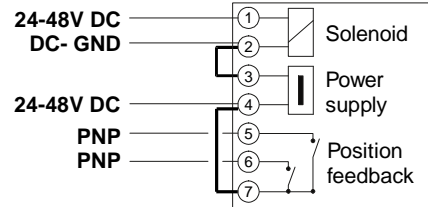
Example 1: 5 wires needed

DC solenoid signal, DC supply, NPN to PLC, common DC ground



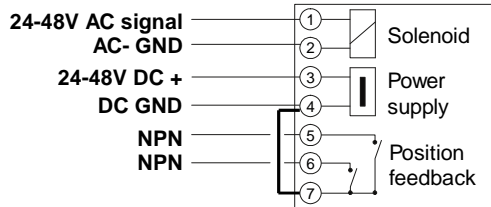
Example 2: 5 wires needed

DC solenoid signal, DC supply, PNP to PLC, common DC ground



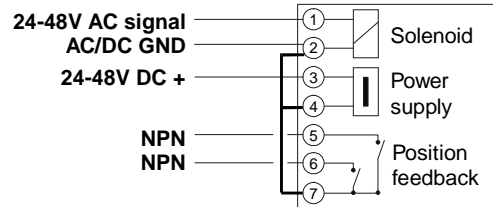
Example 3: 6 wires needed

AC solenoid signal, DC supply, NPN to PLC, not common AC/DC ground



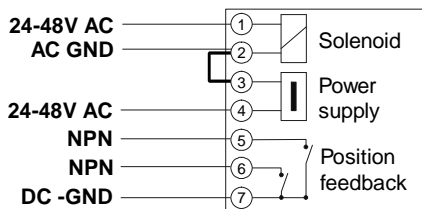
Example 4: 5 wires needed

AC solenoid signal, DC supply, NPN to PLC, common, AC/DC ground



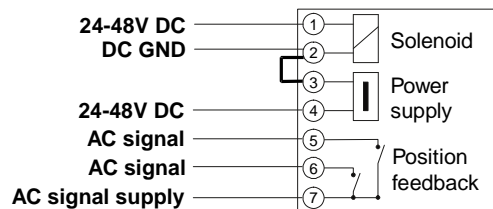
Example 5: 6 wires needed

AC solenoid signal, AC supply, NPN to PLC, not common AC/DC ground



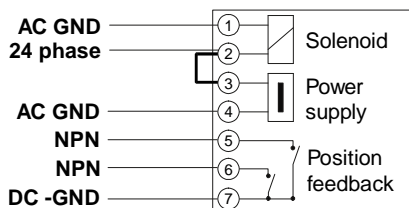
Example 6: 6 wires needed

DC solenoid signal, DC supply, AC to PLC, not common, AC/DC ground



Example 7: 6 wires needed

AC solenoid signal, AC supply, NPN to PLC, not common AC/DC ground,
Pascon (Pasilac PLC)



Note:

Pls. see technical data for electronic module (5.2) for the use of different voltages.

BA CU3DC 00002
ID-No.: H 3 1 1 6 5 5
Translation of original manual



rev. 3



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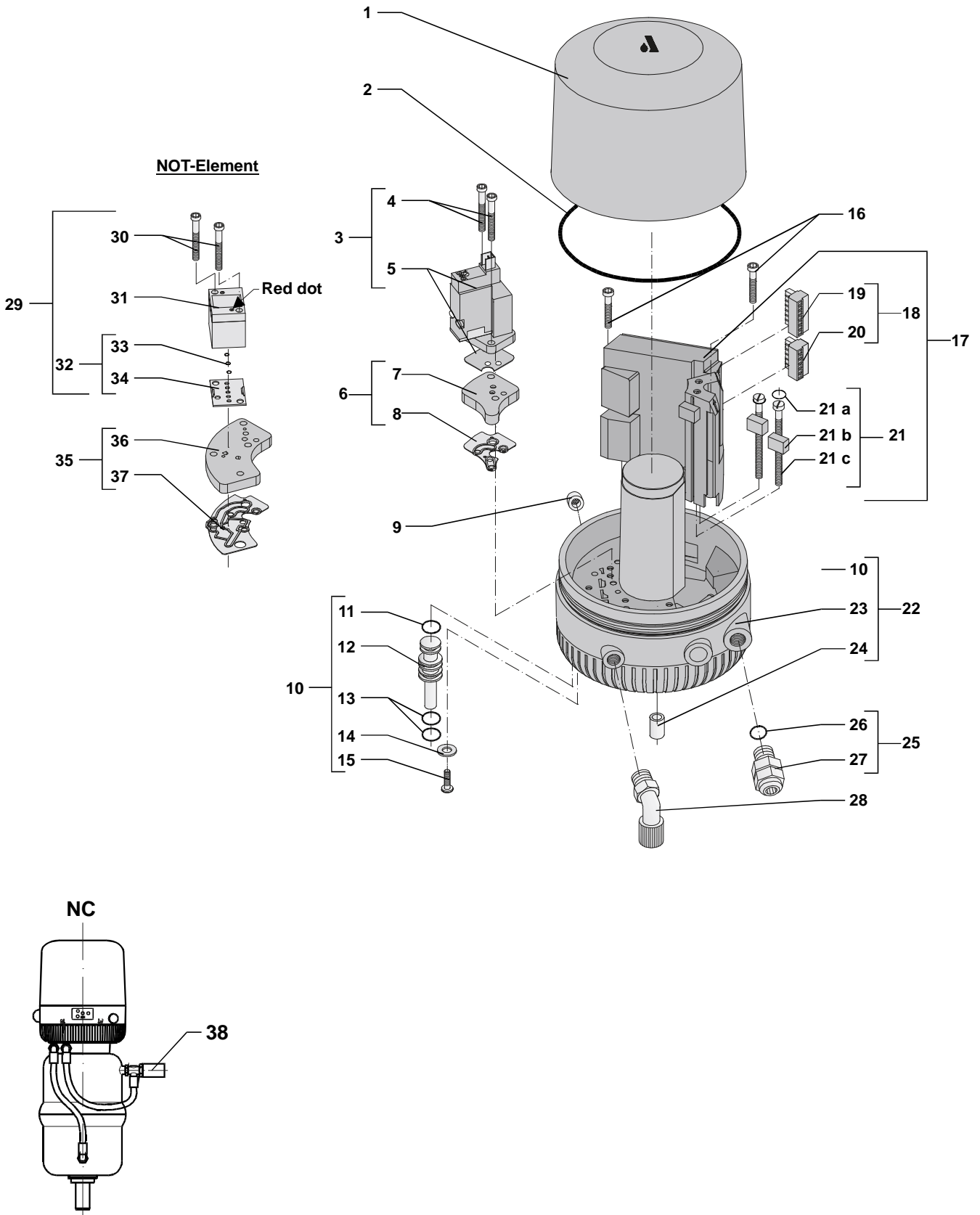
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7.1 Steuereinheit / Control unit

DELTA CU31



7.1 Steuereinheit / Control unit

DELTA CU31

Pos	Stk/Qty	Maße / Dim.	Benennung	Description	Ws.-Nr. / Part No.
-	-		CU31-Direct Connect - Standard	CU31-Direct Connect -Standard	16-31-232/93
-	-		CU31N mit NOT - Element	CU31N with NOT-Element	16-31-233/93
1	1		CU-Haube	CU-Cap	08-60-713/93
2	1	Ø105x2,5 /NBR	O-Ring	O-Ring	-
3	1		Magnetventil CU3 komplett	Solenoid Valve CU3 complete	97-00-160/93
- 4	2	40x25 /WN 1451	TORX - Schraube	TORX-screw	-
- 5	1		Magnetventil mit Dichtung	Solenoid Valve and Gasket	-
6	1		Luftverteilerplatte CU31 komplett	Air Distributing Plate CU31 cpl.	08-60-319/93
- 7	1		Luftverteilerplatte	Manifold	-
- 8	1		Dichtung für Luftverteilerplatte	Gasket for Manifold	-
9	1		Schalldämpfer	Sound Reducer	08-60-751/93
10	1		Druckluftabsperrkolben CU3 kpl.	Shut-off Piston comp. air CU3	15-28-860/93
- 11	1	Ø7,65x1,78 /NBR	O-Ring	O-ring	-
- 12	1		Kolben	Piston	-
- 13	2	Ø9,25x1,78 /NBR	O-Ring	O-ring	-
- 14	1	Ø4,3 A2 /DIN 9021	Scheibe	Washer	-
- 15	1	40x12 /WN 1451	TORX - Schraube	TORX-screw	-
16	2	40x45 /WN 1451	TORX - Schrauben	TORX-screw	08-60-752/15
17	1		CU31 Elektronikbox DC kpl.	CU31 Electronic Box DC cpl.	08-60-793/93
- 18	1		Steckerset 6-und 7-polig	Plug kit	08-60-270/93
- 19*	1		Stecker 7-polig	Plug for terminal block, 7 wire	-
- 20*	1		Stecker 6-polig	Plug for terminal block, 6 wire	-
21	2		Hall Sensor komplett	Hall Sensor kit complete	08-60-850/93
- 21a	1	Ø3x2 /NBR	O-Ring	O-ring	-
- 21b	1		Hall Sensor	Hall sensor	-
- 21c	1		Justierschraube	Adjusting Screw	-
22	1		CU31 Sockel komplett	CU31 Base kit	08-51-016/93
- 23	1		Sockel	Base	-
- 24	1		Überströmventil	Pressure relief Valve	-
25	1		Kabelverschraubung 4-8mm kpl.	Screwed Cable Gland cpl.	08-29-310/93
- 26	1	Ø12,42x1,78 /NBR	O-Ring	O-ring	-
- 27	1		Kabelverschraubung	Cable Inlet	-
28	1		Winkelverschraubung G1/8	Elbow Connector G1/8	08-60-750/93
29	1		NOT - Element komplett	NOT - element complet	08-60-290/93
- 30	2	40x50 /WN 1451	TORX - Schraube	TORX-screw	08-60-759/15
- 31	1		NOT-Element	NOT-element	-
- 32**	1		Dichtungssatz NOT - Element	Seal Kit NOT - element	58-34-300/13
- 33	3	Ø3,68x1,78 /NBR	O-Ring	O-ring	-
- 34	1		Dichtung	Gasket	-
35	1		Luftverteilerplatte CU31N kpl.	Air Distributing Plate CU31N cpl.	08-60-320/93
- 36	1		Luftverteilerplatte	Manifold	-
- 37	1		Dichtung für Luftverteilerplatte	Gasket for Manifold	-
38***	1		Druckreduzierventil	Pressure reducer valve	08-60-766/93

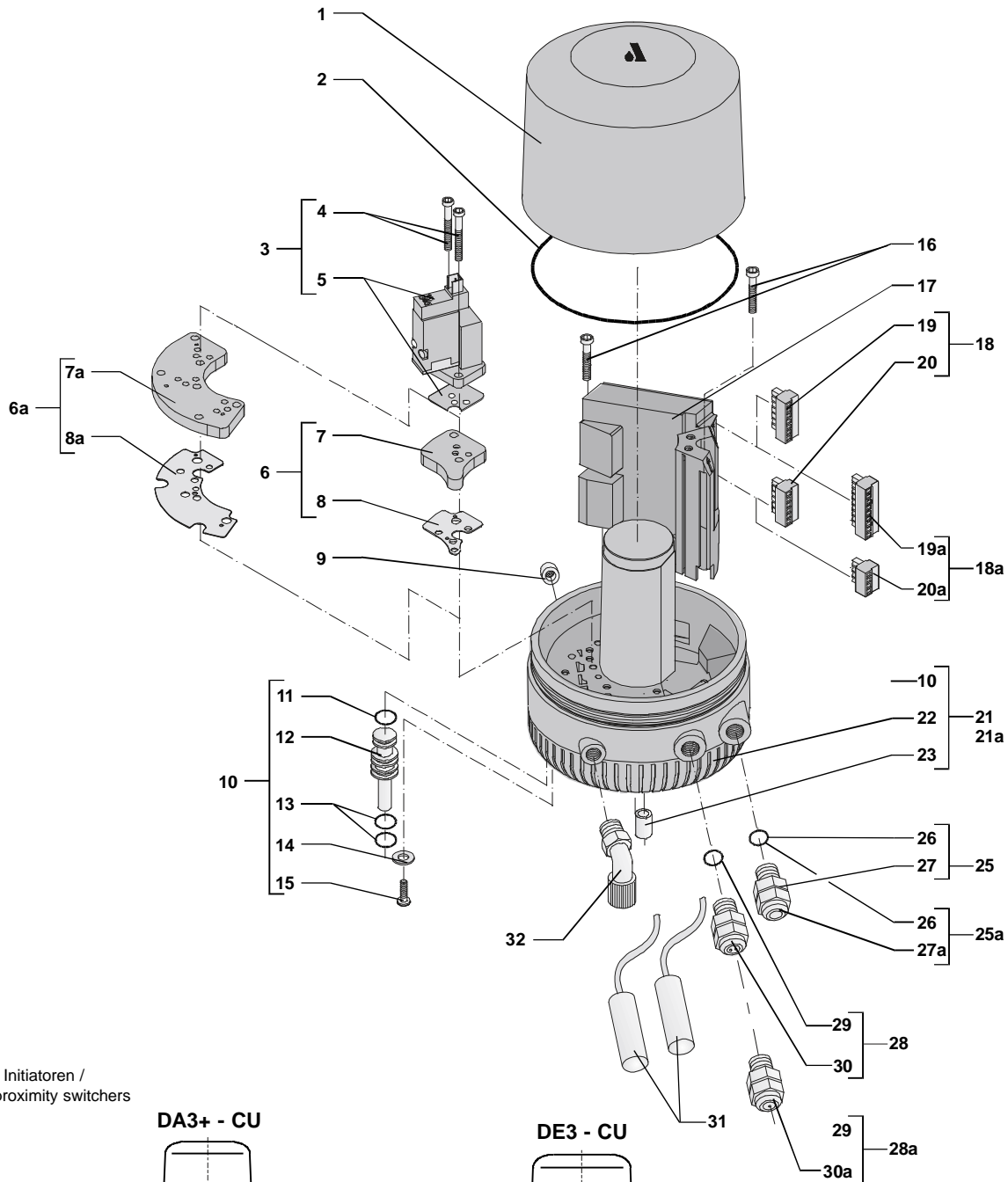
* Ersatzteile für Elektronikbox / Spare part for Electronic Box

** Ersatzteile für NOT - Element / Spare part for NOT - element

*** Das Druckreduzierventil wird nur bei der Control Unit mit NOT - Element eingesetzt.
Für die Montage in den Antrieb ist das Druckreduzierventil beigegefügt.
The pressure reducing valves is used only for the Control Unit with NOT - element.
For assembly in the actuator the pressure reducing valve forms part of the scope of supply.

7.2 Steuereinheit / Control unit

DELTA CU3 for DA3+ / DE3



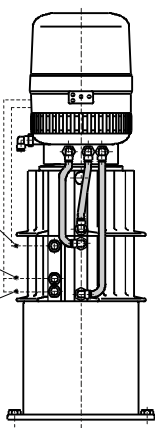
Position der Initiatoren /
Position of proximity switchers

DA3+ - CU

geschlossene Position /
closed position

geöffnete Position
nur für DN 40, 1,5" /
open position
only for DN 40, 1,5"

geöffnete Position
nur für DN 50-100, 2"-4" /
open position
only for DN 50-100, 2"-4"

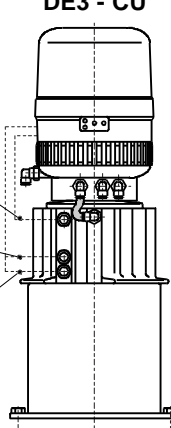


DE3 - CU

geschlossene Position /
closed position

geöffnete Position
nur für DN 40-50, 1,5"-2" /
open position
only for DN 40-50, 1,5"-2"

geöffnete Position
nur für DN 65-100, 2,5"-4" /
open position
only for DN 65-100, 2,5"-4"

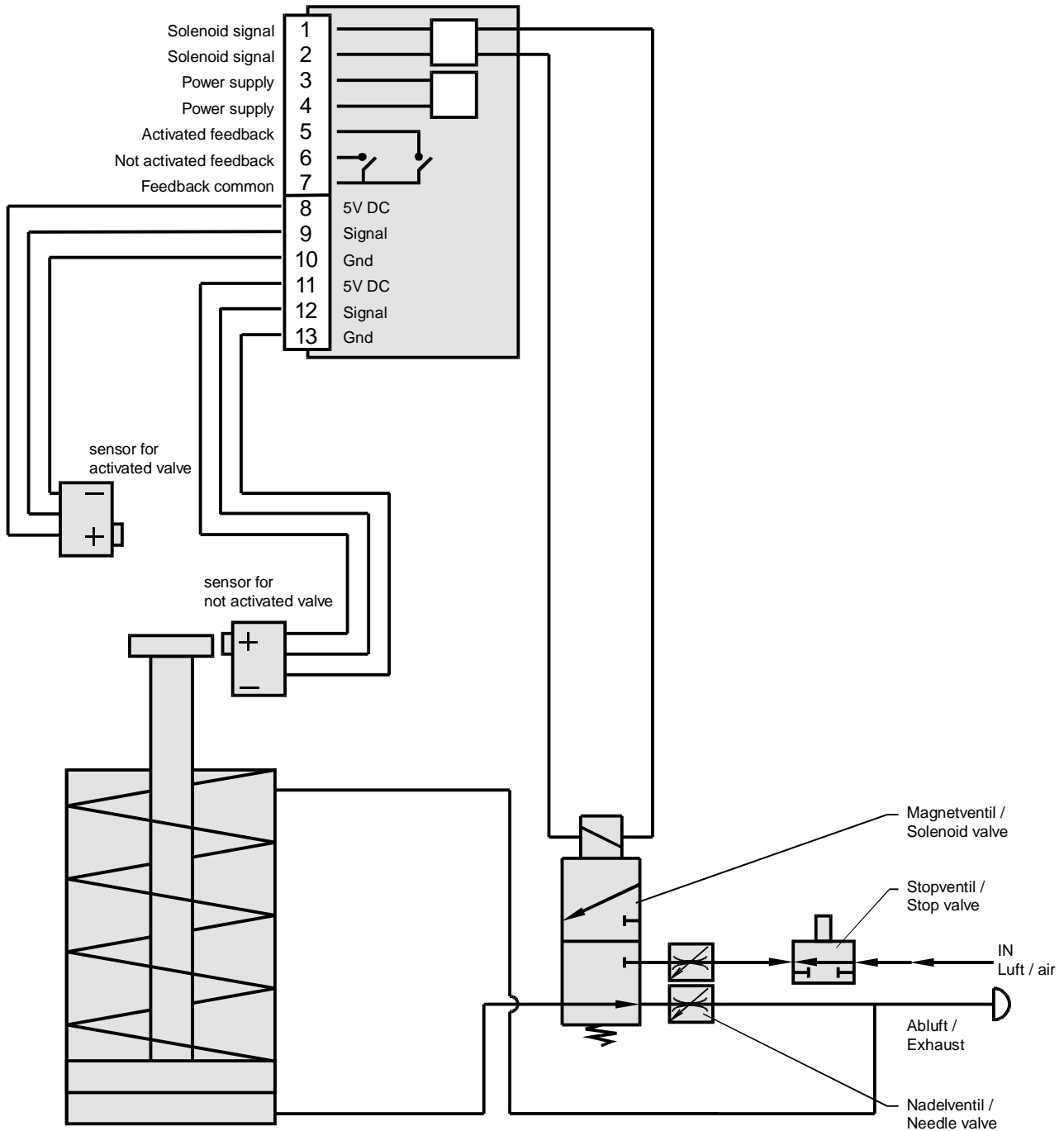


7.2 Steuereinheit / Control unit

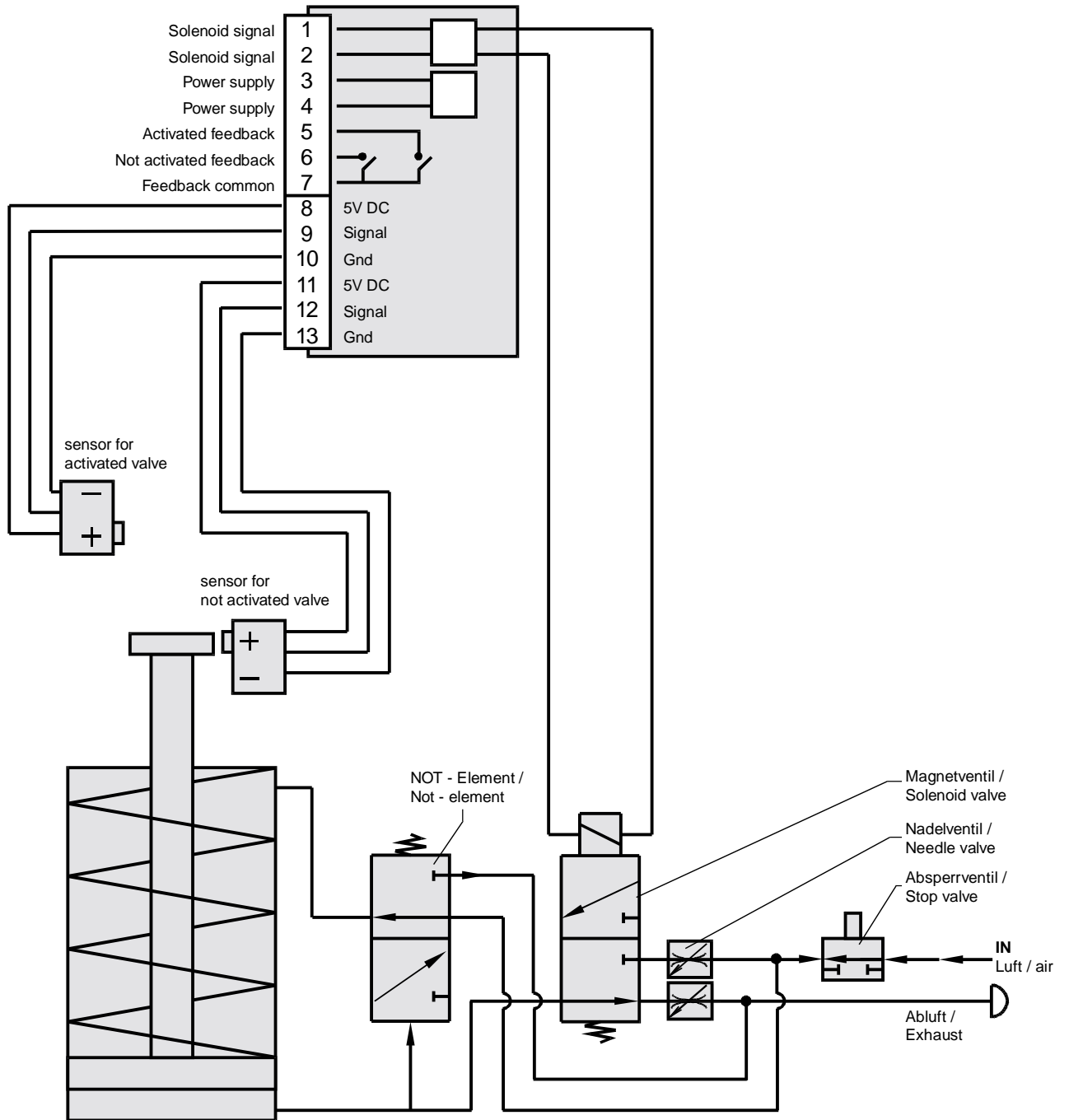
DELTA CU3 for DA3+ / DE3

Pos	Stk/Qty	Maße / Dim.	Benennung	Description	Ws.-Nr. / Part No.
-	-		CU31-DE3 1 Magnetventil	CU31- DE3 - 1 Solenoid Valve	16-31-234/93
-	-		CU33-DA3+ 3 Magnetventile	CU33-DA3+ - 3 Solenoid Valves	16-31-235/93
1	1		CU-Haube	CU-Cap	08-60-713/93
2	1	Ø105x2,5 /NBR	O-Ring	O-ring	-
3	1		Magnetventil komplett	Solenoid Valve kit	97-00-160/93
- 4	2	40x25 /WN 1451	TORX - Schraube	TORX-screw	-
- 5	1		Magnetventil mit Dichtung	Solenoid Valve with seal	-
6	1		Luftverteilerplatte CU31 komplett	Air Distributing Plate CU31 cpl.	08-60-319/93
- 7	1		Luftverteilerplatte	Manifold	-
- 8	1		Dichtung	Gasket	-
6a	1		Luftverteilerplatte CU33 komplett	Air Distributing Plate CU33 cpl.	08-60-321/93
- 7a	1		Luftverteilerplatte	Manifold	-
- 8a	1		Dichtung	Gasket	-
9	1		Schalldämpfer	Sound Reducer	08-60-751/93
10	1		Druckluftabsperrkolben CU3 kpl.	Shut-off Piston comp. air CU3	15-28-860/93
- 11	1	Ø7,65x1,78 /NBR	O-Ring	O-ring	-
- 12	1		Kolben	Piston	-
- 13	2	Ø9,25x1,78 /NBR	O-Ring	O-ring	-
- 14	1	Ø4,3 A2 /DIN 9021	Scheibe	Washer	-
- 15	1	40x12 /WN 1451	TORX - Schraube	TORX-screw	-
16	2	40x45 /WN 1451	TORX - Schraube	TORX-screw	08-60-752/15
17	1		CU31-DE3 Elektronikbox 1EMV	CU31-DE3 Electronic Box 1SV	08-60-794/93
18	1		Stecker Set 6- und 7- polig	Plug kit	08-60-270/93
- 19	1		Stecker 7- polig	Plug for terminal block, 7 wire	-
- 20	1		Stecker 6- polig	Plug for terminal block, 6 wire	-
17a	1		CU33-DA3+ Elektronikbox 3EMV	CU33-DA3+ Electronic Box 3SV	08-60-795/93
18a	1		Stecker Set 4- und 9- polig	Plug kit	08-60-271/93
- 19a	1		Stecker 9- polig	Plug for terminal block, 9 wire	-
- 20a	1		Stecker 4- polig	Plug for terminal block, 4 wire	-
21	1		CU31-DE3 Sockel kpl. (1EMV)	CU31-DE3 Base kit compl. (1SV)	08-51-017/93
21a	1		CU33-DA3+ Sockel kpl. (3EMV)	CU33-DA3+ Base kit compl. (3SV)	08-51-018/93
22	1		Sockel	Base	-
23	1		Überströmventil	Pressure relief Valve	-
25	1		Kabelverschraubung kpl. (4-8mm)	Screwed Cable Gland cpl. (4-8mm)	08-29-310/93
- 26	1	Ø12,42x1,78 /NBR	O-Ring	O-ring	-
- 27	1		Kabelverschraubung	Cable Inlet	-
25a	1		Kabelverschraubung kpl. (5-10mm)	Cable Inlet kit (5-10mm)	08-29-311/93
- 26	1	Ø12,42x1,78 /NBR	O-Ring	O-Ring	-
- 27a	1		Kabelverschraubung	Cable Inlet	-
28	1		Kabelversch. für 2 Initiatoren kpl.	Cable Inlet f. 2 Proximity switch cpl.	08-29-320/93
- 29	1	Ø18,77x1,78/NBR 70	O-Ring	O-ring	-
- 30	1		Kabelverschraubung	Cable Inlet	-
28a	1		Kabelversch. für 1 Initiator kpl.	Cable Inlet f. 1 Proximity switch	08-29-321/93
- 29	1	Ø18,77x1,78 NBR 70	O-Ring	O-ring	-
- 30a	1		Kabelverschraubung	Cable Inlet	-
31	2		Initiator (5V NPN)	Proximity Switch (5V NPN)	08-60-769/93
32	1		Winkelverschraubung	Elbow Connector	08-60-750/93

Direct Connect, one solenoid valve

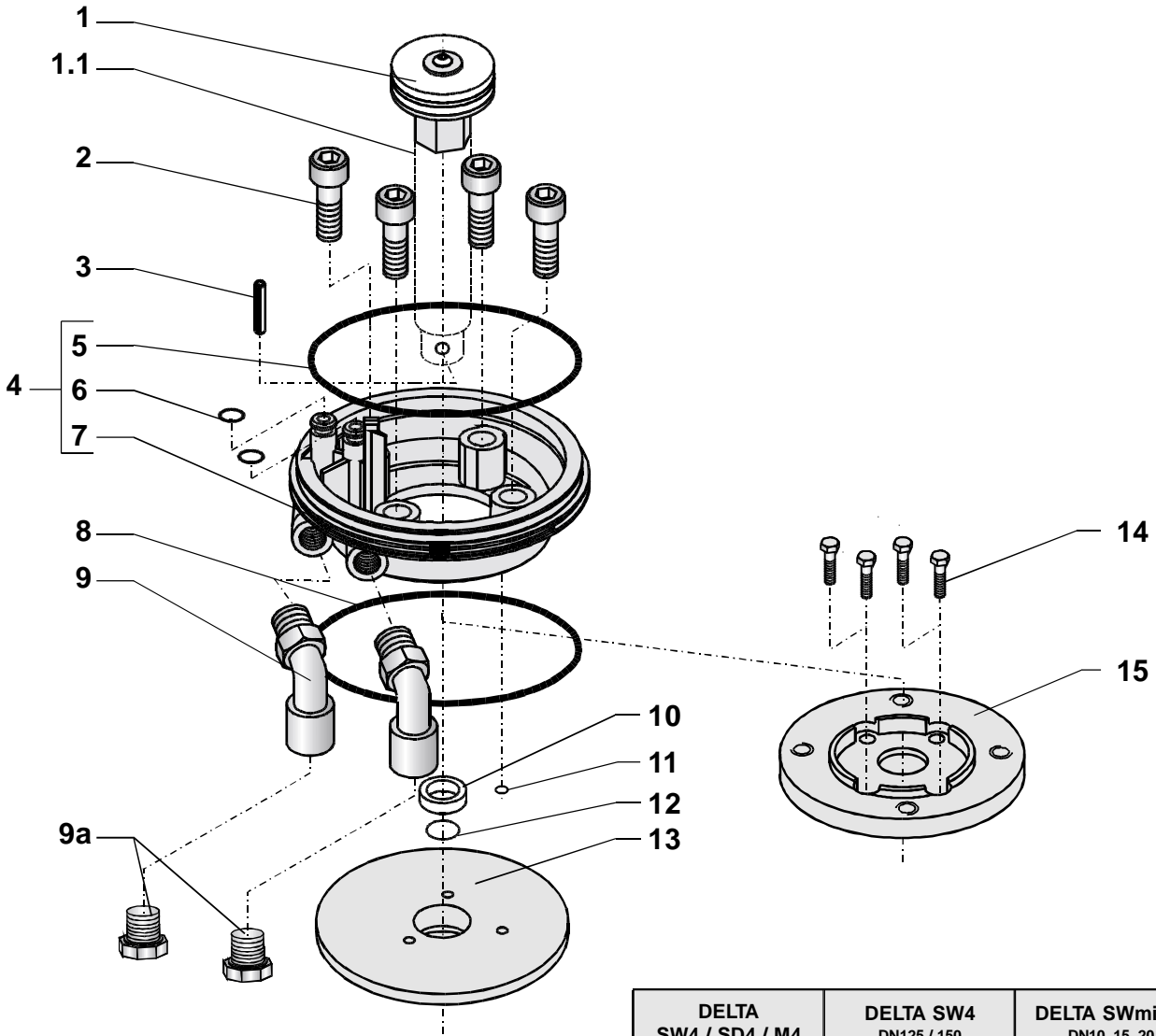


Direct Connect, one solenoid valve with NOT - Element



7.4 Adapter / Adapter

DELTA CU3



Pos.	Stk./Qty.	Benennung	Description	DELTA	DELTA SW4	DELTA SWmini4
				SW4 / SD4 / M4	DN125 / 150	DN10, 15, 20
				Ws.-Nr. / Part No.		
-	-	CU Adapter kpl.	Complete adapter	08-48-415/93	08-48-362/93	08-48-414/93
1	1	Schaltnocke	Actuator screw	08-60-700/93	08-60-700/93	08-60-700/93
1.1	1	Zugstangenverläng.	Extension rod	-	15-26-057/93	15-26-070/93
2	4	Schraube	Screw	M8x25/DIN 912	M8x25/DIN 912	M8x25/DIN 912
3	1	Spannstift	Split pin	-	-	-
4	1	CU Adapter Set	Adapter kit	08-60-331/93	08-60-331/93	08-60-331/93
- 5	1	O-Ring	O-ring	Ø88,62x1,78 /NBR	Ø88,62x1,78 /NBR	Ø88,62x1,78 /NBR
- 6	2	O-Ring	O-ring	Ø5,28x1,78 /NBR	Ø5,28x1,78 /NBR	Ø5,28x1,78 /NBR
- 7	1	Adapter	Adapter	-	-	-
8	1	O-Ring	O-ring	-	-	-
9	2	Winkelverschraub.	Elbow connector	08-60-750/93	08-60-750/93	08-60-750/93
9a	1	Stopfen	Plug	-	-	08-74-021/93
10	1	Dichtung	Gasket	-	-	-
11	1	O-Ring	O-ring	-	-	-
12	1	O-Ring	O-ring	-	-	-
13	1	Adapter	Adapter	-	-	-
14	4	Schraube	Screw	-	-	M5x12/DIN 933
15	1	Adapter SWmini4	Adapter SWmini4	-	-	08-48-355/93

7.4 Adapter / Adapter

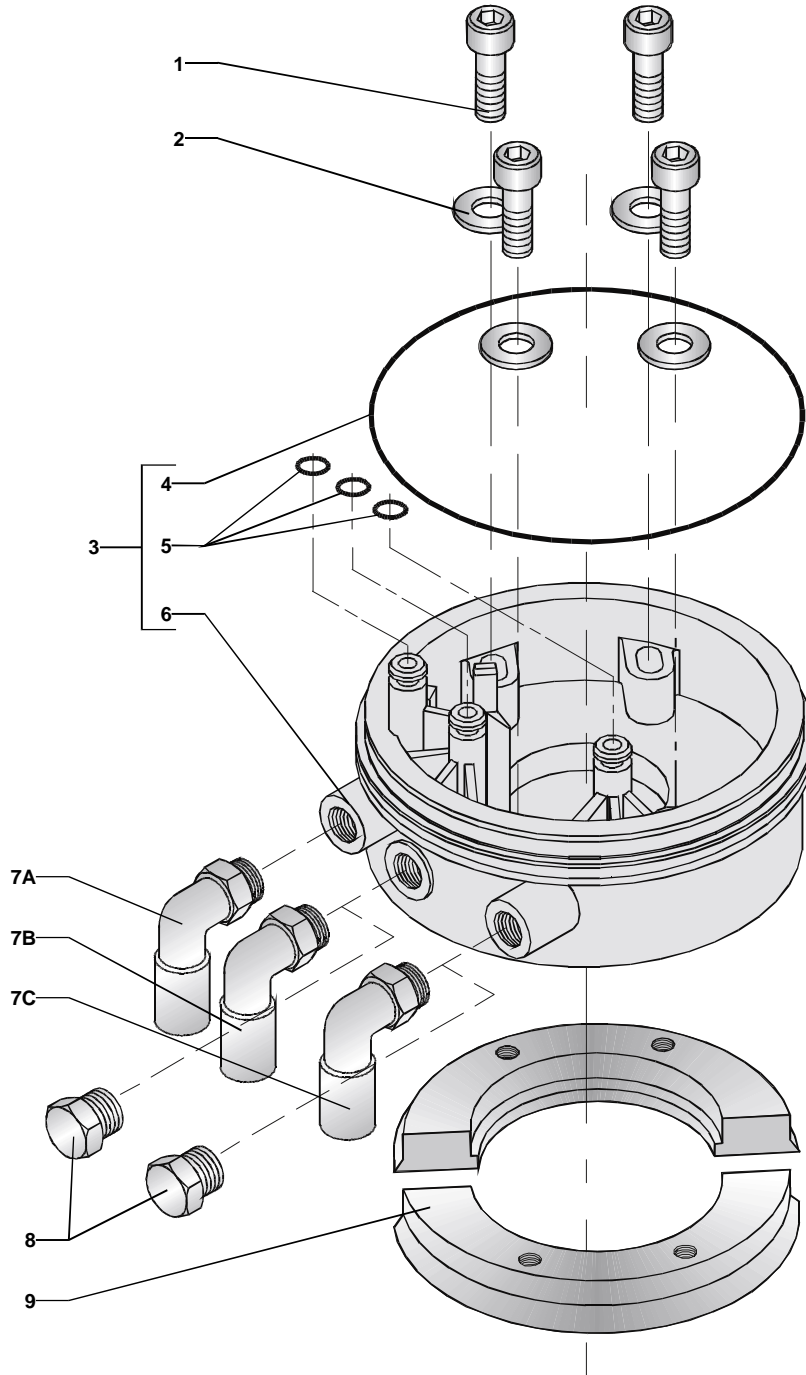
DELTA CU3

				SV/SVS1F DN 25 - 100 and 1" - 4", DKR 2 DN25 - 65 and 1" - 2,5"	SVS1F DN 125 - 250, DKR2 80 - 125 and 3" - 4"	S2 / D2	S3
Pos.	Stk./Qty.	Benennung	Description	Ws.-Nr. / Part No.			
-	-	Adapter komplett	Complete adapter	08-48-416/93	08-48-417/93	08-48-418/93	08-48-419/93
1	1	Schaltnocke	Actuator screw	08-60-779/93	08-60-780/93	08-60-781/93	08-60-782/93
2	4	Schraube	Screw	-	-	-	M8x25/DIN 912
	4	Schraube	Screw	M5x18/ISO 1207	M5x18/ISO 1207	-	-
	4	Schraube	Screw	-	-	M8x22/DIN 912	-
3	1	Spannstift	Split pin	-	-	-	-
4	1	Adapter Set	Adapter kit	08-60-333/93	08-60-333/93	08-60-334/93	08-60-334/93
- 5	1	O-Ring	O-ring	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR
- 6	2	O-Ring	O-ring	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR
- 7	1	Adapter	Adapter	-	-	-	-
8	1	O-Ring	O-ring	Ø 90x2/ NBR	Ø 90x2/ NBR	-	-
9	2	Winkelverschraubung	Elbow connector	-	-	08-60-750/93	08-60-750/93
9a	2	Blindstopfen	Plug	08-60-740/93	08-60-740/93	-	-
10	1	Nutring	Gasket	-	08-60-738/93	-	-
11	1	O-Ring	O-ring	Ø 13 x 2 / NBR 70	Ø 13 x 2 / NBR 70	-	-
12	1	O-Ring	O-ring	-	Ø 11 x 3 / NBR	-	-
13	1	Adapter	Adapter	-	-	-	-

				VPS / VPL /VPB	VPS - 3A	VPS-3A Longstroke	VPM
Pos.	Stk./Qty.	Benennung	Description	Ws.-Nr. / Part No.			
-	-	Adapter komplett	Complete adapter	08-48-420/93	08-48-421/93	08-48-422/93	08-48-423/93
1	1	Schaltnocke	Actuator screw	08-60-778/93	08-60-783/93	08-60-784/93	08-60-785/93
1.1	1	Zugstangenverläng.	Extension rod	-	-	-	-
2	4	Schraube	Screw	-	-	-	-
	4	Schraube	Screw	M5x18/ISO 1207	M5x18/ISO 1207	M5x18/ISO 1207	M5x18/ISO 1207
3	1	Spannhülse	Split pin	-	08-60-762/15	08-60-762/15	-
4	1	CU Adapter Set	Adapter kit	08-60-332/93	08-60-332/93	08-60-332/93	08-60-332/93
- 5	1	O-ring	O-Ring	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR	Ø 88,62x1,78 /NBR
- 6	2	O-ring	O-Ring	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR	Ø 5,28x1,78 /NBR
- 7	1	Adapter	Adapter	-	-	-	-
8	1	O-ring	O-Ring	Ø 88x1,5/ NBR	Ø 88x1,5/ NBR	Ø 88x1,5/ NBR	Ø 88x1,5/ NBR
9	2	Winkelverschraub.	Elbow connector	08-60-750/93	08-60-750/93	08-60-750/93	08-60-750/93
9a	2	Stopfen	Plug	-	-	-	-
10	1	Dichtung	Gasket	-	-	-	-
11	1	O-ring	O-Ring	-	-	-	-
12	1	O-ring	O-Ring	-	-	-	-
13	1	Adapter VPM	Adapter VPM	-	-	-	08-20-125/12

7.5 Adapter / Adapter

DELTA CU3 for DA3+ / DE3



Pos.	Benennung	Description
7A	Luftanschluss : Ventil öffnen	Air connection : Valve opening
7B	Luftanschluss : untere Sitzanlüftung	Air connection : lower seat lift
7C	Luftanschluss : obere Sitzanlüftung	Air connection : upper seat lift

7.5 Adapter / Adapter

DELTA CU3 for DA3+ / DE3

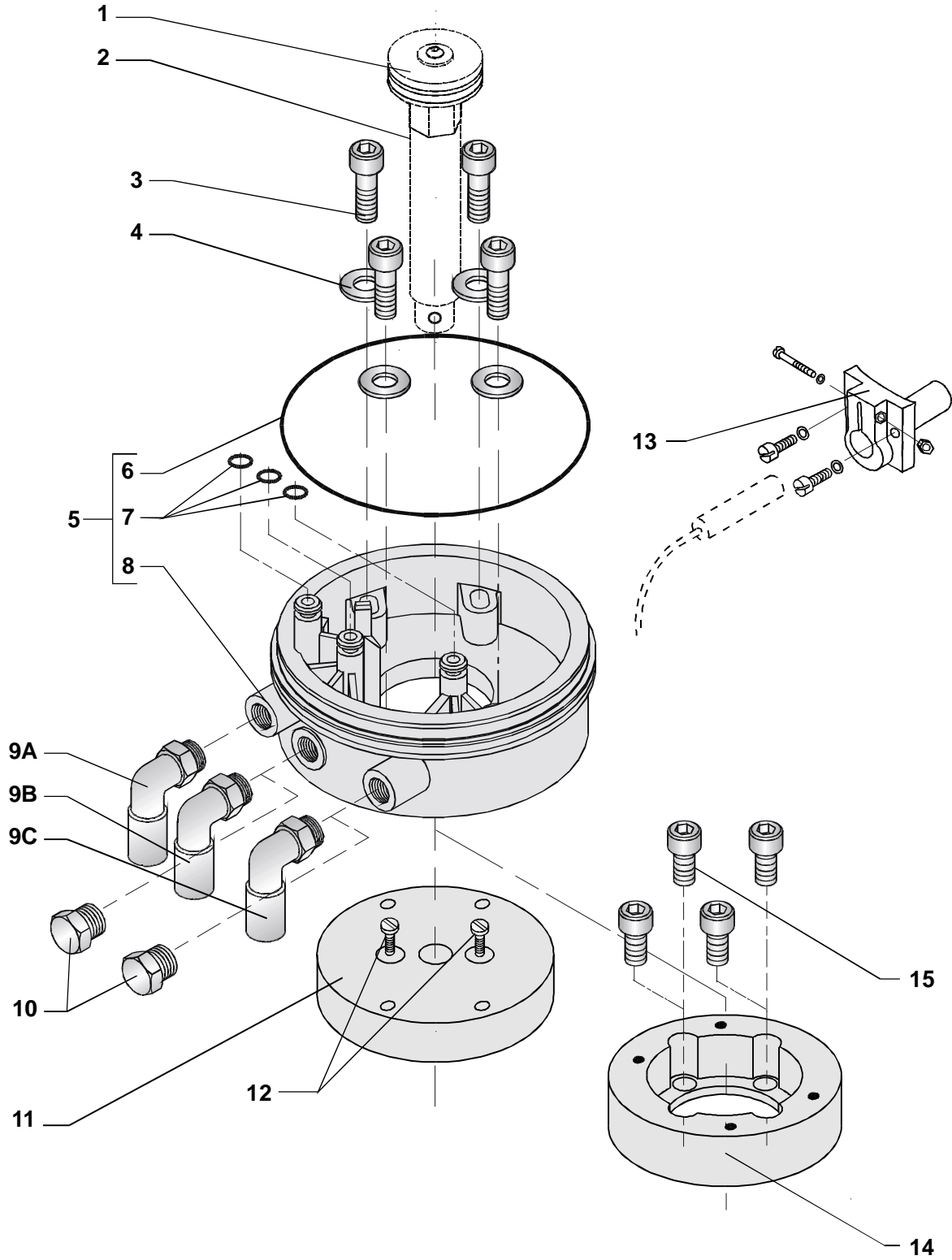
Adapter für DE3 / DA3+ - 1 Magnetventil (EMV) / Adapter for DE3 / DA3+ - 1 Solenoid valve (SV)

Pos	Stk/Qty	Benennung	Description	Ws.-Nr. / Part No.
-	-	CU21 Adapter DA3+, DE3 komplett -1 Elektromagnetventil	CU21 Adapter DA3+, DE3 complete -1 solenoid Valve	08-48-424/93
1	4	Schraube	Screw	M5x25/ ISO4762
2	4	Scheibe	Washer	08-60-767/15
3	1	CU2 Adapter Set DA3+, DE3	CU2 Adapter kit DA3+, DE3	08-60-330/93
- 4	1	O-ring	O-Ring	Ø88,62x1,78 /NBR
- 5	3	O-ring	O-Ring	Ø5,28x1,78 /NBR
- 6	1	Adapter	Adapter	-
7A	1	Winkelverschraubung	Elbow connector	08-60-750/93
8	2	Blindstopfen	Plug	08-60-740/93
9	2	Montagehälfte CU Adapter	Adapter half	08-60-717/93

Adapter für DA3+ - 3 Magnetventile (EMV) / Adapter for DA3+ - 3 Solenoid valves (SV)

Pos	Stk/Qty	Benennung	Description	Ws.-Nr. / Part No.
-	-	CU23 Adapter DA3+ komplett - 3 Elektromagnetventile	CU23 Adapter DA3+ complete - 3 solenoid valves	08-48-425/93
1	4	Schraube	Screw	M5x25 ISO4762
2	4	Scheibe	Washer	08-60-767/15
3	1	CU2 Adapter Set DA3+, DE3	CU2 Adapter kit DA3+, DE3	08-60-330/93
- 4	1	O-ring	O-Ring	Ø88,62x1,78 /NBR
- 5	3	O-ring	O-Ring	Ø5,28x1,78 /NBR
- 6	1	Adapter	Adapter	-
7A-B-C	3	Winkelverschraubung	Elbow connector	08-60-750/93
8	-	Blindstopfen	Plug	-
9	2	Montagehälfte CU Adapter	Adapter half	08-60-717/93

7.6 Adapter / Adapter DELTA CU3 for PHB/ PSL SW4, M4 & S2 - DN 10, 15, 20



7.6 Adapter / Adapter DELTA CU3 for PHB/ PSL SW4, M4 & S2 - DN 10, 15, 20

Adapter für Pneumatische Hubbegrenzung (PHB) SW4 / M4 / Adapter for Pneumatic Stroke Limitation (PSL) SW4 / M4

Pos.	Stk/Qty	Benennung	Description	Ws.-Nr. / Part No.
-	-	CU32 Adapter SW4 / M4 - PHB kpl.	CU32 Adapter SW4 / M4 - PSL cpl.	08-48-370/93
1	1	Schaltnocke	Actuator screw	08-60-700/93
2	1	Zugstangenverlängerung	Extension rod	15-26-057/93
3	4	Zyl. Schraube	Cyl. Screw	M5x25 ISO4762
4	4	Scheibe	Washer	08-60-767/15
5	1	CU2 Adapter Set DA3+, DE3	CU2 Adapter kit DA3+, DE3	08-60-330/93
- 6	1	O-ring	O-Ring	Ø88,62x1,78 /NBR
- 7	3	O-ring	O-Ring	Ø5,28x1,78 /NBR
- 8	1	Adapter	Adapter	-
9A-B	2	Winkelverschraubung	Elbow connector	08-60-750/93
10	1	Blindstopfen	Plug	08-60-740/93
11	-			
12	-			
13	-			
14	1	CU3 Adapter SW4, M4, PHB	CU3 Adapter SW4, M4, PSL	08-48-371/93
15	4	Schraube	Screw	M8x12 DIN912

Adapter für S2-DN 10, 15, 20 / Adapter for S2-DN 10, 15, 20

Pos.	Stk/Qty	Benennung	Description	Ws.-Nr. / Part No.
-	-	CU31 Adapter S2 - DN10,15,20 kpl	CU31 Adapter S2 - DN10,15,20 cpl.	16-00-174/93
1	-			
2	-			
3	4	Zyl. Schraube	Cyl. Screw	M5x25 ISO4762
4	4	Scheibe	Washer	08-60-767/15
5	1	CU2 Adapter Set DA3+, DE3	CU2 Adapter kit DA3+, DE3	08-60-330/93
- 6	1	O-ring	O-Ring	Ø88,62x1,78 /NBR
- 7	3	O-ring	O-Ring	Ø5,28x1,78 /NBR
- 8	1	Adapter	Adapter	-
9A	1	Winkelverschraubung	Elbow connector	08-60-750/93
10	2	Blindstopfen	Plug	08-60-740/93
11	1	Deckel Adapter CU31	Cover Adapter CU31	16-00-174/92
12	2	Zyl. Schraube	Cyl. Screw	M5x10/ DIN912
13	2	Initiatorenhalter kpl.	Proximity switch holder cpl.	15-33-921/83
14	-			