

Type 8695

Control Head



Operating Instructions

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Operating Instructions 2206/12_EU-EN_00805569 / Original DE

Control head Type 8695

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1 OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions in a location which is easily accessible to every user, and make these instructions available to every new owner of the device.

Important safety information.

Failure to observe these instructions may result in hazardous situations.

- ▶ The operating instructions must be read and understood.

1.1 Symbols



DANGER!

Warns of an immediate danger.

- ▶ Failure to observe the warning will result in a fatal or serious injury.



WARNING!

Warns of a potentially dangerous situation.

- ▶ Failure to observe the warning may result in serious injuries or death.



CAUTION!

Warns of a possible danger.

- ▶ Failure to observe this warning may result in a moderate or minor injury.

NOTE!

Warns of damage to property.

- Failure to observe the warning may result in damage to the device or the equipment.



Indicates important additional information, tips and recommendations.



refers to information in these operating instructions or in other documentation.

- ▶ Designates an instruction to prevent risks.

→ Designates a procedure which you must carry out.

1.2 Definition of term / abbreviation

The term “device” used in these instructions always stands for the control head Type 8695.

In these instructions, the abbreviation “Ex” always refers to “potentially explosive atmosphere”.

2 AUTHORIZED USE

Non-authorized use of the control head Type 8695 may be a hazard to people, nearby equipment and the environment.

The device is designed to be mounted on pneumatic actuators of process valves for the control of media.

- ▶ In the potentially explosive atmosphere the control head Type 8695 may be used only according to the specification on the separate approval sticker. For use observe the additional instructions enclosed with the device together with safety instructions for the potentially explosive atmosphere.
- ▶ Devices without a separate approval sticker may not be used in a potentially explosive atmosphere.
- ▶ Do not expose the device to direct sunlight.
- ▶ Use according to the authorized data, operating conditions and conditions of use specified in the contract documents and operating instructions. These are described in the chapter entitled [“6 Technical data”](#).
- ▶ The device may be used only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- ▶ In view of the large number of options for use, before installation, it is essential to study and if necessary to test whether the control head is suitable for the actual use planned.
- ▶ Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the control head Type 8695 only as intended.

2.1 Restrictions

If exporting the system/device, observe any existing restrictions.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not make allowance for any

- contingencies and events which may arise during the installation, operation and maintenance of the devices.
- local safety regulations – the operator is responsible for observing these regulations, also with reference to the installation personnel.



DANGER!

Risk of injury from high pressure in the equipment/device.

- ▶ Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment..

General hazardous situations.

To prevent injury, ensure:

- ▶ That the system cannot be activated unintentionally.
- ▶ Installation and repair work may be carried out by authorized technicians only and with the appropriate tools.
- ▶ After an interruption in the power supply or pneumatic supply, ensure that the process is restarted in a defined or controlled manner.
- ▶ The device may be operated only when in perfect condition and in consideration of the operating instructions.
- ▶ The general rules of technology apply to application planning and operation of the device.

To prevent damage to property on the device, ensure:

- ▶ Do not feed any aggressive or flammable media into the pilot air port.
- ▶ Do not feed any liquids into the pilot air port.
- ▶ When unscrewing and screwing in the body casing or the transparent cap, do not hold the actuator of the process valve but the connection housing of Type 8695.
- ▶ Do not put any loads on the body (e.g. by placing objects on it or standing on it).
- ▶ Do not make any external modifications to the device bodies. Do not paint the body parts or screws.

4 GENERAL INFORMATION

4.1 Contact address

Germany

Bürkert Fluid Control System
Sales Center
Chr.-Bürkert-Str. 13-17
D-74653 Ingelfingen
Tel. + 49 (0) 7940 - 10 91 111
Fax + 49 (0) 7940 - 10 91 448
E-mail: info@buerkert.com

International

Contact addresses can be found on the final pages of the printed operating instructions.

And also on the Internet at:

www.buerkert.com

4.2 Warranty

The warranty is only valid if the control head Type 8695 is used as intended in accordance with the specified application conditions.

4.3 Trademarks

Brands and trademarks listed below are trademarks of the corresponding companies / associations / organizations

Loctite Henkel Loctite Deutschland GmbH

4.4 Information on the internet

The operating instructions and data sheets for Type 8695 can be found on the Internet at:

www.buerkert.com

5 SYSTEM DESCRIPTION

5.1 Structure and function

The control head Type 8695 can control single or double-acting process valves.

The control head Type 8695 has been optimized for the integrated modular fitting of series 21xx process valves (Element) with actuator size $\varnothing 50$. Various expansion stages are possible thanks to the modular design.

For installation on the 20xx series (Classic) there is a special model which is described in chapter [“5.1.2”](#).

The valve position is recorded via a contactless, analog sensor element which automatically detects and saves the valve end positions by means of the teach function during start-up.

Option: Communication possible via AS-Interface.

5.1.1 Control head for integrated installation on 21xx series (Element)

View without transparent cap:

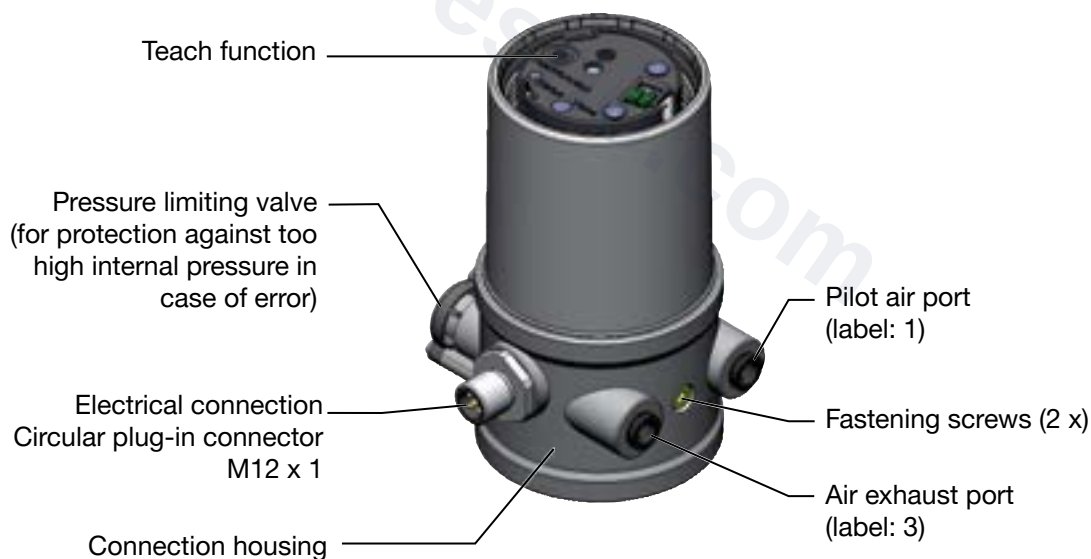


Figure 1: Structure and function

5.1.2 Model for control of process valves belonging to the 20xx series (Classic)

A special model enables the control head Type 8695 to be attached to process valves belonging to the 20xx series.

This model has a different pneumatic connection module so that the pilot air ports can be connected to the outside of the actuator (see "Figure 2").



Figure 2: Model for control of process valves, 20xx series

6 TECHNICAL DATA

6.1 Conformity

In accordance with the EU Declaration of conformity, the control head Type 8695 is compliant with the EU Directives.

6.2 Standards

The applied standards on the basis of which compliance with the EU Directives is confirmed are listed in the EU-Type-Examination Certificate and/or the EU Declaration of Conformity.

6.3 Licenses

The product is approved for use in zone 2 and 22 in accordance with ATEX directive 2014/34/EU category 3GD.



Observe instructions on operation in a potentially explosive atmosphere.
Observe the ATEX additional instructions.

The product is cULus approved. Instructions for use in the UL area see chapter [“6.8 Electrical data”](#).

6.4 Operating conditions



WARNING!

Solar radiation and temperature fluctuations may cause malfunctions or leaks.

- If the device is used outdoors, do not expose it unprotected to the weather conditions.
- Ensure that the permitted ambient temperature does not exceed the maximum value or drop below the minimum value.

Ambient temperature see type label

Degree of protection

Evaluated by the manufacturer:	Evaluated by UL:
IP65 / IP67 according to EN 60529 ¹⁾	UL Type 4x Rating, indoor only ¹⁾

Operating altitude up to 2000 m above sea level

Relative air humidity max. 90% at 55 °C / 60 °C (non condensing)

¹⁾ Only if cables, plugs and sockets have been connected correctly and in compliance with the exhaust air concept see chapter [“8 Pneumatic installation”](#).

6.5 Mechanical data

Dimensions	See data sheet		
Body material	exterior	PPS, PC, VA	
	interior	PA6; ABS	
Sealing material	exterior	EPDM / FKM	
Stroke range of valve spindle	21xx series (Element) and 20xx series (Classic)	AS-Interface	2 – 25 mm
		24 V DC	2 – 35 mm
	Third-party devices (modified guide element required)	AS-Interface	2 – 34 mm
		24 V DC	2 – 44 mm

6.6 Type labels

6.6.1 Type label standard

Example:

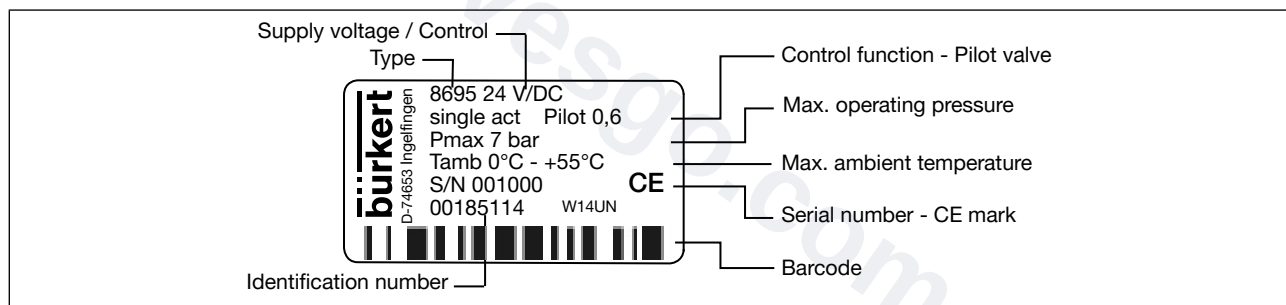


Figure 3: Type label (example)

6.6.2 UL type label

Example:

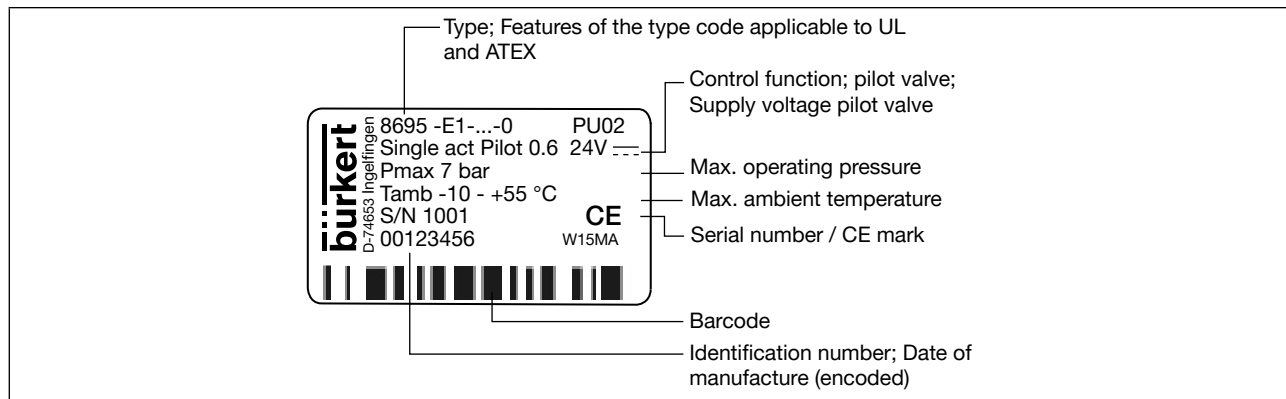


Figure 4: UL type label (example)

6.6.3 UL additional label

Example:

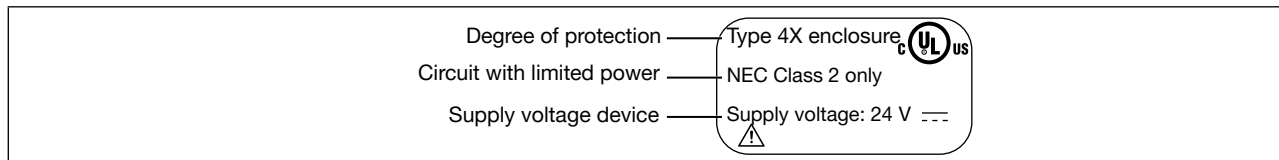


Figure 5: UL additional label (example)

6.7 Pneumatic data

Control medium	neutral gases, air Quality classes in accordance with ISO 8573-1	
Dust content	Class 7	max. particle size 40 µm, max. particle density 10 mg/m ³
Water content	Class 3	max. pressure dew point - 20 °C or min. 10 °C below the lowest operating temperature
Oil content	Class X	max. 25 mg/m ³
Temperature range	-10 – +50 °C	
Pressure range	3 – 7 bar	
Air output of pilot valve	7 l _N / min (for aeration and deaeration) (Q _{Nn} - value according to definition for pressure drop from 7 to 6 bar absolute)	
Connections	21xx (Element)	Plug-in hose connector Ø 6 mm / 1/4" Socket connection G 1/8
	20xx (Classic)	Socket connection G 1/8 with M5 connection for connecting to the actuator

6.8 Electrical data



WARNING!

Only circuits with limited power may be used for UL approved components according to "NEC Class 2".

6.8.1 Electrical data without bus control 24 V DC

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connections	Circular plug-in connector (M12 x 1, 8-pole)
Pilot valve	
Operating voltage	24 V DC $\pm$ 10% - max. residual ripple 10 %
Power input	max. 1 W
Output	max. 100 mA per output
Display	max. 20 mA per illustrated illuminated display (LED)

6.8.2 Electrical data with AS-Interface bus control

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connections	Circular plug-in connector (M12 x 1, 4-pole)
Profile	S-B.A.E. (A/B slave, max. 62 slaves/master)
Operating voltage	29.5 V – 31.6 V DC (according to specification)
Outputs	
Max. switching capacity	1 W via AS-Interface
Watchdog function	integrated
Max. power consumption	120 mA
Power consumption input during normal operation (after current reduction; valve + 1 end position reached)	90 mA

7 INSTALLATION

7.1 Safety instructions



DANGER!

Risk of injury from high pressure in the equipment/device.

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following assembly, ensure a controlled restart.

7.2 Installation of the control head Type 8695 on process valves of series 21xx (Element)

NOTE!

When mounting on process valves with a welded body, follow the installation instructions in the operating instructions for the process valve.

Procedure:

1. Install switch spindle

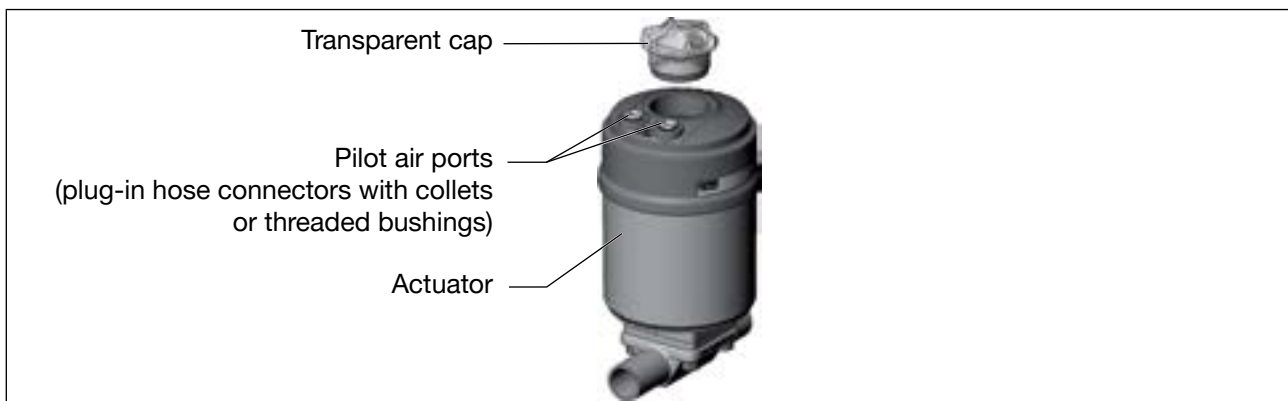


Figure 6: Installation of switch spindle (1), series 21xx

→ Unscrew the transparent cap on the actuator and unscrew the position display (yellow cap) on the spindle extension (if present).

→ For version with plug-in hose connector, remove the collets (white nozzles) from both pilot air ports (if present).

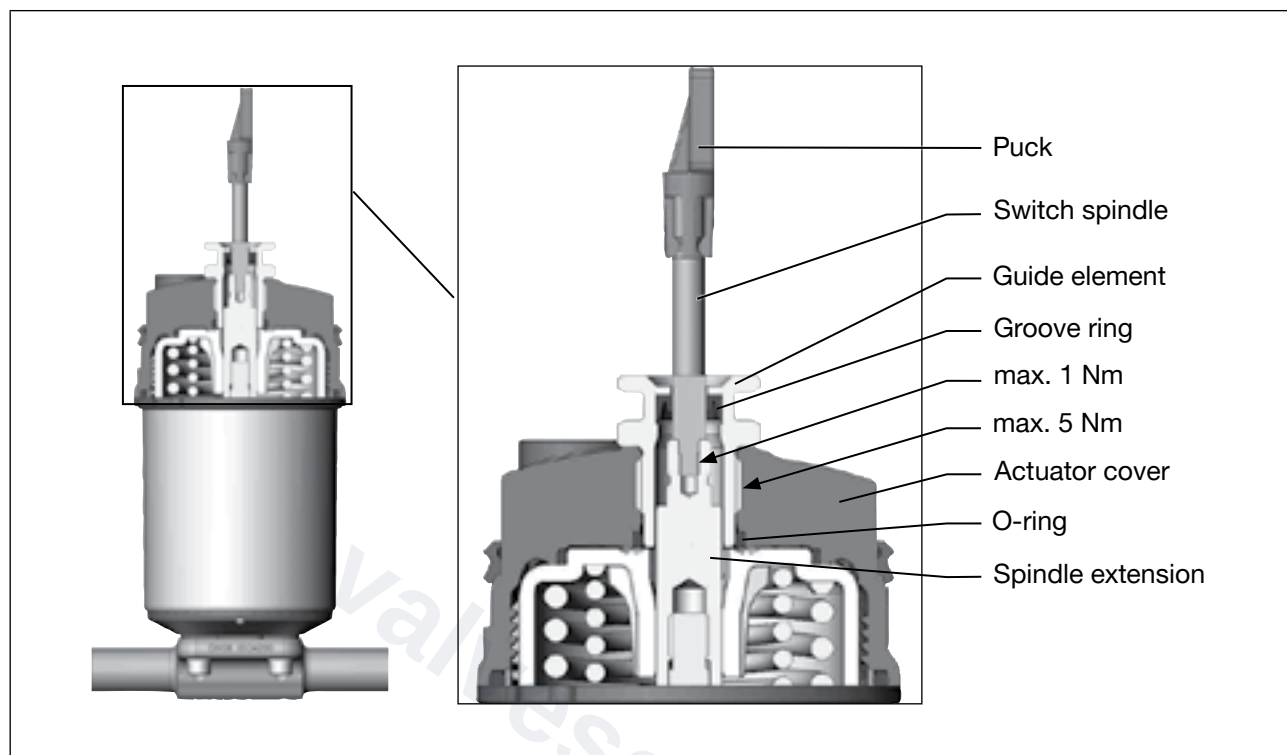


Figure 7: Installation of the switch spindle (2), series 21xx

NOTE!

Improper installation may damage the groove ring in the guide element.

The groove ring is already pre-assembled in the guide element and must be “locked into position” in the undercut.

- ▶ When installing the switch spindle, do not damage the groove ring.

→ Push the switch spindle through the guide element.

NOTE!

Screw locking paint may contaminate the groove ring.

- ▶ Do not apply any screw locking paint to the switch spindle.

→ To secure the switch spindle, apply some screw locking paint (Loctite 290) in the tapped bore of the spindle extension in the actuator.

→ Check that the O-ring is correctly positioned.

→ Screw the guide element to the actuator cover (maximum torque: 5 Nm).

→ Screw switch spindle onto the spindle extension. To do this, there is a slot on the upper side (maximum torque: 1 Nm).

→ Push puck onto the switch spindle and lock into position.

2. Install sealing rings

→ Pull the form seal onto the actuator cover (smaller diameter points upwards).

→ Check that the O-rings are correctly positioned in the pilot air ports.



When the control head is being installed, the collets of the pilot air ports must not be fitted to the actuator.

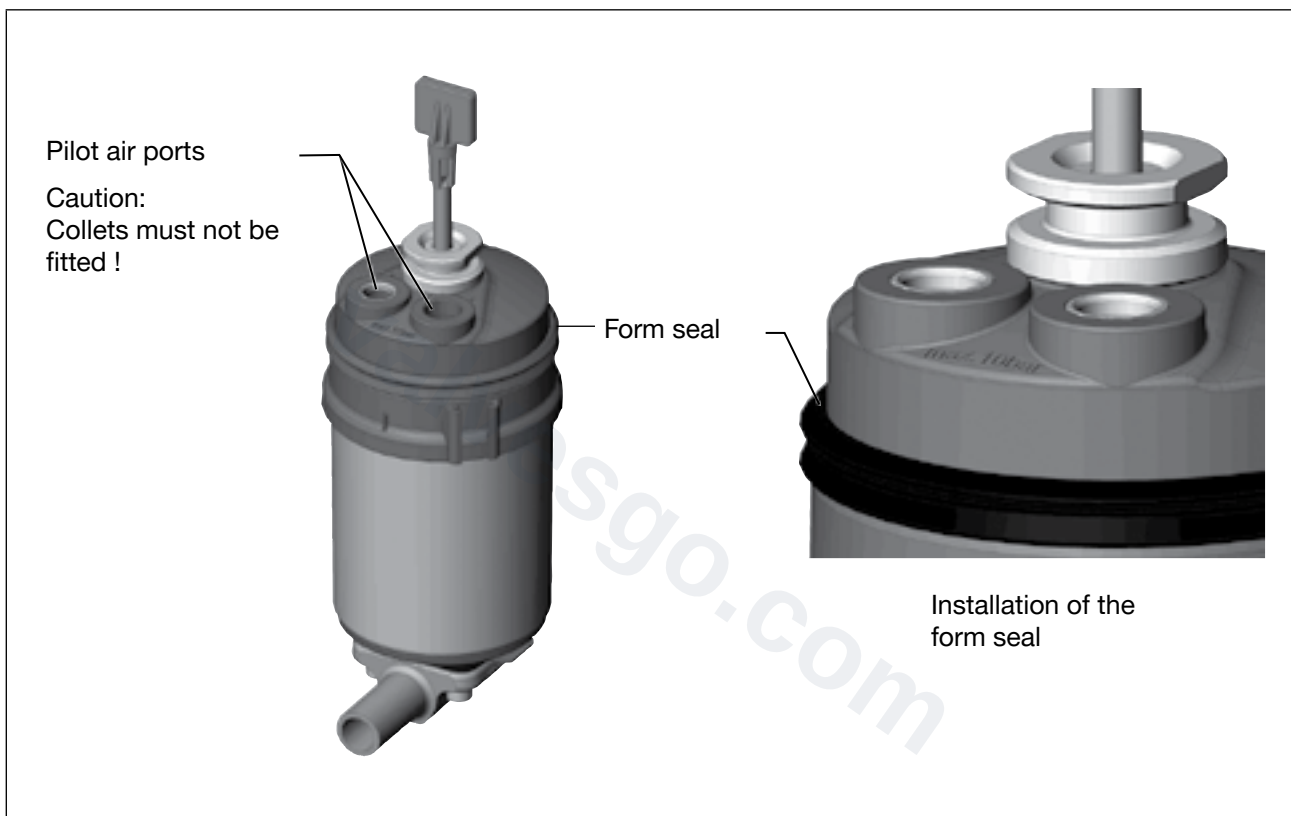


Figure 8: Installation of the sealing rings

3. Install control head

NOTE!

Damaged printed circuit board or malfunction.

- Ensure that the puck is situated flat on the guide rail.

→ Align the puck and the control head until

1. the puck can be inserted into the guide rail of the control head
- and
2. the connection pieces of the control head can be inserted into the pilot air ports of the actuator.

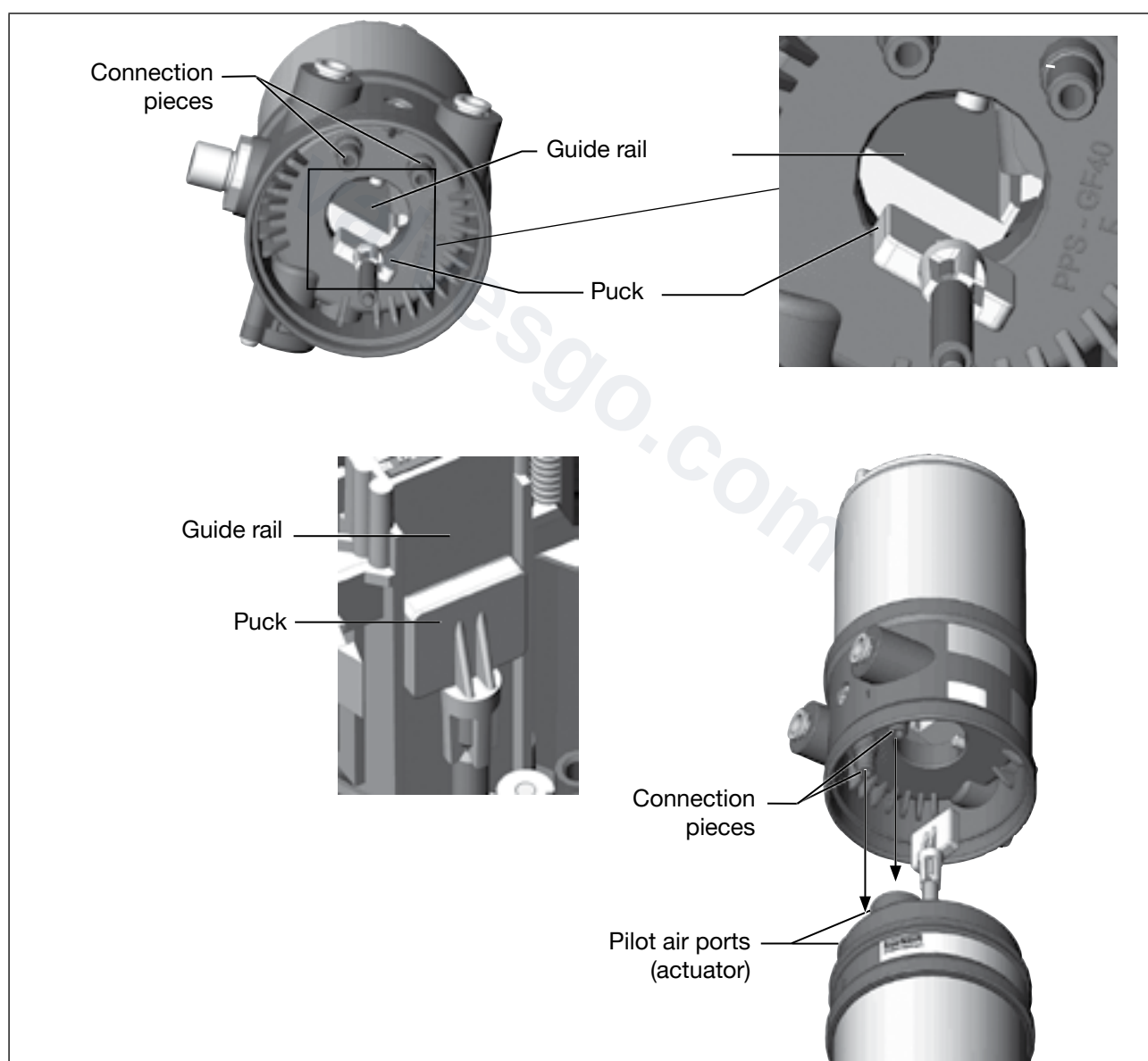


Figure 9: Aligning the puck and the connection pieces

→ Push the control head, without turning it, onto the actuator until no gap is visible on the form seal.

NOTE!

Too high torque when screwing in the fastening screw does not ensure degree of protection IP65 / IP67.

- The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

→ Attach the control head to the actuator using the two side fastening screws. In doing so, tighten the screws only hand-tight (maximum torque: 1.5 Nm).

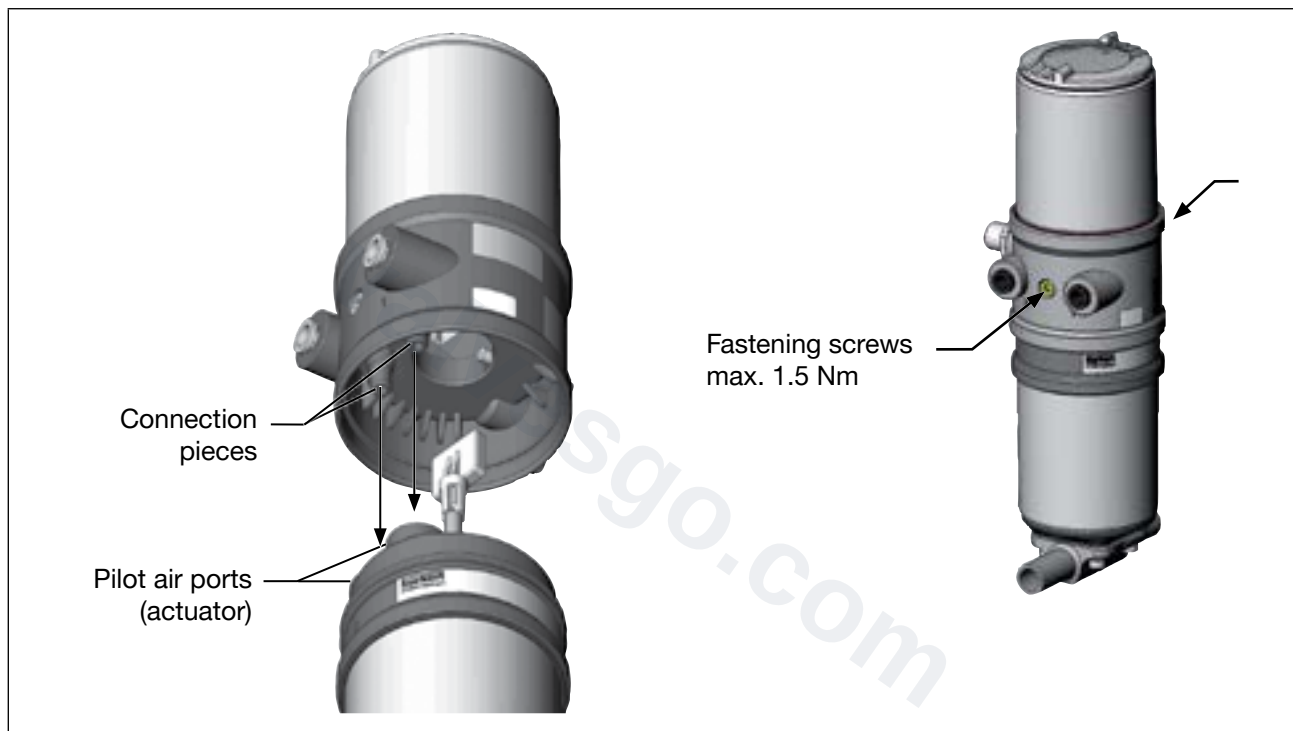


Figure 10: Installation of control head

7.3 Installation of the control head Type 8695 on process valves of series 20xx (Classic)

Procedure:

1. Install switch spindle

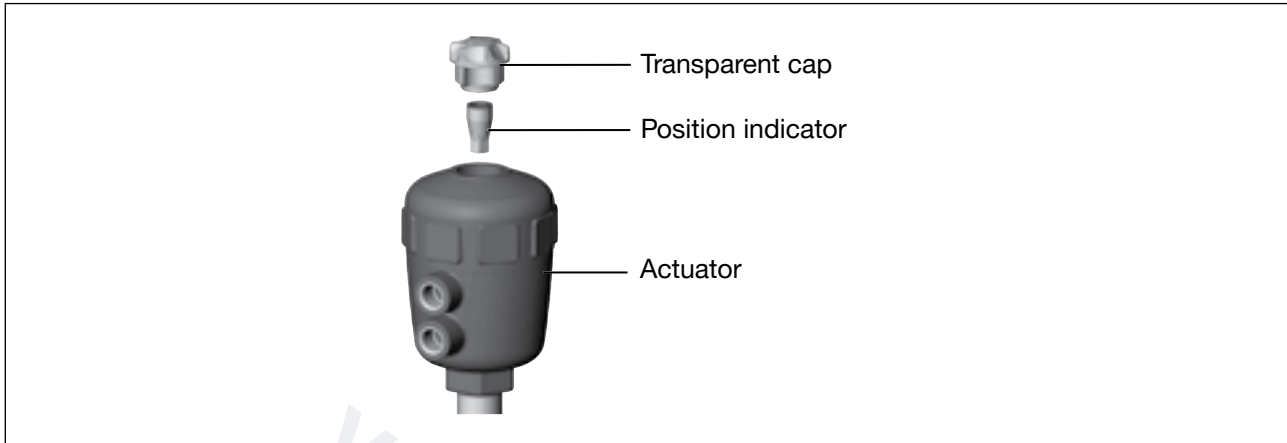


Figure 11: Installation of the switch spindle (1), series 20xx

- Unscrew the transparent cap on the actuator.
- Using a hexagon socket key, unscrew the orange/yellow position indicator from the inside of the actuator.

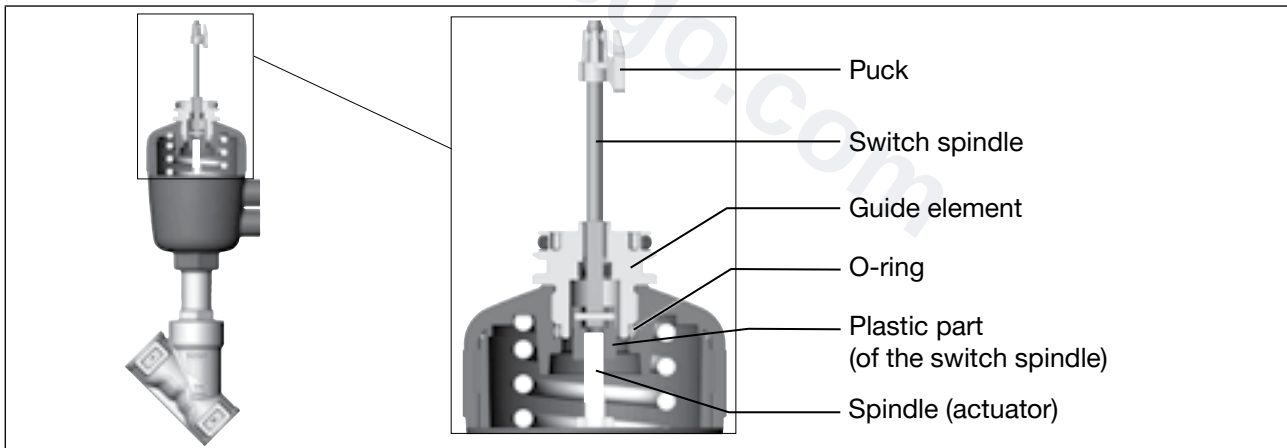


Figure 12: Installation of the switch spindle (2), series 20xx

- Press the O-ring downwards into the cover of the actuator.
- Manually screw the switch spindle (and the plugged-on guide element) together with the plastic part onto the spindle of the actuator, but do not tighten spindle yet.
- Tighten the guide element with a face wrench²⁾ into the actuator cover (maximum torque: 8.0 Nm).
- Tighten the switch spindle on the spindle of the actuator. To do this, there is a slot on the upper side (maximum torque: 1.0 Nm).
- Push the puck onto the switch spindle until it engages.

2. Install control head

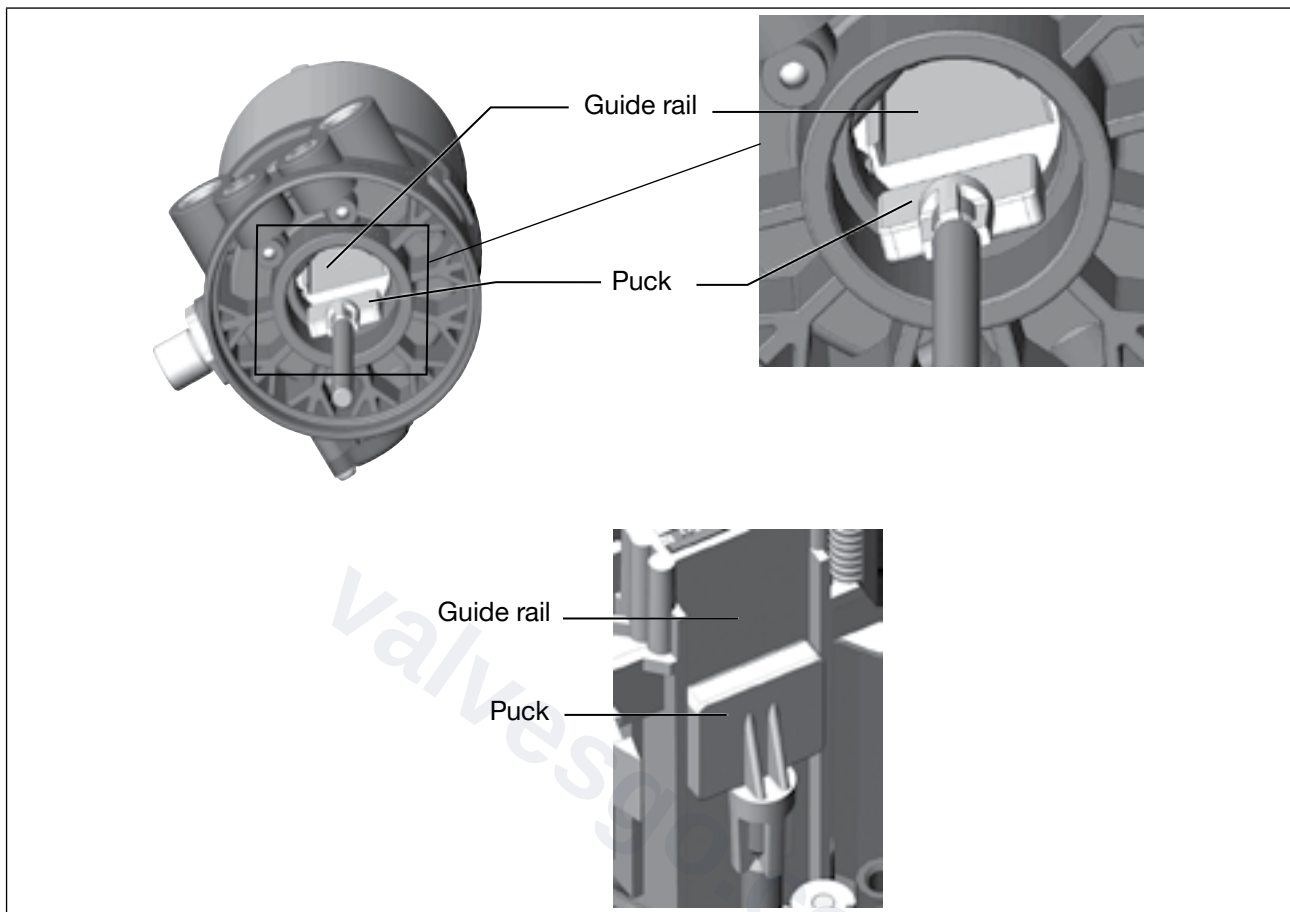


Figure 13: Aligning the puck, series 20xx

NOTE!

Damaged printed circuit board or malfunction.

- Ensure that the puck is situated flat on the guide rail.

- Push the control head onto the actuator. The puck must be aligned in such a way that it is inserted into the guide rail of the control head.
- Press the control head all the way down as far as the actuator and turn it into the required position.



Ensure that the pneumatic connections of the control head and those of the valve actuator are situated preferably vertically one above the other (see [“Figure 14: Installing the control head, series 20xx”](#)).

If they are positioned differently, longer hoses may be required other than those supplied in the accessory kit.

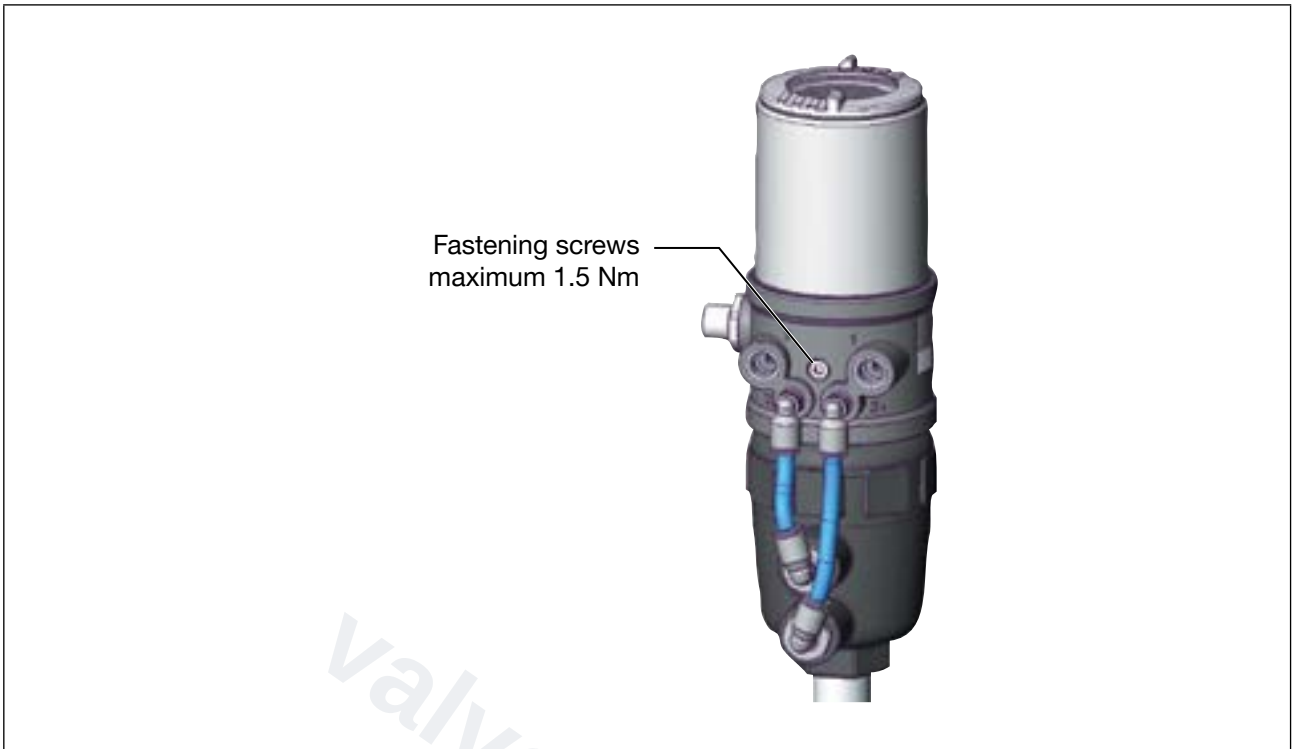


Figure 14: Installing the control head, series 20xx

NOTE!

Too high torque when screwing in the fastening screw does not ensure degree of protection IP65 / IP67.

- ▶ The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

→ Attach the control head to the actuator using the two side fastening screws. In doing so, tighten the fastening screws hand-tight only (maximum torque: 1.5 Nm).

3. Install pneumatic connection between control head and actuator

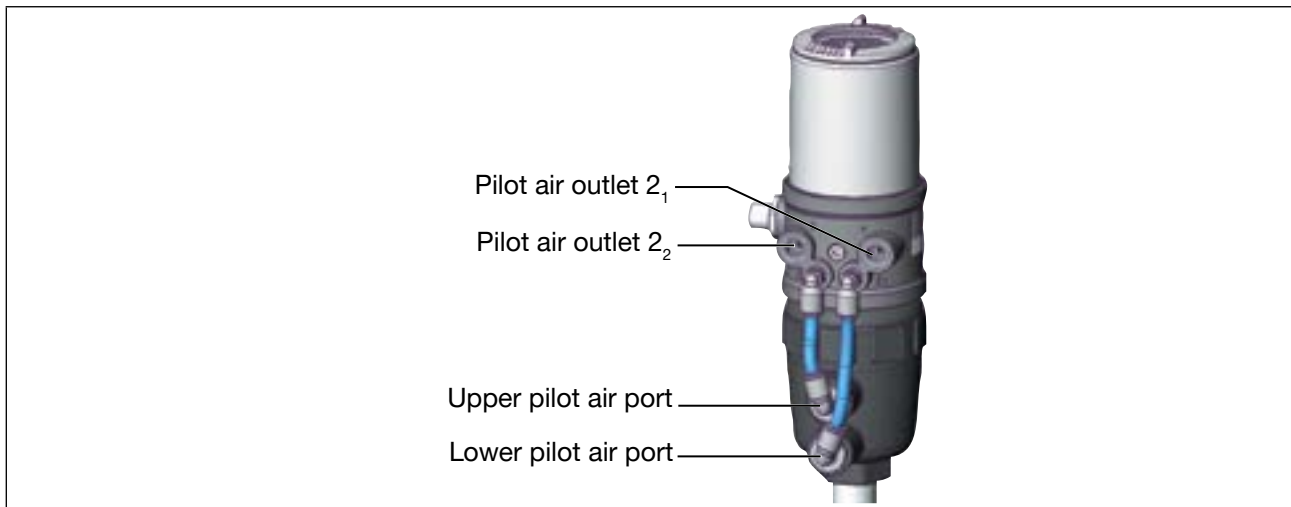


Figure 15: Installing the pneumatic connection between control head and actuator, series 20xx

- Screw the plug-in hose connectors onto the control head and the actuator.
- Using the hoses supplied in the accessory kit, make the pneumatic connection between the control head and actuator with the following [“Table 1: Pneumatic connection to actuator CFA and CFB”](#) or [“Table 2: Pneumatic connection to actuator CFI”](#).

NOTE!

Damage or malfunction due to ingress of dirt and moisture.

- ▶ To comply with degree of protection IP65 / IP67, connect the pilot air outlet (only for CFA or CFB) which is not required to the free pilot air port of the actuator or seal with a plug.



“In rest position” means that the pilot valves of the control head Type 8695 are isolated or not actuated.

Control function A (CFA)

Process valve closed in rest position (by spring force)

Control head	Pilot air outlet		or	
Actuator	Upper pilot air port			
	Lower pilot air port			

Control function B (CFB)

Process valve open in rest position (by spring force)

Control head	Pilot air outlet		or	
Actuator	Upper pilot air port			
	Lower pilot air port			

Table 1: Pneumatic connection to actuator CFA and CFB

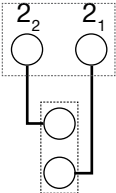
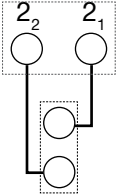
Control function I (CFI)		
Process valve closed in rest position		
Control head	Pilot air outlet	
Actuator	Upper pilot air port	
	Lower pilot air port	
Process valve open in rest position		
Control head	Pilot air outlet	
Actuator	Upper pilot air port	
	Lower pilot air port	

Table 2: Pneumatic connection to actuator CFI

! If the ambient air is humid, a hose can be connected between pilot air outlet 2₂ of the control head and the unconnected pilot air port of the actuator for control function A or control function B. As a result, the spring chamber of the actuator is supplied with dry air from the vent duct of the control head.

7.4 Rotating the actuator module on process valves of series 2100, 2101, 2000 and 2012

! The actuator module (control head and actuator) can be rotated for globe valves and angle-seat valves belonging to series 2100, 2101, 2000 and 2012 only.

The process valve must be in the open position for alignment of the actuator module.

The position of the ports can be aligned steplessly by rotating the actuator module (control head and actuator) through 360°.

! Series 2100 and 2101:
Only the entire actuator module can be rotated. The control head cannot be rotated contrary to the actuator.



DANGER!

Risk of injury from high pressure in the equipment/device.

- Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Procedure:

- Clamp valve body in a holding device (only required if the process valve has not yet been installed).
- Control function A: Open process valve.

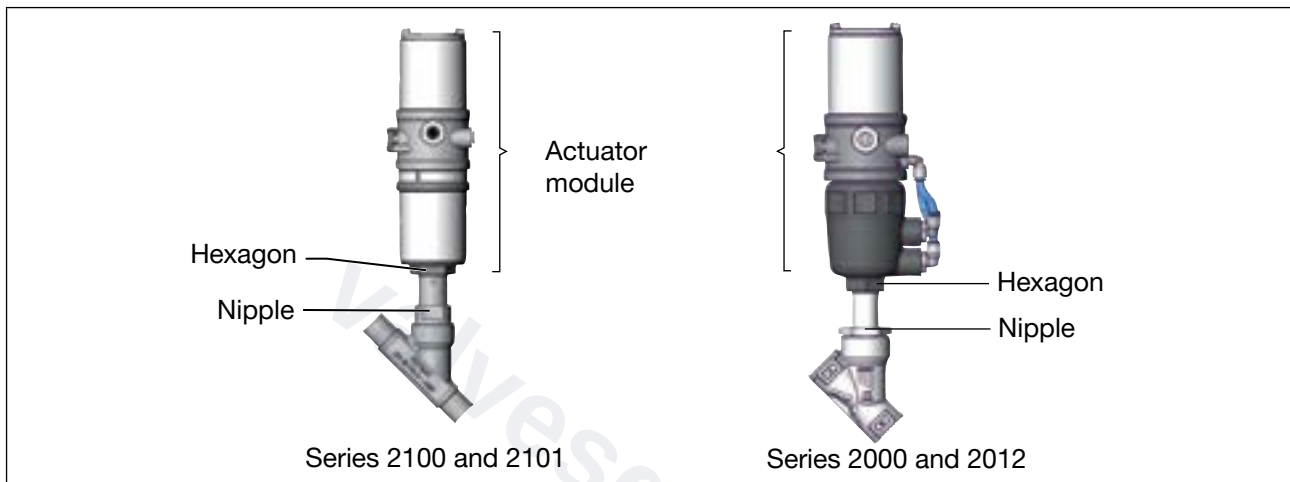


Figure 16: Rotating the actuator module

- Using a suitable open-end wrench, counter the wrench flat on the pipe.
- Place suitable open-end wrench on the hexagon of the actuator.



WARNING!

Risk of injury from discharge of medium and pressure.

If the direction of rotation is wrong, the body interface may become detached.

- Rotate the actuator module counter-clockwise only (see "Figure 17").

- Rotate counter-clockwise (as seen from below) to bring the actuator module into the required position.

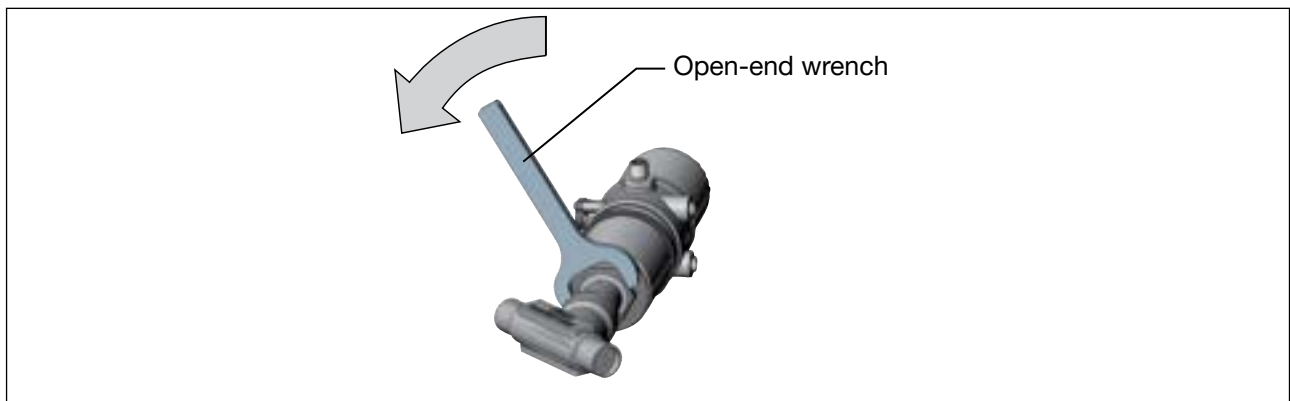


Figure 17: Rotating with open-end wrench

7.5 Rotating the control head for process valves belonging to series 20xx

If the connecting cables or hoses cannot be fitted properly following installation of the process valve, the control head can be rotated contrary to the actuator.

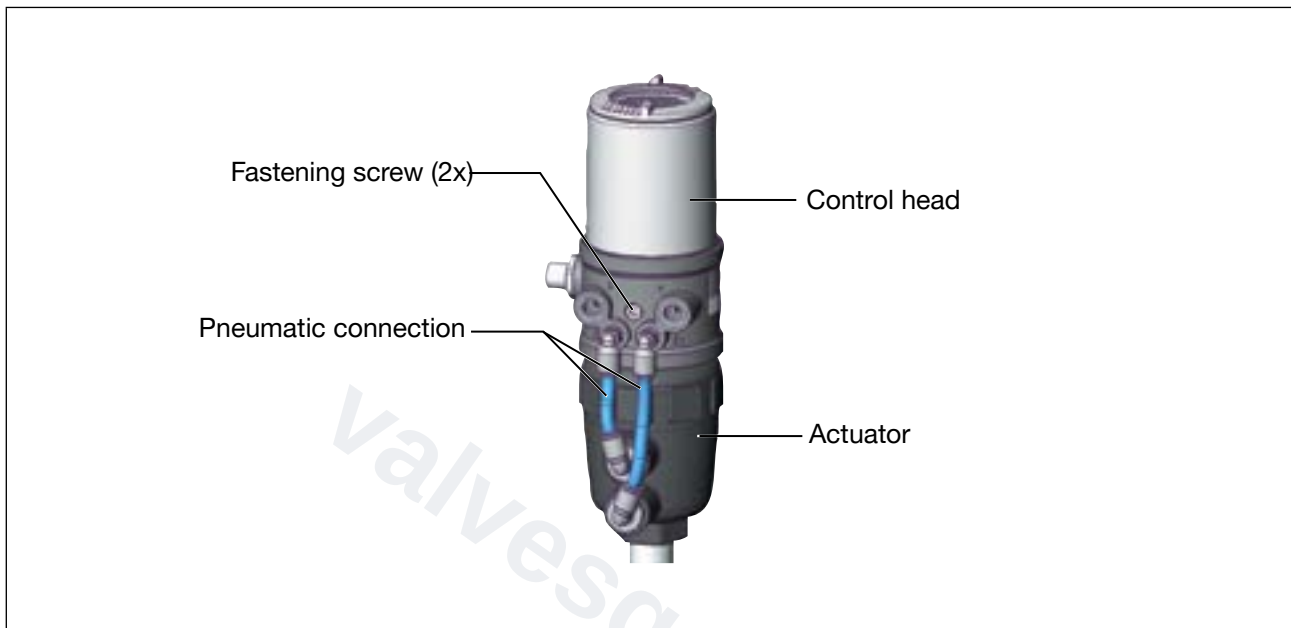


Figure 18: Rotating the control head, series 20xx

Procedure

- Loosen the pneumatic connection between the control head and the actuator.
- Loosen the fastening screws countersunk in the side of the body (hexagon socket wrench size 2.5).
- Rotate the control head into the required position.

NOTE!

Too high torque when screwing in the fastening screw does not ensure degree of protection IP65 / IP67.

- ▶ The fastening screws may be tightened to a maximum torque of 1.5 Nm only.

- Tighten the fastening screws hand-tight only (maximum torque: 1.5 Nm).
- Re-attach the pneumatic connections between the control head and the actuator. If required, use longer hoses.

7.6 Manual actuation of the actuator via pilot valve

The actuator can be moved without a power supply from the rest position to its end position and back again, *when the control air is connected*.

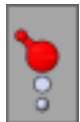
To do this, the pilot valve must be actuated with a screwdriver.

NOTE!

The hand lever may be damaged if it is simultaneously pressed and turned.

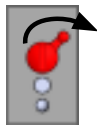
- Do not press the hand lever when turning it.

**Pilot valve non activated
(normal position)**



Hand lever
to the left

Pilot valve activated



Hand lever
to the right

Hand lever



Figure 19: Pilot valve for aerate and deaerate the actuator

Move actuator to end position

→ Turn the hand lever to the right using a screwdriver.

Note: Do not press the hand lever when turning it

Move actuator back to the rest position

→ Turn the hand lever to the left using a screwdriver.

Note: Do not press the hand lever when turning it

8 PNEUMATIC INSTALLATION



DANGER!

Risk of injury from high pressure in the equipment/device.

- ▶ Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper installation.

- ▶ Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- ▶ Secure system from unintentional activation.
- ▶ Following installation, ensure a controlled restart.

Procedure:

- Connect the control medium to the pilot air port (1)
(3 – 7 bar; instrument air, free of oil, water and dust).
- Attach the exhaust airline or a silencer to the exhaust air port (3).



Important information for the problem-free functioning of the device:

- ▶ The installation must not cause back pressure to build up.
- ▶ Select a hose for the connection with an adequate cross-section.
- ▶ The exhaust air line must be designed in such a way that no water or other liquid can get into the device through the exhaust air port.

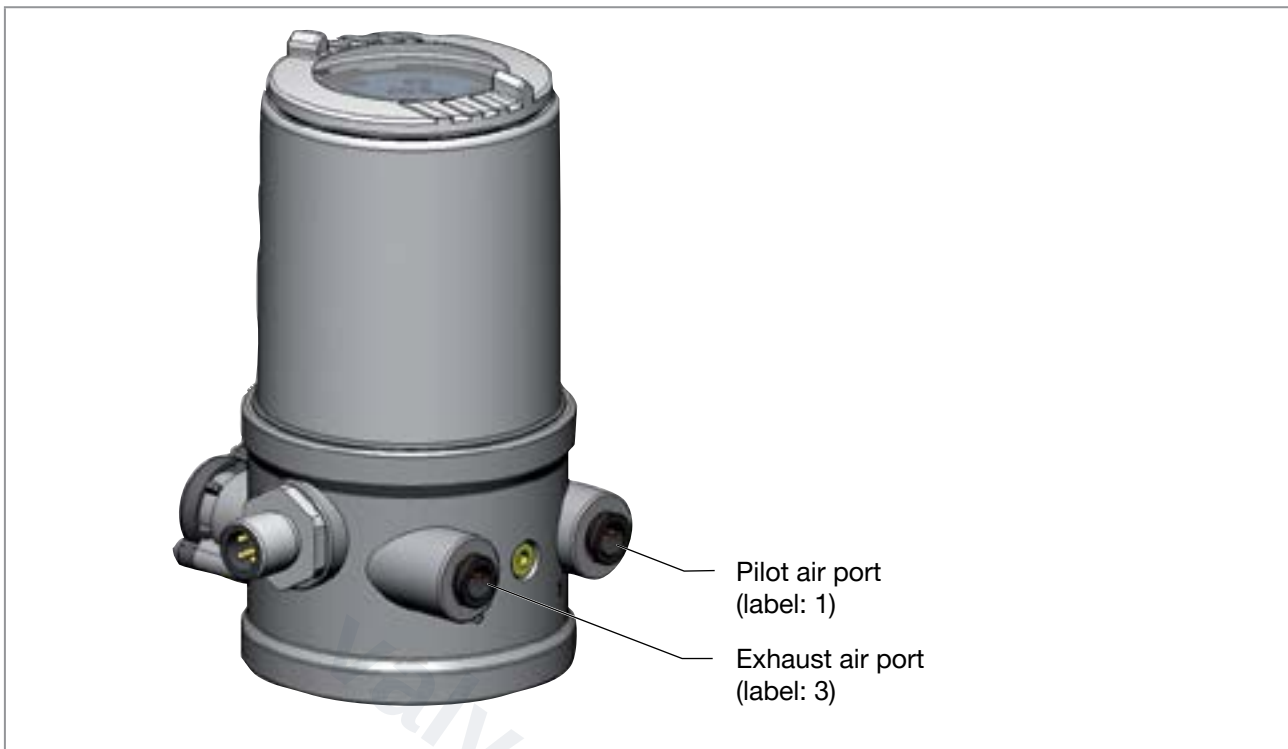


Figure 20: Pneumatic connection



Caution: (Air exhaust concept):

In compliance with degree of protection IP67, an air exhaust line must be installed in the dry area.

Keep the adjacent supply pressure **always** at least 0.5 – 1 bar above the pressure which is required to move the actuator to its end position.

9 ELECTRICAL INSTALLATION 24 V DC

The kind of connection is used for the electrical bonding of the control head:

- **Multi-pole**
with circular plug-in connector M12 x 1, 8-pole

9.1 Safety instructions



DANGER!

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper installation.

- ▶ Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- ▶ Secure system from unintentional activation.
- ▶ Following installation, ensure a controlled restart.

Minimum temperature rating of the cable to be connected to the field wiring terminals: 75 °C

9.2 Electrical installation

Configuration circular plug (M12 x 1, 8-pole):

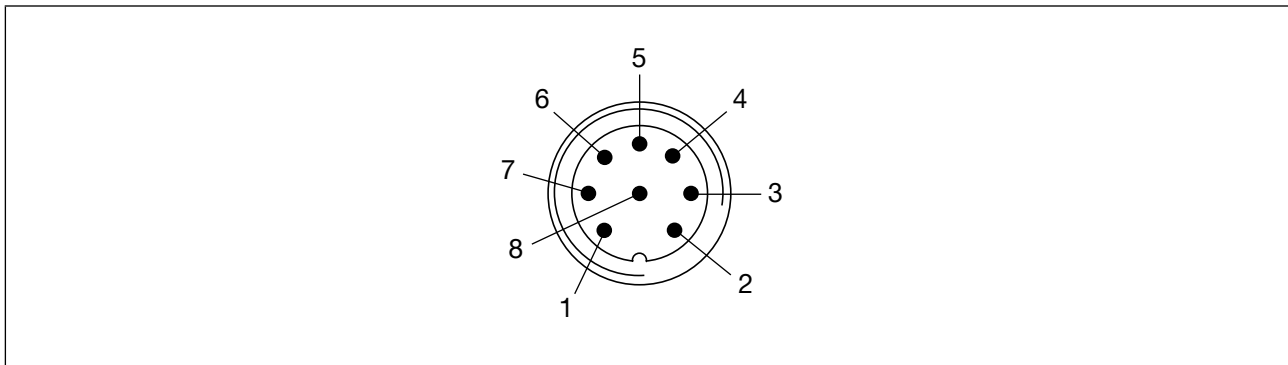


Figure 21: Circular plug M12 x 1, 8-pole

Pin	Wire color ³⁾	Designation	Configuration	External circuit / signal level
1	white	limit switch top	IN 1 (=Top)	
2	brown	limit switch bottom	IN 2 (=Bot)	
3	green	Supply voltage	GND	
4	yellow	Supply voltage +	24 V DC	
5	grey	Valve control unit +	Valve +	
6	pink	Valve control unit -	Valve -	
7		-	not used	
8		-	not used	

Table 3: Connection with circular plug-in connector

→ Connect the control head according to the table.

When the supply voltage is applied, the control head is operating.

→ To read in the end positions of the valve, start the teach function (see [“9.3 Teach function \(calibrating the end position\)”](#)).

³⁾ The indicated colors refer to the connecting cable available as an accessory (919061).

9.3 Teach function (calibrating the end position)

The teach function can be used to automatically determine and read in the end positions of the valve.



DANGER!

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



Necessary requirements:

Before you can actuate the teach function, you must

- mount the control head on the actuator,
- connect the supply voltage and
- connect the compressed-air supply.



DANGER!

Danger due to the valve position changing when the teach function is running.

When the teach function is running under operating pressure, there is an acute risk of injury.

- ▶ Never run the teach function while a process is running.
- ▶ Secure system from unintentional activation.

Procedure:

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▶ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open the control head: turning the transparent cap anti-clockwise.

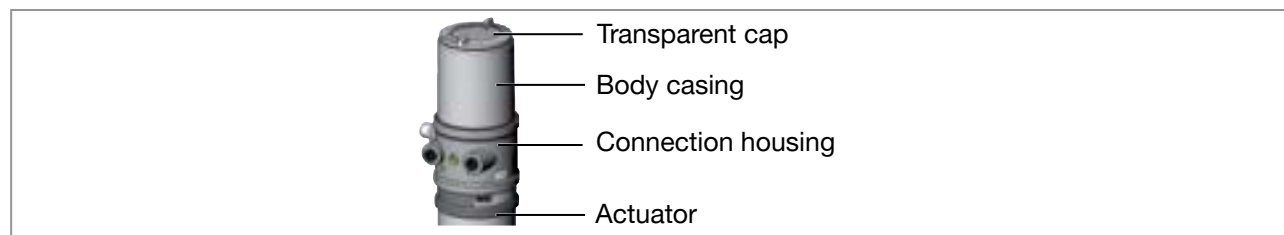


Figure 22: Open control head

→ The key in recess for actuating the Teach function keep pressed for approximately 5 seconds.

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▶ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

Damage or malfunction due to penetration of dirt and humidity.

- ▶ To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (assembly tool: 674078⁴⁾).

Key in recess for actuating the teach function (keep pressed for approximately 5 seconds)



Chronological description of the teach function:

- the bottom position is read in internally
- the pilot valve switches
- the actuator moves automatically to the top position
- the top position is read in internally
- the pilot valve is turned off
- the actuator moves back to the home position

Figure 23: Teach function

⁴⁾ The assembly tool (674078) is available from your Bürkert sales office.

9.4 Display and control elements 24 V DC

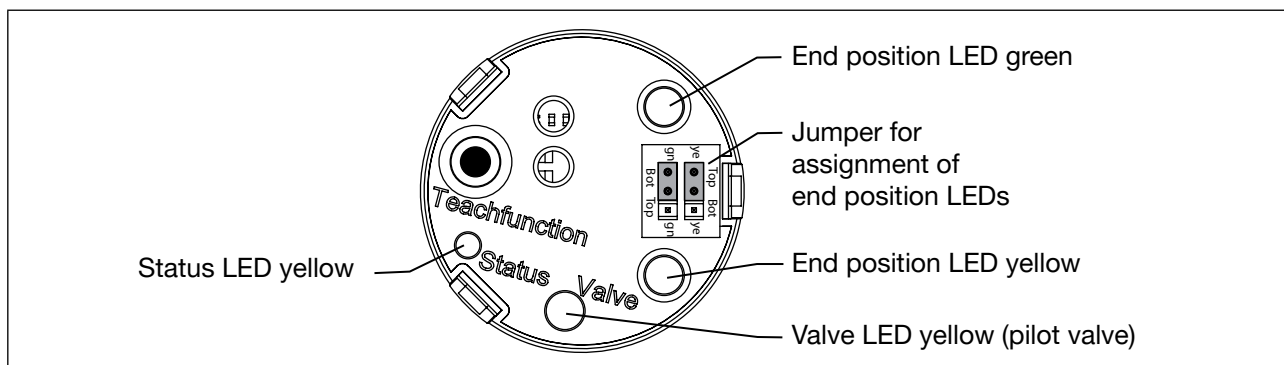


Figure 24: Description LED and Jumpers - 24 V DC

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

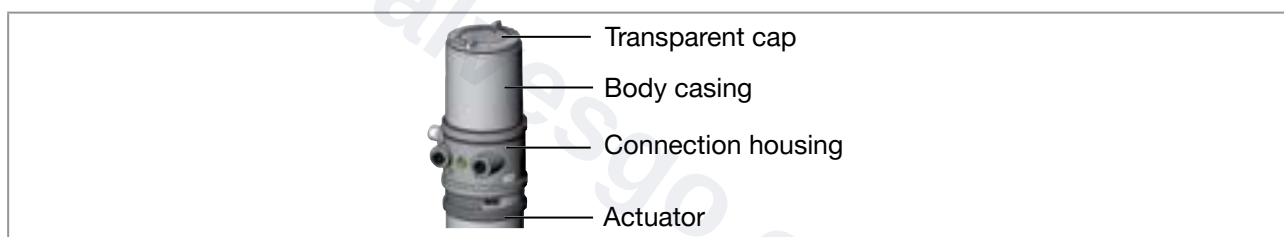


Figure 25: Open control head

NOTE!

Damage or malfunction due to penetration of dirt and humidity.

- To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

9.4.1 Status LED yellow

LED yellow	
flashing	Teach function is running
flickers	Puck not available → Insert puck

Table 4: Status LED yellow - 24 V DC

9.4.2 Valve LED yellow

The yellow LED (valve) indicates whether the pilot valve is actuated (LED is lit yellow).

9.4.3 End position LED green and yellow

Factory setting:

Color	Device status
green LED on	End position bottom
yellow LED on	End position top

Table 5: Assignment of end position LEDs - 24 V DC

9.4.4 Jumper function

You can set the color assignment of the end positions with the jumpers. You can indicate for each color whether it applies to the Top (end position top) or Bot (end position bottom).

9.4.5 Change assignment of the end position LEDs



DANGER!

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

Procedure:

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open control head: turn the transparent cap anti-clockwise.

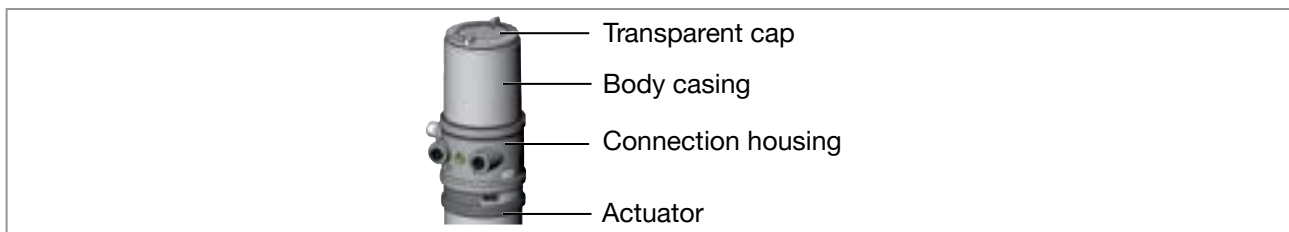


Figure 26: Open control head

→ Using the jumpers, assign the required color to the end position LEDs.

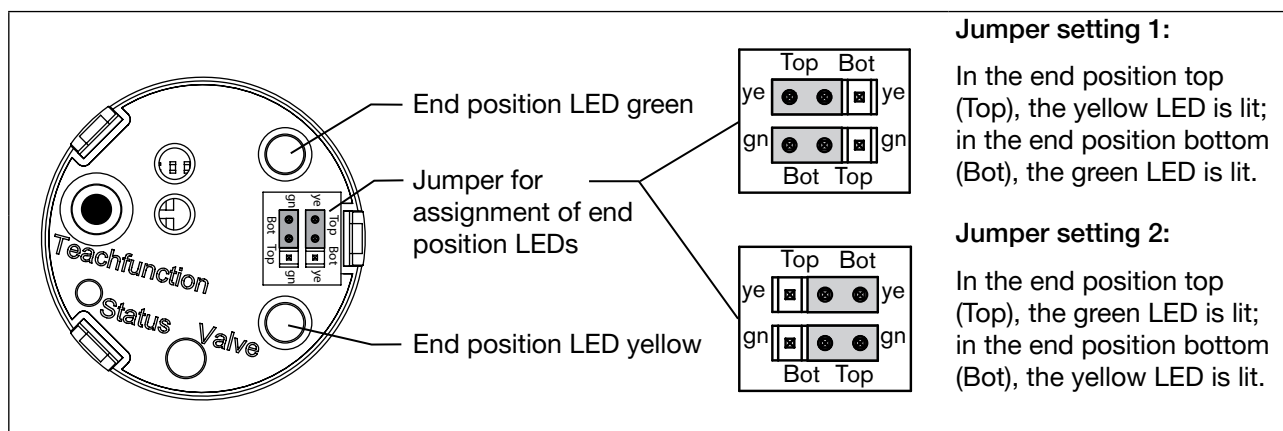


Figure 27: Description end position LEDs and Jumper - 24 V DC

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▶ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

Damage or malfunction due to penetration of dirt and humidity.

- ▶ To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (assembly tool: 674078⁵⁾).

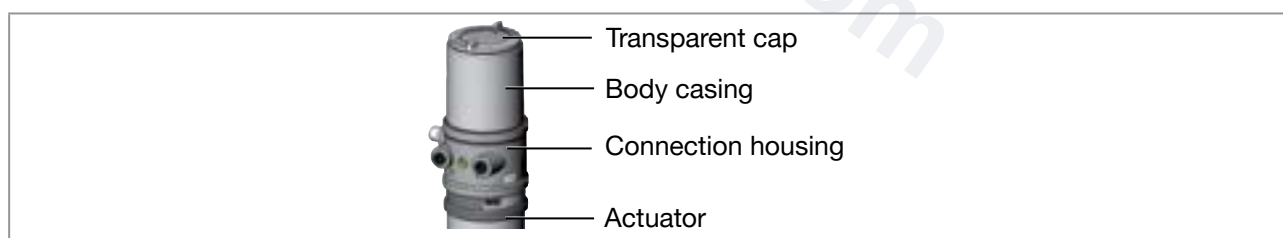


Figure 28: Close control head

⁵⁾ The assembly tool (674078) is available from your Bürkert sales office.

10 AS-INTERFACE INSTALLATION

10.1 AS-Interface connection

AS-Interface (Actuator Sensor Interface) is a field bus system which is used primarily for networking binary sensors and actuators (slaves) with a higher-level control (master).

Bus line

Unshielded two-wire line (AS-Interface line as AS-Interface cable harness) along which both information (data) and energy (supply voltage for the actuators and sensors) are transmitted.

Network topology

Freely selectable within wide limits, i.e. star, tree and line networks are possible. Further details are described in the AS-Interface specification (A/B slave model conforms to the version 3.0 specification).

10.2 Technical data for AS-Interface PCBs

Supply: via AS-Interface (24 V + 20 % / -10 %)

Outputs: 1 Valve Y1, max. 1 W, Power reduction after approx. 100 ms with integrated Watch-Dog function

Certification: Certificate no. 87301 after version 3.0

10.3 Programming data

I/O configuration	B hex
ID code	A hex (see below for bit configuration)
Extended ID code 1	7 hex
Extended ID code 2	E hex
Profile	S-B.A.E

Table 6: Programming data

Bit configuration

Data bit	D3	D2	D1	D0
Input	0 Top not reached 1 Top reached	0 Bot not reached 1 Bot reached	–	–
Output	–	–	not used	0 Pilot valve OFF 1 Pilot valve ON
Parameter bit	P3	P2	P1	P0
Output	not used	not used	not used	“0” START Teach function “1” STOP Teach function

Table 7: Bit configuration

10.4 Electrical installation AS-Interface

10.4.1 Safety instructions



DANGER!

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper installation.

- Installation may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- Secure system from unintentional activation.
- Following installation, ensure a controlled restart.

10.4.2 Connection with circular plug-in connector M12 x 1, 4-pole, male

→ Connect the control head according to the table.

Bus connection (circular plug M12 x 1, 4-pole, male)

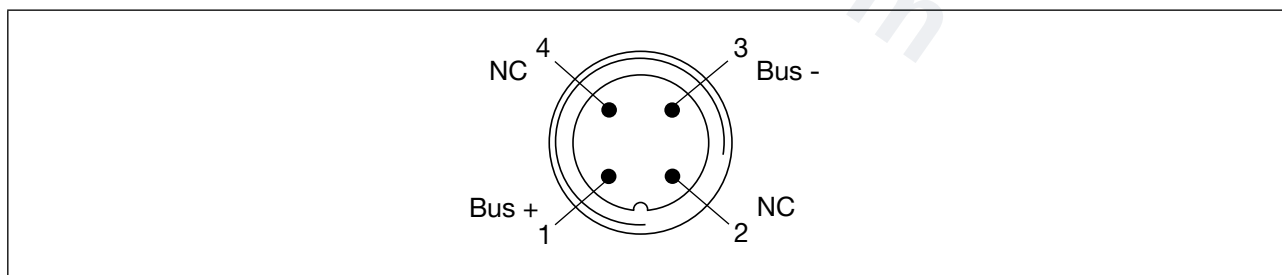


Figure 29: Circular plug M12 x1, 4-pole

Pin	Designation	Configuration
1	Bus +	AS-Interface bus line +
2	NC	not used
3	Bus –	AS-Interface bus line -
4	NC	not used

Table 8: Pin assignment of circular plug-in connector for AS-Interface

10.4.3 Connection with multi-pole cable and ribbon cable terminal

As an alternative to the bus connection model with 4-pole circular plug, there is the control head with multi-pole cable (M12 circular plug) and ribbon cable terminal. The wiring diagram of the circular plug corresponds to the bus connection of the M12 4-pole circular plug and can easily be connected to the ribbon cable terminal (see “Figure 31”).



Figure 30: Control head 8695 with multi-pole cable and ribbon cable terminal

Handling the ribbon cable terminal

The multi-pole cable features a ribbon cable terminal - with M12 plug-in connector branch circuit - for AS-Interface cable harness. The ribbon cable terminal contacts the AS-Interface cable harness by means of penetration technology which allows installation by “clipping in” the AS-Interface cable harness without cutting and without removing insulation.

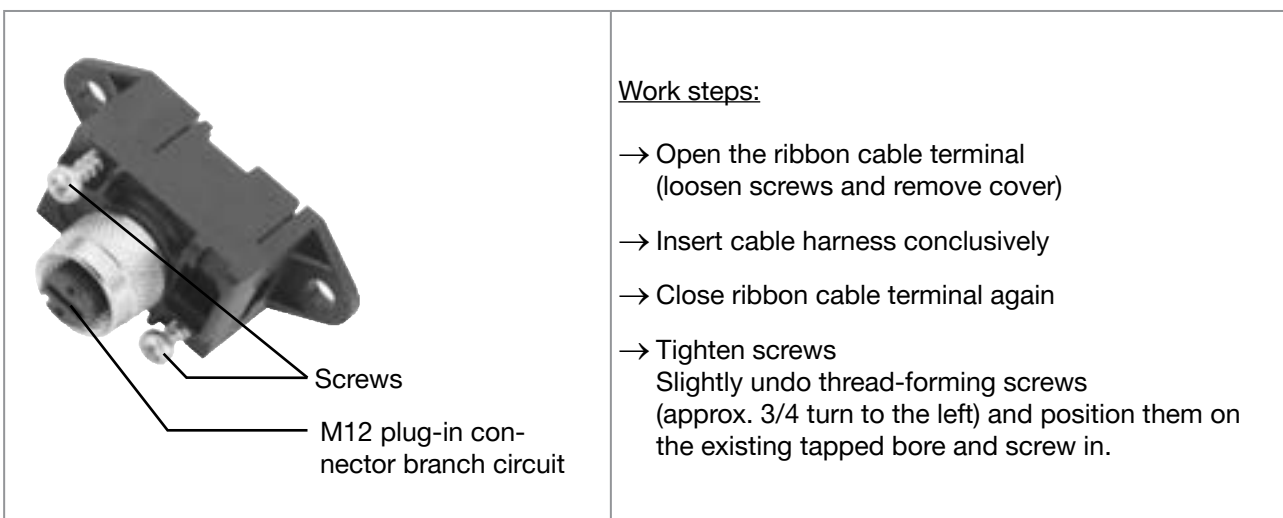


Figure 31: Ribbon cable terminal

10.5 Teach function (calibrating the end position)

The teach function can be used to automatically determine and read in the end positions of the valve.



For the bus variant AS-Interface, the teach function can also be started via the bus protocol.



DANGER!

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



Necessary requirements:

Before you can actuate the teach function, you must

- mount the control head on the actuator,
- connect the supply voltage and
- connect the compressed-air supply.



DANGER!

Danger due to the valve position changing when the teach function is running.

When the teach function is running under operating pressure, there is an acute risk of injury.

- ▶ Never run the teach function while a process is running.
- ▶ Secure system from unintentional activation.

Procedure:

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▶ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open the control head: turning the transparent cap anti-clockwise.

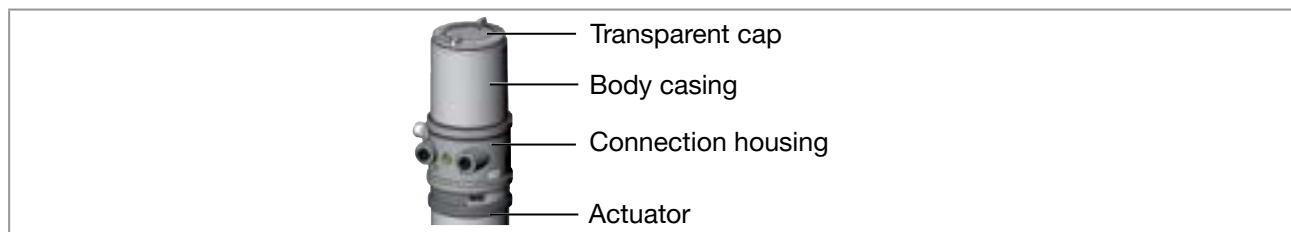


Figure 32: Open control head

→ The key in recess for actuating the teach function keep pressed for approximately 5 seconds.

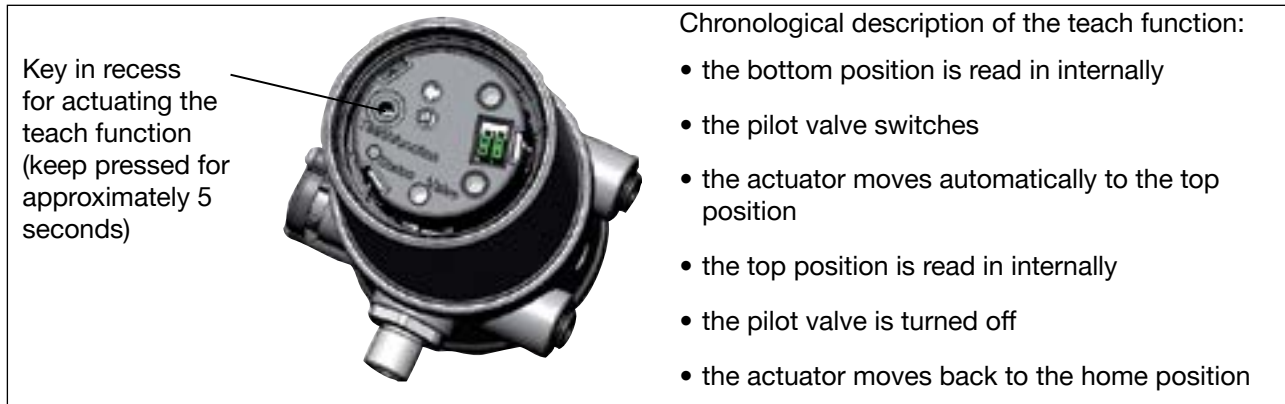


Figure 33: Teach function

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- ▶ When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

Damage or malfunction due to penetration of dirt and humidity.

- ▶ To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (assembly tool: 674078⁶⁾).



Important:

When the teach function is activated the actuator cannot be actuated via the AS-Interface communication.

⁶⁾ The assembly tool (674078) is available from your Bürkert sales office.

10.6 Display and control elements AS-Interface

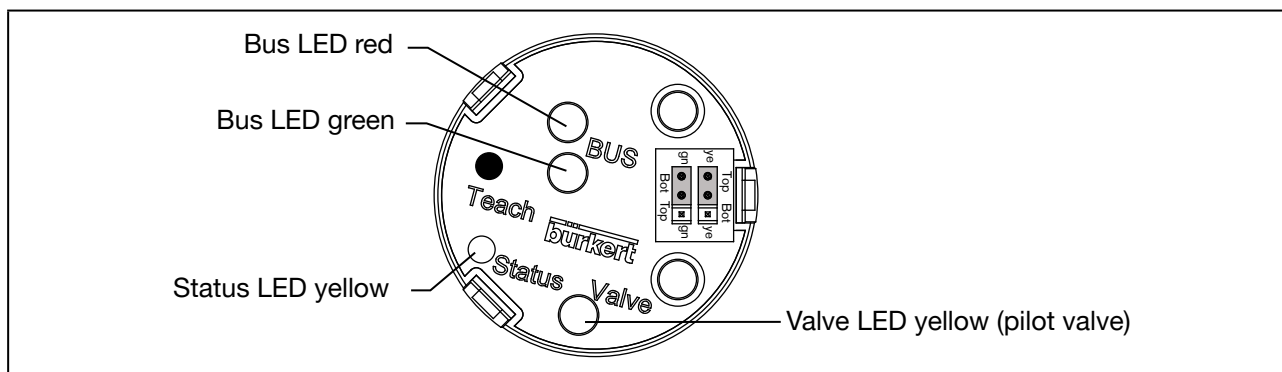


Figure 34: Description LED and Jumper - AS-Interface

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

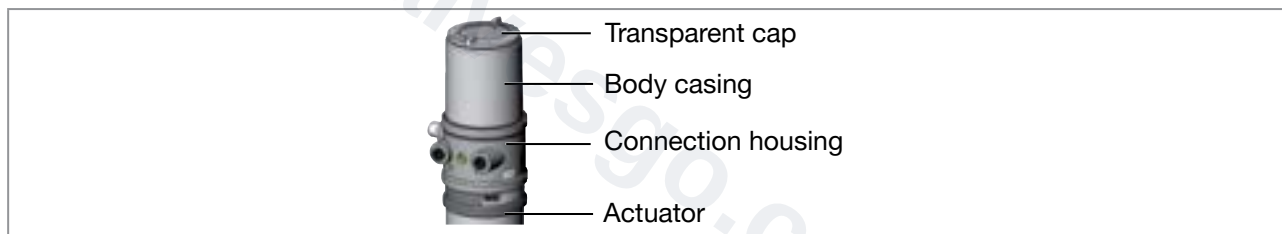


Figure 35: Open control head

NOTE!

Damage or malfunction due to penetration of dirt and humidity.

- To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

10.6.1 Status LED yellow

LED yellow	
flashing	Teach function is running
flickers	Puck PCB or puck not available → Insert puck PCB or puck.

Table 9: Status LED yellow - AS-Interface

10.6.2 Valve LED yellow

The yellow LED (valve) indicates whether the pilot valve is actuated (LED is lit yellow).

10.6.3 Bus LED red and green

The red and green LEDs (bus) indicate the bus status:

LED green	LED red	
off	off	POWER OFF
off	on	No data traffic (expired Watch Dog at slave address does not equal 0)
on	off	OK
flashing	on	Slave address equals 0
off	flashing	Sensor supply overloaded or external reset

Table 10: LED bus status - AS-Interface

10.6.4 End position LEDs

The end position is displayed optically by colored LEDs.

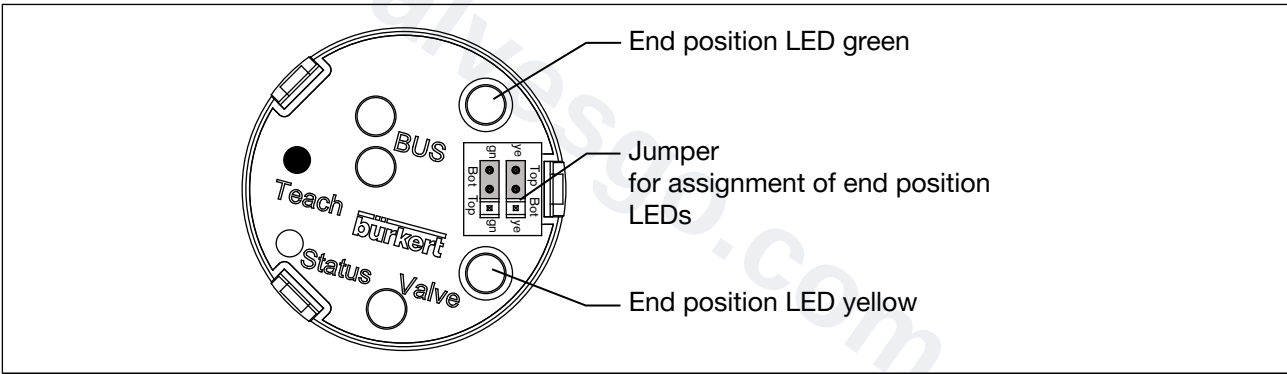


Figure 36: Description end position LEDs and Jumpers - AS-Interface

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

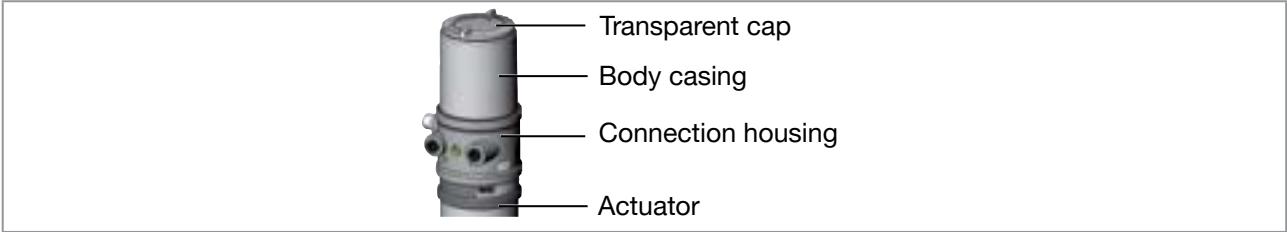


Figure 37: Open control head

NOTE!

Damage or malfunction due to penetration of dirt and humidity.

- To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

Factory setting:

Color	Device status
green LED on	End position bottom
yellow LED off	End position top

Table 11: Assignment of LEDs - AS-Interface

10.6.5 Jumper function

You can set the color assignment of the end positions with the jumpers.

You can indicate for each color whether it applies to the Top (end position top) or Bot (end position bottom).

10.6.6 Change assignment of the end position LEDs

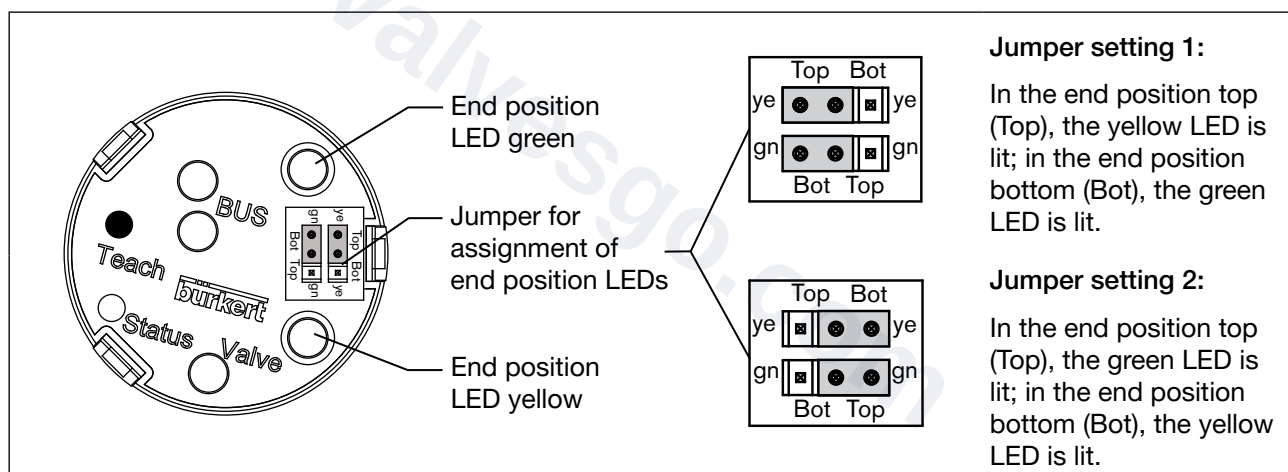


Figure 38: Assignment of the end position LED - AS-Interface



DANGER!

Risk of electric shock.

- Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- Observe applicable accident prevention and safety regulations for electrical equipment.

Procedure:

NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

- When unscrewing and screwing in the transparent cap, do not hold the actuator of the process valve but the connection housing.

→ Open the control head: turning the transparent cap anti-clockwise.

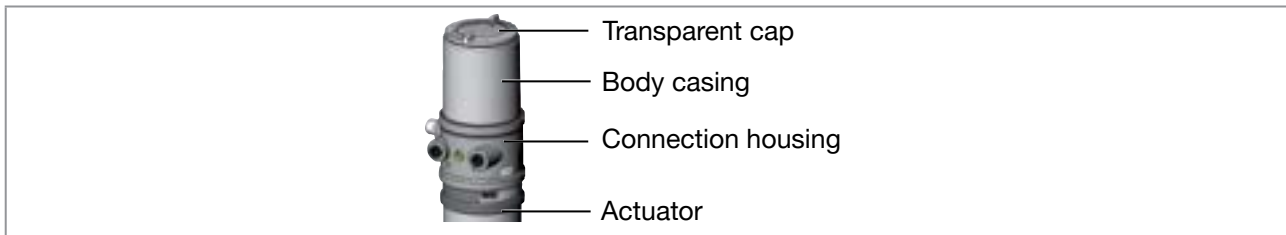


Figure 39: Open control head

→ Using the jumpers, assign the required color to the LEDs (see [“Figure 38: Assignment of the end position LED - AS-Interface”](#)).

NOTE!

Damage or malfunction due to penetration of dirt and humidity.

► To observe degree of protection IP65 / IP67, screw the transparent cap in all the way.

→ Close the device (assembly tool: 674078⁷⁾).

⁷⁾ The assembly tool (674078) is available from your Bürkert sales office.

11 SAFETY POSITIONS

Safety positions after failure of the electrical or pneumatic auxiliary power:

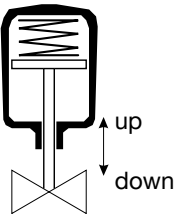
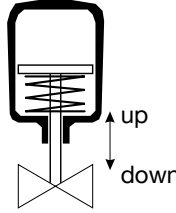
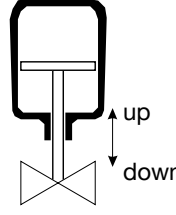
Actuator system	Designation	Safety positions after failure of the auxiliary power	
		electrical	pneumatic
	single-acting Control function A	down	down
	single-acting Control function B	up	up
	double-acting Control function B	down	not defined

Table 12: Safety Positions

12 MAINTENANCE

The control head Type 8695 is maintenance-free when operated according to the instructions in this manual.

13 DISASSEMBLY

13.1 Safety instructions



DANGER!

Risk of injury from high pressure in the equipment/device.

- ▶ Before working on equipment or device, switch off the pressure and deaerate/drain lines.

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.



WARNING!

Risk of injury from improper disassembly.

- ▶ Disassembly may be carried out by authorized technicians only and with the appropriate tools.

Risk of injury from unintentional activation of the system and an uncontrolled restart.

- ▶ Secure system from unintentional activation.
- ▶ Following disassembly, ensure a controlled restart.

13.2 Disassembly the control head

Procedure:

1. Pneumatic connection



DANGER!

Risk of injury from high pressure in the equipment/device.

- ▶ Before working on equipment or device, switch off the pressure and deaerate/drain lines.

→ Loosen the pneumatic connection.

→ 20xx series:

Loosen the pneumatic connection to the actuator.

2. Electrical connection



DANGER!

Risk of electric shock.

- ▶ Before working on equipment or device, switch off the power supply and secure to prevent reactivation.
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment.

→ Loosen the circular plug-in connector.

3. Mechanical connection

→ Loosen the fastening screws.

→ Remove the control head upwards.

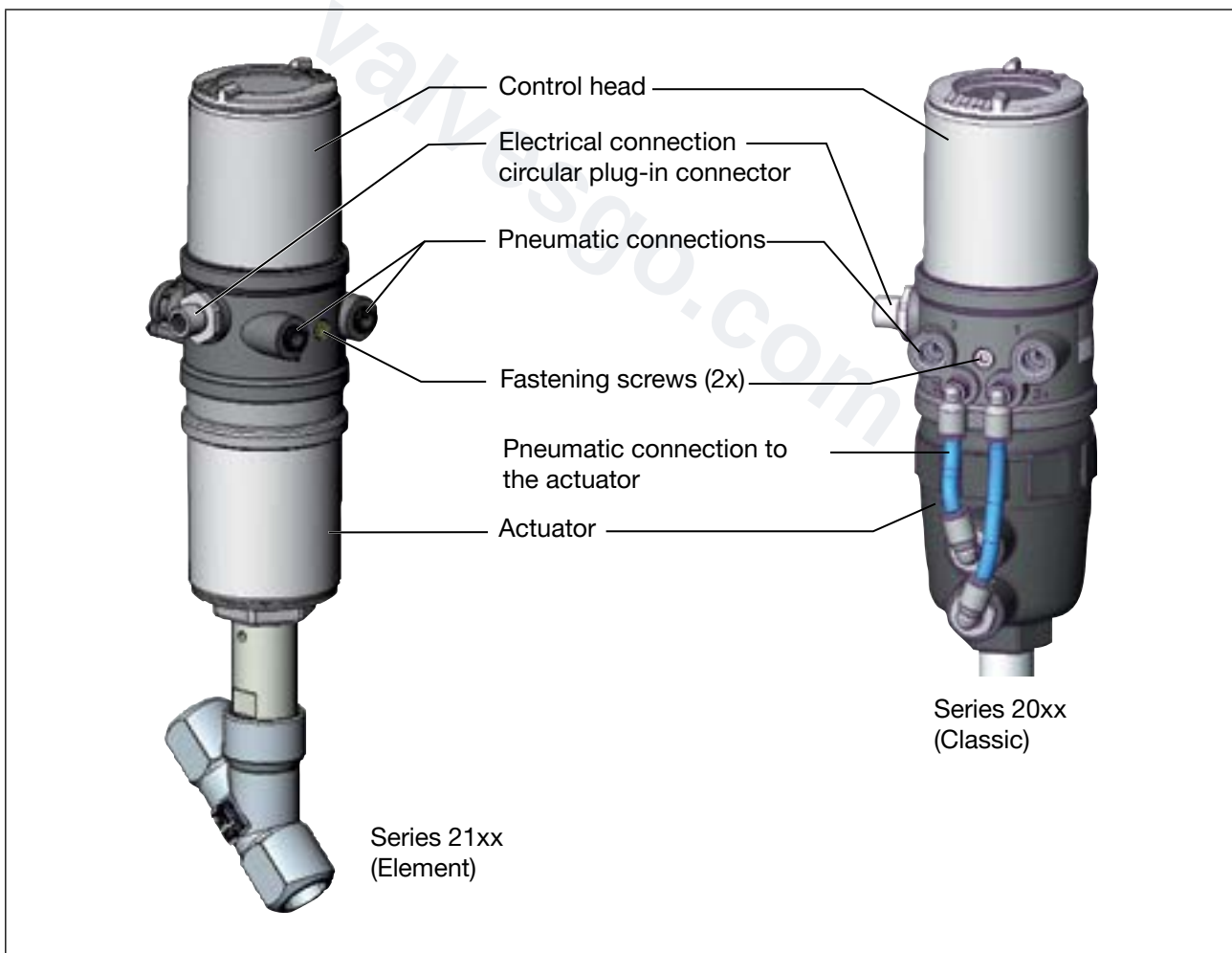


Figure 40: Disassembly the control head

14 ACCESSORIES

Designation	Order no.
Connection cable M12 x 1, 8-pole	919061
Assembly tool	674078

Table 13: Accessories

15 PACKAGING AND TRANSPORT

NOTE!

Transport damages.

Inadequately protected equipment may be damaged during transport.

- ▶ During transportation protect the device against wet and dirt in shock-resistant packaging.
- ▶ Avoid the effects of heat and cold which could result in temperatures above or below the permitted storage temperature.

16 STORAGE

NOTE!

Incorrect storage may damage the device.

- ▶ Store the device in a dry and dust-free location.
- ▶ Storage temperature -20 – +65°C.

17 DISPOSAL

→ Dispose of the device and packaging in an environmentally friendly manner.

NOTE!

Damage to the environment caused by device components contaminated with media.

- ▶ Observe the relevant disposal and environmental protection regulations.



Note:

Observe national waste disposal regulations.

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