

## Type 8691

Control Head

Steuerkopf

Tête de commande



## Quickstart

English    Deutsch    Français

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

© Bürkert Werke GmbH & Co. KG, 2007 - 2022

Quickstart 2205/10\_EU-ML\_00806079 / Original DE

<b>1</b>	<b>QUICKSTART .....</b>	<b>4</b>	<b>7</b>	<b>INSTALLATION .....</b>	<b>11</b>
1.1	Definition of term, abbreviation .....	4	7.1	Safety instructions.....	11
1.2	Symbols.....	4	7.2	Installation of the control head on process valves of series 21xx.....	12
<b>2</b>	<b>AUTHORIZED USE .....</b>	<b>5</b>	7.3	Installation of the control head on process valves of series 20xx.....	13
<b>3</b>	<b>BASIC SAFETY INSTRUCTIONS.....</b>	<b>5</b>	7.4	Manual actuation of the actuator via pilot valve.....	15
<b>4</b>	<b>GENERAL INFORMATION .....</b>	<b>6</b>	<b>8</b>	<b>PNEUMATIC INSTALLATION .....</b>	<b>15</b>
4.1	Contact address.....	6	<b>9</b>	<b>ELECTRICAL INSTALLATION .....</b>	<b>16</b>
4.2	Warranty .....	6	9.1	Safety instructions.....	16
4.3	Information on the Internet.....	6	9.2	Electrical installation 24 V DC .....	17
<b>5</b>	<b>SYSTEM DESCRIPTION .....</b>	<b>7</b>	9.3	Display elements 24 V DC.....	19
5.1	Structure and function.....	7	9.4	Programming data AS-Interface.....	19
5.2	Control head for integrated installation on the 21xx series 7		9.5	Electrical installation AS-Interface .....	20
5.3	Model for control of process valves belonging to the 20xx series.....	8	9.6	Display elements AS-Interface .....	22
<b>6</b>	<b>TECHNICAL DATA.....</b>	<b>8</b>	<b>10</b>	<b>TEACH FUNCTION.....</b>	<b>23</b>
6.1	Conformity.....	8	10.1	Starting the teach function .....	23
6.2	Standards.....	8	<b>11</b>	<b>SAFETY END POSITIONS .....</b>	<b>24</b>
6.3	Licenses .....	8	<b>12</b>	<b>ACCESSORIES .....</b>	<b>25</b>
6.4	Operating conditions.....	9	12.1	USB interface .....	25
6.5	Mechanical data .....	9	<b>13</b>	<b>PACKAGING, TRANSPORT, STORAGE .....</b>	<b>25</b>
6.6	Type labels.....	9			
6.7	Pneumatic data .....	10			
6.8	Electrical data.....	10			

## 1 QUICKSTART

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

### Important Safety Information.

Read Quickstart carefully and thoroughly. Study in particular the chapters entitled [“Basic safety instructions”](#) and [“Authorized use”](#).

- ▶ Quickstart must be read and understood.

Quickstart explains, for example, how to install and start-up the device.

A detailed description of the device can be found in the operating instructions for control head Type 8691.



The operating instructions can be found on the Internet at:  
[www.burkert.com](http://www.burkert.com)

### 1.1 Definition of term, abbreviation

The term “device” used in these instructions always stands for the control head Type 8691.

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

## 1.2 Symbols

The following symbols are used in these instructions.



### DANGER!

Warns of an immediate danger.

- ▶ Failure to observe the warning may 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 medium or minor injury.

### NOTE!

Warns of damage to property.



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 that must be carried out.

## 2 AUTHORIZED USE

**Non-authorized use of the control head Type 8691 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 8691 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 8691 only as intended.

## 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.



**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:

- ▶ 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 8691.
- ▶ Do not put any loads on the housing (e.g. by placing objects on it or standing on it).
- ▶ Do not make any external modifications to the device housing. Do not paint the housing 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@de.buerkert.com](mailto:info@de.buerkert.com)

#### International

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

And also on the Internet at: [www.burkert.com](http://www.burkert.com)

### 4.2 Warranty

The warranty is only valid if the control head Type 8691 is used as intended in accordance with the specified application conditions.

### 4.3 Information on the Internet

The operating instructions and data sheets for Type 8691 can be found on the Internet at: [www.burkert.com](http://www.burkert.com)

## 5 SYSTEM DESCRIPTION

### 5.1 Structure and function

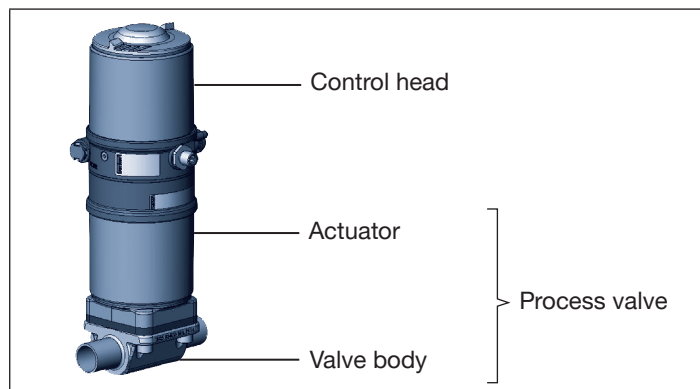


Fig. 1: Structure

The control head Type 8691 can control single or double-acting process valves and has been optimized for the integrated modular fitting of series 21xx process valves (Element). 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 "5.3".

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.

Apart from the electrical position feedback, the status of the device is optically displayed on the control head itself by a colored high-power LED.

Option: Communication possible via AS-Interface.

### 5.2 Control head for integrated installation on the 21xx series

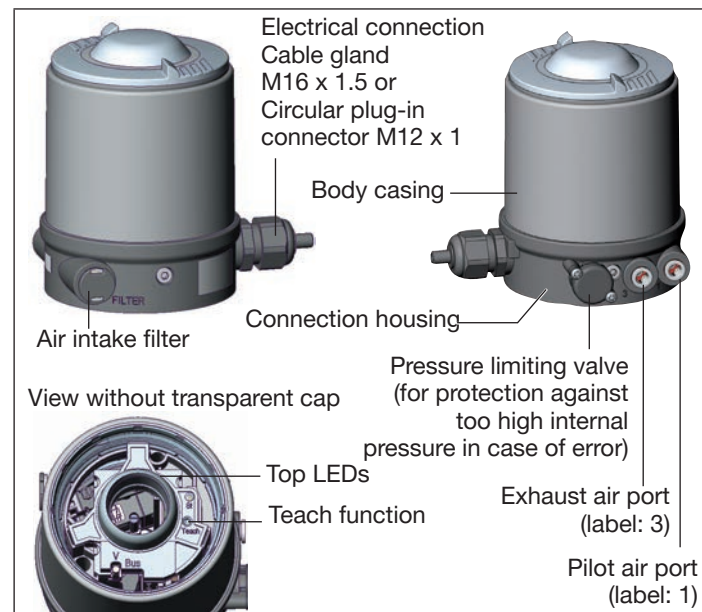


Fig. 2: Structure for process valves belonging to the 21xx series

### 5.3 Model for control of process valves belonging to the 20xx series

A special model enables the control head Type 8691 to be attached to process valves belonging to the 20xx series.

This model features has a different connection housing so that the pilot air ports can be connected to the outside of the actuator (see “Fig. 3”).

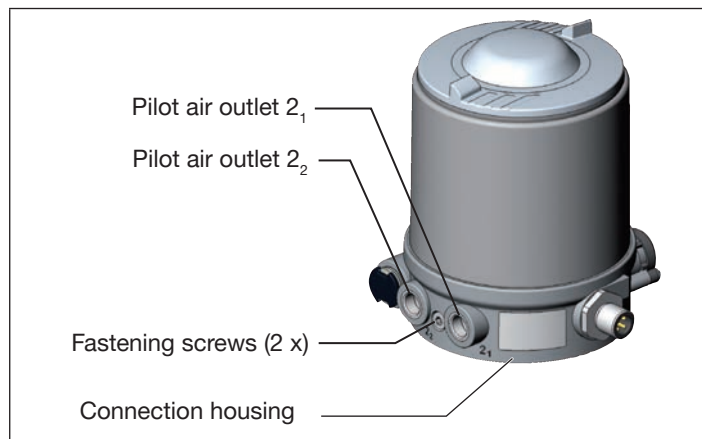


Fig. 3: Structure for process valves belonging to the 20xx series

## 6 TECHNICAL DATA

### 6.1 Conformity

In accordance with the EU Declaration of conformity, the control head Type 8691 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 an explosion-risk (Ex) area. 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 <sup>1)</sup>	UL Type 4x Rating indoor only <sup>1)</sup>

Operating altitude up to 2000 m above sea level

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

*1) Only if cables, plugs and sockets have been connected correctly and in compliance with the exhaust air concept see "8 Pneumatic installation".*

## 6.5 Mechanical data

Dimensions see data sheet

Housing material exterior: PPS, PC, VA

Sealing material exterior: EPDM  
interior: NBR

Stroke range of valve spindle 2 – 47 mm

MAN 1000098456 ML Version: KStatus: RL (released | freigegeben) printed: 10.05.2022

## 6.6 Type labels

### 6.6.1 Type label standard (example)

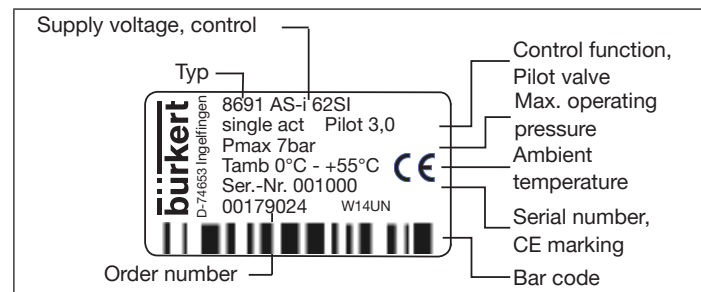


Fig. 4: Type label (example)

### 6.6.2 UL type label (example)

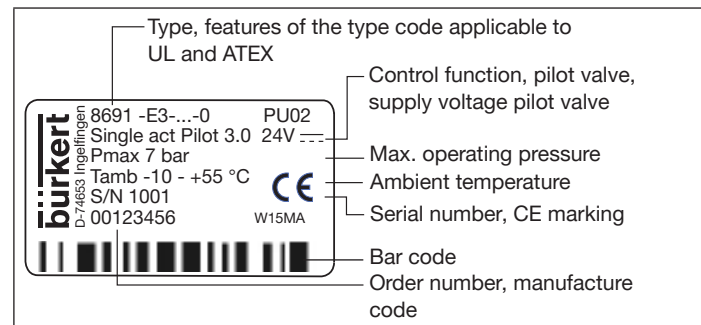


Fig. 5: UL Type label (example)

### 6.6.3 UL additional label (example)

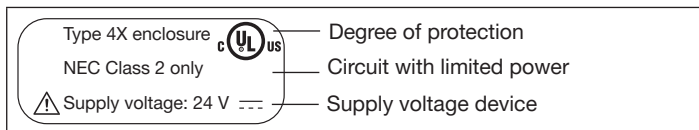


Fig. 6: UL additional label (example)

### 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 <sup>3</sup>
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 <sup>3</sup>
Temperature range control medium	-10 – +50 °C
Pressure range control medium	3 – 7 bar
Air output of pilot valve	250 l <sub>N</sub> / min (for aeration and deaeration) (Q <sub>Nn</sub> - value according to definition for pressure drop from 7 to 6 bar absolute)

### Connections

Plug-in hose connector Ø 6 mm / 1/4"  
Socket connection G 1/8

### 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	Cable gland M16 x 1.5, wrench size 22 (clamping area 5 – 10 mm) with screw-type terminals for cable cross-sections 0.14 – 1.5 mm <sup>2</sup>  Circular plug-in connector (M12 x 1, 8-pole)
Pilot valve Supply voltage	24 V DC ± 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)
Supply voltage	29.5 V – 31.6 V DC (according to specification)
Outputs	
Max. switching capacity	1 W via AS-Interface
Watchdog function	integrated

#### Devices without external supply voltage

Max. power consumption      120 mA

Power consumption input during  
normal operation  
(after current reduction;  
valve + 1 end position reached)

90 mA

#### Devices with external supply voltage

External supply voltage      24 V ± 10 %

The power supply unit must include a secure disconnection  
in accordance with IEC 364-4-41 (PELV or SELV)

Max. power consumption      55 mA (after current reduction  
≤ 30 mA)

Max. power consumption  
from AS-Interface      55 mA

## 7 INSTALLATION



Only for control head without pre-assembled process valve.

### 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 on process valves of series 21xx

### NOTE!

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

### Procedure:

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

- Align the puck and the control head until
  1. the puck can be inserted into the guide rail of the control head (see “Fig. 7”) and
  2. the connection pieces of the control head can be inserted into the pilot air ports of the actuator (see also “Fig. 8”).

### NOTE!

Damaged printed circuit board or malfunction.

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

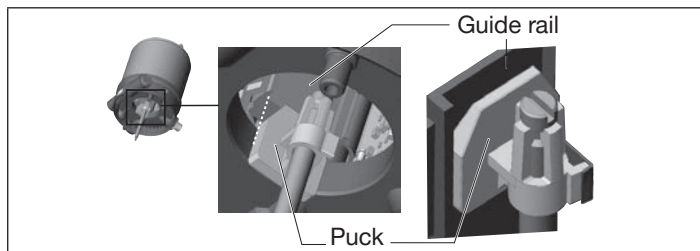


Fig. 7: Aligning the puck

- 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).

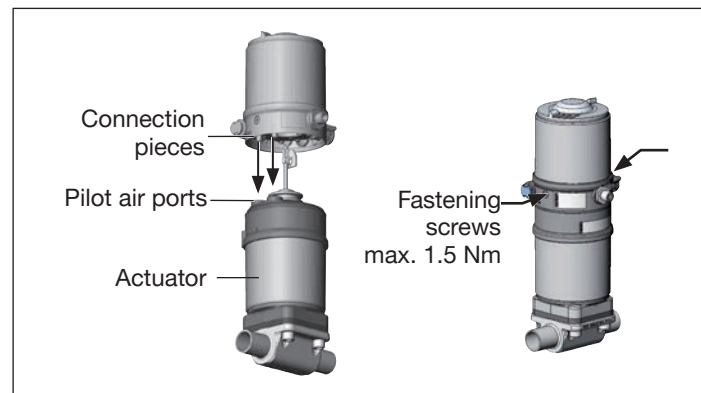


Fig. 8: Installation of control head, 21xx series

### 7.3 Installation of the control head on process valves of series 20xx

#### Procedure:

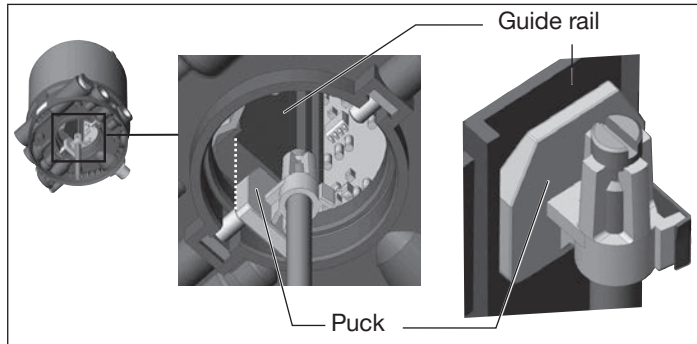


Fig. 9: Aligning the puck

- 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 (see “Fig. 9”).

#### NOTE!

**Damaged printed circuit board or malfunction.**

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

- 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 “Fig. 10”).

#### 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).

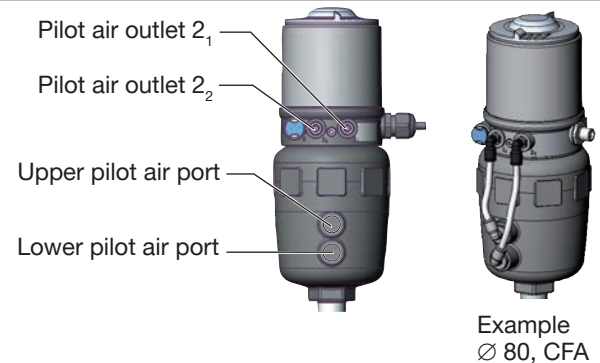


Fig. 10: Installing the pneumatic connection, 20xx series

- 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 "Tab. 1: Pneumatic connection to actuator".

#### 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.



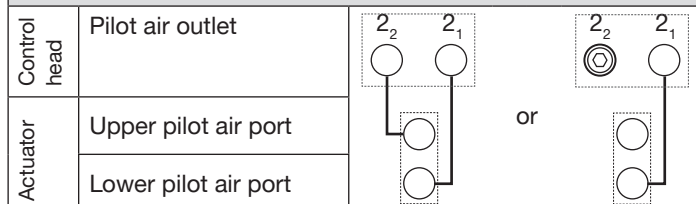
"In rest position" means that the pilot valves of the control head Type 8691 are isolated or not actuated.



If the ambient air is humid, a hose can be connected between pilot air outlet  $2_2$  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.

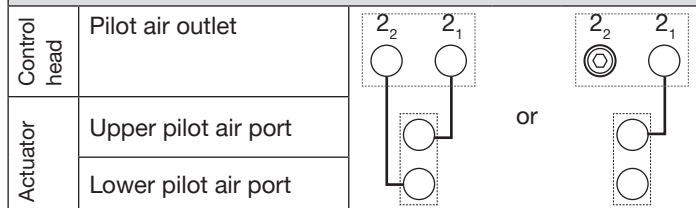
#### Control function A (CFA)

Process valve closed in rest position (by spring force)



#### Control function B (CFB)

Process valve open in rest position (by spring force)

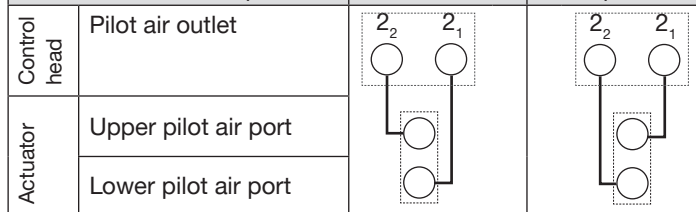


#### Control function I (CFI)

Process valve in rest position

closed

open



Tab. 1: *Pneumatic connection to actuator*

## 7.4 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

Hand lever

Pilot valve activated



Hand lever  
to the right



Fig. 11: Pilot valve for aerate and deaerate the actuator

**Note:** Do not press the hand lever when turning it.

### Move actuator to end position

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

### Move actuator back to the rest position

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

## 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.

### 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)  
(see [“Fig. 12: Pneumatic connection”](#)).



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.



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.

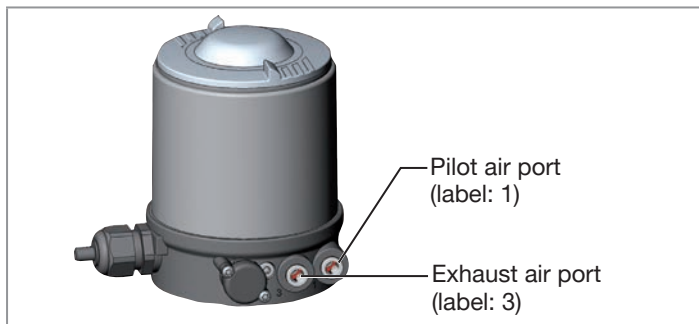


Fig. 12: Pneumatic connection

**Caution:** (Exhaust air concept):  
In compliance with degree of protection IP67, an exhaust air line must be installed in the dry area.

## 9 ELECTRICAL INSTALLATION

### 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 24 V DC

### 9.2.1 Electrical installation with cable gland

#### NOTE!

Breakage of the pneumatic connection pieces due to rotational impact.

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

- Unscrew the body casing (stainless steel) in a counter-clockwise direction.

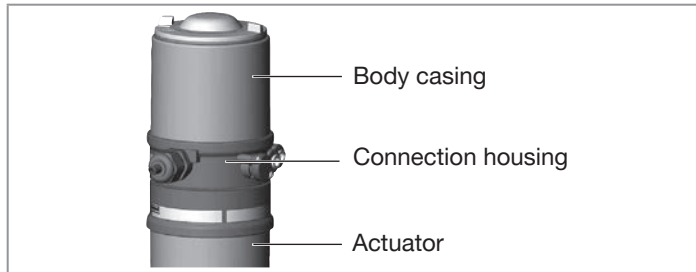


Fig. 13: Open control head

- Push the cables through the cable gland.
- Connect the wires.

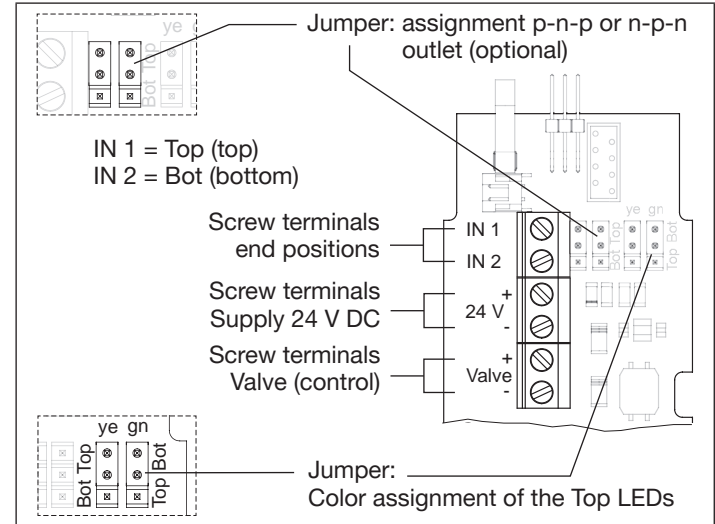


Fig. 14: Connection with cable gland

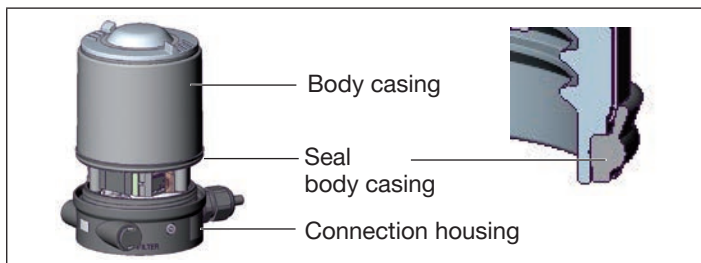


Fig. 15: Position of the seal in the body casing

- Tighten union nut on the cable gland (torque approx. 1.5 Nm).
- Check that the seal is correctly positioned in the body casing.
- Close the device (assembly tool: 674077<sup>2)</sup>).

#### NOTE!

**Damage or malfunction due to penetration of dirt and humidity.**

To ensure degree of protection IP65 / IP67:

- ▶ Tighten the union nut on the cable gland according to the cable size or dummy plugs used. (ca. 1.5 Nm).
- ▶ Screw the body casing in all the way.

The teach function can now be used to automatically determine and read in the end positions of the valve (description of the teach function see chapter [“10 Teach function”](#)).

### 9.2.2 Electrical installation 24 V DC with circular plug-in connector

→ Connect the control head according to the table.

The teach function can now be used to automatically determine and read in the end positions of the valve (description of the teach function see chapter [“10 Teach function”](#)).

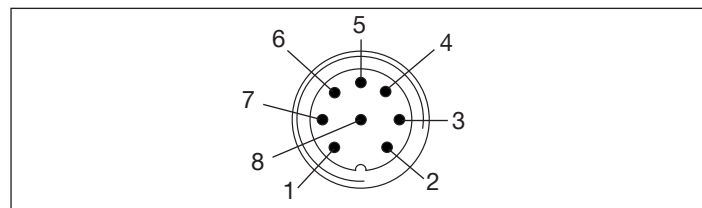


Fig. 16: Circular plug M12 x 1, 8-pole

Pin	Wire color <sup>3)</sup>	Designation	Configuration
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

Tab. 2: Connection with circular plug-in connector

2) The assembly tool (674077) is available from your Bürkert sales office.

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

## 9.3 Display elements 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.

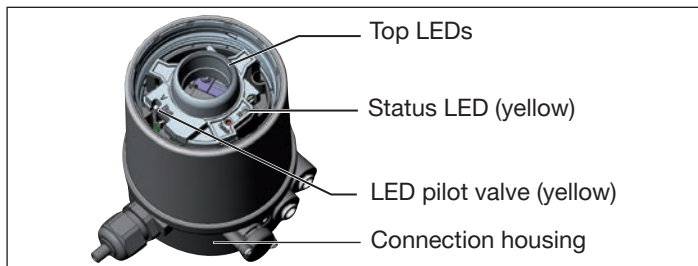


Fig. 17: Display elements 24 V DC

LED	Color	
Top LEDs <sup>4)</sup>	is lit green	End position bottom
	is lit yellow	End position top
LED Pilot valve	is lit yellow	Pilot valve is actuated
Status LED	flashing yellow	Teach function is running
	flickers yellow	Puck PCB not available

Tab. 3: Display elements 24 V DC

4) Color setting ex works. Can be set via jumper (see [“Fig. 14: Connection with cable gland”](#)).

### 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 Programming data AS-Interface

	AS-Interface 31 slaves	AS-Interface 62 slaves
I/O configuration	B hex (1 input, 2 outputs)	
ID code	F hex	A hex
Extended ID code 1	F hex	7 hex
Extended ID code 2	F hex	E hex
Profile	S-B.F.F	S-B.A.E

Tab. 4: Programming data

## 9.5 Electrical installation AS-Interface

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

#### Connector views

The views show the image from the front looking at the pins, the solder connections are behind them.

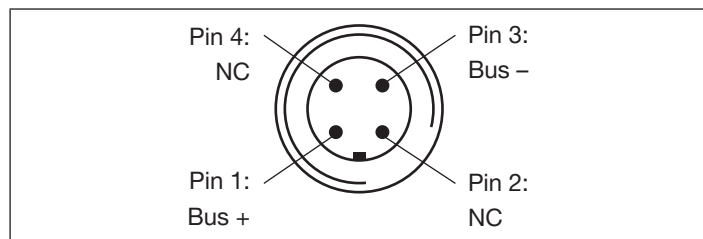


Fig. 18: Bus connection without external supply voltage

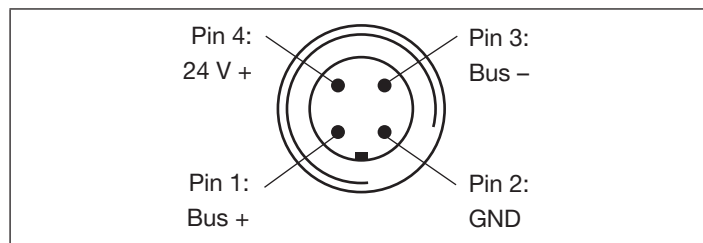


Fig. 19: Bus connection with external supply voltage (optional)

Bus connection without external / with external supply voltage

Pin	Designation	Configuration
1	Bus +	AS-Interface bus line +
2	NC or GND (optional)	not used or external supply voltage – (optional)
3	Bus –	AS-Interface bus line –
4	NC or 24 V + (optional)	not used or external supply voltage + (optional)

Tab. 5: Pin assignment of circular plug-in connector for AS-Interface

→ Connect the control head according to the table.

The teach function can now be used to automatically determine and read in the end positions of the valve (description of the teach function see chapter [“10 Teach function”](#)).



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

### 9.5.2 Connection with multi-pole cable and flat 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 flat 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 flat cable terminal (see [“Fig. 20”](#)).

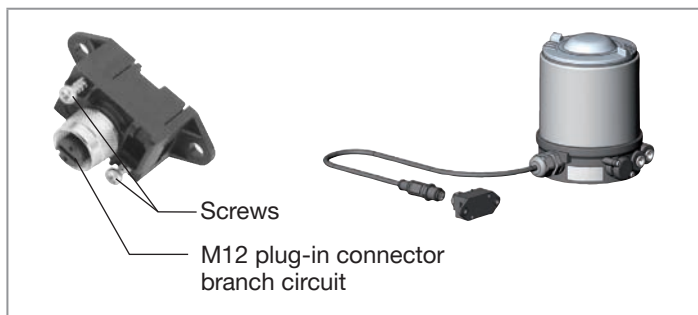


Fig. 20: Control head 8691 with multi-pole cable and flat cable terminal

#### Handling the flat cable terminal

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

#### Procedure:

- Open the flat cable terminal (loosen screws and remove cover).
- Insert AS-Interface flat cable conclusively.
- Close flat cable terminal again.
- Tighten screws  
Slightly undo thread-forming screws (approx. 3/4 turn to the left) and position them on the existing tapped bore and screw in.

The teach function can now be used to automatically determine and read in the end positions of the valve (description of the teach function see chapter [“10 Teach function”](#)).



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

## 9.6 Display elements 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.

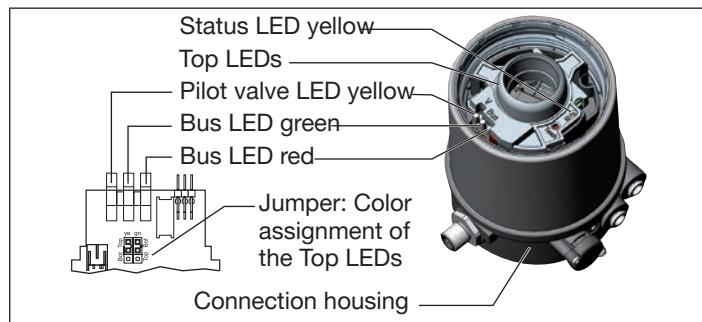


Fig. 21: Display elements AS-Interface

### 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.

Bus LED (green)	Bus 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
flashing	flashing	Teach function error (Periphery error)

Tab. 6: Display elements bus status

LED	Color	
Status LED	flashing yellow	Teach function is running
	flickers yellow	Puck PCB not available
Top LEDs <sup>5)</sup>	is lit green	End position bottom
	is lit yellow	End position top
	flashing red alternately with the green or yellow	no data traffic or teach function error
LED Pilot valve	is lit yellow	Pilot valve is actuated

Tab. 7: Display elements AS-Interface

5) Color setting ex works. Can be set via jumper (see "Fig. 21").

## 10 TEACH FUNCTION

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.

### 10.1 Starting the teach function



#### Necessary requirements:

Before you can actuate the teach function, you must

- mount the control head on the actuator,
- connect the supply voltage,
- connect the compressed-air supply,
- AS-Interface: pilot valve OFF (D0 = 0),

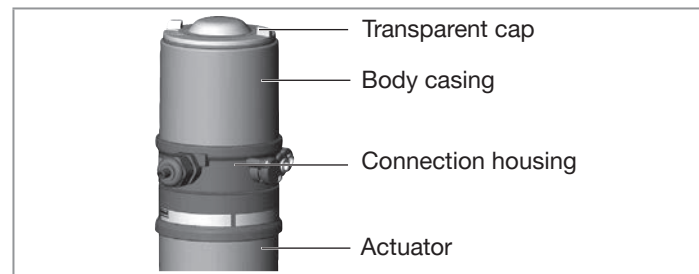


Fig. 22: Open control head

#### 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.
- The key in recess for actuating the teach function keep pressed for approximately 5 seconds.
- Only for control heads without pilot valve:  
When yellow pilot valve LED is lit, move actuator to upper end position.  
When yellow pilot valve LED goes out again, move actuator to lower end position.

## 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: 674077<sup>6)</sup>).

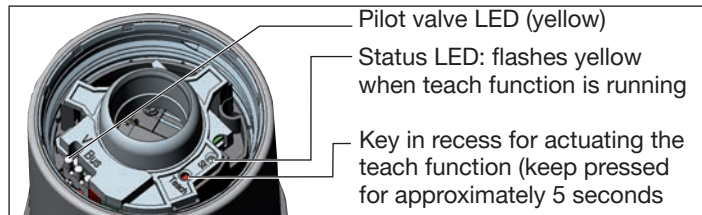


Fig. 23: Teach function

Chronological description of the teach function:

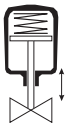
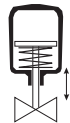

- the bottom position is read in internally
- the pilot valve switches  $\Rightarrow$  the actuator moves automatically to the top position
- the top position is read in internally
- the pilot valve is turned off  $\Rightarrow$  the actuator moves back to the home position.



**Important:** When the teach function is activated the actuator cannot be actuated via the AS-Interface..

6) The assembly tool (674077) is available from your Bürkert sales office.

## 11 SAFETY END POSITIONS

Actuator system	Designation	Safety end 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 I	down	not defined

Tab. 8: Safety end positions



## 12 ACCESSORIES

Designation	Order no.
Connection cable M12 x 1, 8-pole	919061
Assembly tool	674077
USB adapter for connection to a PC in conjunction with an extension cable	227093

Tab. 9: Accessories

### 12.1 USB interface

The PC requires an USB interface for communication with the devices as well as an additional adapter with interface driver (see [“Tab. 9: Accessories”](#)).

## 13 PACKAGING, TRANSPORT, STORAGE

### 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 exceeding or dropping below the permitted storage temperature.

#### Incorrect storage may damage the device.

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

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

- ▶ Dispose of the device and packaging in an environmentally friendly manner.
- ▶ Observe applicable regulations on disposal and the environment.





[www.burkert.com](http://www.burkert.com)