

Type 8691 REV.2 Control Head

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Important information for devices with UL approval

1 Intended use

Non-intended use of the control head Type 8691 REV.2 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.

- ▶ Do not use the device outdoors without protection from the weather.
- ▶ Use according to the authorized data, operating conditions and conditions of use specified as described in this document.
- ▶ 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.

Explosion hazard!

Only those devices are permitted to be installed in a potentially explosive atmosphere/ hazardous (classified) location that bear the corresponding labeling for the respective area.

2 Basic safety instructions

! The operator is responsible for observing the location-specific safety regulations, also with reference to the 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.

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.

To prevent damage to property of 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 REV.2.
- ▶ 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.

3 Operating conditions

Altitude	restricted to max. 2000 m above sea level
Relative air humidity	max. 90% at 55 °C / 60 °C (non condensing)
Ambient temperature	see type label

Degree of protection

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

4 Pneumatic data

Control medium	neutral gases, air Quality classes in accordance with DIN ISO 8573-1
Pressure range	3...7 bar (43.5...101.5 psi)
Temperature range	-10...+50 °C (+14...+122 °F)

5 Electrical data

- !** The device must be supplied by one of the following:
- a) Limited Energy Circuit (LEC) according to UL/ IEC 61010-1
 - b) Limited Power Source (LPS) according to UL/ IEC 60950
 - c) SELV/ PELV with UL Recognized Overcurrent Protection dimensioned according to UL/ IEC 61010-1 Table 18
 - d) NEC Class 2 power source

Electrical data IO-Link

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connections	Circular plug-in connector M12 × 1, 4-pin, Port Class A
Operating voltage	18...30 V $\overline{=}$ (according to specification)
Max. current consumption	135 mA @18 V (incl. inrush current pilot valve for 200 ms)
Current consumption input during normal operation	110 mA @18 V (after current reduction, pilot valve after 200 ms and 1 end position reached)

¹⁾ Only if cables, plugs and sockets have been connected correctly and in compliance with the exhaust air concept

Electrical data büS

Protection class	III as per DIN EN 61140 (VDE 0140-1)
Connections	Circular plug-in connector M12 × 1, 5-pin
Operating voltage	18–30 V $\overline{\text{---}}$ (according to specification)
Max. current consumption	120 mA @18 V (incl. inrush current pilot valve for 200 ms)
Current consumption input during normal operation	95 mA @18 V (after current reduction, pilot valve after 200 ms and 1 end position reached)

6 Installation

6.1 Installing devices with integrated pilot air duct (21xx, Element)

! Only for devices without preinstalled process valve.

Required attachment kit: ELEMENT Type 21xx

NOTE

Damage to the device and the drive when welding welded bodies.

Observe the following during installation on process valves with welded body:

- Observe the installation instructions for the operating manual of the process valve.
- Before installing the device, weld the process valve into the pipe system.

1. Installing the switch spindle

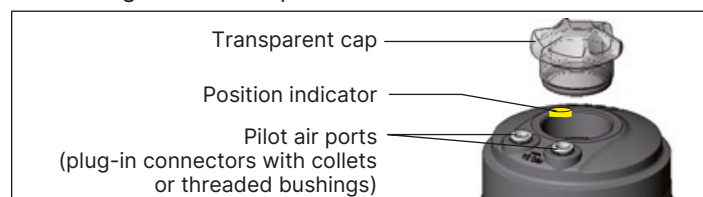


Fig. 1: Installing the switch spindle (1), integrated pilot air duct

- Unscrew the transparent cap from the actuator.
- Unscrew position indicator from spindle extension.
- For variant with hose connector: remove the collets (white sleeves) from the pilot air ports.

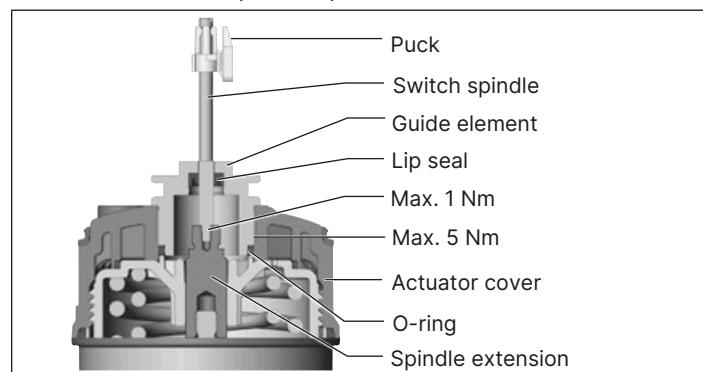


Fig. 2: Installing the switch spindle (2), integrated pilot air duct

NOTE

Lip seal can be damaged if incorrectly installed.

The lip seal is pre-mounted in the guide element and must be "locked into position" in the undercut.

- When installing the switch spindle, do not damage the lip seal.

- Slide switch spindle through the guide element.

NOTE

Contamination of the lip seal due to screw locking paint.

- Do not apply any screw locking paint to the switch spindle.
- To secure the switch spindle, apply some screw locking paint (e.g. Loctite 290) in the threading of the spindle extension in the actuator.
- Check that the O-ring is in the correct position.
- Screw guide element in actuator cover (tightening torque: max. 5 Nm).
- Screw switch spindle onto the spindle extension. A slot is provided on the top side (tightening torque: max. 1 Nm).
- Push puck onto the switch spindle and lock into position.

2. Attaching the form seal

- 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.

! Before installing the device, remove the collets in the pilot air ports.

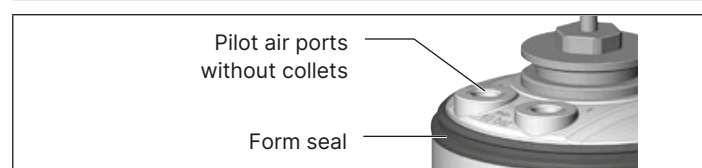


Fig. 3: Attaching the form seal

3. Installing the device

NOTE

Damage or functional outage of the PCB.

- Ensure that the puck lies flat in the guide rail.
- Align the puck and device so that:
 1. The puck rests in the guide rail of the device (see Fig. below).
 2. Find the connection pieces of the device into the pilot air ports of the actuator (see second Fig. below).

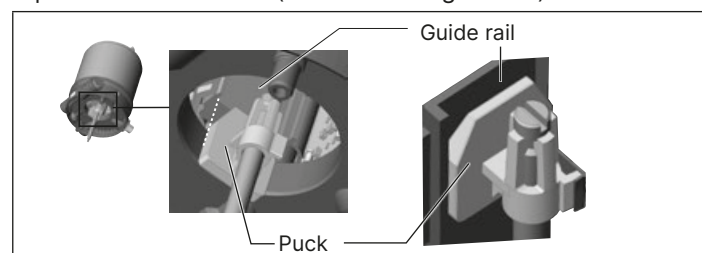


Fig. 4: Aligning the puck

- Push the device without turning it onto the actuator until no gap is visible on the form seal.

NOTE

Damage or malfunction due to ingress of dirt or moisture.

To observe the degree of protection IP65 or IP67:

- Tighten fastening screws only with a tightening torque of max. 1.5 Nm.

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

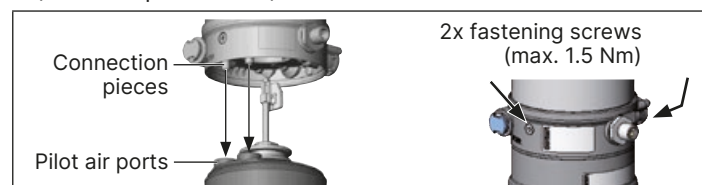


Fig. 5: Installation

6.2 Installing devices with external control air duct (20xx, Classic)



Only for devices without preinstalled process valve.

Required attachment kit:

Classic Type 20xx for the corresponding variant

NOTE

Damage to the device and the drive when welding welded bodies.

Observe the following during installation on process valves with welded body:

- ▶ Observe the installation instructions for the operating manual of the process valve.
- ▶ Before installing the device, weld the process valve into the pipe system.

1. Installing switch spindle

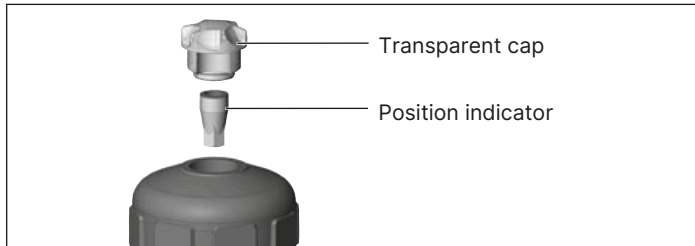


Fig. 6: Installing the switch spindle (1), external pilot air duct

- ▶ Unscrew the transparent cap from the actuator.
- ▶ Unscrew the position indicator of the spindle with hex key.

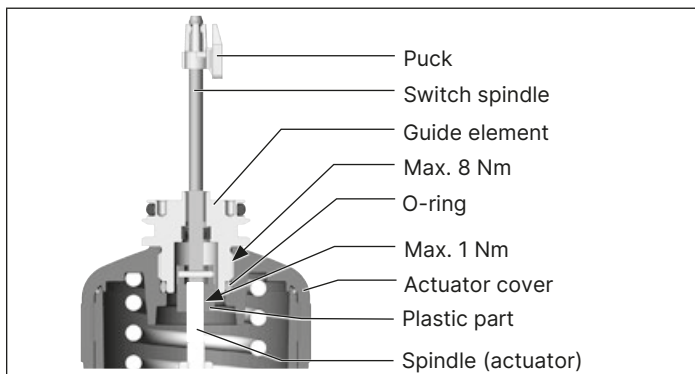


Fig. 7: Installing the switch spindle (2), external pilot air duct

- ▶ Press O-ring down into the actuator cover.
- ▶ Manually screw the switch spindle (and the slipped over guide element) to the spindle of the actuator with the plastic part and do not tighten initially.
- ▶ Screw the guide element into the cover of the actuator with a face pin wrench²⁾ (tightening torque: max. 8 Nm).
- ▶ Tighten the switch spindle on the spindle of the actuator. A slot is provided on the top side (tightening torque: max. 1 Nm).
- ▶ Push puck onto the switch spindle and lock into position.

2. Installing the device

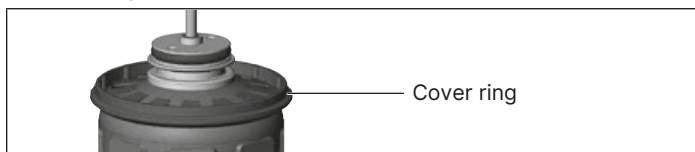


Fig. 8: Attaching cover ring

- ▶ Wind cover ring onto actuator cover (only for actuator size $\varnothing 50$ and $\varnothing 63$).

NOTE

Damage or functional outage of the PCB.

- ▶ Ensure that the puck lies flat in the guide rail.

- ▶ Align the puck and the device so that the puck rests in the guide rail of the device (see following figure).

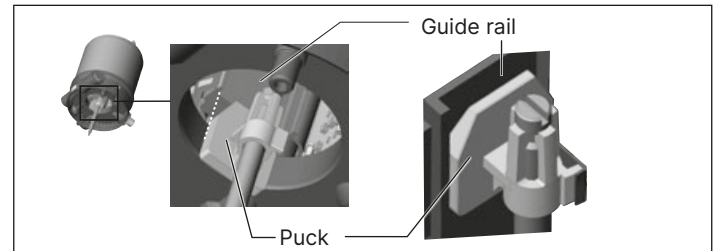


Fig. 9: Aligning the puck

- ▶ Press the device all the way down to the actuator and turn it into the required position.



Ensure that the pneumatic connections of the device and those of the valve actuator are situated preferably vertically one above the other (see Fig. below). For different positioning, longer hoses may be required than those supplied in the attachment kit.

NOTE

Damage or malfunction due to ingress of dirt or moisture.

To observe the degree of protection IP65 or IP67:

- ▶ Tighten fastening screws only with a tightening torque of max. 1.5 Nm.

- ▶ Attach device to the actuator using the two side fastening screws. In doing so, tighten the screws only hand-tight (max. torque: 1.5 Nm).

3. Pneumatically connecting device and actuator

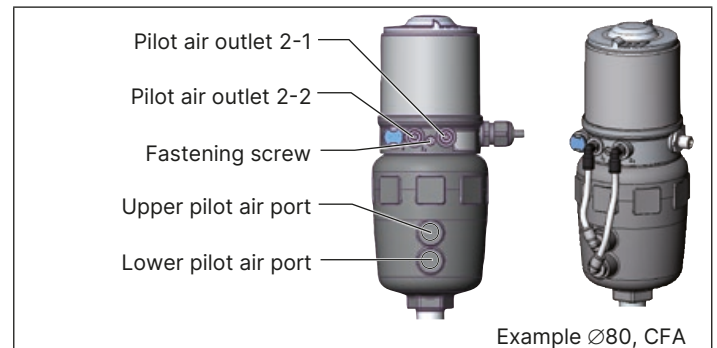


Fig. 10: Pneumatically connecting device and actuator

- ▶ Screw plug-in hose connector onto device and actuator.
- ▶ Using the hoses supplied in the attachment kit, make the pneumatic connection between the device and actuator.

²⁾ pin \varnothing : 3 mm; pin spacing: 23.5 mm

7 Electrical connection

7.1 Connecting the device electrically, IO-Link

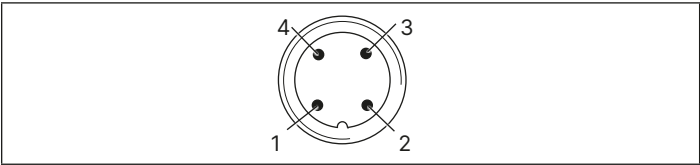


Fig. 11: Pin assignment, IO-Link

Pin	Designation	Assignment	
		IO-Link mode	SIO mode
1	L +	24 V DC	
2	I/Q	Not assigned	DI or DO
3	L -	0 V (GND)	
4	Q/C	IO-Link	DI or DO

Tab. 1: Pin assignment IO-Link

7.2 Connecting the device electrically, bÜS

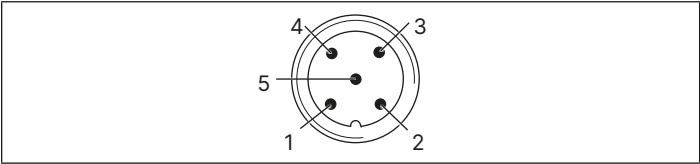



Fig. 12: Pin assignment, bÜS

Pin	Wire color	Assignment
1	CAN plate/shielding	CAN plate/shielding
2	red	+24 V DC \pm 10%, max. residual ripple 10%
3	black	GND / CAN_GND
4	white	CAN_H
5	blue	CAN_L

Tab. 2: Pin assignment bÜS



For electrical installation with bÜS network, note:
Use a 5-pin round plug and shielded 5-core cable.