

## Type 8792, 8793

Electropneumatic positioner and process controller  
Elektropneumatischer Positioner und Prozessregler  
Positionneur et régulateur de process électropneumatique



## Quickstart

English    Deutsch    Français

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Operating Instructions 2206/10\_EU-ML\_00806106 / Original DE

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## 1 QUICKSTART

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!

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

- Quickstart must be read and understood.

Quickstart for Type 8792/8793 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 positioner Type 8792-8793. These instructions also include the warranty provisions and details about the correct disposal of the device.



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

### 1.1 Definition of term “device”

The term “device” used in these instructions always stands for the Type 8792/8793.

## 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 a serious or fatal injury.



### 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!**



Important tips and recommendations.



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

- designates instructions for risk prevention.

→ designates a procedure which you must carry out.

### 3 INTENDED USE

**Incorrect use of the Type 8792 and 8793 can be dangerous to people, nearby equipment and the environment.**

The device is designed for the open-loop control and closed-loop control of media.

- ▶ In the potentially explosive area use only devices with the Ex additional plate.
- ▶ For use in the potentially explosive area follow the Ex additional instructions and the instructions on the Ex additional plate.
- ▶ The device must not be exposed to direct sunlight.
- ▶ Pulsating direct voltage (rectified alternating voltage without smoothing) must not be used as operating voltage.
- ▶ During use observe the permitted data, the operating conditions and conditions of use specified in the contract documents and operating instructions, as described in chapter “[Operating conditions](#)”, [page 10](#) in this manual and in the valve manual for the respective pneumatically actuated valve.
- ▶ The device may be used only in conjunction with third-party devices and components recommended and authorised by Bürkert.
- ▶ In view of the wide range of possible application cases, check whether the device is suitable for the specific application case and check this out if required.
- ▶ Correct transportation, correct storage and installation and careful use and maintenance are essential for reliable and faultless operation.
- ▶ Use the Type 8792 and 8793 only as intended.

### 4 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 – high pressure!**

- ▶ Before loosening the pneumatic lines and valves, turn off the pressure and vent the pneumatic lines.

#### **Risk of electric shock!**

- ▶ Before reaching into the device or the equipment, switch off the operating voltage and secure to prevent reactivation!
- ▶ Observe applicable accident prevention and safety regulations for electrical equipment!

#### **Risk of burns/risk of fire if used continuously through hot device surface!**

- ▶ Keep the device away from highly flammable substances and media and do not touch with bare hands.

#### **General hazardous situations.**

To prevent injury, ensure that:

- ▶ That the system cannot be activated unintentionally.
- ▶ Installation and repair work may be carried out by authorised technicians only and with the appropriate tools.

- ▶ After an interruption in the operating voltage 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.
- ▶ Do not supply the supply pressure connection of the system with aggressive or flammable mediums.
- ▶ Do not supply the supply pressure connection with any liquids.
- ▶ 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 housings. Do not paint the housing parts or screws.
- ▶ The general rules of technology apply to application planning and operation of the device.

#### **NOTE!**

##### **Electrostatic sensitive components / modules!**

The device contains electronic components which react sensitively to electrostatic discharge (ESD). Contact with electrostatically charged persons or objects is hazardous to these components. In the worst case scenario, they will be destroyed immediately or will fail after start-up.

- ▶ Observe the requirements in accordance with EN 61340-5-1 to minimise or avoid the possibility of damage caused by sudden electrostatic discharge!
- ▶ Also ensure that you do not touch electronic components when the operating voltage is present!

## **5 GENERAL INFORMATION**

### **5.1 Scope of supply**

Generally the product package consists of:  
Type 8792/8793 and the associated operating instructions



We will provide you with attachment kits for linear actuator or rotary actuators as accessories.  
For the multi-pole version of the Type 8792/8793 we will provide you with cable connectors as accessories.

If there are any discrepancies, please contact us immediately.

### **5.2 Contact address**

#### **Germany**

Bürkert Fluid Control Systems  
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@burkert.com](mailto:info@burkert.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)

### 5.3 Warranty

The warranty is only valid if the Type 8792/8793 are used as intended in accordance with the specified application conditions.

### 5.4 Information on the Internet

The operating instructions and data sheets for Type 8792 and 8793 can be found on the Internet at:

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

## 6 DESCRIPTION OF SYSTEM

### 6.1 General description

The positioner Type 8792 / process controller Type 8793 is a digital, electro-pneumatic positioner for pneumatically actuated proportional valves. The device incorporates the main function groups

- Position sensor
- Electro-pneumatic control system
- Microprocessor electronics

The position sensor measures the current positions of the proportional valve. The microprocessor electronics continuously compare the current position (actual value) with a set-point position value specified via the standard signal input and supplies the result to the positioner/process controller. If there is a control difference, the electro-pneumatic control system corrects the actual position accordingly.

For the service is a 128 x 64 dot matrix graphics display and a keypad with 4 keys available.

### 6.2 Designs

#### 6.2.1 Type 8792, positioner

The position of the actuator is regulated according to the position set-point value. The position set-point value is specified by an external standard signal (or via field bus).

#### 6.2.2 Type 8793, process controller

Type 8793 also features a PID controller which, apart from actual position control, can also be used to implement process control (e.g. level, pressure, flow rate, temperature) in the sense of a cascade control.



The process controller is linked to a control circuit. The position set-point value of the valve is calculated from the process set-point value and the actual process value via the control parameters (PID controller). The process set-point value can be set by an external signal.

### 6.2.3 Type 8793 remote operation with external position sensor

In the case of this model the positioner has no position sensor in the form of a rotary position sensor, but an external remote sensor.

! Depending on the connection type of the position sensor, Type 8793 functions as a process controller or positioner (positioner)

The following connection options are possible:

Function	Interface	Position sensor	Setting in the menu (ADD.FUNCTION)
Process controller Type 8793	digital (serial)	Remote Sensor Type 8798	POS.SENSOR → DIGITAL
Positioner Type 8793	analog (4...20 mA)*	Any, high-res- olution position sensor	POS.SENSOR → ANALOG

Tab. 1: Connection options Type 8793 with external position sensor

! \* If the position sensor is connected to the process controller Type 8793 via the analog interface, it can be operated only as a positioner (positioner).

## 6.3 Structure of the device

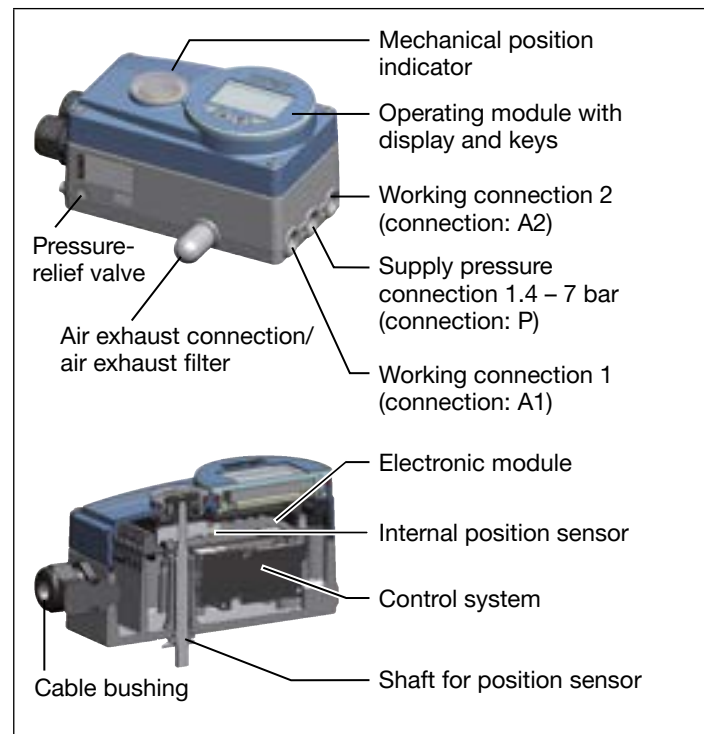


Fig. 1: Structure Type 8792/8793

## 7 TECHNICAL DATA

### 7.1 Conformity

In accordance with the Declaration of conformity, Type 8792 / 8793 is compliant with the EU Directives.

### 7.2 Standards

The applied standards which are used to demonstrate compliance with the EU Directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

### 7.3 Approval

According to Device Group II Category 3G/D, the product is approved for use in potentially explosive areas of Zones 2 and 22.



Follow instructions for use in potentially explosive areas.  
See additional instructions ATEX.

### 7.4 Operating conditions

#### NOTE!

If used outside, the device may be exposed to direct sunlight and temperature fluctuations which 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.

Environmental temperature      -10 – +60 °C

Degree of protection: IP 65 / IP 67\* according to EN 60529  
(only if cables, plugs and sockets have been connected correctly).

\* If the device is used under IP 67 conditions, the ventilation must be removed and the exhaust air conducted into the dry area (see "Fig. 1")

### 7.5 Type label

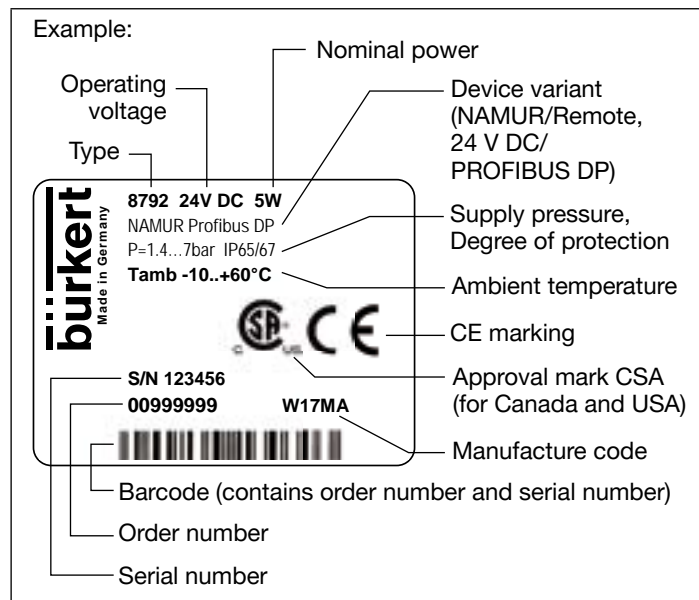


Fig. 2: Description type label (Example)

## 7.6 Mechanical data

Dimensions See data sheet

### Material

Housing material Plastic-coated aluminium  
 Other external parts Stainless steel (V4A), PC, PE, POM,  
 PTFE

Sealing material EPDM, NBR, FKM

Mass approx. 1.0 kg

## 7.7 Electrical data

Protection class III in accordance with DIN EN 61140  
 (VDE 0140-1)

Connections 2 cable glands (M20 x 1.5) with screw-type  
 terminals 0.14 – 1.5 mm<sup>2</sup> or circular plug-in  
 connector

Operating voltage 24 V DC  $\pm$  10% max. residual ripple 10%

Power consumption < 5 W

### Input data for actual value signal

4...20 mA: Input resistance 180  $\Omega$   
 Resolution 12 bit

Frequency: Measuring range 0...1000 Hz  
 Input resistance 17 k $\Omega$   
 Resolution 1‰ of measurement  
 value,  
 Input signal > 300 mV<sub>ss</sub>  
 Signal form Sine, rectangle, triangle

Pt 100: Measuring range -20...+220 °C  
 Resolution < 0,1 °C  
 Measurement current < 1 mA

### Input data for set-point value signal

0/4...20 mA: Input resistance 180  $\Omega$   
 Resolution 12 bit

0...5/10 V: Input resistance 19 k $\Omega$   
 Resolution 12 bit

Analogue feedback  
 max. current

10 mA  
 (for voltage output 0...5/10 V)

Burden (load) 0...560  $\Omega$   
 (for voltage output 0/4...20 mA)

Inductive proximity  
 switches

100 mA current limit

Binary outputs

galvanically isolated

Current limiting

100 mA, output is clocked if overload  
 occurs

Binary input

galvanically isolated  
 0...5 V = log „0“, 10...30 V = log „1“  
 inverted input in reverse order  
 (input current < 6 mA)

Communication  
 interface

direct connection to PC via USB adapter  
 with integrated interface driver

Communications  
 software

Communicator (see [“Accessories”](#))

## 7.8 Pneumatic data

Control medium	Air, neutral gases Quality classes in accordance with ISO 8573-1
Dust content	Quality class 7, max. particle size 40 µm, max. particle density 10 mg/m <sup>3</sup>
Water content	Quality class 3, max. pressure dew point - 20 °C or min. 10 degrees below the lowest operating temperature
Oil content	Quality class X, max. 25 mg/m <sup>3</sup>
Temperature range of compressed air	0...+60 °C
Pressure range	1.4 – 7 bar
Air flow rate	95 I <sub>N</sub> / min (at 1.4 bar*) for aeration and deaeration 150 I <sub>N</sub> / min (at 6 bar*) for aeration and deaeration (Q <sub>Nn</sub> = 100 I <sub>N</sub> / min (according to definition for pressure drop from 7 to 6 bar absolute)).
Connections	Internal thread G1/4"

\* Pressure specifications: Overpressure with respect to atmospheric pressure

## 8 OPERATION

### 8.1 Description of the operating and display elements

Display elements of the process level:



Save symbol



Symbol for position control



Symbol for process control



Symbol for the AUTOMATIC operating state

Other symbols are displayed according to the activated functions. See operating instructions Type 8792/8793

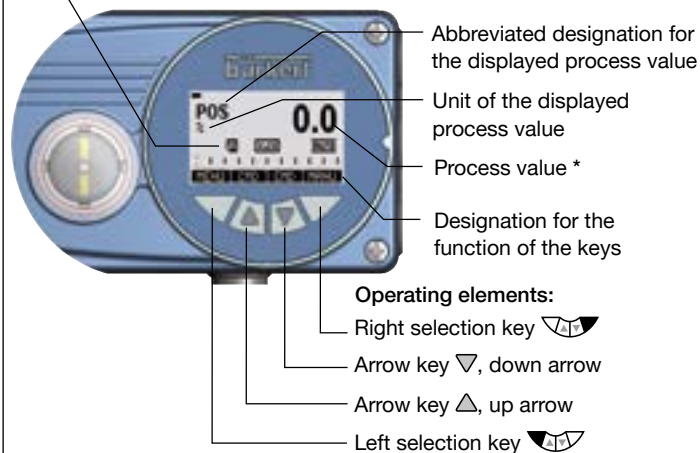


Fig. 3: Display elements of the process level; operating elements

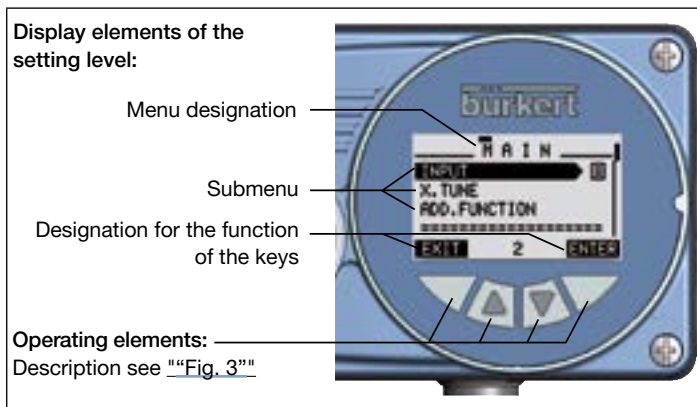


Fig. 4: Display elements of the setting level

The display is adjusted to the set functions and operating levels. In principle, a distinction can be made between the display view for the process level and the setting level.





When the operating voltage has been applied, the process level is displayed.


















\* The process values which can be displayed in the AUTOMATIC operating state depend on type. A detailed description can be found in the operating instructions for Type 8792/8793.

## 8.2 Function of the keys

The function of the 4 keys in the control field differs depending on the operating state (AUTOMATIC or MANUAL) and operating level (process level or setting level).

The key function which is active is displayed in the gray text field which is above the key.

Key function on the process level:			
Key	Key function	Description of the function	Operating state
Arrow key 	OPN (OPEN)	Manual opening of the actuator	MANUAL
		Change the displayed value (e.g. POS-CMD-TEMP-...)	AUTOMATIC
Arrow key 	CLS (CLOSE)	Manual closing of the actuator	MANUAL
		Change the displayed value (e.g. POS-CMD-TEMP-...)	AUTOMATIC
Selection key 	MENU	Change to the setting level Note: Press key for approx. 3 s.	AUTOMATIC or MANUAL
Selection key 	AUTO	Return to AUTOMATIC operating state	MANUAL
	MANU	Change to MANUAL operating state	AUTOMATIC

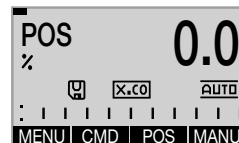
Key function on the setting level:		
Key	Key function	Description of the function
Arrow key 		Scroll up in the menus
		Increase numerical values
Arrow key 		Scroll down in the menus
		Decrease numerical values
		Change by one digit to the left; when entering numerical values
Selection key 	 (BACK)	Return to the process level
		Gradually return from a submenu option
		Leave a menu
Selection key 		Stop a sequence
		Select, activate or deactivate a menu option
		
		
		
	 (BACK)	Gradually return from a submenu option
		Start a sequence
		Stop a sequence

Tab. 2: Function of the keys

## 9 OPERATING STATES

Type 8792/8793 has 2 operating states:  
AUTOMATIC and MANUAL.

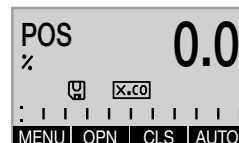
### AUTOMATIC







In the AUTOMATIC operating state normal controlled operation is implemented.

(The symbol for AUTOMATIC AUTO is shown on the display. A bar runs along the top of the display).





### MANUAL



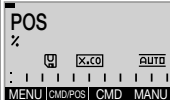
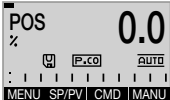
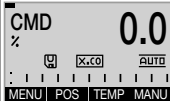
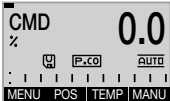
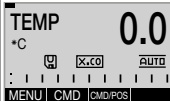
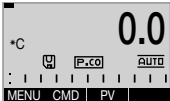
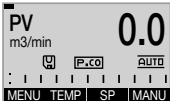


In the MANUAL operating state the valve can be manually opened or closed via the arrow keys   (key function  and ).




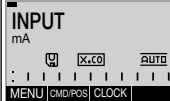





(The symbol for the AUTOMATIC AUTO is hidden. No bar running along the top of the display).


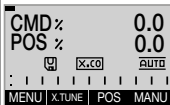
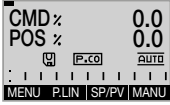
### 9.1 Changing the operating state

Change to MANUAL operating state (only available for process value display: POS, CMD, PV, SP)		 press
Return to AUTOMATIC operating state		 press

## 9.2 Displays in the AUTOMATIC operating state

Type 8792	Description of the display	Type 8793
	Actual position of the valve actuator (0 – 100%)	
	Set-point position of the valve actuator (0 – 100%)	
	Internal temperature in the housing of the positioner ( °C)	
	Process actual value	
	Process set-point value	
	Simultaneous display of the set-point position and the actual position of the valve actuator (0 – 100 %)	

Type 8792	Description of the display	Type 8793
	Graphical display of <i>SP</i> and <i>PV</i> with time axis	
	Graphical display of <i>POS</i> and <i>CMD</i> with time axis	
	Input signal for set-point position (0 – 5/10 V / 0/4 – 20 mA)	
	Time, weekday and date	
	Automatic adjustment of the positioner (positioner)	
	Automatic optimization of the process controller parameters	

Type 8792	Description of the display	Type 8793
	Automatic linearization of the process characteristics	
	Simultaneous display of the set-point position and the actual position of the valve actuator (0 – 100 %)	

### 9.3 Master code

Operation of the device can be locked via a freely selectable user code. In addition, there is a non-changeable master code with which you can perform all operator control actions on the device. This 4-digit master code can be found on the last pages of these operating instructions in the chapter “Master code”.

If required, cut out the code and keep it separate from these operating instructions.

## 10 OPERATING LEVELS

There is the process level and the setting level for the operation and setting of Type 8792/8793.

### Process level:

The running process is displayed and operated on this level.

Operating state: **AUTOMATIC** – Displays of the process data  
**MANUAL** – Manual opening and closing of the valve

### Setting level:





The basic settings for the process are made on this level.

- Inputting the operating parameters
- Activating auxiliary functions



If the device is in the **AUTOMATIC** operating state when changing to the setting level, the process continues running during the setting.

### 10.1 Switching between the operating levels

Change to the setting level		 Press for 3 seconds
Return to the process level		 press briefly



## 11 ATTACHMENT AND ASSEMBLY

### 11.1 Installation of devices for the hazardous area

When installing devices in the explosion-protected area, observe the "Additional information for use in the hazardous area" enclosed with the Ex-devices.

### 11.2 Attachment to a proportional valve with linear actuators according to NAMUR

The valve position is transferred to the position sensor installed in the positioner via a lever (according to NAMUR).



The attachment kit for pusher actuators can be purchased from Bürkert as an accessory by quoting order number 787215. For associated parts see ["Tab. 3"](#).

Part no.	Quantity	Name
1	1	NAMUR mounting bracket IEC 534
2	1	Hoop
3	2	Clamping piece
4	1	Driver pin
5	1	Conical roller
6a	1	NAMUR lever for stroke range 3 – 35 mm

Part no.	Quantity	Name
6b	1	NAMUR lever for stroke range 35 – 130 mm
7	2	U-bolt
8	4	Hexagon bolt DIN 933 M8 x 20
9	2	Hexagon bolt DIN 933 M8 x 16
10	6	Circlip DIN 127 A8
11	6	Washer DIN 125 B8.4
12	2	Washer DIN 125 B6.4
13	1	Spring VD-115E 0.70 x 11.3 x 32.7 x 3.5
14	1	Spring washer DIN 137 A6
15	1	Locking washer DIN 6799 - 3.2
16	3	Circlip DIN 127 A6
17	3	Hexagon bolt DIN 933 M6 x 25
18	1	Hexagon nut DIN 934 M6
19	1	Square nut DIN 557 M6
21	4	Hexagon nut DIN 934 M8
22	1	Guide washer 6.2 x 9.9 x 15 x 3.5

Tab. 3: Attachment kit for linear actuators

### 11.2.1 Installation



#### WARNING!

##### Risk of injury from improper installation!

- ▶ Installation may be carried out by authorised 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.

#### Procedure:

- Using the clamping pieces ③, hexagon bolts ⑰ and circlips ⑯ attach the hoop ② to the actuator spindle.

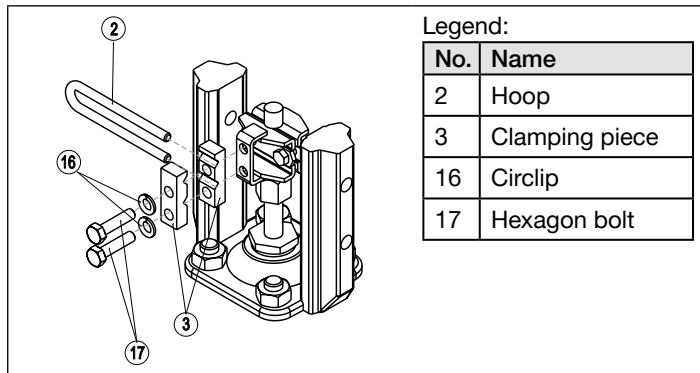


Fig. 5: Attaching the hoop

- Select short or long lever according to the stroke of the actuator. (see “[Tab. 3: Attachment kit for linear actuators](#)”).
- Assemble lever (if not pre-assembled) (see “[Fig. 6](#)”).

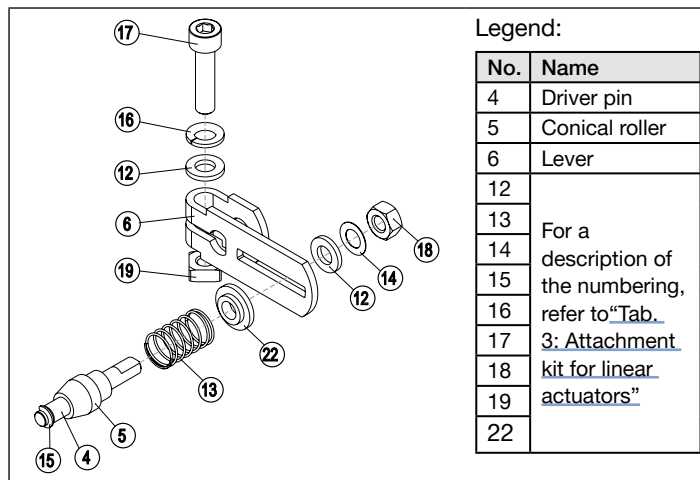


Fig. 6: Assembling the lever



The gap between the driver pin and the shaft should be the same as the actuator stroke. As a result, the lever has a swing range of 60° (see “[Fig. 7](#)”).

#### Angular range of the position sensor:

The maximum angular range of the position sensor is 150°.



### Rotational range of the lever:

To ensure that the position sensor operates at a good resolution, the rotational range of the lever must be at least 30°.

The rotational movement of the lever must be within the position sensor rotation range of 150°.

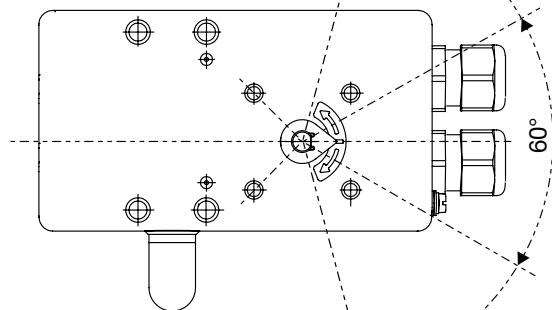
The scale printed on the lever is not relevant.

Angular range of the lever

Ideal: 60°

Minimal: 30°

Maximal: 150°



The rotational movement of the lever must be within the position sensor rotational range of 150°.

Fig. 7: Angular range of the lever

### 11.2.2 Attaching mounting bracket

→ Attach mounting bracket ① to the back of the Type 8792/8793 with hexagon bolts ⑨, circlip ⑩ and washers ⑪ (see “Fig. 8”).



The selection of the M8 thread used on the Type 8792/8793 depends on the size of the actuator.

→ To determine the correct position, hold the Type 8792/8793 with mounting bracket on the actuator.

The conical roller on the lever of the position sensor must be able to move freely in the hoop (refer “Fig. 8”) along the entire stroke range of the actuator.

At 50% stroke the lever position should be approximately horizontal (see chapter “11.2.3 Aligning lever mechanism”).

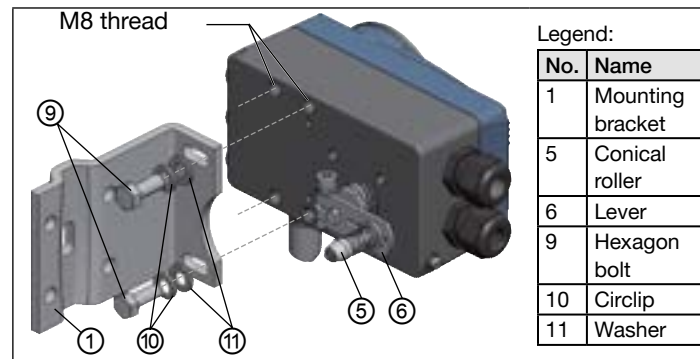


Fig. 8: Attaching mounting bracket

### Attaching the Type 8792/8793 with mounting bracket for actuators with cast frame:

- Attach mounting bracket to the cast frame with one or more hexagon bolts ⑧, washers ⑪ and circlips ⑩ (see "Fig. 9").

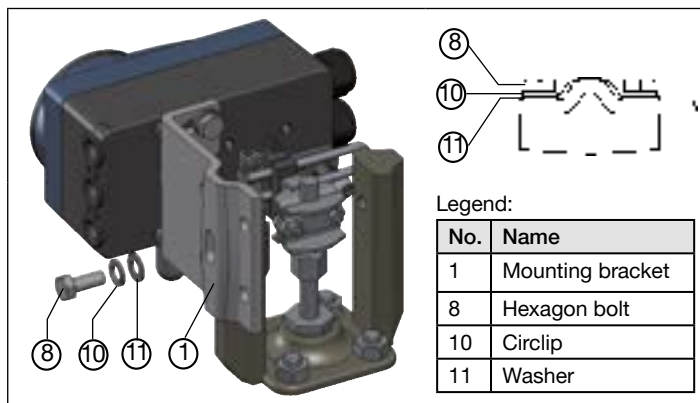


Fig. 9: Attach Type 8792/8793 with mounting bracket; for actuators with cast frame

### Attaching the Type 8792/8793 with mounting bracket for actuators with columnar yoke:

- Attach mounting bracket to the columnar yoke with the U-bolt ⑦, washers ⑪, circlips ⑩ and hexagon nuts ②① (see "Fig. 10").

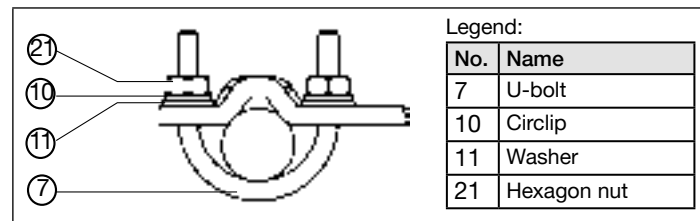


Fig. 10: Attach Type 8792/8793 with mounting bracket; for actuators with columnar yoke

### 11.2.3 Aligning lever mechanism

**!** The lever mechanism cannot be correctly aligned until the device has been connected electrically and pneumatically.

- Move the actuator in MANUAL operating state to half stroke (according to the scale on the actuator).
- Adjust the height of the Type 8792/8793 until the lever is horizontal.
- Fix the Type 8792/8793 in this position on the actuator.

### 11.3 Attachment to a proportional valve with rotary actuator

The shaft of the position sensor integrated in the positioner is connected directly to the shaft of the rotary actuator.



The assembly bridge can be purchased from Bürkert as an accessory by quoting the order number 770294.



The attachment kit for rotary actuators can be purchased from Bürkert as an accessory by quoting order number 787338. For associated parts see ["Tab. 4"](#).

Part no.	Quantity	Name
1	1	Adapter
2	2	Setscrew DIN 913 M4 x 10
3	4	Hexagon bolt DIN 933 M6 x 12
4	4	Circlip B6
5	2	Hexagon nut DIN985, M4

Tab. 4: Mounting kit on rotary actuator



#### WARNING!

##### **Risk of injury from improper installation!**

- Installation may be carried out by authorised 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.

#### Procedure:

- Specify the attachment position of the Type 8792/8793:
  - parallel to the actuator or
  - rotated by 90° to the actuator.
- Determine home position and direction of rotation of the actuator.
- Connect adapter to the shaft of the Type 8792/8793 and secure with 2 setscrews.



#### Anti-twist safeguard:

##### **Note the flat side of the shaft!**

One of the setscrews must be situated on the flat side of the shaft as an anti-twist safeguard (see ["Fig. 11"](#)).

##### **Rotation range of the position sensor:**

The maximum rotation range of the position sensor is 150°.

The shaft of the Type 8792/8793 may be moved within this range only.

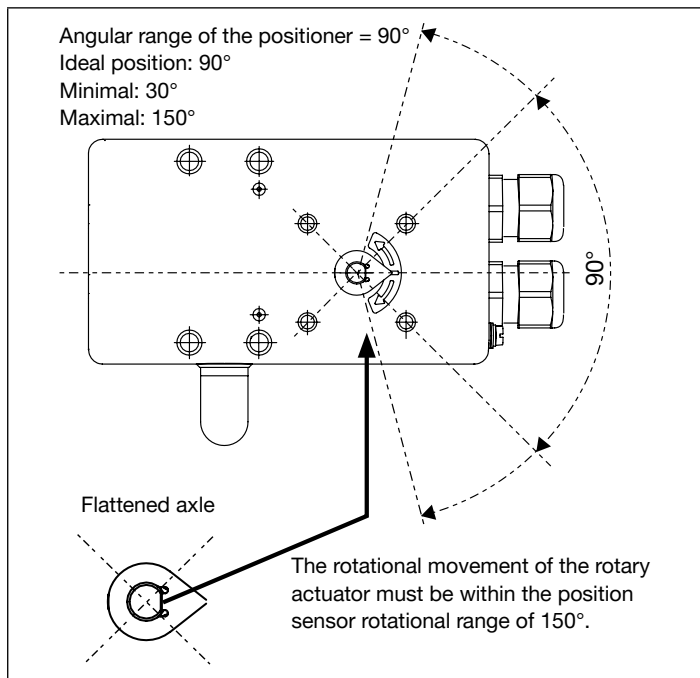


Fig. 11: Rotational range / anti-twist safeguard

- Assemble the multi-part assembly bridge\* suitable for the actuator.
- Attach the assembly bridge to the Type 8792/8793 using 4 hexagon bolts ③ and circlips ④ (see "Fig. 12").

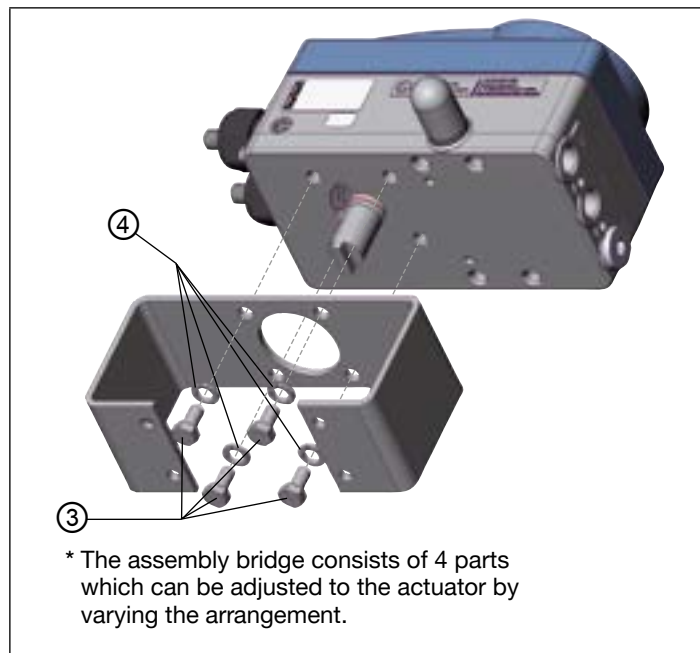


Fig. 12: Attach assembly bridge (schematic representation)

- Place Type 8792/8793 with assembly bridge on the rotary actuator and attach (see "Fig. 13").

## Type 8792, 8793

External position sensor (remote)

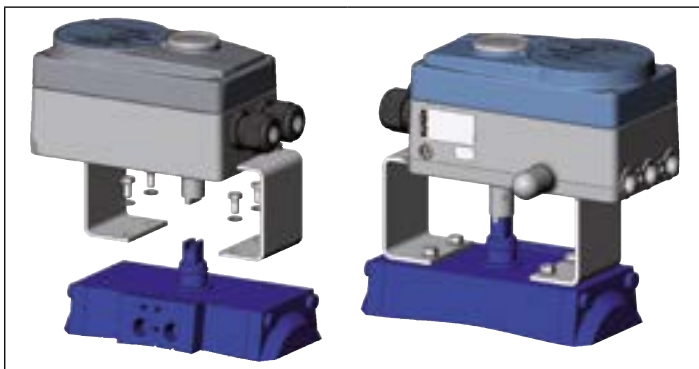


Fig. 13: Rotary actuator attachment

**!** If the X.TUNE ERROR 5 message is indicated on the graphics display after the *X.TUNE* function starts, the shaft of the Type 8792/8793 is not correctly aligned with the shaft of the actuator.

- Check alignment (as described previously in this chapter).
- Then repeat the *X.TUNE* function.

## 12 EXTERNAL POSITION SENSOR (REMOTE)

**!** Depending on the connection type of the position sensor, Type 8793 functions as a process controller or positioner (positioner)

The following connection options are possible:

Device type Remote	Interface	Position sensor	Setting in the menu (ADD.FUNCTION)
Type 8792	digital (serial)	Remote Sensor Type 8798	–
Type 8793			POS.SENSOR → DIGITAL
Type 8793	analog (4 – 20 mA) *	Any, high-resolution position sensor	POS.SENSOR → ANALOG

Tab. 5: Connection options of position sensor

**!** \* If the position sensor is connected to the process controller Type 8793 via the analog interface, it can be operated only as a positioner (positioner).

### 12.1 Mounting accessories

There are two options of attaching the Type 8792/8793 in remote operation.

- **Installation on a DIN rail**  
Holder for DIN rail mounting: Order number 675702.
- **Installation on a wall**  
Bracket for wall mounting: Order number 675715

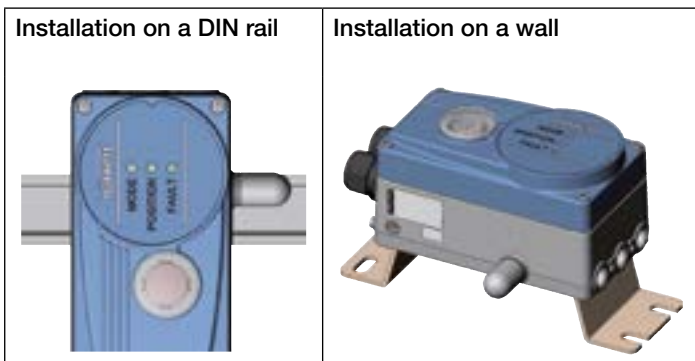


Fig. 14: Attachment types in remote operation

## 12.2 Connection and starting up of the external position sensor (remote operation)



### WARNING!

#### Risk of injury from improper start-up!

- Start-up may be carried out by authorised 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.

### 12.2.1 Remote Sensor Type 8798

- Connect the 3 or 4 wires of the sensor cable to the designated screw-type terminals of Type 8792/8793.

**Connection of screw-type terminals:** (see chapter [“14.6.4 Terminal assignment for external position sensor \(for remote model only\)”](#)).

#### Connection of M8 circular connector

(only for PROFIBUS):

see chapter [“15.3.3 X4 - M8, 4-pole socket, optional - remote sensor \(for remote model only\)”](#).

- Attach remote sensor on the actuator.  
The correct procedure is described in the brief instructions for the remote sensor.
- Connect compressed air to Type 8792/8793.
- Connect Type 8792/8793 pneumatically to the actuator.
- Switch on operating voltage to the Type 8792/8793.
- Run the *X.TUNE* function.



### 12.2.2 Position sensor (for Type 8793 remote model only)



When a 4 – 20 mA position sensor is connected, the process controller Type 8793 can be used as a positioner (positioner) only, as the process actual value input is used as input for the position sensor.

In principle, any position sensor with a 4 – 20 mA output can be connected which has an adequate resolution of the path signal.

Good control properties are obtained if the resolution of the position sensor allows at least 1000 measuring steps over the path to be measured.

Example: Position sensor with 150 mm measurement range  
Of which used measurement range (= stroke) 100 mm  
Required minimum resolution of the position sensor:

$$\frac{100 \text{ mm}}{1000 \text{ Steps}} = 0.1 \text{ mm}$$

→ Connect 4 – 20 mA position sensor to the terminals 1 - 4 of the process controller Type 8793 remote model. (see chapter [“14.7.1 Terminal assignments of the process actual value input”](#))

Internal supply of the position sensor by Type 8793:

→ Connection according to input type “4 – 20 mA - internally supplied”.

Separate supply of the position sensor:

→ Connection according to input type “4 – 20 mA - externally supplied”.

- Attach remote sensor on the actuator.  
The correct procedure is described in the instructions for the position sensor.
- Connect compressed air to the Type 8793.
- Connect Type 8793 pneumatically to the actuator
- Switch on Type 8793 operating voltage.
- To obtain the best possible control precision, adjust the position sensor so that path to be measured corresponds to the signal range 4 – 20 mA (only if the position sensor includes this function).
- In the *ADD.FUNCTION* menu activate the *POS.SENSOR* function. Then select *POS.SENSOR* in the main menu and set *ANALOG*.  
The procedure is described in the operating instructions for Type 8792/8793 in the chapter *“Starting up and operation of the process controller / auxiliary functions / POS.SENSOR”*.
- Run the *X.TUNE* function.

## 13 PNEUMATIC CONNECTION



### **DANGER!**

**Risk of injury from high pressure in the equipment!**

- ▶ Before loosening the pneumatic lines and valves, turn off the pressure and vent the pneumatic lines.



### **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.

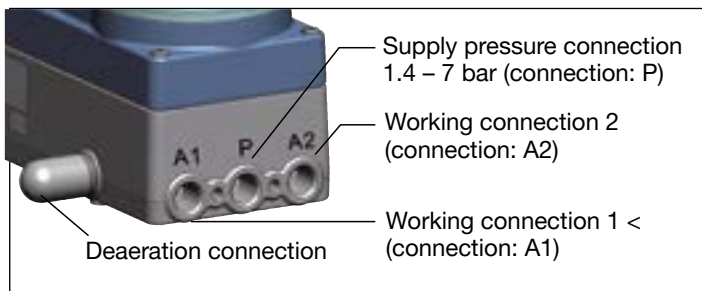


Fig. 15: Pneumatic installation / Location of the connections

### **Procedure:**

- Apply supply pressure (1.4 – 7 bar) to the supply pressure connection P.

### **For single-acting actuators (control function A and B):**

- Connect one working connection (A1 or A2, depending on required safety end position) to the chamber of the single-acting actuator.  
Safety end positions see chapter “13.1.1”.
- Seal a working connection which is not required with a plug.

### **For double-acting actuators (control function I):**

- Connect working connections A1 and A2 to the respective chambers of the double-acting actuator  
Safety end positions see chapter “13.1.2”.



### **Important information for perfect control behaviour!**

This ensures that the control behaviour is not extremely negatively affected in the upper stroke range on account of too little pressure difference.

- keep the applied supply pressure at least 0.5 – 1 bar above the pressure which is required to move the pneumatic actuator to its end position.

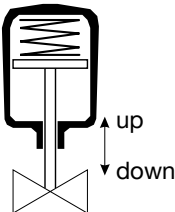
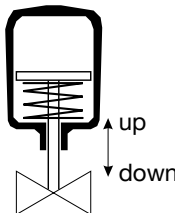
If fluctuations are greater, the control parameters measured with the X.TUNE function are not optimum.

- during operation keep the fluctuations of the supply pressure as low as possible (max.  $\pm 10\%$ ).

## 13.1 Safety end positions

The safety end position following failure of the auxiliary electrical power depends on the pneumatic connection of the actuator to the working connections A1 or A2.

### 13.1.1 Single-acting actuators

Actuator system	Safety end positions after failure of the	
	electrical auxiliary power	pneumatic auxiliary power
 Control function A	down → Connection according to "Fig. 16"	down
	up → Connection according to "Fig. 17"	
 Control function B	up → Connection according to "Fig. 16"	up
	down → Connection according to "Fig. 17"	

Tab. 6: Safety end positions - single-acting actuators

#### Single-acting actuators - control function A or B



Connection:  
working connection A1  
to actuator  
A2 sealing

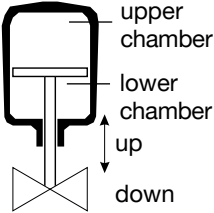
Fig. 16: Connection A1



Connection:  
working connection A2  
to actuator  
A1 sealing

Fig. 17: Connection A2

### 13.1.2 Double-acting actuators

Actuator system	Safety end positions after failure of the	
	electrical auxiliary power	pneumatic auxiliary power
 <p>Control function I</p>	→ Connection according to <a href="#">"Fig. 18"</a>	not defined
	up = lower chamber of the actuator to A2	
	down = upper chamber of the actuator to A2	

Tab. 7: Safety end positions - double-acting actuators


Double-acting actuators - Control function I	
	<p>Connection: Working connection A1 and A2 to actuator</p> <p>Safety end position: up = lower chamber to A2 down = upper chamber to A2</p>

Fig. 18: Connection with CFI

## 14 ELECTRICAL INSTALLATION



The descriptions for the electrical connection of the PPOFIBUS-DP designs can be found in chapter ["15 PROFIBUS DP"](#)

### 14.1 Safety instructions



#### **DANGER!**

**Risk of injury due to electrical shock!**

- ▶ Before reaching into the device or the equipment, switch off the operating voltage 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.

## 14.2 Designation of the circular connectors and contacts

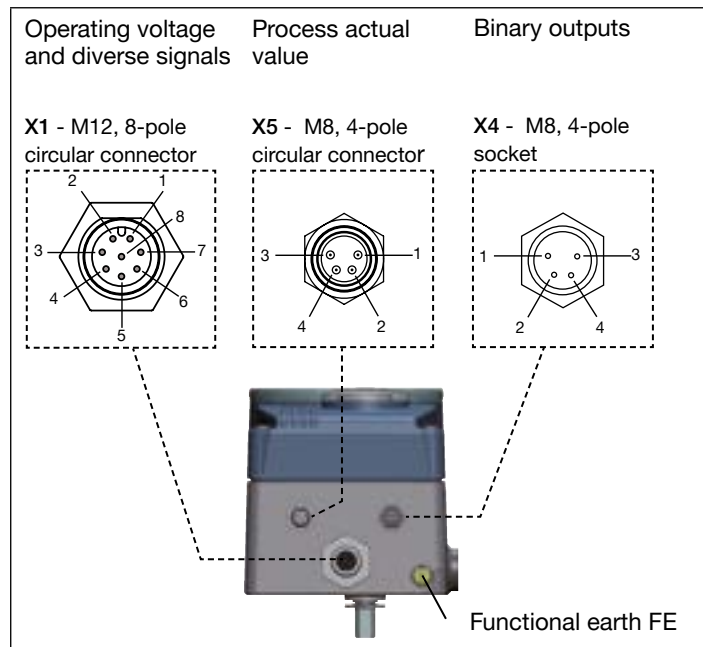


Fig. 19: Designation of the circular connectors and contacts

### Location of the switch:

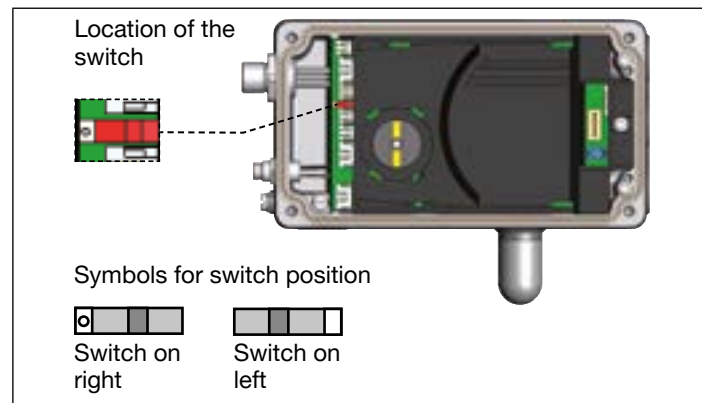



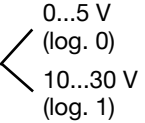








Fig. 20: Location of the switch; Symbols for switch position

## 14.3 Connection of the positioner Type 8792

→ Connect pins according to the model (options) of the positioner.




### 14.3.1 X1 - M12, 8-pole circular connector

Pin	Configuration	On the device side	External circuit/ Signal level
<b>Input signals of the control centre (e.g. PLC)</b>			
1	(white)* Set-point value + (0/4...20 mA or 0...5/10 V)	1 	+ (0/4...20 mA or 0...5/10 V) completely galvanically isolated
2	(brown)* Set-point value GND	2 	GND set-point value
5	(grey)* Binary input	5 	+ 
6	(pink)* Binary input GND	6 	GND (identical with the GND operating voltage)

Pin	Configuration	On the device side	External circuit/ Signal level
Output signals to the control centre (e.g. PLC) - (only used for analog output option)			
8	(red)* Analogue feedback +	8 	+ (0/4...20 mA or 0...5/10 V) completely galvanically isolated
7	(blue)* Analogue feedback GND	7 	GND Analogue feedback
Operating voltage			
3	(green)* GND	3 	 24 V DC $\pm$ 10 % max. residual ripple 10 %
4	(yellow)* +24 V	4 	
* The wire colours indicated in brackets refer to the connection cable, part no. 919267, available as an accessory.			

Tab. 8: Pin assignment; X1 - M12, 8-pole circular connector

### 14.3.2 X4 - M8, 4-pole socket (for binary outputs option only) Output signals to the control centre (e.g. PLC)

Pin	Configuration	On the device side	External circuit / Signal level
1	Binary output 1	1 	0...24 V
2	Binary output 2	2 	0...24 V
3	Binary output GND	3 	GND (identical with the GND operating voltage)

Tab. 9: Pin assignment; X4 - M8, 4-pole socket - output signals to the control centre


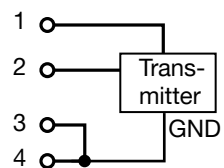



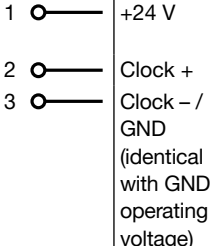
When the operating voltage is applied, the positioner is operating.



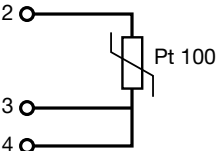
→ Now make the required basic settings and actuate the automatic adjustment of the positioner. The procedure is described in chapter [“16.2 Starting-up Type 8792”](#).

## 14.4 Connecting the process controller Type 8793

→ First connect the process controller as described in chapter [“14.3 Connection of the positioner Type 8792”](#).

### 14.4.1 X5 - M8, 4-pole circular connector, process actual value input

Input type**	Pin	Configuration	Switches	On the device side	External circuit
4...20 mA - internally supplied	1	(brown)* +24 V transmitter supply	 Switch on left		
	2	(white)* Output from transmitter			
	3	(blue)* GND (identical with GND operating voltage)			
	4	(black)* Bridge to GND (Pin 3)			
4...20 mA - externally supplied	1	(brown)* not used	 Switch on right		4...20 mA  GND 4 - 20 mA
	2	(white)* Process actual +			
	3	(blue)* not used			
	4	(black)* Process actual -			
Frequency -internally supplied	1	(brown)* +24 V sensor supply	 Switch on left		+24 V  Clock + Clock - / GND (identical with GND operating voltage)
	2	(white)* Clock input			
	3	(blue)* Clock input - (GND)			
	4	(black)* not used			

Input type**	Pin	Configuration	Switches	On the device side	External circuit
Frequency - externally supplied	1 2 3 4	(brown)* not used (white)* Clock input + (blue)* Clock input - (black)* not used	 Switch on right	2 3	Clock + Clock -
Pt 100 (**see information)	1 2 3 4	(brown)* not used (white)* Process actual 1 (power supply) (blue)* Process actual 3 (GND) (black)* Process actual 2 (compensation)	 Switch on right		

\* The wire colours indicated in brackets refer to the connection cable, part no. 918718, available as an accessory.

\*\* Can be adjusted via software (see Operating Instructions, chapter „Specifying the standard settings“).

Tab. 10: Pin assignment; X5 - M8, 4-pole circular connector - process actual value input



\*\*\* Connect the Pt 100 sensor via 3 cables for cable compensation reasons. It is essential to bridge terminal 3 and terminal 4 on the sensor.

When the operating voltage is applied, the process controller is operating.

→ Now make the required basic settings and actuate the automatic adjustment of the process controller. The procedure is described in chapter “16.3 Start-up Type 8793”

## 14.5 Electrical installation with cable gland



### DANGER!

**Risk of injury due to electrical shock!**

- ▶ Before reaching into the device or the equipment, switch off the operating voltage 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.



### Using the 4 – 20 mA set-point value input

If several devices of Type 8792/8793 are connected in series and the power supply to a device in this series connection fails, the input of the failed device becomes highly resistive.

As a result, the 4 – 20 mA standard signal fails.

In this case please contact Bürkert Service directly.



### 14.5.1 Connection board of the Type 8792/8793 with screw-type terminals

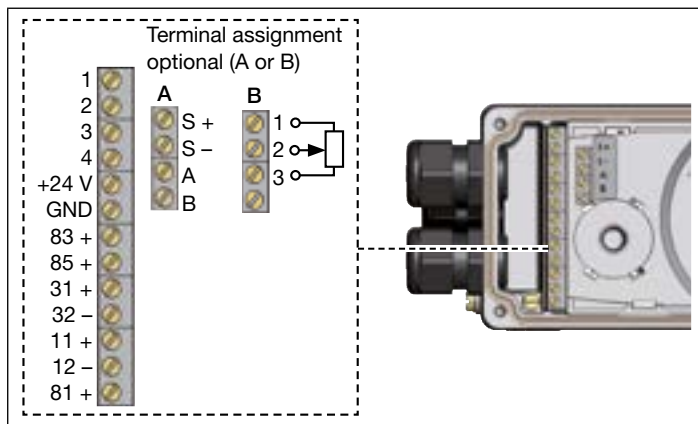





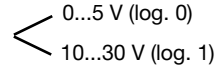
Fig. 21: Designation of the screw-type terminals

#### Procedure:

- Unscrew the 4 screws on the housing cover and remove the cover.  
The screw-type terminals are now accessible.
- Connect Type 8792/8793.  
The procedure is described in the following chapters.

### 14.6 Terminal assignment for cable gland - positioner Type 8792





#### 14.6.1 Input signals from the control centre (e.g. PLC)

Terminal	Configuration	On the device side	External circuit / Signal level
11 +	Set-point value +	11 + 	+ (0/4...20 mA or 0...5/10 V) completely galvanically isolated
12 -	Set-point value GND	12 - 	GND Set-point value
81 +	Binary input +	81 + 	+  specific to operating voltage GND (terminal GND)

Tab. 11: Terminal assignment; input signals of the control centre



### 14.6.2 Output signals to the control centre (e.g. PLC) (required for analogue output and/or binary output option only)

→ Connect terminals according to the model (options) of the positioner.

Terminal	Configuration	On the device side	External circuit / Signal level
83 +	Binary output 1	83 + 	24 V / 0 V, NC / NO specific to operating voltage GND (terminal GND)
85 +	Binary output 2	85 + 	24 V / 0 V, NC / NO specific to operating voltage GND (terminal GND)
31 +	Analogue feedback +	31 + 	+ (0/4...20 mA or 0...5/10 V) completely galvanically isolated
32 -	Analogue feedback GND	32 - 	GND Analogue feedback

Tab. 12: Terminal assignment; output signals to the control centre

### 14.6.3 Operating voltage









Terminal	Configuration	On the device side	External circuit / Signal level
+24 V GND	Operating voltage + Operating voltage GND	+24 V  GND 	24 V DC $\pm 10\%$ max. residual ripple 10 %

Tab. 13: Terminal configuration; operating voltage

### 14.6.4 Terminal assignment for external position sensor (for remote model only)

Connection of the digital, contact-free position sensor

Type 8798:

Terminal	Configuration	On the device side	External circuit / Signal level
S +	Supply sensor +	S + 	+ 
S -	Supply sensor -	S - 	- 
A	Serial interface A-line	A 	A-line 
B	Serial interface B-line	B 	B-line 

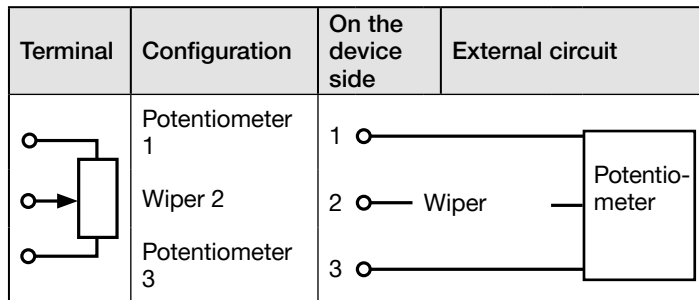
Remote Sensor Type 8798\*  
  
 For assignment of the wire color see "Tab. 15"

Tab. 14: Terminal configuration; position sensor Type 8798

Positioner Terminal	Wire color Type 8798	
	Cable type 1	Cable type 2
S +	brown	brown
S -	white	black
A	green	red
B	yellow	orange

Tab. 15: Assignment of the wire color, position sensor Type 8798

Connection of a potentiometric position sensor:



Tab. 16: Terminal assignment; potentiometric position sensor

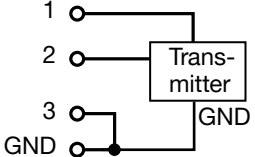
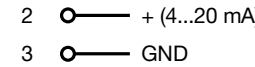
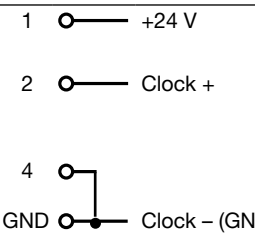
When the operating voltage is applied, the positioner is operating.

→ Now make the required basic settings and actuate the automatic adjustment of the positioner. The procedure is described in chapter [“16.2 Starting-up Type 8792”](#)

## 14.7 Terminal assignment for cable gland - process controller Type 8793

→ First connect the process controller as described in chapter [“14.6 Terminal assignment for cable gland - positioner Type 8792”](#).

### 14.7.1 Terminal assignments of the process actual value input

Input type*	Terminal	Configuration	On the device side	External circuit
4...20 mA - internally supplied	actual value	1		
		2		
		3		
		4		
	GND	GND from operating voltage		
4...20 mA - externally supplied	actual value	1		
		2		
		3		
		4		
Frequency -internally supplied	actual value	1		
		2		
		3		
		4		
	GND	GND from operating voltage		

Input type*	Terminal	Configuration	On the device side	External circuit
Frequency - externally supplied	actual value	1 not used	2	Clock +
	2	Clock input +	4	Clock -
	3	not used		
	4	Clock input -		
Pt 100 see information**	actual value	1 not used	2	
	2	Process actual 1 (Power supply)	3	
	3	Process actual 3 (GND)	4	
	4	Process actual 2 (Compensation)		

\*Can be adjusted via software  
(see Operating Instructions, chapter „Specifying the standard settings“)..

Tab. 17: Terminal assignments of the process actual value input



\*\* Connect the Pt 100 sensor via 3 cables for cable compensation reasons.  
It is essential to bridge terminal 3 and terminal 4 on the sensor.

When the operating voltage is applied, the process controller is operating.

→ Now make the required basic settings and actuate the automatic adjustment of the process controller. The procedure is described in chapter [“16.3 Start-up Type 8793”](#).

## 15 PROFIBUS DP

### 15.1 Designation of the circular connectors and contacts Type 8792

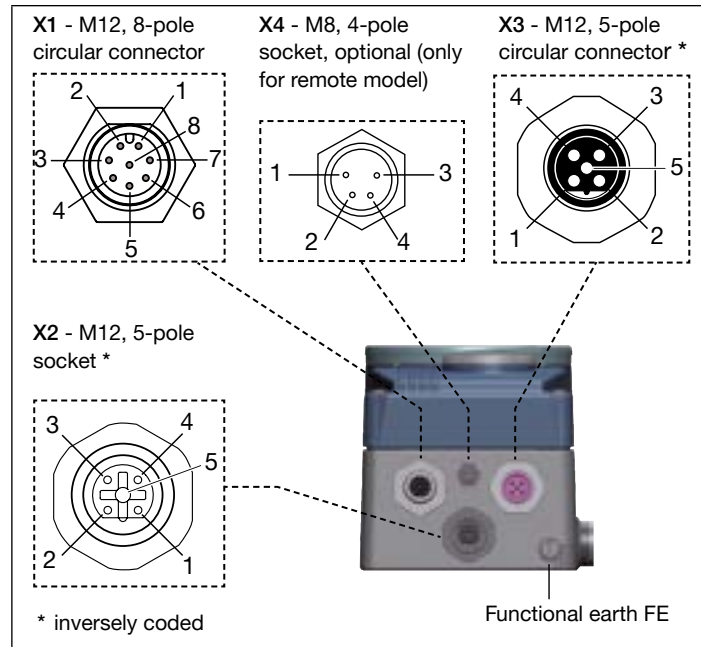


Fig. 22: PROFIBUS DP;  
circular connectors and contacts - Type 8792

## 15.2 Designation of the circular connectors and contacts Type 8793

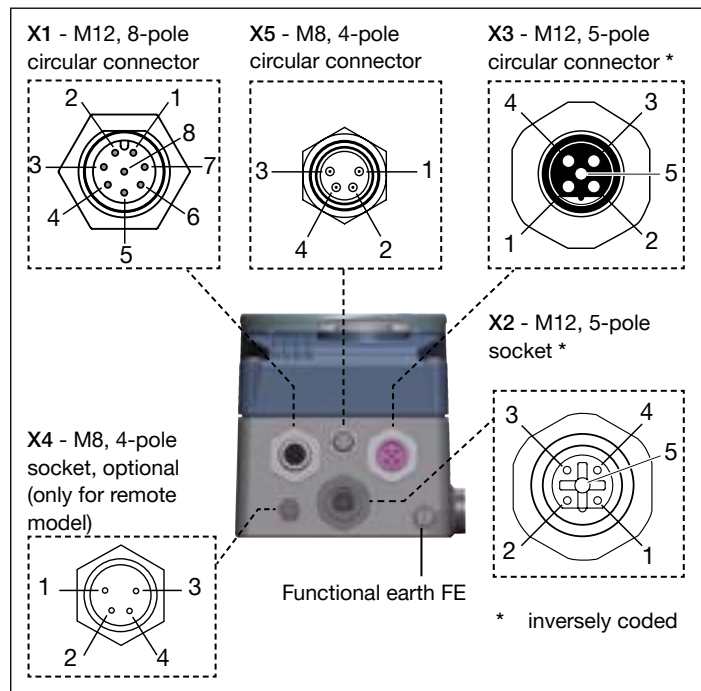


Fig. 23: PROFIBUS DP;  
circular connectors and contacts - Type 8793

## 15.3 Electrical installation PROFIBUS



### DANGER!

**Risk of injury due to electrical shock!**

- ▶ Before reaching into the device or the equipment, switch off the operating voltage 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.







### NOTE!

**Electromagnetic compatibility (EMC) is only ensured if the appliance is connected correctly to an earthing point.**

On the outside of the housing is a TE terminal for connection of the technical earth (TE).



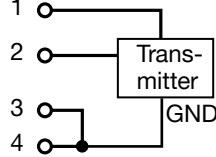




- Connect the TE terminal to the earthing point via a shortest possible cable (maximum length 30 cm).









### 15.3.1 X1 - M12, 8-pole circular connector

Pin	Configuration	On the device side	External circuit / Signal level
1	not used		
2	not used		
<b>Operating voltage</b>			
3	GND	3 	24 V DC $\pm$ 10 %
4	+24 V	4 	max. residual ripple 10 %
<b>Input signals of the control centre (e.g. PLC)</b>			
5	Binary input +	5 	+ $\begin{cases} 0...5 \text{ V} & (\text{log. } 0) \\ 10...30 \text{ V} & (\text{log. } 1) \end{cases}$
6	Binary input -	6 	GND (identical with Pin 3)
<b>Output signals to the control centre (e.g. PLC) - (only used for binary output option)</b>			
7	Binary output 1 (referring to Pin 3)	7 	0...24 V
8	Binary output 2 (referring to Pin 3)	8 	0...24 V

Tab. 18: Pin assignment; X1 - M12, 8-pole circular connector  
PROFIBUS DP

### 15.3.2 X5 - M8, 4-pole circular connector - process actual value (Type 8793 only)

Input type**	Pin	Configuration	Switches ***	On the device side	External circuit
4...20 mA - internally supplied	1	(brown)* +24 V transmitter supply	 Switch on left		
	2	(white)* Output from transmitter			
	3	(blue)* GND (identical with GND operating voltage)			
	4	(black)* Bridge to GND (Pin 3)			
4...20 mA - externally supplied	1	(brown)* not used	 Switch on right		4...20 mA
	2	(white)* Process actual +			
	3	(blue)* not used			
	4	(black)* Process actual -			
Frequency -internally supplied	1	(brown)* +24 V sensor supply	 Switch on left		+24 V
	2	(white)* Clock input			
	3	(blue)* Clock input - (GND)			
	4	(black)* not used			

Input type**	Pin	Configuration	Switches ***	On the device side	External circuit
Frequency - externally supplied	1 2 3 4	(brown)* not used (white)* Clock input + (blue)* Clock input - (black)* not used	 Switch on right	2  3 	Clock + Clock -
Pt 100 (see information below)	1 2 3 4	(brown)* not used (white)* Process actual 1 (power supply) (blue)* Process actual 3 (GND) (black)* Process actual 2 (compensation)	 Switch on right	2  3  4 	 Pt 100

\* The wire colours indicated in brackets refer to the connection cable, part no. 918718, available as an accessory.

\*\* Can be adjusted via software (see Operating Instructions, chapter „Specifying the standard settings“).

\*\*\* The switch is inside the device on the PCB (see “Fig. 20: Location of the switch; Symbols for switch position”)









Tab. 19: Plug assignments; PROFIBUS DP; X5 - M8, 4-pole circular connector - process actual value input (Type 8793)

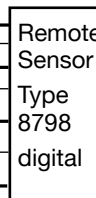


Connect the Pt 100 sensor via 3 cables for cable compensation reasons.  
It is essential to bridge terminal 3 and terminal 4 on the sensor.

### 15.3.3 X4 - M8, 4-pole socket, optional - remote sensor (for remote model only)


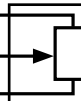


Connection of the digital, contact-free position sensor  
Type 8798:

Pin	Configuration	On the device side	External circuit
1	Supply sensor +	S + 	+ 
2	Supply sensor -	S - 	- 
3	Serial interface, A-line	A 	A-line 
4	Serial interface, B-line	B 	B-line 



Tab. 20: Plug assignments PROFIBUS DP; X4 - M8, 4-pole socket - digital, contact-free position sensor Type 8798

Connection of an analog, potentiometric position sensor:

Pin	Configuration	On the device side	External circuit
1	Potentiometer 1	1 	 Potentiometer
2	Wiper 2	2 	
3	Potentiometer 3	3 	
4	not used		

Tab. 21: Plug assignments PROFIBUS DP; X4 - M8, 4-pole socket - analog, potentiometric position sensor

## 15.4 Electrical connection PROFIBUS

To operate the appliance, the following must be connected:

- **X1** - circular connector M12, 8-pole  
(operating voltage see ["Tab. 18"](#)) and
- **X2** - socket M12, 5-pole, inversely coded  
(PROFIBUS DP see ["Tab. 22"](#)).

### 15.4.1 X2/X3 - M12, 5-pole socket/circular connector - bus connection

Pin	Configuration	External circuit / Signal level
1	VP+5	Supply the terminating resistors
2	RxD/TxD-N	Received/transmitted data -N, A-line
3	DGND	Data transmission potential (earth to 5 V)
4	RxD/TxD-P	Received/transmitted data -P, B-line
5	Shielding	Shielding / protective earth

Tab. 22: Pin assignment PROFIBUS DP;  
X2/X3 - M12, 5-pole circular connector/socket - bus  
connection, PROFIBUS DP

When the operating voltage is applied, Type 8792/8793 is activated.

- Now make the required basic settings:

**Positioner:**

see ["16.2.1 Specifying the standard settings"](#)

**Process controller:**

see ["16.3.1 Basic settings of the process controller"](#)

## 16 START-UP

### 16.1 Safety instructions



#### WARNING!

**Risk of injury from improper operation!**

Improper operation may result in injuries as well as damage to the device and the area around it.

- ▶ Before start-up, ensure that the operating personnel are familiar with and completely understand the contents of the operating instructions.
- ▶ Observe the safety instructions and intended use.
- ▶ Only adequately trained personnel may operate the equipment/the device.

### 16.2 Starting-up Type 8792

#### 16.2.1 Specifying the standard settings



The basic settings are made on the setting level.

To change from the process to the setting level, press the **MENU** key for approx. 3 seconds.

You must make the following basic settings for starting up:

- Setting the input signal (INPUT)
- Automatic adjustment of the positioner (X.TUNE)



### Input the input signal (INPUT)

- In the *INPUT* menu option select the input signal for the set-point value.  
(4...20 mA, 0...20 mA, 0...10 V or 0...5 V).

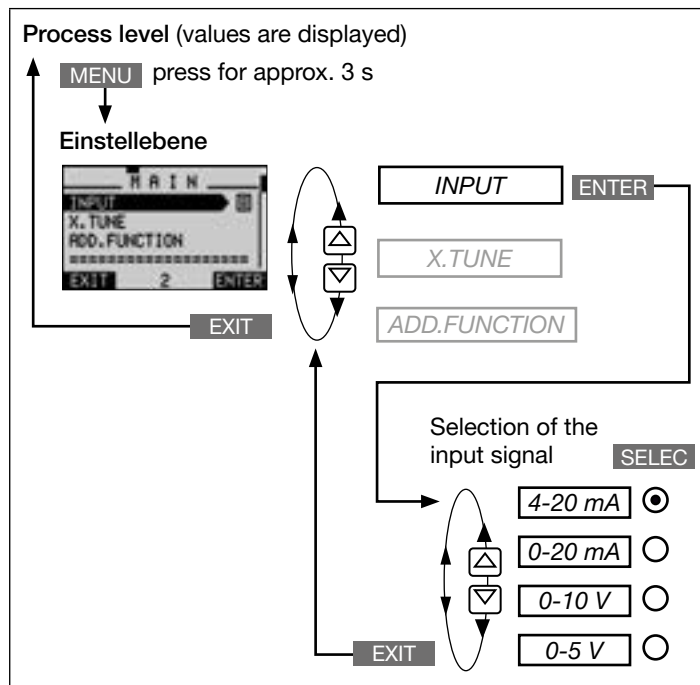


Fig. 24: Operating structure *INPUT*; Input the signal

### Automatic adjustment of the positioner to the operating conditions (*X.TUNE*)



#### WARNING!

**Danger due to the valve position changing when the *X:TUNE* function is run!**

When the *X.TUNE* function is run under operating pressure, there is an acute risk of injury.

- ▶ *Never run X.TUNE* while the process is running!
- ▶ Secure system from unintentional activation!


#### NOTE!

**An incorrect supply pressure or incorrectly connected operating medium pressure may cause the controller to be wrongly adjusted!**




- ▶ Run *X.TUNE* in each case at the supply pressure available in subsequent operation (= pneumatic auxiliary power).
- Run the *X.TUNE* function preferably **without** operating medium pressure to exclude interference due to flow forces.

The following functions are actuated automatically:



- Adjustment of the sensor signal to the (physical) stroke of the actuator used.
- Determination of parameters of the PWM signals to control the solenoid valves integrated in Type 8792/8793.
- Setting of the controller parameters of the positioner. Optimization occurs according to the criteria of the shortest possible transient time with simultaneous freedom from overshoot.

 To stop *X.TUNE*, press the left or right selection key **STOP**.

**Procedure:**

Key	Action	Description
<b>MENU</b>	 press for approx. 3 s	Change from process level ⇨ setting level
▲ / ▼	Select <i>X.TUNE</i>	
<b>RUN</b>	Hold down  as long as countdown (5 ...) is running	During the automatic adjustment messages are displayed indicating the progress of the <i>X.TUNE</i> "TUNE #1... <i>X.TUNE</i> ready".
	Press any key	Return to main menu (MAIN)
<b>EXIT</b>	 press	Change from setting level ⇨ process level

Tab. 23: Automatic adjustment of *X.TUNE*

 You have to exit the main menu by pressing the left selection key **EXIT** before the modified data is saved in the memory (EEPROM). During the save process the save symbol is indicated  on the display.

## 16.3 Start-up Type 8793





To be able to operate the positioner as a process controller, perform the following steps:

### 1. Setting up the positioner:

Description see ["16.2.1 Specifying the standard settings"](#)

### 2. Setting up the process controller:

→ Enter the *P.CONTROL* auxiliary function into the main menu (MAIN) via the configuration menu (*ADD.FUNCTION*).

Key	Action
<b>MENU</b>	 press for approx. 3 s
▲ / ▼	Select <i>ADD.FUNCTION</i>
<b>ENTER</b>	 press
▲ / ▼	Select <i>P.CONTROL</i>
<b>ENTER</b>	 press
<b>EXIT</b>	 press

The *P.CONTROL* function is now activated and entered in the main menu (MAIN).

Tab. 24: Enter the *P.CONTROL* auxiliary function into the main menu (MAIN)

### 16.3.1 Basic settings of the process controller

→ In the main menu (MAIN) select the P.CONTROL function and make the basic settings.

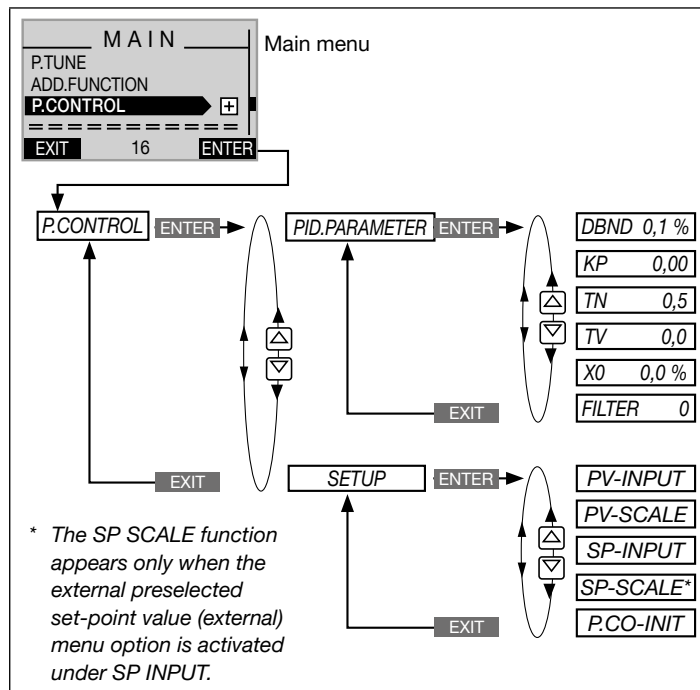


Fig. 25: Operating structure - basic settings of the process controller

### P.CONTROL - settings:

PID.PARAMETER	Parameter settings of the process controller
DBND 0,1 %	Insensitivity area of the PID process controller
KP 0,00	Amplification factor of the process controller
TN 0,5	Reset time
TV 0,0	Hold-back time
X0 0,0 %	Operating point
FILTER 0	Filtering of the process actual value input
SETUP	Setting up the process controller:
PV-INPUT	Indication of the signal type for process actual value
PV-SCALE	Scaling the process controller
SP-INPUT	Type of the set-point value default (internal or external)
SP-SCALE*	Scaling the positioner (for external set-point value default only)
P.CO-INIT	Enables a smooth switchover between AUTOMATIC and MANUAL operating state

Tab. 25: Basic settings of the process controller



Parameters can be set automatically with the aid of the P.TUNE function (description see "Operating instructions for Type 8792/8793").

### 16.3.2 Manually changing the process set-point value

Vorgehensweise:

1. Set the internal preselected set-point value on the setting level:

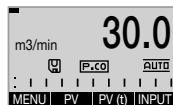
In the main menu (MAIN) select the *P.CONTROL* function



→ Return to the process level via the **EXIT** button (press 4 x).

2. Manually change the process set-point value on the process level:

→ Using the arrow keys  $\Delta$   $\nabla$ , select the display for the process set-point value (SP).



→ Press the **INPUT** button..

→ Input process set-point value (as described in the image on the right).

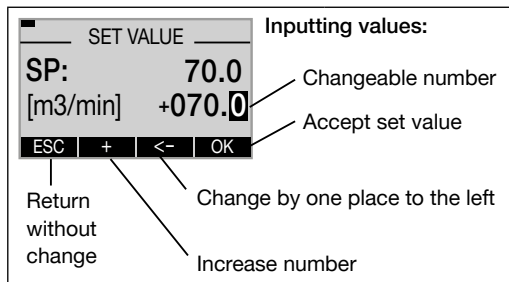


Fig. 26: Inputting values

## 17 ACCESSORIES

Designation	Order no.
USB Interface for serial communication	227 093
Communicator	Information at <a href="http://www.burkert.com">www.burkert.com</a>

Tab. 26: Accessories

Other accessories can be found on the data sheet for Type 8792/8793.

### 17.1 Communications software

The PC operating program “Communicator” is designed for communication with the devices from the Bürkert positioner family. Devices constructed since August 2014 support the full range of functions. If you have any questions regarding compatibility, please contact the Bürkert Sales Center.



A detailed description and precise schedule of the procedure for the installation and operation of the software can be found in the associated documentation.

## 18 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 allowable storage temperature.

#### Incorrect storage may damage the device.

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

## 19 DISPOSAL

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

### NOTE!

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

- Observe applicable regulations on disposal and the environment.



#### Note:

Observe national waste disposal regulations.





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