bürkert
FLUID CONTROL SYSTEMS

Type 8840

Modular process valve cluster, DN20 and DN25
Modularer Prozessventilknoten, DN20 und DN25
Nœud de vanne de process modulaire, DN20 et DN25

Operating Instructions

Bedienungsanleitung
Manuel d'utilisation

MAN 1000359645 EN Version: -Status: RL (released | freigegeben) printed: 03.07.2018

Operating Instructions 1806/00_EU-ML_00810703 / Original DE

MAN 1000359645 EN Version: -Status: RL (released | freigegeben) printed: 03.07.2018

1 THE OPERATING INSTRUCTIONS

The operating instructions describe the entire life cycle of the device. Keep these instructions ready to hand at the operation site.

Important safety information.

- Carefully read these instructions.
- Observe in particular the safety instructions, intended use and operating conditions.
- Persons, who work on the device, must read and understand these instructions.

1.1 Definition of terms

Term	in these instructions representative for
Valve cluster, device	modular process valve cluster Type 8840
Valve body	valve body block
Ex atmosphere	potentially explosive atmosphere
Ex approval	approval in the potentially explosive atmosphere

1.2 Symbols

DANGER

Warns of an immediate danger.

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

WARNING

Warns of a potentially dangerous situation.

- Failure to observe the warning may result a fatal or serious injury.

CAUTION

Warns of a possible danger.

- Failure to observe the warning may result in a moderate 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.

▶ Highlights instructions to avoid a danger.

→ Designates a procedure which you must carry out.

2 INTENDED USE

The modular process valve cluster Type 8840 is designed for controlling the flow rate of liquid and gaseous media, especially distributing and collecting or mixing and supplying media.

- Use the device for its intended purpose only. Non-intended use of the device may be dangerous to people, nearby equipment and the environment.
- In areas at risk of explosion, only use devices approved for use in those areas. These devices are labeled with a separate Ex type label. When utilized in a potentially explosive atmosphere, always pay attention to the details on the separate Ex type label and the Ex additional instructions contained in the scope of delivery.
- The prerequisites for safe and efficient operation are correct transport, storage, assembly, installation, start-up, operation, and maintenance.
- When using the device, observe the permitted data, operating conditions and application conditions. This information can be found in the contractual documents, the operating instructions and on the type label.
- Use the device only in conjunction with third-party devices and components recommended and authorized by Bürkert.
- Make sure the device is in efficient working order before use.

3 BASIC SAFETY INSTRUCTIONS

These safety instructions do not consider any contingencies or incidents which occur during assembly, operation and maintenance. The operator is responsible for observing the location-specific safety regulations, also with reference to the personnel.

Risk of injury from high pressure and medium leakage.

- Before working on the system or device, switch off the pressure and vent or drain lines.

Risk of burns from hot media.

- Do not touch the device during operation.

Risk of injury from moving parts.

- Do not reach into openings.

Risk of injury when opening the actuator due to a tensioned spring.

If the actuator is opened, there is a risk of injury from the spring jumping out.

- The actuator Type 2100 must not be opened.

General hazardous situations.

To prevent injury, ensure that:

- The device may be operated only when in perfect condition and in consideration of the operating instructions.

- Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- Do not make any changes on the device and do not subject it to mechanical stress.
- Secure the system from unintentional actuation.
- Only trained technicians may perform installation and maintenance work.
- Install the device in accordance with the regulations in force in the country.
- After an interruption in the power supply, ensure that the process is restarted in a defined or controlled manner.
- Observe the general rules of technology.
- To attach the valve cluster, use only the factory-provided fastening threads.
- Feed only air or neutral gases up to 60° into the pilot air ports.
- Ensure adequate freedom of motion and sufficiently long pneumatic hoses on the pilot air ports which move up and down as determined by the valve stroke.
- Do not remove body components from the valve cluster.
- Remove the pilot air ports for transportation.

4 GENERAL INFORMATION

4.1 Contact addresses

Germany

Bürkert Fluid Control Systems
Sales Center
Christian-Bürkert-Straße 13-17
D-74653 Ingelfingen
Tel. + 49 (0) 7940 - 10-91 111
Fax + 49 (0) 7940 - 10-91 448
E-mail: info@burkert.com

International

Contact addresses are found on the final pages of the printed operating manual.

And also on the Internet at: www.burkert.com

4.2 Warranty

The warranty is only valid if the device is used as intended in accordance with the specified application conditions.

4.3 Information on the Internet

The operating instructions and data sheets for Bürkert products can be found on the Internet at: www.burkert.com

5 PRODUCT DESCRIPTION

5.1 Structure and description

The valve cluster is suitable for controlling liquid and gaseous media and can be used to distribute, collect, mix or supply media.

The valve cluster, based on a modular valve body, allows different configurations. The individual parts are joined hermetically tight and in a very compact way.

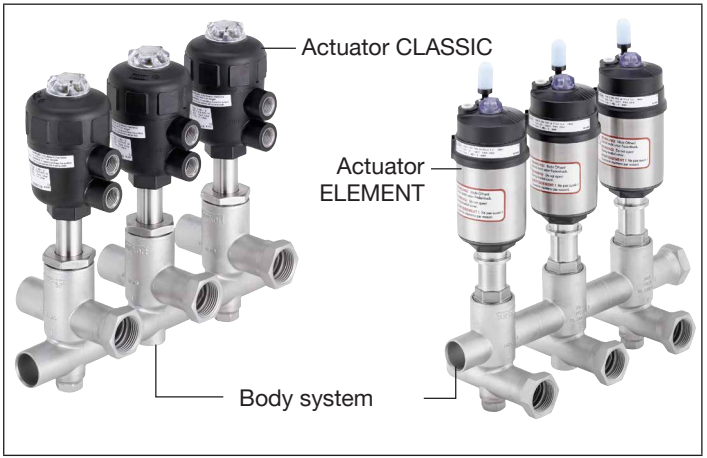


Fig. 1: Structure of the valve cluster

5.2 Versions

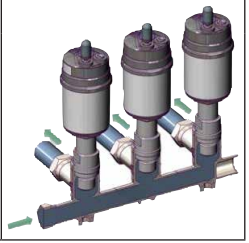
Depending on the requirement and preferred type of automation, different actuators (ELEMENT, CLASSIC, INOX) can be selected.

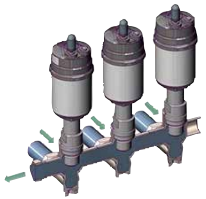
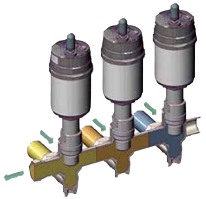
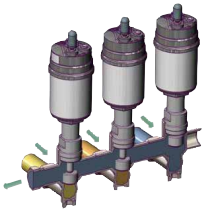
The following orifices are available:

- DN10 (screwed down and sealed with a graphite seal),
- DN20 and DN25 (welded).

The orifice 10 is described in separate operating instructions.

5.3 Function

Function	Description of the application	Representation
Distributor	Distributing: The valve cluster distributes the medium from a feed line to several consumers	

Function	Description of the application	Representation
Collector	Collecting: The medium can be collected from several consumers	
	Mixing: Different media, e. g. hot water and cold water or various chemicals, can be mixed	
	Supplying: Different media, e. g. various cleaning agents, can be supplied alternately to one consumer	

6 TECHNICAL DATA

6.1 Conformity

The device conforms with the EU Directives according to the EU Declaration of Conformity (if applicable).

6.2 Standards

The applied standards, which verify conformity with the EU Directives, can be found on the EU-Type Examination Certificate and / or the EU Declaration of Conformity (if applicable).

6.3 Type label

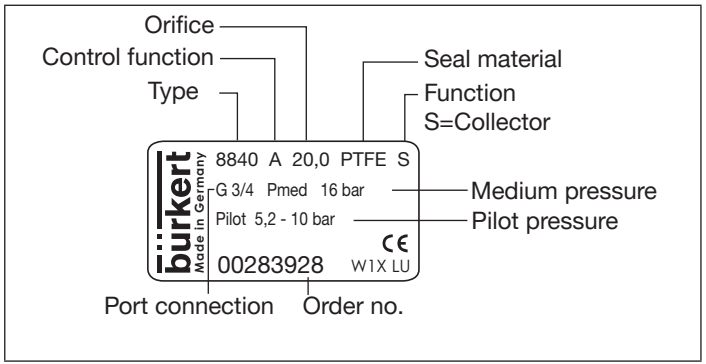


Fig. 2: Description of the type label

6.4 Operating conditions

Operating conditions		
Permitted ambient temperature	CLASSIC	ELEMENT
	-10...+60 °C (PA-actuator) +5...+140 °C (PPS-actuator)	0...+60 °C
Permitted medium temperature	-10...+180 °C	
Flow media	Water, alcohols, oils, fuels, hydraulic fluid, saline solutions, alkalis, organic solvents, vapor, air, neutral gases	

6.5 Mechanical data

Mechanical data	
Control function	CFA, CFB (on request)
Dimensions	Depending on the number of valve positions
Weight	Depending on the number of valve positions and installed actuators
Number of valve slots	2 to 5 (others on request)
Body material	Stainless steel precision cover 316L (CF3M)
Seal material	Seat seal: PTFE Seal between actuator and body: graphite

6.6 Pneumatic data

Pneumatic data	
Control media	Neutral gases, air
Max. pilot pressure	10 bar
Line connection	Thread: G3/4 to G1, NPT3/4 to NPT1 Weld ends according to ISO 4200 (on request) Clamp according to DIN 32676 / Series B (on request)
Pilot air port	CLASSIC: G1/4 ELEMENT: Push-In 6/4

6.7 Pressure range

6.7.1 Pressure range for actuator CLASSIC

Orifice [mm]	Actuator size [mm]	Minimum pilot pressure	Maximum operating pressure up to 180 °C	
		CFA [bar]	CFA [bar]	CFB [bar]
20	50	3.9	11	16
25	63	4.2	11	16

6.7.2 Pressure range for actuator ELEMENT

Orifice [mm]	Actuator size [mm]	Minimum pilot pressure	Maximum operating pressure up to 180 °C	
		CFA [bar]	CFA [bar]	CFB [bar]
20	50	5.2	16	16
25	70	5.0	16	16

7 INSTALLATION

DANGER

Risk of injury from high pressure and medium leakage.

- Before working on the system or device, switch off the pressure and vent or drain lines.

WARNING

Risk of injury from improper installation.

- Installation may be carried out only by trained technicians and with the appropriate tools.
- Secure system against unintentional activation.
- After installation, ensure that the process is restarted in a controlled manner.

Risk of burns from hot media.

- Do not touch the device during operation.

Risk of injury from moving parts.

- Do not reach into openings.

CAUTION

Risk of injury due heavy devices.

During transport or during assembly, a heavy device may fall and cause injury.

- Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- Use appropriate tools.

7.1 Preparatory work

The installation position is optional. Preferably with actuator face up.

→ Observe flow direction.

→ Observe type of incoming flow.

→ Remove contaminants from pipelines.

→ Ensure that the pipelines are aligned.

7.1.1 Install dirt traps

Dirt trap for devices with approval in accordance with DIN EN 161

In accordance with DIN EN 161 (Automatic shut-off valves for gas burners and gas appliances) a dirt trap must be connected upstream of the valve and prevent the insertion of a 1 mm plug gauge.

For devices with stainless steel body:

→ Install dirt traps upstream of the valve.

7.2 Install the valve body

Devices with weld ends connection:

→ Weld valve body in pipeline system. Please observe chapter “7.3”.

Devices with thread or clamp connection:

→ Connect valve body to pipeline.

7.3 Devices with weld ends connection

NOTE

Damage to the actuator during welding of the valve body into the pipeline.

▸ Remove the actuator before welding into the pipeline.

7.3.1 Remove the actuator

→ Clamp the valve body in a holding device.

NOTE

Damage to the seat seal or the seat contour.

▸ When removing the actuator, ensure that the valve is open.

→ For actuators CLASSIC and control function A: pressurize lower pilot air port with compressed air (5 bar): valve opens.

→ For actuator ELEMENT and control function A: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.

→ Counter on the flats of the nipple with a suitable open-end wrench.

→ Unscrew the actuator.

7.3.2 Install the actuator

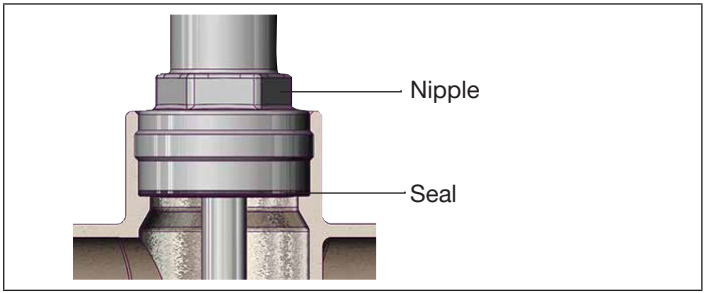


Fig. 3: Install the actuator

→ Check the seal and if required, replace it. Remove residues completely.

WARNING

Danger if incorrect lubricants used.

Unsuitable lubricant may contaminate the medium. In oxygen applications there is a risk of an explosion.

▸ In specific applications, e.g. oxygen or analysis applications, use appropriately authorised lubricants only.

→ Grease nipple thread before re-installing the actuator (e.g. with Klüber paste UH1 96-402 from Klüber).

NOTE

Damage to the seat seal or the seat contour.

▸ When installing the actuator, ensure that the valve is open.

→ For actuators CLASSIC and control function A: pressurize lower pilot air port with compressed air (5 bar): valve opens.

→ For actuator ELEMENT and control function A: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.

→ Counter on the flats of the nipple with a suitable open-end wrench.

→ Screw actuator into the valve body. Observe tightening torque.

7.3.3 Tightening torque

Orifice (DN)	Tightening torque [Nm]
20	50 ±3
25	60 ±3

Tab. 1: Tightening torque

7.4 Rotating the actuator

The position of the connections can be aligned steplessly by rotating the actuator through 360°.

NOTE

Damage to the seat seal or the seat contour.

- ▸ When rotating the actuator, ensure that the valve is open.

→ Clamp the valve body in a holding device.

→ For actuators CLASSIC and control function A: pressurize lower pilot air port with compressed air (5 bar): valve opens.

→ For actuator ELEMENT and control function A: pressurize the pilot air port 1 with compressed air (5 bar): valve opens.

→ Counter on the flats of the nipple with a suitable open-end wrench.

DANGER

Risk of injury from discharge of medium and pressure.

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

- ▸ Rotate the actuator in the specified direction only.

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

7.5 Connect the device pneumatically

DANGER

Risk of injury from unsuitable connection hoses.

- ▸ Use only hoses which are authorised for the indicated pressure and temperature range.
- ▸ Observe the data sheet specifications from the hose manufacturers.

Fig. 4: Pilot air ports

7.5.1 Connection of the control medium

The position of the connections can be aligned steplessly by rotating the actuator through 360°. The procedure is described in the chapter “7.4”.

Connection of the control medium for devices with actuator CLASSIC:

→ Control function A:
Connect the control medium to the lower pilot air port.

→ Control function B:
Connect the control medium to the upper pilot port.

Connection of the control medium for devices with actuator ELEMENT:

→ Control function A and B:
Connect the control medium to the pilot air port 1.

If used in an aggressive environment, we recommend conveying all free pneumatic connections into a neutral atmosphere with the aid of a pneumatic hose.

7.6 Removal

DANGER

Risk of injury from high pressure and medium leakage.

- Before working on the system or device, switch off the pressure and vent or drain lines.

→ Loosen the pneumatic connection.

→ Remove the actuator from valve body.

8 MAINTENANCE, TROUBLESHOOTING

WARNING

Risk of injury from improper maintenance.

- Maintenance may only be carried out by trained specialist personnel using suitable tools.
- Secure system from unintentional activation.
- Following maintenance, ensure a controlled restart.

8.1 Maintenance work

8.1.1 Wearing parts

Parts which are subject to natural wear:

Actuator CLASSIC	Actuator ELEMENT
• Valve set (swivel plate with PTFE-seal, pin, seal)	• Valve set (swivel plate with PTFE-seal, pin, seal)
• Seal set for actuator	• Seal set for the packing gland

The exact procedure for replacing the valve set and seal set can be found on the Internet on:

www.burkert.com → Type 2000 www.burkert.com → Type 2100

8.1.2 Visual inspection

Perform regular visual inspections according to the application conditions:

→ Check media connections for leaks.

→ Check release bore for leaks.

8.2 Cleaning

Commercially available cleaning agents can be used to clean the outside.

NOTE

Avoid causing damage with cleaning agents.

- Before cleaning, check that the cleaning agents are compatible with the body materials and seals.

8.3 Recommended auxiliary materials

The following auxiliary materials are recommended in this manual for the proper operation, maintenance and repair of the device:

Type of auxiliary material	Auxiliary material	Manufacturer information
Lubrication paste	Klüberpaste UH1 96-402	Klüber Lubrication München KG www.klueber.de
Adhesive	Loctite 640	Marketing Loctite, Henkel AG & Co. KGaA www.loctite.de

8.4 Malfunction

Malfunction	Reason	Remedial action
Actuator does not switch	Pilot air port interchanged	CFA: Connect the pilot air port CLASSIC: lower, ELEMENT: 1 CFB: Connect the pilot air port CLASSIC: upper, ELEMENT: 2
	Pilot pressure too low	Observe pressure specifications on the type label
	Medium pressure too high	
	Flow direction reversed	Observe the direction arrows in chapter “5.3”
Valve is not sealed	Dirt between seal and valve seat	Installing dirt trap
	Seat seal worn	Installing new swivel plate
	Flow direction reversed	Observe the direction arrows in chapter “5.3”
	Pilot pressure too low	Observe pressure specifications on the type label
	Medium pressure too high	
Valve is leaking on the release bore	Packing gland worn	Replace packing gland or replace actuator

9 REPLACEMENT PARTS

CAUTION

Risk of injury and/or damage by the use of incorrect parts.

Incorrect accessories and unsuitable replacement parts may cause injuries and damage the device and the surrounding area.

- Use only original accessories and original replacement parts from Bürkert.

9.1 Replacement parts for actuator CLASSIC

The following replacement parts are available for the actuator CLASSIC:

- Seal set for actuator
  consists of the sealing of the actuators
- Valve set
  consists of swivel plate, pin and seal

9.1.1 Seal set for PA-actuator

Actuator size [mm]	Orifice [mm]	Order number (VA-body)
50	20	233 588
63	25	233 591

9.1.2 Seal set for PPS-actuator

Actuator size [mm]	Orifice [mm]	Order number (VA-body)
50	20	233 582
63	25	233 583

9.1.3 Valve set

Actuator size [mm]	Orifice [mm]	Order number (PTFE-seal)
50	20	011 171
50	25	011 202
63	25	160 737

9.2 Replacement parts for actuator ELEMENT

The following replacement parts are available for the actuator ELEMENT:

- Seal set for packing gland
  consists of the individual parts of the packing gland, seal and lubricant
- Valve set
  consists of swivel plate, pin and seal

9.2.1 Seal set

Actuator size [mm]	Orifice [mm]	Spindle diameter	Order number
50	20	10	216 433
70	25	10	216 433

9.2.2 Valve set

Actuator size [mm]	Orifice [mm]	Order number
50	20	011 171
70	25	160 737

10 TRANSPORT, STORAGE, DISPOSAL

CAUTION

Risk of injury due heavy devices.

During transport or during assembly, a heavy device may fall and cause injury.

- ▸ Do not transport, install or remove heavy devices without the aid of a second person and using suitable auxiliary equipment.
- ▸ Use appropriate tools.

NOTE

Transport damage to inadequately protected devices.

- During transportation protect the device against wet and dirt in shock-resistant packaging.
- Maintain permissible 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.

bürkert
FLUID CONTROL SYSTEMS

www.burkert.com

MAN 1000359645 EN Version: -Status: RL (released | freigegeben) printed: 03.07.2018