

## Type 8011

Flowmeter with paddle-wheel  
Durchfluss-Messgerät mit Flügelrad  
Débitmètre à ailette



## Operating Instructions

Bedienungsanleitung  
Manuel d'utilisation

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

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## 1 ABOUT THIS MANUAL

This manual describes the entire life cycle of the device. Please keep this manual in a safe place, accessible to all users and any new owners.

### This manual contains important safety information.

Failure to comply with these instructions can lead to hazardous situations. Pay attention in particular to the chapters „[Basic safety information](#)“ and „[Intended use](#)“.

- ▶ Whatever the version of the device, this manual must be read and understood.

### 1.1. Definition of the word "device"

The word "device" used within this manual refers to the flowmeter type 8011.

### 1.2. Symbols used



#### DANGER

##### Warns against an imminent danger.

- ▶ Failure to observe this warning can result in death or in serious injury.



#### WARNING

##### Warns against a potentially dangerous situation.

- ▶ Failure to observe this warning can result in serious injury or even death.



#### CAUTION

##### Warns against a possible risk.

- ▶ Failure to observe this warning can result in substantial or minor injuries.

#### NOTE

##### Warns against material damage.

- ▶ Failure to observe this warning may result in damage to the device or system.



Indicates additional information, advice or important recommendations.



Refers to information contained in this manual or in other documents.

- ▶ Indicates an instruction to be carried out to avoid a danger, a warning or a possible risk.

→ Indicates a procedure to be carried out.



Indicates the result of a specific instruction.

## 2 INTENDED USE

**Use of the device that does not comply with the instructions could present risks to people, nearby installations and the environment.**

The 8011 flowmeter is intended exclusively to measure flow rate in liquids.

- ▶ Use this device in compliance with the characteristics and commissioning and use conditions specified in the contractual documents and in the user manual.
- ▶ Never use the flowmeter type 8011 for security applications.
- ▶ Protect this device against electromagnetic interference, ultra-violet rays and, when installed outdoors, the effects of climatic conditions.
- ▶ Only operate a device in perfect working order.
- ▶ Requirements for the safe and proper operation of the device are proper transport, storage and installation, as well as careful operation and maintenance.
- ▶ Only use the device as intended.

## 3 BASIC SAFETY INFORMATION

This safety information does not take into account:

- any contingencies or occurrences that may arise during assembly, use and maintenance of the devices.
- the local safety regulations that the operator must ensure the staff in charge of installation and maintenance observe.



**Danger due to high pressure in the installation.**

**Danger due to electrical voltage.**

**Danger due to high temperatures of the fluid.**

**Danger due to the nature of the fluid.**



**Various dangerous situations**

To avoid injury take care:

- ▶ not to use the device in explosive atmospheres.
- ▶ not to use the device in an environment incompatible with the materials it is made of.
- ▶ not to use fluid that is incompatible with the materials the device is made of.

**Various dangerous situations**

To avoid injury take care:

- ▶ not to make any modifications to the device.
- ▶ not to subject the device to mechanical loads.
- ▶ to prevent any unintentional power supply switch-on.
- ▶ to carry out the installation and maintenance work by qualified and skilled staff with the appropriate tools.
- ▶ to guarantee a defined or controlled restarting of the process, after a power supply interruption.
- ▶ to observe the general technical rules when installing and using the device.

**NOTE****The device may be damaged by the fluid in contact with.**

- ▶ Systematically check the chemical compatibility of the component materials of the device and the fluids likely to come into contact with it (for example: alcohols, strong or concentrated acids, aldehydes, alkaline compounds, esters, aliphatic compounds, ketones, halogenated aromatics or hydrocarbons, oxidants and chlorinated agents).

**NOTE****Elements / Components sensitive to electrostatic discharges**

- ▶ This device contains electronic components sensitive to electrostatic discharges. They may be damaged if they are touched by an electrostatically charged person or object. In the worst case scenario, these components are instantly destroyed or go out of order as soon as they are activated.
- ▶ To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions described in the EN 61340-5-1 norm.
- ▶ Do not touch any of the live electrical components.

## 4 GENERAL INFORMATION

### 4.1. Manufacturer's address and international contacts

To contact the manufacturer of the device use following address:

Bürkert SAS

Rue du Giessen

BP 21

F-67220 TRIEMBACH-AU-VAL

You may also contact your local Bürkert sales office.

The addresses of our international sales offices are available on the internet at: [www.burkert.com](http://www.burkert.com)

### 4.2. Warranty conditions

The condition governing the legal warranty is the conforming use of the 8011 in observance of the operating conditions specified in this manual.

### 4.3. Information on the Internet

You can find the user manuals and technical data sheets regarding the type 8011 at: [www.burkert.com](http://www.burkert.com)

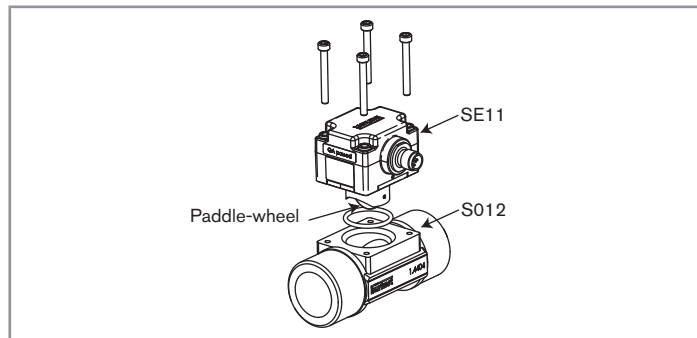
## 5 DESCRIPTION

### 5.1. Area of application

The 8011 flowmeter is intended to measure the flow rate of neutral or slightly aggressive liquids free of solid particles.

### 5.2. General description

The 8011 flowmeter comprises the SE11 electronics incorporating the measuring paddle-wheel and an S012 fitting allowing the device to be fitted to all types of pipes from DN6 to DN65.



The sensor detects the rotation of the paddle-wheel; it generates a signal in which the frequency  $f$  is proportional to the rotation frequency of the paddle-wheel.

## Type 8011

### Description

To obtain a flow rate Q, this frequency must be divided by a proportionality factor K according to the following formula:

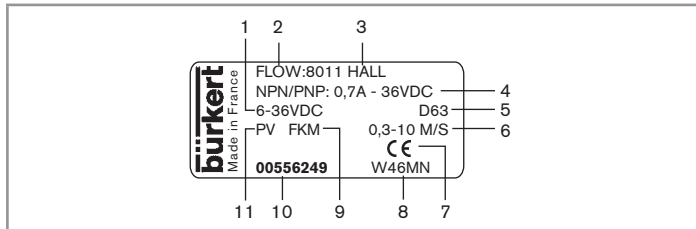
$$Q = f/K$$

Depending on the version, the electrical connection is made using a 1 m long cable or a multi-pin M12 fixed connector which position can be adjusted.

Depending on the version, the device is equipped:

- with one NPN pulse output
- with two pulse outputs, NPN and PNP.

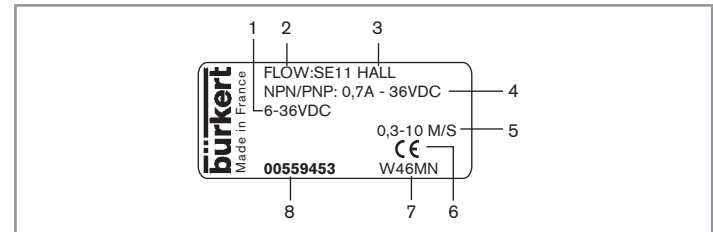
### 5.3. Description of the name plate of the 8011



1. Supply voltage
2. Measured value and type of the device
3. Type of sensor
4. Pulse output data
5. Type of connection
6. Flow range

7. Conformity logo
8. Manufacturing code
9. Material of the seal exposed to the fluid
10. Article number
11. Fitting material

### 5.4. Description of the name plate of the SE11



1. Supply voltage
2. Measured value and type of the device
3. Type of sensor
4. Pulse output data
5. Flow range
6. Conformity logo
7. Manufacturing code
8. Article number

## 6 TECHNICAL DATA

### 6.1. Conditions of use

Ambient temperature	-15...+60 °C
Air humidity	< 80%, non condensated
Protection class acc. to EN 60529	<ul style="list-style-type: none"> <li>▪ IP67 (version with M12 fixed connector), female connector wired, plugged in and tightened</li> <li>▪ IP65 (version with cable gland)</li> </ul>

### 6.2. Conformity to standards and directives

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. Conformity to the pressure equipment directive

The device conforms to Article 4, Paragraph 1 of the Pressure Equipment Directive 2014/68/EU under the following conditions:

- Device used on a pipe (depending on the maximum pressure, the DN of the pipe and the fluid)

Type of fluid	Conditions
Fluid group 1, Article 4, Paragraph 1.c.i	DN ≤ 25
Fluid group 2, Article 4, Paragraph 1.c.i	DN ≤ 32 or PSxDN ≤ 1000
Fluid group 1, Article 4, Paragraph 1.c.ii	DN ≤ 25 or PSxDN ≤ 2000
Fluid group 2, Article 4, Paragraph 1.c.ii	DN ≤ 200 or PS ≤ 10 or PSxDN ≤ 5000

## 6.4. Mechanical data

Component	Material
SE11 electronic housing	PPS
Cable gland, M12 fixed connector	PA
Cable, 1 m	PVC, $T_{max} = 80\text{ °C}$
Seal exposed to the fluid	FKM (EDPM on request)
Seal exposed to the ambient air	EDPM
Paddle-wheel holder	PVDF
Paddle-wheel	PVDF, blue
Paddle-wheel axis and bearings	ceramic
Body of the S012 fitting	stainless steel (316L/DIN1.4404), brass, PVC, PP, PVDF
Screws	Stainless steel A4

## 6.5. Dimensions of device

→ please refer to the technical data sheets regarding the type 8011 available at: [www.burkert.com](http://www.burkert.com)

## 6.6. Fluid data

<b>Max. temperature of the fluid</b>	<ul style="list-style-type: none"> <li>▪ Fitting in stainless steel, brass, PVDF:               <ul style="list-style-type: none"> <li>a) 100 °C if the ambient temperature <math>\leq +45\text{ °C}</math></li> <li>b) 90 °C if the ambient temperature is between 45 °C and 60 °C</li> </ul> </li> <li>▪ Fitting in PP: 80 °C</li> <li>▪ Fitting in PVC: 60 °C</li> </ul>
<b>Min. fluid temperature</b>	<ul style="list-style-type: none"> <li>▪ Fitting in stainless steel, brass: -15 °C</li> <li>▪ Fitting in PP or PVC: +5 °C</li> <li>▪ Fitting in PVDF: -15 °C</li> </ul>
<b>Fluid pressure</b>	depends on the fitting material (see <a href="#">Fig. 1</a> in <a href="#">chap. 7.1</a> )
<b>Fluid viscosity</b>	300 cSt max.
<b>Rate of solid particles</b>	1% max.
<b>Measurement range</b>	0.3...10 m/s

<b>Measurement deviation</b>	
▪ Teach-In	▪ $\pm 1\%$ of the measured value*
▪ Standard K factor	▪ $\pm 2.5\%$ of the measured value*
<b>Linearity</b>	$\pm 0.5\%$ of the full scale (10 m/s)
<b>Repeatability</b>	$\pm 0.4\%$ of the measured value*
<b>Measuring element</b>	magnetic sensor

\* These values were determined in the following reference conditions:  
medium = water, water and ambient temperatures 20 °C, min. upstream and downstream distances respected, appropriate pipe dimensions

## 6.7. Electrical data

<b>Power supply</b>	
▪ Version with 1 pulse output	▪ 4,5...24 V DC, filtered and regulated
▪ Version with 2 pulse outputs	▪ 4,5...36 V DC, filtered and regulated, if only the NPN output is connected; 6...36 V DC, filtered and regulated, if the PNP output is connected;
<b>Current consumption</b>	max. 5 mA (without load)
<b>Protection against polarity reversal</b>	yes
<b>Protection against spike voltages</b>	yes
<b>Protection against short circuits</b>	yes, for the pulse outputs

<b>Pulse output</b>	transistor
▪ Version with 1 pulse output	▪ open collector, 20 mA max., NPN output: 0,2...24 V DC, frequency up to 300 Hz (frequency = K factor x flow rate).
▪ Version with 2 pulse outputs, NPN and PNP	▪ open collector, 700 mA max., frequency up to 300 Hz (frequency = K factor x flow rate), NPN output: 0,2...36 V DC and PNP output: Supply voltage

## 6.8. Electrical connections

Version	Type
With a cable gland	Cable, 1 m
With a fixed connector	Male 5-pin M12 fixed connector

## 6.9. K factors

The K factors have all been determined in the following reference conditions:

medium = water, water and ambient temperatures 20 °C, min. upstream and downstream distances respected, appropriate pipe dimensions



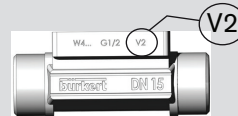
Two versions of the S012 in DN15 and DN20 exist, having different K factors.

Only version 2, identified by the "v2" marking, is available from March 2012. The "v2" marking can be found:

- on the bottom of the DN15 or DN20 fitting in plastic:



- on the side of the DN15 or DN20 fitting in metal:





The names of the following norms have changed in the Operating Instructions:

- for the welding ends, norm BS 4825 is renamed BS 4825-1
- for the clamp connections:
  - norm BS 4825 is renamed BS 4825-3
  - norm ISO (for pipes acc. to EN ISO 1127 / ISO 4200) is renamed DIN 32676 series B
  - norm DIN 32676 is renamed DIN 32676 series A
- for the flange connections, norm EN 1092-1 is renamed EN 1092-1 / B1

Material	Type of connections and standard	K factor [pulse/litre] <sup>1)</sup>											
		DN6	DN8	DN15	DN15 v2	DN20	DN20 v2	DN25	DN32	DN40	DN50	DN65	
Stainless steel	<b>Welding ends acc. to</b>												
	▪ SMS 3008	-	-	-	-	97,0	73,4	61,5	47,5	29,5	18,9	10,5	
	▪ DIN 11866 series C / BS 4825-1 / ASME BPE	-	-	-	-	97,0	73,4	61,5	47,5	29,5	18,9	10,5	
	▪ DIN 11866 series B / ISO 1127 / ISO 4200	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-	
Stainless steel	▪ DIN 11850 series 2 / DIN 11866 series A / EN 10357 series A	-	288	97,0	73,4	97,0	73,4	61,5	47,5	29,5	18,9	-	
	<b>External threads acc. to</b>												
	▪ SMS 1145	-	-	-	-	97,0	73,4	61,5	47,5	29,5	18,9	10,5	
Stainless steel	▪ G	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-	
	<b>Internal threads</b>												
Stainless steel	▪ G, Rc, NPT	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-	

**Type 8011**  
Technical data

Material	Type of connections and standard	K factor [pulse/litre] <sup>1)</sup>										
		DN6	DN8	DN15	DN15 v2	DN20	DN20 v2	DN25	DN32	DN40	DN50	DN65
Stainless steel	<b>Clamp acc. to</b>											
	▪ SMS 3017 / ISO 2852	-	-	-	-	97,0	73,4	61,5	47,5	29,5	18,9	10,5
	▪ BS 4825-3 / ASME BPE	-	-	-	-	97,0	73,4	61,5	47,5	29,5	18,9	10,5
	▪ DIN 32676 series B	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-
	▪ DIN 32676 series A	-	288	97,0	73,4	97,0	73,4	61,5	47,5	29,5	18,9	-
Stainless steel	<b>Flanges acc. to</b>											
	▪ EN1092-1 / B1 / PN16											
	▪ ANSI B16-5	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-
	▪ JIS 10K											
Brass	all	450	288	97,0	73,4	61,5	-	47,5	29,5	18,9	10,5	-
PVC	all	450	288	110	83,5	76,5	-	51,5	28,2	17,5	10,2	-
PP	all	-	-	115	86,6	77,0	-	52,0	29,2	17,0	10,0	-
PVDF	all	450	288	120	89,6	73,2	-	52,5	29,5	18,0	10,3	-

<sup>1)</sup> K factor in pulse/US gallon = K factor in pulse/l x 3,785;  
K factor in pulse/UK gallon = K factor in pulse/l x 4,546

## 7 INSTALLATION AND WIRING

### 7.1. Safety instructions



#### **DANGER**

##### **Danger due to high pressure in the installation.**

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

##### **Danger due to electrical voltage.**

- ▶ If the device is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Shut down and isolate the electrical power source before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.

##### **Danger due to high temperatures of the fluid.**

- ▶ Use safety gloves to handle the device.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

##### **Danger due to the nature of the fluid.**

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.



#### **WARNING**

##### **Risk of injury due to non-conforming installation.**

- ▶ The electrical and fluid installation can only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Install appropriate safety devices (correctly rated fuse and/or circuit-breaker).

##### **Risk of injury due to unintentional switch on of power supply or uncontrolled restarting of the installation.**

- ▶ Take appropriate measures to avoid unintentional activation of the installation.
- ▶ Guarantee a defined or controlled restarting of the process subsequent to the installation of the device.



#### **WARNING**

##### **Risk of injury if the fluid pressure/ temperature dependency is not respected.**

- ▶ Take the fluid pressure / temperature dependency into account according to the nature of the material of the fitting used (see [Fig. 1](#)).

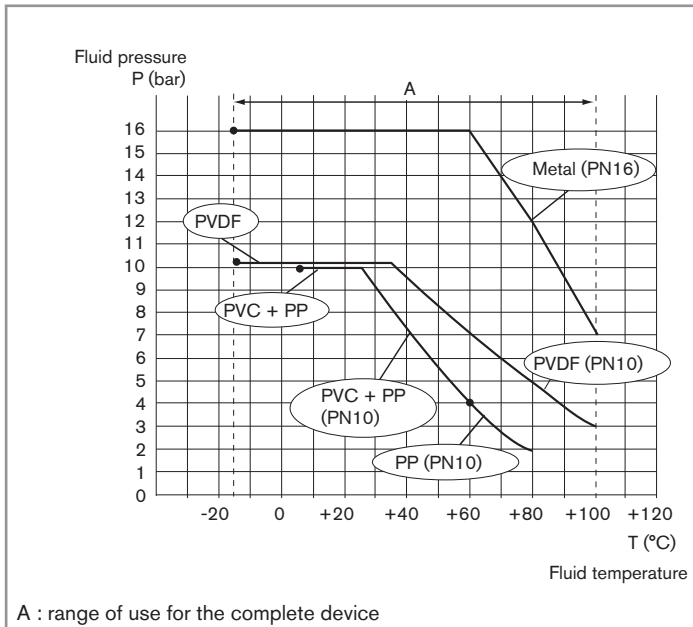


Fig. 1: Fluid pressure / temperature dependency curves

## 7.2. Installation onto the pipe



### DANGER

#### Danger due to high pressure in the installation.

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

#### Danger due to high temperatures of the fluid.

- ▶ Use safety gloves to handle the device.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

#### Danger due to the nature of the fluid.

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.

### 7.2.1. Recommendations for installing the 8011 on the pipe



Check that the DN of the fitting is dimensioned to the process according to the graphs in chap. 7.3.

- Install the device on the pipe in such a way that the upstream and downstream distances are respected according to the design of the pipes, as per Fig. 2 and the EN ISO 5167-1 standard.

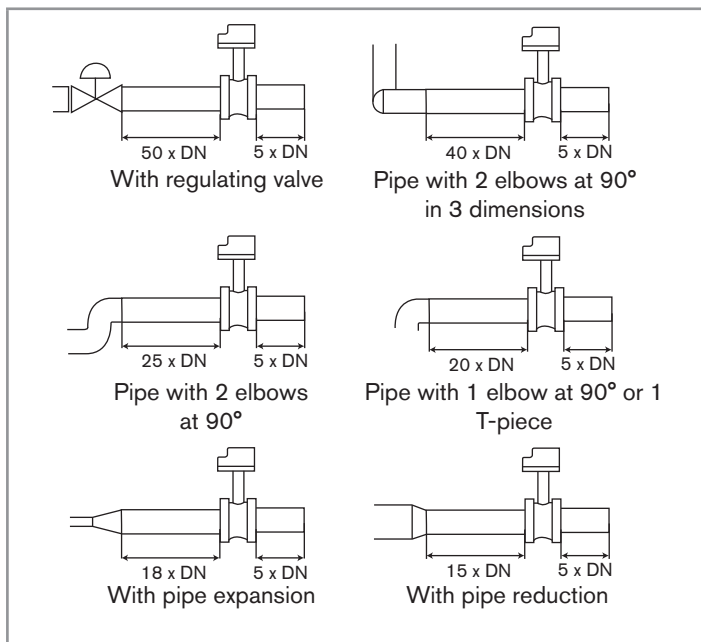


Fig. 2: Upstream and downstream distances depending on the design of the pipes.

- If necessary, use a flow conditioner to improve measurement precision.
- Install the device in such a way that the paddle-wheel axis is horizontal.

- On an horizontal pipe, mount the device in such a way that the paddle-wheel is downwards (Fig. 3).
- Prevent the formation of air bubbles in the pipe in the section around the device (Fig. 4).
- Ensure that the pipe is always filled in the section around the device (Fig. 5).

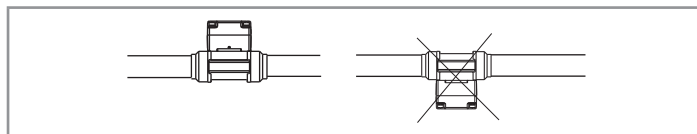


Fig. 3: Paddle-wheel downwards on an horizontal pipe

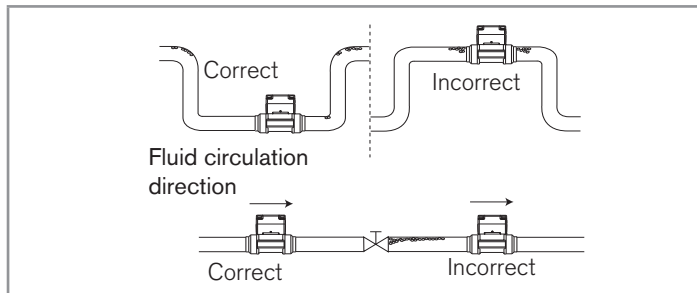
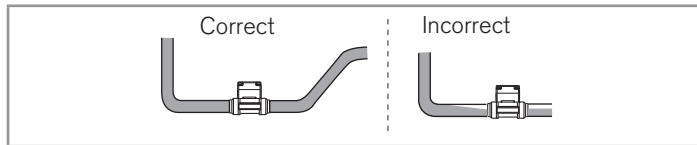


Fig. 4: Air bubbles within the pipe



## Type 8011

### Installation and wiring

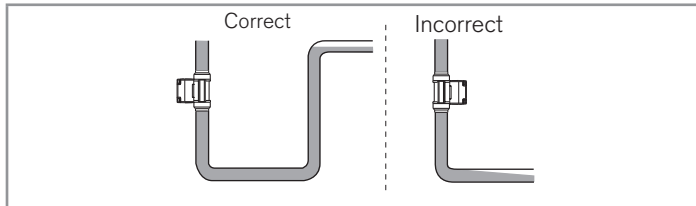


Fig. 5: Filling the pipe

### 7.2.2. Installing a device with welding ends

#### NOTE

**The SE11 electronic module and the seal may be damaged when welding the connections to the pipe.**

- ▶ Before welding to the pipe, unscrew the 4 locking screws on the SE11 electronic module.
- ▶ Remove the electronic module.
- ▶ Remove the seal.

- Follow the installation recommendations in chap. [7.2.2.](#)
- Weld the connections.
- After welding the connections to the pipe, correctly replace the seal.
- Properly replace the electronic module.
- Tighten the 4 screws in an alternating pattern, applying a torque of 1.5 N·m (1.1 ft·lbf).

### 7.2.3. Installing a device with Clamp connections

→ Follow the installation recommendations in chap. [7.2.1.](#)



- Check that the seals are in good condition.
- Place the seals, that have been chosen depending on the process temperature and fluid, into the grooves of the Clamp connections.

→ Fit the Clamp connections to the pipe using a clamping collar.

### 7.2.4. Installing a device with flange connections

→ Follow the installation recommendations in chap. [7.2.1.](#)



- Check that the seals are in good condition.
- Insert a seal, that has been chosen depending on the process temperature and fluid, into the grooves of the connections.

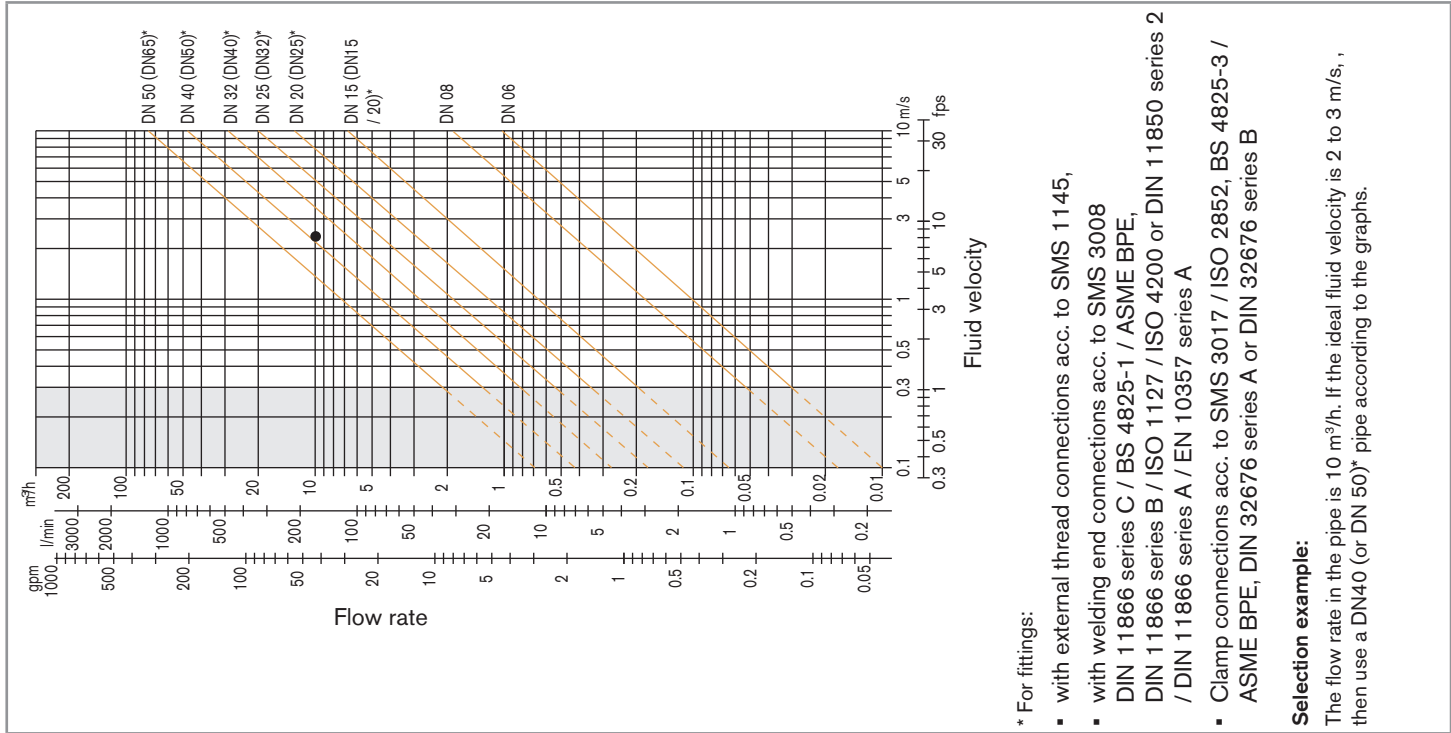


Make sure the seal remains in its groove when tightening the flange.

→ Tighten the flange to mount the device to the pipe.

### 7.3. Graphs

These graphs are used to determine the DN of the pipe and the fitting appropriate to the application, according to the fluid velocity and the flow rate.



## 7.4. Electrical wiring



### DANGER

#### Risk of injury due to electrical discharge

- ▶ If the device is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Shut down and isolate the electrical power source before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.

### NOTE

- ▶ Use cables with an operating temperature limit suitable for your application.
- ▶ Protect the power supply of a version with 2 pulse outputs by means of an 800 mA fuse and a switch.
- ▶ Protect the power supply of a version with 1 pulse output by means of a 50 mA fuse and a switch.



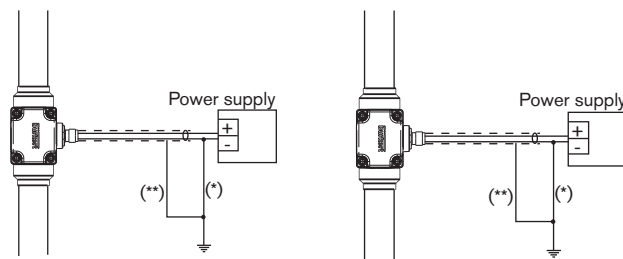
#### Use a high quality electrical power supply (filtered and regulated).

- Under normal conditions of use, cable with a cross section of 0.75 mm<sup>2</sup> should be enough to transmit the signal.
- Do not install the cable near high voltage or high frequency cables.
- If this is unavoidable, keep a minimum distance of 30 cm.



#### Make sure the installation is equipotential (power supply - 8011):

- Connect the different earth connections of the installation to one another in order to remove any differences in potential which may arise between two earth connections.
- Correctly connect the cable shielding to the earth.
- Connect the negative power supply terminal to the earth to eradicate the effects of common mode currents. If this connection cannot be made directly, a 100 nF / 50 V capacitor can be fitted between the negative power supply terminal and the earth.



8011 with cable gland

8011 with M12 fixed connector

\*) If a direct earth connection is not possible, fit a 100 nF / 50 V capacitor between the negative power supply terminal and the earth

\*\*\*) If the cable used is shielded.

### 7.4.1. Assembling the M12 female connector

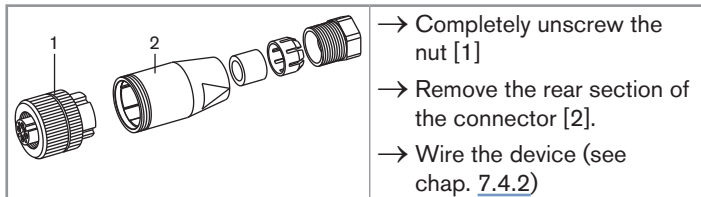


Fig. 6: M12 multi-pin connector (not supplied, article number 917116)

### 7.4.2. Wiring a version with M12 fixed connector

#### NOTE

- For the electrical connection of a version with an M12 fixed connector, use a straight connector.

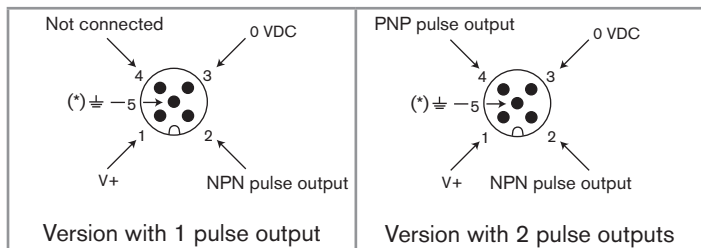


Fig. 7: Pin assignment of the M12 male fixed connector

(\*) Functional earth;

Pin of the M12 female cable available as accessory equipment (article number 438680)	Colour of the wire
1	brown
2	white
3	blue
4	black
5	grey

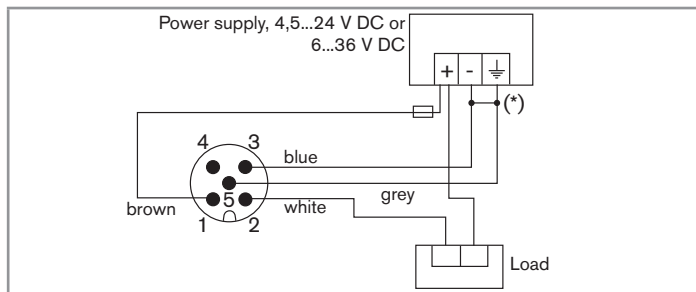


Fig. 8: NPN wiring of the pulse output of a version with M12 fixed connector

(\*) Functional earth; If a direct earth connection is not possible, fit a 100 nF / 50 V capacitor between the negative power supply terminal and the earth.

## Type 8011

### Installation and wiring

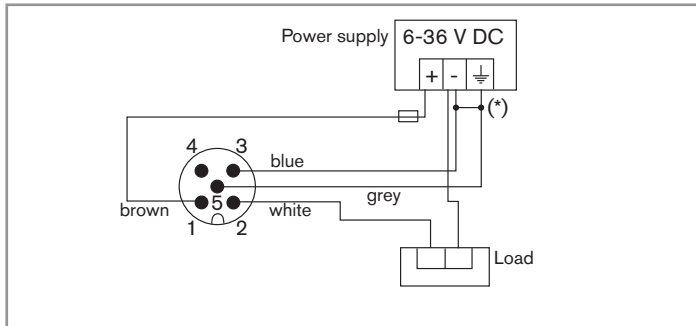


Fig. 9: PNP wiring of the pulse output of a version with M12 fixed connector

(\*) Functional earth; If a direct earth connection is not possible, fit a 100 nF / 50 V capacitor between the negative power supply terminal and the earth.

### 7.4.3. Wiring a version with cable gland

Colour of the wire	BN (brown)	WH (white)	GN (green)	YE (yellow)	GY (grey)
Signal on a version with 1 pulse output	V+	0 V DC	Functional earth	Not connected	NPN
Signal on a version with 2 pulse outputs	V+	0 V DC	Functional earth	PNP	NPN

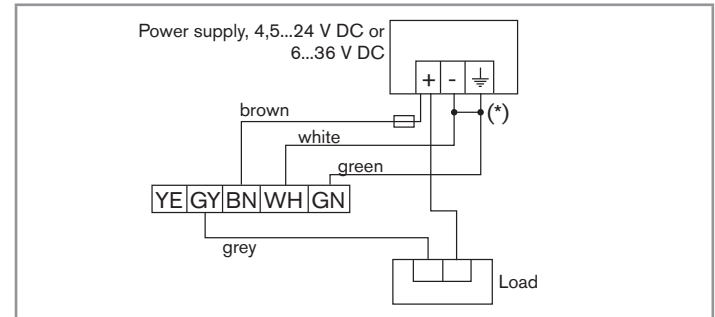


Fig. 10: NPN wiring of the pulse output of a version with cable gland

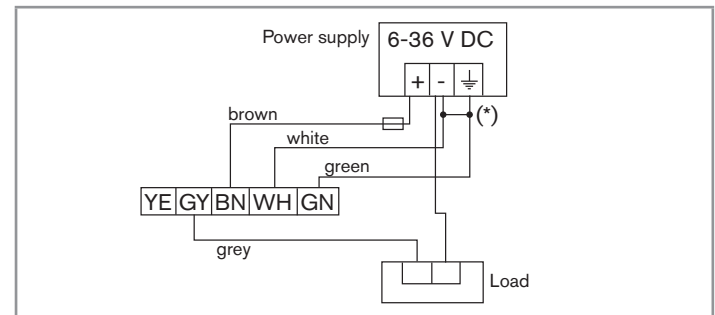


Fig. 11: PNP wiring of the pulse output of a version with cable gland

(\*) Functional earth; If a direct earth connection is not possible, fit a 100 nF / 50 V capacitor between the negative power supply terminal and the earth.

## 8 COMMISSIONING

### 8.1. Safety instructions



#### WARNING

##### **Danger due to nonconforming commissioning.**

Non conforming commissioning may lead to injuries and damage the device and its surroundings.

- ▶ Before commissioning, make sure that the staff in charge have read and fully understood the contents of the manual.
- ▶ In particular, observe the safety recommendations and intended use.
- ▶ The device / the installation must only be commissioned by suitably trained staff.

#### NOTE

##### **Risk of damage to the device due to the environment**

- ▶ Protect this device against electromagnetic interference, ultraviolet rays and, when installed outdoors, the effects of the climatic conditions.

## 9 MAINTENANCE AND TROUBLESHOOTING

### 9.1. Safety instructions



#### DANGER

##### **Risk of injury due to high pressure in the installation.**

- ▶ Stop the circulation of fluid, cut off the pressure and drain the pipe before loosening the process connections.

##### **Risk of injury due to electrical voltage.**

- ▶ If the device is installed either in a wet environment or outdoors, all the electrical voltages must be of max. 35 V DC.
- ▶ Shut down and isolate the electrical power source before carrying out work on the system.
- ▶ Observe all applicable accident protection and safety regulations for electrical equipment.

##### **Risk of injury due to high fluid temperatures.**

- ▶ Use safety gloves to handle the device.
- ▶ Stop the circulation of fluid and drain the pipe before loosening the process connections.

##### **Risk of injury due to the nature of the fluid.**

- ▶ Respect the prevailing regulations on accident prevention and safety relating to the use of aggressive fluids.



**WARNING**

**Risk of injury due to non-conforming maintenance.**

- ▶ Maintenance must only be carried out by qualified and skilled staff with the appropriate tools.
- ▶ Ensure that the restart of the installation is controlled after any interventions.

## 9.2. Cleaning

→ Depending on the nature of the fluid, regularly check for clogging of the paddle-wheel.

**NOTE**

**The device may be damaged by the cleaning liquid.**

- ▶ Clean the device with a cloth slightly dampened with water or a cleaning liquid compatible with the materials the device is made of.

## 9.3. Problem solving

Problem	Recommended action	see chap.
The device does not function	<ul style="list-style-type: none"> <li>▪ Check the wiring</li> <li>▪ Check that the device is energized</li> </ul>	<a href="#">7.4</a>
The pulse output does not work	Check whether the wiring is suitable for the output type, NPN or PNP	<a href="#">7.4</a>
The flow rate measurement is incorrect	Recalculate and change the setting of the K factor	<a href="#">6.9</a>

## 9.4. Replacing the seal

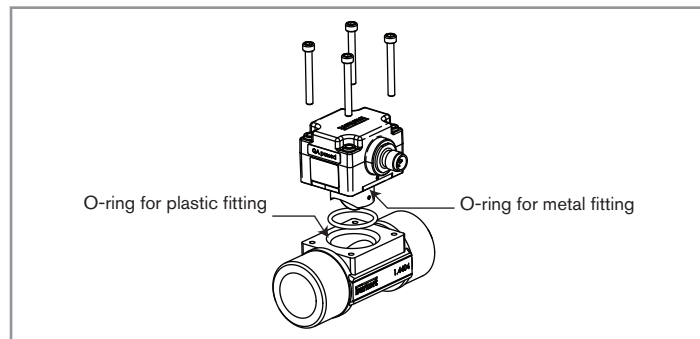


Fig. 12: Exploded view of the 8011

- Unscrew the 4 screws in the electronic module and remove it from the fitting.
- Remove the used seal.
- Clean the surfaces on which the seal is placed.
- Insert the new seal (see [Fig. 12](#)).
- Position the electronic module on the fitting so that the arrow points in the fluid direction on versions with optical sensor.
- Insert the 4 screws into the electronic module (use the long screws for a plastic S012, DN6 or DN8 fitting).
- Tighten the 4 screws in an alternating pattern, to a torque of 1.5 N·m (1.1 ft·lbf).

## 10 SPARE PARTS AND ACCESSORIES



### ATTENTION

**Risk of injury and/or damage caused by the use of unsuitable parts.**

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

- ▶ Use only original accessories and original spare parts from Bürkert.

Spare part	Article number
<b>Seal for metal fitting (Fig. 13)</b>	
FKM (DN6 to DN65)	<b>426340</b>
EPDM (DN6 to DN65)	<b>426341</b>
<b>Set of 2 O-rings for end pieces (true union connections only) + 1 flat seal and 1 O-ring for the SE11 electronic module connection (Fig. 14)</b>	
FKM - DN8	<b>448679</b>
FKM - DN15	<b>431555</b>
FKM - DN20	<b>431556</b>
FKM - DN25	<b>431557</b>
FKM - DN32	<b>431558</b>
FKM - DN40	<b>431559</b>
FKM - DN50	<b>431560</b>

Spare part	Article number
EPDM - DN8	<b>448680</b>
EPDM - DN15	<b>431561</b>
EPDM - DN20	<b>431562</b>
EPDM - DN25	<b>431563</b>
EPDM - DN32	<b>431564</b>
EPDM - DN40	<b>431565</b>
EPDM - DN50	<b>431566</b>
Set of screws: 4 short screws (M4x35 - A4) + 4 long screws (M4x60 - A4)	<b>555775</b>

Accessory	Article number
5-pin M12 female connector, moulded on shielded cable (2 m)	<b>438680</b>
5-pin M12 female connector, to be wired	<b>917116</b>

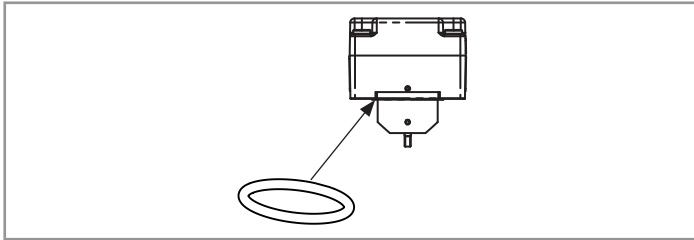


Fig. 13: Seal for metal fitting

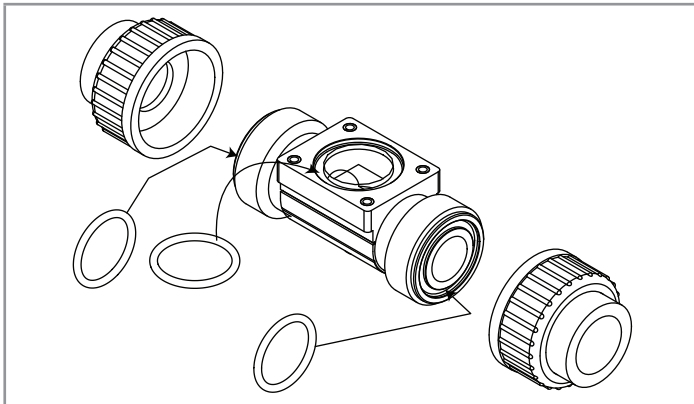


Fig. 14: Seals for plastic fitting

## 11 PACKAGING, TRANSPORT, STORAGE

### ATTENTION

#### Damage due to transport

Transport may damage an insufficiently protected device.

- ▶ Transport the device in shock-resistant packaging and away from humidity and dirt.
- ▶ Do not expose the device to temperatures that may exceed the admissible storage temperature range.
- ▶ Protect the electrical interfaces using protective plugs.

#### Poor storage can damage the device.

- ▶ Store the device in a dry place away from dust.
- ▶ Storage temperature:  $-15...+60\text{ }^{\circ}\text{C}$ .

## 12 DISPOSAL OF THE PRODUCT

→ Dispose of the device and its packaging in an environmentally-friendly way.

### NOTE

#### Damage to the environment caused by parts contaminated by the fluid.

- ▶ Comply with the national and/or local regulations which concern the area of waste disposal.

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