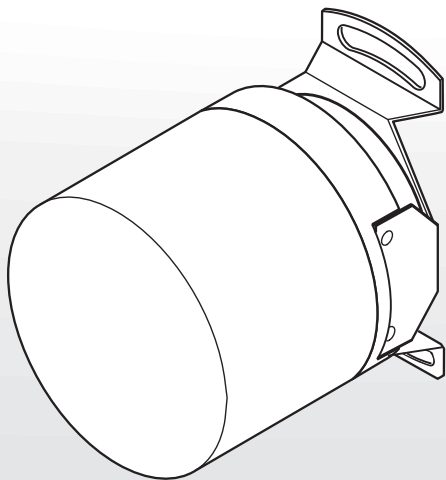




**HEIDENHAIN**



**ERN/ECN/EQN 10xx**

Mounting Instructions

## Table of contents

<b>1</b>	<b>Basic information.....</b>	<b>4</b>
<b>2</b>	<b>Safety.....</b>	<b>8</b>
<b>3</b>	<b>Items supplied and accessories.....</b>	<b>10</b>
<b>4</b>	<b>Mounting.....</b>	<b>11</b>
<b>5</b>	<b>Removal.....</b>	<b>15</b>

<b>1</b>	<b>Basic information.....</b>	<b>4</b>
1.1	Validity of the documentation.....	4
1.2	Target groups of the Mounting Instructions.....	4
1.3	Notes on reading the documentation.....	5
1.4	Symbols and fonts used for marking text.....	6
1.5	Notes in this documentation.....	7
1.6	Units and tolerances.....	7
<b>2</b>	<b>Safety.....</b>	<b>8</b>
2.1	Personnel qualification.....	8
2.2	General safety precautions.....	8
<b>3</b>	<b>Items supplied and accessories.....</b>	<b>10</b>
3.1	Items supplied.....	10
3.2	Mounting accessories.....	10
<b>4</b>	<b>Mounting.....</b>	<b>11</b>
4.1	Prerequisites and notes.....	11
4.2	<b>Assembly variant I: Mounting with screws.....</b>	<b>12</b>
4.2.1	Materials and tools.....	12
4.2.2	Mounting the encoder.....	12
4.3	<b>Assembly variant II: Mounting with washers.....</b>	<b>13</b>
4.3.1	Materials and tools.....	13
4.3.2	Mounting the encoder.....	13
4.4	<b>Final steps.....</b>	<b>14</b>
4.4.1	Connecting the encoder.....	14
<b>5</b>	<b>Removal.....</b>	<b>15</b>
5.1	Safety precautions regarding removal.....	15
5.2	Removing the encoder.....	15

## 1 Basic information

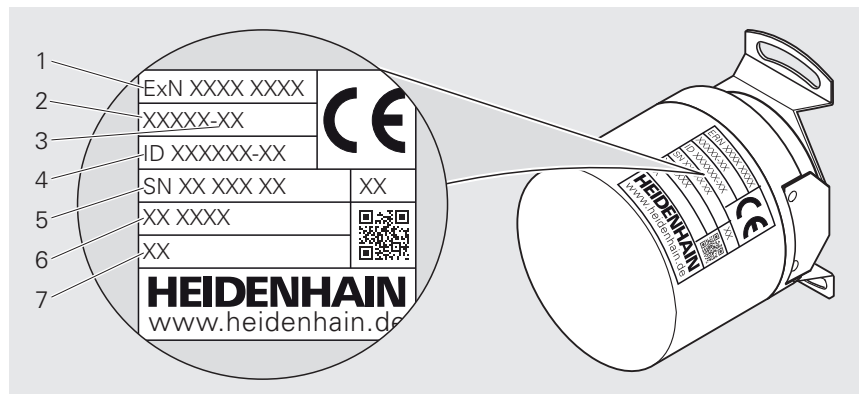
This chapter contains information about the product and the Mounting Instructions.

### 1.1 Validity of the documentation

These Mounting Instructions apply to encoders of the ERN/ECN/EQN 10xx series.

- Prior to using the documentation, check whether the documentation and encoder model match. The encoder designation is printed on the ID label.

#### ID label



ID label with legend

- 1 Product name and line count
- 2 Electrical connection
- 3 Assignment
- 4 Part number (ID)
- 5 Serial number (SN)
- 6 Supply voltage
- 7 Interface

### 1.2 Target groups of the Mounting Instructions

The Mounting Instructions must be read and observed by every person who performs any of the following tasks:

- Design
- Mounting
- Removal

### 1.3 Notes on reading the documentation

#### **WARNING**

##### **Fatal accidents, personal injury or property damage caused by non-compliance with the documentation!**

Failure to comply with the documentation may result in fatal accidents, personal injury or property damage.

- ▶ Read the documentation carefully from beginning to end
- ▶ Keep the documentation for future reference

The following table lists the various parts of the documentation in their order of reading priority.

Document type	Description
Addendum	An Addendum supplements or supersedes the corresponding contents of the Operating Instructions and, if applicable, of the Mounting Instructions. If an Addendum is included in the shipment, it has the highest priority for reading. All other documentation content retains its validity.
Operating Instructions	The Operating Instructions contain all of the information and safety instructions for the proper and intended operation of the product. The Operating Instructions (English language version) are included in delivery and can also be downloaded in other languages from <b><a href="http://www.heidenhain.com/documentation">www.heidenhain.com/documentation</a></b> . The Operating Instructions must be read prior to initial operation the product. The Operating Instructions have the second highest priority for reading.
Mounting Instructions	The Mounting Instructions contain all the information and safety precautions needed for the proper mounting and installation of a product. The Mounting Instructions are not included in delivery and must be downloaded from <b><a href="http://www.heidenhain.com/documentation">www.heidenhain.com/documentation</a></b> . The Mounting Instructions have the third highest priority for reading.

#### **Have you found any errors or would you like to suggest changes?**

We are continuously striving to improve our documentation for you. Please help us by sending your suggestions to the following e-mail address:

**[userdoc@heidenhain.de](mailto:userdoc@heidenhain.de)**

## 1.4 Symbols and fonts used for marking text

In these instructions the following symbols and fonts are used for marking text:

Format	Meaning
▶ ...	Identifies an action and the result of this action
> ...	Example: ▶ Tilt the shipping brace to remove it <b>(c)</b> > The shipping brace has been removed now
■ ...	Identifies an item of a list
■ ...	Example: ■ Solid contaminants: class 3 ■ Max. pressure dew point: class 4
<b>Bold</b>	Identifies elements in figures and illustrations, such as positions, dimensions and worksteps Example: <b>S</b> marks the beginning of the measuring length <b>(ML)</b> . Identifies further documents and web addresses Example: For more information, refer to the <b>Rotary Encoders</b> brochure.

## 1.5 Notes in this documentation

### Safety precautions

Precautionary statements warn of hazards in handling the product and provide information on their prevention. Precautionary statements are classified by hazard severity and divided into the following groups:

#### DANGER

**Danger** indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **will result in death or severe injury**.

#### WARNING

**Warning** indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **could result in death or serious injury**.

#### CAUTION

**Caution** indicates hazards for persons. If you do not follow the avoidance instructions, the hazard **could result in minor or moderate injury**.

#### NOTICE

**Notice** indicates danger to material or data. If you do not follow the avoidance instructions, the hazard **could result in property damage**.

### Informational notes

Informational notes ensure reliable and efficient operation of the product. Informational notes are divided into the following groups:



The information symbol indicates a **tip**.  
A tip provides important additional or supplementary information.



The book symbol indicates a **cross reference**.  
A cross reference leads to external documentation, for example: further documentation from HEIDENHAIN or another supplier.

## 1.6 Units and tolerances

Unless otherwise specified, the dimensions stated in these Mounting Instructions are given in millimeters.

Unless otherwise specified, the tolerances stated in these Mounting Instructions correspond to ISO 8015 and ISO 2768:1989-mH standards.

mm



Tolerancing ISO 8015  
ISO 2768:1989-mH  
≤ 6 mm: ±0.2 mm

## 2 Safety

This chapter provides important safety information needed for the proper mounting and installation of the product.

### 2.1 Personnel qualification

Mounting, initial configuration and removal must be conducted by a qualified specialist under compliance with local safety regulations.

### 2.2 General safety precautions

#### WARNING

##### **Danger of electric shock due to connection to unsuitable downstream electronics!**

If you connect unsuitable downstream electronics to the product, fatal accidents or severe personal injuries can occur.

- ▶ Connect the product only to downstream electronics whose supply voltage comes from PELV systems

#### WARNING

##### **Live plug connections**

If you disengage plug connections while the equipment is under power, this may result in fatal accidents or severe personal injury.

- ▶ Do not engage or disengage any connecting elements while the product is under power

#### WARNING

##### **Risk of injury from damaged or worn components!**

Safety functions can fail if damaged or worn components are installed. Failed safety functions can result in death or serious injury.

- ▶ Do not use any damaged or worn components
- ▶ In case of replacement, use new screws, spring pins and nuts

#### WARNING

##### **Risk of injury due to improper assembly work!**

Safety functions can fail if assembly is performed incorrectly. Failed safety functions can result in death or serious injury.

- ▶ Further assembly requirements must be defined by the machine manufacturer
- ▶ Note the machine manufacturer's assembly requirements
- ▶ After assembly, perform an acceptance test according to the machine manufacturer's requirements

**⚠ WARNING****Moving machine parts**

Risk of injury due to moving machine parts depending on the installation location and the application

- ▶ Observe all of the machine manufacturer's notes on working on the machine, e.g., always disconnect the machine from the power supply

**⚠ WARNING****Hot surface due to high operating temperatures**

Serious burns and skin injuries can be caused by touching the surface of the encoder.

- ▶ Never touch the encoder, unless it has cooled down completely

**NOTICE****Property damage due to mechanical stress**

- ▶ Do not drop the product or subject it to major vibration
- ▶ Do not expose the product to mechanical stress
- ▶ Do not change the physical structure of the product

**NOTICE****Property damage due to electrical stress**

- ▶ Do not engage or disengage any connecting elements while the product is under power
- ▶ Do not touch the contacts of the plug connections

**NOTICE****Electrostatic discharge (ESD)!**


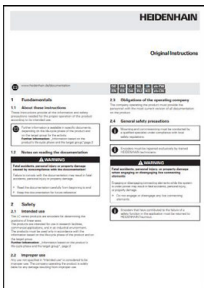
This product contains electrostatic sensitive components that can be destroyed by electrostatic discharge (ESD).

- ▶ It is essential to observe the safety precautions for handling ESD-sensitive components
- ▶ Never touch connecting contacts without ensuring proper grounding
- ▶ Wear a grounded ESD wristband when handling product connections

### 3 Items supplied and accessories

This chapter contains information on the items supplied and the available accessories of the product.

#### 3.1 Items supplied

Component	Figure
Encoder	
Operating Instructions	

#### 3.2 Mounting accessories

Accessories can be obtained separately from HEIDENHAIN.



For more information, please refer to the Infobase.

- ▶ [www.heidenhain.com/documentation](http://www.heidenhain.com/documentation)
- ▶ Enter the product ID
- ▶ Open the brochure
- ▶ In the brochure, open the “Mechanical design types and mounting” section

## 4 Mounting

This chapter describes the mounting prerequisites, different mounting variants, and all other tasks necessary when mounting.

### 4.1 Prerequisites and notes

The mounting surface and the surface of the encoder must be clean and free from grease.



For more information, please refer to the Infobase.

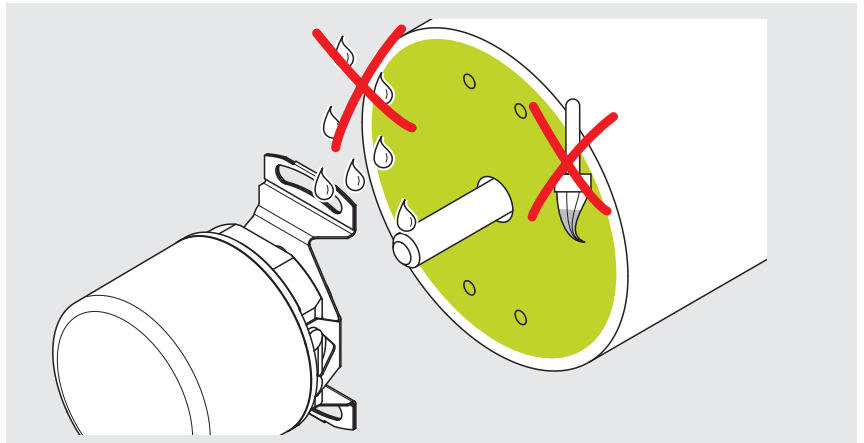
- ▶ [www.heidenhain.com/documentation](http://www.heidenhain.com/documentation)
- ▶ Enter the product ID
- ▶ Open the brochure
- ▶ In the brochure, open the "General Mechanical Information" section

#### NOTICE

##### Property damage due to inappropriate tools

Using inappropriate tools for mounting or removal of the encoder may cause damage to the encoder.

- ▶ Do not use hammers
- ▶ Do not use pointed or sharp-edged tools



## 4.2 Assembly variant I: Mounting with screws

### 4.2.1 Materials and tools

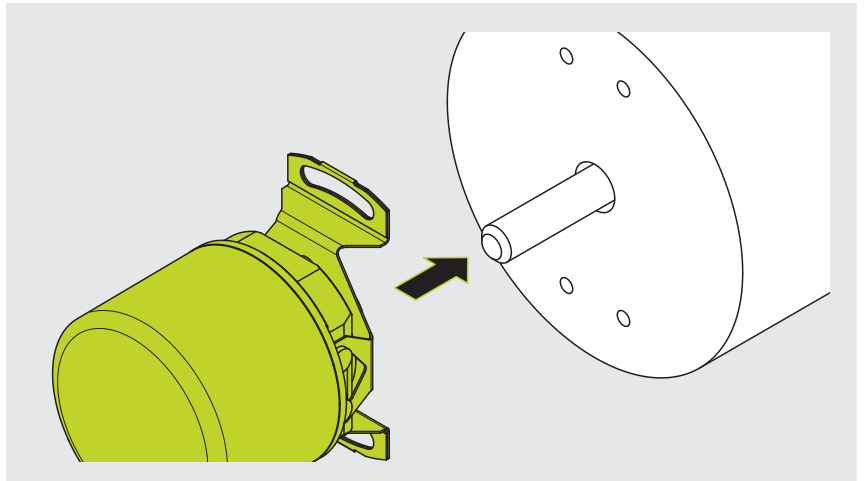


For more information, refer to the mating dimensions and the brochure.

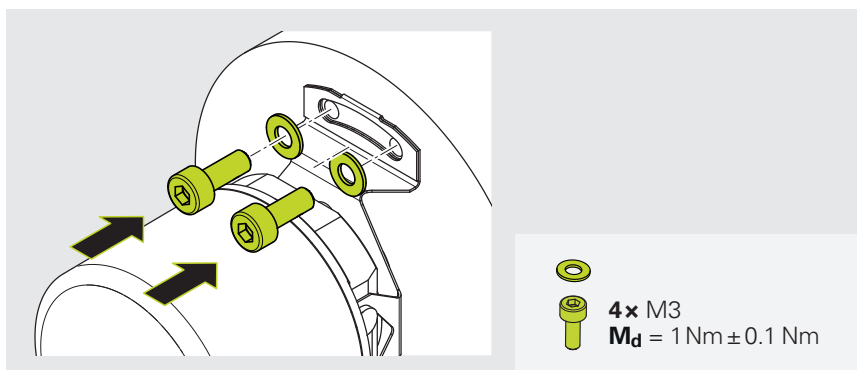
- ▶ [www.heidenhain.com/documentation](http://www.heidenhain.com/documentation)
- ▶ Enter the product ID
- ▶ Open the mating dimensions and the brochure
- ▶ In the brochure, open the "Mechanical design types and mounting" section

### 4.2.2 Mounting the encoder

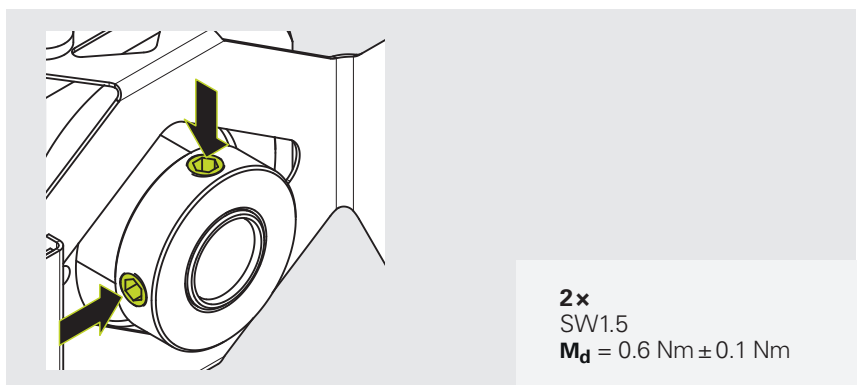
- ▶ Place the encoder on the machine shaft



- ▶ Tighten the screws with the specified torque



- ▶ Tighten the screws on the clamping ring with the specified torque



**Further information:** "Final steps",  
Page 14

## 4.3 Assembly variant II: Mounting with washers

### 4.3.1 Materials and tools

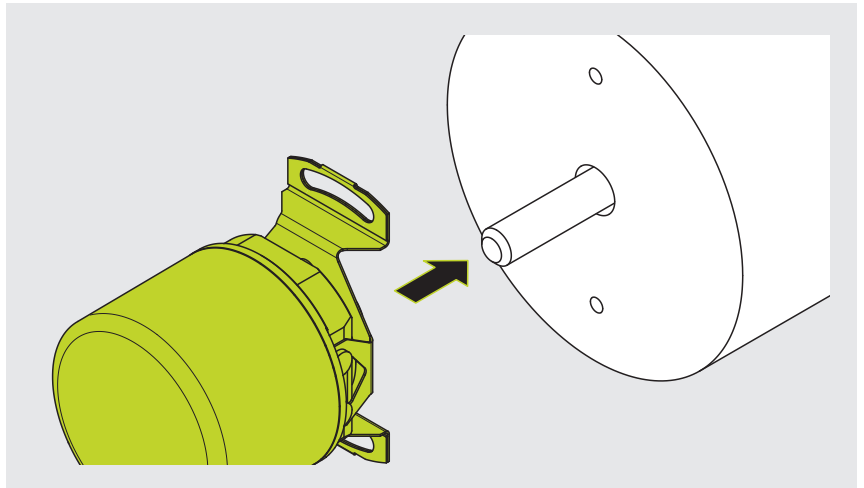


For more information, refer to the mating dimensions and the brochure.

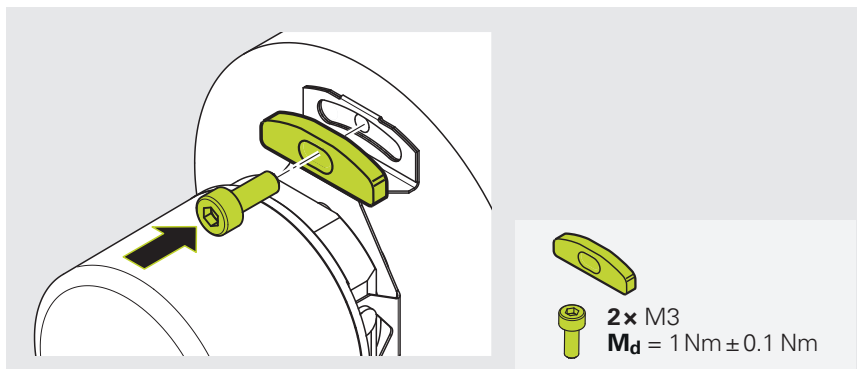
- ▶ [www.heidenhain.com/documentation](http://www.heidenhain.com/documentation)
- ▶ Enter the product ID
- ▶ Open the mating dimensions and the brochure
- ▶ In the brochure, open the "Mechanical design types and mounting" section

### 4.3.2 Mounting the encoder

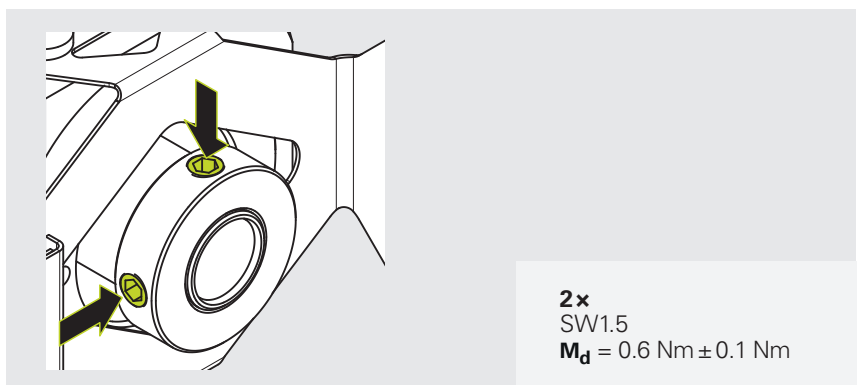
- ▶ Place the encoder on the machine shaft



- ▶ Apply the washer
- ▶ Tighten the screws with the specified torque



- ▶ Tighten the screws on the clamping ring with the specified torque



**Further information:** "Final steps",  
Page 14

## 4.4 Final steps

### 4.4.1 Connecting the encoder

#### **WARNING**

##### **Danger of electric shock due to plug connections under voltage**

Connecting and disconnecting live cables and plug connections in the equipment can result in death or serious injury.

- Only connect and disconnect cables and plug connections when no current is flowing through them
- Disconnect the downstream electronics from power before connecting the encoder
- For cables without connectors, pay attention to the pin layout

- ▶ Connect the encoder to the downstream electronics

#### **NOTICE**

##### **Property damage resulting from incorrect routing of the connecting cable**

Connecting cables may become damaged as a result of incorrect routing.

- ▶ Observe the maximum permissible bend radii
- ▶ Do not cross connecting cables in drag chains
- ▶ Route connecting cables professionally

## 5 Removal

This chapter describes the disassembly of the product.

### 5.1 Safety precautions regarding removal

#### WARNING

##### Live plug connections

If you disengage plug connections while the equipment is under power, this may result in fatal accidents or severe personal injury.

- ▶ Do not engage or disengage any connecting elements while the product is under power

#### WARNING

##### Moving machine parts

Risk of injury due to moving machine parts depending on the installation location and the application

- ▶ Observe all of the machine manufacturer's notes on working on the machine, e.g., always disconnect the machine from the power supply

#### WARNING

##### Hot surface due to high operating temperatures

Serious burns and skin injuries can be caused by touching the surface of the encoder.

- ▶ Never touch the encoder, unless it has cooled down completely

### 5.2 Removing the encoder

- ▶ Disconnect the encoder from the downstream electronics
- ▶ Remove the encoder in the reversed sequence of mounting.

**Further information:** "Mounting", Page 11

# HEIDENHAIN

## DR. JOHANNES HEIDENHAIN GmbH

Dr.-Johannes-Heidenhain-Straße 5

**83301 Traunreut, Germany**

☎ +49 8669 31-0

☎ +49 8669 32-5061

info@heidenhain.de

**Technical support** ☎ +49 8669 32-1000

**Measuring systems** ☎ +49 8669 31-3104

service.ms-support@heidenhain.de

**NC support** ☎ +49 8669 31-3101

service.nc-support@heidenhain.de

**NC programming** ☎ +49 8669 31-3103

service.nc-pgm@heidenhain.de

**PLC programming** ☎ +49 8669 31-3102

service.plc@heidenhain.de

**APP programming** ☎ +49 8669 31-3106

service.app@heidenhain.de

**www.heidenhain.com**