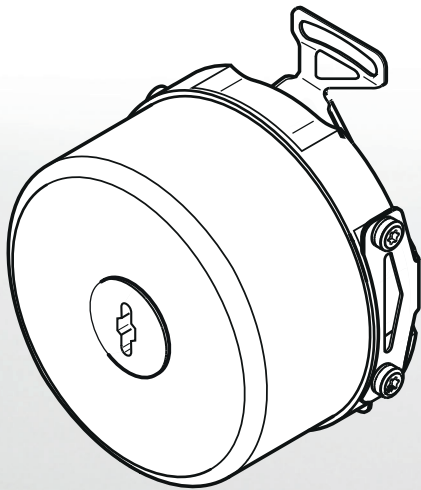




HEIDENHAIN



ECN 4xx

EQN 4xx

ERN 4xx

Mounting Instructions

WELLA1: 67F

KUPPA1: 14

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1 Basic information

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

1.1 Applicability of the documentation

These Mounting Instructions are valid for the ECN 4xx, EQN 4xx, ERN 4xx.

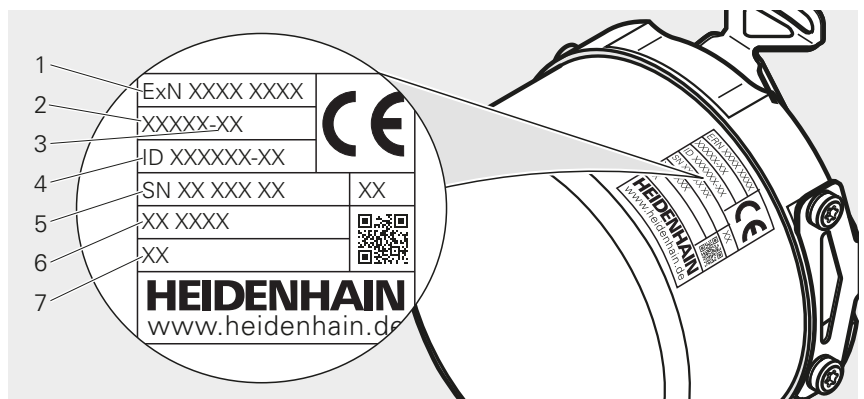
Prior to using the documentation, check whether the documentation and product match. To do so, compare these Mounting Instructions with the document assigned to the product on the HEIDENHAIN Corporate Website.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the product ID (the product ID is indicated on the ID label)
- ▶ Select the product
- ▶ Select the **Mounting Instructions** category and open the PDF file
- ▶ Compare the document IDs given in these Mounting Instructions and in the PDF file



The document ID given in these Mounting Instructions and the document ID on the last page of the PDF file must be identical.

ID label



ID label with legend

- 1 Product name and line count
- 2 Electrical connection
- 3 Assignment
- 4 Product ID / 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 device. The Operating Instructions (English language version) are included in delivery and can also be downloaded in other languages from www.heidenhain.com/documentation . The Operating Instructions must be read prior to initial operation of 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 www.heidenhain.com/documentation . The Mounting Instructions have the third highest priority for reading.

Would you like any changes, or have you found any errors?

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

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: <ul style="list-style-type: none">▶ Tilt the shipping brace to remove it (c)> The shipping brace has been removed now
■ ...	Identifies an item of a list
■ ...	Example: <ul style="list-style-type: none">■ Solid contaminants: class 3■ Max. pressure dew point: class 4

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.



The globe symbol represents a **cross reference** to a source on the Internet, e.g. www.heidenhain.de.

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)!**


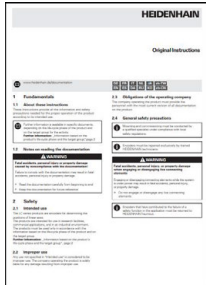
This product contains electrostatic sensitive components that can be destroyed by electrostatic discharge (ESD).

- ▶ 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 ordered separately from HEIDENHAIN.



For more information, refer to the **Rotary Encoders** brochure

- ▶ www.heidenhain.com/documentation
- ▶ Enter the brochure ID **349529**
- ▶ Open the brochure
- ▶ In the brochure, open the "Mechanical design types and mounting" section

4 Mounting

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

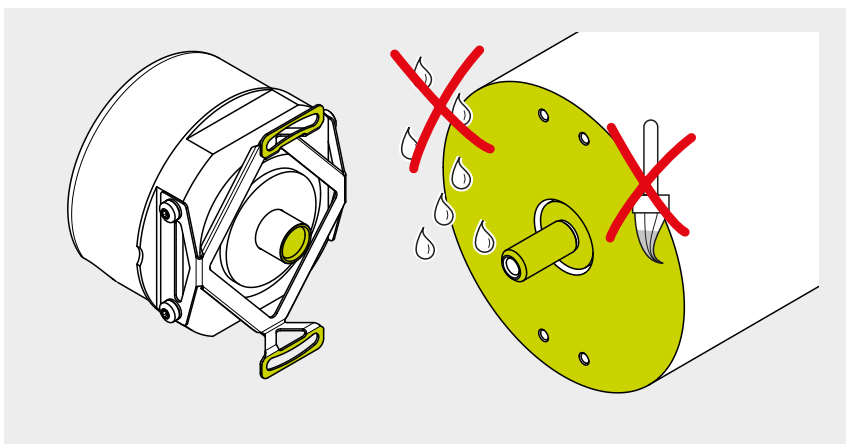
4.1 Requirements and notes

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



For more information, refer to the **Rotary Encoders** brochure

- ▶ www.heidenhain.com/documentation
- ▶ Enter the brochure ID **349529**
- ▶ 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

NOTICE

Property damage due to unsuitable cleaning agents

- ▶ Do not clean the encoder with organic solvents such as thinners, alcohol, or mineral spirits

4.2 Materials and tools



For more information, refer to the **Rotary Encoders** brochure

- ▶ www.heidenhain.com/documentation
- ▶ Enter the brochure ID **349529**
- ▶ Open the brochure
- ▶ In the brochure, open the "Mechanical design types and mounting" section

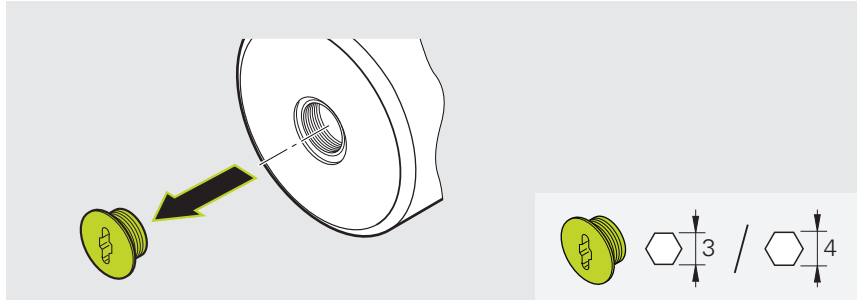
4.3 Mounting the encoder



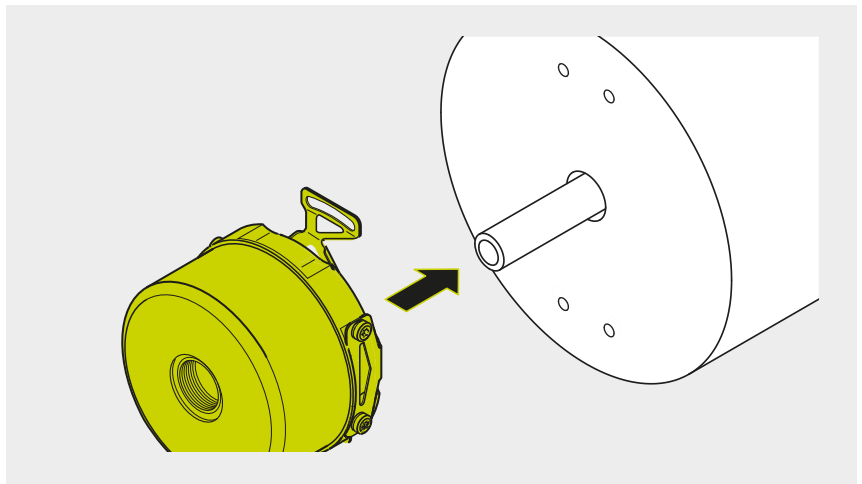
For more information on mounting, refer to the **Mating Dimensions** document.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the product ID
- ▶ Open **Mating Dimensions**

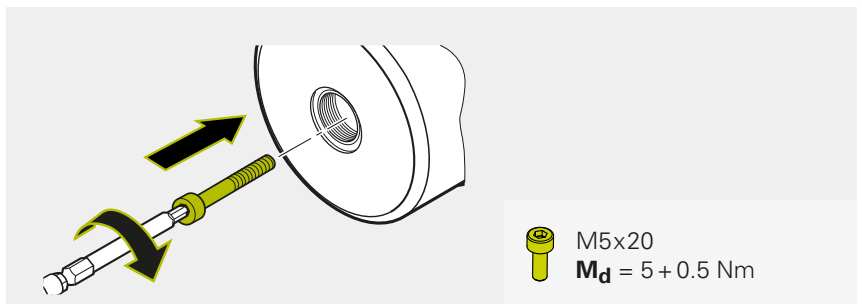
- ▶ Remove the filler plug



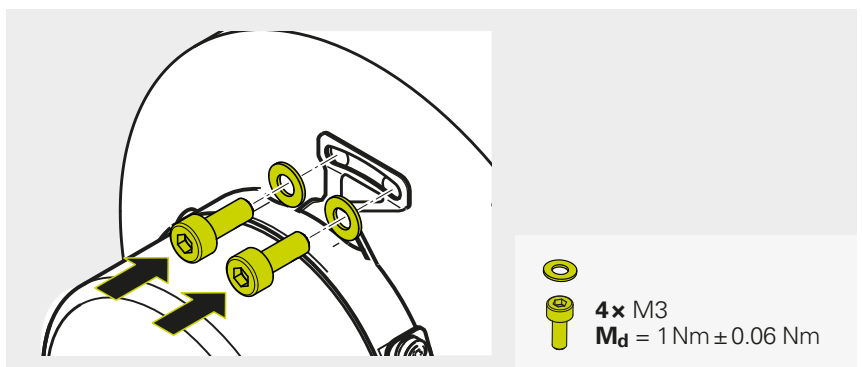
- ▶ Place the encoder on the machine shaft



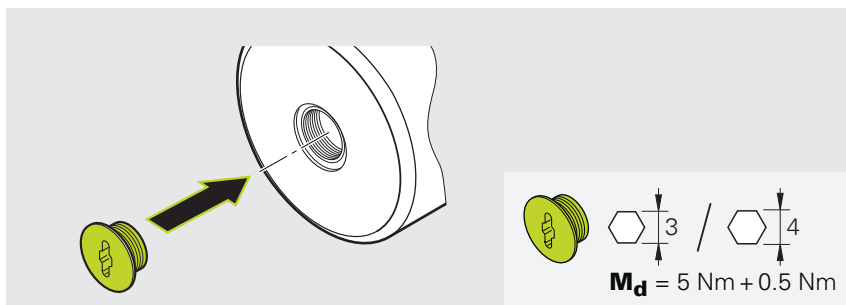
- ▶ Tighten the central screw with the specified torque



- ▶ Tighten the four screws and the four washers with the specified torque to fasten the stator coupling.



- Tighten the filler plug with the specified torque



Next step: "Final steps", Page 13

5 Final steps

5.1 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 product
- 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

5.2 Electrical connection, cable and connector



For more information, refer to the **Cables and Connectors** brochure.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the document ID **1206103**
- ▶ Open the brochure
- ▶ In the brochure, open the "**General information**" section



For more information on sources of interference, refer to the **Interfaces of HEIDENHAIN Encoders** brochure.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the document ID **1078628**

6 Removal

This chapter describes the disassembly of the product.

6.1 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

6.2 Removing the encoder

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

Further information: "Mounting", Page 10

HEIDENHAIN

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