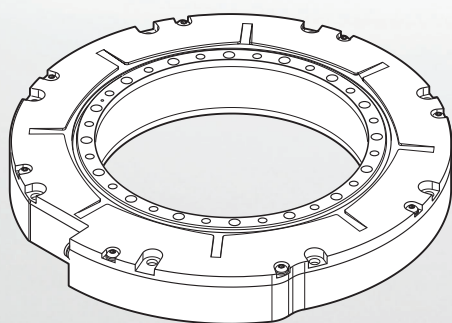




HEIDENHAIN



RCN 63x0

Mounting Instructions

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1 Basic information

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

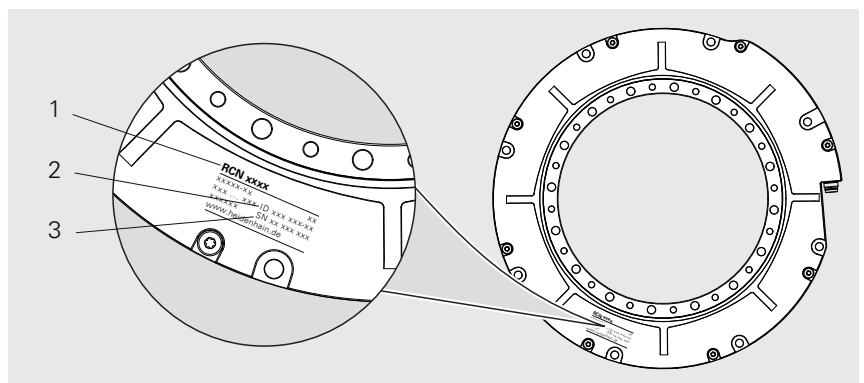
1.1 Validity of the documentation

These Mounting Instructions apply to RCN 63x0.

► Before using the documentation, check whether the documentation and product model match

The designation of the product is printed on the ID label.

ID label



- 1 Product name
- 2 Product ID / Part number (ID)
- 3 Serial number (SN)

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



If an Addendum is included in delivery, it supplements or supersedes the relevant contents of the documents listed in the Operating Instructions.

The Operating Instructions are included in delivery and contain all of the information and safety instructions for the proper and intended operation of the product.

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: ▶ Tilt the shipping brace to remove it (c) > The shipping brace has been removed now
■ ...	Identifies an item of a list
■ ...	Example: ■ 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 things other than personal injury, such as 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.com

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 conform to ISO 8015 and ISO 2768 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 setup 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

Risk of injury due to plug connections under voltage!

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!

If you unintentionally install damaged or worn components, safety functions can fail. Failed safety functions can result in death or serious injury.

- ▶ Inspect the component for damage
- ▶ Do not use any damaged or worn components
- ▶ In case of replacement, repair the thread
- ▶ Use new fastening elements (e.g. screws, spring pins and nuts).
- ▶ Secure screws and nuts with suitable material-bonding anti-rotation lock

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**Risk of injury due to moving machine parts!**

Moving machine parts can cause accidents resulting in severe personal injury.

- ▶ Comply with local safety regulations and the machine manufacturer's requirements.

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

Exposing the product to mechanical stress can cause damage to the product.

- ▶ 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!**

Improper handling of the connecting element can cause damage to the product.

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

NOTICE**Property damage due to electrostatic discharge (ESD)!**

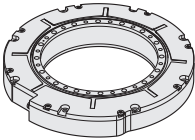
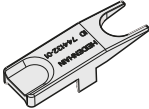
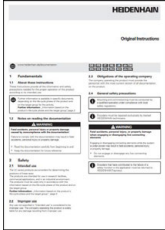
This product contains electrostatically sensitive components that can be destroyed by electrostatic discharge (ESD).

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

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	
Disassembly tool for connecting cable	
Operating Instructions	
Quality Inspection Document	

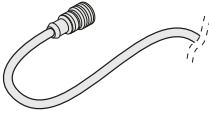
3.2 Mounting accessories

The following accessories can be ordered separately from HEIDENHAIN.



For more information, refer to the **Angle Encoders with Integral Bearing** brochure.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the document ID **591109**

Designation	ID	Figure
Connecting cable		

4 Mounting

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

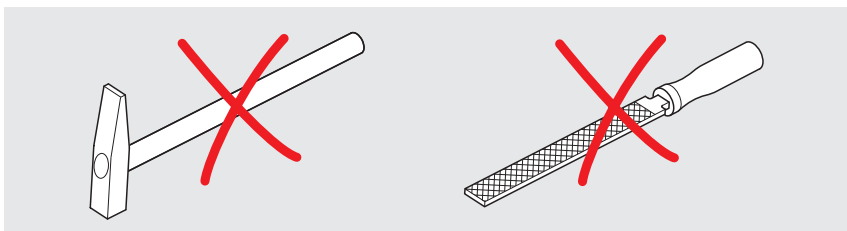
4.1 Requirements and notes

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 aggressive media

The use of aggressive media or organic solvents such as thinners, alcohol, or ligroin causes damage to the encoder.

- ▶ Never use aggressive media or organic solvents



The mounting surfaces must be clean and free of burrs.



All information on screw connections is based on a mounting temperature of 15 °C to 35 °C.

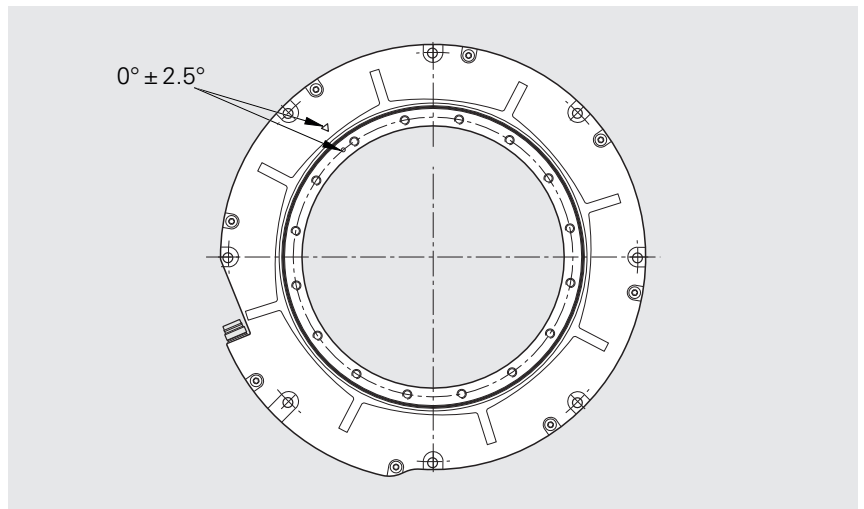


For more information on mounting, refer to the **Mating Dimensions** document.

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

Zero position

If the zero position is relevant in the application, pay attention to the alignment of the zero position marks during mounting.



4.2 Connecting the cable

4.2.1 Materials and tools

For this task, the following materials and tools are needed:

Included in delivery

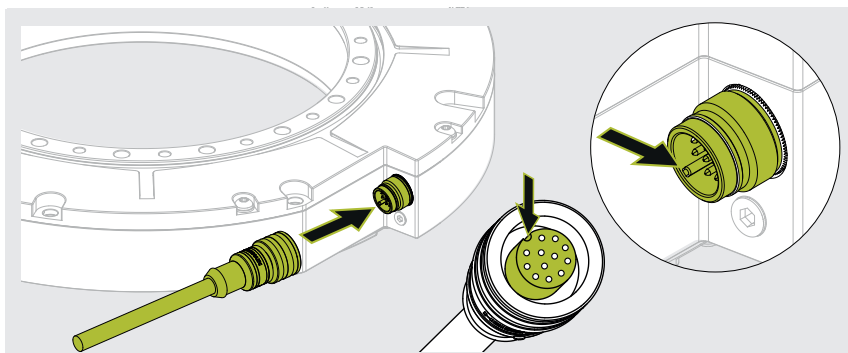
To be provided separately

- Connecting cable

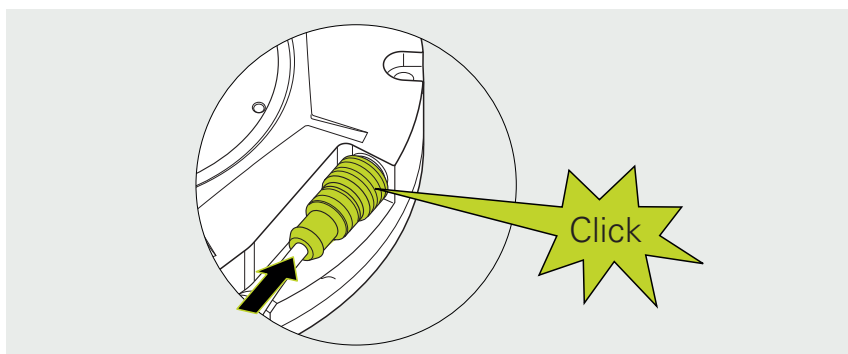
4.2.2 Connecting the cable

- ▶ Connect the cable to the mating socket of the encoder

i Pay attention to the correct alignment of the connector.



- ▶ Ensure that the cable engages in the mating socket



For more information on the pin layout of the product, refer to the **Pin Layout** document

- ▶ www.heidenhain.com/documentation
- ▶ Enter the product ID
- ▶ Open the **Pin Layout**



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

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

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



For more information on the cable characteristics and cable routing, refer to the **Cables and Connectors** brochure.

- ▶ **www.heidenhain.com/documentation**
- ▶ Enter the document ID **1206103**



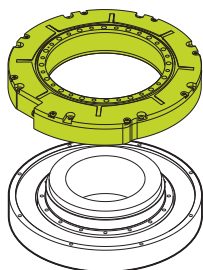
For more information on the pin layouts of pre-assembled cables, refer to the **Cables and Connectors** brochure.

- ▶ **www.heidenhain.com/documentation**
- ▶ Enter the document ID **1206103**

4.3 Choosing the mounting variant

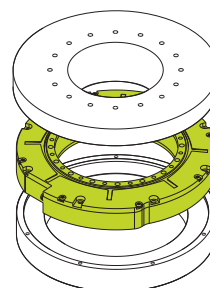
Mounting variants for the shaft coupling

Shaft coupling via through hole



Page 17

Shaft coupling via thread

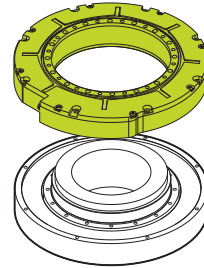


Page 19

4.4 Mounting variant I: Shaft coupling via through hole

This chapter describes the shaft coupling via the through hole.

An overview of the mounting variants is provided on Page 16.



4.4.1 Materials and tools

For this task, the following materials and tools are needed:

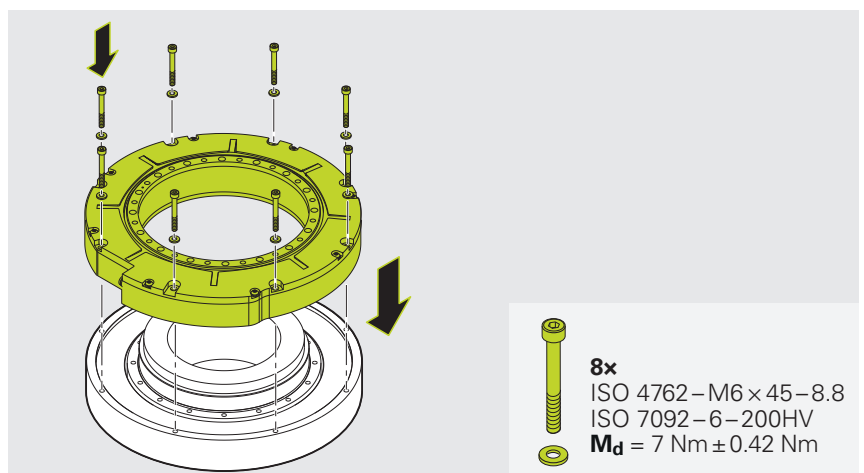
Included in delivery

To be provided separately

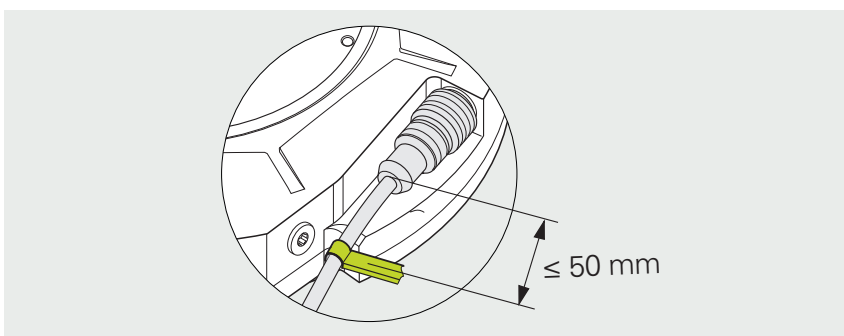
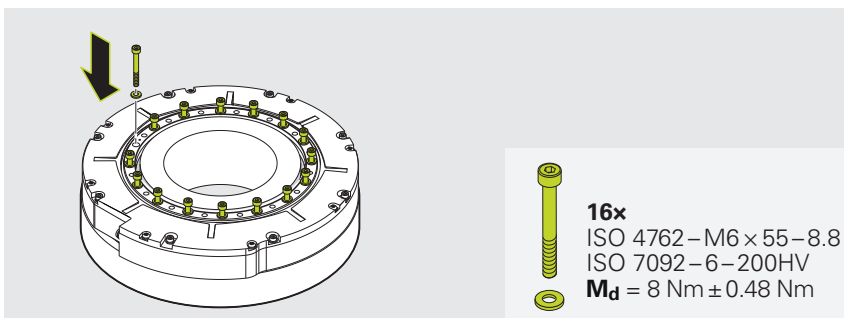
- Suitable material bonding anti-rotation lock (medium strength, removable)
- 8 screws (ISO 4762 – M6 × 45 – 8.8)
- 8 washers (ISO 7092 – 6 – 200HV)
- 16 screws (ISO 4762 – M6 × 55 – 8.8)
- 16 washers (ISO 7092 – 6 – 200HV)
- Torque wrench (hexagon socket for 5 mm)
- Cable fastening

4.4.2 Mounting the encoder

- ▶ Slide the encoder onto the machine shaft
- ▶ Apply material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers into the encoder
- ▶ Tighten the screws crosswise with the specified torque



- ▶ Apply material bonding anti-rotation lock (medium strength, removable) to the screws
 - ▶ Insert the screws and washers into the encoder
 - ▶ Tighten the screws crosswise with the specified torque
-
- ▶ Attach the cable fastening with the specified distance

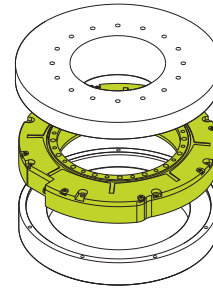


Next step: "Connecting the encoder"

4.5 Mounting variant II: Shaft coupling via thread

This chapter describes the shaft coupling via the thread.

An overview of the mounting variants is provided on Page 16.



4.5.1 Materials and tools

For this task, the following materials and tools are needed:

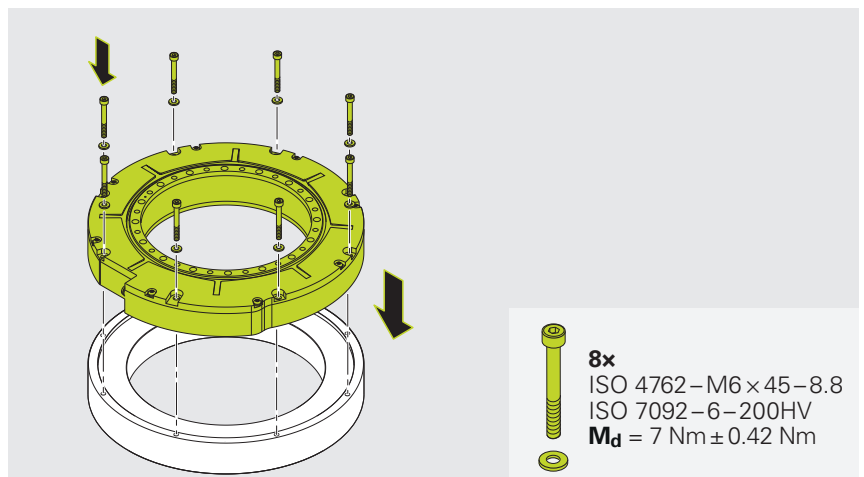
Included in delivery

To be provided separately

- Mounting element (adapted to the design)
- Suitable material bonding anti-rotation lock (medium strength, removable)
- 8 screws (ISO 4762 – M6 × 45 – 8.8)
- 8 washers (ISO 7092 – 6 – 200HV)
- 16 screws (ISO 4762 – M6 × L1 – 8.8)
- 16 washers (ISO 7092 – 6 – 200HV)
- Torque wrench (hexagon socket for 5 mm)
- Cable fastening

4.5.2 Mounting the encoder

- ▶ Slide the encoder onto the machine shaft
- ▶ Apply material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers into the encoder
- ▶ Tighten the screws crosswise with the specified torque



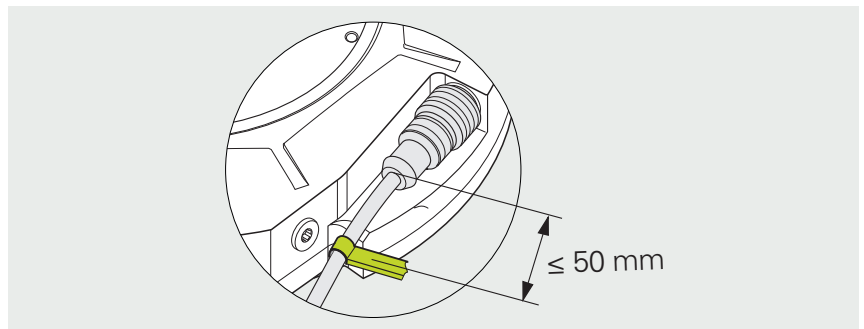
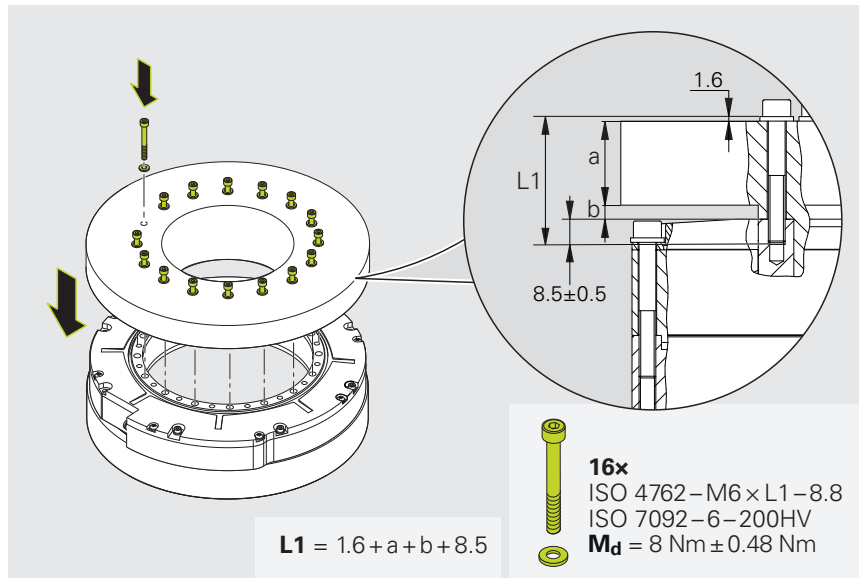
- ▶ Position the mounting element onto the encoder. Pay attention to the orientation of the holes
- ▶ Apply the material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers into the encoder

NOTICE

Damage due to improper mounting of the mounting element

Improper mounting can lead to jamming of the mounting element, thus causing damage to the encoder.

- ▶ Tighten the screws only crosswise by half a turn at a time
 - ▶ Ensure that the mounting element does not get jammed in the encoder
- ▶ Tighten the screws crosswise with the specified torque
 - ▶ Attach the cable fastening with the specified distance



Next step: "Connecting the encoder"

4.6 Final steps

This chapter describes the necessary final steps.

4.6.1 Connecting the encoder to the downstream electronics

Connecting the encoder

WARNING

Danger of electric shock due to plug connections under power!

Connecting and disconnecting live cables and connecting elements in the equipment can result in death or serious injury.

- ▶ Do not connect or disconnect any cable or connecting element when they are under power
- ▶ Disconnect the downstream electronics from power before connecting the product
- ▶ For cables without connectors, pay attention to the pin layout

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

- ▶ Connect the encoder to the downstream electronics



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

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



For more information on the cable characteristics and cable routing, refer to the **Cables and Connectors** brochure.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the document ID **1206103**



For more information on the pin layouts of pre-assembled cables, refer to the **Cables and Connectors** brochure.

- ▶ www.heidenhain.com/documentation
- ▶ Enter the document ID **1206103**

5 Removal

This chapter describes the disassembly of the product.

5.1 Safety precautions regarding removal

WARNING

Risk of injury due to plug connections under voltage!

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 due to improper disassembly work!

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

- ▶ Further disassembly requirements must be defined by the machine manufacturer
- ▶ Note the machine manufacturer's disassembly requirements

WARNING

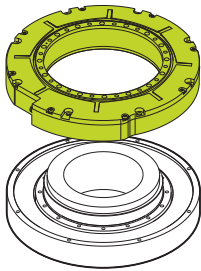
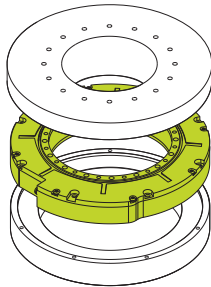
Risk of injury due to moving machine parts!

Moving machine parts can cause accidents resulting in severe personal injury.

- ▶ Comply with local safety regulations and the machine manufacturer's requirements.

5.2 Disassembly variants

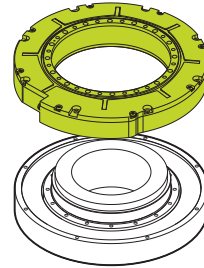
The removal procedure depends on the selected mounting variant.

Mounting variants for the shaft coupling	
Shaft coupling via through hole	Shaft coupling via thread
	
Page 24	Page 26

5.3 Removal variant I: Shaft coupling via through hole

This chapter describes the removal process for the shaft coupling via through hole variant.

An overview of the mounting variants is provided on Page 16.



5.3.1 Materials and tools

For this task, the following materials and tools are needed:

Included in delivery

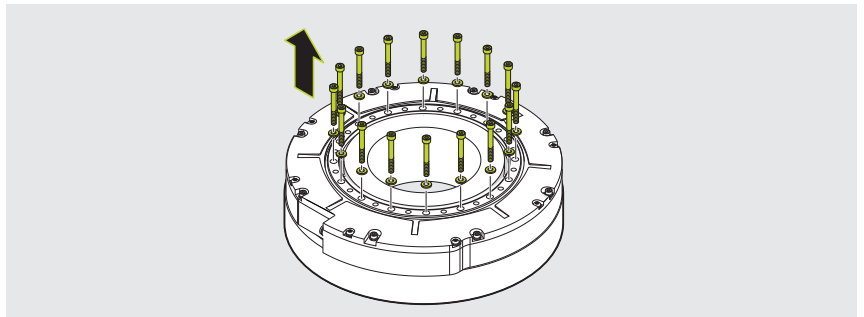
- Disassembly tool for connecting cable

To be provided separately

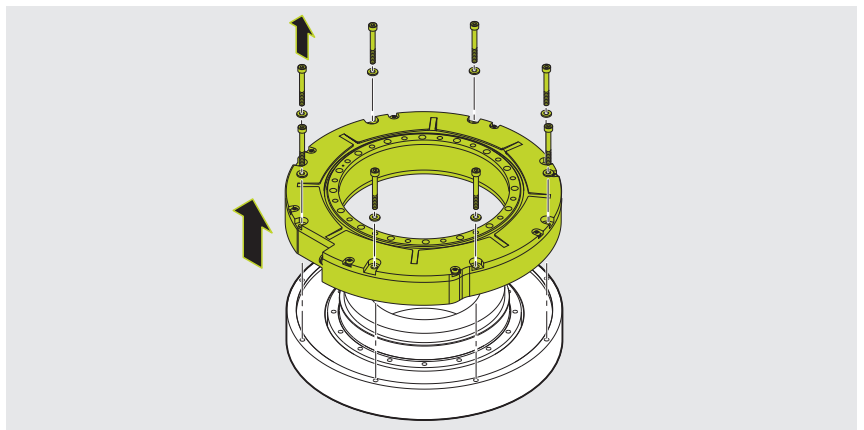
- Allen key (5 mm)

5.3.2 Removing the encoder

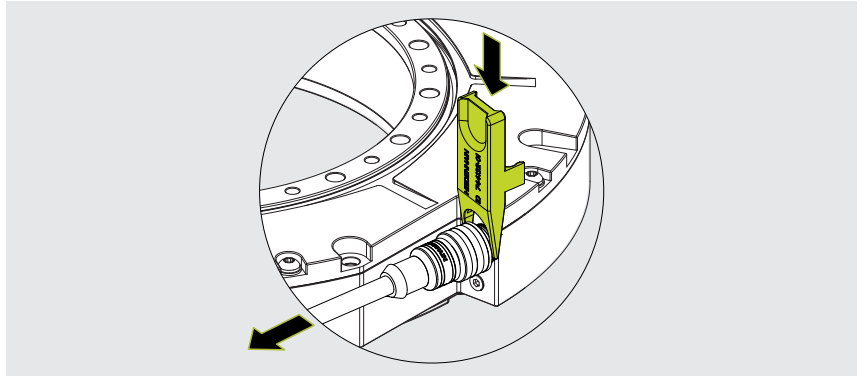
- ▶ Remove the cable fastening
- ▶ Loosen the screws and remove them including the washers



- ▶ Loosen the screws on the encoder and remove them including the washers
- ▶ Remove the encoder



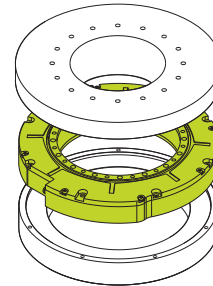
- ▶ Loosen the connecting cable with the disassembly tool
- ▶ Remove the cable



5.4 Removal variant II: Shaft coupling via thread

This chapter describes the removal process for the shaft coupling via thread variant.

An overview of the mounting variants is provided on Page 16.



5.4.1 Materials and tools

For this task, the following materials and tools are needed:

Included in delivery

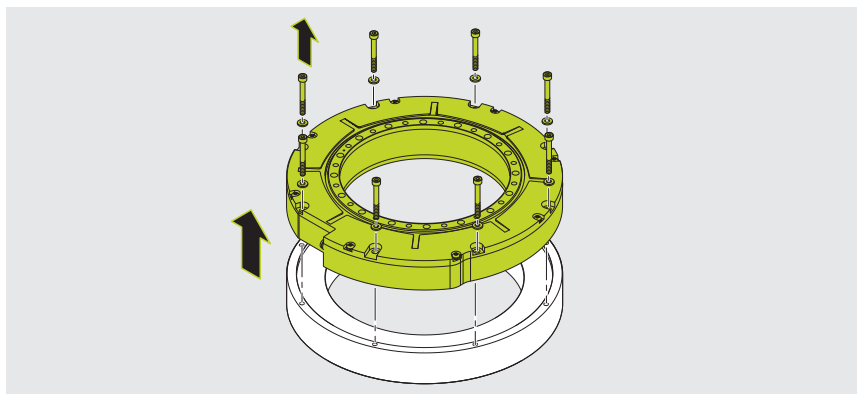
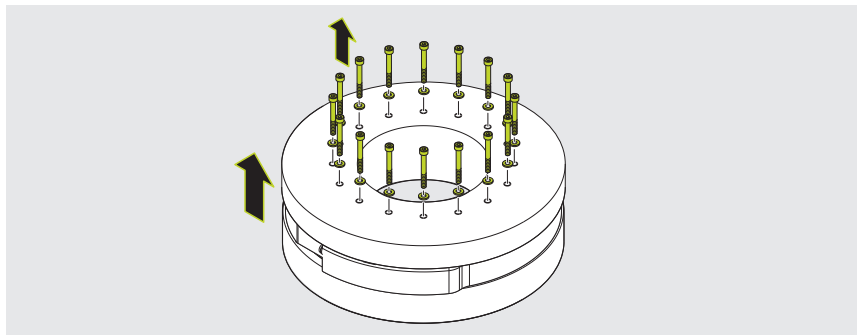
- Disassembly tool for connecting cable

To be provided separately

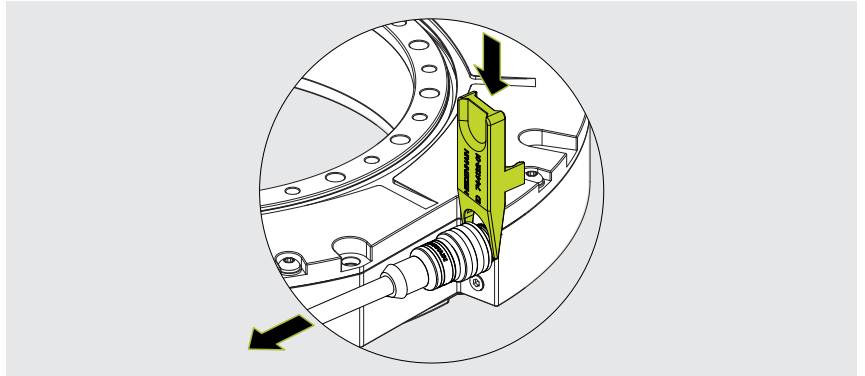
- Allen key (5 mm)

5.4.2 Removing the encoder

- ▶ Remove the cable fastening
- ▶ Loosen the screws on the mounting element and remove them including the washers
- ▶ Remove the mounting element
- ▶ Loosen the screws and remove them including the washers
- ▶ Remove the encoder



- ▶ Loosen the connecting cable with the disassembly tool
- ▶ Remove the cable



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