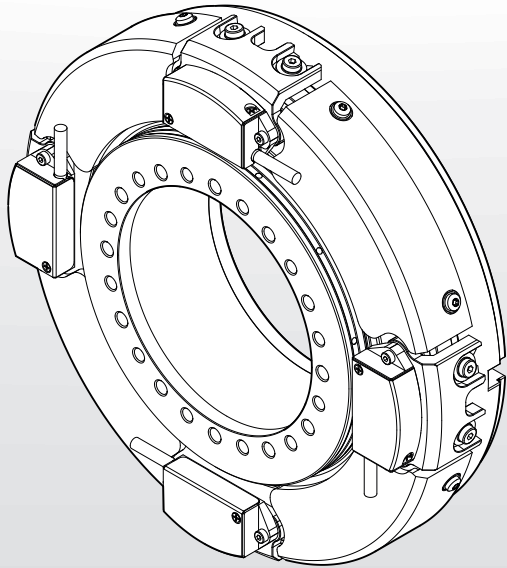




HEIDENHAIN



MRP 8181 *Dplus*
Mounting Instructions

Table of contents

1	Basic information.....	4
2	Safety.....	8
3	Items supplied and accessories.....	10
4	Mounting.....	11
5	Removal.....	17

1	Basic information.....	4
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
2	Safety.....	8
2.1	Personnel qualification.....	8
2.2	General safety precautions.....	8
3	Items supplied and accessories.....	10
3.1	Items supplied.....	10
4	Mounting.....	11
4.1	Mounting variants.....	12
4.1.1	Mounting variant I.....	13
4.1.2	Mounting variant II.....	14
4.1.3	Mounting variant III.....	15
4.2	Final steps.....	16
4.2.1	Connecting the encoder.....	16
5	Removal.....	17
5.1	Safety precautions regarding removal.....	17
5.2	Removing the encoder.....	17

1 Basic information

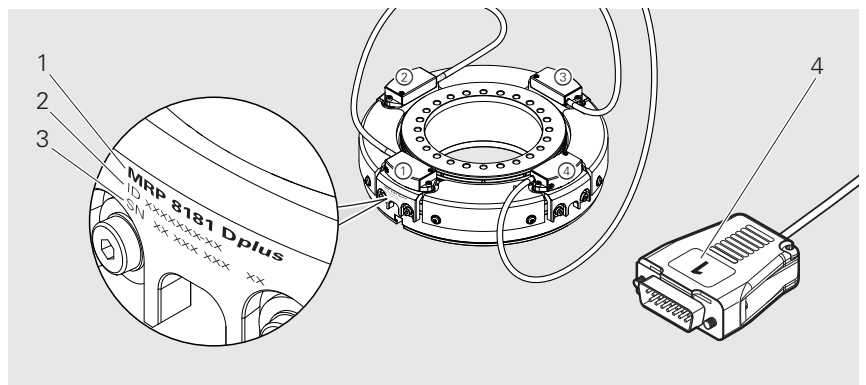
This chapter contains information about the product and the Mounting Instructions.

1.1 Validity of the documentation

These Mounting Instructions apply to encoders of the MRP 8181 Dplus 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
- 2** Part number (ID)
- 3** Serial number (SN)
- 4** Scanning head number

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 www.heidenhain.com/documentation . 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 www.heidenhain.com/documentation . 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

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
Bold	Identifies elements in figures and illustrations, such as positions, dimensions and worksteps Example: S marks the beginning of the measuring length (ML) .

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 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 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.

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

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

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)!**

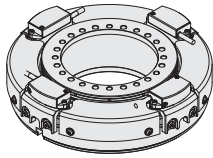
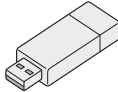
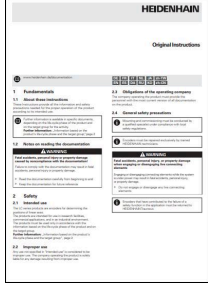


This product contains electrostatic sensitive components that can be destroyed by electrostatic discharge (ESD).

- ▶ It is essential to observe the safety precautions for handling ESD-sensitive components
- ▶ Never touch 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	
USB flash drive with compensation data file	
Operating Instructions	
Quality Inspection Certificate System accuracy	
Quality Inspection Certificate Radial guideway accuracy	

4 Mounting

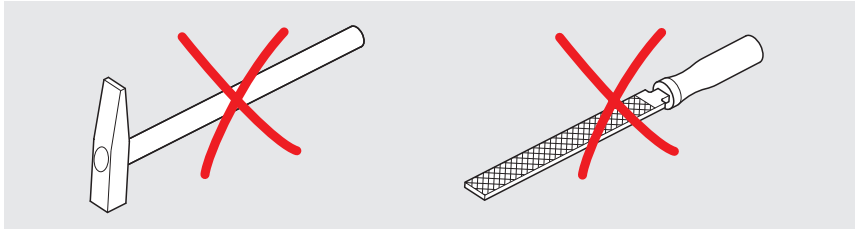
This chapter describes the mounting prerequisites, different mounting variants, and all other tasks necessary when mounting.

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.

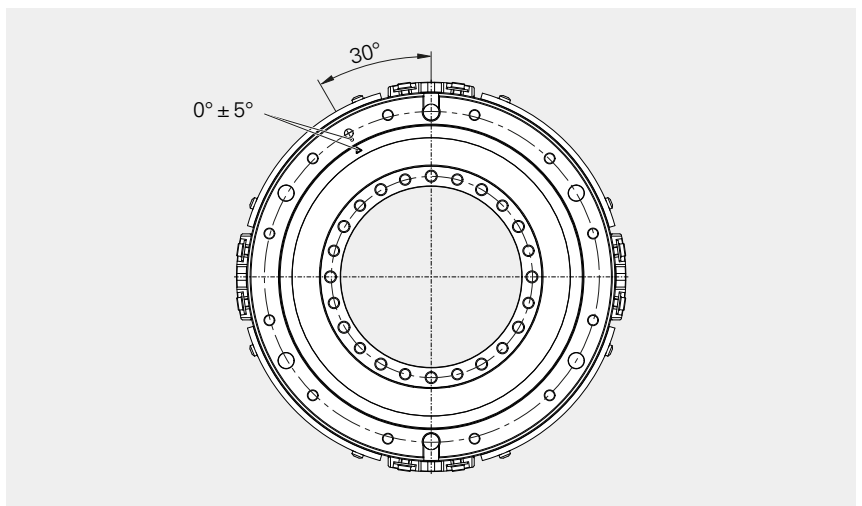
- ▶ Never use aggressive media or organic solvents



The mounting surfaces must be clean and free of burrs.

Zero position

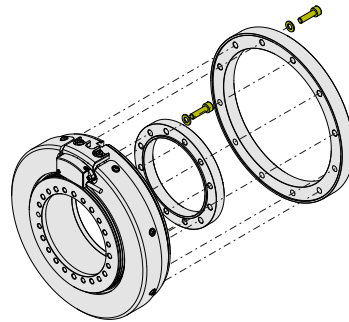
If the zero position is relevant in the application, pay attention to the alignment of the zero position marks during mounting.



4.1 Mounting variants

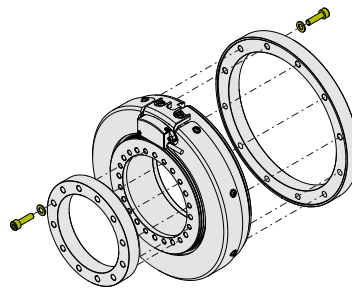
Mounting variants

Mounting variant I



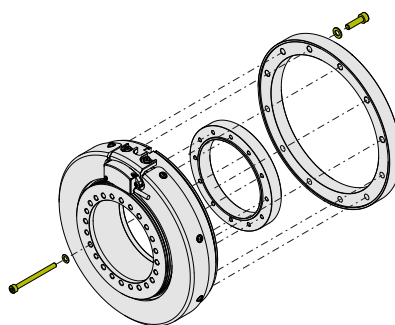
Page 13

Mounting variant II



Page 14

Mounting variant III



Page 15

4.1.1 Mounting variant I

Materials and tools

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

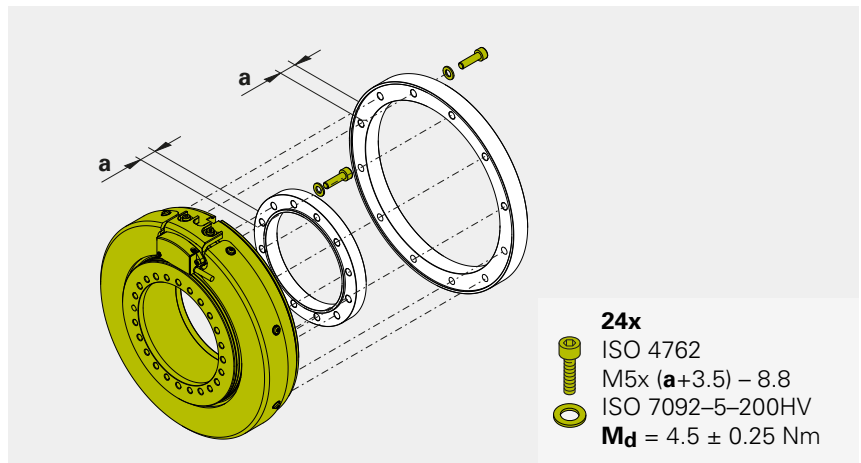
Included in delivery

To be provided separately

- Suitable material bonding anti-rotation lock
- 24 screws (ISO 4762 – M5x (a+6) – 8.8)
- 24 washers (ISO 7092 – 5 – 200HV)
- Torque wrench (hexagon socket for 4 mm)
- Caliper gauge

To mount the encoder

- ▶ Position the encoder to the mounting holes
- ▶ Apply the material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers
- ▶ Tighten the screws crosswise, half a turn at a time, until the tightening torque is reached



Further information: "Connecting the encoder", Page 16

4.1.2 Mounting variant II

Materials and tools

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

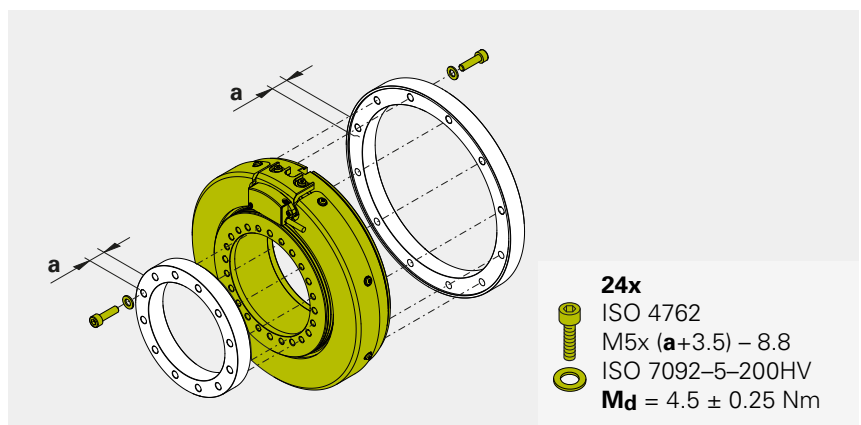
Included in delivery

To be provided separately

- Suitable material bonding anti-rotation lock
- 24 screws (ISO 4762 – M5x (a+6) – 8.8)
- 24 washers (ISO 7092 – 5 – 200HV)
- Torque wrench (hexagon socket for 4 mm)
- Caliper gauge

To mount the encoder

- ▶ Position the encoder to the mounting holes
- ▶ Apply the material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers
- ▶ Tighten the screws crosswise, half a turn at a time, until the tightening torque is reached



Further information: "Connecting the encoder", Page 16

4.1.3 Mounting variant III

Materials and tools

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

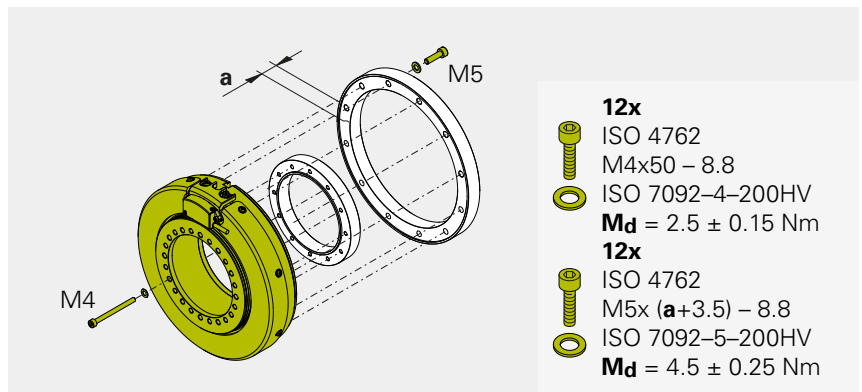
Included in delivery

To be provided separately

- Suitable material bonding anti-rotation lock
- 12 screws (ISO 4762 – M4x50 – 8.8)
- 12 screws (ISO 4762 – M5x (**a**+6) – 8.8)
- 12 washers (ISO 7092 – 4 – 200HV)
- 12 washers (ISO 7092 – 5 – 200HV)
- Torque wrench (hexagon socket for 4 mm)
- Caliper gauge

To mount the encoder

- ▶ Position the encoder to the mounting holes
- ▶ Apply the material bonding anti-rotation lock (medium strength, removable) to the screws
- ▶ Insert the screws and washers
- ▶ Tighten the screws crosswise, half a turn at a time, until the tightening torque is reached



Further information: "Connecting the encoder", Page 16

4.2 Final steps

4.2.1 Connecting the encoder

To connect 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



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, refer to the **Cables and Connectors** brochure.

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



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

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

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

5.2 Removing the encoder

- ▶ Remove the encoder in the reversed sequence of mounting.

Further information: "Mounting",
Page 11

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