FlexIN™
Magnetic Scale System for Large Diameters

WIDE INSTALLATION TOLERANCES

WIDE TEMPERATURE RANGE

FLEXIBLE SHAFT DIAMETERS

FlexIN is a rubber-supported magnetic scale system with integrated tensioning mechanism compatible with LM10 or LM15 incremental encoders.
It is intended for installation on large shafts as part of position and speed control systems. The non-contact measuring principle ensures high reliability and long-term stability, even in demanding industrial environments.

Features and benefits

- Rubber spring profile supported scale with built-in tensioning mechanism
- For diameters from 350 mm to 3,500 mm
- Large allowable shaft diameter tolerance ±0.2 mm
- For outer diameter installation
- Full circle measurements
- Wide operating temperatures
- Substrate thermal expansion compensation

WIND TURBINES | RADIO TELESCOPE | SOLAR PANELS | CT SCANNING | HARSH ENVIRONMENT

General information

FlexIN is a rubber-supported magnetic scale system with an integrated tensioning mechanism, designed for installation on large shaft diameters from 350 mm to 3,500 mm.
It enables full-circle position and speed measurement and compensates for thermal expansion of the substrate.
The non-contact measuring principle ensures high reliability in demanding industrial environments. The system is compatible with LM10 and LM15 incremental readheads.

Choose your FlexIN system

The FlexIN system is compatible with LM10 and LM15 readheads. The LM10 readhead is optimised for applications requiring high accuracy and resolution, enabling precise positioning, while the LM15 readhead is designed for higher rotational speeds and increased installation tolerances, making it suitable for demanding dynamic applications.

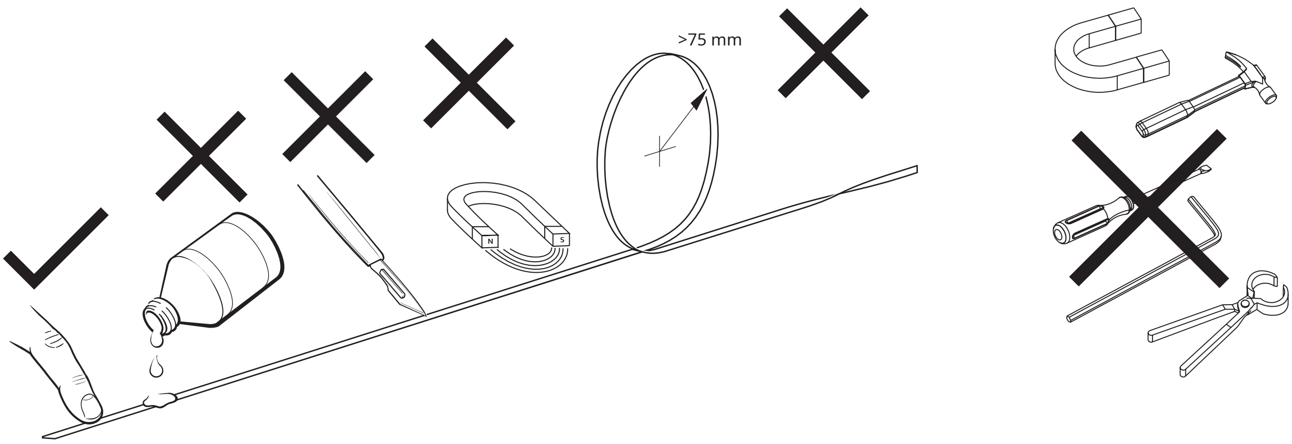
LM10 readhead

LM15 readhead

Further information
For detailed technical specifications, refer to **LM10D01** and **LM15D01** at RLS Media center.

Storage and handling

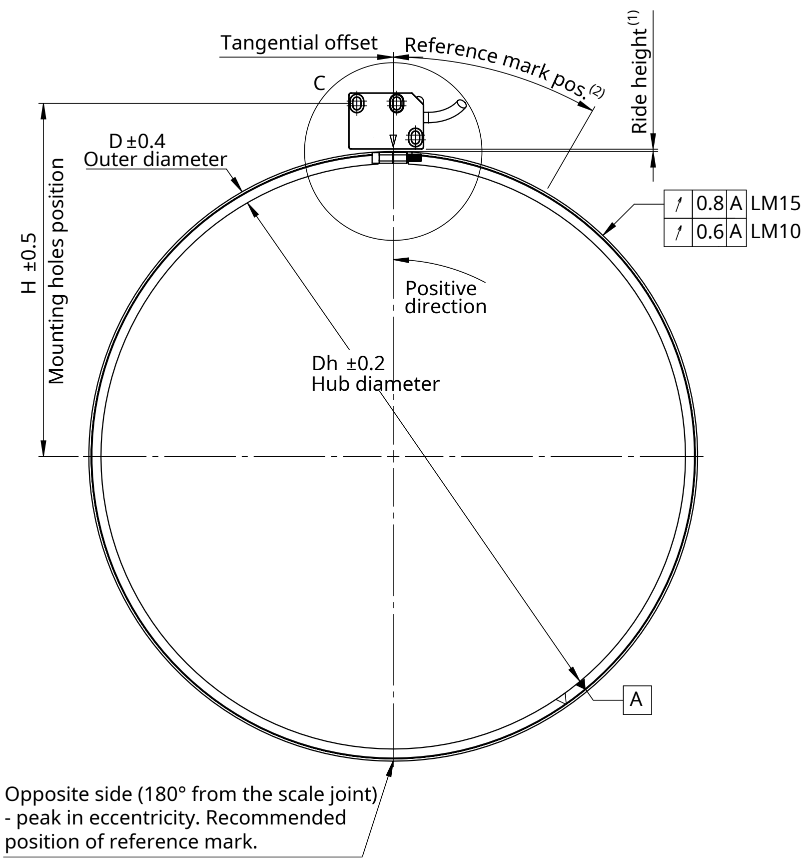
Storage temperature	Operating temperature	Humidity
–40 °C to +60 °C (without readhead)	–40 °C to +85 °C (without readhead)	85 % non-condensing

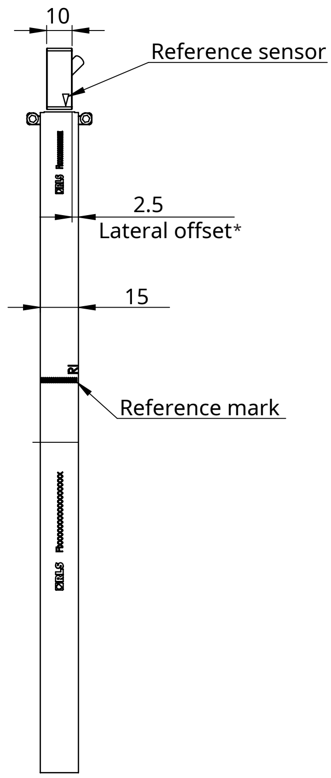


HANDLE WITH CARE. FlexIN system is a high performance metrology product and should be handled with the same care as any other precision instrument. The use of industrial tools during installation or exposure to strong magnets such as a magnetic base is not recommended as it carries the risk of damaging parts of the system which as a result might not perform in accordance with specifications.

Dimensions and installation drawings

Dimensions and tolerances are in mm. Dimensions without tolerance values are in accordance with ISO 2768-m.

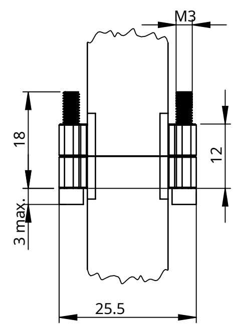




* Check tolerances on **page 12**.

(1) Ride height needs to be adjusted on the opposite side of the magnetic scale joint.
(2) The recommended position of the reference mark is at the opposite side of the magnetic scale joint (more details in the "**Mechanical data**" table).

Scale joint detail



The fasteners are M3×18, based on DIN912, with reduced shank and head (custom screws).

Scale length	Hub diameter	Outer diameter	Mounting holes position
$L_S = n \cdot p$	$D_h = \frac{Ls}{\pi} - 8.36$	$D = \frac{Ls}{\pi} + 2.3$	$LM10\text{:}\ \ H = \frac{L_S}{2 \cdot \pi} + 21$
			$LM15\text{:}\ \ H = \frac{L_S}{2 \cdot \pi} + 22$

n - Number of magnetic poles
p - Magnetic pole length (2 mm or 5 mm)

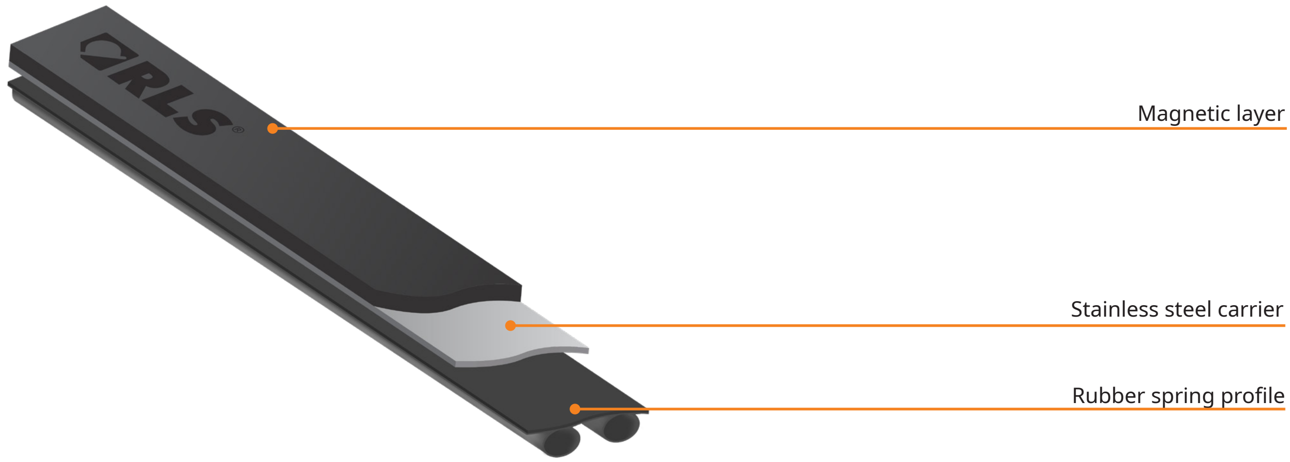
General tolerances for linear dimensions according to ISO 2768-m

Tolerance class	up to 6	6-30	30-120
m (medium)	±0.1	±0.2	±0.3

The orientation of the readhead and magnetic scale is essential. Please make sure that orientation is as specified.

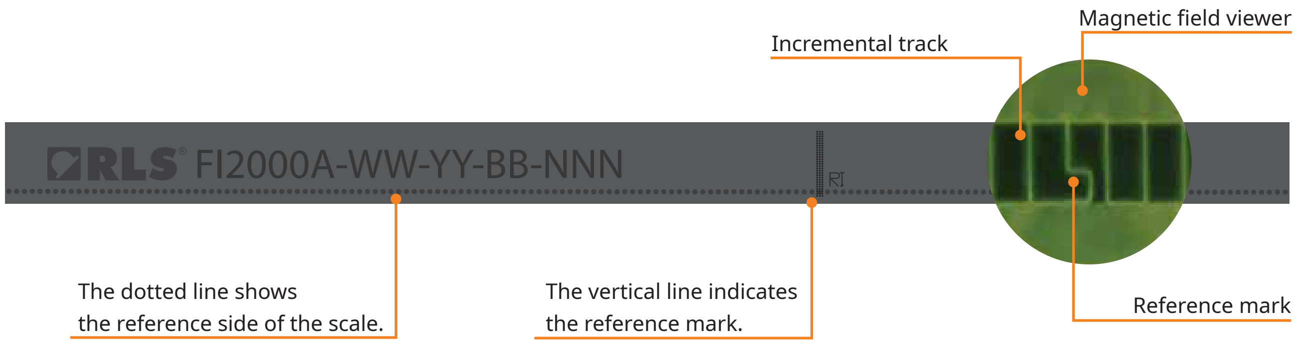
FlexIN magnetic scale design

Structure



Appearance and print

The orientation of the magnetised reference mark and the incremental track is always the same, relative to the scale print as shown in the figure below.



The shape of the reference mark may vary. The image is for representation purposes only.

Scale surface print description

Scale surface print appears every 100 mm and contains the RLS logo and a unique code.

FI 2000 A WW YY BB NNN

- FI – Magnetic scale
- 2000 – Pole length
- A – Accuracy class
- WW – Week of scale production
- YY – Year of scale production
- BB – Batch number
- NNN – Counter designator (100 mm = +1 count)

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Technical specifications

System data	With LM10	With LM15
Substrate diameter	350 mm to 3,500 mm	350 mm to 3,500 mm
Number of poles	564 – 5510	226 – 2204
Accuracy (at 1 m diameter)*	±0.043°	±0.064°
Resolution	0.244140625 µm	0.6103515625 µm
Hysteresis	< 3 µm at 0.3 mm ride height	< 12.5 µm at 1 mm ride height
Maximum speed	See chapter **Maximum speed**.	
Reference mark position tolerance	±1 mm × 360° / scale length (mm)	±2.5 mm × 360° / scale length (mm)
Reference mark position	Recommended value: 180 °, min. 5°, max. 355° (position of scale joint is 0°)	

* See chapter **Accuracy**.

Mechanical data

Material	Carrier	1.4310 stainless steel
	Magnetic scale	NBR elasto-ferrite
	Rubber spring profile	EPDM rubber, black
	Joint	1.4301 stainless steel
Thickness	Magnetic scale	6.25 ±0.6 mm (relaxed rubber state)
Mass	Magnetic scale and carrier	93 g/m
	Rubber spring profile	33 g/m
	Connecting element	4 g (two used in a joint)
	Fastener M3	1 g (two used in a joint)
Width		$15^{+0.15}_{-0.05}$ mm
Length		Min. 1.1 m, max. 11 m
Thermal expansion coefficient (CTE)		11.2×10^{-6} K^{-1}

Environmental data

Operating temperature	–40 °C to +85 °C (without readhead)
Storage temperature	–40 °C to +60 °C (without readhead)
Maximum non-operational external magnetic field	25 mT
Vibrations (55 Hz to 2000 Hz)	300 m/s^2 (IEC 60068-2-6)
Shocks (6 ms)	300 m/s^2 (IEC 60068-2-27)
Environmental sealing	Up to 85 % humidity non-condensing

Maximum speed

The maximum rotational speed is limited by the peripheral (linear) speed of the magnetic scale. As the diameter increases, the surface of the scale covers a greater distance per revolution. To maintain safe operating conditions, the allowable rotational speed (rpm) therefore decreases as the diameter increases.

The maximum permissible speed can be estimated using:

$$\mathbf{rpm} = \frac{\mathbf{C}}{\mathbf{D}}$$

D = outer diameter of the mounted scale [m]
C = constant depending on system configuration:

- 210 for diameters D < 900 mm
- 325 for diameters D > 900 mm

Example:
For D = 1.0 m → rpm = 325 / 1.0 = 325 rpm
For D = 0.5 m → rpm = 210 / 0.5 = 420 rpm

Diameter is specified in metres. The values indicate the mechanical speed limit of the system; the actual maximum speed depends on the selected readhead and configuration. For precise limits, use the RLS **Flexin calculator** or **contact RLS**.

Accuracy of FlexIN system

The accuracy of the FlexIN system is affected by the accuracy errors of the encoder (magnetic scale and readhead) and by installation-related errors. In order to assess the overall accuracy of the system, each of these errors must be taken into account. This document explains all the errors and gives an example of how to calculate each error based on the shaft diameter and the eccentricity introduced in your system. The accuracy and hysteresis can also be calculated on **the RLS website**.

Contributing factors to the inaccuracy of the system

The system error consists of a:

- Magnetisation error (Mag. error)
- Joint error
- Eccentricity error (Ecc. error)
- Crosstalk error due to the magnetisation of reference mark
- Sub-divisional error (SDE)

Figure 1 shows a typical accuracy error plot with marked contributions to the inaccuracy of the system.

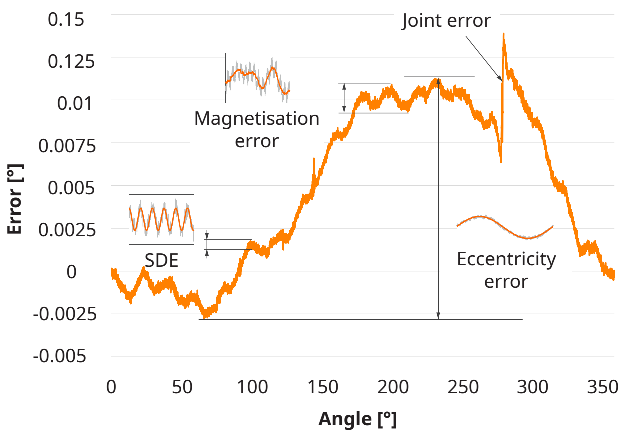


Fig. 1. Typical accuracy error plot.

Magnetisation error

The magnetisation error is caused by imperfections in the elasto-ferrite material and possible deviations due to the magnetisation process.

The following factors influence the result:

- The magnetic inhomogeneity of the elasto-ferrite layer
- The quality of the magnetisation system
- The size of magnetic poles (2 mm or 5 mm pole length)

This value is a constant that is determined by the accuracy of the magnetic scale. The 2 mm pole length magnetic scale is more accurate than the 5 mm pole length magnetic scale. The magnetisation error contribution based on the pole length is:

$$\textbf{Mag. error (2 mm pole length) [°]} = \pm \frac{\mathbf{7200}}{\mathbf{CIRC\ [\mu m]}}$$

$$\textbf{Mag. error (5 mm pole length) [°]} = \pm \frac{\mathbf{36000}}{\mathbf{CIRC\ [\mu m]}}$$

CIRC = Circumference in [µm]. It can be calculated based on the PN parameters of the FlexIN system (FI**XXXX**A**YYYY**B0000A100).

CIRC [µm] = XXXX × YYYY

XXXX = Pole length (2000 or 5000)

YYYY = Number of magnetic poles per circumference

Example of the FlexIN part numbering for a magnetic scale with a diameter of 1 m and a magnetic pole length 2 mm. The part number of the FlexIN scale would be FI**2000**A**1584**B0000A100

CIRC = 2000 × 1584 = 3168000 µm

$$\text{Mag. error (2 mm pole length)} = \pm \frac{7200}{3168000\ \mu m} = \pm 0.0023°$$

The contribution to the inaccuracy due to the magnetisation error would be ±0.0023° or ±2.3 mdeg or ±8.3 arcsec.

Error on the joint

The joint error must be taken into account when calculating the system error. The joint error is caused by the phase mismatch and the damage of the magnetic pattern during the cutting process of the scale. The phase mismatch is the physical gap between both ends of the scale.

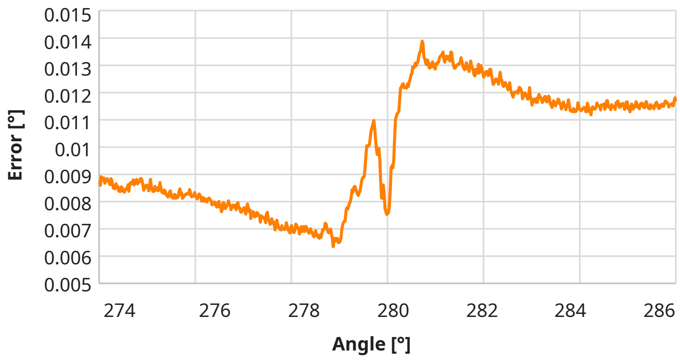
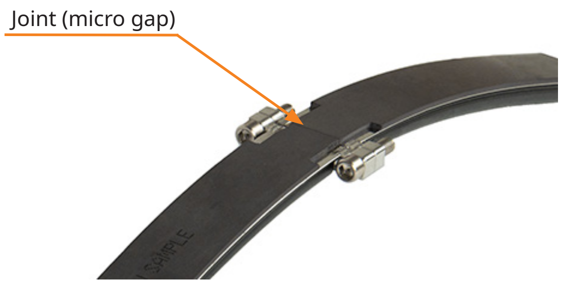


Fig. 2. Junction error plot.



The joint error is determined with a constant independent of the magnetic pole length (for LM10 and LM15):

$$\textbf{Joint error [°]} = \pm \frac{\textbf{18000}}{\textbf{CIRC [μm]}}$$

Example of the FlexIN part numbering for a magnetic scale with a diameter of 1 m and a magnetic pole length 2 mm. The part number of the FlexIN scale would be FI**2000**A**1584**B0000A100

CIRC = 2000 × 1584 = 3168000 μm

$$\text{Joint error [°]} = \pm \frac{18000}{3168000\ \mu m} = \pm 0.0057°$$

The contribution to the inaccuracy due to the error at the joint would be ±0.0057° or ±5.7 mdeg or ±20.5 arcsec.

Eccentricity error

The installation and adjustment of the FlexIN scale has a significant influence on the overall accuracy of the system. The eccentricity error is caused by the uneven distribution of the rubber spring during the installation process of the FlexIN. The eccentricity error contributes significantly to the inaccuracy of the system and can be reduced by correct and optimised installation. Please follow **the installation instructions** shown in the video.

The eccentricity error is determined with a constant and varies between 2 mm and 5 mm magnetic pole length.

The drawing below shows the dial gauge indicator measuring the radial runout on the circumference of the installed FlexIN scale.

To simplify the calculation of the contribution of the radial runout to the inaccuracy of the system, two constants were determined based on the maximum rideheight of the LM10 and LM15 encoder systems.

Maximum allowed radial runout:

LM10 (2 mm pole length) = ±0.3 mm

LM15 (5 mm pole length) = ±0.4 mm

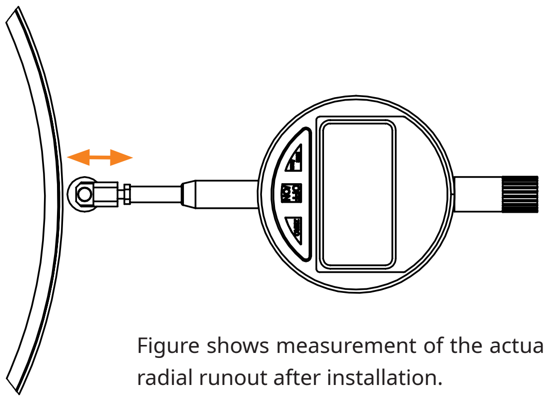


Figure shows measurement of the actual radial runout after installation.

$$\textbf{Ecc. error (2 mm pole length) [°]} = \pm \frac{\mathbf{108000}}{\textbf{CIRC [µm]}}$$

$$\textbf{Ecc. error (5 mm pole length) [°]} = \pm \frac{\mathbf{144000}}{\textbf{CIRC [µm]}}$$

First example of the FlexIN part numbering for a magnetic scale with a diameter of 1 m and a magnetic pole length 2 mm. The part number of the FlexIN scale would be FI**2000**A**1584**B0000A100

CIRC = 2000 × 1584 = 3168000 µm

$$\text{Ecc. error (2 mm pole length)} = \pm \frac{108000}{3168000\ \mu m} = \pm 0.0341°$$

The contribution to the inaccuracy due to the eccentricity error would be ±0.0341° or ±34.1 mdeg or ±122.8 arcsec.

> For a more accurate calculation of the eccentricity error, it is recommended to measure the actual radial runout with a dial gauge indicator once the FlexIN is installed (as shown in the drawing above).

Second example on the FlexIN magnetic scale with a diameter of 1 m and a magnetic pole length of 2 mm, but with a measured radial runout of ±100 µm:

$$\text{Ecc. error (LM10/LM15)} = \pm \frac{360000 \times E\ [mm]}{CIRC\ [\mu m]} = \pm \frac{360000 \times 0.1}{3168000\ \mu m} = \pm 0.0114°$$

E is measured radial runout in mm.

The contribution to the inaccuracy due to the eccentricity error would be ±0.0114° or ±11.4 mdeg or ±41 arcsec.

Crosstalk error

Crosstalk is an undesirable effect of the magnetisation of the reference mark on the magnetisation of the incremental track, which leads to inaccuracy spikes. It depends on both the ride height and the lateral offset. To simplify the calculation of the system accuracy, the crosstalk error is already included in the magnetisation error and can be ignored.

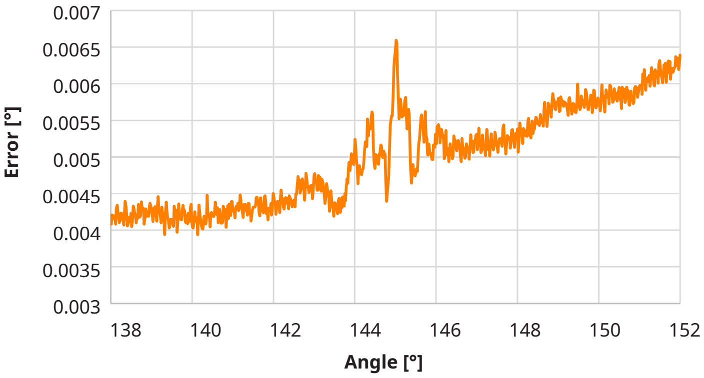


Fig. 3. Crosstalk error plot.

Sub-divisional error (SDE) or interpolation error

The sub-divisional or interpolation error is a periodical accuracy error. It is influenced by the following factors:

- the length of the poles,
- the homogeneity and cycle definition of the magnetic poles,
- the sensing distance (ride height) of the installed readhead,
- the quality of the signal processing,
- the characteristics of the internal AMR sensor.

The SDE leads to speed ripples in applications where the encoder is used as speed feedback, e.g. in speed control loops.

The SDE contribution was determined as a constant over the entire installation range and varies between 2 mm (LM10) and 5 mm (LM15) pole length.

$$\textbf{SDE error (2 mm pole length) [°]} = \pm \frac{\textbf{1800}}{\textbf{CIRC [μm]}}$$

$$\textbf{SDE error (5 mm pole length) [°]} = \pm \frac{\textbf{3600}}{\textbf{CIRC [μm]}}$$

Example of the FlexIN part numbering for a magnetic scale with a diameter of 1 m and a magnetic pole length 2 mm (LM10 readhead). The part number of the FlexIN scale would be FI**2000**A**1584**B0000A100

CIRC = 2000 × 1584 = 3168000 μm

$$\text{SDE error (2 mm pole length)} = \pm \frac{1800}{3168000\ \mu\text{m}} = \pm 0.0006°$$

The contribution to the inaccuracy due to the SDE error would be ±0.0006° or ±0.6 mdeg or ±2.2 arcsec.

System error (SUM value)

The system error results from the sum of all contributions described on the previous pages. The result is an expected accuracy value of the FlexIN system based on the shaft diameter and the eccentricity error. Most of the inaccuracy is an eccentricity error. It is therefore recommended to install the FlexIN scale as optimally as possible in order to achieve better results. Installation instructions can be found **here**.

Sys. error = ± (Mag. error + Joint error + Ecc. error + SDE error)

$$\mathrm{LM10} = \pm \frac{7200 + 18000 + 108000 + 1800}{\mathrm{CIRC}} = \pm \frac{135000}{\mathrm{CIRC}} \qquad \mathrm{LM15} = \pm \frac{36000 + 18000 + 144000 + 3600}{\mathrm{CIRC}} = \pm \frac{201600}{\mathrm{CIRC}}$$

For example, on the FlexIN magnetic scale from the previous examples for each contribution, the system error would be as follows:

Sys. error = ± (0.0023° + 0.0057° + 0.0341° + 0.0006°) = ±0.0427°

The system accuracy would be ±0.0427° or ±42.7 mdeg or ±154 arc-sec.

For a more precise calculation of the system error, it is recommended to use **the calculator** on the RLS website.

Hysteresis

Hysteresis is the difference in the result of measuring the same point when approaching it from different directions.
It is known that ferromagnetic materials maintain their magnetised state in response to external fields and attempt to change direction.

The hysteresis in encoder systems depends on the strength of the magnetic field. A stronger magnetic field leads to a smaller hysteresis and vice versa. Therefore the hysteresis is strongly influenced by the ride height at which the readhead is installed (Fig. 3).

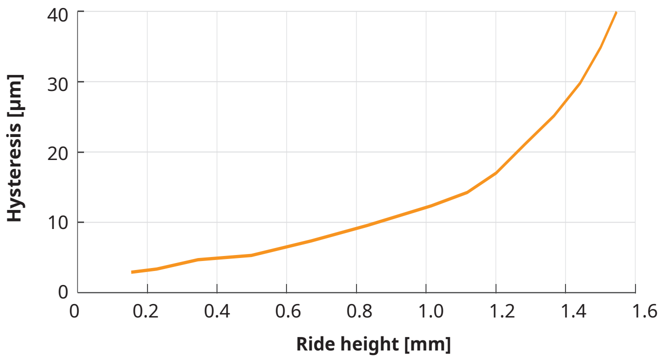


Fig. 3. Hysteresis vs. ride height (for encoder systems with 2 mm pole length).

For a more precise calculation of the hysteresis, it is recommended to use **the calculator** on the RLS website.

Installation instructions

Installation of the scale

For a correct and smooth installation process, it is essential to use the appropriate tools. We recommend using the dedicated accessories available from our portfolio to ensure optimal results.

For installation of the FlexIN scale, the following accessories are required:

- **Rolling tool (ACC089)**
- **Mounting fluid (ACC077)**

These accessories are designed to ensure proper alignment, secure adhesion and optimal system performance. Using them helps achieve a precise fit and reliable long-term operation.

The installation instructions below describe the complete procedure step by step, including surface preparation, scale mounting, alignment and final adjustment. You may also follow the installation video for additional visual guidance.

FlexIN installation video

Method for axial alignment of the scale

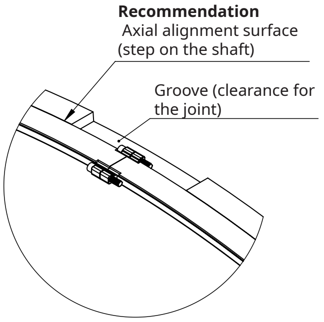
Depending on the mounting surface, there are two options for the axial alignment of the scale to ensure optimum system performance. Both methods are designed to enable accurate and efficient installation of the scale and integrate seamlessly into your system.

Option 1
Step on the shaft acts as a stop barrier for accurate lateral positioning of the scale. A groove must be milled into the mounting surface to ensure enough room for scale joint. Groove must allow enough space for fastener mounting. This method provides a physical guide that ensures the scale is perfectly aligned with the axis of the machine.

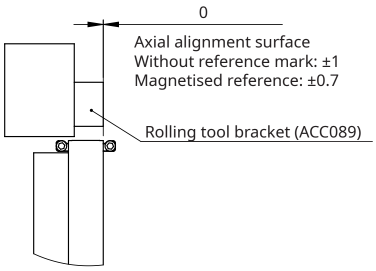
Option 2
The surface of the rolling tool bracket is used as a reference point. By aligning the scale to the surface of the rolling tool bracket, you can achieve precise positioning without additional machining.

Option 1

Recommended



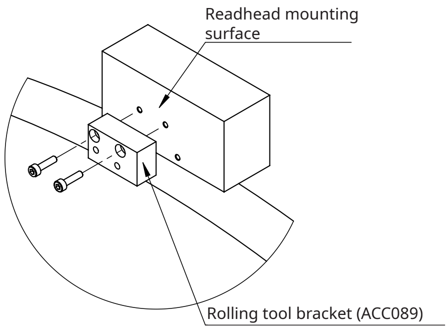
Option 2



Installation process

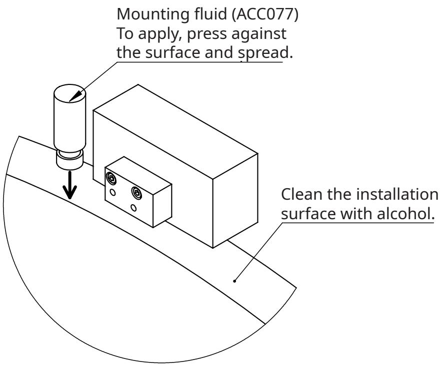
1. Preparation for the installation of the rolling tool

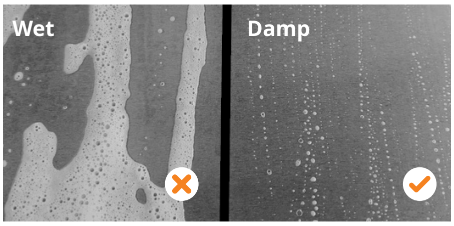
Prepare the readhead mounting surface. Install the rolling tool bracket by using the mounting holes where the readhead will be installed.



2. Preparation of the installation surface

Start by thoroughly cleaning the installation surface to remove dirt, debris and contaminants. This will ensure a clean bonding environment for the scale. After cleaning, evenly apply a layer of the recommended mounting fluid to the surface. Make sure that the entire surface is damp. This will make it easier to position and adjust the scale during installation.



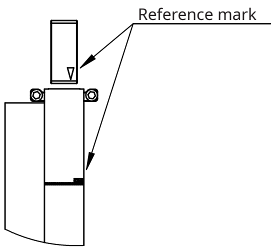


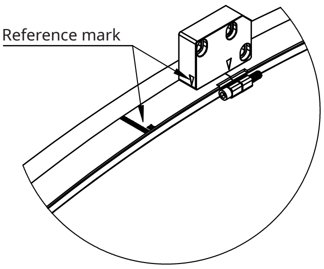
The use of a lubricant is required for all diameters. A moderate amount of mounting fluid must be applied, as shown in the picture. The surface must be damp, not wet.

Recommended surface roughness Ra = 1.6

3. Setting up the scale

Carefully place the scale with the rubber side on the prepared installation surface without twisting or bending it.

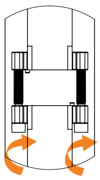




Make sure that the alignment of the scale and the readhead is correct.

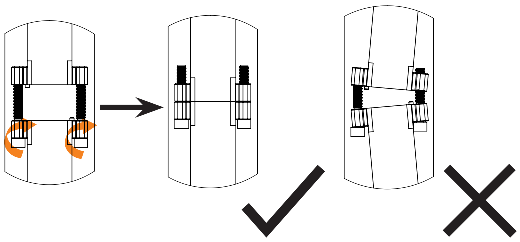
4. Securing the scale ends and axial aligning

Loosely connect the ends of the scale with the specified fasteners by leading them through the threads located in the adjacent connecting element. Align the scale in the axial direction on a reference surface around the entire circumference.



5. Connect the scale ends

Tighten the two fasteners alternately and gradually, no more than one full turn at a time. The maximum torque is 0.6 Nm. Make sure that the connecting elements remain parallel during the process.



Maximum torque is 0.6 Nm. No more than a full turn at a time.

Always make sure that the scale is axially aligned and has not moved from the required position.

6. Installing the rolling tool (ACC089)

Mount the rolling tool on the bracket. (Fig. 1.) Press the rolling tool down so that the connecting elements touch the installation surface. (Fig. 2.) Secure the roller in position by tightening the fasteners on the rolling tool.

Fig. 1

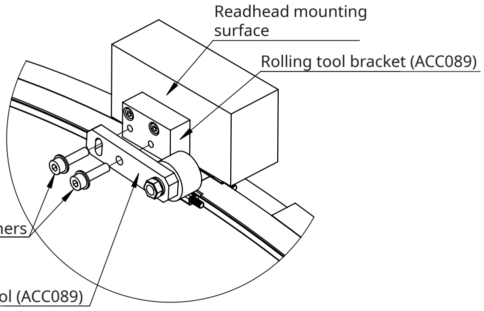
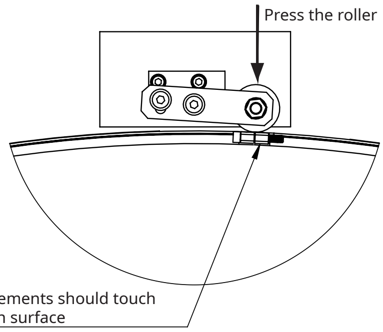


Fig. 2



If the rotation of the hub is not possible and ACC089 cannot be used, another rolling tool can be used to roll around the circumference manually.

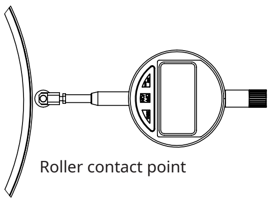
The magnetic scale can easily be damaged by sharp edges, so use a smooth and soft roller.

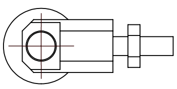
The roller should be pressed onto the magnetic scale with enough force to bend the scale and compress the rubber spring profile under the scale.

7. Improving radial runout circumference

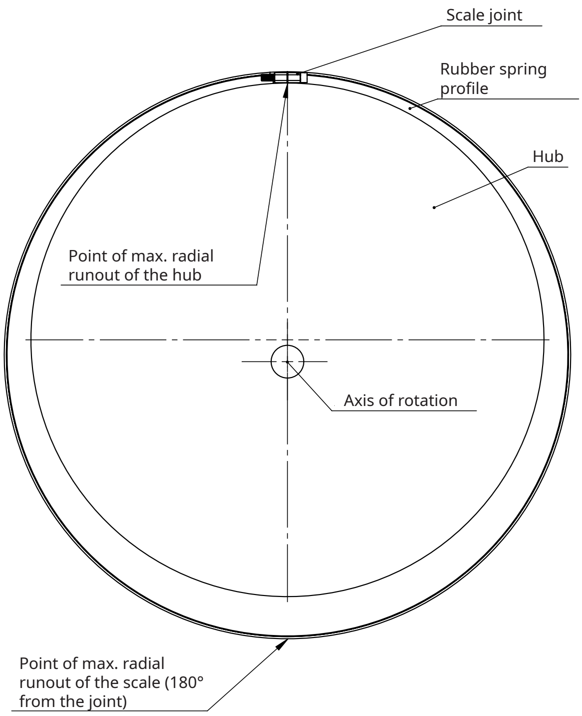
This step is important minimise eccentricity and improve accuracy.

Use a rolling tool to roll along the length of the scale while rotating the axis for at least 10 full rotations. Unfasten the wheel of the rolling tool and lift it from the scale. It is necessary to measure the radial runout with a dial indicator. If the radial runout of the magnetic scale does not meet the requirements, you can improve it by rolling another 10 full rotations or more.





Maximum allowed radial runout of the magnetic scale	
LM10	±0.3 mm
LM15	±0.4 mm



Use a dial indicator with low exertion force to avoid scratching the scale surface. A digital indicator with a roller is recommended.

If the required radial runout cannot be achieved, check the radial runout of the hub with a dial indicator.

The radial runout of the hub and the magnetic scale can be subtracted if the scale joint is placed at the point of maximum radial runout the scale.

8. Uninstalling / Removing the rolling tool

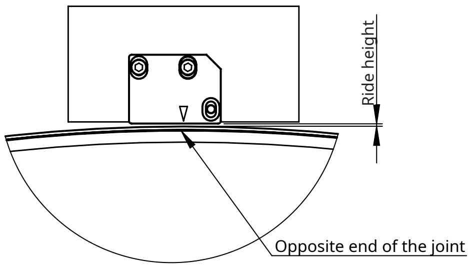
Once you have successfully improved the radial runout of the scale, you can uninstall and remove the rolling tool.

9. Axial alignment

After radial alignment, the FlexIN scale must be checked for lateral alignment using the method selected at the beginning of the installation. The permissible axial deviation is ±0.7 mm.

10. Installing the readhead

Set the ride height according to the specifications provided in the readhead data sheet. The ride height must be adjusted on the opposite side of the joint element where the eccentricity is highest. The LED on the readhead provides immediate feedback on the installation status. A continuous green signal confirms correct installation; otherwise, further adjustment is required. The properly installed FlexIN scale is ready for use after 1 hour. After 24 hours it is suitable for use under maximum load.



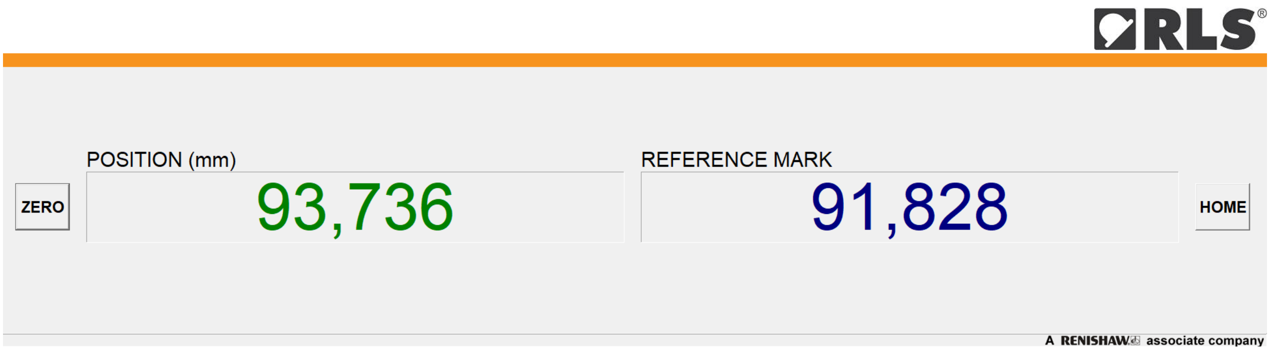
Ride height	LM10	LM15
Values in mm.	0.1 - 0.8 (recommended 0.3 mm)	0.1 - 2.5 (recommended 0.5 mm)

The ride height should be set on the opposite side of the scale joint.

11. System verification when required radial runout is not achievable

If the required runout cannot be achieved, the system performance can be verified using the E201 interface. Connect the readhead to the E201 interface and observe the LED display on the readhead. If the LED remains green throughout the entire rotation, the system is operating correctly.

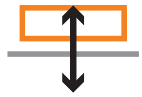
The reference mark must be checked in both directions and over at least 10°. If the position value of the reference mark is the same in both directions, the system is working correctly. Check the display of the reference mark indicator on the monitor – see picture below.



Installation tolerances

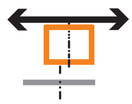
Ride height / radial offset

Values in mm.	LM10	LM15
No Ri	$0.3^{+1.2}_{-0.2}$	$0.5^{+3.5}_{-0.4}$
Magnetised Ri	$0.3^{+0.5}_{-0.2}$	$0.5^{+2}_{-0.4}$



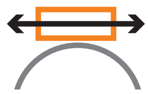
Axial offset

Values in mm.	LM10	LM15
No Ri	0 ±1	0 ±1
Magnetised Ri	0 ±0.7	0 ±0.7



Tangential offset

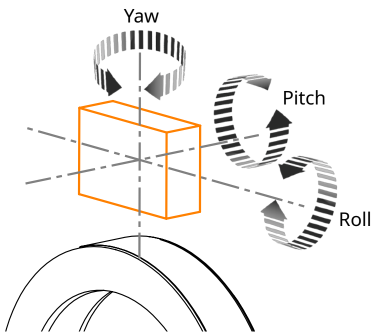
Values in mm.	LM10	LM15
No Ri	0 ±1	0 ±1
Magnetised Ri	0 ±0.7	0 ±0.7



Readhead to scale

Roll	±3°
Yaw	±3°
Pitch	±3°

At lower ride height the readhead can come into contact with the magnetic scale within the roll-pitch-yaw tolerances.



Reference mark options

Unique reference mark

The readhead must be ordered with reference mark option A. The magnetic scale must be ordered with reference mark. For further details, please refer to the "Part numbering" chapter in the **LM10** or **LM15** data sheet, which is available from the **RLS Media center**.

Periodic reference mark

The readhead must be ordered with reference mark option C. For further details, please refer to the "Part numbering" chapter in the **LM10** or **LM15** data sheet, which is available from the **RLS Media center**.

The magnetic scale must be ordered without reference mark option. The position information is output in incremental quadrature format with periodic reference pulses every 2 mm (LM10) or 5 mm (LM15).

Part numbering

FlexIN scale

FI 2000 A 5500 A 5500 A1 00

Pole length

2000 - 2 mm pole length (for use with LM10 readhead)
5000 - 5 mm pole length (for use with LM15 readhead)

Accuracy class

A - ±20 µm/m (for use with LM10 readhead)
C - ±100 µm/m (for use with LM15 readhead)

Scale length *

xxxx - Where xxxx equals number of magnetic poles

* Maximum scale length is 11,000 mm. To calculate the scale length and the number of poles, please use **the FlexIn calculator**.

Reference mark

A - Unique reference mark
B - No reference mark

Reference position

xxxx - Where xxxx equals scale position in poles, calculated from angle position from the scale joint
0000 - No reference mark

Readhead compatibility

A1 - LM10
A2 - LM15

Special requirements

00 - No special requirements (standard)

Table of available combinations

Series	Pole length	Accuracy class	Scale length	Reference mark	Reference position	Readhead compatibility	Special requirements
FI	2000	A	xxxx	A	xxxx	A1	00
				B	0000		
	5000	C		A	xxxx	A2	
				B	0000		

Accessories

Rolling tool (including fasteners)
ACC089

Mounting fluid
ACC077

Magnet viewer
MM0001

Packaging

Each magnetic scale is packed and rolled in a cardboard box.

All FlexIN magnetic scales have 12 months shelf life and should be installed within this period.

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Document issues

Issue	Date	Page	Description
1	10. 9. 2024	–	New document
2	7. 10. 2024	13	Accessories added to installation description
3	10. 7. 2025	10	Hub diameter and scale joint dimension amended
4	2. 4. 2026	14	Roughness added

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