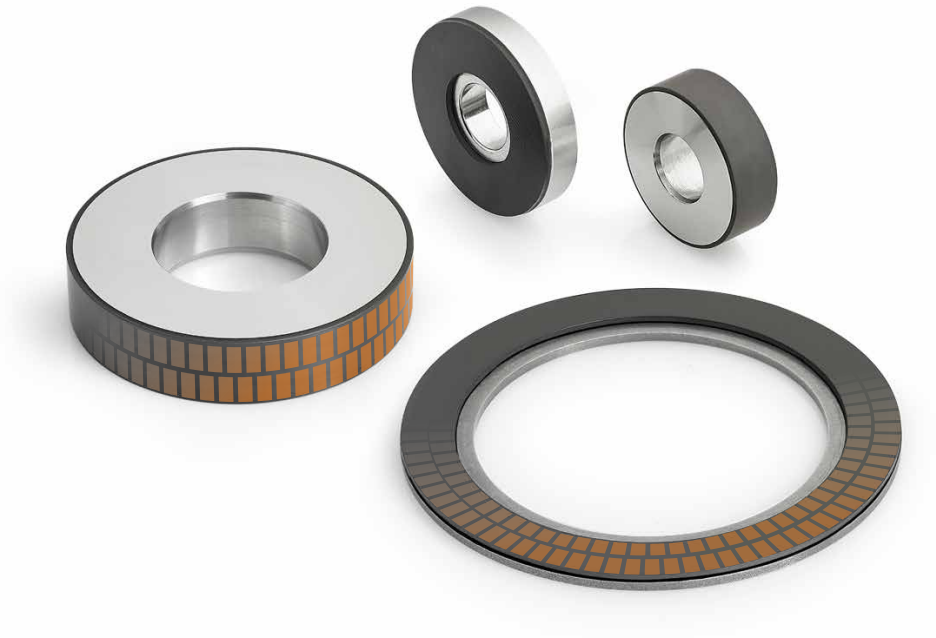
Nonius
Absolute Magnetic Rings

HIGH QUALITY MAGNETISATION

EASY TO MOUNT

EXCELLENT PRICE PERFORMANCE RATIO

The robust RLS radial and axial magnetic rings consist of an elasto-ferrite layer which is bonded to a steel hub. The elasto-ferrite layer is magnetised with Nonius magnetisation with different pole lengths and different numbers of magnetic periods.
The magnetic rings operate in a temperature range from –40 °C to +85 °C and can be installed by gluing or press-fitting.



Features and benefits

- Non-contact technology
- High speed operation
- Compatible with existing Nonius sensors and readheads
- High quality materials
- Installation by gluing or press-fitting
- Excellent resistance to dirt and dust
- High precision machining

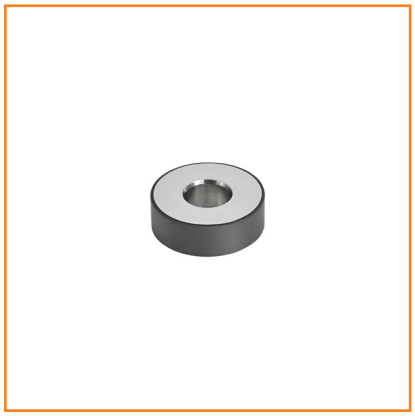
COLLABORATIVE ROBOTS | AGVs | GIMBALS | ROBOTIC JOINTS | AGRICULTURAL AUTOMATION

General information

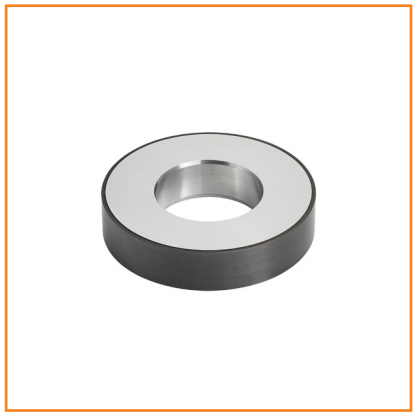
RLS Nonius magnetic rings are available in two radial and two axial sizes.

Choose your Nonius absolute magnetic ring

Radial Nonius absolute magnetic rings

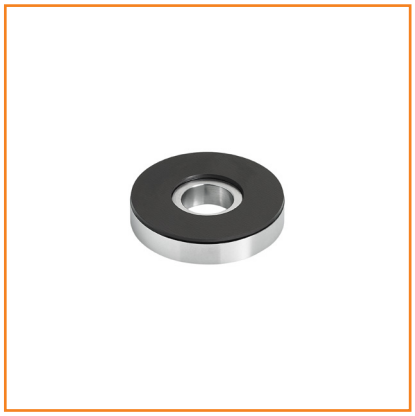


MRN025

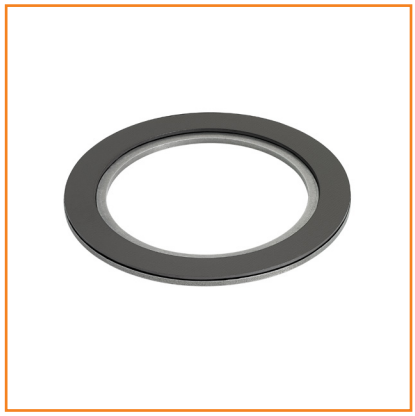


MRN051

Axial Nonius absolute magnetic rings

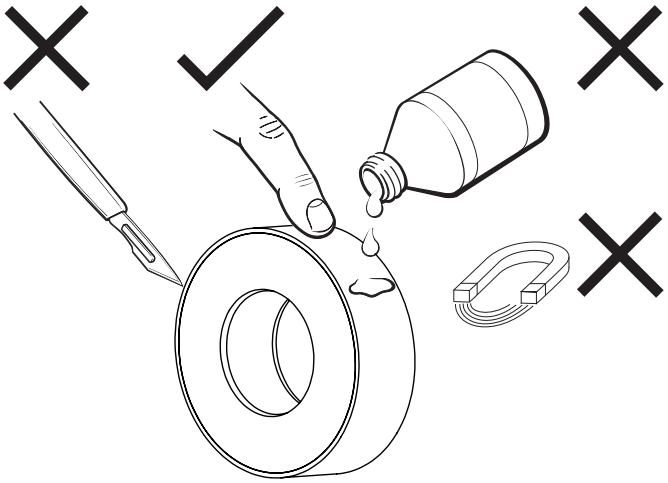


MRN030



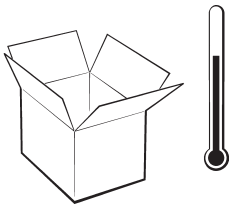
MRN064

Storage and handling



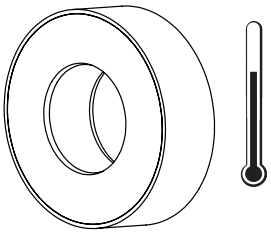
The magnetic ring should not be exposed to magnetic field densities higher than 50 mT on its surface, as this can damage the ring.

Storage temperature



–40 °C to +85 °C

Operating temperature



–40 °C to +85 °C *

* If wider temperature range is required, please **contact RLS**.

Packaging

Nonius magnetic rings are packed individually in an antistatic box.

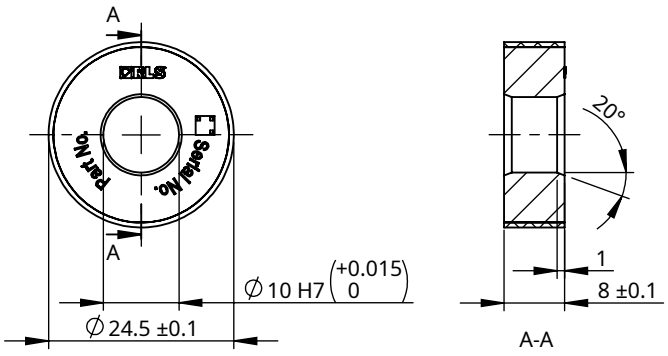
Dimensions and installation drawings

Dimensions and tolerances are in mm.

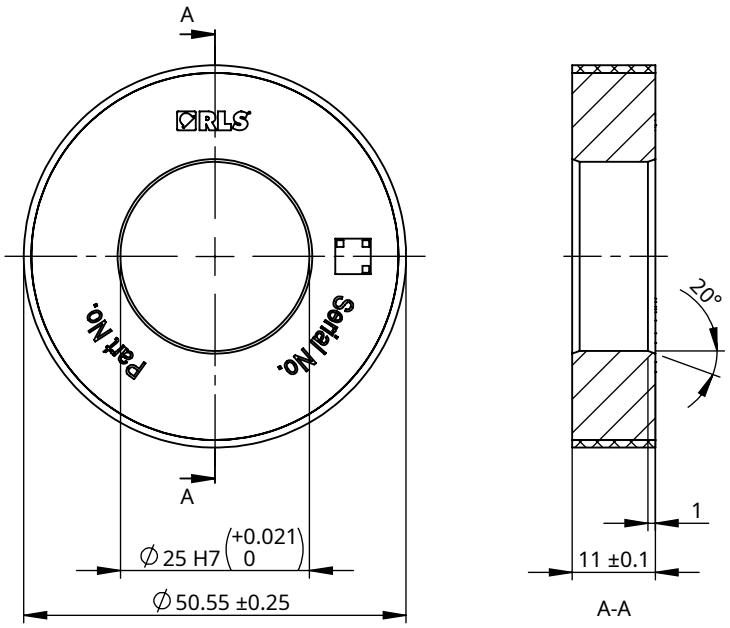
Radial magnetic rings

Master track is on the side with engraved markings.
Nonius track is on the side without engraving.

MRN025



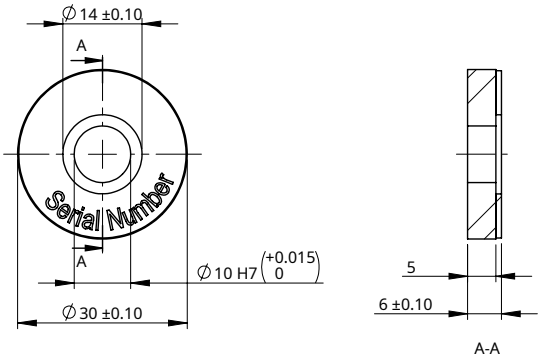
MRN051



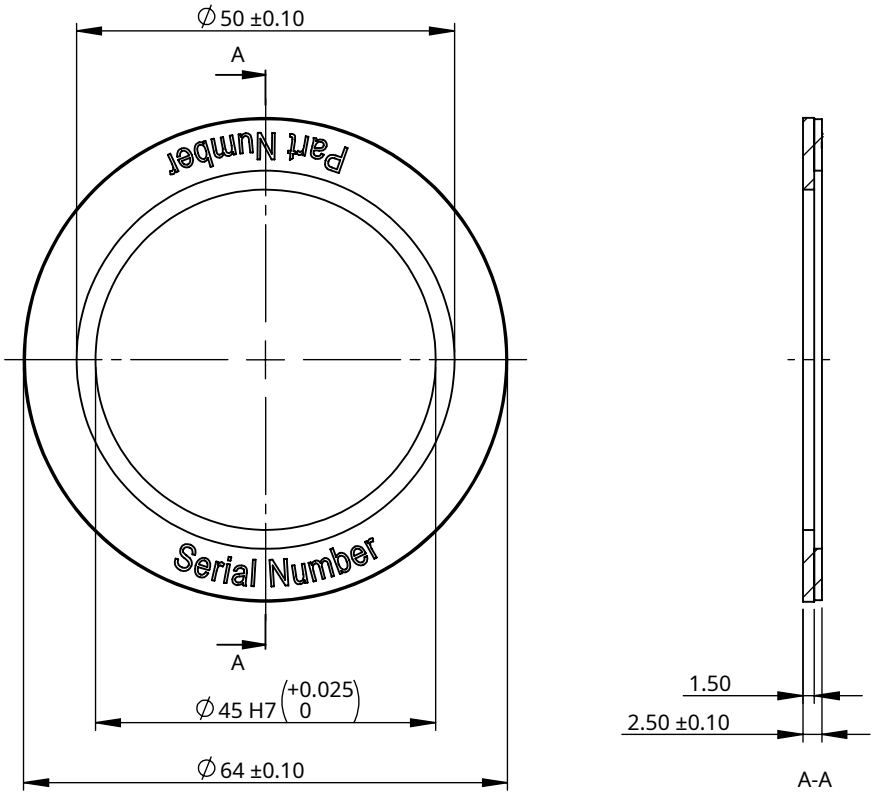
Axial magnetic rings

Master track is on the outside of the ring.
Nonius track is on the inside of the ring.

MRN030



MRN064



Technical specifications

System data	MRN025	MRN051	MRN030	MRN064
Magnetic periods	32/31	64/63	32/31	64/63
Pole length (mm)	1.28	1.28	1.28	1.50
Radius at defined pole length (mm)	13.04	26.08	13.03	30.56
Maximum speed (RPM)	7,000	4,000	12,000	10,000
Magnetic field density 550 µm from ring surface	40 ±10 mT	40 ±10 mT	40 ±10 mT	40 ±10 mT

Mechanical data	MRN025	MRN051	MRN030	MRN064
Hub material	EN 1.4057	EN 1.4057	EN 1.4057	EN 1.4016
Inner diameter (mm)	10	25	10	45
Outer diameter (mm)	24.5	50.55	30	64
Height (mm)	8	11	6	2.5
Mass (g)	23	121	26	22
Moment of inertia (kgm²)	2.4×10^{-6}	49.3×10^{-6}	1.7×10^{-6}	8.0×10^{-6}

Environmental data		
Temperature	Operating	–40 °C to +85 °C *
	Storage	–40 °C to +85 °C

* If wider temperature range is required, please **contact RLS**.

Installation instructions

Machine the mounting shaft according to the dimensions given in the table below:

Magnetic ring	Shaft outer diameter (Ds) for gluing (mm)	Shaft outer diameter (Dsp) for press-fit method (mm) *
MRN025	10 g6 $\left(^{-0.005}_{-0.014}\right)$	10 $^{+0.028}_{+0.021}$
MRN051	25 g6 $\left(^{-0.007}_{-0.020}\right)$	25 r6 $\left(^{+0.041}_{+0.028}\right)$
MRN030	10 g6 $\left(^{-0.005}_{-0.014}\right)$	
MRN064	45 g6 $\left(^{-0.009}_{-0.025}\right)$	

* Valid for steel with typical properties ρ=7850 kg/m³, E = 210 kN/mm², $R_{p0.2}$ = 500 N/mm², α = 1.1×10^{-5} K^{-1} with coefficient of friction µ = 0.3, under operating conditions a_{max} = 20,000 rpm/s, temperature from –40 °C to +85 °C and shaft surface roughness Ra 0.8.

Part numbering

MRN 025 C B 010 A A 00

Series

MRN - Nonius magnetic ring

Outer diameter

025 - 24.50 mm
030 - 30 mm
051 - 50.55 mm
064 - 64 mm

Cross section

A - Axial, height 2.5 mm
B - Axial, height 6 mm
C - Radial, height 8 mm
D - Radial, height 11 mm

Magnetisation

B - 32/31 pole pairs, 1.28 mm magnetic pole length
C - 64/63 pole pairs, 1.28 mm magnetic pole length
F - 64/63 pole pairs, 1.50 mm magnetic pole length

Inner diameter

010 - 10 mm
025 - 25 mm
045 - 45 mm

Material

A - Stainless steel hub with bonded rubber tape (-40°C to +85°C)

Packaging

A - Individual packaging

Special requirements

00 - No special requirements (standard)

Table of available combinations

Series	Outer diameter	Cross section	Magnetisation	Inner diameter	Material	Packaging	Special requirements
MRN	025	C	B	010	A	A	00
	030	B					
	051	D	C	025			
	064	A	F	045			

Accessories

Magnet viewer
MM0001

Head office

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