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RMSN

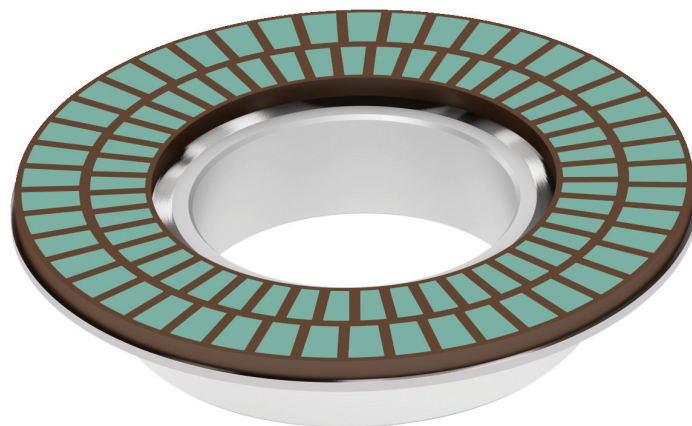
Rotary Magnetic Scale Nonius

Indicating movements with RMSN is simple, precise and economic. RMSN rotary magnetic are used in continuous or discrete positioning, motion control, such as commutation, and many other solutions. BOGEN manufactures rotary scales on the flange, outer or inner diameter. Production processes cover both prototype quantities and large series production. The combination of BOGEN encoders and scales with optimized pole pitches ensure highest system accuracy.

Counting

Controlling

ALWAYS
ABSOLUTE



Features and Benefits

- wide range of selectable magnetic scale characteristics: low to very high accuracy, several pole pitches, different scale geometries, a variety of magnetic materials
- two track magnetization
- customizable for many applications
- no wear from usage
- resistant to dust, cooling lubricant emulsion, oil, etc.

Features

Magnetic Properties (Elastomer-bonded ferrite/Isotropic)

residual induction [Br] mT	240-260
coercive force [Hcb] kA/m	171-195
intrinsic coercive force [Hcj] kA/m	223-279
maximum energy product [Bhmax] MGOe	1.45-1.65
reversing temperature modulus % / °C	-0.18
physical properties	
tensile strength N/mm ² (MPa)	>2.5
hardness shore D	30 -45
density g/cm ³	3.55-3.7
temperature range °C	-40 to 100

Chemical Properties

hydraulic oil (23 °C × 72 h)	++
alcohol (23 °C × 72 h)	+
weak alkali (23 °C × 72 h)	++
detergent (23 °C × 72 h)	++
aromatic solvent (23 °C × 72 h)	-
organic, anorganic acid (23 °C × 72 h)	-
aliphatic solvent (23 °C × 72 h)	-
water (60 °C × 72 h)	++

Magnetic Properties (Hard ferrite/Isotropic)

residual induction [Br] mT	200 - 220
coercive force [Hcb] kA/m	135 - 140
intrinsic coercive force [Hcj] kA/m	220 - 230
maximum energy product [Bhmax] MGOe	1.45 - 1.65
reversing temperature modulus % / °C	-0.19

Physical Properties

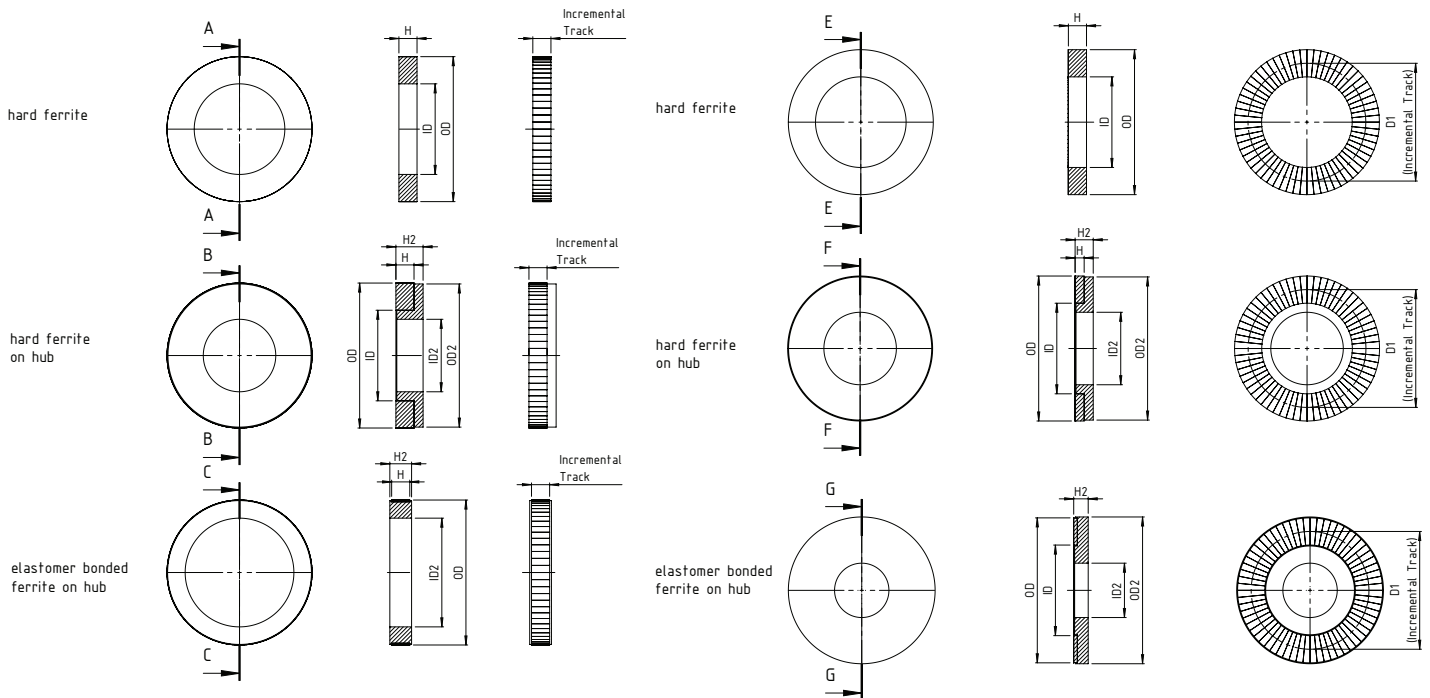
tensile strength N/mm ² (MPa)	50
hardness HV	500 -600
density g/cm ³	4.8 - 4.9
temperature range °C	- 40 to 250

Chemical Properties

hydraulic oil (23 °C × 72 h)	++
alcohol (23 °C × 72 h)	+
weak alkali (23 °C × 72 h)	++
detergent (23 °C × 72 h)	++
aromatic solvent (23 °C × 72 h)	chemical resistance depends on temperature, concentration and time of exposure to the medium
organic, anorganic acid (23 °C × 72 h)	
aliphatic solvent (23 °C × 72 h)	
water (60 °C × 72h)	++

- not suitable + good ++ very good

Due to mechanical characteristics of individual parts and the applied manufacturing processes, the top surface of the magnetic component may show minimal surface changes. This has no negative impact on functionality.



Available Dimensions RMSN Axial

order no.	order code	OD (elastomer/ hard ferrite)	OD2 (hub)	ID (elastomer/ hard ferrite)	ID2 (hub)	fit	H (elastomer/ hard ferrite)	H2 (RMSN)	master track Ø	nonius track Ø
		[mm]					[mm]			
51558	RMSN16-15A-1.28-E-S	15.50	17.00	3.00	5.00	D9	1.00	7.00	13.04	5.84
51701	RMSN16-15A-1.28-E-S	15.50	16.00	3.00	3.00	H7	1.00	6.00	13.04	5.84
51216	RMSN32-31A-1.28-E-S	29.00	29.80	15.10	10.00	H7	1.00	6.00	26.08	18.88
51499	RMSN32-31A-1.28-E-S	29.00	29.00	15.10	11.00	H7	1.00	3.50	26.08	18.88
51217	RMSN32-31A-1.28-F-A	30.00	29.80	11.50	10.00	H7	2.50	6.00	26.08	18.88
51694	RMSN32-31A-1.50-F-A	34.00	33.60	20.40	15.70	H7	2.00	6.00	30.56	23.36
51352	RMSN32-31A-1.50-E-S	33.50	34.00	20.00	19.00	H7	1.00	6.00	30.35	23.15
51353	RMSN32-31A-1.50-E-S	33.50	34.00	20.00	16.00	H7	1.00	6.00	30.56	23.36
52066	RMSN64-63A-1.28-F-A	55.00	54.00	42.00	35.00	H7	2.50	4.00	52.15	44.95
52087	RMSN64-63A-1.28-E-S	55.00	55.00	42.00	35.00	H7	1.00	2.50	51.78	45.28
52076	RMSN64-63A-1.50-F-A	64.50	64.00	51.00	40.00	H7	3.00	4.50	61.12	53.92
52097	RMSN64-63A-1.50-E-S	64.00	64.00	51.00	45.00	H7	1.00	2.50	61.12	53.92

Available Dimensions RMSN Radial

order no.	order code	OD (elastomer/ hard ferrite)	OD2 (hub)	ID (elastomer/ hard ferrite)	ID2 (hub)	fit	H (elastomer/ hard ferrite)	H2 (RMSN)
		[mm]					[mm]	
51218	RMSN32-31-1.28-F-A	24.50	24.00	17.00	10.00	H7	6.00	7.00
51467	RMSN32-31-1.28-F-A	24.50	24.00	17.00	16.35	H7	6.00	10.00
51269	RMSN64-63-1.28-F-A	50.55	50.00	38.00	31.00	H7	8.00	9.50
51356	RMSN64-63-1.28-E-S	50.55	49.55	48.55	25.00	H7	10.00	11.00
51521	RMSN64-63-1.50-F-A	59.50	50.00	43.50	35.00	H7	6.00	7.50
51529	RMSN64-63-1.50-E-S	59.60	57.60	57.60	52.60	H7	6.00	6.00

magnet material: E = elastomer; F = hard ferrite; hub material: S = steel; A = aluminum

Order Code Sensor

RMSN M-N - S - P - M - H - G- P

			code	explanation *
parameters	M-N	number of pole pairs	... - ...	number of pole pairs: Master-Nonius, e. g. 32-31
	S	surface of magnetization		radial, on the circumference (no input required)
			A	axial, on the end surface
	P	pole pitch (mm)	...	pole pitch of nonius track in millimeter, e. g. 1.28
	M	magnetization material	F	hard ferrite [8/22]
			E	elastomer bonded ferrite
			V	vulcanized ferrite
			P	plastroferrite
	H	hub material	A	aluminum
			S	steel
			M	sheet metal
	G	accuracy class		300 arc seconds (no input required)
			G...	only necessary if deviates from default
	P	protection		without protection (no input required)
S			stainless steel	
F			fibre	
P			plastic	

* standard parameters are bold

Ordering Example

RMSN32-31-1.28-E-A-G100 Rotary Magnetic Scale Nonius, 32 master-31 nonius pole pairs radial on the circumference, pole pitch of nonius track 1.28 mm, elastomer bonded ferrite (magnetization material), aluminum hub, 100 arc seconds accuracy class, no protection

RMSN64-63A-1.50-E-S Rotary Magnetic Scale Nonius, 64 master-63 nonius pole pairs , surface of magnetization axial, pole pitch of nonius track 1.50 mm, elastomer bonded ferrite (magnetization material), stainless steel hub, 300 arc seconds accuracy class, no protection

Customized Rotary Magnetic Scales

Customized rotary magnetic scales with different dimensions and pole numbers can be produced economically, and BOGEN scale production capabilities are designed for high flexibility at low cost. Please contact BOGEN to discuss your requirements.

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Handling of Magnetic Scales

Magnetic scales have been magnetized with a magnetic pattern that can be changed by various influences. Therefore, some precautions must be taken to maintain the quality of the magnetic pattern permanently.

- Remove all strong magnets near the magnetic scales - the stronger the magnet, the higher the risk of damage.
- Keep strong magnets, even for short moments, away from the magnetic scales - the farther away the lower the effect on the scale.
- Make sure that no contact can occur during assembly between the magnetic scales and strong permanent magnets or electromagnets.
- Avoid all materials between the scale and, for example, a magnetic brake, being magnetic.
- When storing, supplying and picking parts, make sure that the magnetic scales are not transported with other magnets in a stacked or contiguous manner. These include e.g. magnets for linear drives and possibly permanent magnets for electric motors.
- Store the scales without additional load from other parts or material and avoid mechanical damage to the elastomer surfaces.
- Remove all tools with magnetic properties from the assembly area, e.g. screwdriver with black tips (typical sign for magnets),
- Do not use magnet holders or handling magnets for the magnetic scales.
- Do not use lamps with a magnetic base near the magnetic scales.
- Avoid possible inductance caused by high voltage power lines near magnetic scales.
- Do not store magnetic scales touching with the scale sides, as this may cause magnetic interference. At high accuracies, a distance of at least one pole length between the scales must be observed.
- Linear scales with steel band may not be bent. The material is optimized for linear use.