

RMSI and RMSN

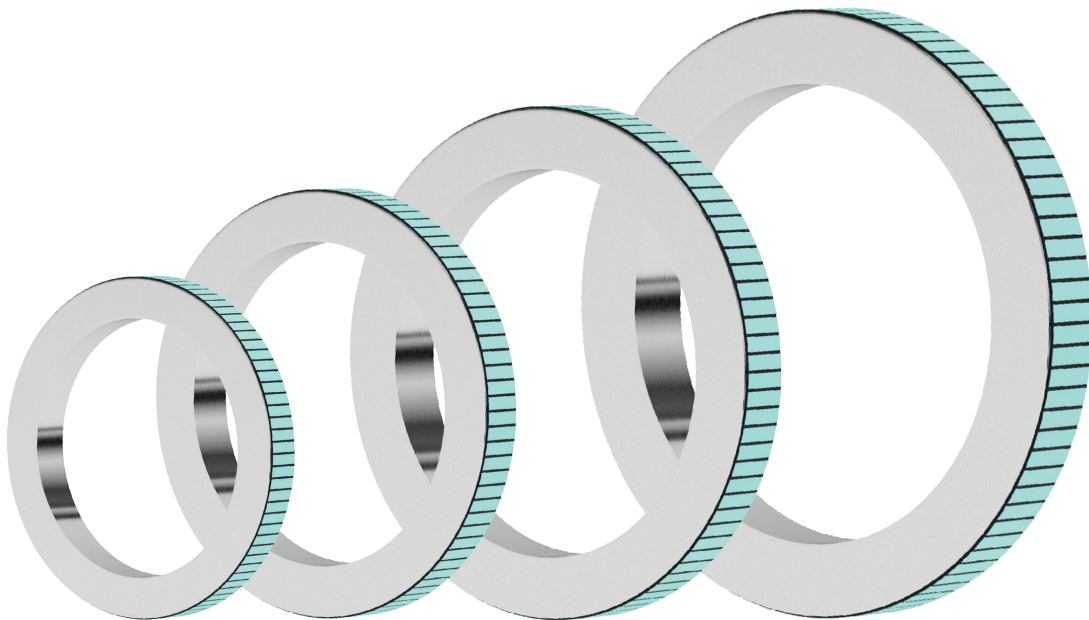
Rotary Magnetic Scale Standard Programme

Motion control and angle measuring have never been easier and more reliable with BOGEN's rotary magnetic scales standard programme. Our portfolio of standard rotary magnetic scales is available from stock and includes a choice of different dimensions that can suit various tasks and applications.

Incremental/
Absolute
Measuring

Rotary
Applications

Counting and
Controlling
Tasks



Features and Benefits

- incremental rotary scales (reference mark available on request)
- absolute rotary scales for use with existing Nonius sensors
- axial and radial magnetization
- high quality materials and precisely machined hubs
- high resistance to dust, cooling lubricants, oil, etc.
- easy installation by gluing or press-fitting

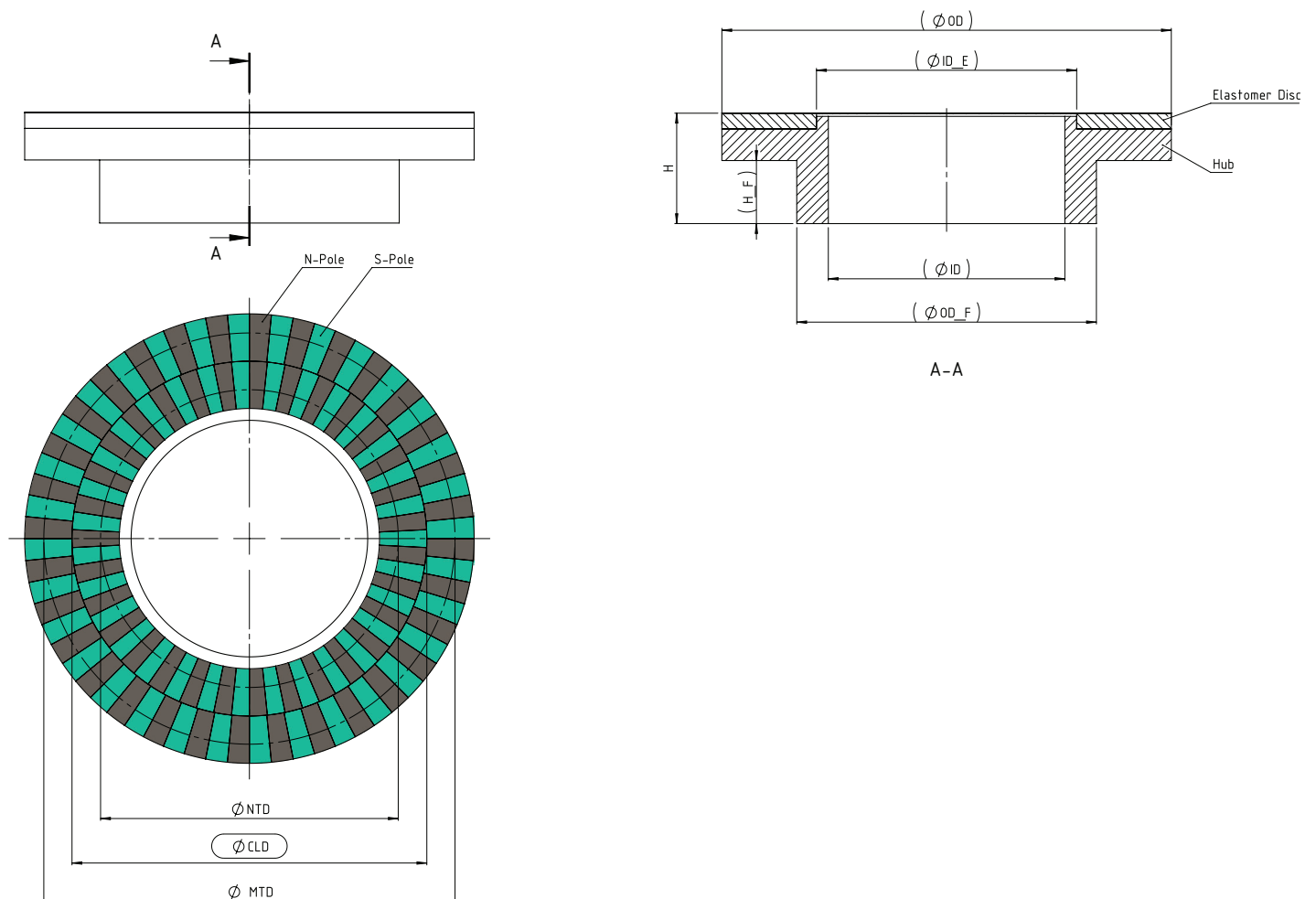
RMSN - Rotary Magnetic Scale Nonius - Axial with Flange

article number		58870	58873	58876	58879	58882	58885	58888	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	28.5	33	44.5	63.5	63.5	85.5	85.5	± 0.1
inner diameter elastomer (ID_E)	[mm]	16.5	21	28.5	51.5	51.5	69.5	69.5	
height	[mm]	7	8	8	9	10	11	13	± 0.12
height flange (H_F)	[mm]	4	5	5	6	7	8	10	
outer diameter flange (OD_F)	[mm]	19	25	30	51	57	63	75	
center line diameter (CLD)	[mm]	22.5	27	36.5	57.5	57.5	77.5	77.5	± 0.5
master track diameter (MTD)	[mm]	26.1	30.6	40.5	61.1	61.1	81.5	81.5	
nonius track diameter (NTD)	[mm]	18.9	23.4	32.5	53.9	53.9	73.5	73.5	
pole pitch master track at MTD	[mm]	1.28	1.5	1.99	1.5	1.5	2.0	2.0	
number of pole pairs master		32	32	32	64	64	64	64	
number of pole pairs nonius		31	31	31	63	63	63	63	

matching sensor type ⁽²⁾	AKS16	AKP18	AKS16-MT
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Absolute Sensing Heads for Nonius Rotary Scales“ section on the last page of this document



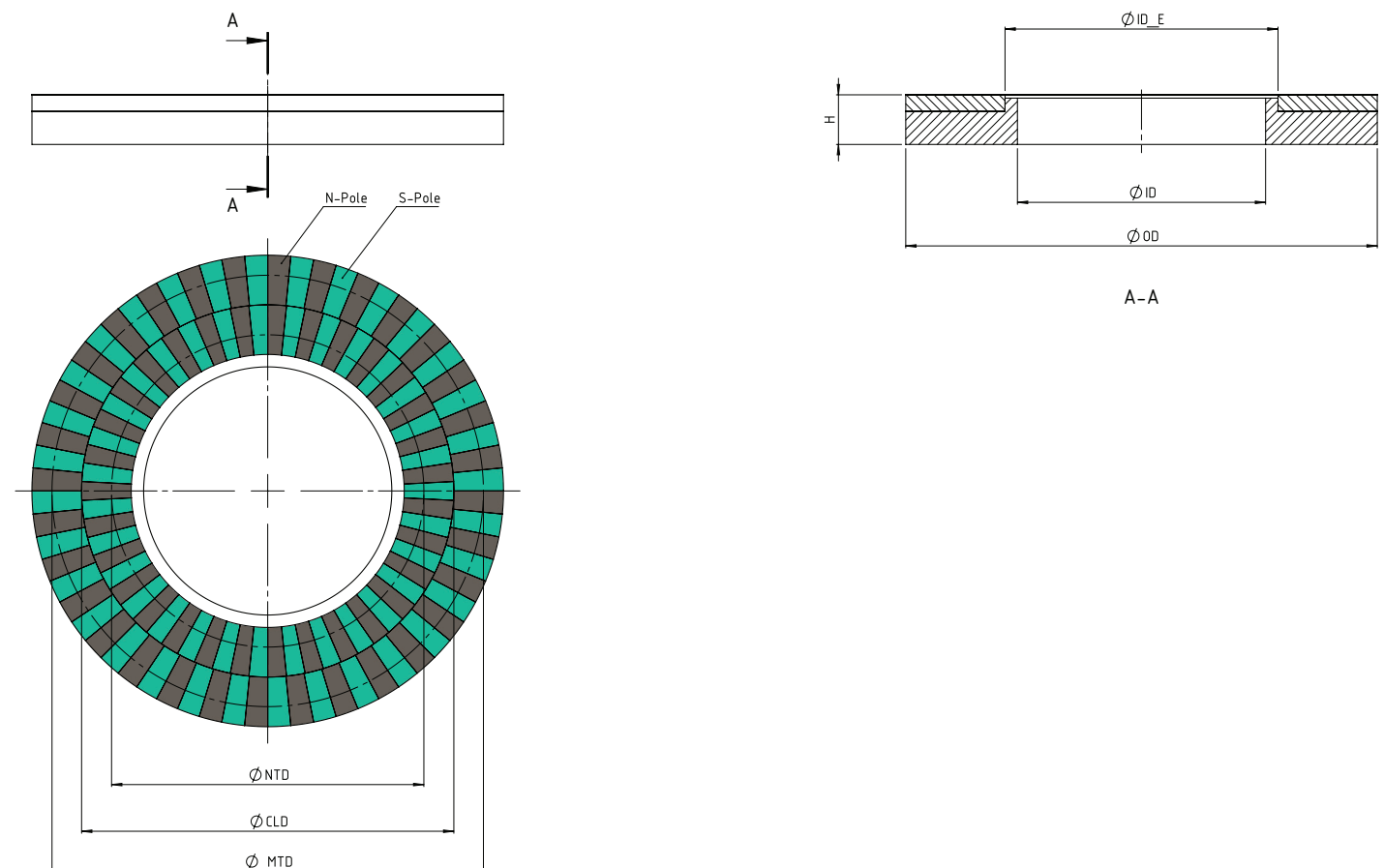
RMSN - Rotary Magnetic Scale Nonius - Axial Flat

article number		58822	58825	58830	58834	58837	58840	58843	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	28.5	33	44.5	63.5	63.5	85.5	85.5	± 0.1
inner diameter elastomer (ID_E)	[mm]	16.5	21	28.5	51.5	51.5	69.5	69.5	
height (H)	[mm]	3	3	3	3	3	3	3	± 0.12
center line diameter (CLD)	[mm]	22.5	27	36.5	57.5	57.5	77.5	77.5	
master track diameter (MTD)	[mm]	26.08	30.56	40.74	61.12	61.12	81.49	81.49	
nonius track diameter (NTD)	[mm]	18.88	23.36	32.74	53.92	53.92	73.49	73.49	
pole pitch master track at MTD	[mm]	1.28	1.5	2	1.5	1.5	2	2	
number of pole pairs master		32	32	32	64	64	64	64	
number of pole pairs nonius		31	31	31	63	63	63	63	

matching sensor type*	AKS16	AKP18	AKS16-MT
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Absolute Sensing Heads for Nonius Rotary Scales“ section on the last page of this document



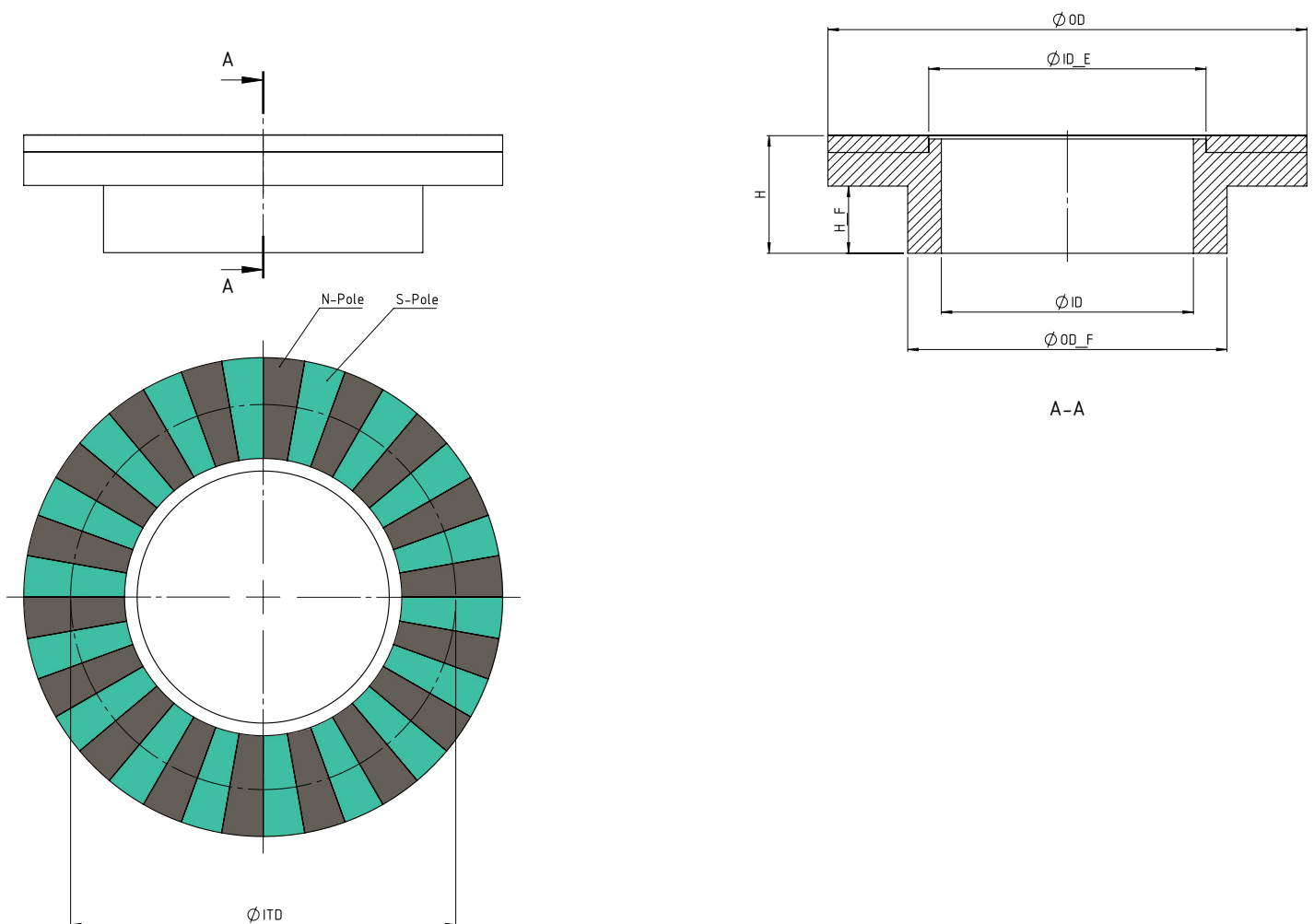
RMSI - Rotary Magnetic Scale Incremental - Axial with Flange

article number		58889	58890	58891	58892	58893	58894	58895	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	28.5	33	44.5	63.5	63.5	85.5	85.5	± 0.1
inner diameter elastomer (ID_E)	[mm]	16.5	21	28.5	51.5	51.5	69.5	69.5	
height (H)	[mm]	7	8	8	9	10	11	13	± 0.12
height flange (H_F)	[mm]	4	5	5	6	7	8	10	
outer diameter flange (OD_F)	[mm]	19	25	30	51	57	63	75	
incremental track diameter (ITD)	[mm]	22.92	26.74	36.92	57.3	57.3	77.67	77.67	
pole pitch incremental track at ITD	[mm]	2	2	2	2	2	2	2	
number of poles		36	42	58	90	90	122	122	

matching sensor type ⁽²⁾	IKS9	IKS9.1	IKS15	IKS15.1	IKP11	IKS11	IKS23
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Sensing Heads for Incremental Rotary Scales“ section on last page of this document



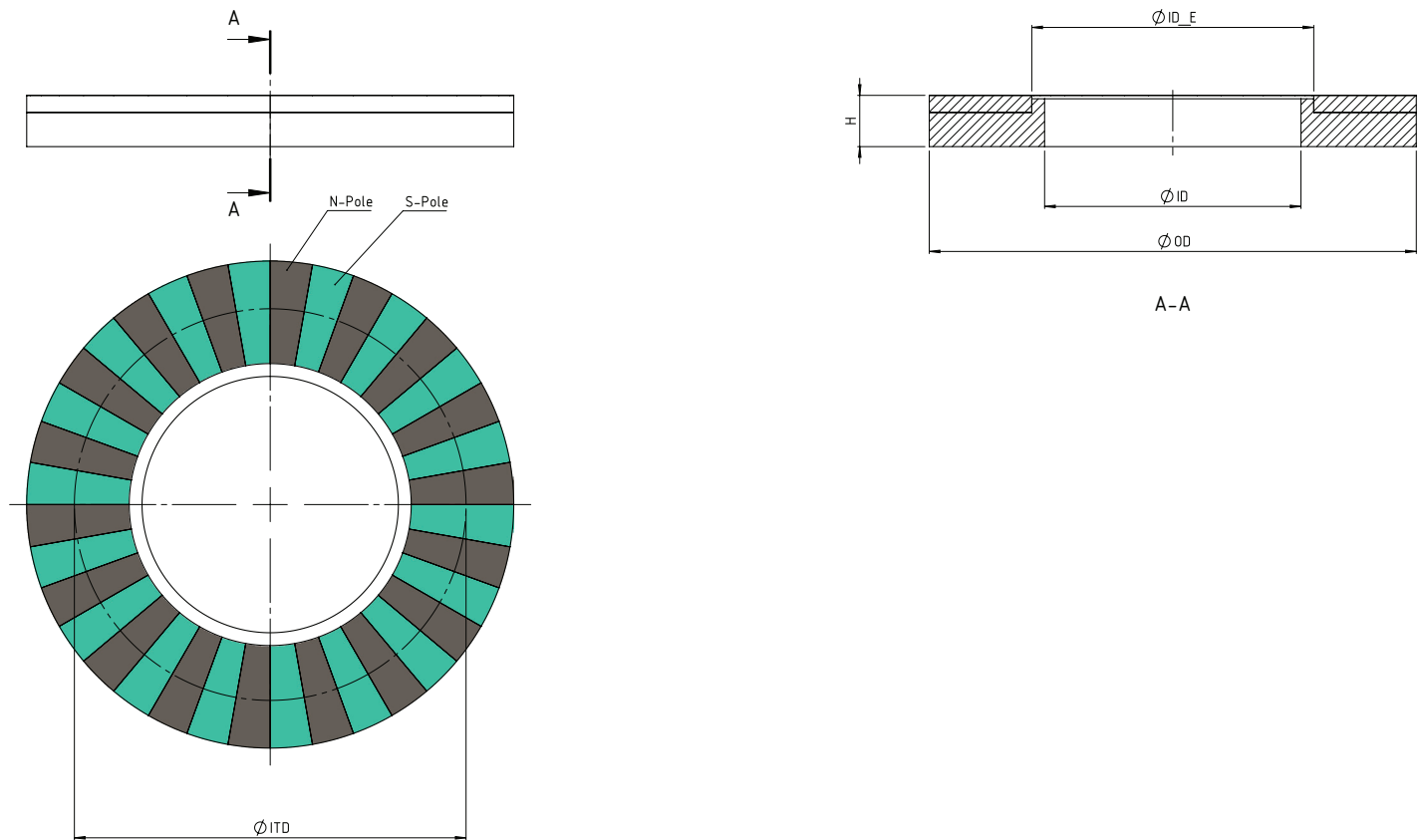
RMSI - Rotary Magnetic Scale Incremental - Axial Flat

article number		58845	58847	58849	58851	58852	58854	58855	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	28.5	33	44.5	63.5	63.5	85.5	85.5	± 0.1
inner diameter elastomer (ID_E)	[mm]	16.5	21	28.5	51.5	51.5	69.5	69.5	
height (H)	[mm]	3	3	3	3	3	3	3	± 0.12
incremental track diameter (ITD)	[mm]	22.92	26.74	36.92	57.30	57.30	77.67	77.67	
pole pitch incremental track at ITD	[mm]	2	2	2	2	2	2	2	
number of poles		36	42	58	90	90	122	122	

matching sensor type ⁽²⁾	IKS9	IKS9.1	IKS15	IKS15.1	IKP11	IKS11	IKS23
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Sensing Heads for Incremental Rotary Scales“ section on last page of this document



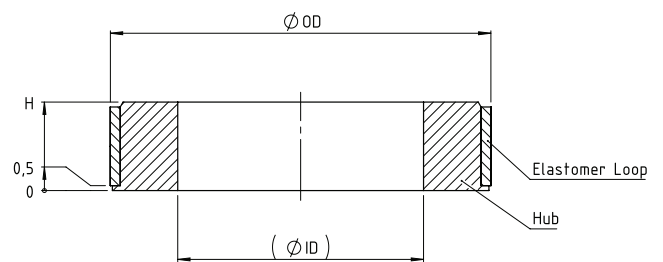
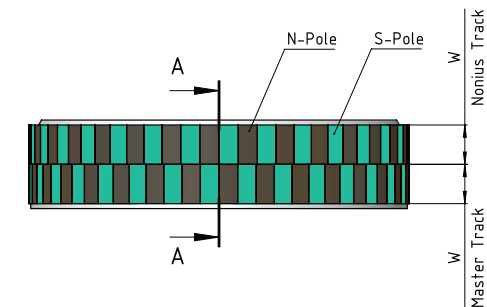
RMSN - Rotary Magnetic Scale Nonius - Radial

article number		58903	58907	58911	58916	58919	58923	58926	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	24.5	29	38.7	59.5	59.5	79.5	79.5	± 0.12
height (H)	[mm]	7	7	9	7	7	9	9	± 0.05
track width (W)	[mm]	3	3	4	3	3	4	4	± 0.2
reading master track diameter (MTD)	[mm]	26.08	30.56	40.74	61.12	61.12	81.49	81.49	
pole pitch master track at RTD	[mm]	1.28	1.5	2	1.5	1.5	2	2	
number of pole pairs master		32	32	32	64	64	64	64	
number of pole pairs nonius		31	31	31	63	63	63	63	

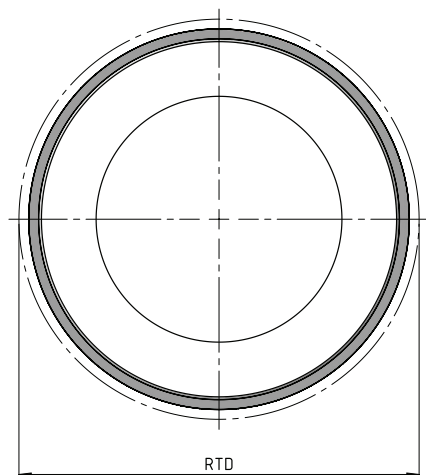
matching sensor type ⁽²⁾	AKS16	AKP18	AKS16-MT
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Absolute Sensing Heads for Nonius Rotary Scales“ section on the last page of this document



A-A



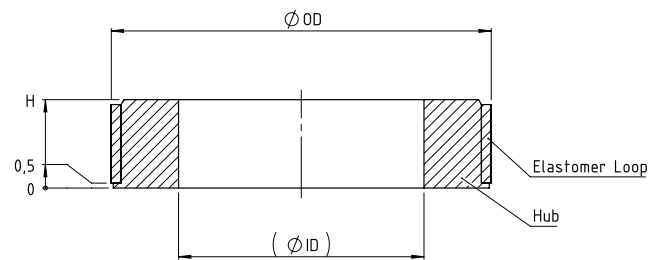
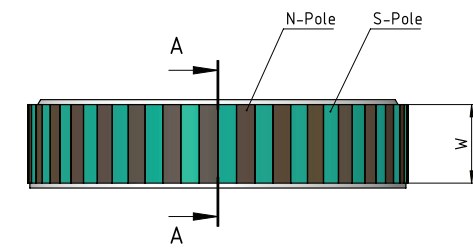
RMSI - Rotary Magnetic Scale Incremental - Radial

article number		58928	58930	58932	58934	58935	58937	58938	tolerance ⁽¹⁾
inner diameter (ID)	[mm]	15	20	25	45	50	55	65	H7
outer diameter (OD)	[mm]	24.5	29	38.7	59.5	59.5	79.5	79.5	± 0.12
height (H)	[mm]	7	7	9	7	7	9	9	± 0.05
track width (W)	[mm]	6	6	8	6	6	8	8	± 0.2
reading track diameter (RTD)	[mm]	26.74	30.56	40.74	61.12	61.12	81.49	81.49	
pole pitch at RTD	[mm]	2	2	2	2	2	2	2	
number of poles		42	48	64	96	96	128	128	

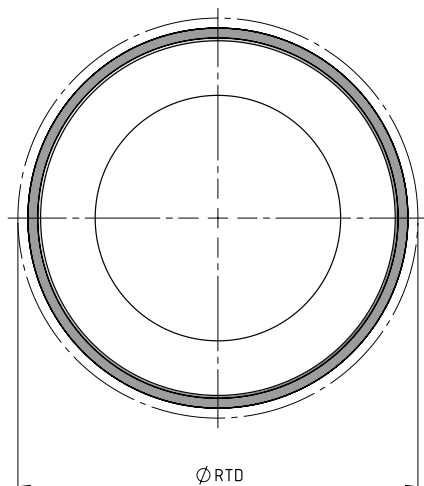
matching sensor type ⁽²⁾	IKS9	IKS9.1	IKS15	IKS15.1	IKP11	IKS11	IKS23
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⁽¹⁾ general tolerance ISO 2768-mK, if not indicated otherwise

⁽²⁾ for more details on sensor type please refer to „Corresponding Sensing Heads for Incremental Rotary Scales“ section on last page of this document



A-A



Environmental Specification (Elastomer-Bonded Ferrite/Isotropic)

Magnetic Properties

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/mm² (MPa)	> 2.5
hardness shore D	30 - 45
density g/cm³	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)	+

- not suitable
+ good
++ very good

Environmental Specifications (Hard Ferrite)

Magnetic Properties

residual induction (Br) mT	200 - 220
coercive force (Hcb) kA/m	125 - 140
intrinsic coercive force (Hcj) kA/m	220 - 230
maximum energy product (Bhmax) MGOe	0.8 - 1.1
reversing temperature modulus % / °C	- 0.18

Physical Properties

tensile strength N/mm²(MPa)	50
hardness shore D	500 - 600
density g/cm³	4.8 - 4.9
temperature range °C	-40 to 200

Chemical Properties

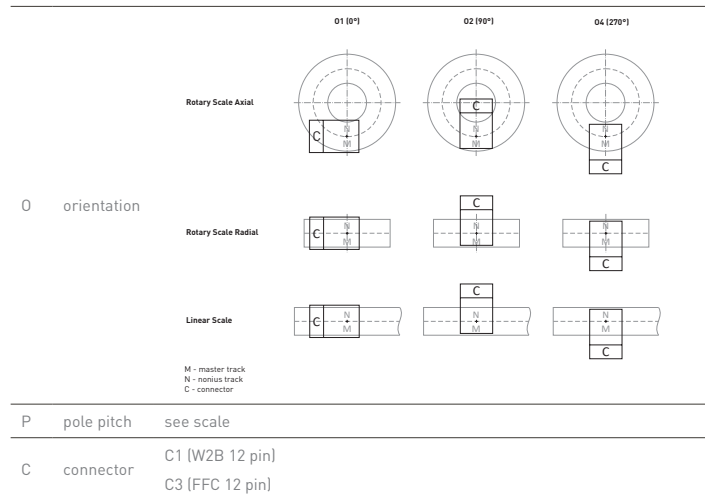
hydraulic oil (23 °C × 72 h)	++
alcohol (23 °C × 72 h)	+
weak alkali (23 °C × 72 h)	++
detergent (23 °C × 72 h)	++
aromatic solvent (23 °C × 72 h)	chemical resistance depends on temperature, concentration and time of exposure to the medium
organic, anorganic acid (23 °C × 72 h)	
aliphatic solvent (23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

- not suitable
+ good
++ very good

Nonius Rotary Scales - Corresponding Absolute Sensing Heads

sensor type	pole pitch nonius rotary scale		
	1.28	1.5	2
AKS16 ^[1]	AKS16-P1.28	AKS16-P1.50	AKS16-P2.00
AKP18 ^[2]	AKP18-P1.28-C3	AKP18-P1.50-C3	AKP18-P2.00-C3

[1] full order code AKS16-0-P-C:



ordering example AKS16-01-P1.28-C1:

- AKS16 Magnetic Sensing Head
- orientation option parallel
- 1.28 mm pole pitch
- connector Molex 12 pin

[2] W2B as standard connector; choose C1 for FFC connector

For more details in our datasheets please click sensor type in the table above.

Incremental Rotary Scales - Corresponding Sensing Heads

sensor type	order code	reference signal	supply voltage	interface	resolution	max. output frequency	cable	cable length	connector
IKS9 ^[3]	IKS9-Z1.50-P2-V5-D1-R1-F1000-T2-L1-C3-E1	periodic index every 50 counts	5 V	RS422	1µm	1000 Hz	drag chain qua- li- ty	1 m	D-Sub9 (male)
IKP11	IKP11-Z1.50-P2-D1-R1-F1000-C1			RS422				without	W2B
IKS11	IKS11-Z1.50-P2-D1-R1-F1000-L100			ABZ				0.1 m	FFC
IKS15 ^[3]	IKS15-Z0-P2-V5-D4-L1-T2-C3-E1	without		1 Vpp	-	-		1 m	D-Sub9 (male)
IKS23	IKS23-Z1-P2-V5-D1-R1-F1000-T1-L2-C2	periodic index every 1 mm		line driver (AB, /AB)	1µm	1000 Hz		2 m	M8 plug

[3] choose IKS9.1-[...] / IKS15.1-[...] respectively for metal case instead of plastic case

Please see full datasheets by clicking on the sensor type in the table above.