

ERO 785

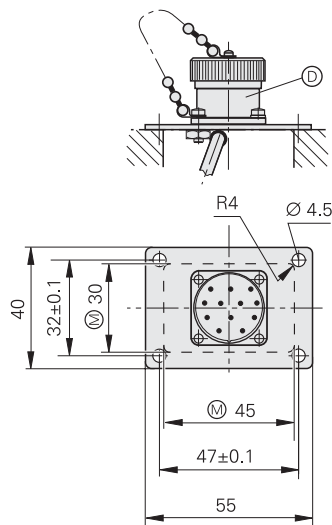
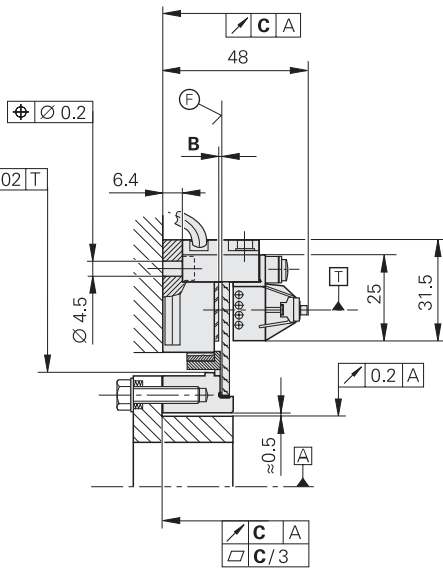
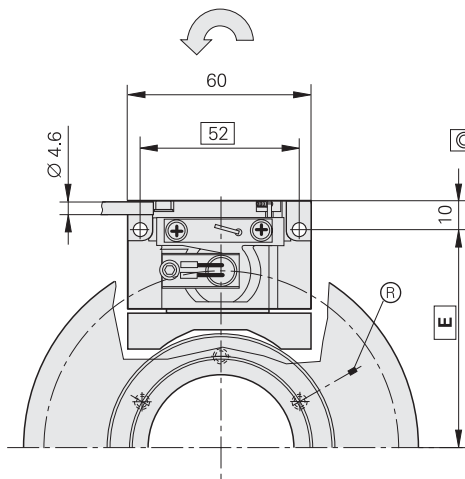
- Modular angle encoder
- Circular scale with hub



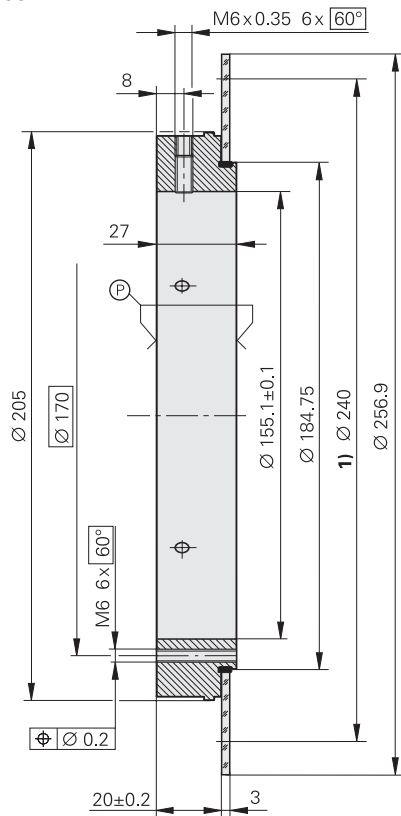
Dimensions in mm



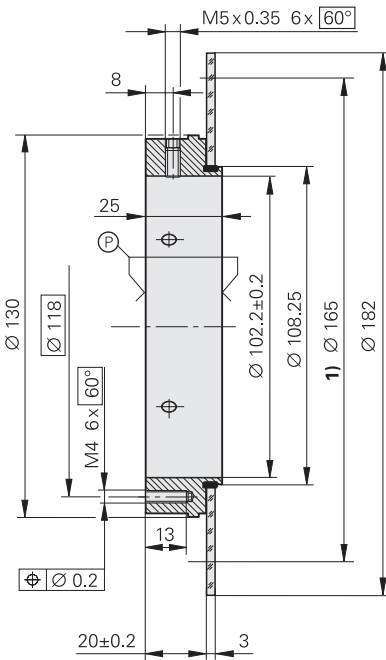
Tolerancing ISO 8015
ISO 2768 - m H



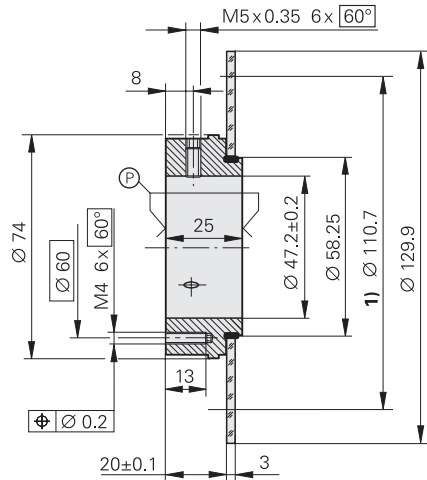
Hub inside diameter
155.1 mm



102.2 mm



47.2 mm



1) Mean graduation diameter

- ▢ = Bearing
- ⊙ = Cutout for mounting
- ⊙ = Position of the reference mark to an integral mounting thread $\pm 2^\circ$
- ▢ = Graduation
- ⊙ = Graduation surface
- ⊙ = Mounting surface
- ⊙ = Flange socket
- ↻ Direction of shaft rotation for output signals is described in interface description.

Hub inside diameter	Line count	E	B	C
155.1	36 000	132	0.05 ± 0.02	0.02
102.2		94.5	0.20 ± 0.02	
47.2		67.35	0.08 ± 0.01	0.01

	Incremental ERO 785		
Incremental signals	~ 1 V _{PP}		
Line count	36 000		
Reference mark	One		
Cutoff frequency –3 dB	180 kHz		
Recommended measuring step for position capture	0.000 1°		
System accuracy ¹⁾	± 4.2"	± 3"	± 2.2"
Accuracy of the graduation ²⁾	± 3.7"	± 2.5"	± 1.7"
Power supply without load	5 V ± 10% max. 150 mA		
Electrical connection	Cable 0.3 m (1 ft) with flange socket (male) M23 on mounting base		
Max. cable length ³⁾	150 m		
Hub inside diameter*	472 mm	102.2 mm	155.1 mm
Mech. permissible speed	≤ 8000 rpm	≤ 6000 rpm	≤ 4000 rpm
Moment of inertia of rotor	620 · 10 ⁻⁶ kgm ²	3700 · 10 ⁻⁶ kgm ²	26 000 · 10 ⁻⁶ kgm ²
Permissible axial motion of measured shaft	See the tolerance of scanning gap "B" in the dimension drawing		
Vibration 55 to 2000 Hz Shock 6 ms	≤ 100 m/s ² (IEC 60 068-2-6) ≤ 1000 m/s ² (IEC 60 068-2-27)		
Operating temperature	0 to 50 °C (32 °F to 122 °F)		
Protection* IEC 60529	IP 00		
Weight			
Scanning unit	Approx. 0.19 kg (0.42 lb)		
Circular scale with hub	0.46 kg (1.0 lb)	0.87 kg (1.9 lb)	2.6 kg (5.2 lb)

* Please indicate when ordering
¹⁾ Without installation. Additional errors caused by mounting and the bearing of the measured shaft are not included.
²⁾ For other errors, see *Measuring Accuracy*
³⁾ With HEIDENHAIN cable

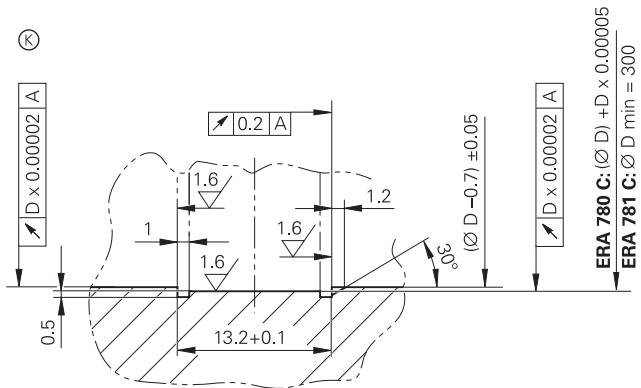
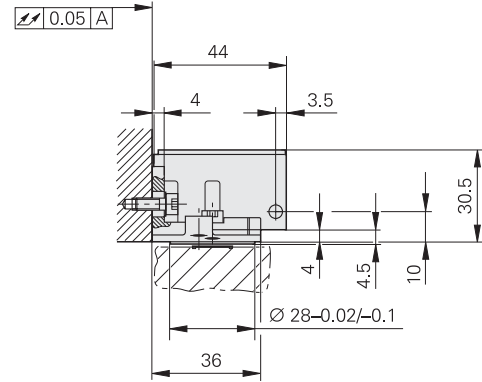
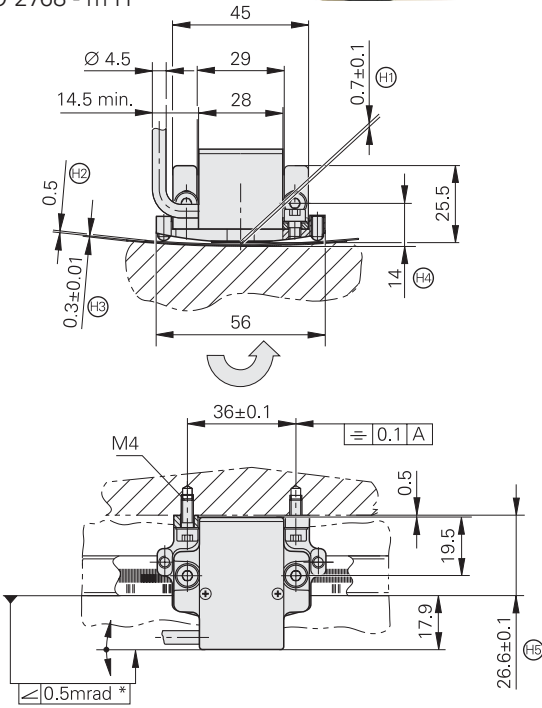
ERA 700 Series

- Modular angle encoder for inside diameters
- Full-circle and segment versions

Dimensions in mm

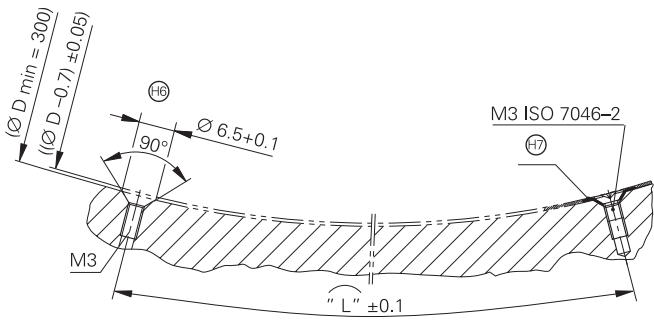
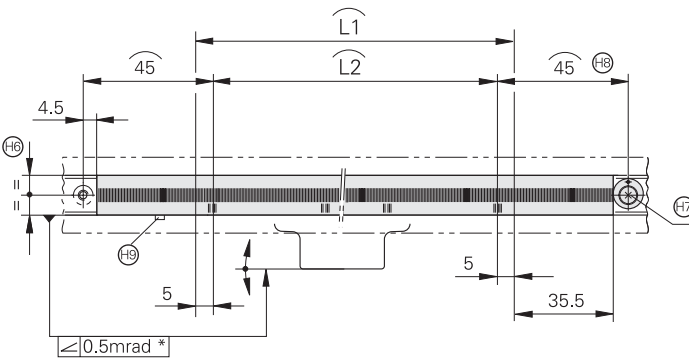


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ISO 2768 - m H

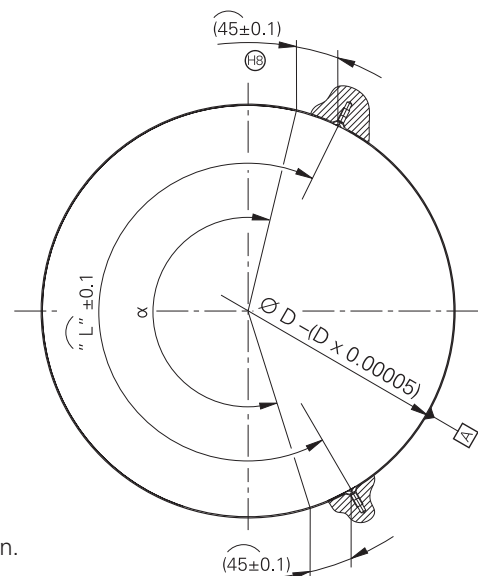


ERA 780 C: (Ø D) + D x 0.00005
ERA 781 C: Ø D min = 300

ERA 781C Scale tape



- * = Max. change during operation
- A = Ball bearing
- ⊗ = Required mating dimensions for the scale tape (not to scale)
- L = Distance of the mounting holes
- L1 = Traverse path
- L2 = Measuring range in radian measure
- α = Measuring range in degrees (segment angle)
- ⊕ = Scanning gap (distance between scanning reticle and scale-tape surface)
- ⊕ = Mounting clearance for mounting bracket. Spacer foil 0.5 mm
- ⊕ = Scale-tape thickness
- ⊕ = Distance between floor of scale-tape slot and threaded mounting hole
- ⊕ = Distance between mounting surface and scale-tape slot
- ⊕ = View of customer boring
- ⊕ = Cam disk for tensioning the scale tape
- ⊕ = Position of first reference mark
- ⊕ = Notch for removing scale tape (1 x b = 2 mm)
- ↻ Direction of shaft rotation for output signals is described in interface description.



	Incremental ERA 780C Full-circle version ERA 781C Segment version, scale-tape mounting with tensioning elements			
Incremental signals	 1 V _{pp}			
Reference mark	Distance-coded, nominal increment of 1000 grating periods			
Cutoff frequency -3 dB	≥ 180 kHz			
Power supply without load	5 V ± 10% max. 150 mA			
Electrical connection	Cable 3 m (9.9 ft) with coupling M23			
Max. cable length ¹⁾	150 m			
Scale-slot diameter*	318.58 mm	458.62 mm	573.20 mm	1 146.10 mm
Line count				
ERA 780C full circle	–	36 000	45 000	90 000
ERA 781C segment*	72°: 5 000 ⁴⁾ 144°: 10 000 ⁴⁾	50°: 5 000 100°: 10 000 200°: 20 000	160°: 20 000	–
Recommended measuring step for position capture	0.0002°	0.0001°	0.00005°	0.00002°
System accuracy ²⁾				
ERA 780C full circle	–	± 3.5"	± 3.4"	± 3.2"
ERA 781C segment	See <i>Measuring Accuracy</i>			
Accuracy of the graduation ³⁾	± 3"			
Mech. permissible speed	≤ 500 rpm			
Permissible axial motion of measured shaft	± 0.2 mm			
Vibration 55 to 2000 Hz Shock 6 ms	≤ 100 m/s ² (IEC 60 068-2-6) ≤ 1000 m/s ² (IEC 60 068-2-27)			
Operating temperature	–10 to 50 °C (32 °F to 122 °F) (thermal coefficient of expansion of the scale substrate between 9 · 10 ^{–6} K ^{–1} and 12 · 10 ^{–6} K ^{–1})			
Protection IEC 60 529	IP 00			
Weight				
Scanning unit	Approx. 0.35 kg (0.77 lb)			
Scale tape	Approx. 30 g/m (7.1 oz/m)			

* Please indicate when ordering; other versions available upon request.

1) With HEIDENHAIN cable

2) Without installation. Additional errors caused by mounting inaccuracy and inaccuracy from the bearing of the measured shaft are not included.

3) For other errors, see *Measuring Accuracy*

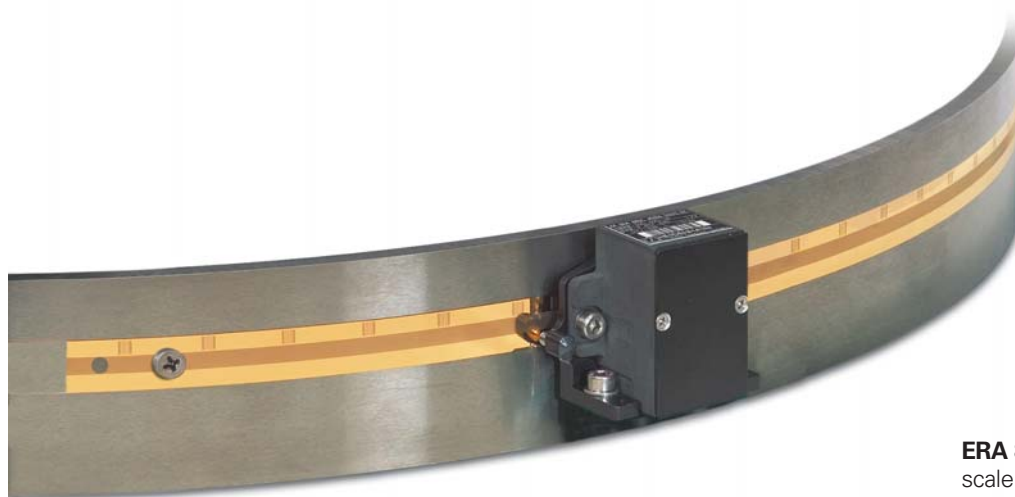
4) Corresponds to 25 000 lines on a full circle

ERA 800 Series

- **Modular angle encoder for outside diameters**
- **Full-circle and segment versions**

**ERA 880 C** Full-circle version

ERA 881C Circle-segment version,
scale tape secured with tensioning elements



ERA 882C Circle-segment version,
scale tape without tensioning elements

	Incremental ERA 880 C Full-circle version ERA 881 C Circle-segment version, scale-tape mounting via tensioning elements ERA 882 C Circle-segment version, scale tape without tensioning elements		
Incremental signals	 1 V _{pp}		
Reference mark	Distance-coded, nominal increment of 1000 grating periods		
Cutoff frequency –3 dB	≥ 180 kHz		
Power supply without load	5 V ± 10% max. 150 mA		
Electrical connection	Cable 3 m (9.9 ft) with coupling M23		
Max. cable length ¹⁾	150 m		
Scale-slotdiameter*	317.99 mm	458.04 mm	572.63 mm
Line count			
ERA 880 C full circle	–	36 000	45 000
ERA 881 C/ ERA 882 C segment*	72°: 5 000 ⁴⁾ 144°: 10 000 ⁴⁾	50°: 5 000 100°: 10 000 200°: 20 000	160°: 20 000
Recommended measuring step for position capture	0.000 2°	0.000 1°	0.000 05°
System accuracy ²⁾			
ERA 880 C full circle	–	± 3.5"	± 3.4"
ERA 881 C/ ERA 882 C segment	See <i>Measuring Accuracy</i>		
Accuracy of the graduation ³⁾	± 3"		
Mech. permissible speed	≤ 100 rpm		
Permissible axial motion of measured shaft	± 0.2 mm		
Vibration 55 to 2000 Hz Shock 6 ms	≤ 100 m/s ² (IEC 60 068-2-6) ≤ 1000 m/s ² (IEC 60 068-2-27)		
Operating temperature	–10 to 50 °C (+14 to 122 °F) (thermal coefficient of expansion of the scale substrate between 9 · 10 ^{–6} K ^{–1} and 12 · 10 ^{–6} K ^{–1})		
Protection IEC 60 529	IP 00		
Weight			
Scanning unit	Approx. 0.35 kg (0.77 lb)		
Scale tape	Approx. 30 g/m (7.1 oz/m)		

* Please indicate when ordering; other versions available upon request.

1) With HEIDENHAIN cable

2) Without installation. Additional errors caused by mounting inaccuracy and inaccuracy from the bearing of the measured shaft are not included.

3) For other errors, see *Measuring Accuracy*

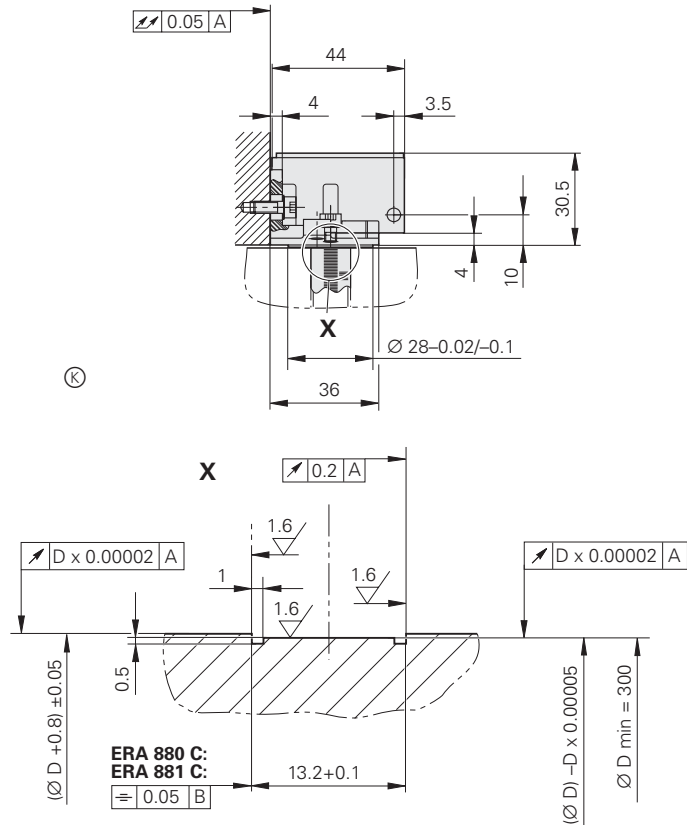
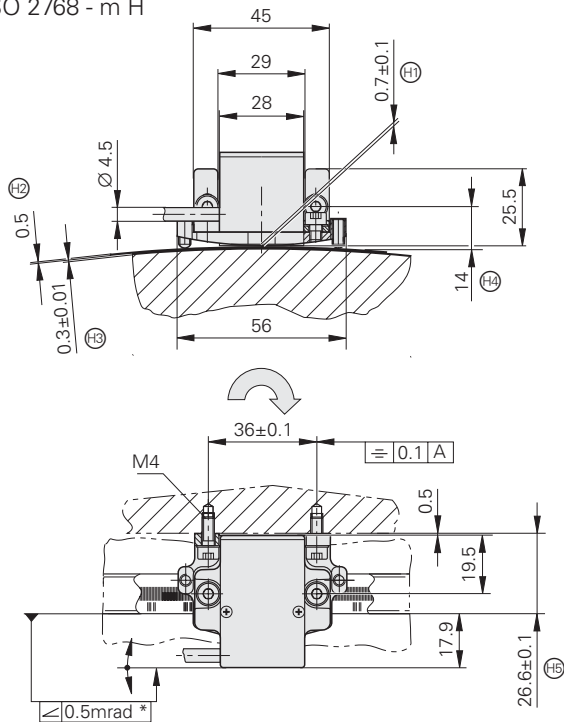
4) Corresponds to 25 000 lines on a full circle

ERA 800 Series

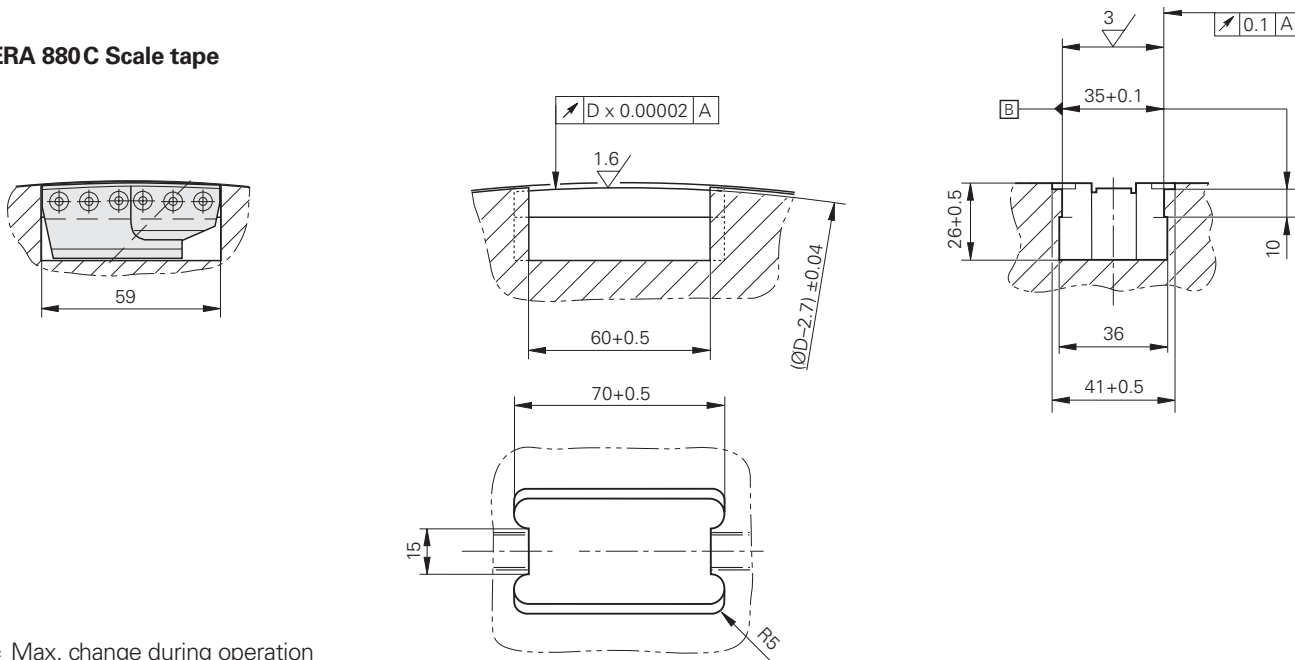
Dimensions in mm



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ISO 2768 - m H

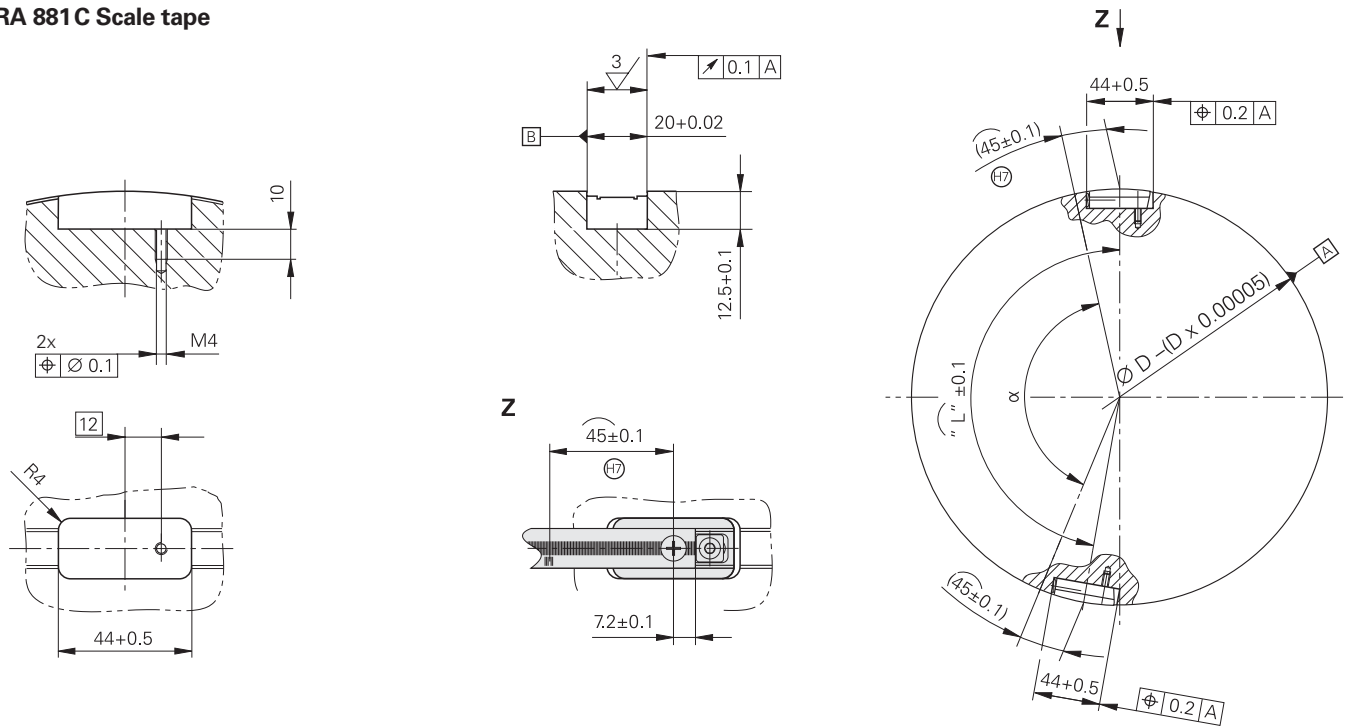


ERA 880 C Scale tape

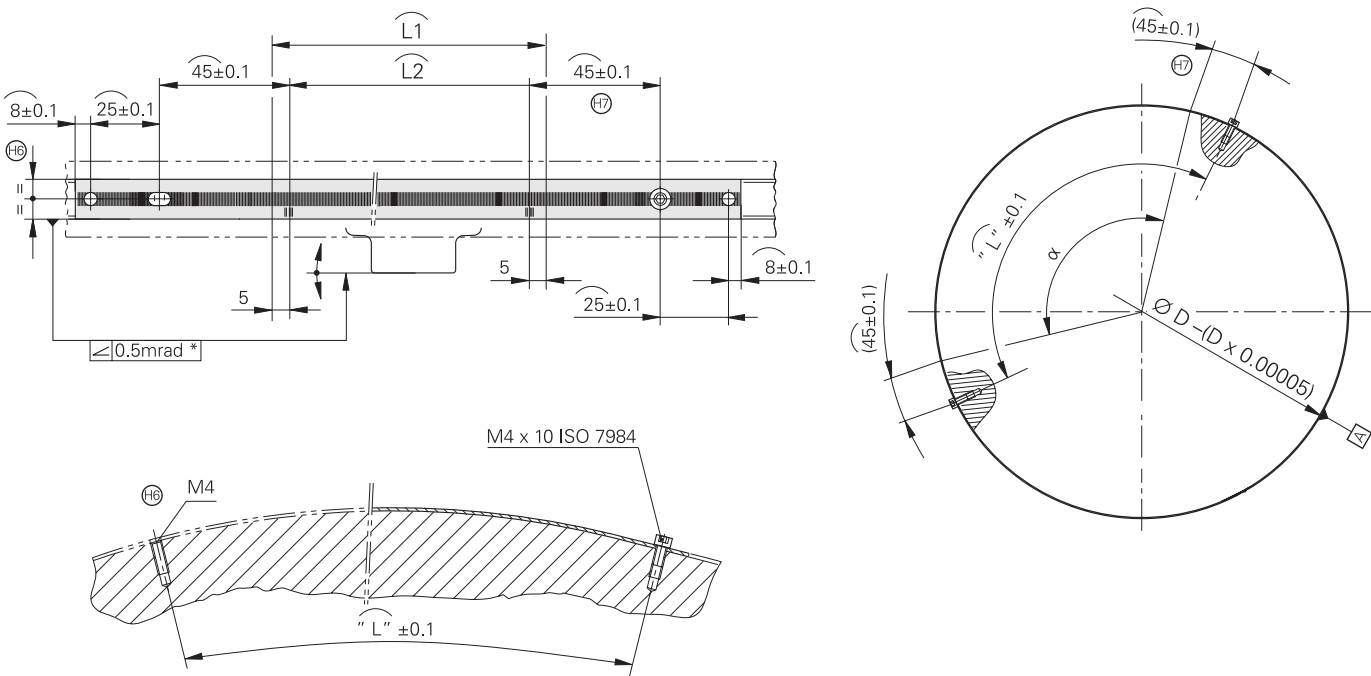


- * = Max. change during operation
- [A] = Ball bearing
- [K] = Required mating dimensions for the scale tape (not to scale)
- [H] = Scanning gap (distance between scanning reticle and scale-tape surface)
- [H2] = Mounting clearance for mounting bracket. Spacer foil 0.5 mm
- [H3] = Scale-tape thickness
- [H4] = Distance between floor of scale-tape slot and threaded mounting hole
- [H5] = Distance between mounting surface and scale-tape slot
- ↻ Direction of shaft rotation for output signals is described in interface description.

ERA 881 C Scale tape



ERA 882 C Scale tape



* = Max. change during operation
A = Ball bearing
H6 = View of customer boring
H7 = Position of first reference mark
L = With ERA 881 C: Positions of the tensioning elements
With ERA 882 C: Distance of mounting holes
L1 = Traverse path
L2 = Measuring range in radian measure
 α = Measuring range in degrees (segment angle)