

# HEIDENHAIN

Montageanleitung  
*Mounting Instructions*

**ERP 4080**  
**ERP 8080**

11/2007

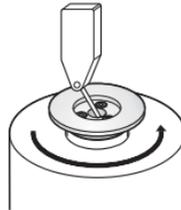
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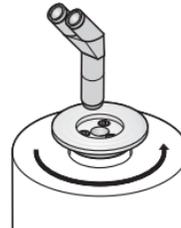
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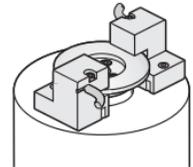
Alternative Zentriermöglichkeiten  
*Alternative centering methods*



**mech.**



**opt.**



**el.**

**ERP 4080**  
60" ... 50"

**ERP 4080**  
30" ... 20"

**ERP 4080**  
10" ... 5"

Systemgenauigkeit  
(typ. erreichbare Werte)  
*System accuracy*  
(*typical values to be achieved*)

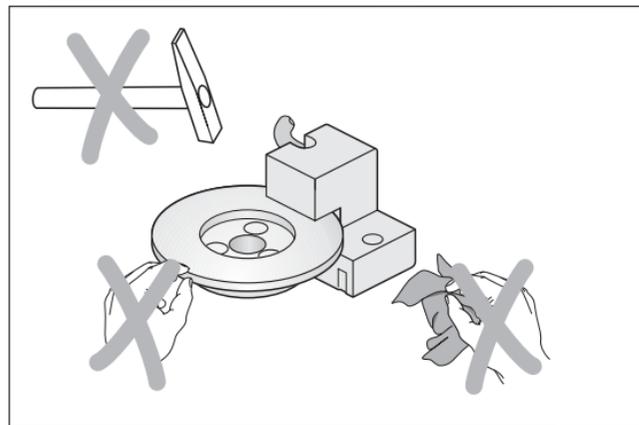
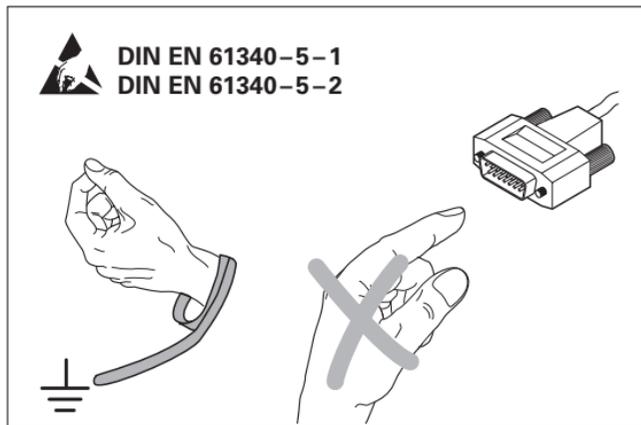
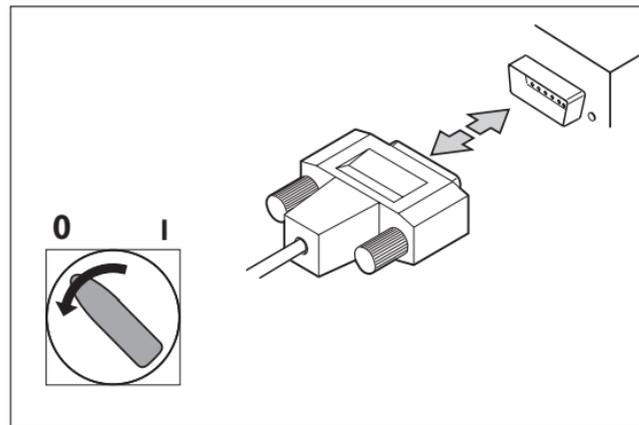
**ERP 8080**  
25" ... 20"

**ERP 8080**  
15" ... 10"

**ERP 8080**  
5" ... 2"



Maße in mm  
Dimensions in mm





Gerät nur mit Handschuhen aus der Verpackung nehmen.

Teilkreis nur seitlich berühren.

*Always wear gloves when taking the device out of the packaging.*

*Touch graduated disk on the sides only.*



Teilung nicht berühren!

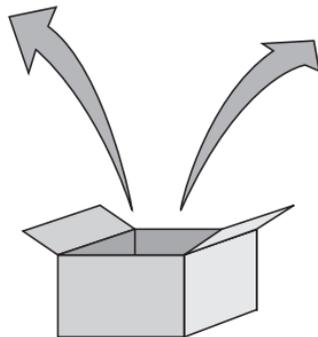
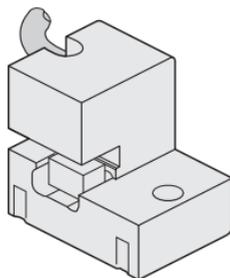
*Do not touch the graduation!*



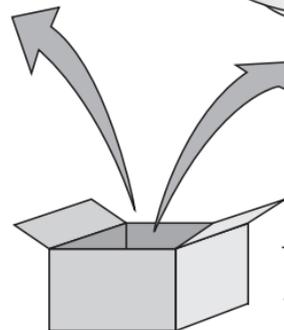
Gerät nicht reinigen!

*Do not clean the device!*

**Lieferumfang**  
**Items Supplied**



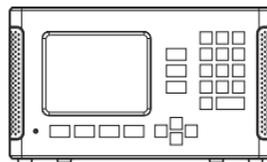
Abtastkopf  
Scanning Head



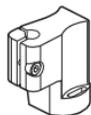
Teilscheibe/Nabe  
Disk/Hub

## Zubehör Accessories

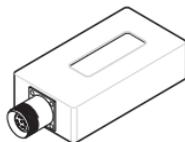
Seperat bestellen  
*Order seperately*



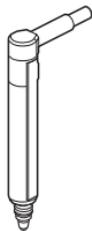
**ND 780**  
ID 520 010-01



**Messtaster-Adapter**  
**Gauge adapter**  
ID 627 142-01



**PWT 18**  
ID 325 413-01



**ST 1288**  
ID 383 979-01

### Abstandsfolien Spacer foils



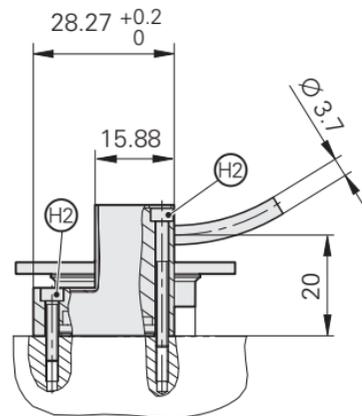
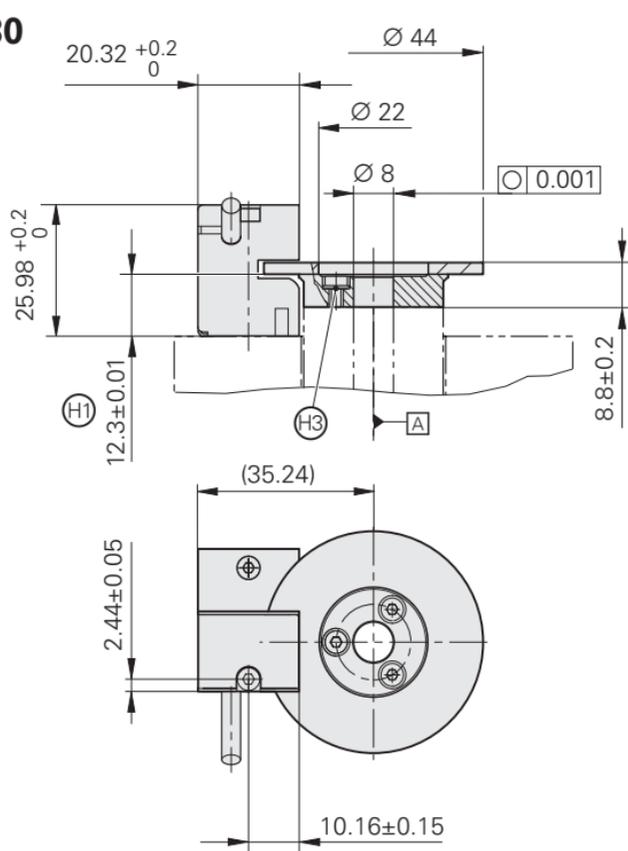
ID 619 943-01 : 10 µm bis 100 µm in 10 µm – Schritten  
: 10 µm up to 100 µm in steps of 10 µm  
-10

ID 619 943-11 alle Größen (je 1 Folie)  
*choice of all kinds (one of each)*



**Montagehilfe**  
**Assembly aid**  
ID 622 976-02

# ERP 4080



$\square$  = Lagerung  
Bearing

mm



Tolerancing ISO 8015

ISO 2768 - m H

< 6 mm:  $\pm 0.2$  mm

Ⓜ1 = Montageabstand mit Abstandsfolie eingestellt  
*Mounting clearance set with spacer foil*

Ⓜ2 = Zylinderschraube ISO 4762 M2.5  
*ISO 4762 M 2.5 cylinder head screw*

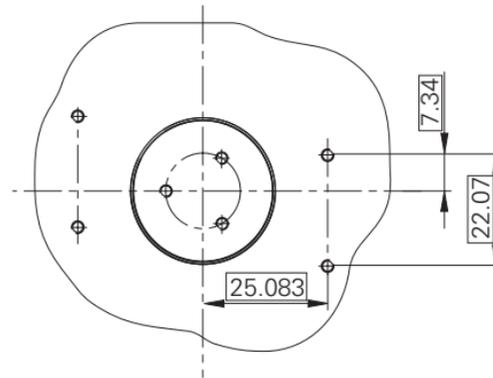
Ⓜ3 = Zylinderschraube ISO 4762 M 2.5 und Scheibe ISO 7089-2.5  
*ISO 4762 M 2.5 cylinder head screw and ISO 7089-2.5 disk*



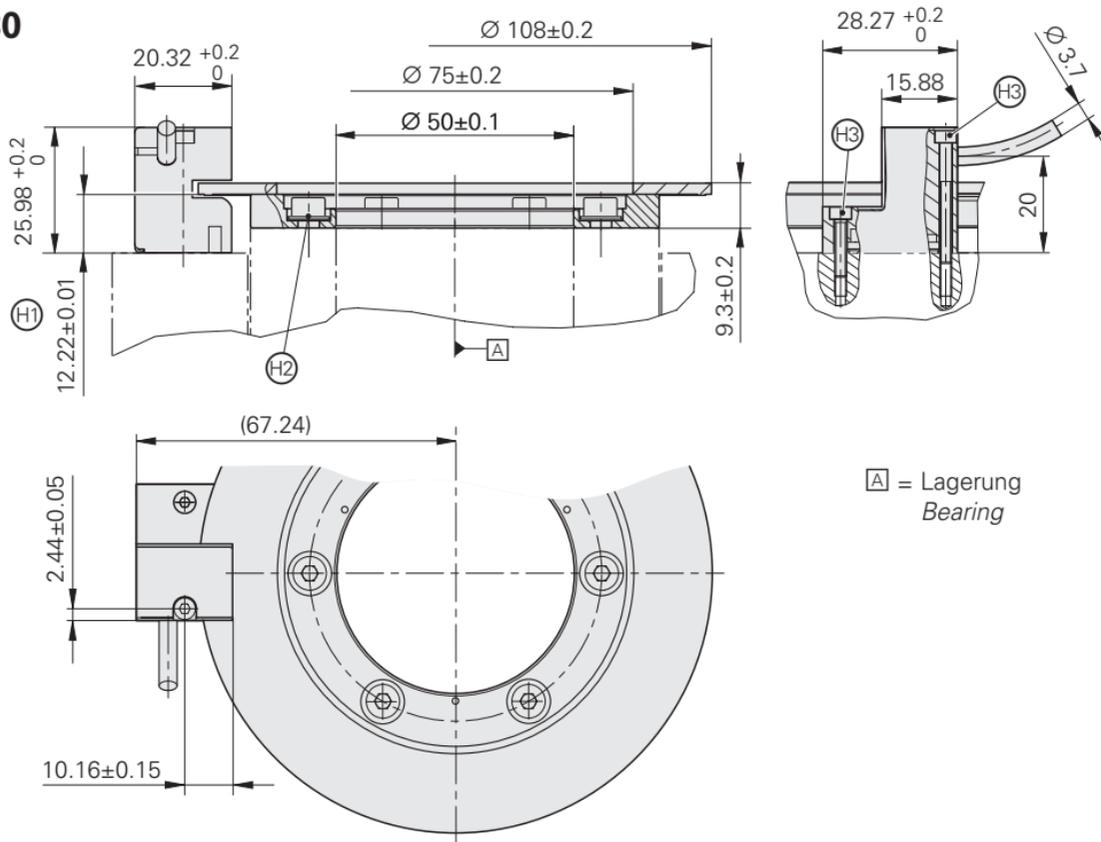
⌈A⌋ = Lagerung  
*Bearing*

⊕ = Auflagefläche nicht convex  
*Mounting surface not convex*

Bei elektrischem Zentrieren mit  
zwei Abtastköpfen  
*For electrical centering with  
two scanning heads*



# ERP 8080



mm



Tolerancing ISO 8015

ISO 2768 - m H

< 6 mm:  $\pm 0.2$  mm

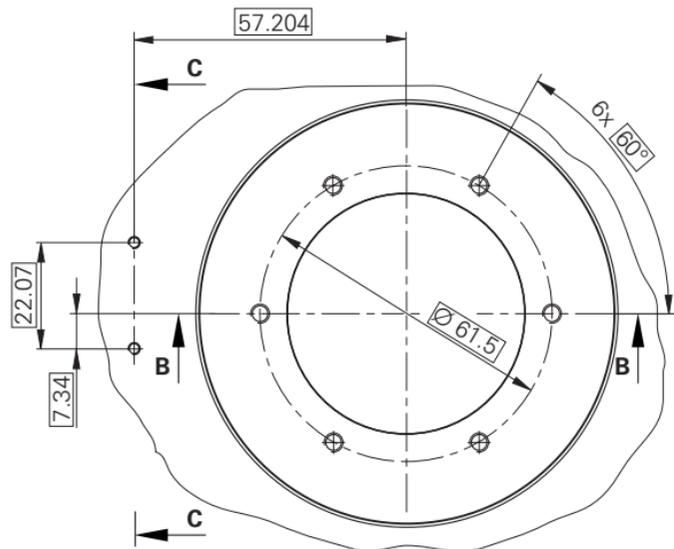
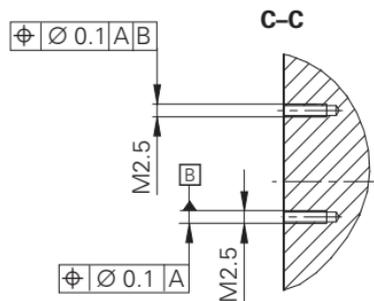
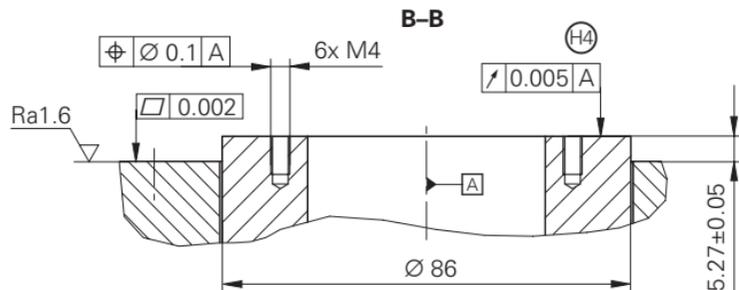
Ⓜ1 = Montageabstand mit Abstandsfolie eingestellt  
*Mounting clearance set with spacer foil*

Ⓜ2 = Zylinderschraube ISO 4762 M4 und Scheibe ISO 7089-4  
*ISO 4762 M4 cylinder head screw and ISO 7089-4 disk*

Ⓜ3 = Zylinderschraube ISO 4762 M 2.5  
*Cylinder head screw ISO 4762 M 2.5*

# ERP 8080

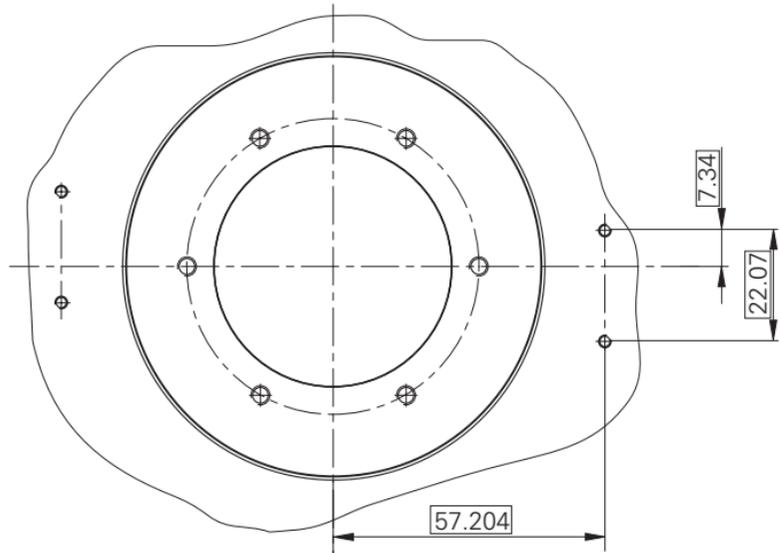
Kundenseitige Anschlussmaße  
*Required mating dimensions*



⊠ = Lagerung  
Bearing

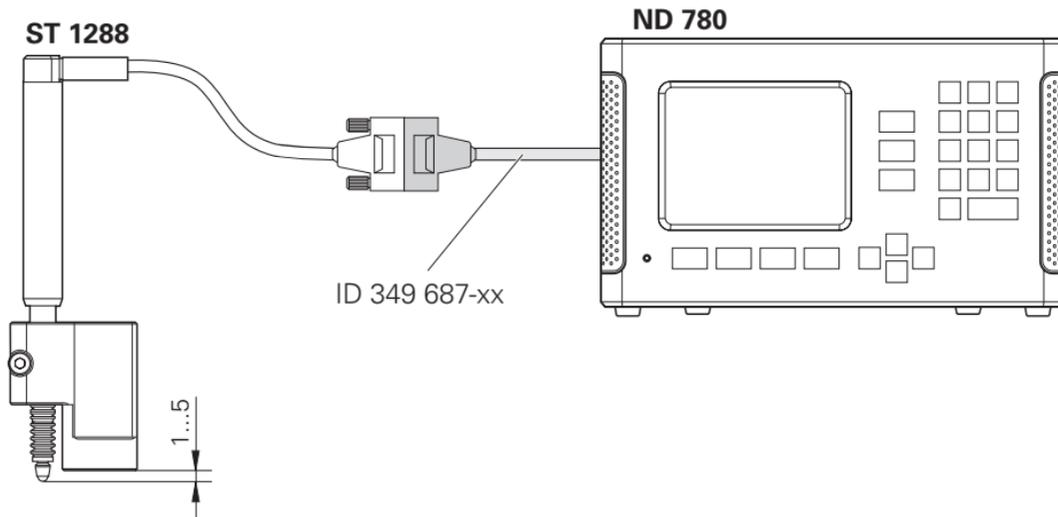
⊕ = Auflagefläche nicht konvex  
Mounting surface not convex

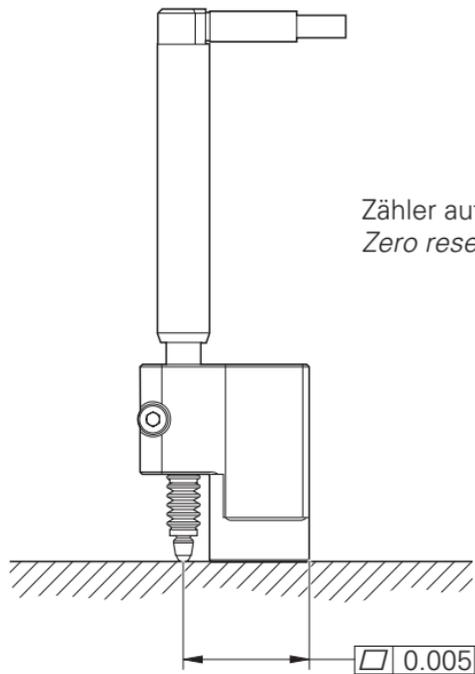
Bei elektrischem Zentrieren mit  
zwei Abtastköpfen  
For electrical centering with  
two scanning heads



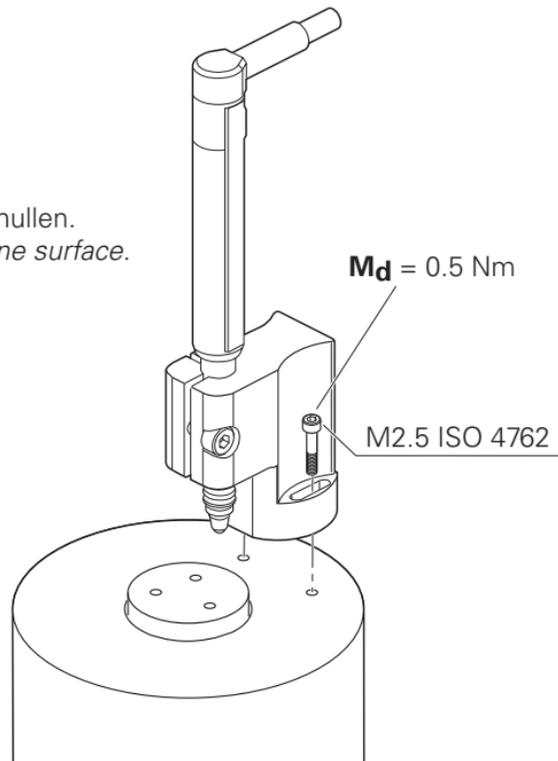
**Planlauf und Abtastspalt messen**  
***Measuring axial runout and scanning gap***

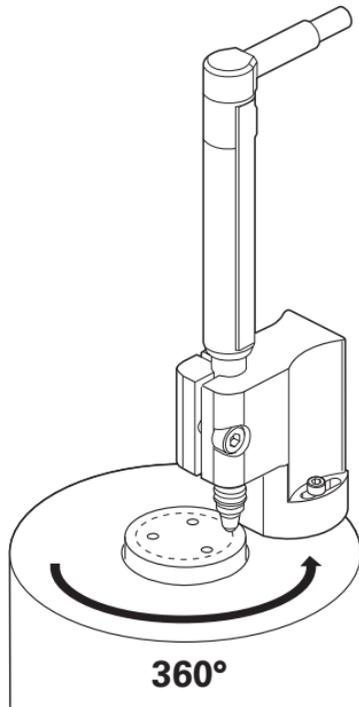
HEIDENHAIN empfiehlt  
*HEIDENHAIN recommends*





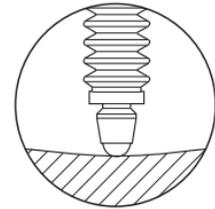
Zähler auf ebener Fläche nullen.  
*Zero reset counter on plane surface.*





Welle um  $360^\circ$  drehen und  
Min. und Max. Punkt ermitteln.  
Diese beiden Punkte auf der Welle markieren.  
Anschließend Messtaster wieder abbauen.  
*Turn shaft by  $360^\circ$  and  
determine min. and max. points.  
Mark these two points on the shaft.  
Then remove touch probe again.*

Werte notieren  
*Write down values*



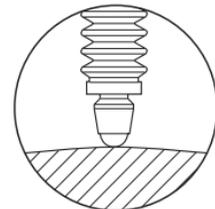
min. =  $y_1$

S.Nr. = \_\_\_\_\_

$y_1$  = \_\_\_\_\_

$y_2$  = \_\_\_\_\_

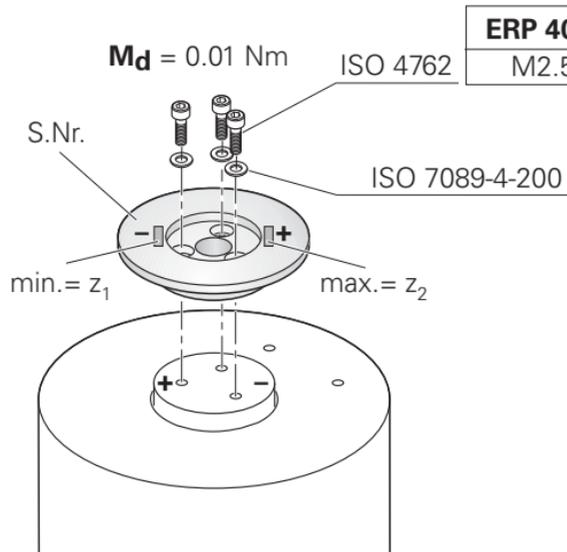
→ **29**



max. =  $y_2$

Teilscheibe mit Nabe muss so angebaut werden, dass der maximale Wert des Teilkreises auf dem minimalen Wert der Welle liegt bzw. der minimale Wert des Teilkreises auf dem maximalen Wert der Welle liegt.

*The disk/hub assembly must be mounted in such a way that the maximum value of the graduated disk is on top of the minimum value of the shaft and the minimum value of the graduated disk is on the maximum value of the shaft.*



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M2.5	M4

S.Nr. = \_\_\_\_\_

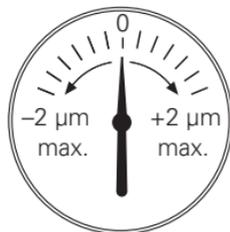
$z_1$  = \_\_\_\_\_

$z_2$  = \_\_\_\_\_

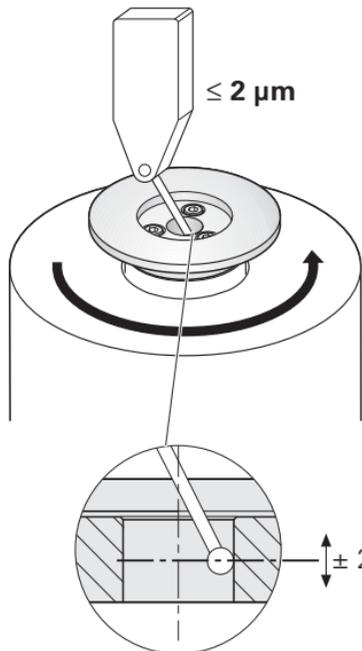
 → **29**

Werte notieren  
Write down values

**Mechanisch Zentrieren**  
**Mechanical centering**



1.



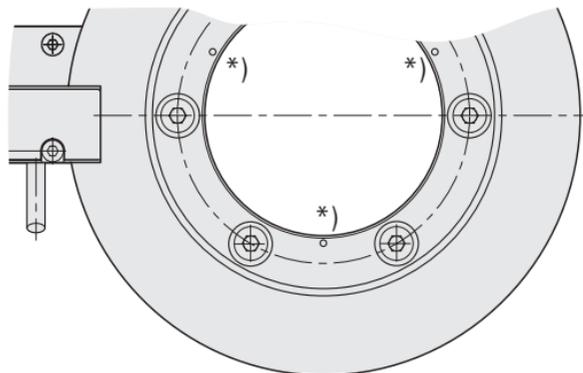
**ERP 4080**

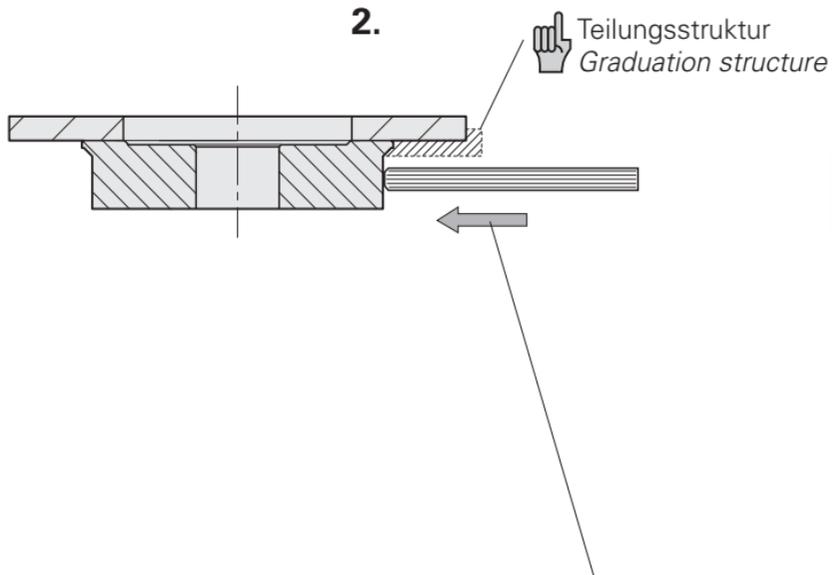
Um 360° messen.  
*Measure 360°.*

**ERP 8080**

\*)

An Messpunkten messen.  
*Measure on the measuring points.*



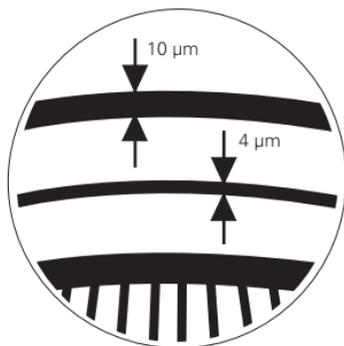


- 3.** Schrauben festziehen  
Fasten screws

	<b>ERP 4080</b>	<b>ERP 8080</b>
M <sub>d</sub>	0.5 Nm	1.1 Nm

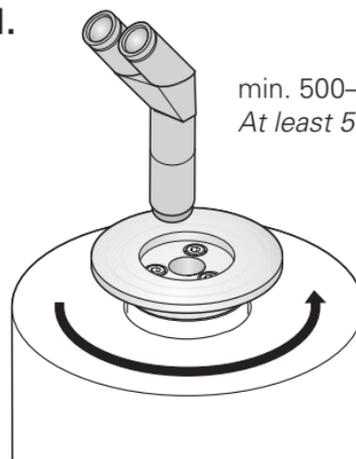
Leicht klopfen, bis Zentrierwert erreicht ist. Kein metallisches Werkzeug verwenden.  
*Tap lightly until required centricity is achieved (non-metallic adjustment tool).*

**Optisch Zentrieren**  
**Optical centering**

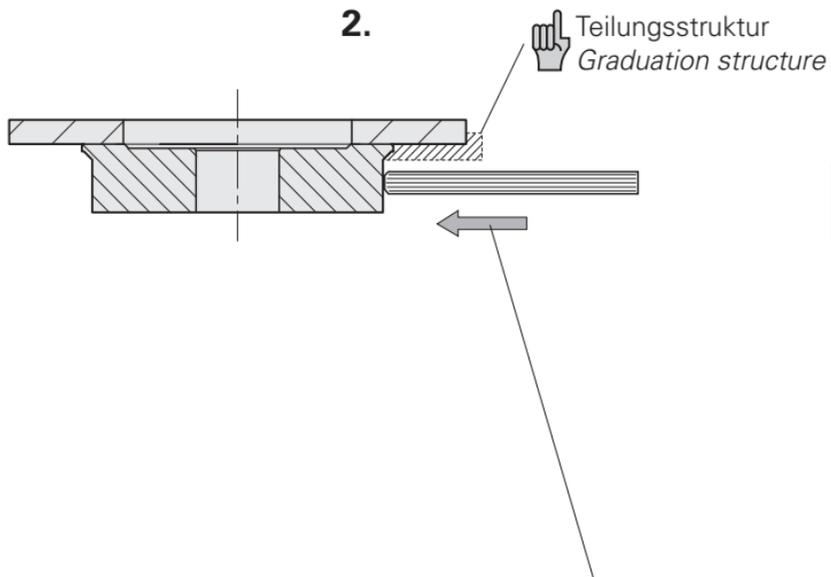


Zentriergenauigkeit  $\pm 2\ \mu\text{m}$   
Centering accuracy  $\pm 2\ \mu\text{m}$

1.



min. 500-fache Vergrößerung  
At least 500-fold magnification

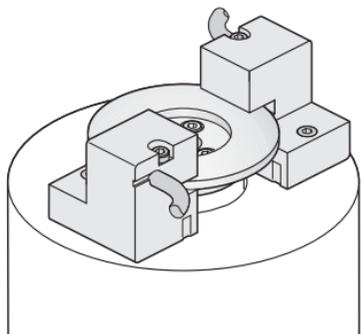
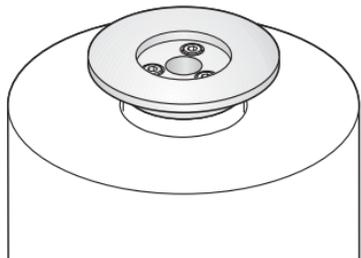


**3.** Schrauben festziehen  
Fasten screws

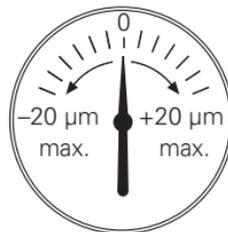
	<b>ERP 4080</b>	<b>ERP 8080</b>
M <sub>d</sub>	0.5 Nm	1.1 Nm

Leicht klopfen, bis Zentrierwert erreicht ist. Kein metallisches Werkzeug verwenden.  
Tap lightly until required centricity is achieved (non-metallic adjustment tool).

## Elektrisch Zentrieren *Electrical centering*

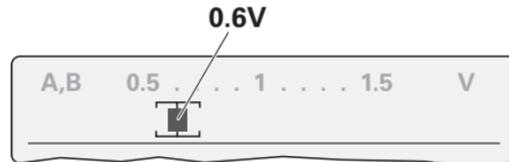


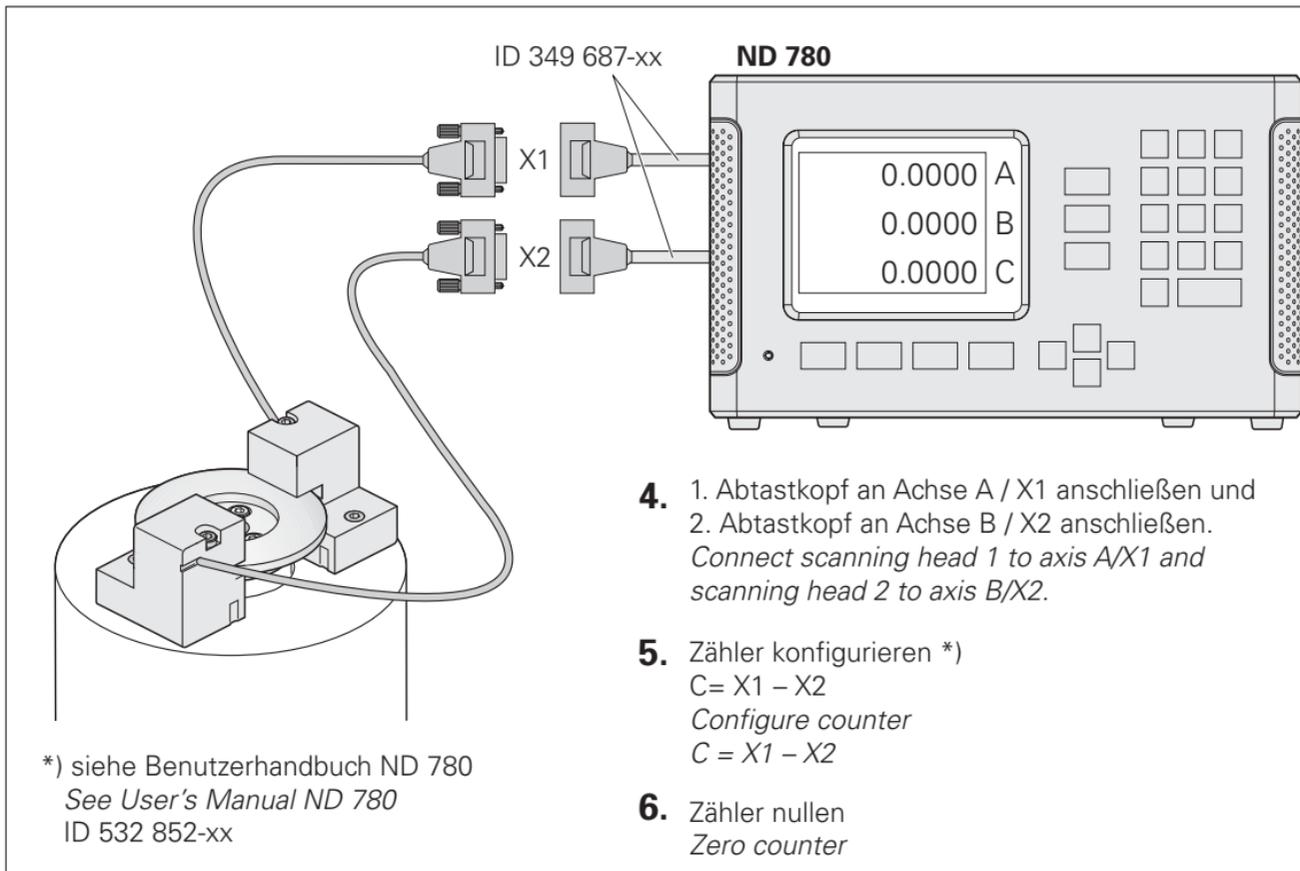
1. Zentrieren Sie den Teilkreis wie auf den Seiten 20 und 21, in den Schritten 1 und 2 beschrieben. Sie müssen dabei folgende Werte erreichen.  
*Center the graduated disk as described on pages 20 and 21, steps 1 and 2.*  
*The following values must be achieved.*

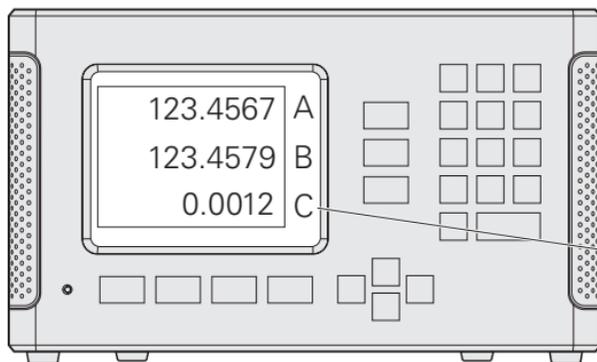


2. Bauen Sie die beiden Abtastköpfe wie auf den Seiten 30 und 31 beschrieben an.  
*Mount the two scanning heads as described on pages 30 and 31.*

- 3.** Justieren Sie die beiden Abtastköpfe wie auf den Seiten 32 und 33 beschrieben.  
Signalgröße 0.6 V ist ausreichend.  
*Adjust the two scanning heads as described on pages 32 and 33.  
A signal amplitude of 0.6 V is sufficient.*

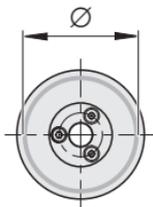






Rundlauf= 2 x e  
Runout= 2 x e

$$\Delta\varphi = \pm \frac{412 \cdot e}{\varnothing}$$

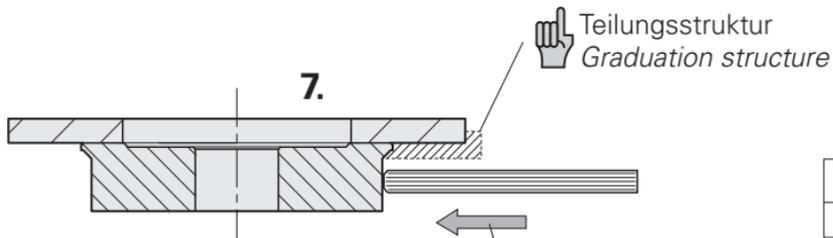


Einfluss von Exzentrizität.  
*Influence of eccentricity.*

	<b>ERP 4080</b>	<b>ERP 8080</b>
Ø [mm]	40	104

$\Delta\varphi$  = Messabweichung in Winkelsekunden durch Exzentrizität.  
 $\Delta\varphi$  = *Measuring error in arc seconds due to eccentricity.*

e= Exzentrizität in  $\mu\text{m}$   
e= *eccentricity in  $\mu\text{m}$*



8. Schrauben festziehen  
Fasten screws

	<b>ERP 4080</b>	<b>ERP 8080</b>
M <sub>d</sub>	0.5 Nm	1.1 Nm

Leicht klopfen, bis Zentrierwert erreicht ist. Kein metallisches Werkzeug verwenden.  
*Tap lightly until required centricity is achieved (non-metallic adjustment tool).*

**Berechnung Foliendicke**  
**Calculating the foil thickness**



		<b>ERP 4080</b>	<b>ERP 8080</b>
x [mm]		12.3	12.22
y <sub>1</sub> [mm]			
y <sub>2</sub> [mm]			
S.Nr.	z <sub>1</sub> [mm]		
<input type="text"/>	z <sub>2</sub> [mm]		
D=(y <sub>1</sub> + y <sub>2</sub> + z <sub>1</sub> + z <sub>2</sub> )/2 - x			

D= Foliendicke  
*Foil thickness*

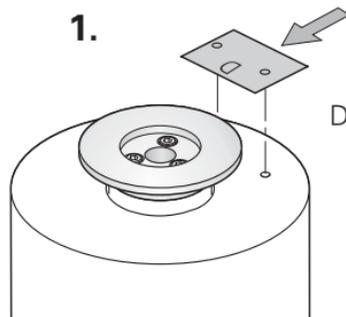


$$|(y_1 + z_2) - (y_2 + z_1)| < 0,009$$

Kontrolle Planlauf  
*Axial runout check*

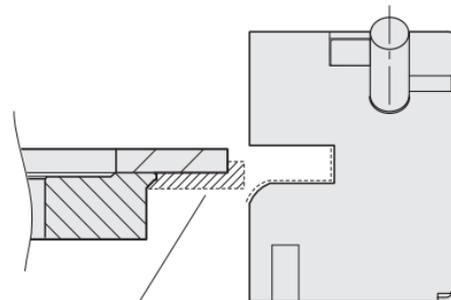
## Montage Abtastkopf Mounting the scanning head

1.



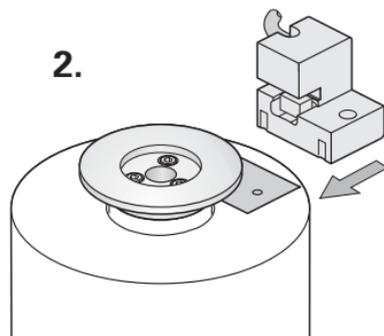
Leserichtung  
Reading direction

D = Foliendicke (S.29)  
Foil thickness (S.29)

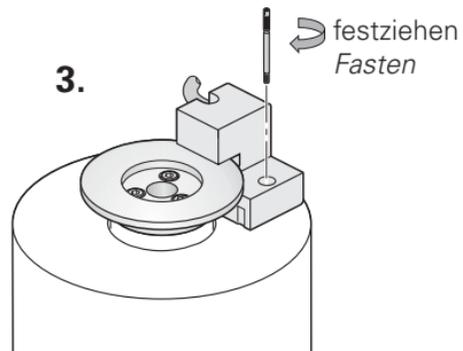


Teilungsstruktur  
Graduation structure

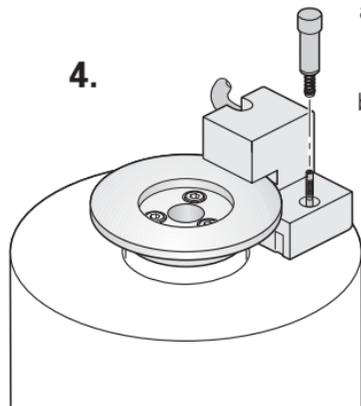
2.



3.

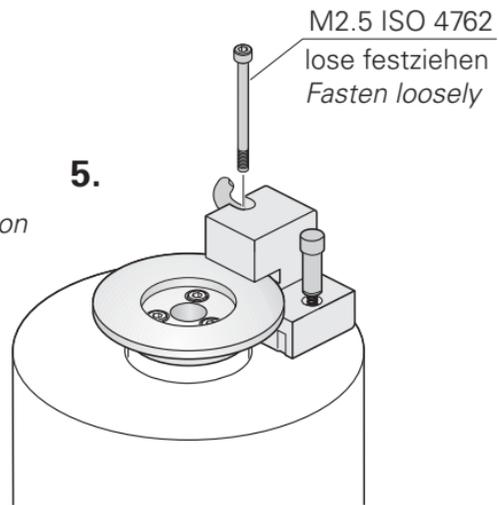


festziehen  
Fasten



a)  festziehen  
*Fasten*

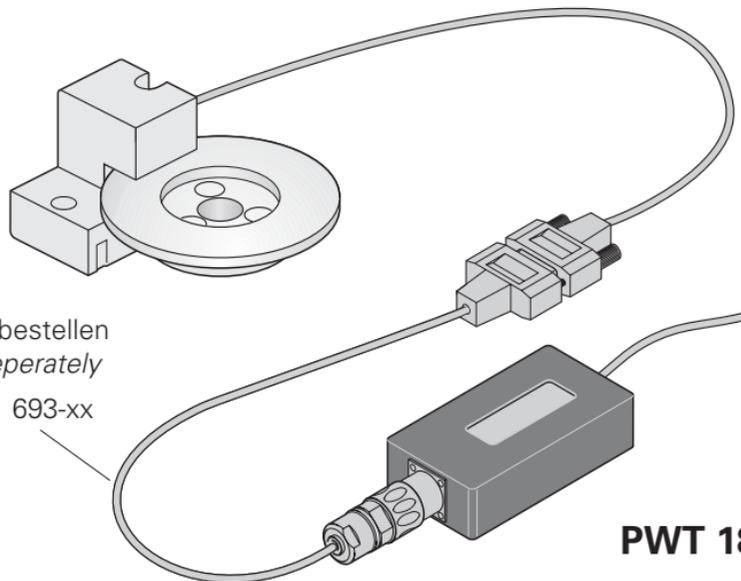
b)  1/4 Umdrehung lösen  
*Loosen by 1/4 revolution*



**Justage Abtastkopf**  
**Adjusting scanning head**



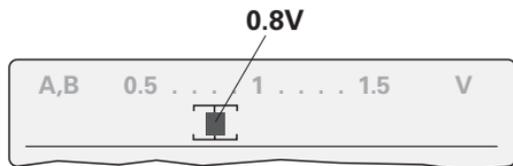
siehe Betriebsanleitung PWT 1x, ID 319 502-9x  
See Operating Instructions for PWT 1x, ID 319 502-9x



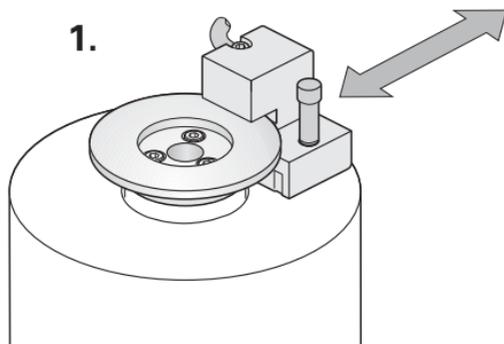
Seperat bestellen  
Order seperately

ID 331 693-xx

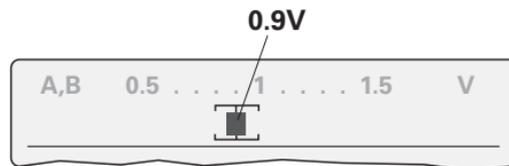
**PWT 18**



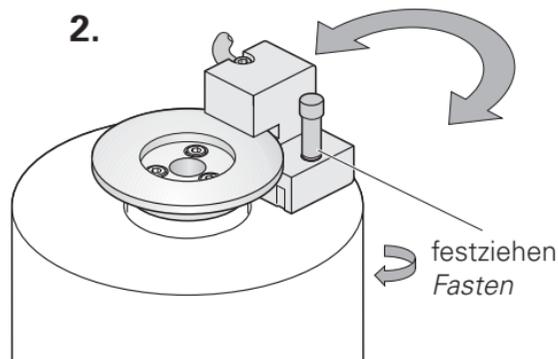
**1.**



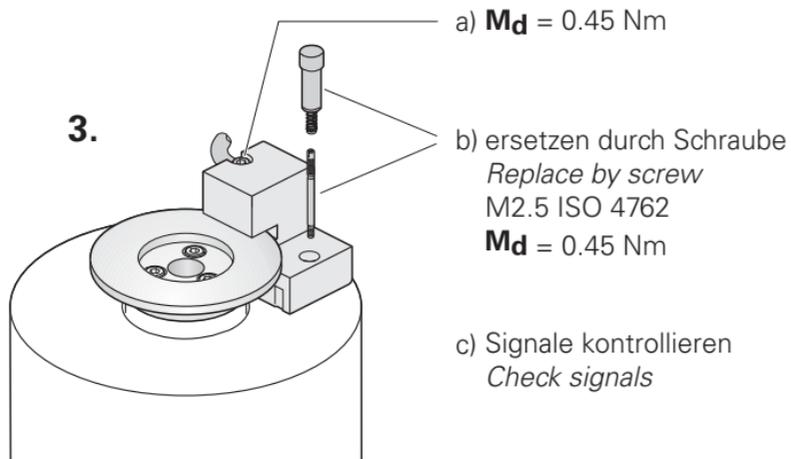
Radial nach innen und außen bewegen,  
bis Signalamplitude  $\sim 0.8\text{ V}$  zeigt.  
*Move inward and outward in radial direction  
until signal amplitude is  $\sim 0.8\text{ V}$ .*

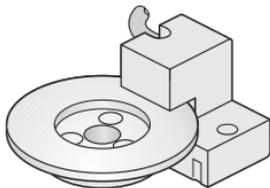


**2.**



Drehen bis Signalamplitude  $> 0.9\text{ V}$  beträgt.  
*Rotate until signal amplitude is  $> 0.9\text{ V}$ .*

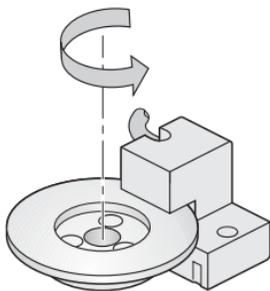




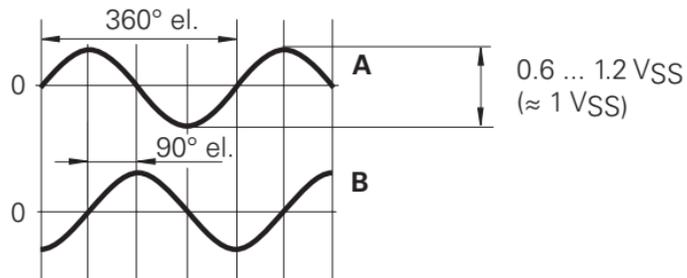
**Up = 5 V ± 5 %**  
(max. 150 mA)

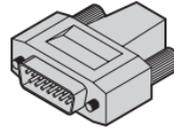
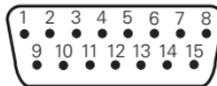


EN 50 178/4.98; 5.2.9.5  
IEC 364-4-41: 1992; 411(PELV/SELV)  
(siehe, see, voir, vedi, véase  
HEIDENHAIN D 231 929)

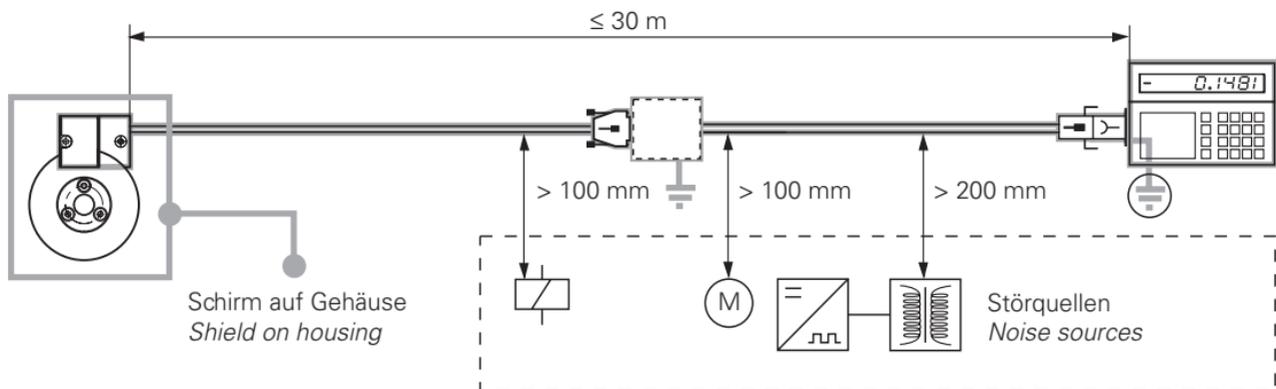


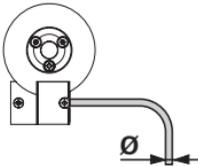
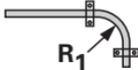
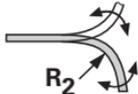
A, B

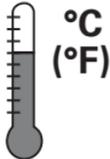
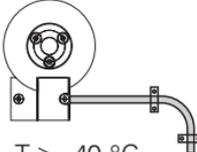
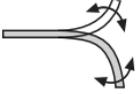
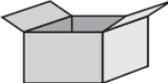




4	12	2	10	1	9	3	11	5	6	7	8	13, 14, 15
Up	Sensor	0V	Sensor 0V	A+	A-	B+	B-	/	/	/	/	/
BNGN	BU	WHGN	WH	BN	GN	GY	PK	BK	YE	RD	VT	/

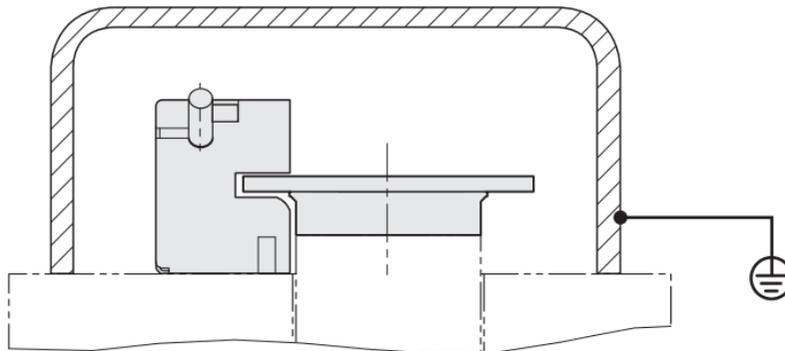


		
<p><b>Ø 3.7 mm</b></p>	<p><math>R_1 \geq 8 \text{ mm}</math></p>	<p><math>R_2 \geq 40 \text{ mm}</math></p>

	 <p><math>T \geq -40 \text{ }^\circ\text{C}</math> (<math>-40 \text{ }^\circ\text{F}</math>)</p>  <p><math>T \geq -10 \text{ }^\circ\text{C}</math> (<math>14 \text{ }^\circ\text{F}</math>)</p>
	 <p>5 ... 40 °C (41 ... 104 °F)</p>

**Abschließende Arbeiten**  
**Final Steps**

Leitfähige Schutzkappe für CE  
*Conductive protective cap for CE*





# HEIDENHAIN

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