



# HEIDENHAIN

Montageanleitung  
*Mounting Instructions*  
Instructions de montage  
*Istruzioni di montaggio*  
Instrucciones de montaje

**Abtastkopf**  
***Scanning Head***  
**Tête captrice**  
***Testina di scansione***  
**Cabezal**  
**AK ERM 220**  
**AK ERM 280**

4/2013

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*Dimensioni AK ERM 2x0 con tamburo graduato ERM 200/200 C, ERM 202/202 C*

Dimensiones AK ERM 2x0 con tambor graduado ERM 200/200 C, ERM 202/202 C

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*Dimensions of AK ERM 2x0 (mechanically compatible with ERM 1x0) with ERM 200 grating drum*

Dimensions Tête ERM 2x0 (montage compatible ERM 1x0) avec tambour gradué ERM 200

*Dimensioni AK ERM 2x0 (montaggio compatibile con ERM 1x0) con tamburo graduato ERM 200*

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Montage AK ERM 2x0 (anbaukompatibel zu ERM 1x0) mit Teilungstrommel ERM 200  
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Abmessungen AK ERM 2x0 (anbaukompatibel zu ERM 1x0) mit Teilungstrommel ERM 209  
*Dimensions of AK ERM 2x0 (mechanically compatible with ERM 1x0) with ERM 209 grating drum*  
 Dimensions Tête ERM 2x0 (montage compatible ERM 1x0) avec tambour gradué ERM 209  
*Dimensioni AK ERM 2x0 (montaggio compatibile con ERM 1x0) con tamburo graduato ERM 209*  
 Dimensiones AK ERM 2x0 (montaje compatible con ERM 1x0) con tambor graduado ERM 209



Elektrische und Technische Kennwerte  
*Electrical data and technical specifications*  
 Caractéristiques électriques et techniques  
*Dati elettrici e tecnici*  
 Datos eléctricos y técnicos





**Achtung:** Die Montage und Inbetriebnahme ist von einer qualifizierten Fachkraft unter Beachtung der örtlichen Sicherheitsvorschriften vorzunehmen.

Die Steckverbindung darf nur spannungsfrei verbunden oder gelöst werden.

Der Antrieb darf während der Montage nicht in Betrieb gesetzt werden.

**Note:** *Mounting and commissioning is to be conducted by a qualified specialist under compliance with local safety regulations.*

*Do not engage or disengage any connections while under power.*

*The drive must not be put into operation during installation.*

**Attention:** le montage et la mise en service doivent être assurés par un personnel qualifié dans le respect des consignes de sécurité locales.

Le connecteur ne doit être branché ou débranché que hors tension.

L'entraînement ne doit pas être mis en route pendant le montage.

**Attenzione:** *Il montaggio e la messa in funzione devono essere eseguite da personale qualificato nel rispetto delle norme di sicurezza locali.*

*Collegare o staccare i collegamenti soltanto in assenza di tensione.*

*L'azionamento non deve essere messo in funzione durante il montaggio.*

**Atención:** El montaje y la puesta en marcha deben ser realizados por un especialista cualificado, observando las prescripciones locales de seguridad.

Conectar o desconectar el conector sólo en ausencia de tensión.

El accionamiento no debe estar en marcha durante el montaje.

Angegebene Wellentoleranzen müssen eingehalten werden.

Die Teilungstrommel ist mit allen vorgesehenen Schrauben und Scheiben zu befestigen.

Die Schrauben sind abwechselnd, kreuzweise mit dem angegebenen Anzugsdrehmoment festzuschrauben und gegen unbeabsichtigtes Lösen zu sichern.

Nur dann gelten die für die Teilungstrommeln spezifizierten Drehzahlwerte.

*The specified shaft tolerances must be complied with.*

*The grating drum is to be fastened with all provided screws and washers.*

*The screws must be tightened alternately (crosswise) with the tightening torque, and secured against unintentional loosening.*

*Only then are the speed values specified for the scale drums valid.*

Les tolérances indiquées pour l'arbre doivent être respectées.

Le tambour gradué doit être fixé à l'aide des vis et rondelles prévues à cet effet.

Les vis doivent être serrées alternativement, en croix, en utilisant le couple de serrage et sécurisées pour ne pas être desserrées malencontreusement. Les valeurs de vitesse de rotation spécifiées pour les tambours gradués ne sont valables qu'à cette condition.

*Le tolleranze di montaggio devono essere rispettate.*

*Fissare il tamburo graduato con tutte le viti e le rondelle previste.*

*Le viti sono da stringere alternativamente a croce con chiave dinamometrica e da assicurare contro il rischio di allentamento.*

*Solo rispettando questi valori, Vale la velocità specificata per il tamburo.*

Las tolerancias de eje indicadas deben ser respetadas.

El tambor graduado debe ser fijado con todos los tornillos y arandelas previstos para ello.

Fijar los tornillos alternativamente en cruz con el par de apriete y asegurarlos para que no se suelten involuntariamente.

Serán sólo válidos los valores de velocidad especificados para los tambores graduados.

Maximale Fremdfelder bei Lagerung und Einbau < 25 mT.

*Maximum external fields during storage and mounting < 25 mT.*

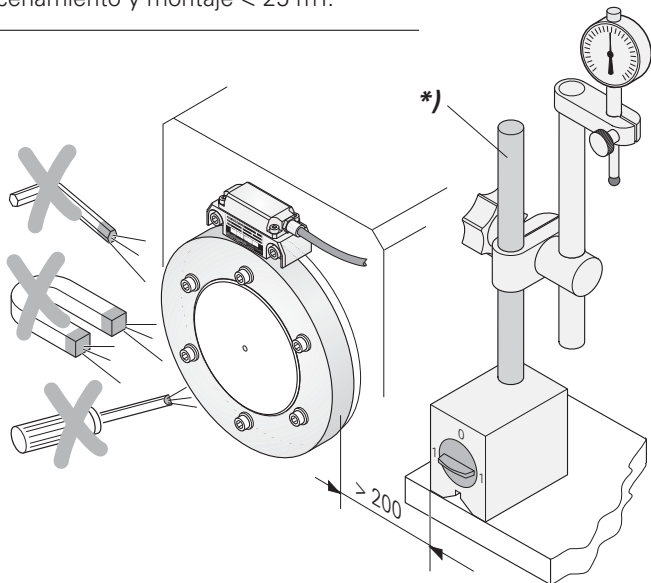
Champs parasites max. pour stockage et montage < 25 mT.

*Massimo campo magnetico esterno durante montaggio e centraggio < 25 mT.*

Campos magnéticos máximos en almacenamiento y montaje < 25 mT.



- \* ) Nicht magnetisch leitender Werkstoff  
*Magnetically non-conductive material*  
Matériau isolant magnétique  
*Materiale non conduttore*  
Material magnéticamente no conductor



Maximale Fremd-Wechselfelder im Betrieb 2.5 mT.

Maximale Fremd-Gleichfelder im Betrieb 5.0 mT.

*Maximum external alternating fields during operation 2.5 mT.*

*Maximum external constant fields during operation 5.0 mT.*

Champs alternants parasites max. en fonctionnement 2.5 mT.

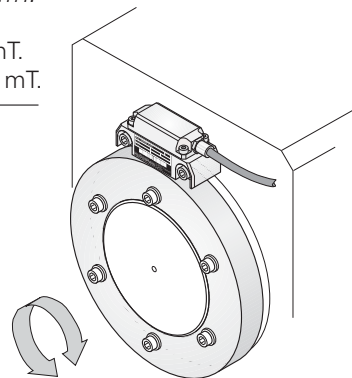
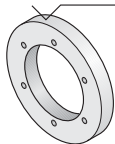
Champs continus parasites max. en fonctionnement 5.0 mT.

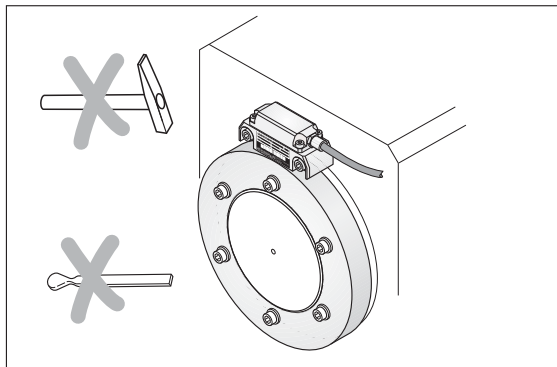
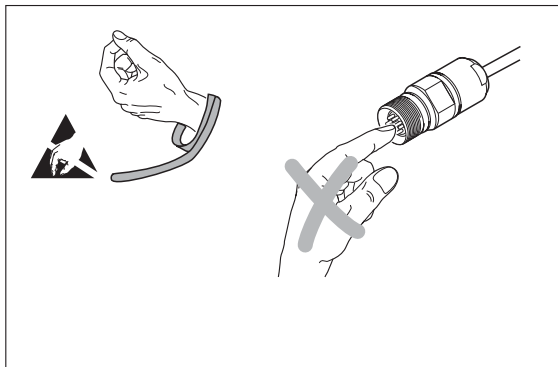
*Massimo campo magnetico esterno alternato in lavoro 2.5 mT.*

*Massimo campo magnetico esterno unidirezionale in lavoro 5.0 mT.*

Campos magnéticos alternos máximos en funcionamiento 2.5 mT.

Campos magnéticos continuos máximos en funcionamiento 5.0 mT.





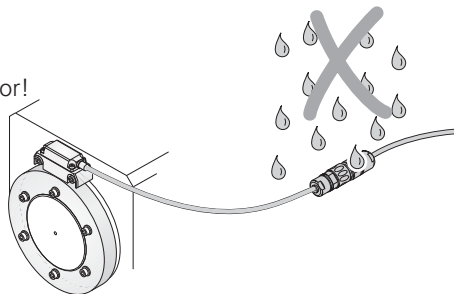
Der direkte Kontakt von Flüssigkeiten am Steckverbinder ist zu vermeiden!

*Avoid direct contact of fluids with the connector!*

*Eviter le contact direct de liquides sur le connecteur!*

*Evitare il contatto diretto di liquidi con il connettore*

*¡Debe evitarse el contacto directo de flúidos con el conector!*



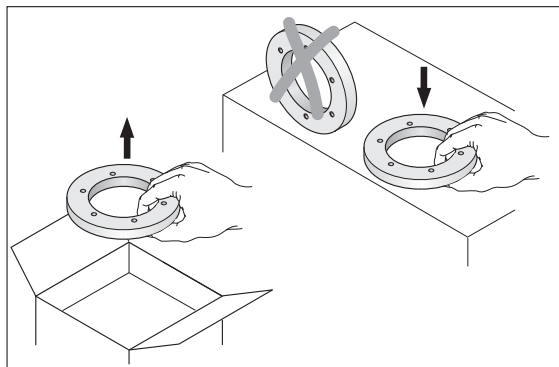
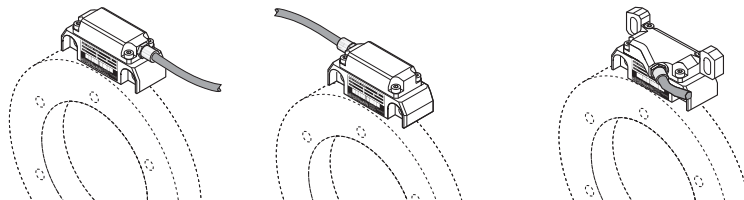
Bei Anbau auf Lage Typenschild achten.

*Note position of ID label when mounting.*

Lors du montage, attention à la position de l'étiquette signalétique.

*In fase di montaggio porre attenzione alla targhetta.*

Al montar, prestar atención a la posición de la etiqueta.



**Maße in mm**

***Dimensions in mm***

**Cotes en mm**

***Dimensioni in mm***

**Dimensiones en mm**

Zur Erleichterung der Montage kann die Teilungstrommel erwärmt werden.

**Keine Induktionsheizquelle verwenden!** Dazu die Teilungstrommel vor der Montage langsam über einen Zeitraum von 10 min auf eine Temperatur von max. 100 °C erwärmen.

Maximale Temperaturdifferenz Heizplatte zur ERM-Teilungstrommel 20 K.

*In order to facilitate mounting, the scale drum can be heated. **Do not use an inductive heat source!** Before mounting, slowly warm the scale drum over a period of 10 minutes to a temperature of max. 100 °C. Maximum temperature difference between heating plate and ERM scale drum: 20 K.*

Pour faciliter le montage, le tambour gradué peut être réchauffé.

**Ne pas utiliser de source de chaleur par induction!** Pour cela, avant le montage, réchauffer lentement le tambour gradué pendant une durée de 10 min. à une température de 100 °C max.. Différence de température max. entre la plaque chauffante et le tambour gradué de l'ERM: 20 K.

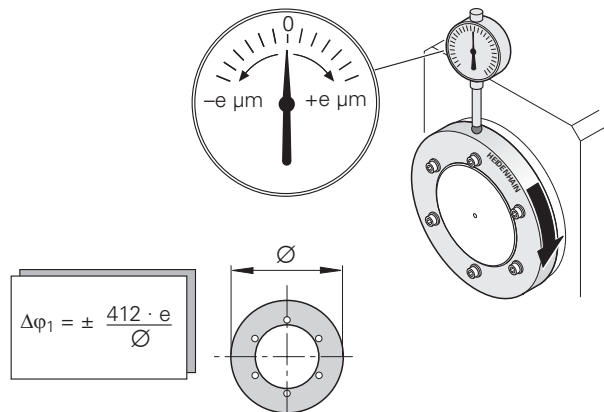
*Per facilitare il montaggio il tamburo può essere riscaldato.*

**Non utilizzare una fonte di calore a induzione!** Prima del montaggio riscaldare lentamente il tamburo, portandolo a 100 °C in 10 minuti. Max differenza di temperatura tra piastra di riscaldamento e tamburo dell'ERM: 20 K.

Para facilitar el montaje, puede calentarse el tambor graduado.

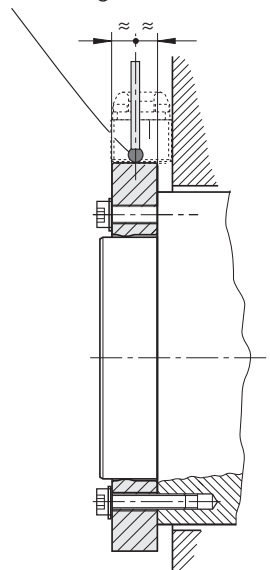
**¡No utilizar ninguna fuente de calor inductiva!** Antes del montaje, calentar lentamente el tambor graduado durante 10 minutos a una temperatura máxima de 100 °C. Máxima diferencia de temperatura entre la placa de calentamiento y el tambor graduado del ERM: 20 K.

**Einfluss von Exzentrizität**  
**Influence of eccentricity**  
**Influence de l'excentricité**  
**Influenza dell'eccentricità**  
**Influencia de la excentricidad**



$\Delta\phi_1$  = Messabweichung in Winkelsekunden durch Exzentrizität.  
 $\Delta\phi_1$  = Measuring error in arc seconds due to eccentricity.  
 $\Delta\phi_1$  = écart de mesure en secondes d'arc due à l'excentricité.  
 $\Delta\phi_1$  = errori di misura in secondi d'arco a causa dell'eccentricità.  
 $\Delta\phi_1$  = desviación de la medida en segundos angulares debido a excentricidad.

Eine nicht magnetische Kugel verwenden.  
 Use a non-magnetic tip.  
 Utiliser une bille non magnétique.  
 Non utilizzare una sfera magnetica.  
 Utilizar una esfera no magnética.



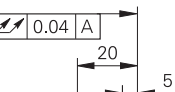
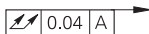
mm



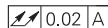
Tolerancing ISO 8015

ISO 2768 - m H

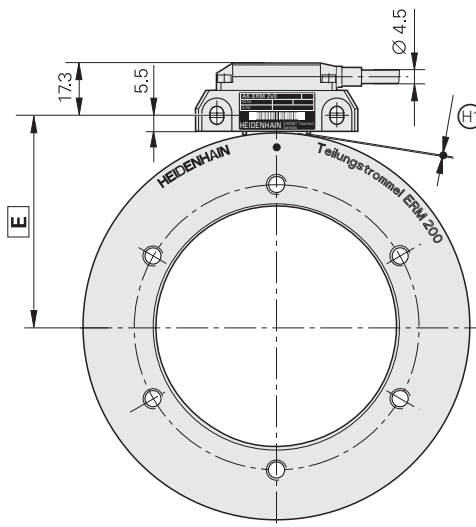
< 6 mm: ±0.2 mm

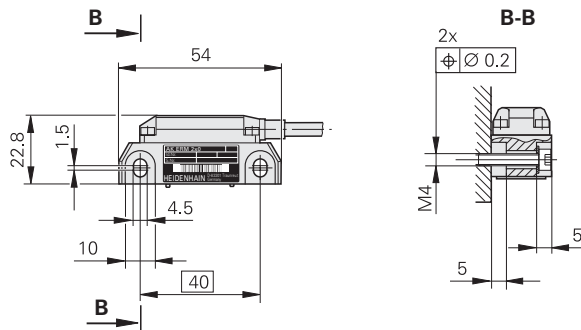


[A] = Lagerung  
Bearing  
Roulement  
Cuscinetto  
Rodamiento



AK ERM 2x0 mit Teilungstrommel ERM 200/200 C  
AK ERM 2x0 with ERM 200/200 C grating drum  
Tête ERM 2x0 avec tambour gradué ERM 200/200 C  
AK ERM 2x0 con tamburo graduato ERM 200/200 C  
AK ERM 2x0 con tambor graduado ERM 200/200 C





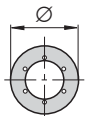
Ⓜ = Montageabstand 0.15 mm mit Abstandsfolie eingestellt.  
(Teilungstrommeln ERM 100 = 0.10 mm).

*0.15 mm mounting clearance set with spacer foil.  
(ERM 100 grating drums = 0.10 mm).*

Distance fonctionnelle 0.15 mm réglée avec cale d'épaisseur.  
(tambour gradué ERM 100 = 0.10 mm).

*Distanza di montaggio a 0.15 mm determinata con pellicola distanziale.  
(tamburo graduato ERM 100 = 0.10 mm).*

Distancia de montaje 0.15 mm ajustada con lámina separadora.  
(Tambor graduado ERM 100 = 0.10 mm).

| Polzahl<br>Pole count<br>Nombre de pôles<br>Numero di poli<br>Nº polos |  | E     |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|
| 512                                                                    | Ø 64.37                                                                             | 37.9  |
| 600                                                                    | Ø 75.44                                                                             | 43.4  |
| 720                                                                    | Ø 90.53                                                                             | 51.0  |
| 900                                                                    | Ø 113.16                                                                            | 62.3  |
| 1024                                                                   | Ø 128.75                                                                            | 70.1  |
| 1200                                                                   | Ø 150.88                                                                            | 81.2  |
| 1400                                                                   | Ø 176.03                                                                            | 93.7  |
| 1696                                                                   | Ø 213.24                                                                            | 112.3 |
| 2048                                                                   | Ø 257.50                                                                            | 134.5 |
| 2600                                                                   | Ø 326.90                                                                            | 169.2 |
| 2880                                                                   | Ø 362.11                                                                            | 186.8 |
| 3600                                                                   | Ø 452.64                                                                            | 232.0 |
| 3850                                                                   | Ø 484.07                                                                            | 247.7 |
| 4800                                                                   | Ø 603.52                                                                            | 307.5 |
| 5600                                                                   | Ø 704.10                                                                            | 357.8 |

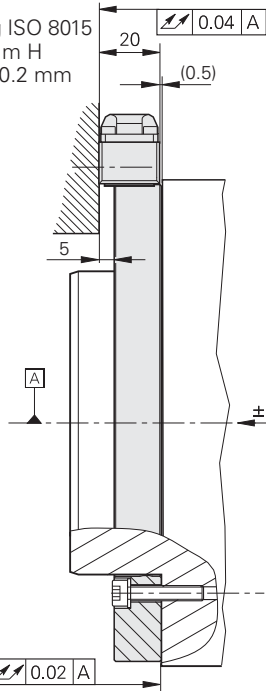
mm



## Tolerancing ISO 8015

ISO 2768 - m H

< 6 mm:  $\pm 0.2$  mm



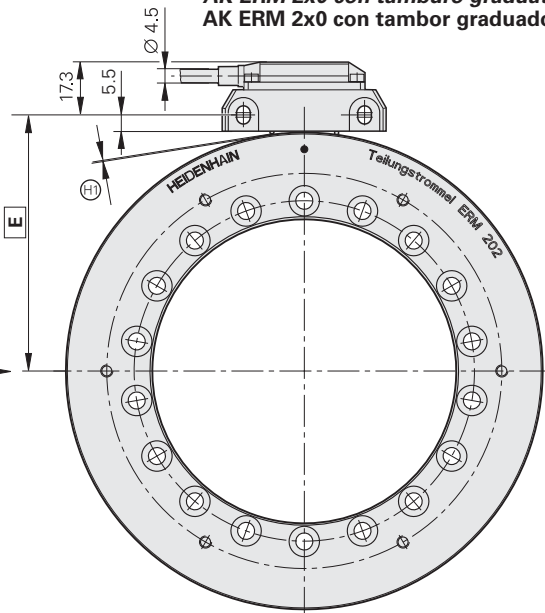
### AK ERM 2x0 mit Teilungstrommel ERM 202/202 C

**AK ERM 2x0 with ERM 202/202 C grating drum**

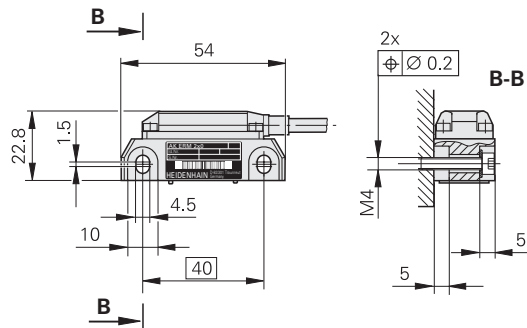
**Tête ERM 2x0 avec tambour gradué ERM 202/202 C**

**AK ERM 2x0 con tamburo graduato ERM 202/202 C**

**AK ERM 2x0 con tambor graduado ERM 202/202 C**



[A] = Lagerung  
*Bearing*  
 Roulement  
*Cuscinetto*  
 Rodamiento



| Polzahl<br>Pole count<br>Nombre de pôles<br>Numero di poli<br>N° polos |          |       | <div>E</div> |
|------------------------------------------------------------------------|----------|-------|--------------|
|                                                                        | D1       | D2    |              |
| 2176                                                                   | Ø 273.59 | Ø 200 | 142.5        |
| 2720                                                                   | Ø 341.99 | Ø 260 | 176.7        |
| 3296                                                                   | Ø 414.41 | Ø 325 | 212.9        |
| 4448                                                                   | Ø 559.26 | Ø 460 | 285.3        |

⊕ = Montageabstand 0.15 mm mit Abstandsfolie eingestellt.

0.15 mm mounting clearance set with spacer foil.

Distance fonctionnelle 0.15 mm réglée avec cale d'épaisseur.

Distanza di montaggio a 0.15 mm determinata con pellicola distanziale.

Distancia de montaje 0.15 mm ajustada con lámina separadora.

mm



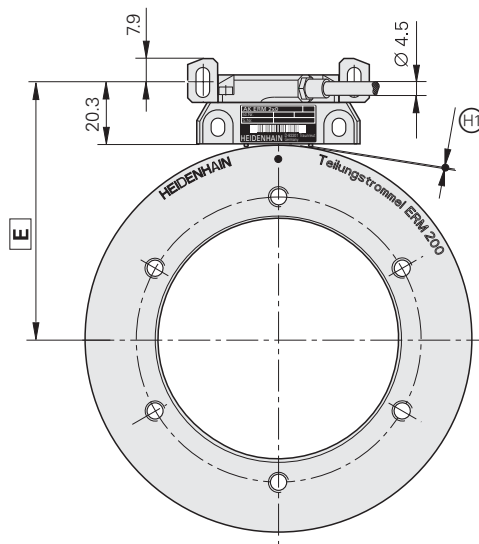
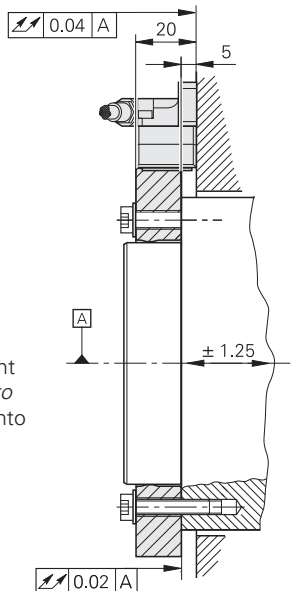
Tolerancing ISO 8015

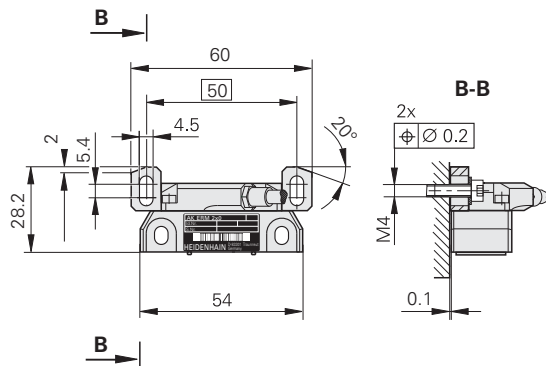
ISO 2768 - m H

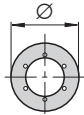
< 6 mm:  $\pm 0.2$  mm

**AK ERM 2x0 (anbaukompatibel zu ERM 1x0) mit Teilungstrommel ERM 200**  
**AK ERM 2x0 (mechanically compatible to ERM 1x0) with ERM 200 grating drum**  
**Tête ERM 2x0 (montage compatible ERM 1x0) avec tambour gradué ERM 200**  
**AK ERM 2x0 (montaggio compatibile con ERM 1x0) con tamburo graduato ERM 200**  
**AK ERM 2x0 (montaje compatible con ERM 1x0) con tambor graduado ERM 200**

**A** = Lagerung  
 Bearing  
 Roulement  
 Cuscinetto  
 Rodamiento





| Polzahl<br>Pole count<br>Nombre de pôles<br>Numero di poli<br>Nº polos |  | <b>E</b> |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
| 600                                                                    | Ø 75.44                                                                             | 58.2     |
| 900                                                                    | Ø 113.16                                                                            | 77.1     |
| 1024                                                                   | Ø 128.75                                                                            | 84.9     |
| 1200                                                                   | Ø 150.88                                                                            | 95.9     |
| 1400                                                                   | Ø 176.03                                                                            | 108.5    |
| 2048                                                                   | Ø 257.50                                                                            | 149.2    |
| 2600                                                                   | Ø 326.90                                                                            | 183.9    |

Ⓜ = Montageabstand 0.15 mm mit Abstandsfolie eingestellt.  
(Teilungstrommeln ERM 100 = 0.10 mm).

*0.15 mm mounting clearance set with spacer foil.  
(ERM 100 grating drums = 0.10 mm).*

Distance fonctionnelle 0.15 mm réglée avec cale d'épaisseur.  
(tambour gradué ERM 100 = 0.10 mm).

*Distanza di montaggio a 0.15 mm determinata con pellicola distanziale.  
(tamburo graduato ERM 100 = 0.10 mm).*

Distancia de montaje 0.15 mm ajustada con lámina separadora.  
(Tambor graduado ERM 100 = 0.10 mm).

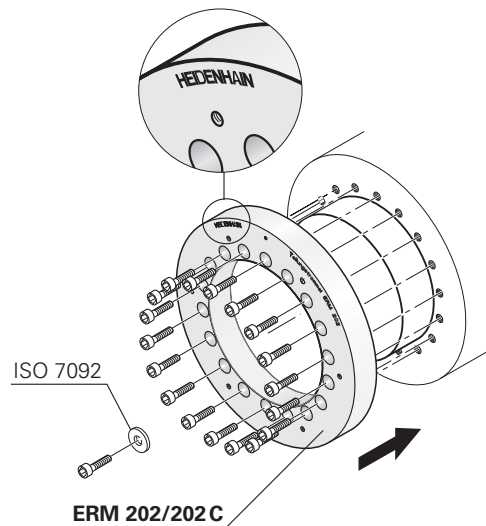
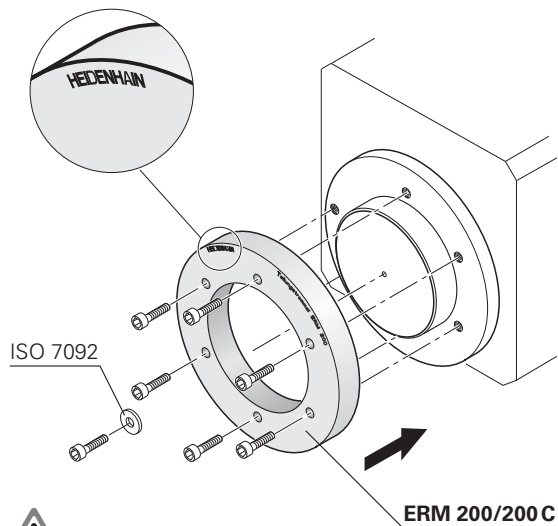
**Bei der Montage der Teilungstrommel Maße und Hinweise der Montageanleitung Teilungstrommel ERM 2xx beachten.**

***When mounting the scale drum, please refer to the dimensions and notes in the Mounting Instructions for the ERM 2xx scale drum.***

**Lors du montage du tambour gradué, tenir compte des cotes et remarques contenues dans les Instructions de montage du tambour gradué ERM 2xx**

***Per il montaggio del tamburo, rispettare le misure e le indicazioni del libretto istruzioni del tamburo ERM 2xx.***

**En el montaje del tambor graduado tener en cuenta las cotas y las indicaciones de las Instrucciones de Montaje ERM 2xx.**



EN 60529

**Achtung:** Auf Berührungsschutz achten.

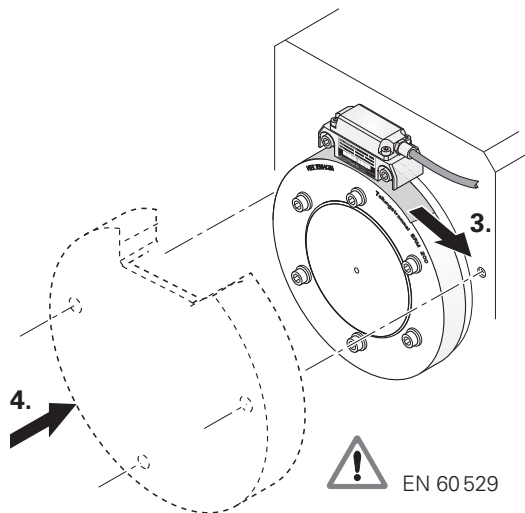
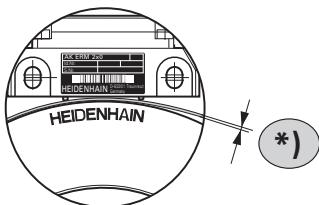
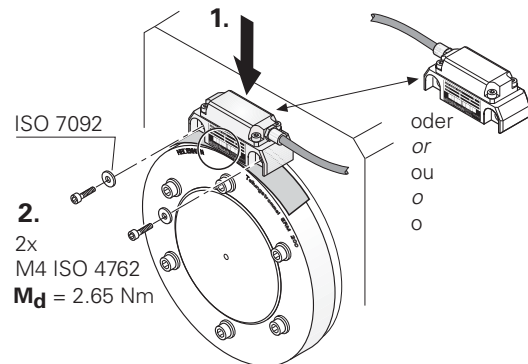
**Caution:** Protect against contact.

**Attention:** Veiller à la protection contre les contacts directs.

**Attenzione:** Prestare attenzione alla protezione.

**Atención:** Tener en cuenta la protección ante contacto.

AK ERM 2x0 mit Teilungstrommel ERM 200/200 C  
 AK ERM 2x0 with ERM 200/200 C grating drum  
 Tête ERM 2x0 avec tambour gradué ERM 200/200 C  
 AK ERM 2x0 con tamburo graduato ERM 200/200 C  
 AK ERM 2x0 con tambor graduado ERM 200/200 C



- \*) Abstandsfolie 0.15 mm im Lieferumfang der Teilungstrommel enthalten.  
 0.15 mm spacer foil included with the grating drum.  
 Cale d'épaisseur 0.15 mm contenue dans la fourniture du tambour gradué.  
 Pellicola differenziale da 0.15 mm compresa nello standard di fornitura.  
 Lámina separadora de 0.15 mm contenida en el suministro del tambor graduado.

**AK ERM 2x0 mit Teilungstrommel ERM 202/202 C**  
**AK ERM 2x0 with ERM 202/202 C grating drum**  
**Tête ERM 2x0 avec tambour gradué ERM 202/202 C**  
**AK ERM 2x0 con tamburo graduato ERM 202/202 C**  
**AK ERM 2x0 con tambor graduado ERM 202/202 C**

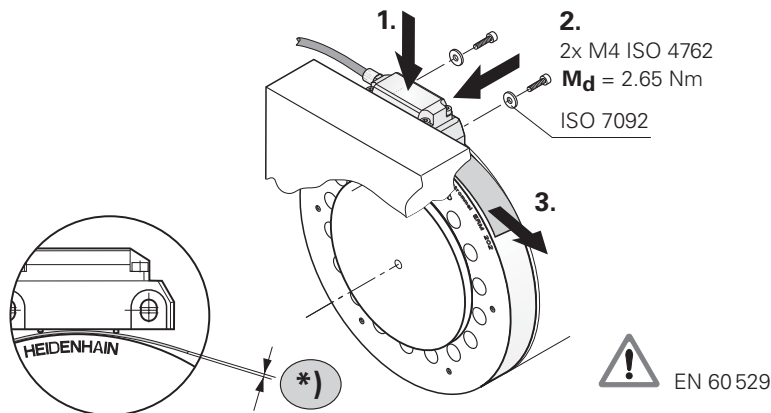
Typenschildlage entgegengesetzt zur Trommelbeschriftung

*ID label on reverse side of drum engraving*

Position de l'étiquette signalétique à l'opposé du l'inscription sur le tambour

*Targhetta opposta alla scritta del tamburo*

Posición de la etiqueta en contraposición a la inscripción del



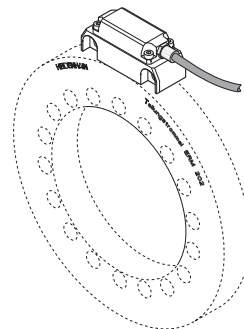
Bei Kabelausgang links:

*For cable exit on left:*

Avec sortie du câble à gauche:

*Con uscita cavo a sinistra*

Con salida del cable hacia la izquierda:



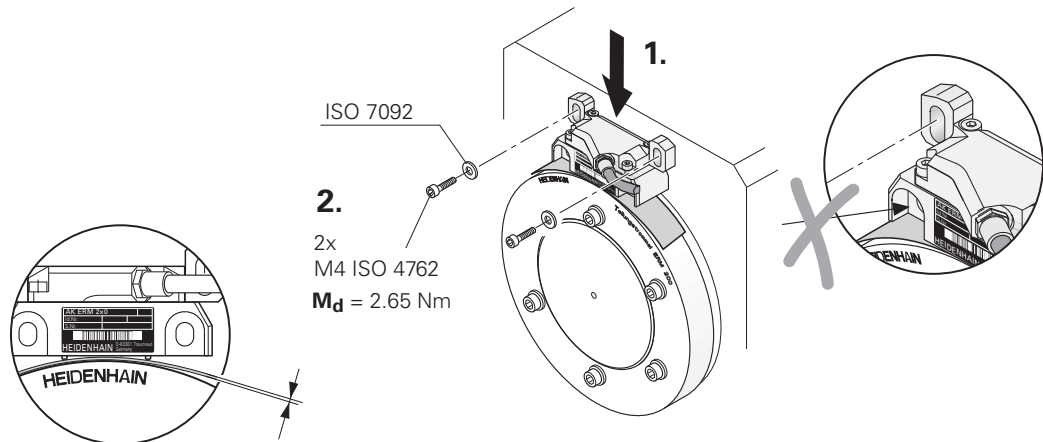
**AK ERM 2x0 (anbaukompatibel zu ERM 1x0) mit Teilungstrommel ERM 200**

**AK ERM 2x0 (mechanically compatible to ERM 1x0) with ERM 200 grating drum**

**Tête ERM 2x0 (montage compatible ERM 1x0) avec tambour gradué ERM 200**

**AK ERM 2x0 (montaggio compatibile con ERM 1x0) con tamburo graduato ERM 200**

**AK ERM 2x0 (montaje compatible con ERM 1x0) con tambor graduado ERM 200**

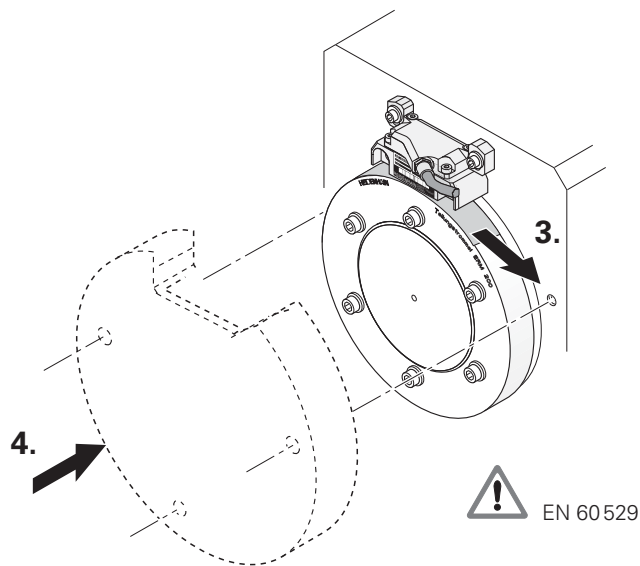


Abstandsfolie 0.15 mm im Lieferumfang der Teilungstrommel enthalten. (Teilungstromein ERM 100 = 0.10 mm)  
0.15 mm spacer foil included with the grating drum. (ERM 100 grating drums = 0.10 mm).

Cale d'épaisseur 0.15 mm contenue dans la fourniture du tambour gradué. (tambour gradué ERM 100 = 0.10 mm).

Pellicola differenziale da 0.15 mm compresa nello standard di fornitura. (tamburo graduato ERM 100 = 0.10 mm).

Lámina separadora de 0.15 mm contenida en el suministro del tambor graduado. (Tambor graduado ERM 100 = 0.10 mm).



mm



DIN ISO 8015

ISO 2768 - m H

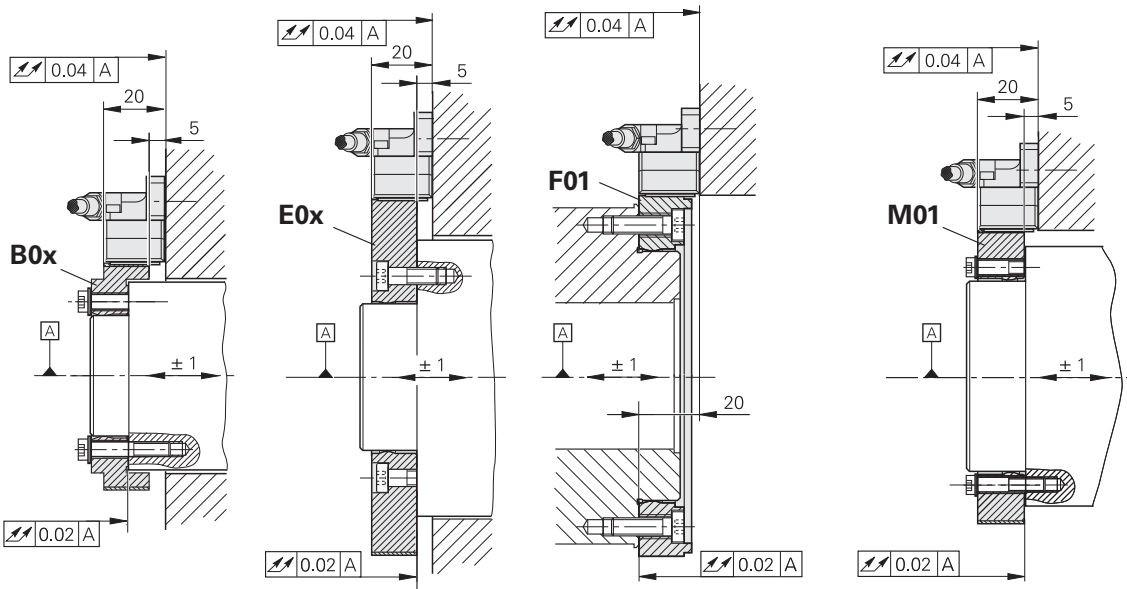
**AK ERM 2x0 (anbaukompatibel zu ERM 1x0) mit Teilungstrommel ERM 209**

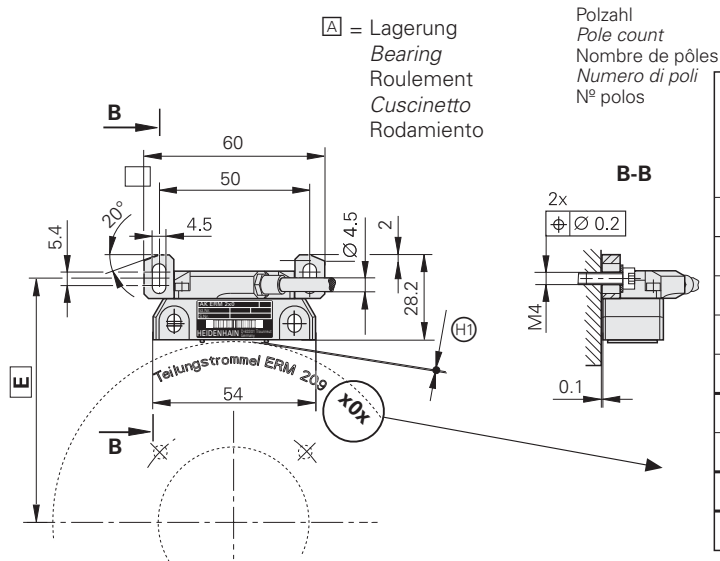
**AK ERM 2x0 (mechanically compatible to ERM 1x0) with ERM 209 grating drum**

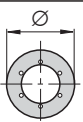
**Tête ERM 2x0 (montage compatible ERM 1x0) avec tambour gradué ERM 209**

**AK ERM 2x0 (montaggio compatibile con ERM 1x0) con tamburo graduato ERM 209**

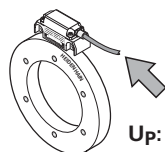
**AK ERM 2x0 (montaje compatible con ERM 1x0) con tambor graduado ERM 209**



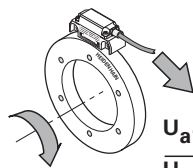


|            |                                                                                     |                                                                                     |          |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------|
|            |  |  | <b>E</b> |
| <b>B01</b> | 600                                                                                 | Ø 75.44                                                                             | 58.2     |
| <b>B02</b> | 1024                                                                                | Ø 128.75                                                                            | 84.9     |
| <b>B03</b> | 1400                                                                                | Ø 176.03                                                                            | 108.5    |
| <b>B04</b> | 2048                                                                                | Ø 257.50                                                                            | 149.2    |
| <b>B05</b> | 2600                                                                                | Ø 326.90                                                                            | 183.9    |
| <b>E02</b> | 1200                                                                                | Ø 150.88                                                                            | 95.9     |
| <b>E03</b> | 2048                                                                                | Ø 257.50                                                                            | 149.2    |
| <b>F01</b> | 1230                                                                                | Ø 154.65                                                                            | 97.8     |
| <b>M01</b> | 1024                                                                                | Ø 128.75                                                                            | 84.9     |

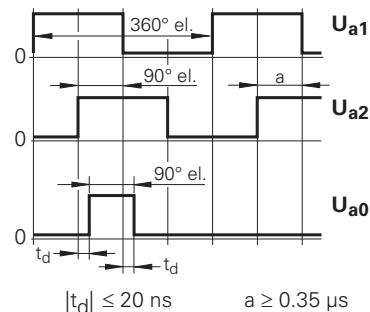
# ERM 220



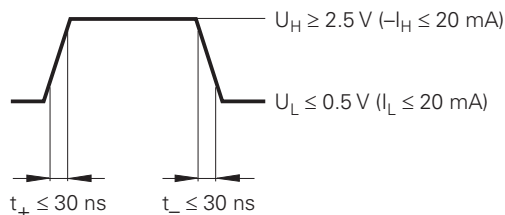
**U<sub>p</sub>**: DC 5 V  $\pm$  0.5 V  
(max. 80 mA)



$\overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a0}}$   
 $\overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a0}}, \overline{U_{aS}}$



# TTL



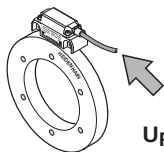
$\overline{U_{aS}}$ : Störungssignal (optional)  
*Fault detection signal (optional)*  
Signal de perturbation (option)  
*Segnale di malfunzionamento (opzionale)*  
Señal de avería (opcional)

$\overline{U_{aS}}$  = High: ✓

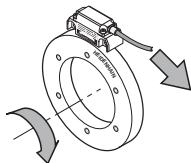
$\overline{U_{aS}}$  = Low:



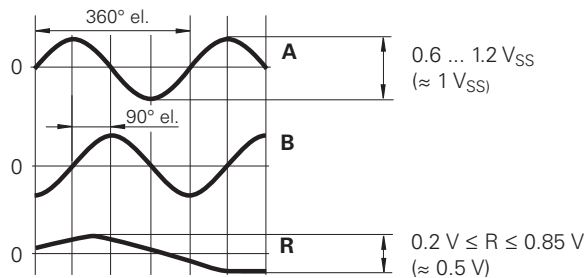
## ERM 280



**U<sub>P</sub>: DC 5 V ± 0.5 V**  
(max. 80 mA)

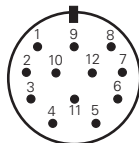
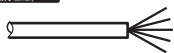


**A, B, R**

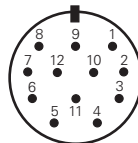
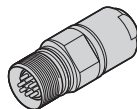


**ERM 220**

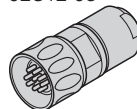
01-03



03S12-03



02S12-03



| 5                                           | 6                                       | 8                                      | 1                                    | 3                                    | 4                                         | 12                                                                      | 10                                                                     | 2                                       | 11                                         | 7                                                | /                                             | 9 |
|---------------------------------------------|-----------------------------------------|----------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|--------------------------------------------------|-----------------------------------------------|---|
| $U_{a1}$                                    | $\overline{U}_{a1}$                     | $U_{a2}$                               | $\overline{U}_{a2}$                  | $U_{a0}$                             | $\overline{U}_{a0}$                       | $U_P$                                                                   | 0V                                                                     | Sensor<br>$U_P$                         | Sensor<br>0V                               | $\overline{U}_{aS}$                              | /                                             | / |
| braun<br>brown<br>brun<br>marrone<br>marrón | grün<br>green<br>vert<br>verde<br>verde | grau<br>gray<br>gris<br>grigio<br>gris | rosa<br>pink<br>rose<br>rosa<br>rosa | rot<br>red<br>rouge<br>rosso<br>rojo | schwarz<br>black<br>noir<br>nero<br>negro | braun/grün<br>brown/green<br>brun/vert<br>marrone/verde<br>marrón/verde | weiß/grün<br>white/green<br>blanc/vert<br>bianco/verde<br>blanco/verde | blau<br>blue<br>bleu<br>azzurro<br>azul | weiß<br>white<br>blanc<br>bianco<br>blanco | violett<br>violet<br>violet<br>violet<br>violeta | gelb<br>yellow<br>jaune<br>giallo<br>amarillo | / |

Die Sensorleitung ist intern mit der Versorgungsleitung verbunden.

*The sensor line is connected internally with the power supply.*

La ligne de palpeur est reliée de manière interne à la ligne d'alimentation.

*La linea del sensore è collegata internamente con la linea di alimentazione.*

La línea de sensor está unida internamente con la línea de alimentación.

Außenschirm auf Gehäuse

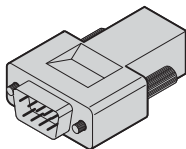
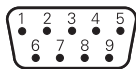
*External shield on housing*

Blindage externe sur boîtier

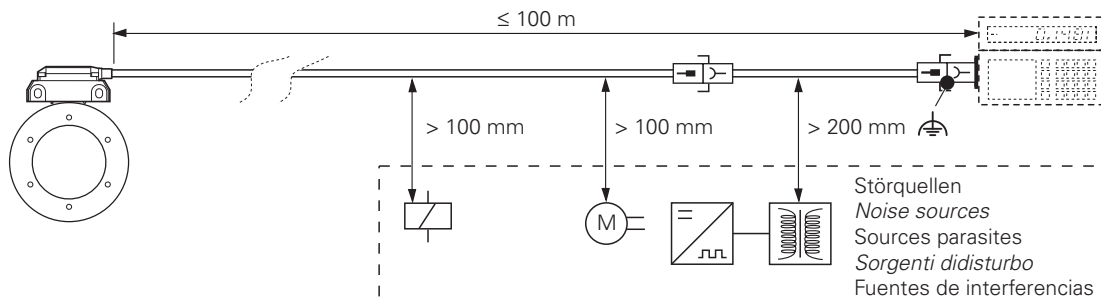
*Schermo esterno sulla carcassa*

Blindaje externo a carcasa

16S09-75



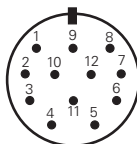
| 2                                           | 3                                       | 6                                      | 7                                    | 8                                    | 9                                         | 4                                                                       | 5                                                                      | 1                                          |
|---------------------------------------------|-----------------------------------------|----------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------|
| $U_{a1}$                                    | $\overline{U_{a1}}$                     | $U_{a2}$                               | $\overline{U_{a2}}$                  | $U_{a0}$                             | $\overline{U_{a0}}$                       | $U_p$                                                                   | 0V                                                                     | Sensor<br>0V                               |
| braun<br>brown<br>brun<br>marrone<br>marrón | grün<br>green<br>vert<br>verde<br>verde | grau<br>gray<br>gris<br>grigio<br>gris | rosa<br>pink<br>rose<br>rosa<br>rosa | rot<br>red<br>rouge<br>rosso<br>rojo | schwarz<br>black<br>noir<br>nero<br>negro | braun/grün<br>brown/green<br>brun/vert<br>marrone/verde<br>marrón/verde | weiß/grün<br>white/green<br>blanc/vert<br>bianco/verde<br>blanco/verde | weiß<br>white<br>blanc<br>bianco<br>blanco |



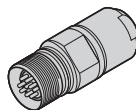
# ERM 280



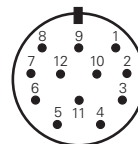
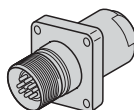
→ 01-03



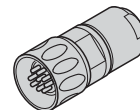
03S12-03



35S12-03



02S12-03



| 5                                           | 6                                       | 8                                      | 1                                    | 3                                    | 4                                         | 12                                                                      | 10                                                                     | 2                                       | 11                                         | 7                                                 | /                                             | 9 |
|---------------------------------------------|-----------------------------------------|----------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|---------------------------------------------------|-----------------------------------------------|---|
| A                                           |                                         | B                                      |                                      | R                                    |                                           | Up                                                                      | 0 V                                                                    | Sensor<br>Up                            | Sensor<br>0 V                              | /                                                 | /                                             | / |
| +                                           | -                                       | +                                      | -                                    | +                                    | -                                         |                                                                         |                                                                        |                                         |                                            |                                                   |                                               |   |
| braun<br>brown<br>brun<br>marrone<br>marrón | grün<br>green<br>vert<br>verde<br>verde | grau<br>gray<br>gris<br>grigio<br>gris | rosa<br>pink<br>rose<br>rosa<br>rosa | rot<br>red<br>rouge<br>rosso<br>rojo | schwarz<br>black<br>noir<br>nero<br>negro | braun/grün<br>brown/green<br>brun/vert<br>marrone/verde<br>marrón/verde | weiß/grün<br>white/green<br>blanc/vert<br>bianco/verde<br>blanco/verde | blau<br>blue<br>bleu<br>azzurro<br>azul | weiß<br>white<br>blanc<br>bianco<br>blanco | violett<br>violet<br>violet<br>violeta<br>violeta | gelb<br>yellow<br>jaune<br>giallo<br>amarillo | / |

Die Sensorleitung ist intern mit der Versorgungsleitung verbunden.

*The sensor line is connected internally with the power supply.*

La ligne de palpeur est reliée de manière interne à la ligne d'alimentation.

*La linea del sensore è collegata internamente con la linea di alimentazione.*

La línea de sensor está unida internamente con la línea de alimentación.

Außenschirm auf Gehäuse

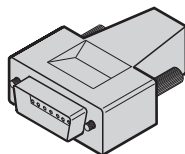
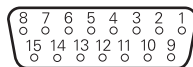
*External shield on housing*

Blindage externe sur boîtier

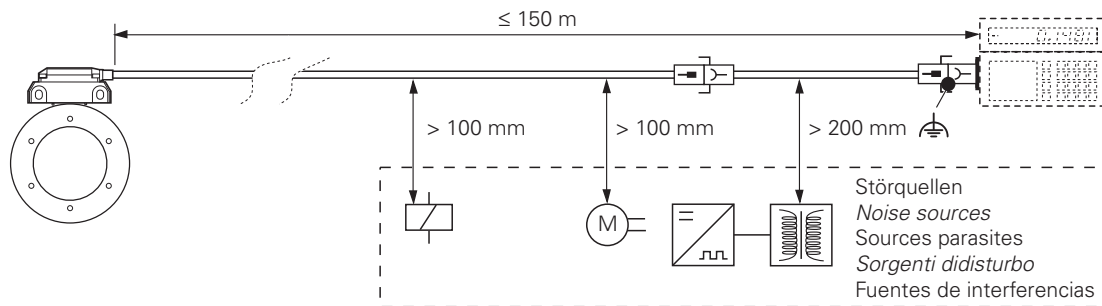
*Schermo esterno sulla carcassa*

Blindaje externo a carcasa

16B15-03

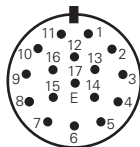
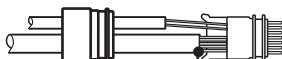


| 3                                           | 4                                       | 6                                      | 7                                    | 10                                   | 12                                        | 1                                                                       | 2                                                                      | 9                                       | 11                                         | 14                                              | /                                             |
|---------------------------------------------|-----------------------------------------|----------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|-----------------------------------------|--------------------------------------------|-------------------------------------------------|-----------------------------------------------|
| A                                           |                                         | B                                      |                                      | R                                    |                                           | Up                                                                      | 0 V                                                                    | Sensor Up                               | Sensor 0 V                                 | /                                               | /                                             |
| +                                           | -                                       | +                                      | -                                    | +                                    | -                                         |                                                                         |                                                                        |                                         |                                            |                                                 |                                               |
| braun<br>brown<br>brun<br>marrone<br>marrón | grün<br>green<br>vert<br>verde<br>verde | grau<br>gray<br>gris<br>grigio<br>gris | rosa<br>pink<br>rose<br>rosa<br>rosa | rot<br>red<br>rouge<br>rosso<br>rojo | schwarz<br>black<br>noir<br>nero<br>negro | braun/grün<br>brown/green<br>brun/vert<br>marrone/verde<br>marrón/verde | weiß/grün<br>white/green<br>blanc/vert<br>bianco/verde<br>blanco/verde | blau<br>blue<br>bleu<br>azzurro<br>azul | weiß<br>white<br>blanc<br>bianco<br>blanco | violett<br>violet<br>violet<br>viola<br>violeta | gelb<br>yellow<br>jaune<br>giallo<br>amarillo |

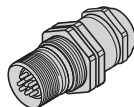


**ERM 280**

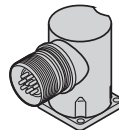
→ 21S17-57



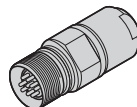
2ZS17-57



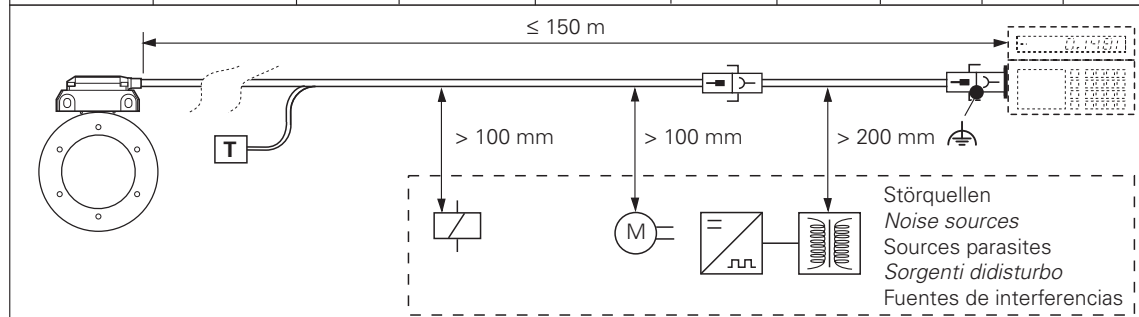
68S17-57



03S17-0T \*)



| 1                                                                     | 2                                                                           | <div>Schirm</div> <div>Shield</div> <div>Blindage</div> <div>Scherma</div> <div>Blindaje</div> | 11                                                                    | 12                                                                 | 3                                    | 13                                        | 4, 5, 6, 14 | *)                                              | *)                                            |
|-----------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------|-------------------------------------------|-------------|-------------------------------------------------|-----------------------------------------------|
| A                                                                     |                                                                             |                                                                                                | B                                                                     |                                                                    | R                                    |                                           | /           | /                                               | /                                             |
| +                                                                     | –                                                                           |                                                                                                | +                                                                     | –                                                                  | +                                    | –                                         |             |                                                 |                                               |
| grün/schwarz<br>green/black<br>vert/noir<br>verde/nero<br>verde/negro | gelb/schwarz<br>yellow/black<br>jaune/noir<br>giallo/nero<br>amarillo/negro |                                                                                                | blau/schwarz<br>blue/black<br>bleu/noir<br>azzurro/nero<br>azul/negro | rot/schwarz<br>red/black<br>rouge/noir<br>rosso/nero<br>rojo/negro | rot<br>red<br>rouge<br>rosso<br>rojo | schwarz<br>black<br>noir<br>nero<br>negro | /           | violett<br>violet<br>violet<br>viola<br>violeta | gelb<br>yellow<br>jaune<br>giallo<br>amarillo |



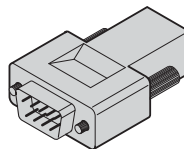
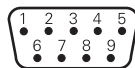
Außenschirm auf Gehäuse  
*External shield on housing*  
 Blindage externe sur boîtier  
*Schermo esterno sulla carcassa*  
 Blindaje externo a carcasa

1) Innenschirm Pin 17  
*Internal shield pin 17*  
 Blindage interne pin 17  
*Schermo interno pin 17*  
 Blindaje interno pin 17

|                                                                                                                                                                                                                                                                                                                                                                                                | <b>7</b>                                                                             | <b>10</b>                                                                             | <b>15</b>                                                | <b>16</b>                                             | <b>17</b>                                                                                | <b>8</b>                                                  | <b>9</b>                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                | <b>0V</b>                                                                            | <b>Up</b>                                                                             | <b>Sensor</b><br>0V                                      | <b>Sensor</b><br>Up                                   | 1)                                                                                       | <b>T</b>                                                  |                                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |                                                                                       |                                                          |                                                       |                                                                                          | +                                                         | -                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | braun/grün<br><i>brown/green</i><br>brun/vert<br><i>marrone/verde</i><br>marrón/verde | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | weiß/braun<br><i>white/brown</i><br>blanc/brun<br><i>bianco/marrone</i><br>blanco/marrón | braun<br><i>brown</i><br>brun<br><i>marrone</i><br>marrón | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco |
| Die Sensorleitung ist intern mit der Versorgungsleitung verbunden.<br><i>The sensor line is connected internally with the power supply.</i><br>La ligne de palpeur est reliée de manière interne à la ligne d'alimentation.<br><i>La linea del sensore è collegata internamente con la linea di alimentazione.</i><br>La línea de sensor está unida internamente con la línea de alimentación. |                                                                                      |                                                                                       |                                                          |                                                       | <b>*) 17</b>                                                                             | <b>*) 8</b>                                               | <b>*) 9</b>                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |                                                                                       |                                                          |                                                       | /                                                                                        | /                                                         | /                                                        |
|                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                      |                                                                                       |                                                          |                                                       | /                                                                                        | /                                                         | /                                                        |

**ERM 280**

→ 16S09-6D



| 3                                                         | 2                                                     | 1                                                    | 9                                                  | 8                                                  | 7                                                       | 5                                                                                     | 4                                                                                    | 6                                                        | /                                                           | /                                                     | /                                                             |
|-----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------|
| A                                                         |                                                       | B                                                    |                                                    | R                                                  |                                                         | Up                                                                                    | 0V                                                                                   | 0V                                                       | /                                                           | /                                                     | /                                                             |
| +                                                         | –                                                     | +                                                    | –                                                  | +                                                  | –                                                       |                                                                                       |                                                                                      |                                                          |                                                             |                                                       |                                                               |
| braun<br><i>brown</i><br>brun<br><i>marrone</i><br>marrón | grün<br><i>green</i><br>vert<br><i>verde</i><br>verde | grau<br><i>gray</i><br>gris<br><i>grigio</i><br>gris | rosa<br><i>pink</i><br>rose<br><i>rosa</i><br>rosa | rot<br><i>red</i><br>rouge<br><i>rosso</i><br>rojo | schwarz<br><i>black</i><br>noir<br><i>nero</i><br>negro | braun/grün<br><i>brown/green</i><br>brun/vert<br><i>marrone/verde</i><br>marrón/verde | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | gelb<br><i>yellow</i><br>jaune<br><i>giallo</i><br>amarillo | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | violett<br><i>violet</i><br>violet<br><i>viola</i><br>violeta |

Außenschirm auf Gehäuse

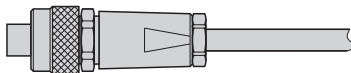
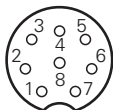
*External shield on housing*

Blindage externe sur boîtier

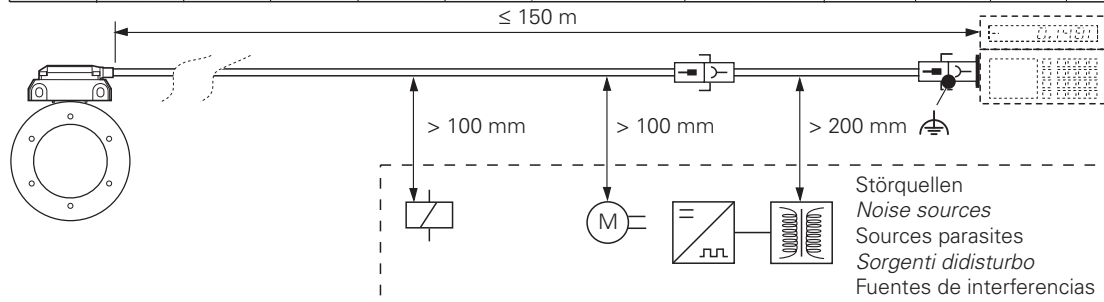
*Schermo esterno sulla carcassa*

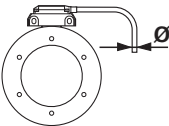
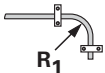
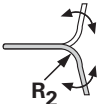
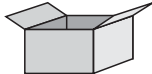
Blindaje externo a carcasa

4KS08-A1



| 3                                                         | 4                                                     | 7                                                    | 6                                                  | 1                                                  | 2                                                       | 8                                                                                     | 5                                                                                    | /                                                        | /                                                           | /                                                     | /                                                             |
|-----------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------------|
| A                                                         |                                                       | B                                                    |                                                    | R                                                  |                                                         | Up                                                                                    | 0V                                                                                   | /                                                        | /                                                           | /                                                     | /                                                             |
| +                                                         | -                                                     | +                                                    | -                                                  | +                                                  | -                                                       |                                                                                       |                                                                                      |                                                          |                                                             |                                                       |                                                               |
| braun<br><i>brown</i><br>brun<br><i>marrone</i><br>marrón | grün<br><i>green</i><br>vert<br><i>verde</i><br>verde | grau<br><i>gray</i><br>gris<br><i>grigio</i><br>gris | rosa<br><i>pink</i><br>rose<br><i>rosa</i><br>rosa | rot<br><i>red</i><br>rouge<br><i>rosso</i><br>rojo | schwarz<br><i>black</i><br>noir<br><i>nero</i><br>negro | braun/grün<br><i>brown/green</i><br>brun/vert<br><i>marrone/verde</i><br>marrón/verde | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | gelb<br><i>yellow</i><br>jaune<br><i>giallo</i><br>amarillo | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | violett<br><i>violet</i><br>violet<br><i>viola</i><br>violeta |



|                                                                                                       |                                                                                                                                         |                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       |  <p><math>T \geq -40\text{ °C}</math><br/>(-40 °F)</p> |  <p><math>T \geq -10\text{ °C}</math><br/>(14 °F)</p> | <div data-bbox="753 117 866 277">  </div> <div data-bbox="988 265 1161 350">  </div> <div data-bbox="1193 298 1354 353"> <p>-30 ... 80 °C<br/>(-22 ... 176 °F)</p> </div> |
| <p><b>Ø 4.5 mm</b></p>                                                                                | <p><math>R_1 \geq 10\text{ mm}</math></p>                                                                                               | <p><math>R_2 \geq 50\text{ mm}</math></p>                                                                                              |                                                                                                                                                                                                                                                                                                                                              |
|  <p><b>Ø 8 mm</b></p> | <p><math>R_1 \geq 40\text{ mm}</math></p>                                                                                               | <p><math>R_2 \geq 100\text{ mm}</math></p>                                                                                             |                                                                                                                                                                                                                                                                                                                                              |

Elektrischen Widerstand zwischen Steckergehäuse und Maschine prüfen.

**Sollwert: 1  $\Omega$  max.**

*Check the resistance between the connector housing and the machine.*

**Desired value: 1  $\Omega$  max.**

Tester la résistance électrique entre le carter de la prise et la machine.

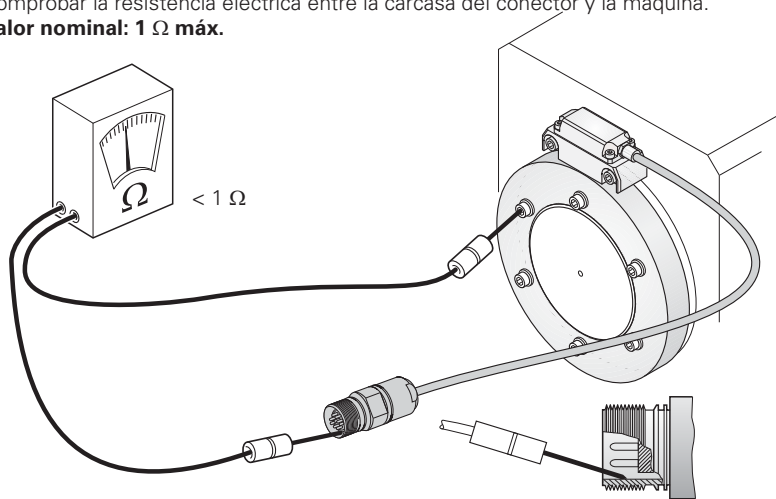
**Valeur nominale: 1  $\Omega$  max.**

*Controllare la resistenza elettrica tra l'alloggiamento del connettore e la macchina.*

**Valore nominale: 1  $\Omega$  max.**

Comprobar la resistencia eléctrica entre la carcasa del conector y la máquina.

**Valor nominal: 1  $\Omega$  máx.**



# HEIDENHAIN

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