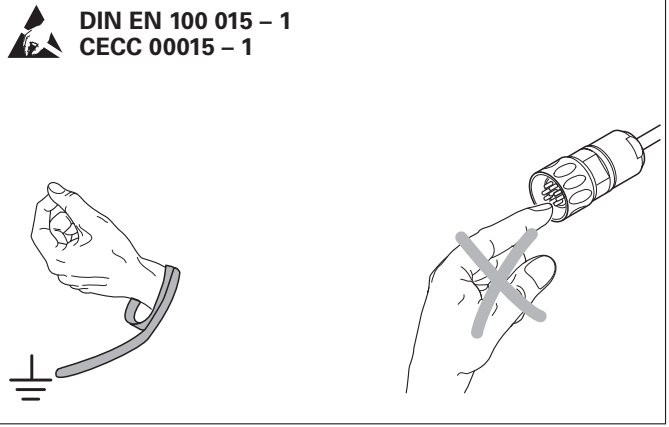
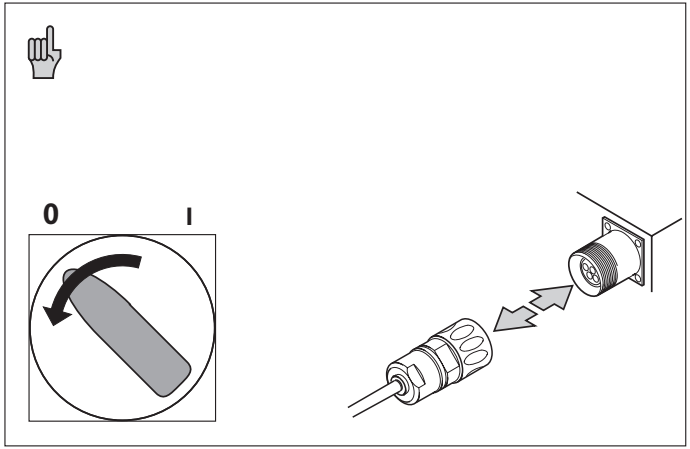
HEIDENHAIN

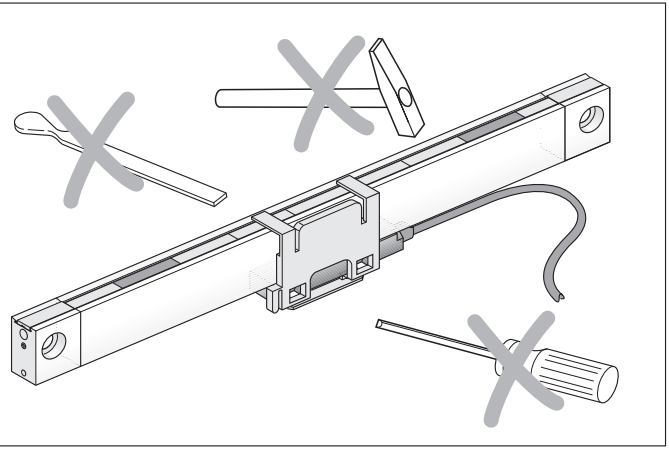
Montageanleitung
*Mounting Instructions*
Instructions de montage
*Istruzioni di montaggio*
Instrucciones de montaje

# LS 406
# LS 476
# LS 486

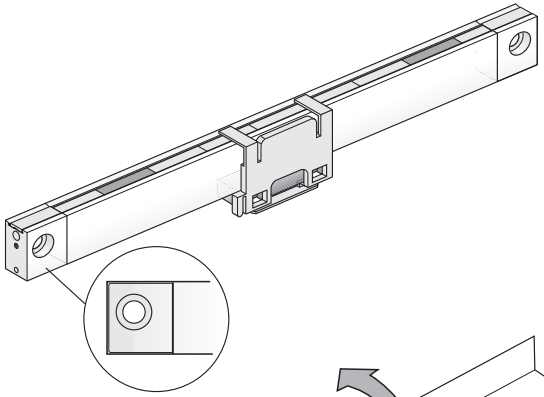
**10/2003**

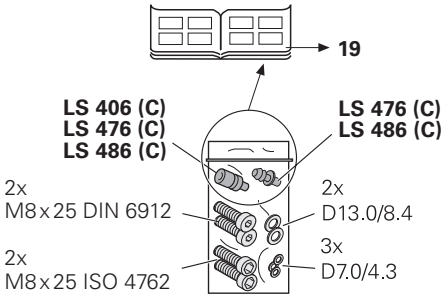


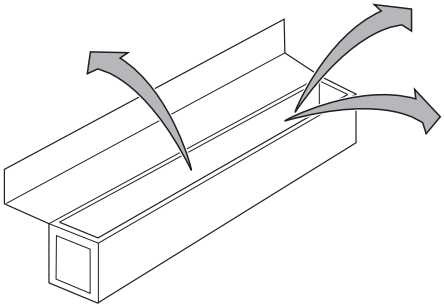



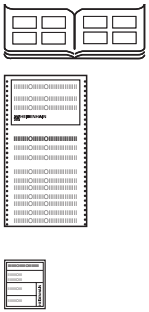



**Maße in mm**
***Dimensions in mm***
**Cotes en mm**
***Dimensioni in mm***
**Dimensiones en mm**



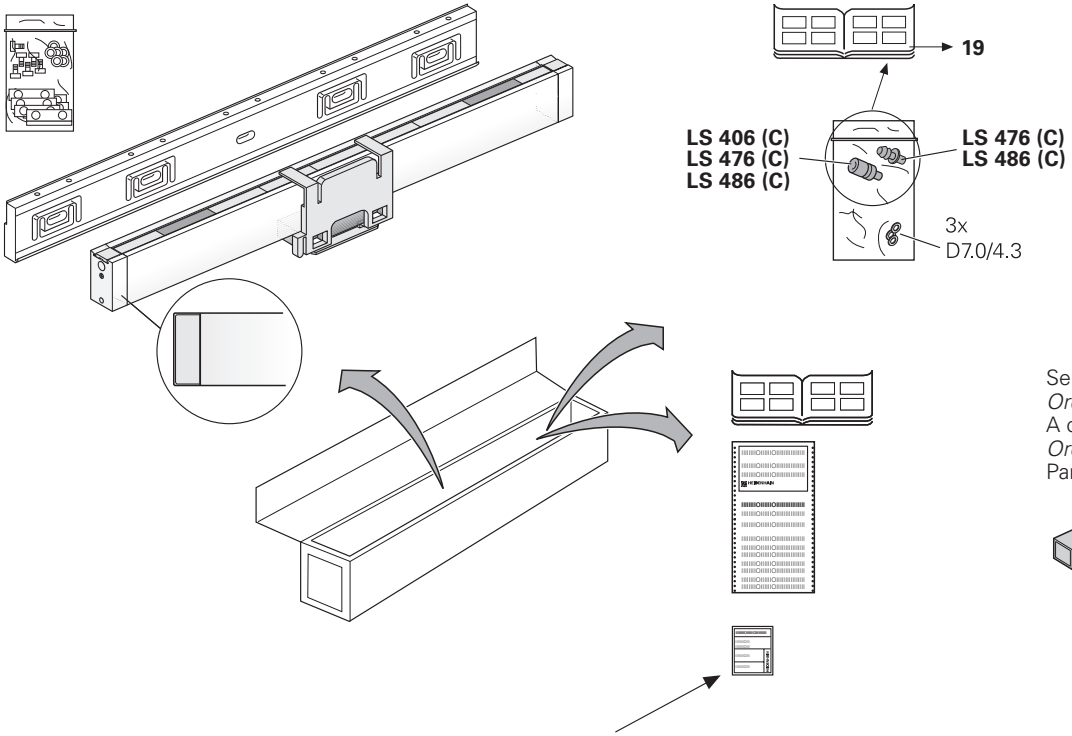




Separat bestellen
*Order separately*
A commander séparément
*Ordinare a parte*
Para pedir por separado

Bei Montage bitte Geräteschild-Aufkleber anbringen (Schaltschrank, Maschinen-Handbuch usw.)
*Apply the encoder ID label to an appropriate surface, e.g. the electrical cabinet or machine manual*
Lors du montage, accoler S.V.P. l'étiquette signalétique de l'appareil (armoire électrique, manuel de la machine, etc.)
*Completato il montaggio, ricordarsi di applicare l'etichetta (manuale della macchina, quadro elettrico)*
Por favor, durante el montaje, colocar el adhesivo del letrero del aparato (armario eléctrico, modo de empleo de la máquina, etc.)

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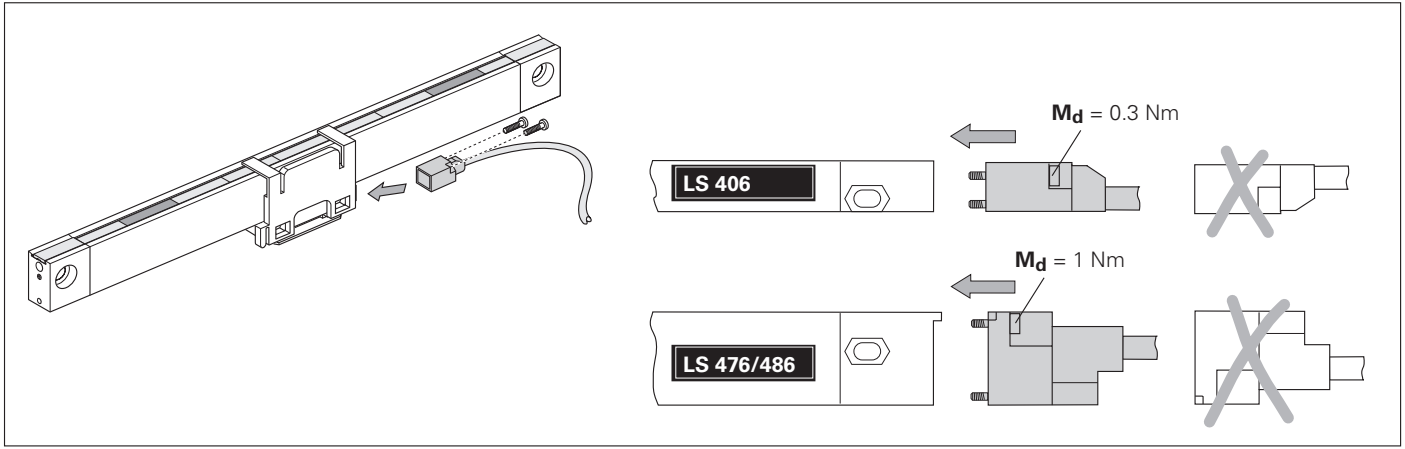
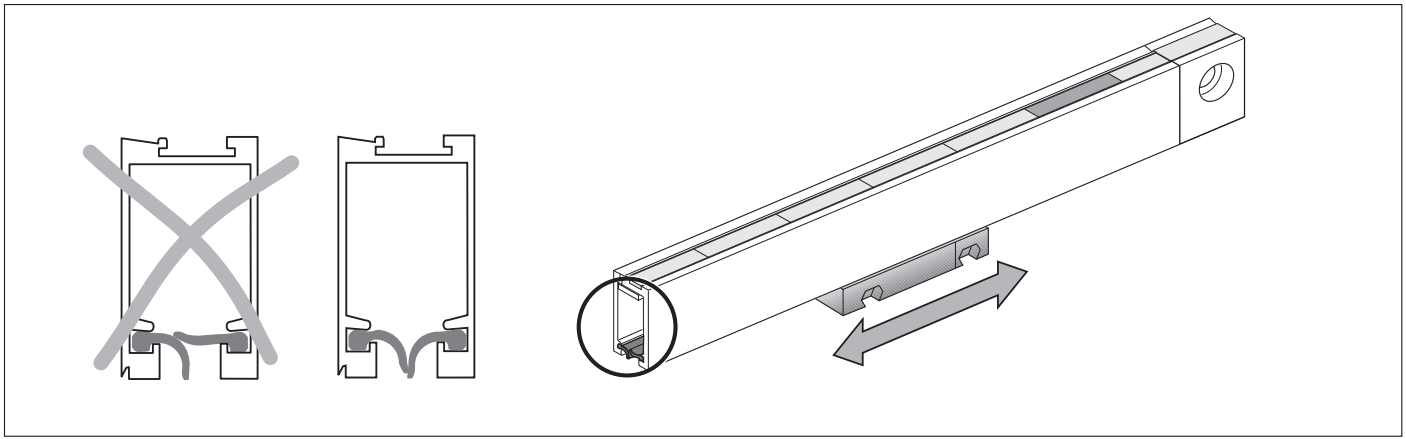
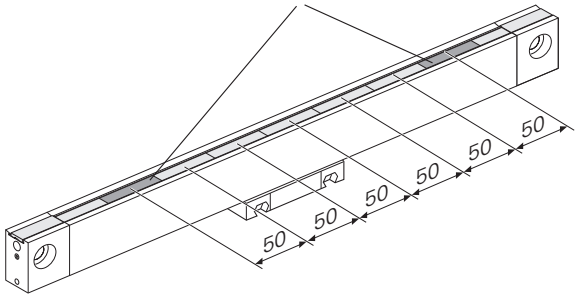
## Kabelanschluss · *Cable Connection* · Raccordement du cable · *Cavo di colleganto* · Conexión de cable

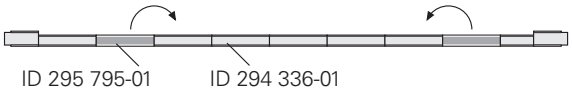


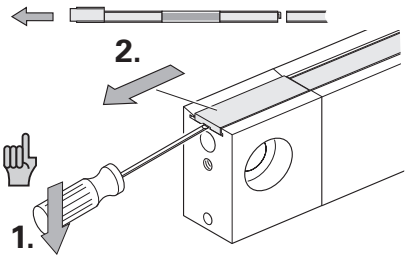

## Dichtlippen überprüfen · *Inspect Sealing Lips* · Contrôler les lèvres d`étanchéité · *Controllo delle guarnizioni* · Verificar labios

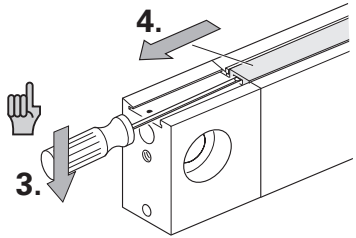


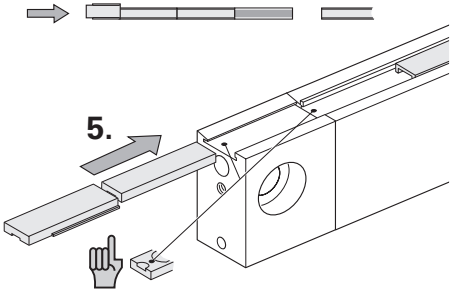
## LS 4x6

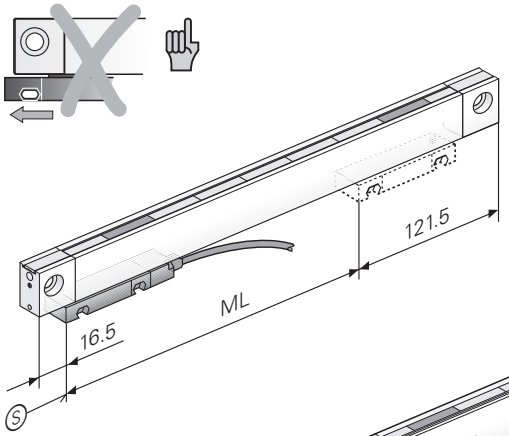

Referenzmarken-Lage
*Reference mark*
Marque de référence
*Indici di riferimento*
Marca de referencia
50
50
50
50
50
50


ID 295 795-01
ID 294 336-01

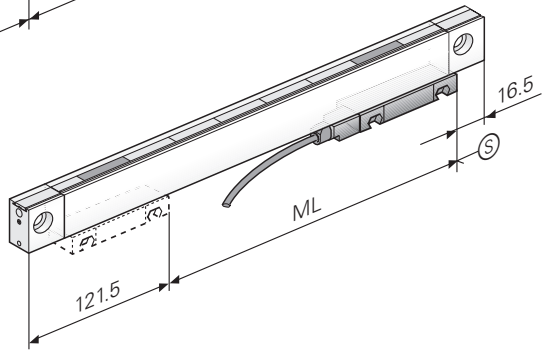

2.
1.

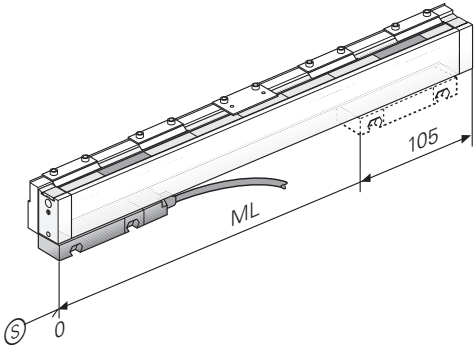

4.
3.


5.

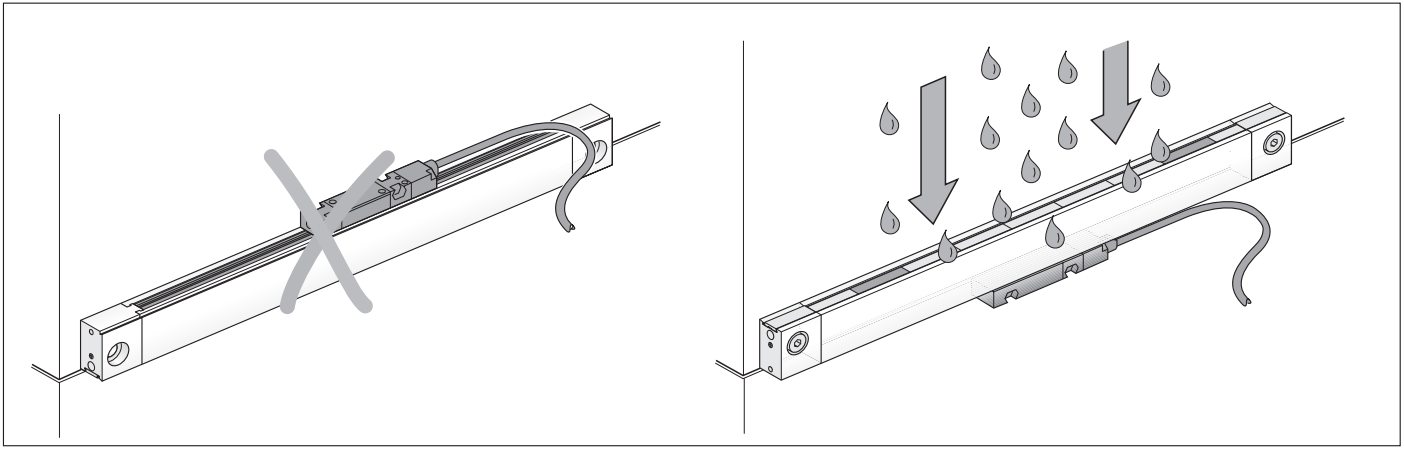



180° gedreht angebaut
*Mounted rotated by 180°*
Montage avec rotation de 180°
*Montaggio ruotato di 180°*
Montado girado 180º



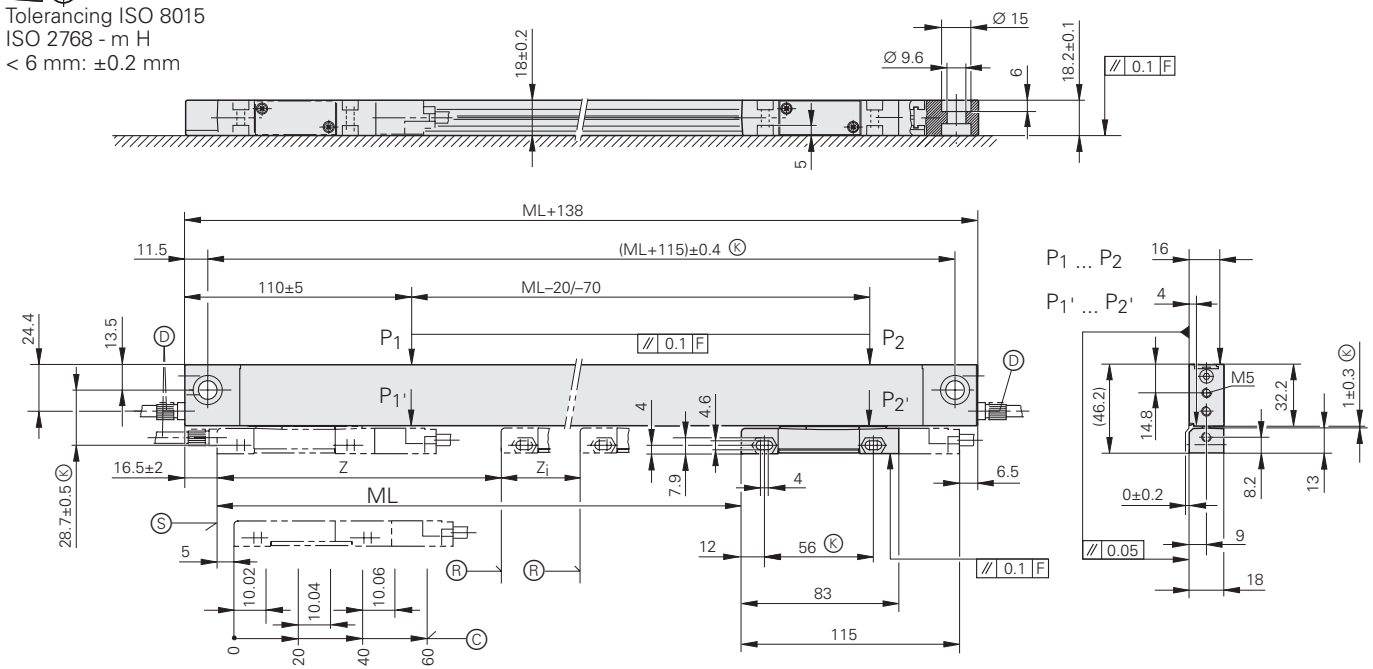

Ⓢ = Beginn der Messlänge ML
*Begin. of meas. length ML*
Début longueur utile ML
*Inizio lunghezza di misura ML*
Comienzo longitud útil ML



# LS 406 ( C)

mm

Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm




| ML 70 ... 1020 | ML 1140 ... 1240 |
|---|---|
| z = 35 mm | z = 45 mm |
| $z_i$ = ML – 70 mm | $z_i$ = ML – 90 mm |

P = Messpunkte zum Ausrichten
*Gauging points for alignment*
points de mesure pour dé gauchissage
*punti di misura per allineamento*
puntos medición alineamiento

Ⓢ = Beginn der Messlänge ML
*Begin. of meas. length ML*
début longueur utile ML
*inizio lunghezza di misura ML*
comienzo longitud útil ML

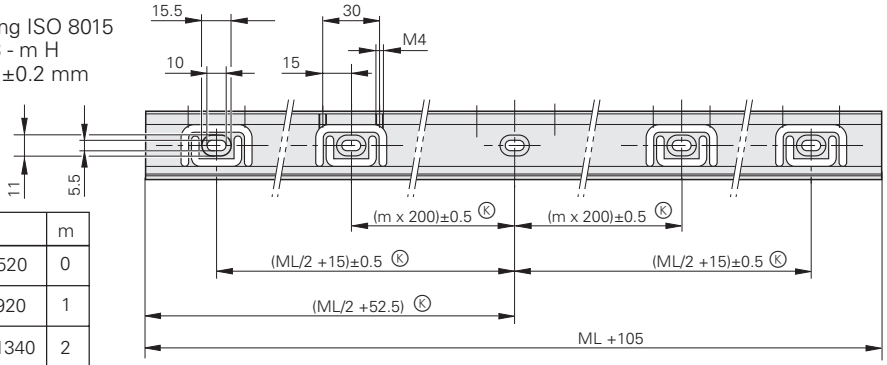
Ⓡ = Referenzmarken-Lage
Ⓒ *Reference mark*
marque de référence
*indici di riferimento*
marca de referencia

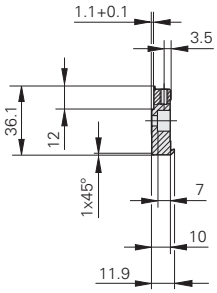
# LS 406 ( C)

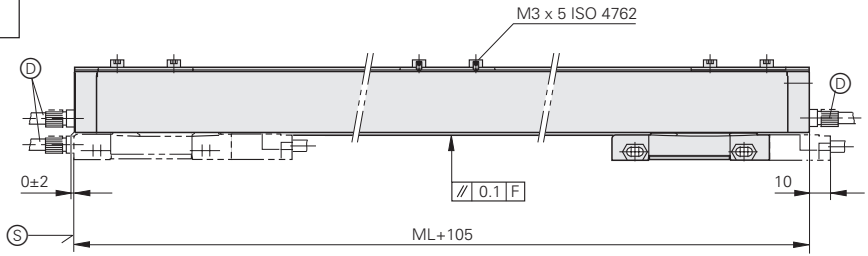
mm

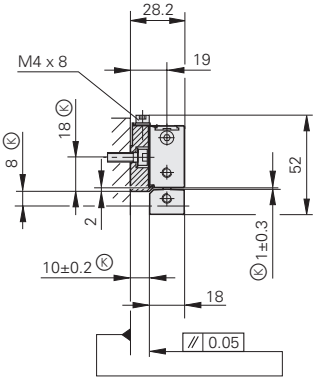
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

| ML | m |
|---|---|
| 70 ... 520 | 0 |
| 570 ... 920 | 1 |
| 1020 ... 1340 | 2 |
| 1440 ... 1740 | 3 |
| 1840 ... 2040 | 4 |




Ⓚ = Kundenseitige Anschlussmaße
*Required mating dimensions*
conditions requises pour le montage
*dimensioni di collegamento lato cliente*
cotas de montaje requeridas

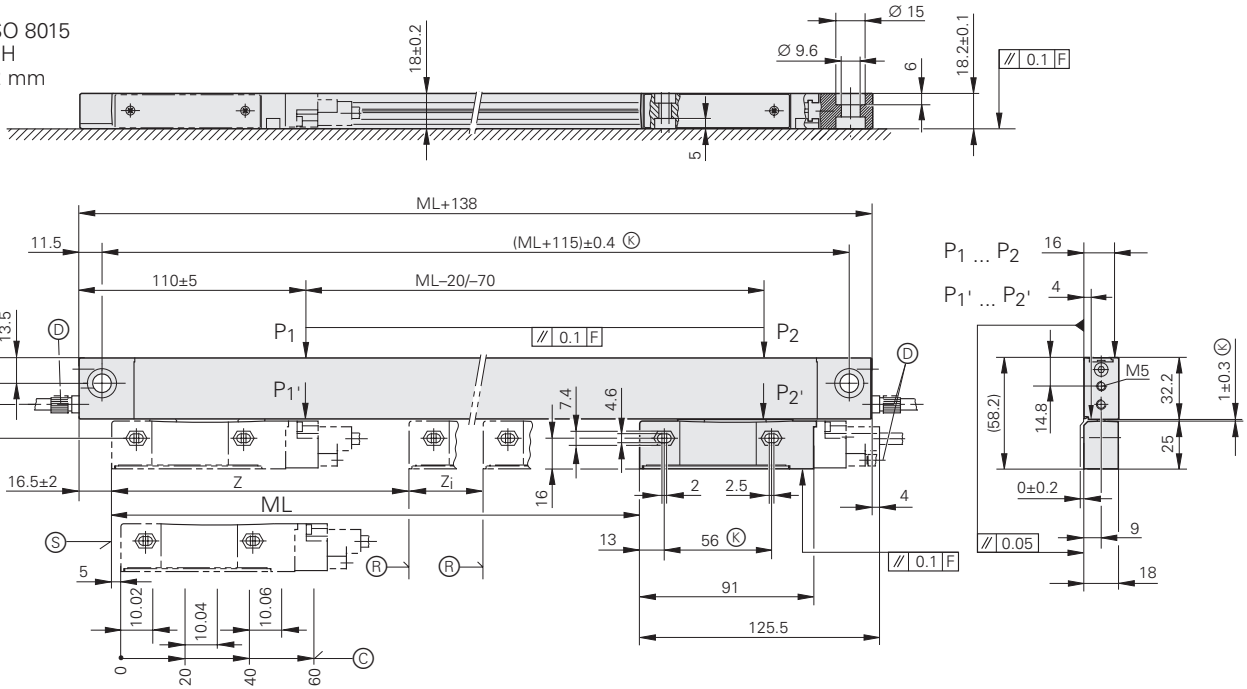
F = Maschinenführung
*Machine guideway*
guidage de la machine
*guida della macchina*
guía de la máquina

Ⓓ = Druckluftanschluss
*Compressed air inlet*
raccordement d´air comprimé
*ingresso per pressurizzazione*
conexión de aire comprimido

# LS 476/LS 486 (C)

mm

Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

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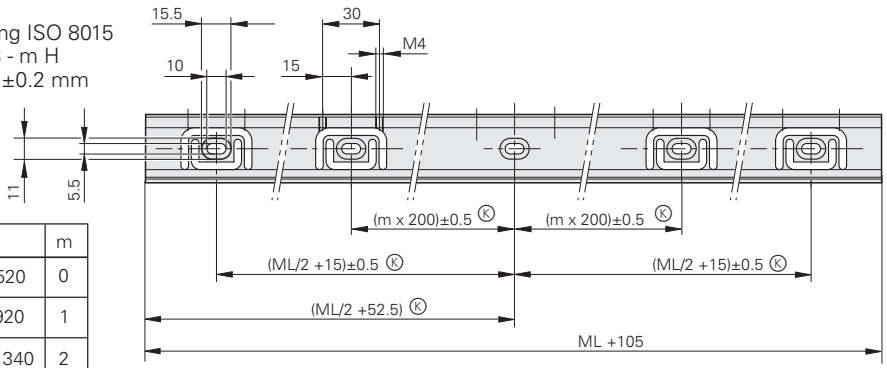


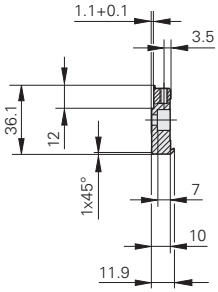


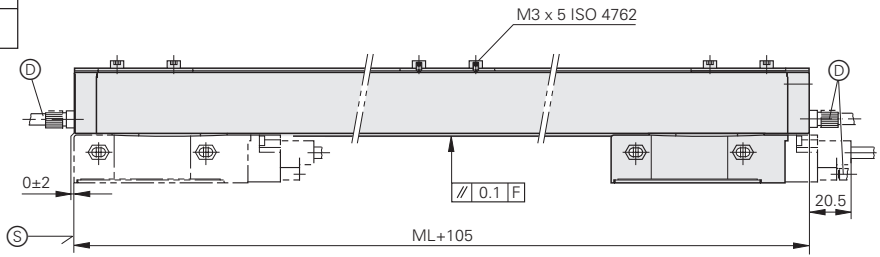


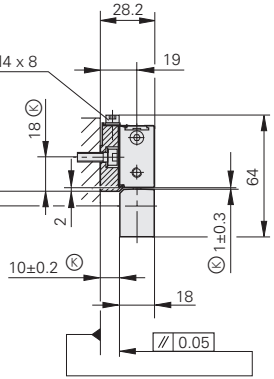


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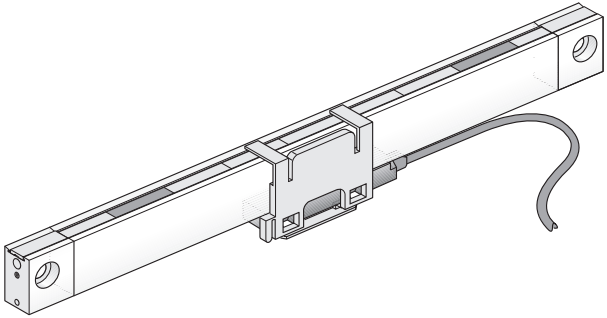
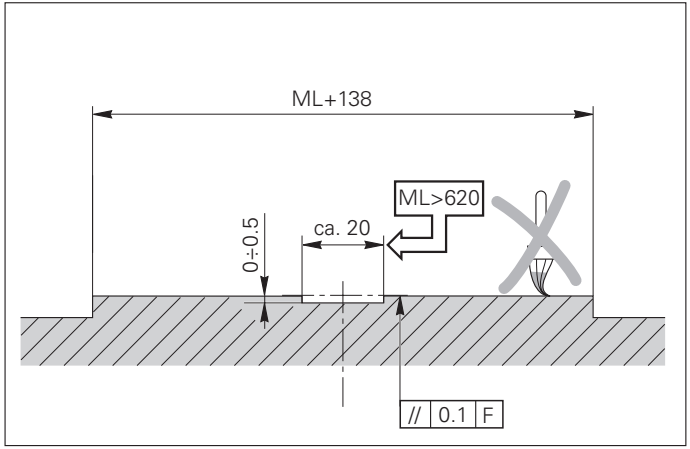
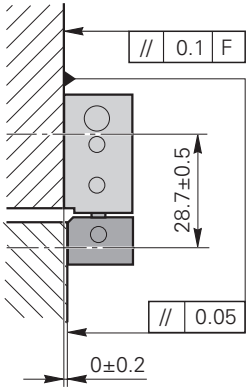
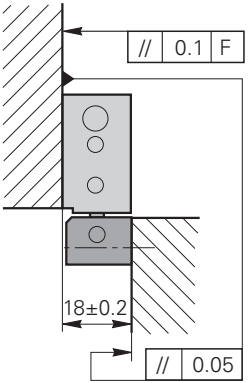
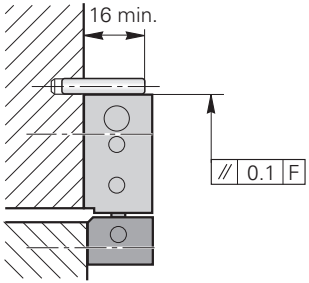


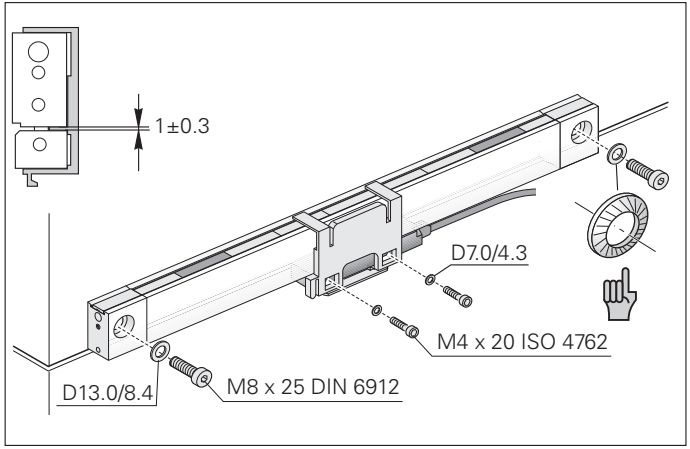


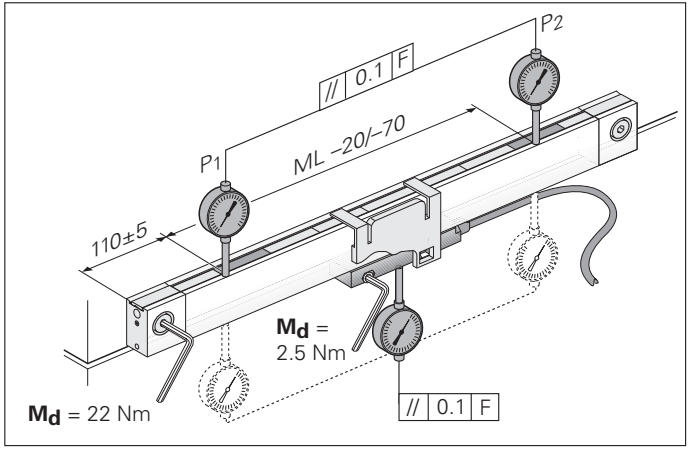



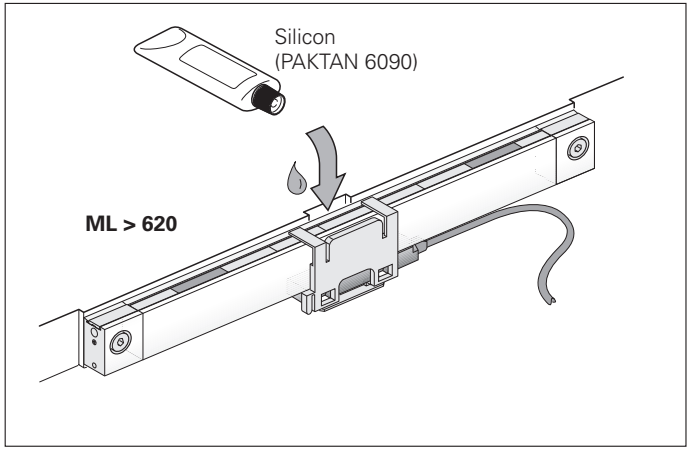



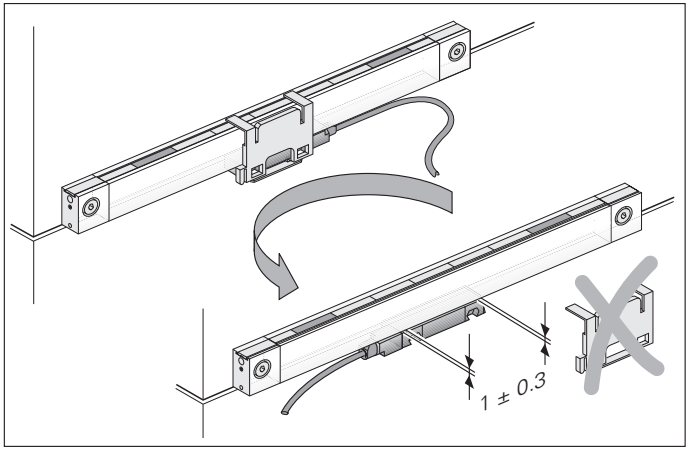



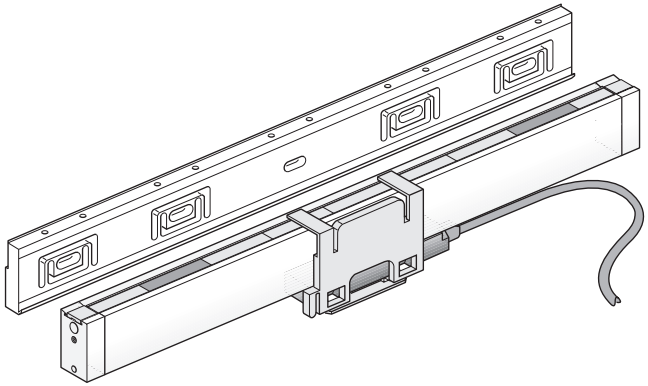

weitere Anbaumöglichkeit mit Anschlagstifte
*Additional mounting option with stop pins*
autre possibilité de montage avec goupilles d'arrêt
*altra possibilità di montaggio con permo di battuta*
otra posibilidad de montaje con espigas de ajuste

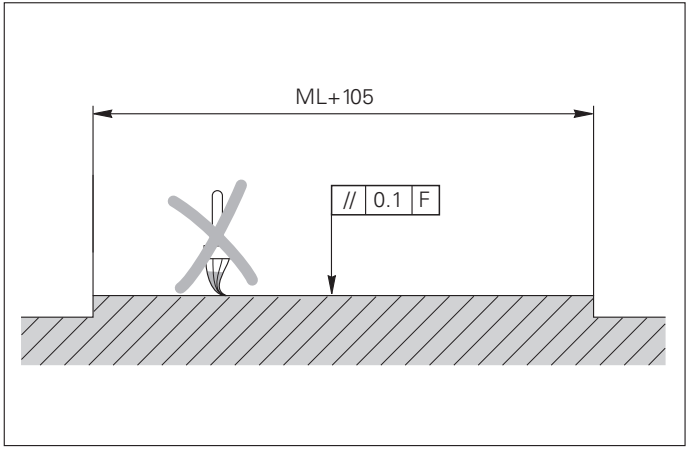

1±0.3
D7.0/4.3
M4 x 20 ISO 4762
D13.0/8.4
M8 x 25 DIN 6912

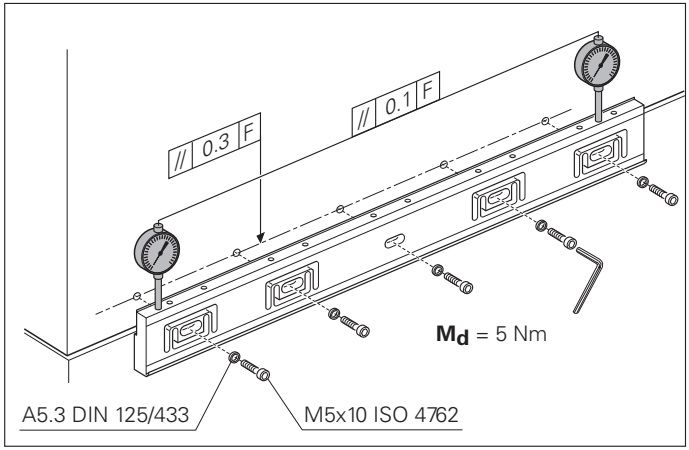

P2
// 0.1 F
P1
ML –20/–70
110±5
Md =
2.5 Nm
Md = 22 Nm
// 0.1 F

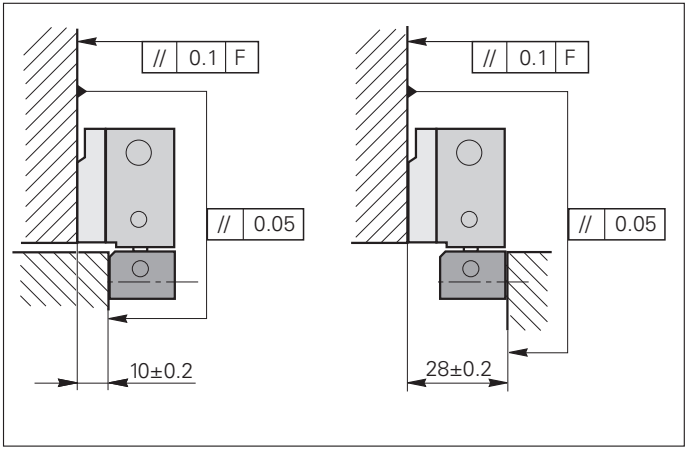

Silicon
(PAKTAN 6090)
ML > 620

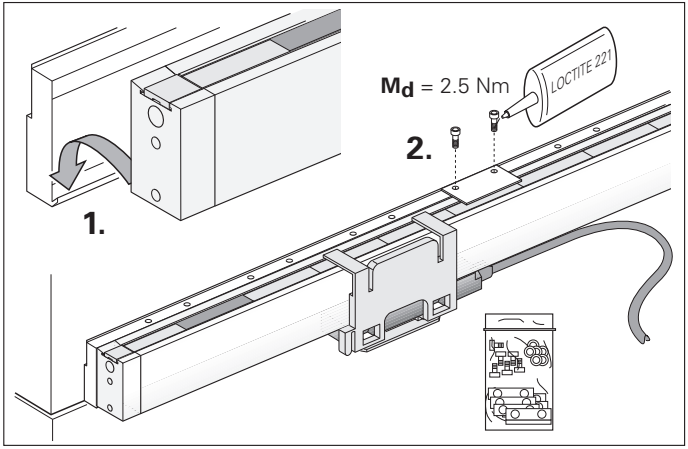

1 ± 0.3

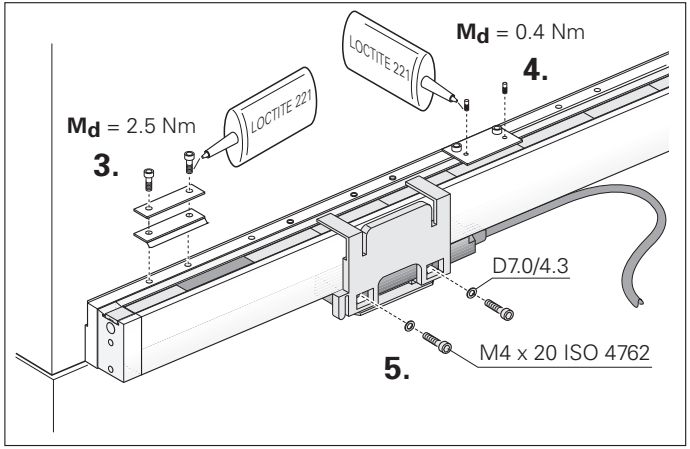


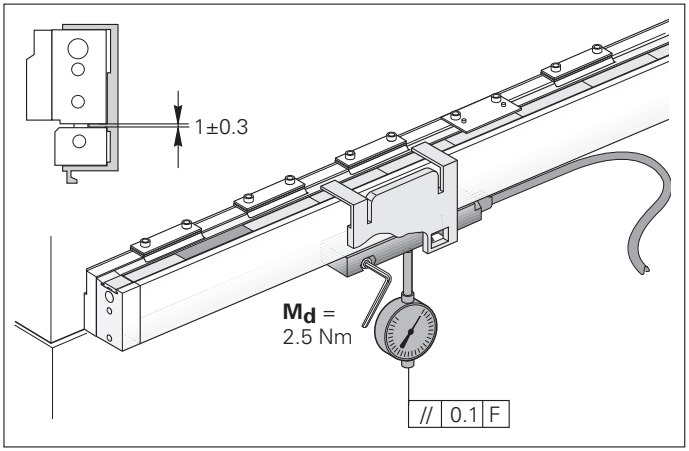

ML+105
// 0.1 F

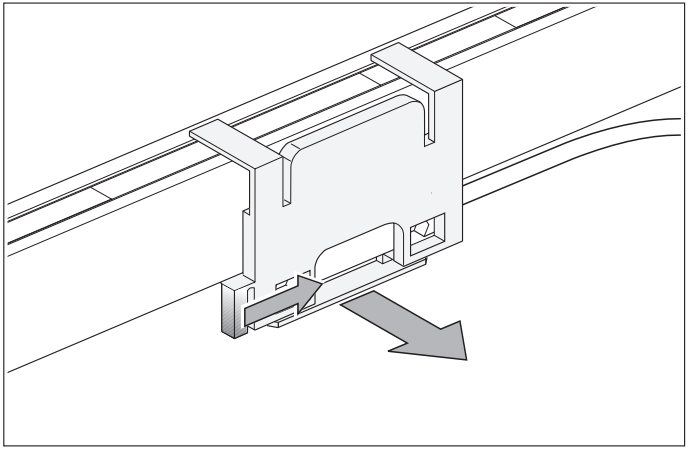

// 0.3 F
// 0.1 F
Md = 5 Nm
A5.3 DIN 125/433
M5x10 ISO 4762

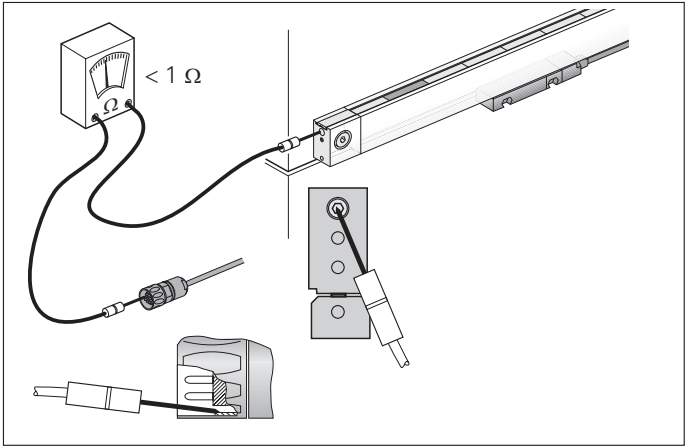

// 0.1 F
// 0.05
10±0.2
// 0.1 F
// 0.05
28±0.2


1.
2.
Md = 2.5 Nm
LOCTITE 221

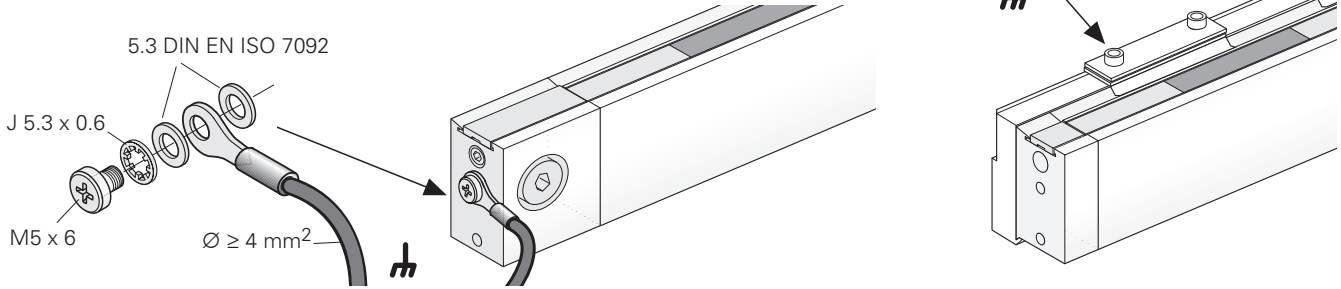

3.
Md = 2.5 Nm
LOCTITE 221
4.
Md = 0.4 Nm
LOCTITE 221
D7.0/4.3
5.
M4 x 20 ISO 4762

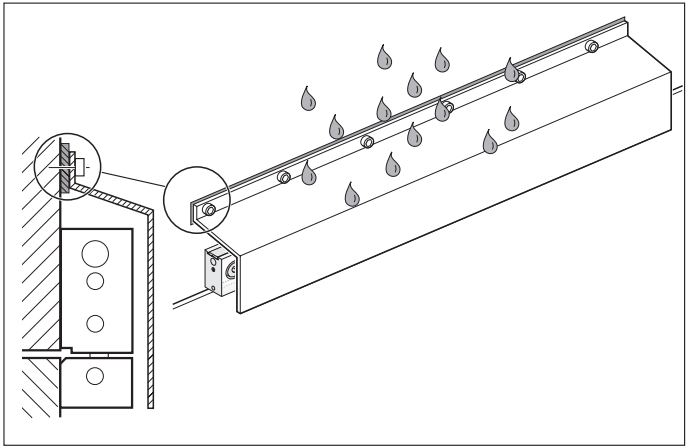

1±0.3
Md =
2.5 Nm
// 0.1 F

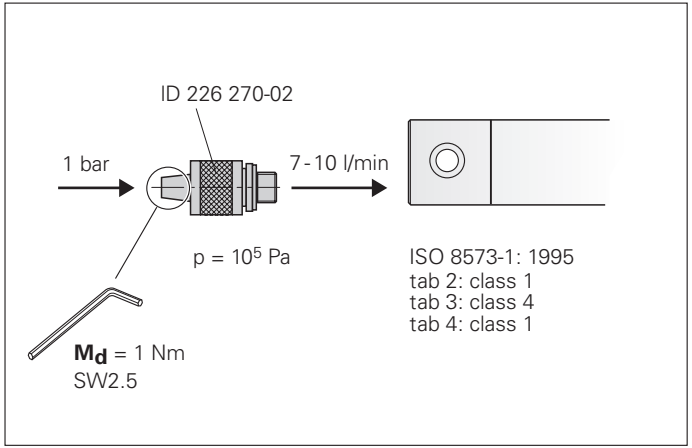


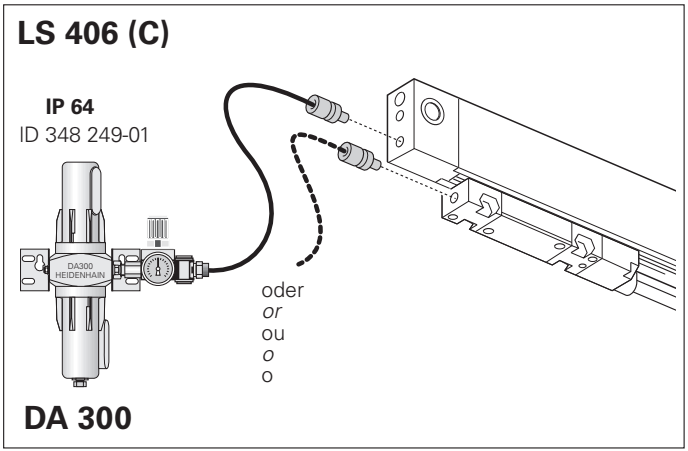


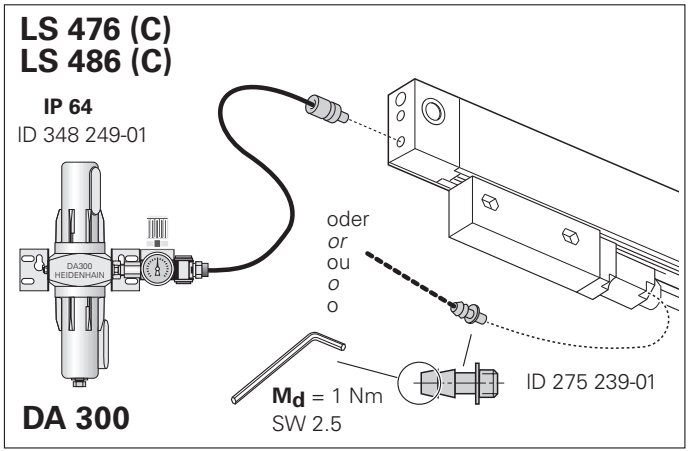

Bei Erdungsproblemen zusätzlich Endstück oder Montageschiene erden!
*If grounding problems occur, ground also the end piece or mounting spar!*
En cas de problèmes de mise à la terre, mettre aussi l'embout ou le rail de montage à la terre!
*Nel caso di problemi di messa a terra, mettere a terra anche il blocchetto terminale o la guida di montaggio!*
¡En caso de problemas de tierras, poner a tierra adicionalmente la pieza final o la guía de montaje!



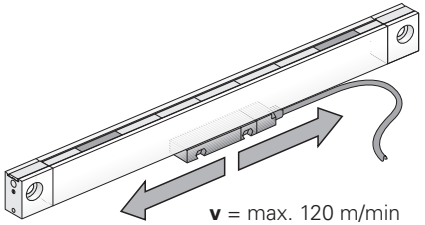



ID 226 270-02
1 bar
7 - 10 l/min
p = $10^5$ Pa
ISO 8573-1: 1995
tab 2: class 1
tab 3: class 4
tab 4: class 1
$M_d$ = 1 Nm
SW2.5


LS 406 (C)
IP 64
ID 348 249-01
DA300
HEIDENHAIN
oder
*or*
ou
*o*
o
DA 300


LS 476 (C)
LS 486 (C)
IP 64
ID 348 249-01
DA300
HEIDENHAIN
oder
*or*
ou
*o*
o
$M_d$ = 1 Nm
SW 2.5
ID 275 239-01
DA 300

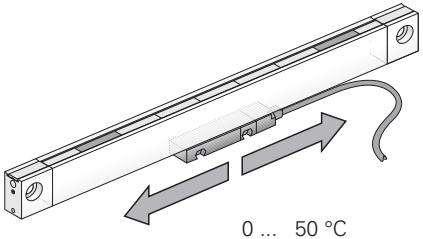
| Ø | $R_1$ | $R_2$ |
|---|---|---|
| **Ø 6 mm** | $R_1 \geq 20$ mm | $R_2 \geq 75$ mm |
| **Ø 10 mm** | $R_1 \geq 35$ mm | $R_2 \geq 75$ mm |
| **Ø 8 mm** | $R_1 \geq 40$ mm | $R_2 \geq 100$ mm |



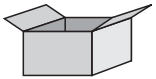
**v** = max. 120 m/min

**F** ≤ 5 N

**°C (°F)**

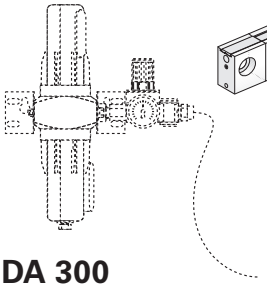


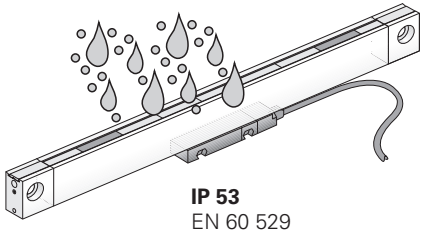
0 ... 50 °C
(32 ... 122 °F)



–20 ... 70 °C
(– 4 ... 158 °F)

**IP 64**
EN 60 529

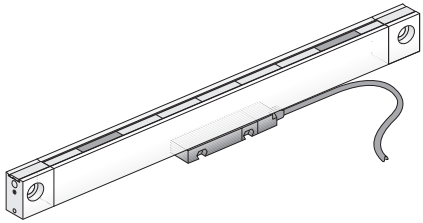




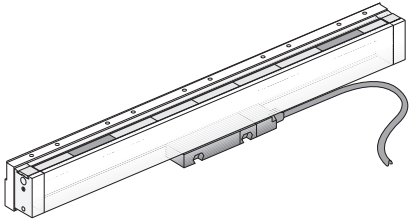
**IP 53**
EN 60 529

**DA 300**

## Vibration/Schock · *Vibration/Shock* · Vibrations/Chocs · *Vibrazioni/Shock* · Vibración/Choque



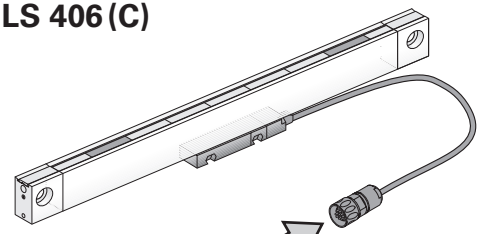
EN 60 068-2-6 (55 ... 2000 Hz): max. 100 m/s$^2$
EN 60 068-2-27 (11 ms): max. 300 m/s$^2$



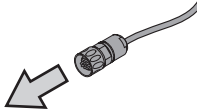
EN 60 068-2-6 (55 ... 2000 Hz): max. 200 m/s$^2$
EN 60 068-2-27 (11 ms): max. 300 m/s$^2$

## Elektrische Kennwerte · *Electrical Data* · Caractéristiques électriques · *Dati elettrici* · Datos eléctricas

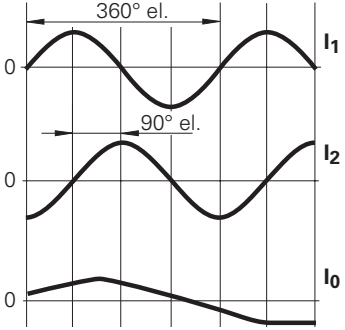
### LS 406 (C)



**$U_P$ = 5 V** ± 5 %
(max. 70 mA)



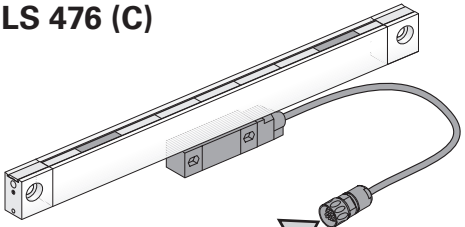
**$I_1$: 7 ... 16 µA$_{SS}$**
**$I_2$: 7 ... 16 µA$_{SS}$**
**$I_0$: 2 ... 8 µA**




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)

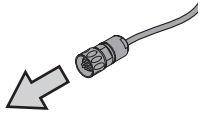
## LS 476 (C)



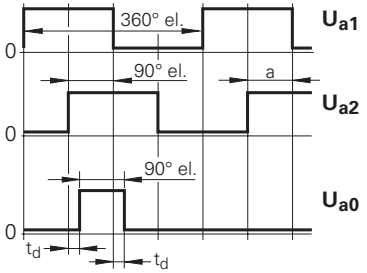
**$U_P$ = 5 V** ± 5 %
(max. 140 mA)

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)

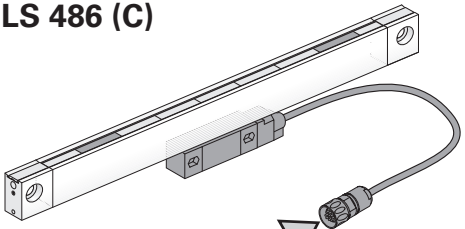


**$U_{a1}$, $U_{a2}$, $U_{a0}$**
**$\overline{U_{a1}}$, $\overline{U_{a2}}$, $\overline{U_{a0}}$, $\overline{U_{aS}}$**




$|t_d| \leq 0.1$ µs  a ≥ 0.5 µs

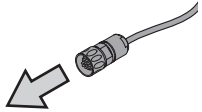
## LS 486 (C)



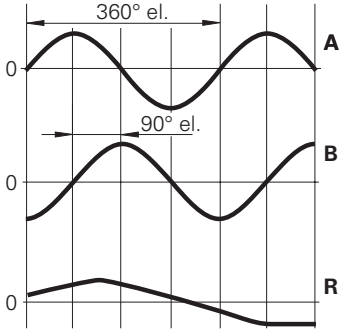
**$U_P$ = 5 V** ± 5 %
(max. 150 mA)

EN 50 178/4.98; 5.2.9.5
IEC 364-4-41: 1992; 411(PELV/SELV)

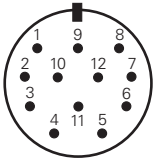
(siehe, *see,* voir, *vedi,* véase
HEIDENHAIN D 231 929)

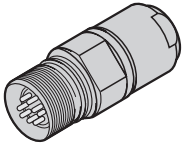


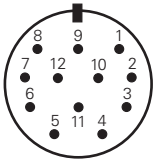
**A: 0.6 ... 1.2 $V_{SS}$**
**B: 0.6 ... 1.2 $V_{SS}$**
**R: 0.2 ... 0.85 V**

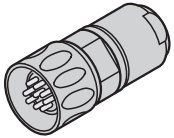


## LS 476 (C)



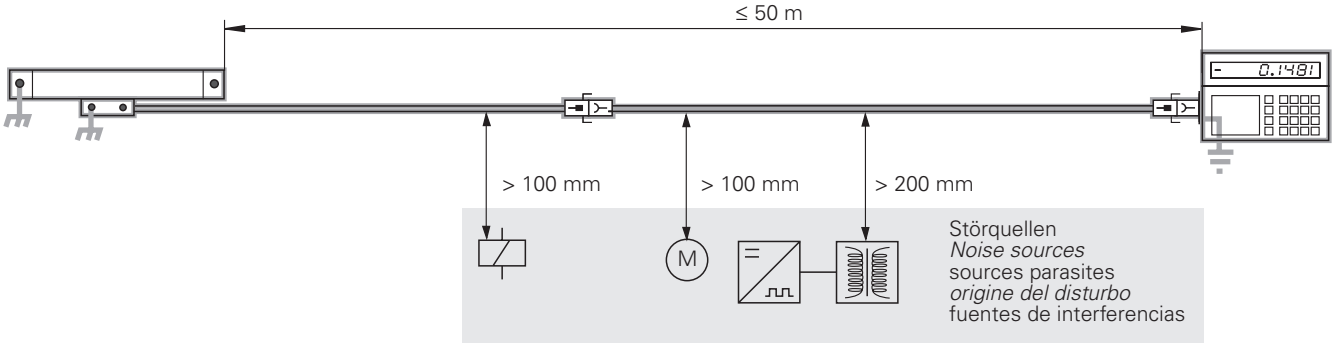





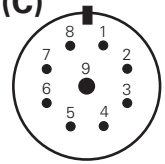



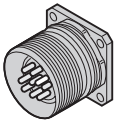
Schirm auf Gehäuse
*Shield on housing*
blindage sur boîtier
*schermo sulla carcassa*
blindaje a carcasa

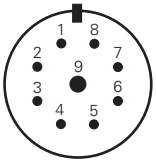
| 5 | 6 | 8 | 1 | 3 | 4 | 12 | 10 | 2 | 11 | 7 | / |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $U_{a1}$ | $\overline{U_{a1}}$ | $U_{a2}$ | $\overline{U_{a2}}$ | $U_{a0}$ | $\overline{U_{a0}}$ | 5 V<br>$U_P$ | 0 V<br>$U_N$ | 5 V<br>sensor | 0 V<br>sensor | $\overline{U_{aS}}$ | / |
| braun<br>*brown*<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>marron/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 |

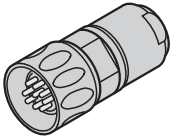


## LS 406 (C)



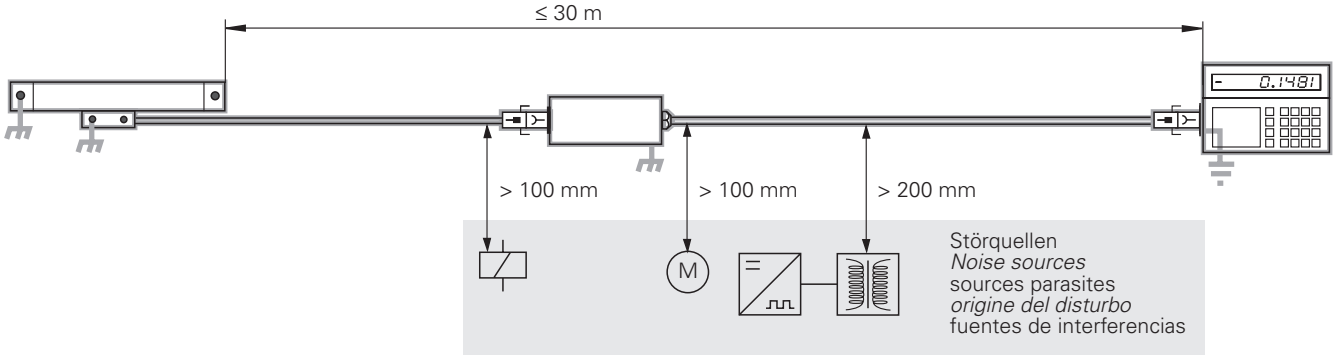


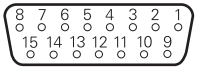



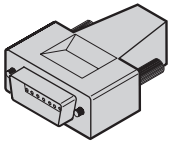
1) Außenschirm auf Gehäuse
*External shield on housing*
blindage externe sur boîtier
*schermo esterno sulla carcassa*
blindaje externo a carcasa

2) Innenschirm Pin 9
*Internal shield pin 9*
blindage interne pin 9
*schermo interno pin 9*
blindaje interno pin 9

| 1 | 2 | 5 | 6 | 7 | 8 | 3 | 4 | | 9 |
|---|---|---|---|---|---|---|---|---|---|
| $I_1$ | | $I_2$ | | $I_0$ | | 5 V $U_P$ | 0 V $U_N$ | 1) | 2) |
| + | – | + | – | + | – | | | | |
| grün<br>*green*<br>vert<br>*verde*<br>verde | gelb<br>*yellow*<br>jaune<br>*giallo*<br>amarillo | blau<br>*blue*<br>bleu<br>*azzurro*<br>azul | rot<br>*red*<br>rouge<br>*rosso*<br>rojo | grau<br>*gray*<br>gris<br>*grigio*<br>gris | rosa<br>*pink*<br>rose<br>*rosa*<br>rosa | braun<br>*brown*<br>brun<br>*marrone*<br>marrón | weiß<br>*white*<br>blanc<br>*bianco*<br>blanco | | weiß/braun<br>*white/brown*<br>blanc/brun<br>*bianco/marrone*<br>blanco/marrón |



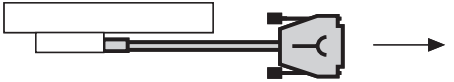


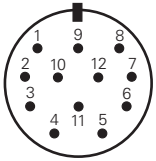
1) Außenschirm auf Gehäuse
*External shield on housing*
blindage externe sur boîtier
*schermo esterno sulla carcassa*
blindaje externo a carcasa

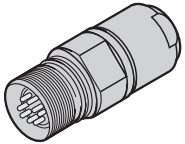
2) Innenschirm Pin 13
*Internal shield pin 13*
blindage interne pin 13
*schermo interno pin 13*
blindaje interno pin 13

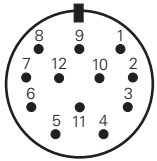
| 3 | 4 | 6 | 7 | 10 | 12 | 1 | 2 | | 13 |
|---|---|---|---|---|---|---|---|---|---|
| $I_1$ | | $I_2$ | | $I_0$ | | 5 V $U_P$ | 0 V $U_N$ | 1) | 2) |
| + | – | + | – | + | – | | | | |
| grün<br>*green*<br>vert<br>*verde*<br>verde | gelb<br>*yellow*<br>jaune<br>*giallo*<br>amarillo | blau<br>*blue*<br>bleu<br>*azzurro*<br>azul | rot<br>*red*<br>rouge<br>*rosso*<br>rojo | grau<br>*gray*<br>gris<br>*grigio*<br>gris | rosa<br>*pink*<br>rose<br>*rosa*<br>rosa | braun<br>*brown*<br>brun<br>*marrone*<br>marrón | weiß<br>*white*<br>blanc<br>*bianco*<br>blanco | | weiß/braun<br>*white/brown*<br>blanc/brun<br>*bianco/marrone*<br>blanco/marrón |

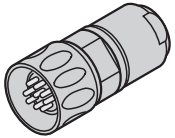


## LS 486 (C)



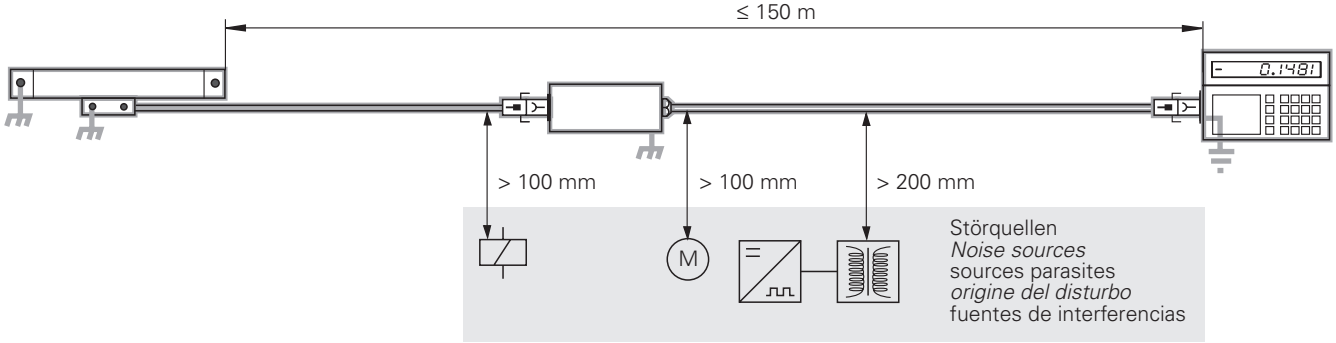



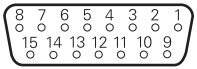


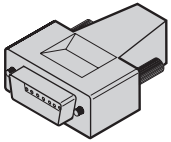



Schirm auf Gehäuse
*Shield on housing*
blindage sur boîtier
*schermo sulla carcassa*
blindaje a carcasa

| 5 | 6 | 8 | 1 | 3 | 4 | 12 | 10 | 2 | 11 | 7 | / |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | | **B** | | **R** | | **5 V $U_P$** | **0 V $U_N$** | **5 V sensor** | **0 V sensor** | **/** | **/** |
| + | – | + | – | + | – | | | | | | |
| 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>marron/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 |





Schirm auf Gehäuse
*Shield on housing*
blindage sur boîtier
*schermo sulla carcassa*
blindaje a carcasa

| 3 | 4 | 6 | 7 | 10 | 12 | 1 | 2 | 9 | 11 | 14 | / |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A** | | **B** | | **R** | | **5 V** $U_P$ | **0 V** $U_N$ | **5 V sensor** | **0 V sensor** | / | / |
| + | – | + | – | + | – | | | | | | |
| 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>marron/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 |

**IK 220**
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