



# HEIDENHAIN

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

**LS 406**

**LS 476**

**LS 486**

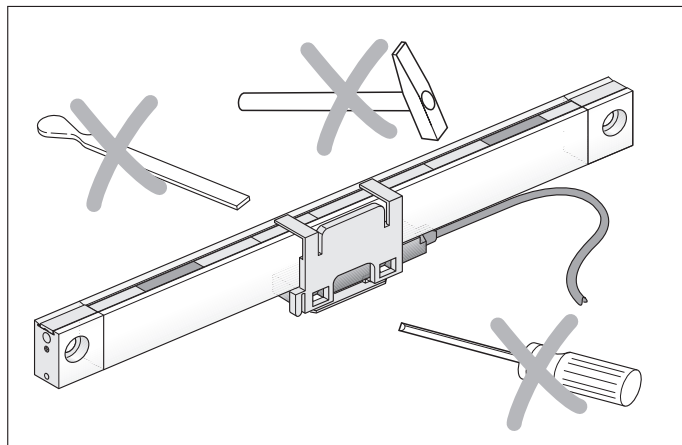
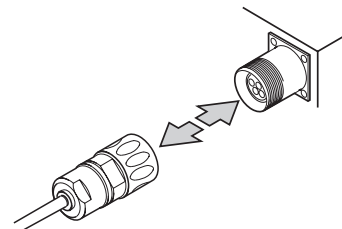
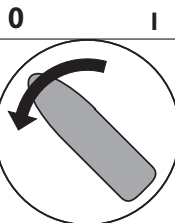
10/2003



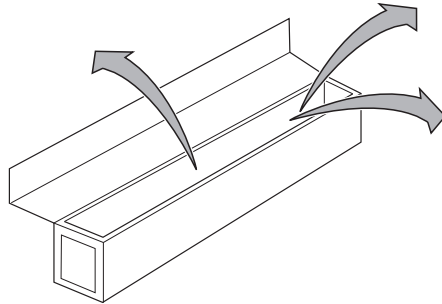
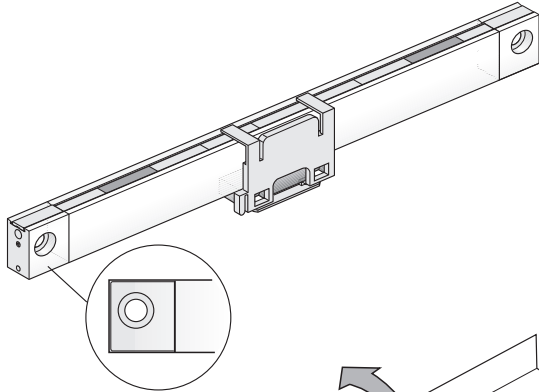
Warnhinweise · Warnings · Recommendations · Avvertenze · Advertencias



DIN EN 100 015 – 1  
CECC 00015 – 1



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

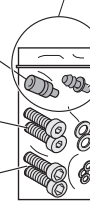


LS 406 (C)  
LS 476 (C)  
LS 486 (C)

LS 476 (C)  
LS 486 (C)

2x  
M8x25 DIN 6912  
  
2x  
M8x25 ISO 4762

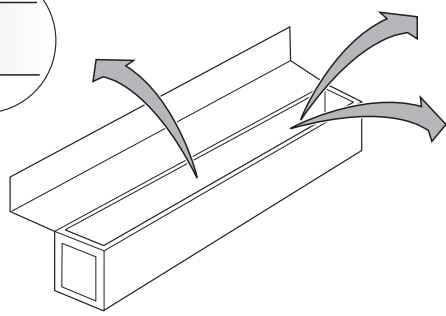
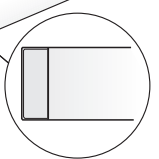
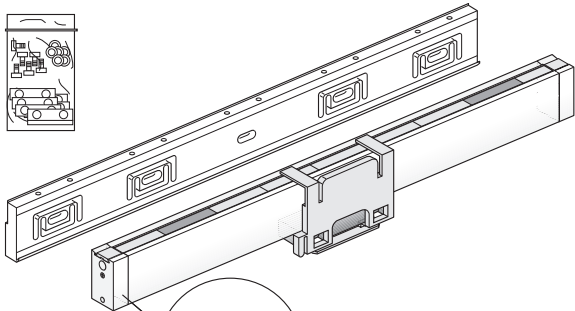
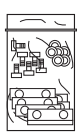
2x  
D13.0/8.4  
  
3x  
D7.0/4.3



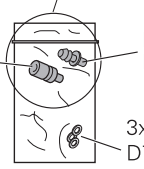
Separat bestellen  
*Order separately*  
A commander séparément  
*Ordinare a parte*  
Para pedir por separado



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.)



LS 406 (C)  
LS 476 (C)  
LS 486 (C)



LS 476 (C)  
LS 486 (C)

3x  
D7.0/4.3

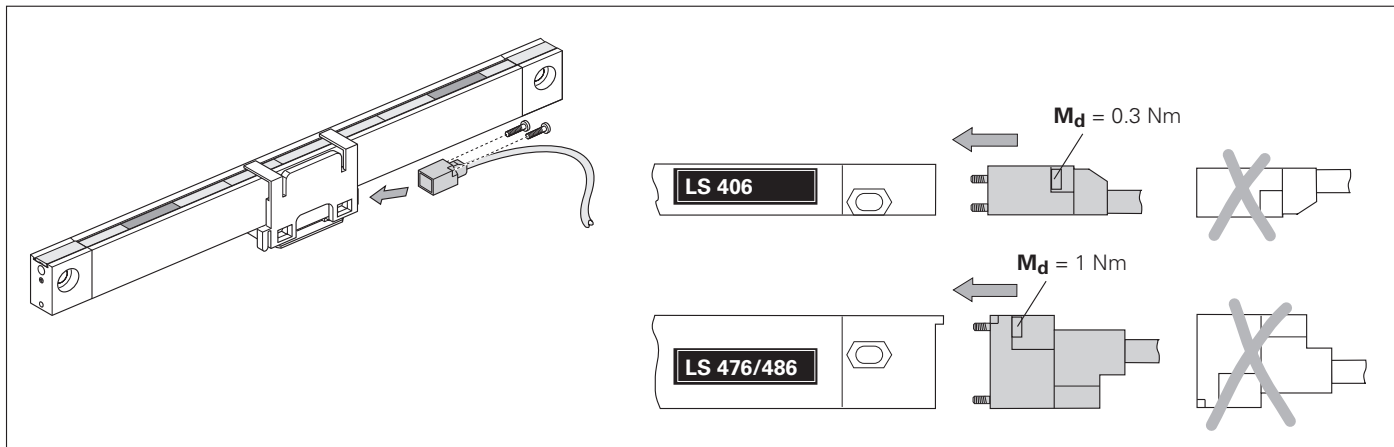


Separat bestellen  
Order separately  
A commander séparément  
Ordinare a parte  
Para pedir por separado

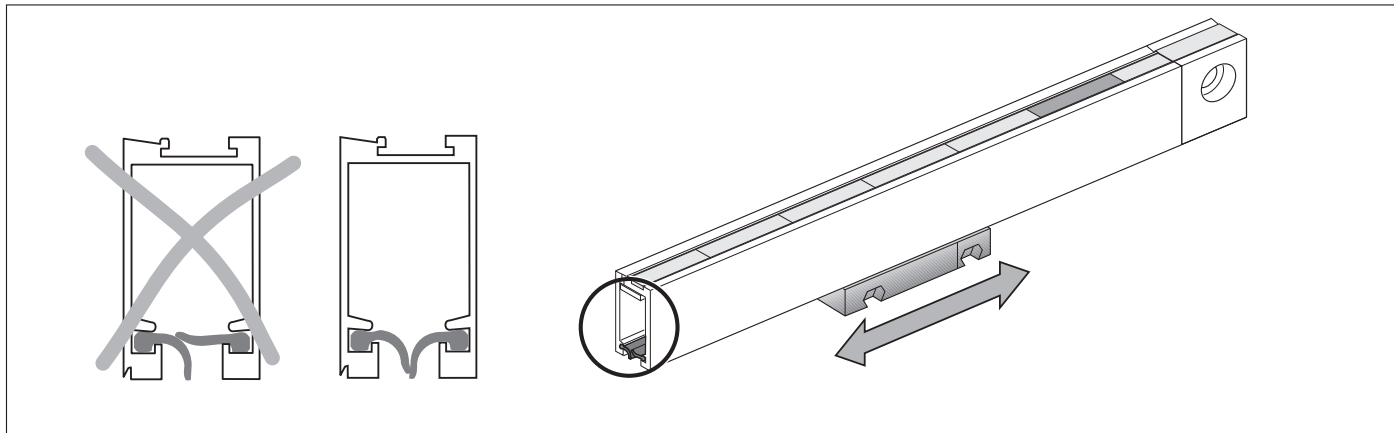


Bei Montage bitte Geräteschild-Aufkleber anbringen (Schaltschrank, Maschinen-Handbuch usw.)  
Apply the encoder ID label to an appropriate surface, e.g. the electrical cabinet or machine manual  
lors du montage, accoler S.V.P. l'étiquette signalétique de l'appareil (armoire électrique, manuel de la 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.)

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

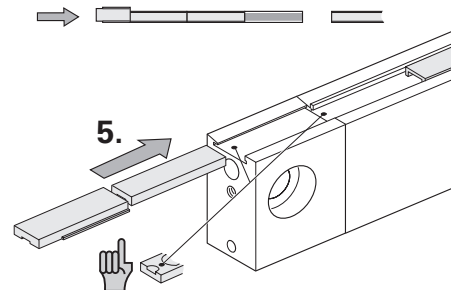
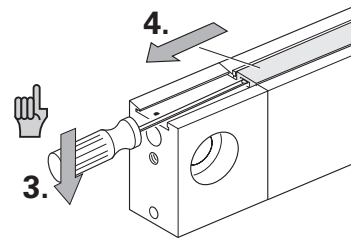
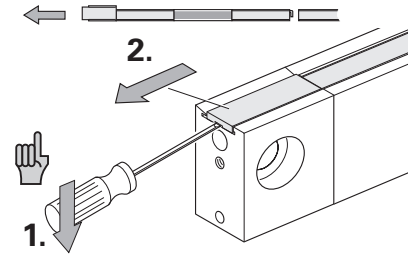
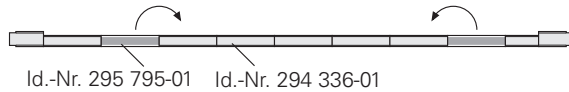
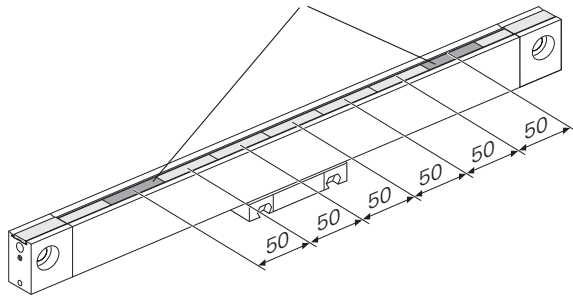


**Dichtlippen überprüfen · Inspect Sealing Lips · Contrôler les lèvres d'étanchéité · Controllo delle guarnizioni · Verificar labios**

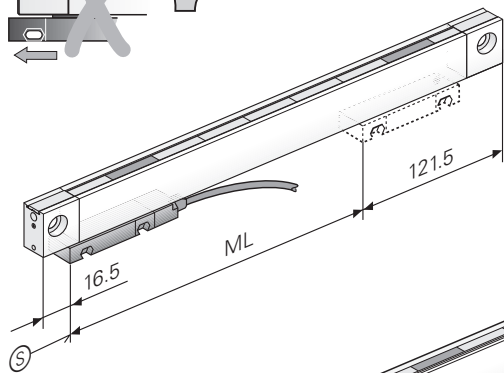
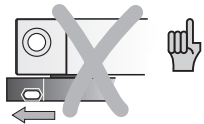


## LS 4x6

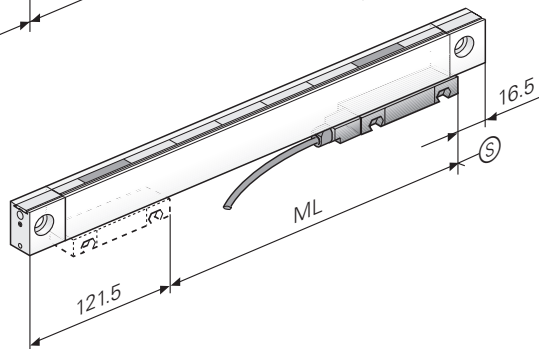
Referenzmarken-Lage  
*Reference mark*  
*marque de référence*  
*indici di riferimento*  
*marca de referencia*



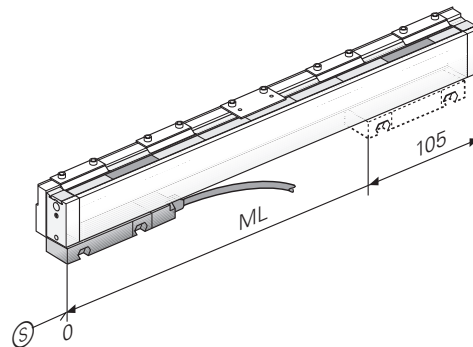
## Hinweise zur Montage · *Mounting Procedure* · Procédure pour le montage



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

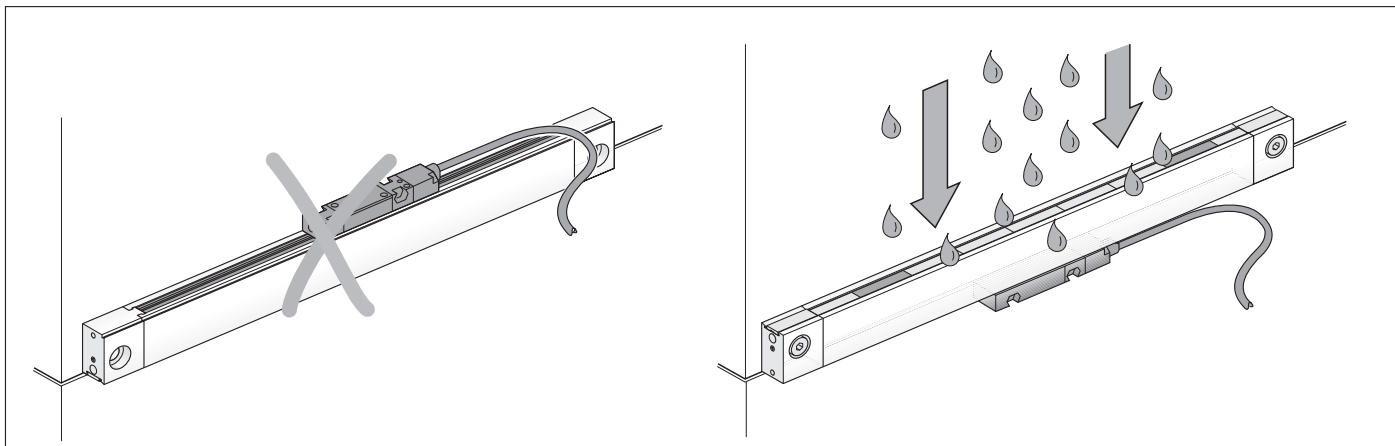


Ⓢ = Beginn der Messlänge ML  
*Begin. of meas. length ML*  
début longueur utile ML  
*inizio lunghezza di misura ML*  
comienzo longitud útil ML





**Avvertenze per il montaggio · Indicaciones para el montaje**



# LS 406 ( C )

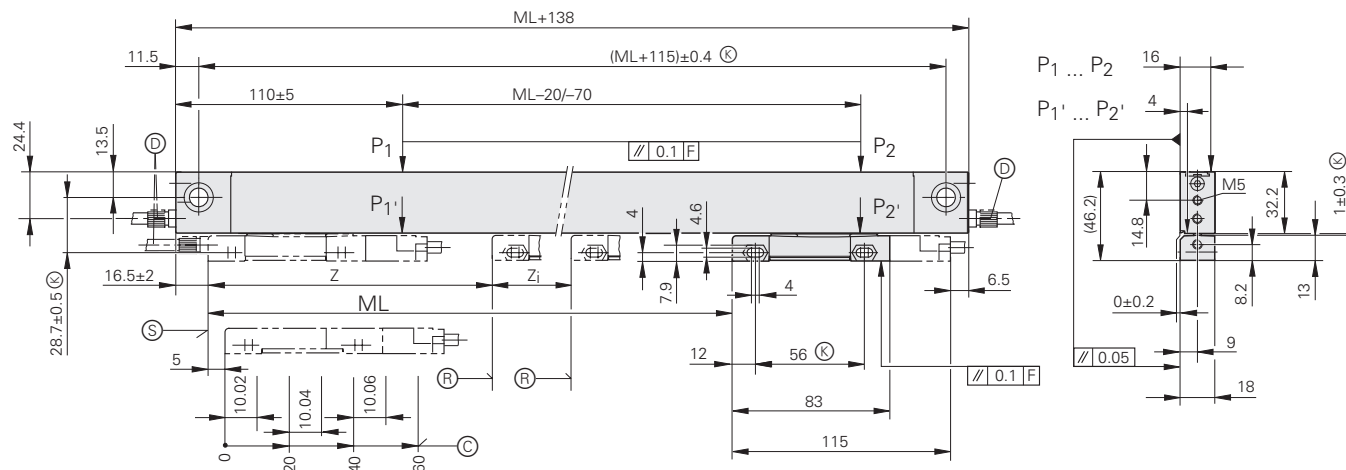
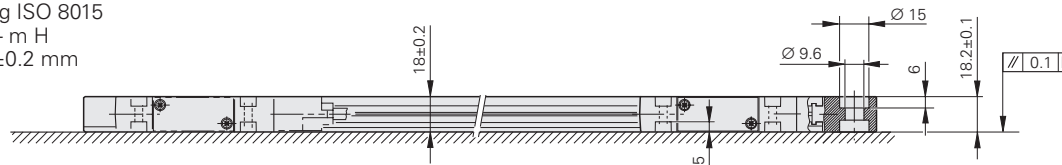
mm



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<sub>i</sub> = ML - 70 mm

z<sub>i</sub> = ML - 90 mm

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

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

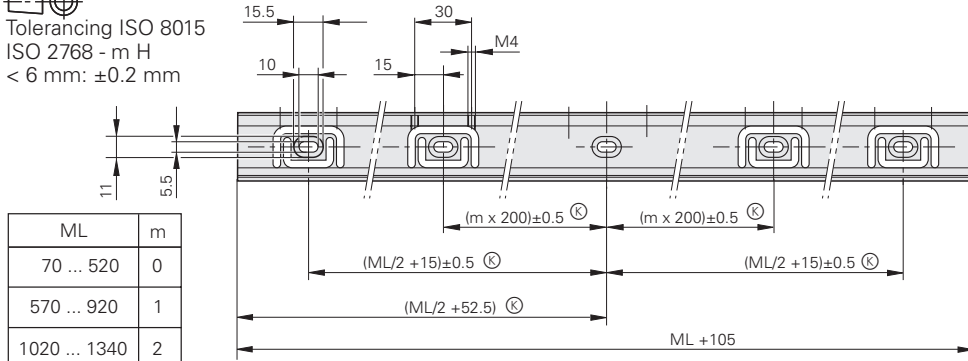
(R) = Referenzmarken-Lage  
Reference mark  
marque de référence  
(C) = Indici di riferimento  
marca de referencia

# LS 406 (C)

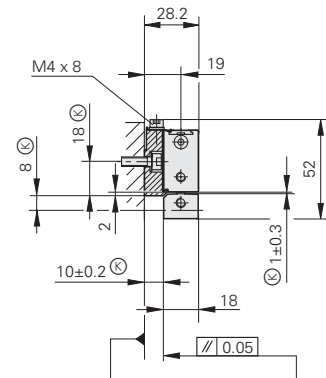
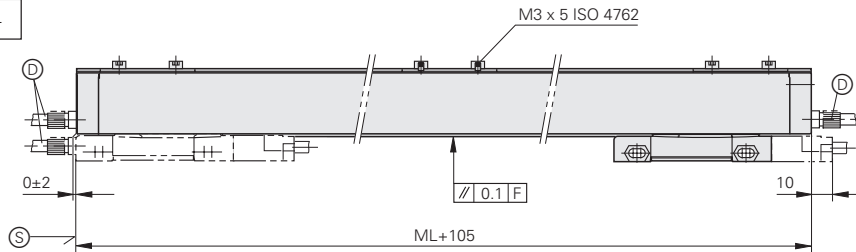
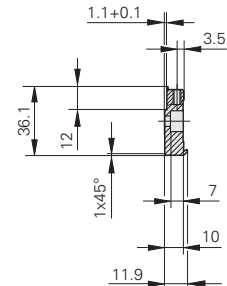
mm



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

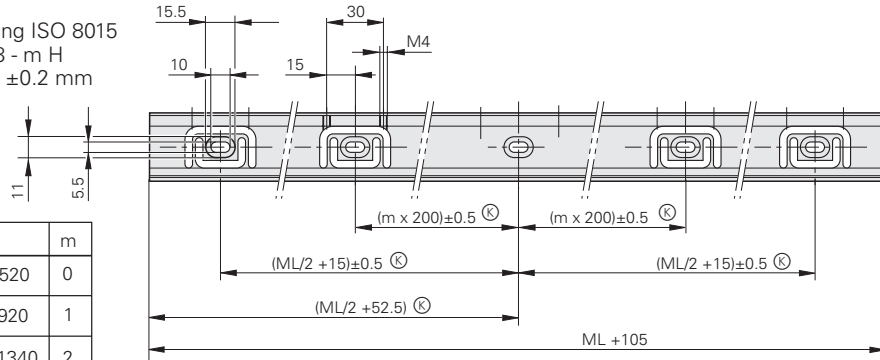


## LS 476/LS 486 (C)

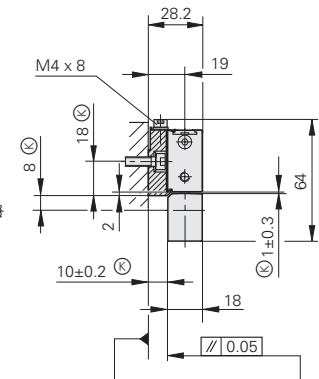
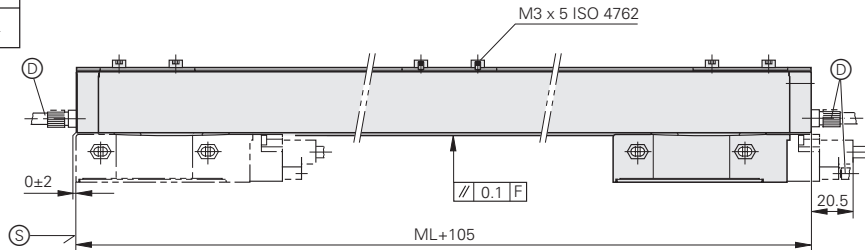
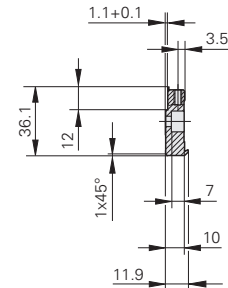
mm



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



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

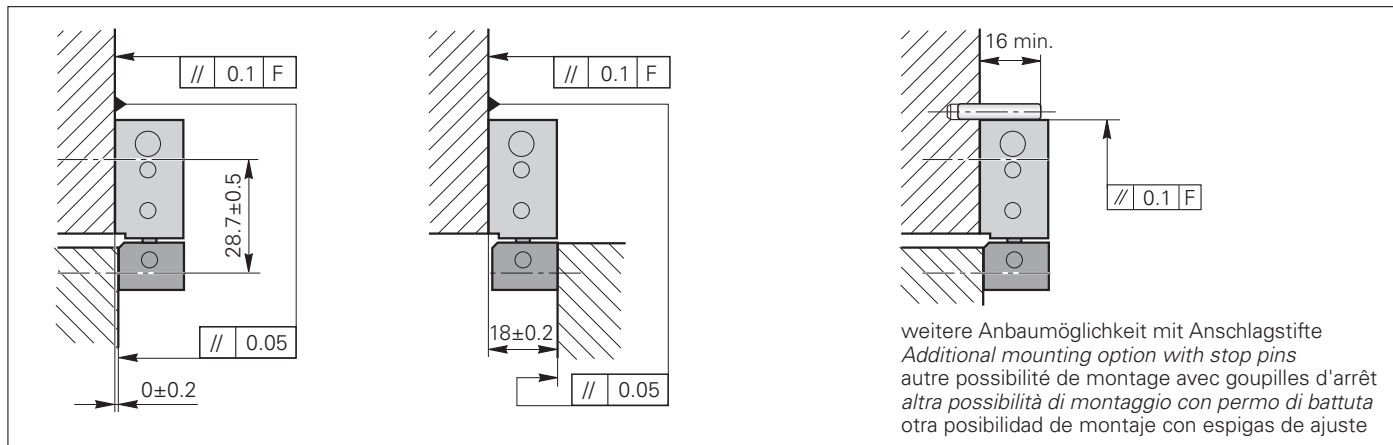
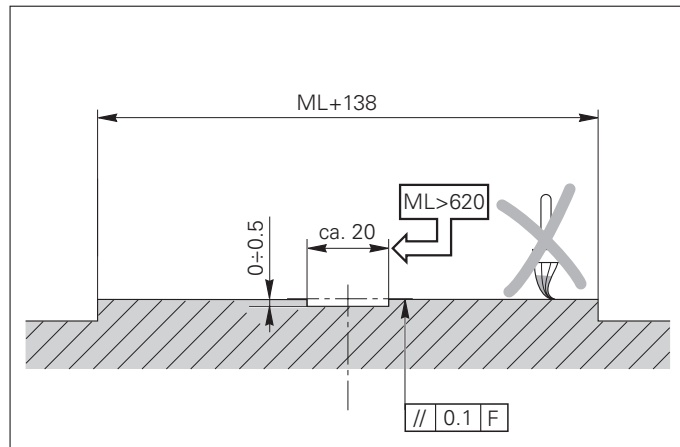
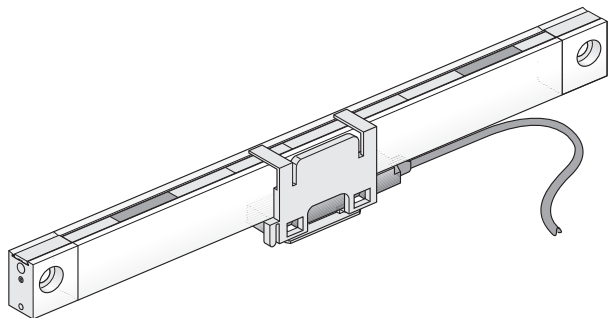


(K) = Kundenseitige Anschlussmaße  
Required mating dimensions  
conditions requises pour le montage  
dimensioni di collegamento lato cliente  
cotas de montaje requeridas

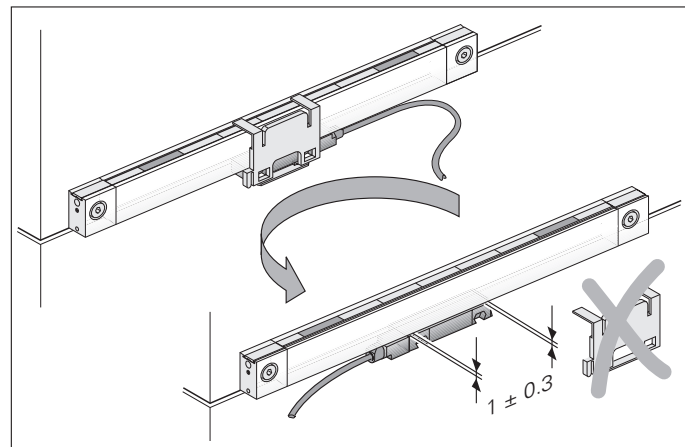
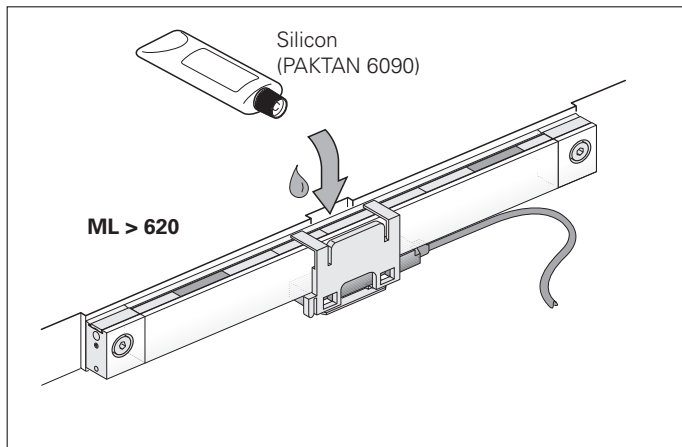
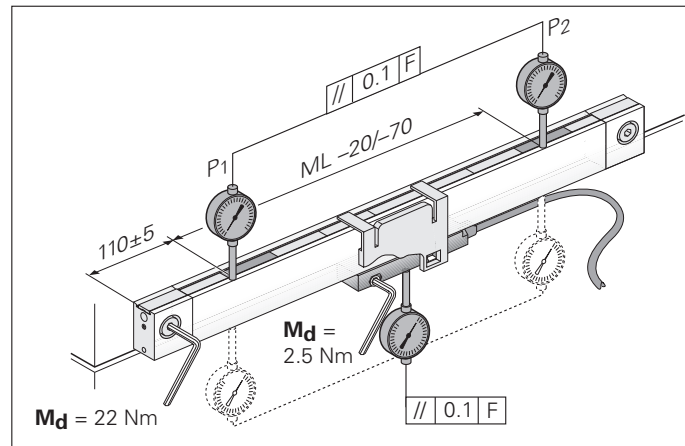
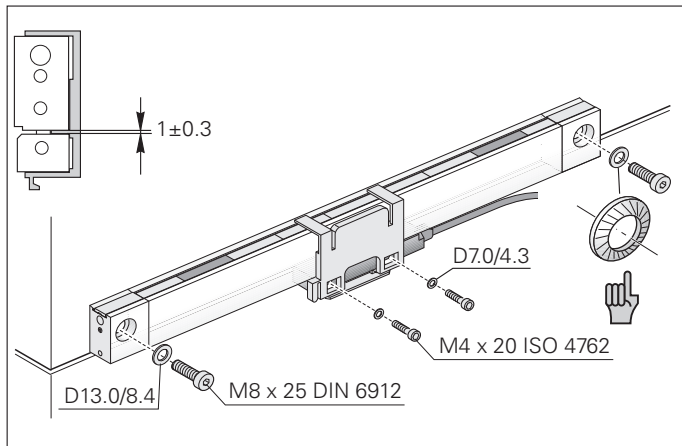
F = Maschinenführung  
Machine guideway  
guidage de la machine  
guida della macchina  
guía de la máquina

(D) = Druckluftanschluss  
Compressed air inlet  
raccordement d'air comprimé  
ingresso per pressurizzazione  
conexión de aire comprimido

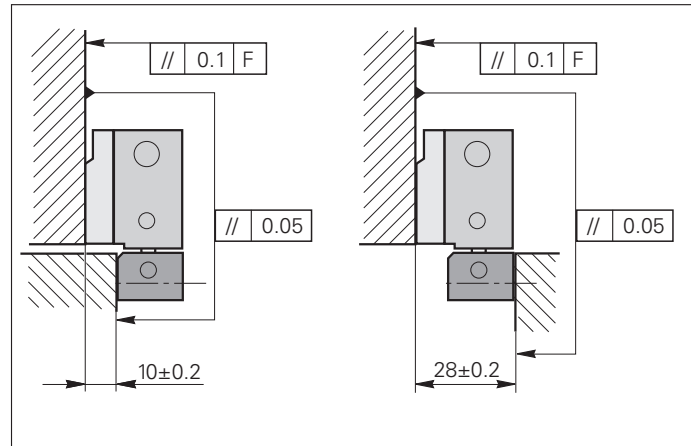
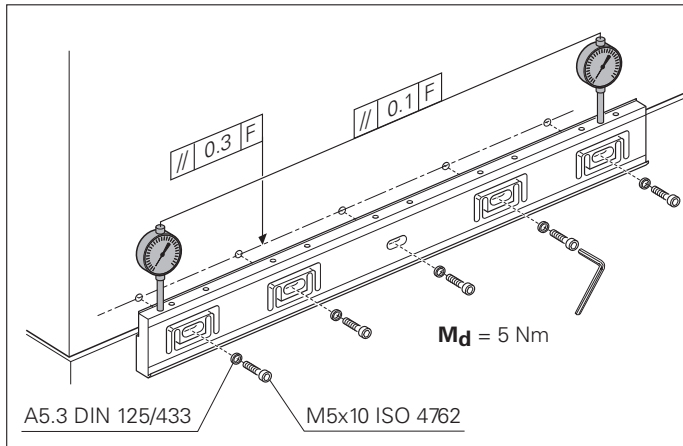
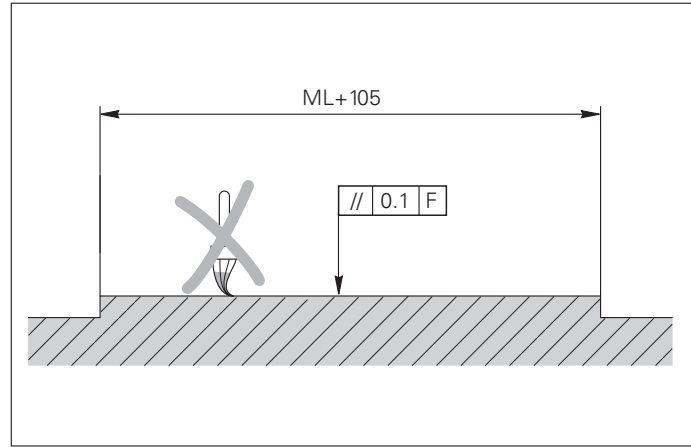
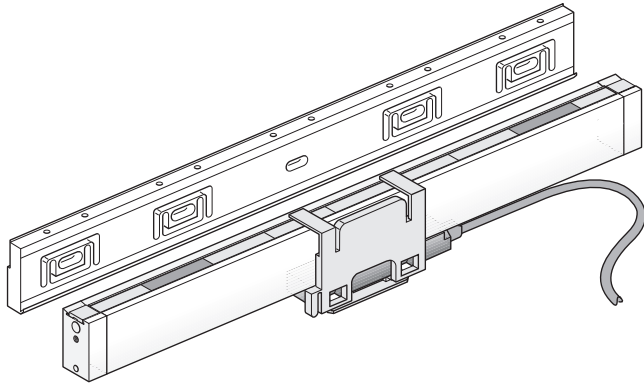
# Anbau ohne Montageschiene · Mounting without Mounting Spar · Montage sans rail de guidage



## Montaggiosenza guida · Instalación sin guía de montaje

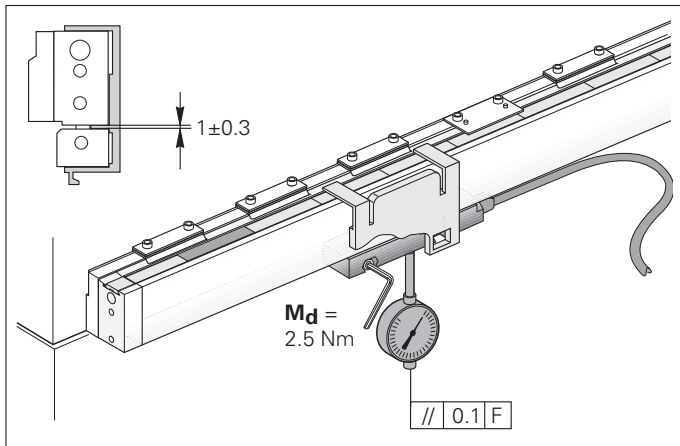
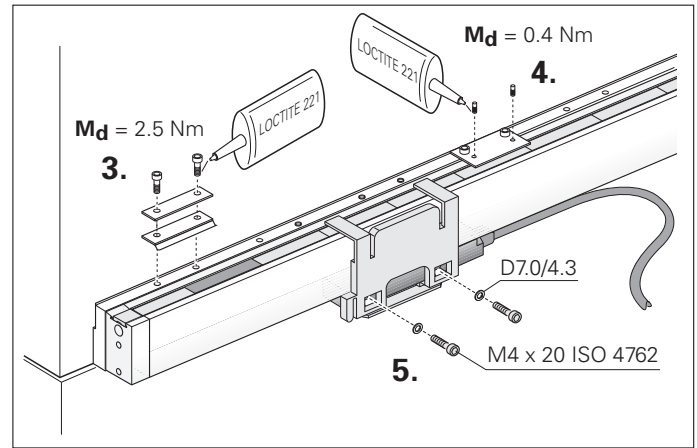
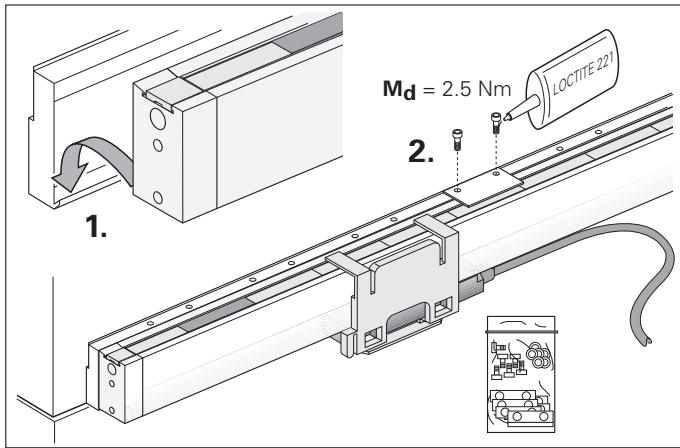


Anbau mit Montageschiene · *Mounting with Mounting Spar* · Montage avec rail de guidage

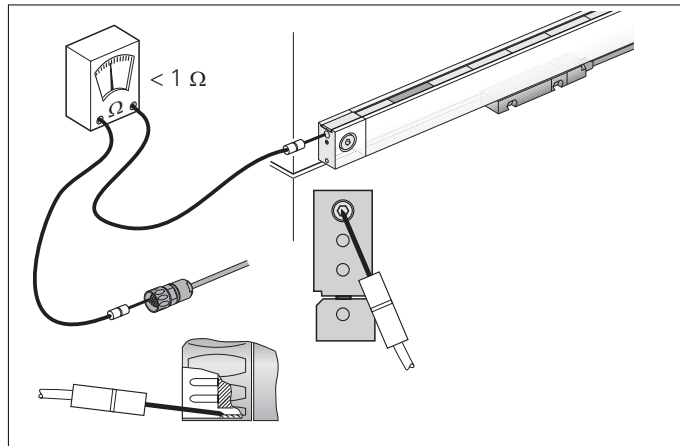
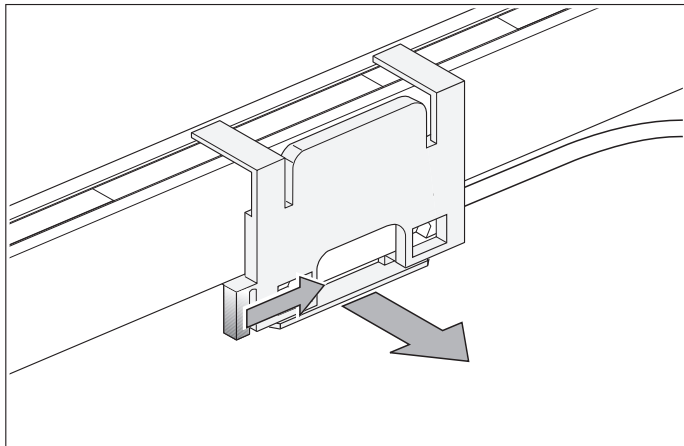




# Montaggio con guida · Instalación con guía de montaje



**Abschließende Arbeiten · Final Steps · Opérations finales · Operazioni finali · Trabajos finales**



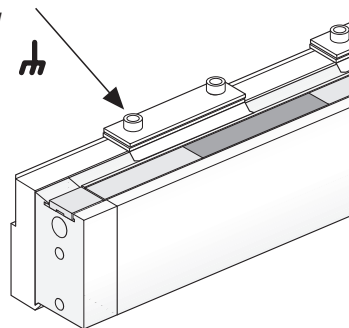
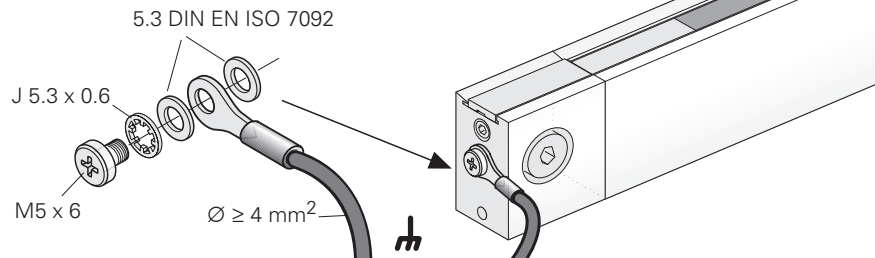
Bei Erdungsproblemen zusätzlich Endstück oder Montageschiene erden!

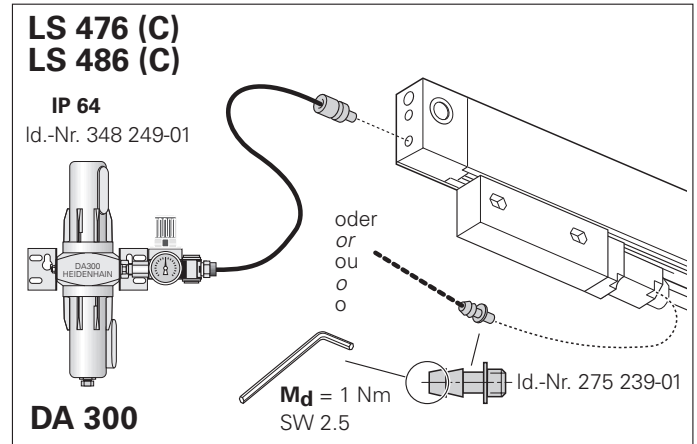
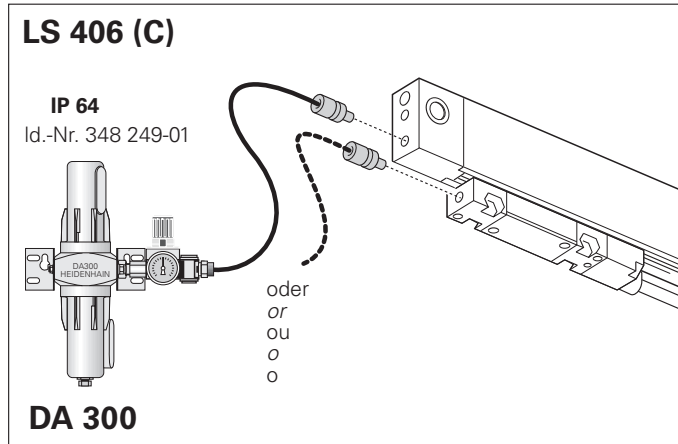
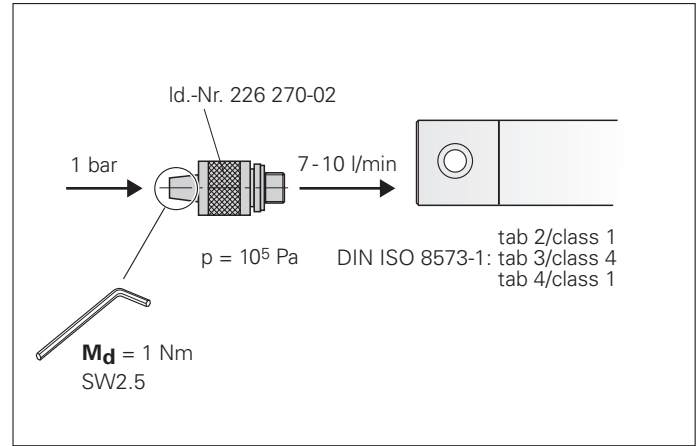
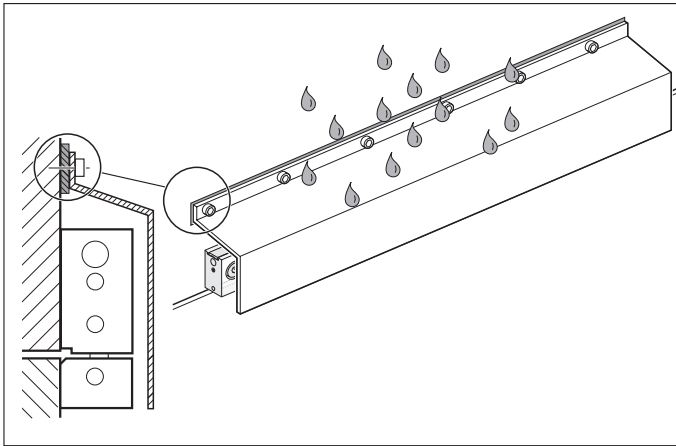
*If grounding problems occur, ground also the end piece or mounting spar!*

En cas de problèmes de mise à terre, mettre aussi l'embout ou le rail de montage à la terre!

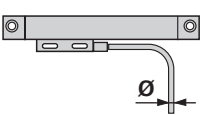

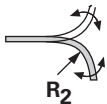

*Nel caso di problemi di messa a terra, mettere a terra anche il blocchetto terminale o la guida di montaggio!*

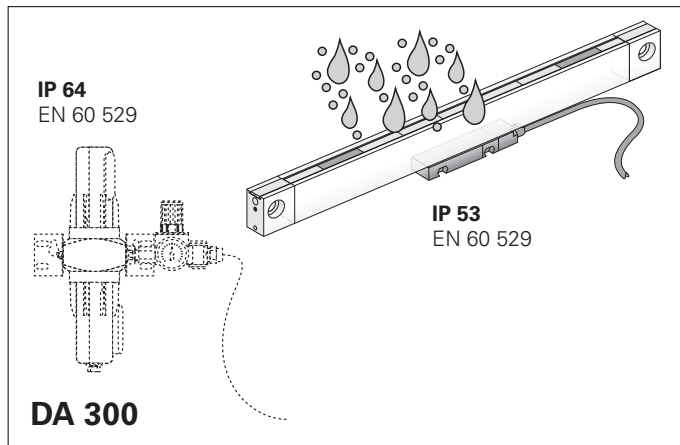
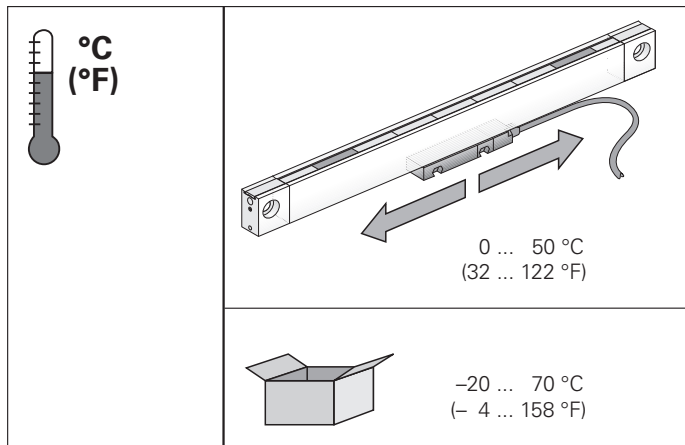
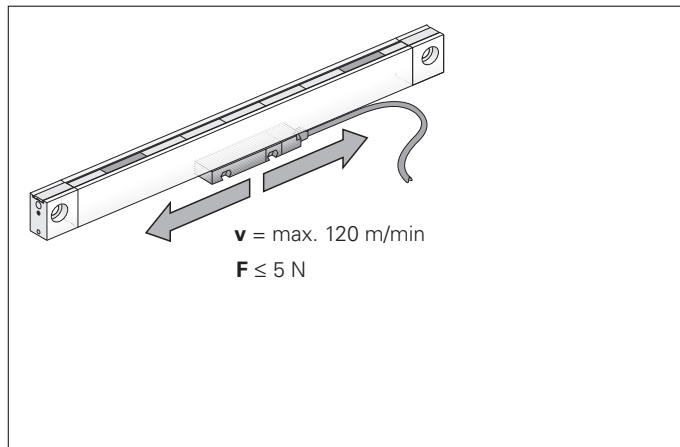
¡En caso de problemas de tierras, poner a tierra adicionalmente la pieza final o la guía de montaje!



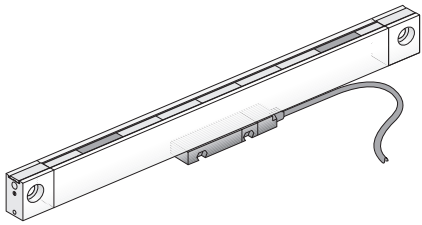


Technische Kennwerte · Specifications · Caractéristiques techniques · Dati tecnici · Datos técnicos

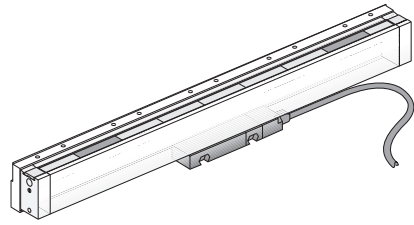
|   |   |   |
|---|---|---|
|                   |  |  |
| <b>Ø 6 mm</b>   | $R_1 \geq 20 \text{ mm}$  | $R_2 \geq 75 \text{ mm}$  |
| <b>Ø 10 mm</b>  | $R_1 \geq 35 \text{ mm}$  | $R_2 \geq 75 \text{ mm}$  |
| <br><b>Ø 8 mm</b> | $R_1 \geq 40 \text{ mm}$  | $R_2 \geq 100 \text{ mm}$   |



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



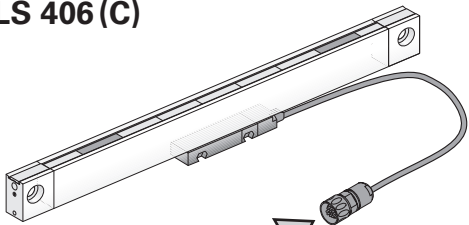
EN 60 068-2-6 (55 ... 2000 Hz): max. 100 m/s<sup>2</sup>  
 EN 60 068-2-27 (11 ms): max. 300 m/s<sup>2</sup>



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

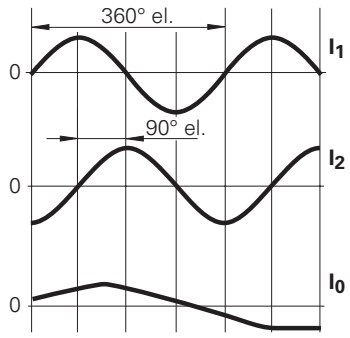
Elektrische Kennwerte · Electrical Data · Caractéristiques électriques · Dati elettrici · Datos eléctricos

**LS 406 (C)**



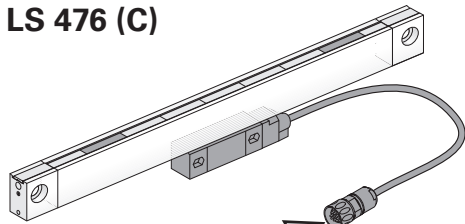
**U<sub>p</sub> = 5 V ± 5 %**  
 (max. 70 mA)

**I<sub>1</sub>: 7 ... 16 μAss**  
**I<sub>2</sub>: 7 ... 16 μAss**  
**I<sub>0</sub>: 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 D231 929)

## LS 476 (C)



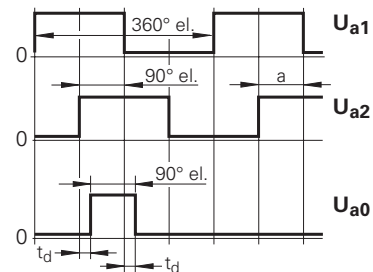
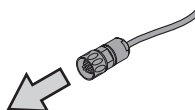
$U_P = 5\text{ V} \pm 5\%$   
(max. 140 mA)



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)

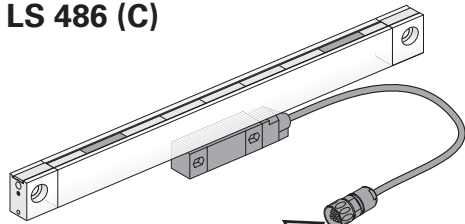
$U_{a1}, U_{a2}, U_{a0}$   
 $\overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a0}}, \overline{U_{aS}}$



$|t_d| \leq 0.1\ \mu\text{s}$

$a \geq 0.5\ \mu\text{s}$

## LS 486 (C)



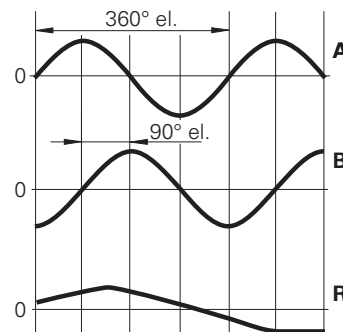
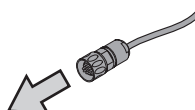
$U_P = 5\text{ V} \pm 5\%$   
(max. 150 mA)



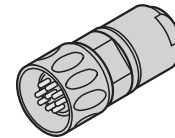
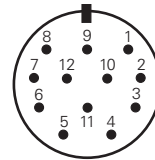
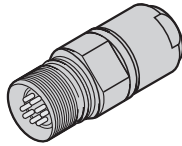
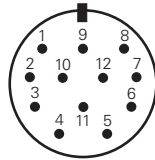
EN 50 178/4.98; 5.2.9.5  
IEC 364-4-41: 1992; 411(PELV/SELV)

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

**A: 0.6 ... 1.2 V<sub>SS</sub>**  
**B: 0.6 ... 1.2 V<sub>SS</sub>**  
**R: 0.2 ... 0.85 V**

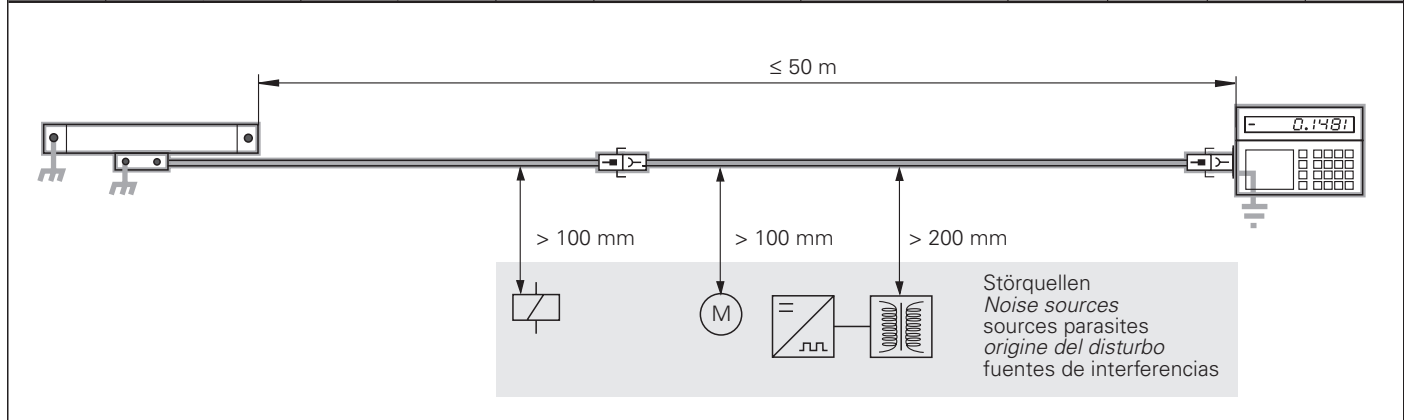


### LS 476 (C)

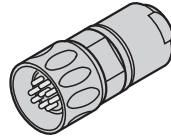
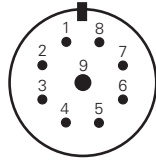
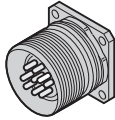
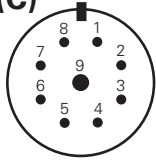


Schirm auf Gehäuse  
*Shield on housing*  
 blindage sur boîtier  
*schermo sulla carcassa*  
 blindaje a carcasa

|   |   |  |  |  |   |   |  |   |  |   |   |
|---|---|--|--|--|---|---|--|---|--|---|---|
| 5   | 6   | 8  | 1  | 3  | 4   | 12  | 10   | 2   | 11   | 7   | /   |
| $U_{a1}$  | $\overline{U_{a1}}$                                   | $U_{a2}$   | $\overline{U_{a2}}$                                | $U_{a0}$   | $\overline{U_{a0}}$                                     | 5V<br>$U_p$   | 0V<br>$U_N$  | 5V<br>sensor  | 0V<br>sensor   | $\overline{U_{aS}}$   | /   |
| 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>marron/verde | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | violett<br><i>violet</i><br>violet<br><i>viola</i><br>violeta | gelb<br><i>yellow</i><br>jaune<br><i>giallo</i><br>amarillo |



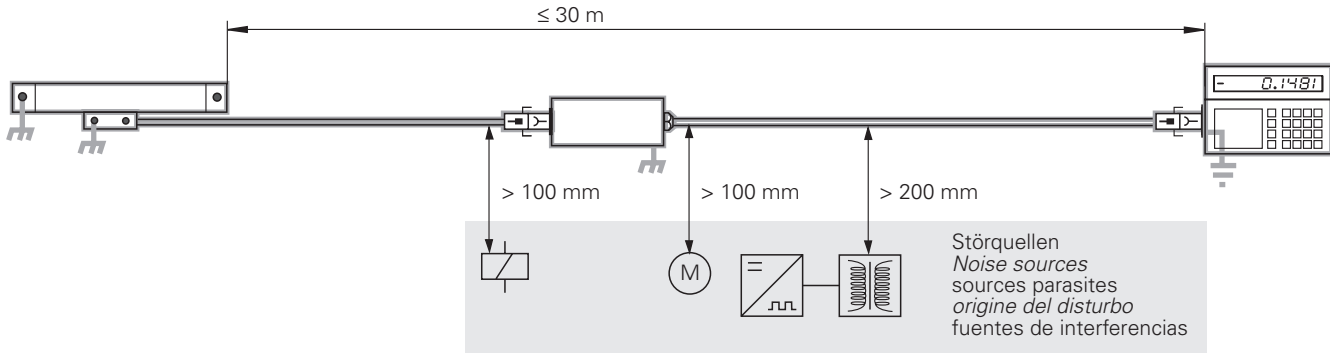
LS 406 (C)



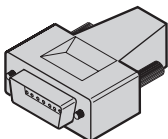
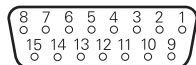
1) Außenschirm auf Gehäuse  
*External shield on housing*  
 blindage externe sur boîtier  
*schermo esterno sulla carcassa*  
 blindaje externo a carcasa

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  | 1) | 9  |  |
|---|---|---|--|--|--|---|--|----|--|--|
| $I_1$   |   | $I_2$   |  | $I_0$  |  | 5 V<br>$U_P$  | 0 V<br>$U_N$   |    | 2)   |  |
| +   | -   | +   | -  | +  | -  |   |  |    |  |  |
| grün<br><i>green</i><br>vert<br><i>verde</i><br>verde | 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 | rot<br><i>red</i><br>rouge<br><i>rosso</i><br>rojo | 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 | 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 |    | weiß/braun<br><i>white/brown</i><br>blanc/brun<br><i>bianco/marrone</i><br>blanco/marrón |  |







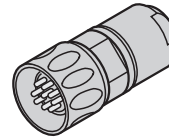
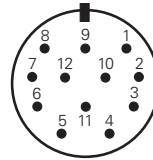
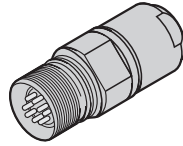
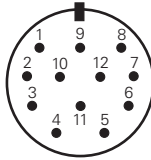
1) Außenschirm auf Gehäuse  
*External shield on housing*  
 blindage externe sur boîtier  
*schermo esterno sulla carcassa*  
 blindaje externo a carcasa

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   | 1) | 13  |
|--|--|--|---|---|---|--|---|----|---|
| I <sub>1</sub>                                 |  | I <sub>2</sub>                                 |   | I <sub>0</sub>                                |   | 5V<br>U <sub>P</sub>                               | 0V<br>U <sub>N</sub>                              |    | 2)  |
| +  | -  | +  | -   | +   | -   |  |   |    |   |
| grün<br><i>green</i><br>vert<br>verde<br>verde | gelb<br><i>yellow</i><br>jaune<br>giallo<br>amarillo | blau<br><i>blue</i><br>bleu<br>azzurro<br>azul | rot<br><i>red</i><br>rouge<br>rosso<br>rojo | grau<br><i>gray</i><br>gris<br>grigio<br>gris | rosa<br><i>pink</i><br>rose<br>rosa<br>rosa | braun<br><i>brown</i><br>brun<br>marrone<br>marrón | weiß<br><i>white</i><br>blanc<br>bianco<br>blanco |    | weiß/braun<br><i>white/brown</i><br>blanc/brun<br>bianco/marrone<br>blanco/marrón |

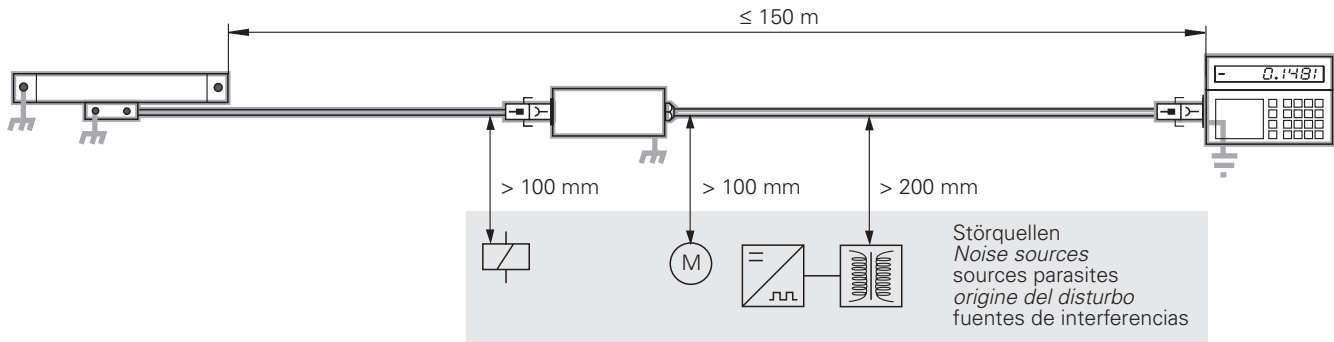


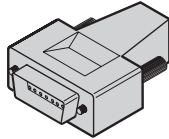
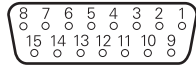
LS 486 (C)



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  |   | 5V<br>U <sub>P</sub>  | 0V<br>U <sub>N</sub>   | 5V<br>sensor  | 0V<br>sensor   | /   | /   |
| +   | -   | +  | -  | +  | -   |   |  |   |  |   |   |
| 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>marron/verde | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | violett<br><i>violet</i><br>violet<br><i>viola</i><br>violeta | gelb<br><i>yellow</i><br>jaune<br><i>giallo</i><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  |   | 5V<br>U <sub>P</sub>  | 0V<br>U <sub>N</sub>   | 5V<br>sensor  | 0V<br>sensor   | /   | /   |
| +   | -   | +  | -  | +  | -   |   |  |   |  |   |   |
| 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>marron/verde | weiß/grün<br><i>white/green</i><br>blanc/vert<br><i>bianco/verde</i><br>blanco/verde | blau<br><i>blue</i><br>bleu<br><i>azzurro</i><br>azul | weiß<br><i>white</i><br>blanc<br><i>bianco</i><br>blanco | violett<br><i>violet</i><br>violet<br><i>viola</i><br>violeta | gelb<br><i>yellow</i><br>jaune<br><i>giallo</i><br>amarillo |



# HEIDENHAIN

---

## DR. JOHANNES HEIDENHAIN GmbH

Dr.-Johannes-Heidenhain-Straße 5

**83301 Traunreut, Germany**

☎ +49 (86 69) 31-0

FAX +49 (86 69) 50 61

E-Mail: [info@heidenhain.de](mailto:info@heidenhain.de)

---

**Technical support** FAX +49 (86 69) 31-10 00

**Measuring systems** ☎ +49 (86 69) 31-31 04

E-Mail: [service.ms-support@heidenhain.de](mailto:service.ms-support@heidenhain.de)

**TNC support** ☎ +49 (86 69) 31-31 01

E-Mail: [service.nc-support@heidenhain.de](mailto:service.nc-support@heidenhain.de)

**NC programming** ☎ +49 (86 69) 31-31 03

E-Mail: [service.nc-pgm@heidenhain.de](mailto:service.nc-pgm@heidenhain.de)

**PLC programming** ☎ +49 (86 69) 31-31 02

E-Mail: [service.plc@heidenhain.de](mailto:service.plc@heidenhain.de)

**Lathe controls** ☎ +49 (7 11) 95 28 03-0

E-Mail: [service.hsf@heidenhain.de](mailto:service.hsf@heidenhain.de)

---

**[www.heidenhain.de](http://www.heidenhain.de)**



Ve 04

312 619-94 · 100 · 4/2006 · E · Printed in Germany

Änderungen vorbehalten · *Subject to change without notice* · Sous réserve de modifications · *Con riserva di modifiche* · Sujeto a modificaciones

