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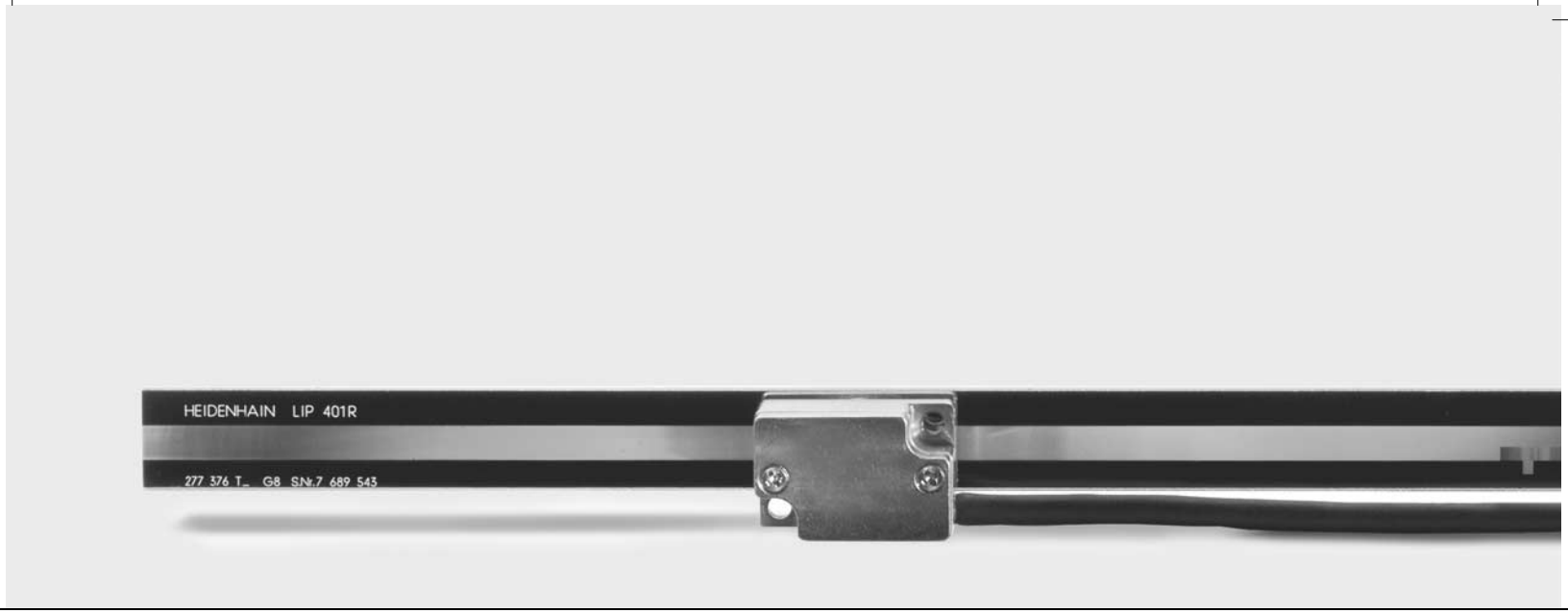
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Find the *Heidenhain LIP 48R* at our website: ***Click HERE***



HEIDENHAIN

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

LIP 481 R/LIP 481 A

7/2001

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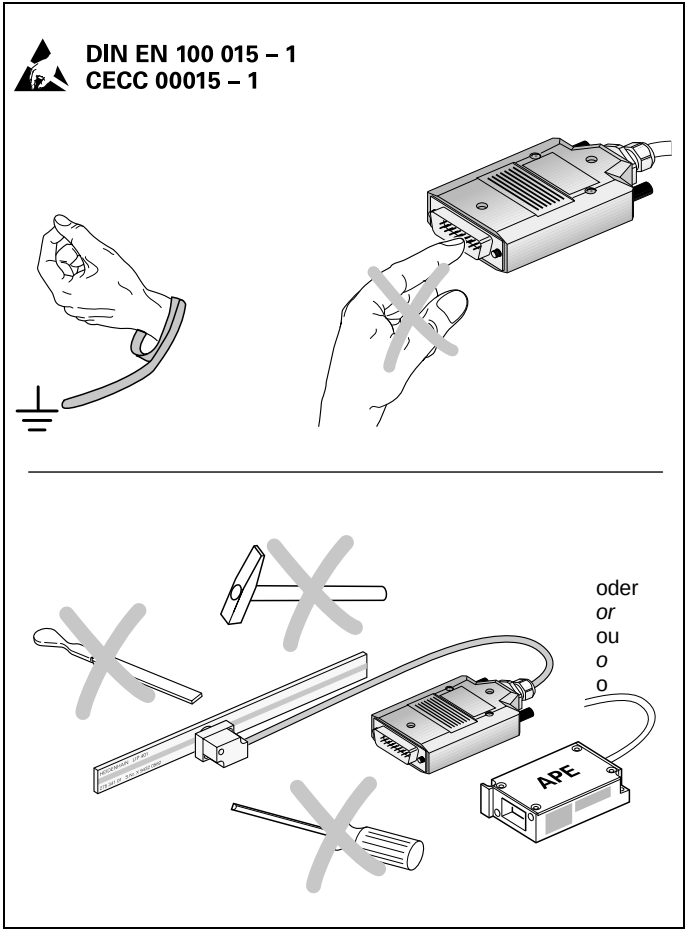
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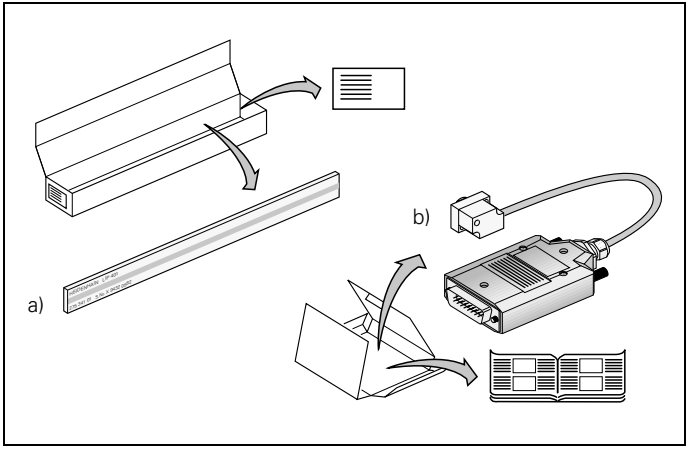
Maße in mm
Dimensions in mm
cotes en mm
dimensioni in mm
dimensiones en mm



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a) Maßstab
b) Abtastkopf LIP 48R/A

a) Scale
b) LIP 48R/A scanning head



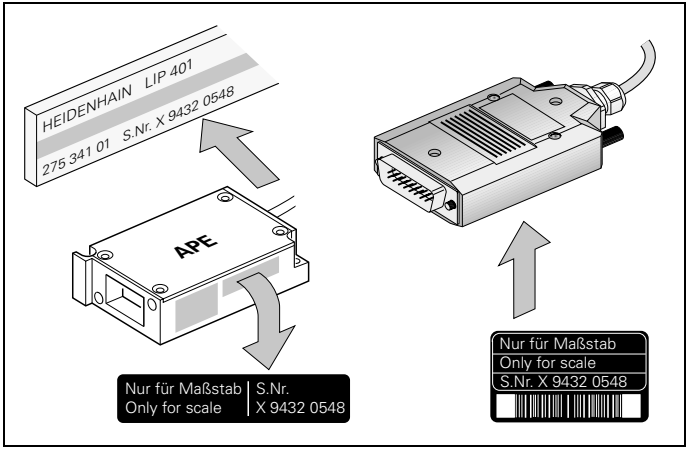
a) Règle de mesure
b) Tête captrice LIP 48R/A

a) Riga di misura
b) Testina LIP 48R/A

a) Regla
b) Cabezal LIP 48R/A

Nur zusammengehörige Teile montieren.

Only join parts that belong together.



Ne monter que les pièces allant ensemble.

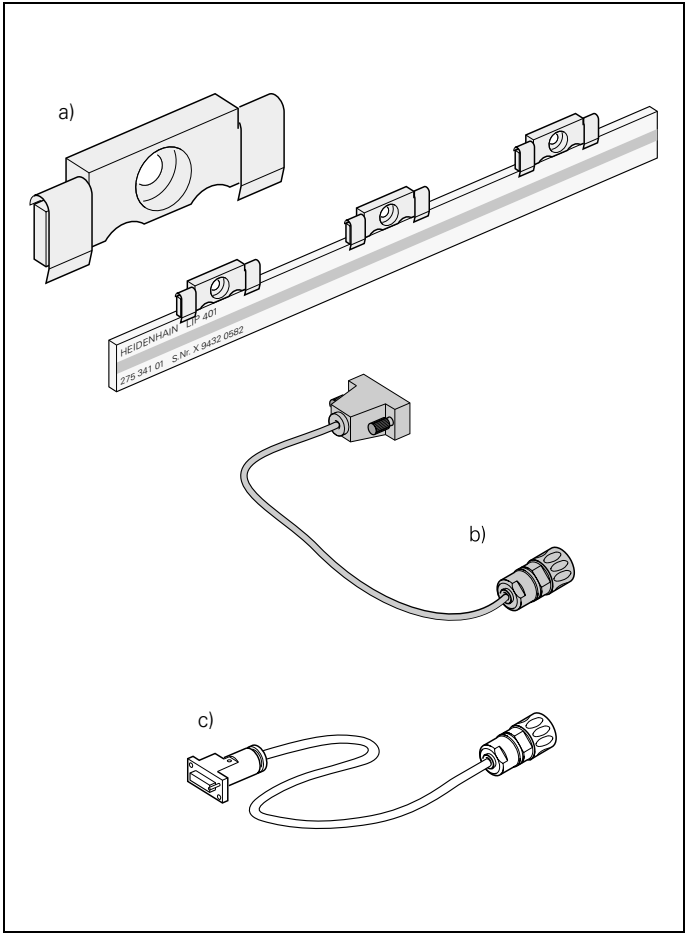
Montare solo i componenti specifici

Montar sólo las piezas que vayan juntas

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Separat bestellen:
a) Spannpratze zur Befestigung des Maßstabs. Anzahl je nach Messlänge.
b) Adapterkabel für Sub-D-Stecker
c) Adapterkabel für APE

Order separately:
a) Fixing clamb for mounting the scale. Quantity accordung to measuring length.
b) Adapter cable for D-Sub connector
c) Adapter cable for APE



A commander séparément:
a) Griffe de serrage pour la fixation de la règle. Le nombre dépend de la longueur de mesure.
b) Câble adaptateur pour prise Sub-D
c) Câble adaptateur pour APE

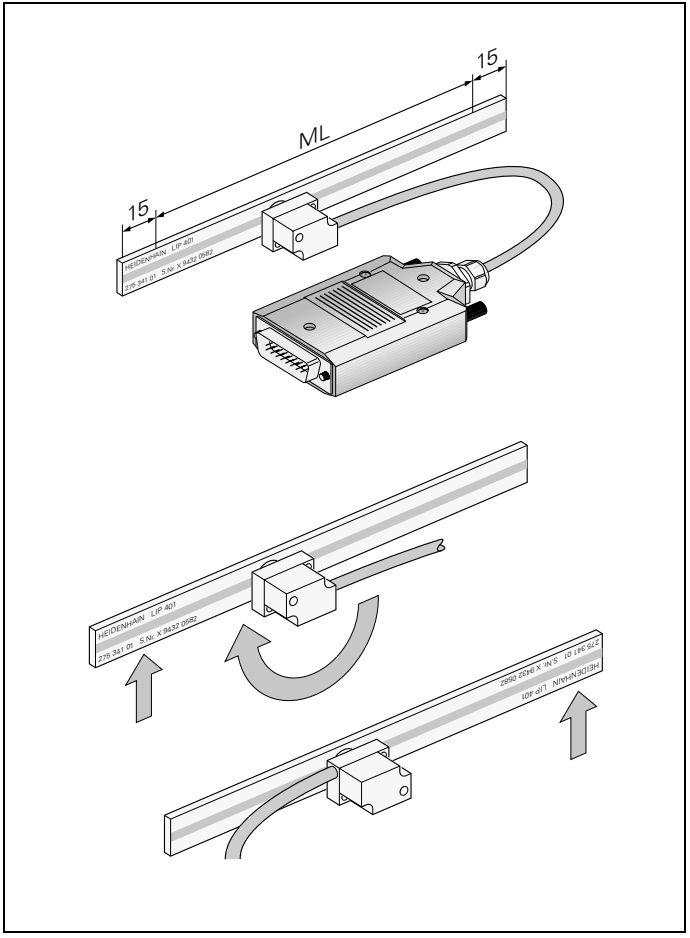
Ordinare a parte:
a) Graffette per il fissaggio della riga; quantità a seconda della lunghezza della riga.
b) Cavo adattatore per connettore Sub-D
c) Cavo adattatore per APE

Para pedir por separado:
a) Grapas para la fijación de la regla.
b) Cable adaptador para conector Sub-D
c) Cable adaptador para APE

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Anbau so wählen, dass der maximale Verfahrweg innerhalb der Messlänge ML des Maßstabs liegt.
Achtung!
Abtastkopf-Maßstab beachten! Abtastkopf relativ zum Maßstab nicht um 180° drehen!

Choose a mounting attitude such that the maximum traverse range is within the measuring length ML of the scale.
Note!
Relative position of scanning head to scale. Do not rotate the scanning head relative to the scale by 180°!



Choisir l'implantation de telle manière que le déplacement max. soit compris dans la longueur de mesure ML de la règle.
Attention!
Position de la règle vis à vis de la tête captrice! Ne pas faire pivoter de 180° la tête captrice par rapport à la règle!

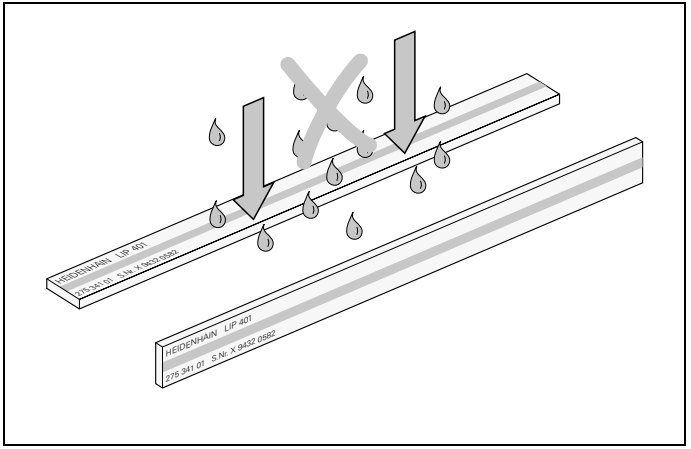
Montare in modo che la corsa utile sia inferiore alla lunghezza ML.
Attenzione!
Prestare attenzione all'allineamento tra testina e riga! Non ruotare la testina di 180° rispetto alla riga.

Elegir el montaje de forma que el máximo recorrido de desplazamiento se encuentre dentro de la máxima longitud útil ML de la regla.
¡Atención!
¡Tener en cuenta la posición del cabezal con respecto a la escala!. ¡No rotar el cabezal relativo a la escala a 180º!

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Maßstab so anbauen, dass Teilung vor direkter Verschmutzung geschützt ist. Eventuell besondere Schutzvorrichtung vorsehen.

Mount the scale so that the graduation is protected from direct contamination. If necessary, fit a protective cover over the scale.



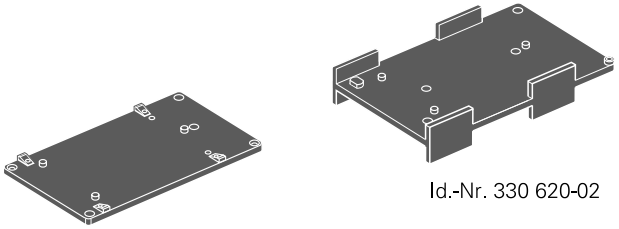
Monter la règle de sorte que la gravure soit protégée contre les salissures directes. Si nécessaire, prévoir un carter de protection.

Proteggere la graduazione dagli agenti contaminanti. Prevedere ev. un dispositivo di protezione aggiuntivo.

Deberá montarse la regla de forma que la graduación esté protegida de la suciedad que caiga directamente. Si es necesario colocar una protección sobre la regla.

Steckermontage mit Zwischenplatten möglich.

Connector assembly possible using spacers.



Id.-Nr. 330 620-11

Id.-Nr. 330 620-02

Montage de la connexion possible avec plaques intermédiaires.

E' possibile fissare il connettore con piastra intermedia.

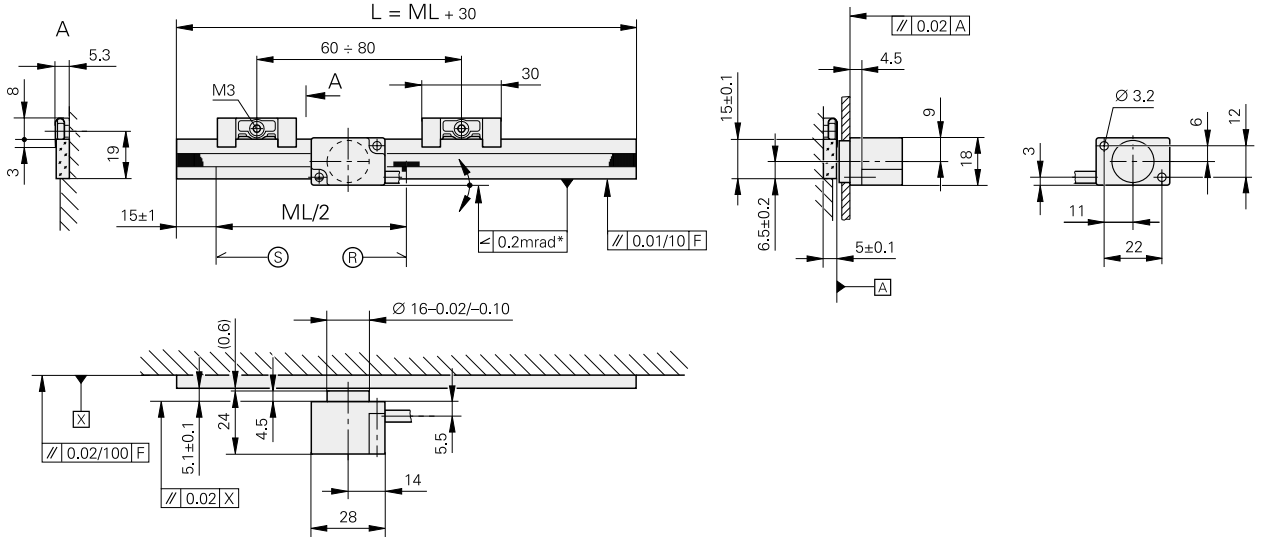
Es posible el montaje del conector con placas intermedias.

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LIP 481 R

mm

DIN ISO 8015
ISO 2768 - m H



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

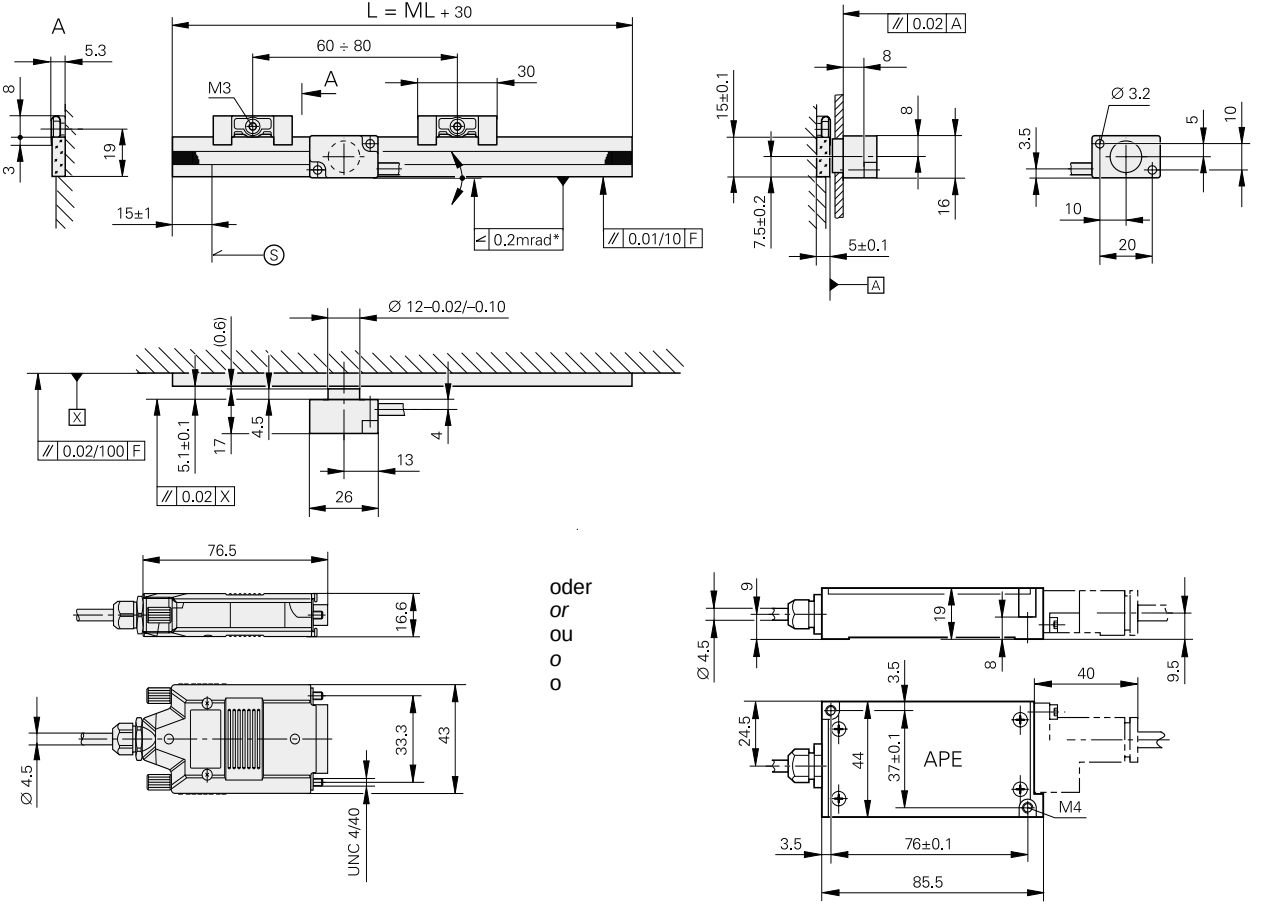
* = max. Änderung bei Betrieb
Max. change during operation
modification max. en fonctionnement
variazione massima durante il funzionamento
máx. variación durante el funcionamiento

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

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

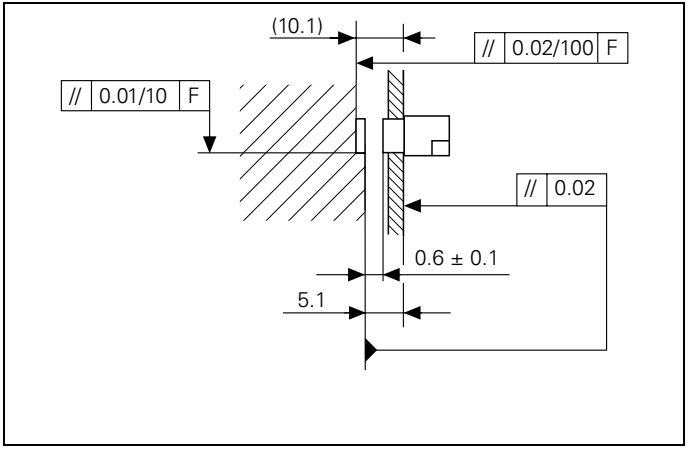
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LIP 481 A


A
5.3
8
3
19
L = ML + 30
60 ÷ 80
M3
A
30
15±1
S
0.2mrad*
0.01/10 F
0.02 A
8
15±0.1
8
16
7.5±0.2
5±0.1
A
Ø 3.2
5
10
3.5
10
20
Ø 12–0.02/–0.10
(0.6)
X
0.02/100 F
5.1±0.1
17
4.5
4
13
26
0.02 X
76.5
16.6
Ø 4.5
33.3
43
UNC 4/40
oder
or
ou
o
o
9
19
8
Ø 4.5
40
9.5
3.5
24.5
44
37±0.1
APE
M4
3.5
76±0.1
85.5

Anbautoleranzen
F = Maschinenführung

Mounting tolerances
F = machine guideway



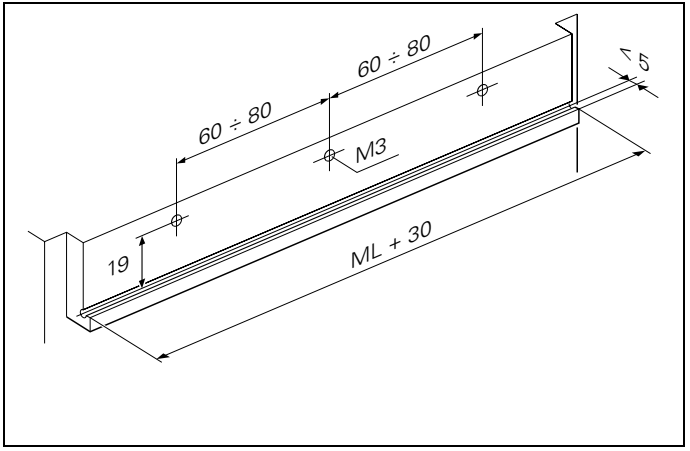
Tolérances de montage
F = Guidage de la machine

Tolleranze di montaggio
F = guida della macchina

Tolerancias de montaje
F = guía de la máquina

Lackfreie Montagefläche vorbereiten. Ggf. Gewinde für Spannpratzen bohren.

Prepare the mounting surface. It must be free of paint. If required, drill and tap hole(s) for fixing clamps.



La surface de montage doit être exempte de peinture. Si nécessaire percer les filets pour les griffes de serrage.

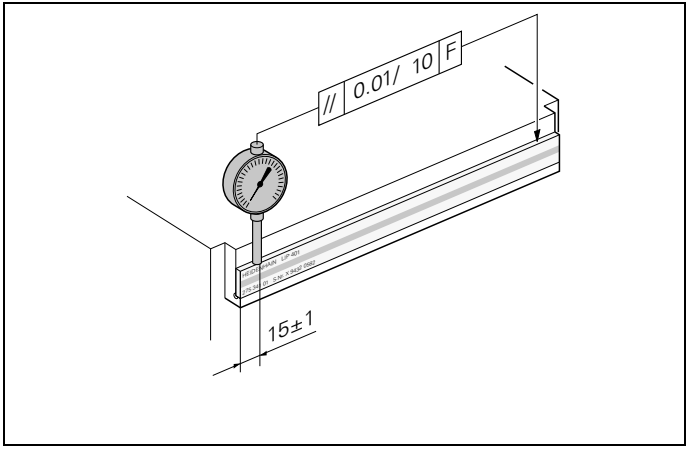
Preparare una superficie di montaggio che non dovrà essere verniciata. Eventualmente preparare i fori per le graffette di fissaggio.

Limpiar bien la superfie de montaje para que no haya pintura. En caso necesario taladrar las roscas para las grapas de fijación.

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Ausrichtung des Maßstabs zur Maschinenführung F überprüfen. Prüfposition an den Enden beachten.

Check alignment of scale to machine guideway F. Observe gauging positions at the end.



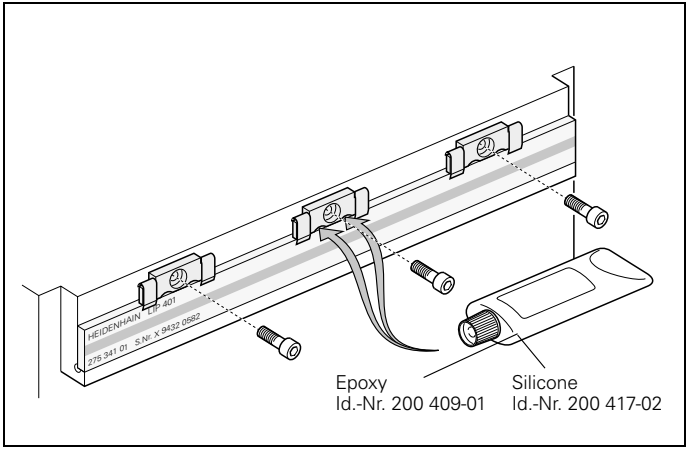
Vérifier l'allgnement de la règle par rapport au guidage F de la machine. Respecter la position de test aux extrêmités.

Verificare l'allineamento della riga alla guida F della macchina. Prestare attenzione ai punti di verifica alle due estremità.

Verificar la alineación de la regla respecto de la guía de la máquina F. Observar las posiciones de verificación en los extremos.

Maßstab mit Spannpratzen befestigen (1 Nm). Den Maßstab in der Mitte mit Epoxy fixieren bei ML ≤ 170 mm.

Secure the scale with the fixing clamps (1 Nm), and for ML ≤170 mm, apply Epoxy at the center point of the scale.



Fixer la règle avec les griffes de serrage (1 Nm). La coller en son centre avec Epoxy pour ML ≤ 170 mm.

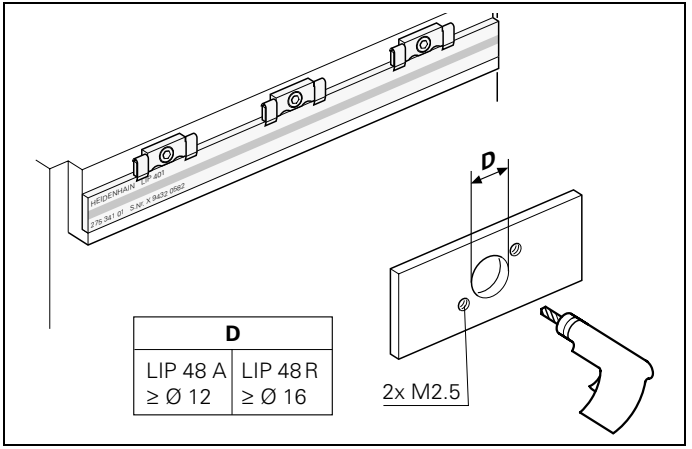
Fissare la riga con le graffette (1 Nm). Fissare la riga al centro con Epoxy se la lunghezza è ≤170 mm.

Fijar la regla con las grapas (1 Nm). Fijar la regla en el centro con Epoxy a ML ≤170 mm

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Die Anbaufläche muß lackfrei sein. Der Abtastkopf des LIP 48R ist nicht symmetrisch zum Maßstab.

The mounting surface must be free of paint. The scanning head of the LIP 48R is not symmetrical to the scale.



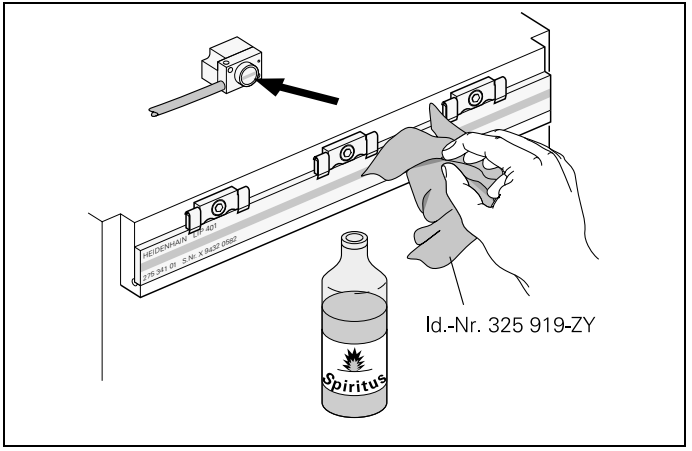
La surface d'appui doit être exempte de peinture. La tête captrice du LIP 48R n'est pas symétrique par rapport à la règle.

La superficie di montaggio non deve essere verniciata. La testina della LIP 40R non è simmetrica alla riga.

La superficie de montaje debe estar exenta de pintura. El cabezal del LIP 48R no es simétrico a la escala.

Teilung des Maßstabs und des Abtastkopfes mit fusselfreiem Lappen und destilliertem Spiritus oder Isopropylalkohol reinigen.

Clean the graduation surface of the scale and scanning head with a lint-free cloth and methylated or isopropyl alcohol.



Nettoyer la gravure de la règle et de la tête captrice à l'aide d'un chiffon non pelucheux et d'alcool distillé ou d'isopropanol.

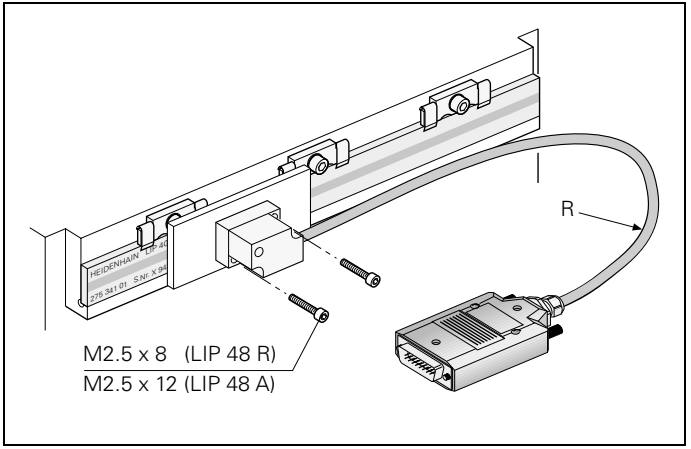
Pulire la graduazione della riga e la testina con un panno che non lasci residui e con alcool o isopropilene.

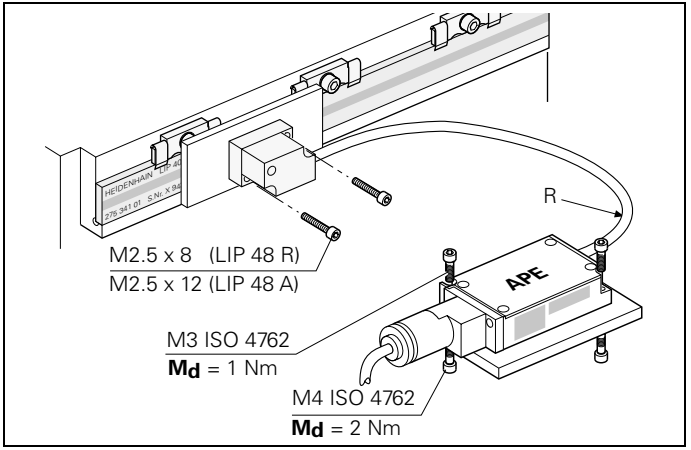
Limpiar las divisiones de la regla y del cabezal con un trapo limpio, sin pelusa y alcohol o isopropileno.

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Abtastkopf lose anschrauben. Zulässige Biegeradien R des Kabels beachten.

Loosely screw down the scanning head. Observe permissible bending radii R of the cable.





Serrer légèrement les vis de la tête captrice. Respecter les rayons de courbure R admissibles pour le câble.

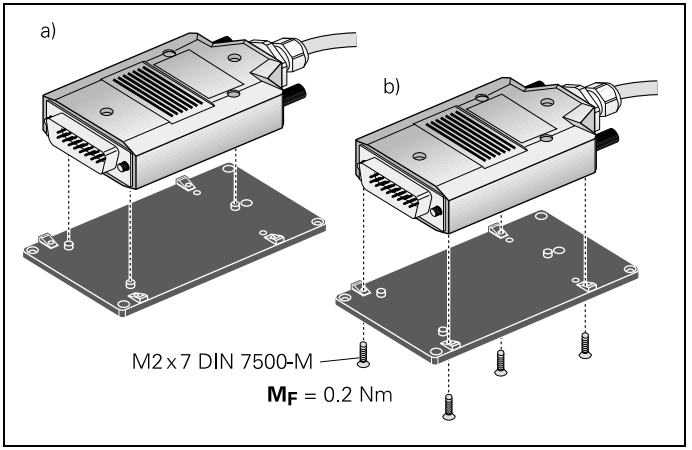
Montare la testina, senza stringere le viti.
Attenzione al raggio di curvatura R del cavo.

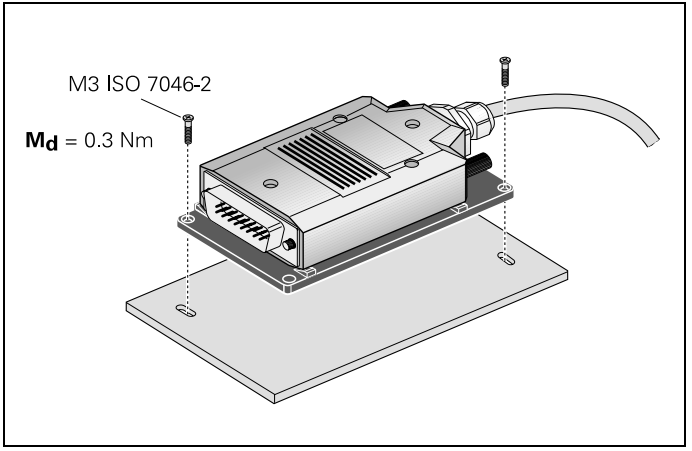
Atornillar el cabezal suavemente y asegurar el APE. Deberán tenerse en cuenta los radios de torsión R de los cables.

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a) Sub-D-Stecker aufstecken und einrasten.
b) Bei Bedarf anschrauben.

a) Push sub-D connector into place until it catches.
b) Screw down if required.





a) Enficher et encliqueter la prise Sub-D.
b) Visser si nécessaire.

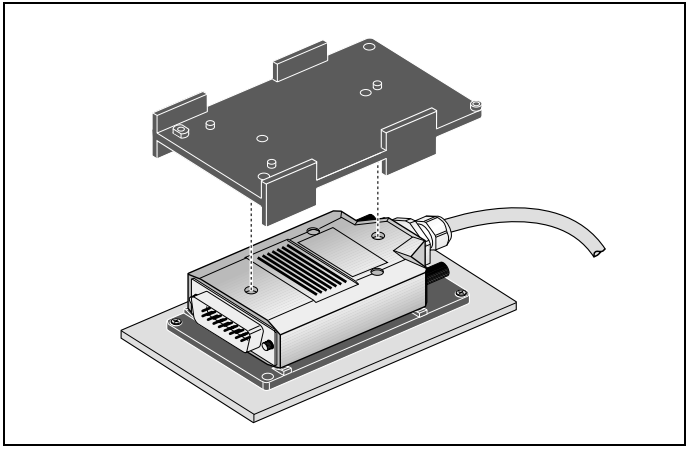
a) Collegare il connettore Sub-D e bloccarlo.
b) Se necessario avvitare.

a) Enchufar y fijar el conector Sub-D.
b) Si es preciso, atornillar.

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Anbau mit zwei Sub-D-Stecker und Zwischenplatte, Zwischenplatte einrasten.

Mounting with two D-sub connectors and spacer. Spacer must sit properly.



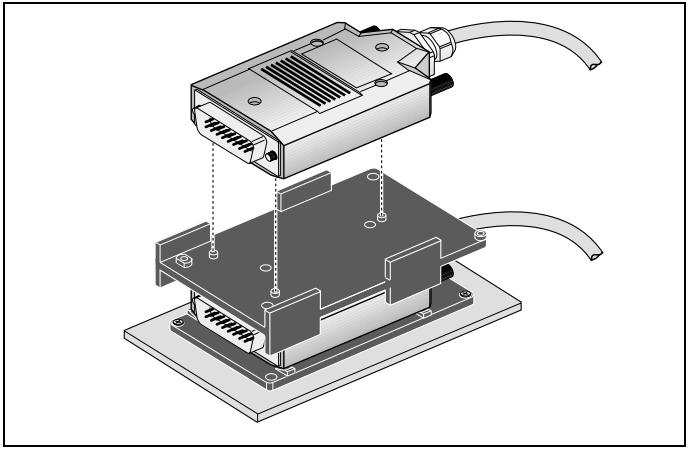
Montage avec deux prises Sub-D et plaquette intermédiaire, Encliqueter la plaquette intermédiaire.

Montaggio con due connettori Sub-D e piastra intermedia. Bloccare la piastra.

Montaje con dos conectores Sub-D y placa intermedida, fijar la placa.

Sub-D-Stecker aufstecken und einrasten.

Push sub-D connector into place until it catches.



Enficher et encliqueter la prise Sub-D.

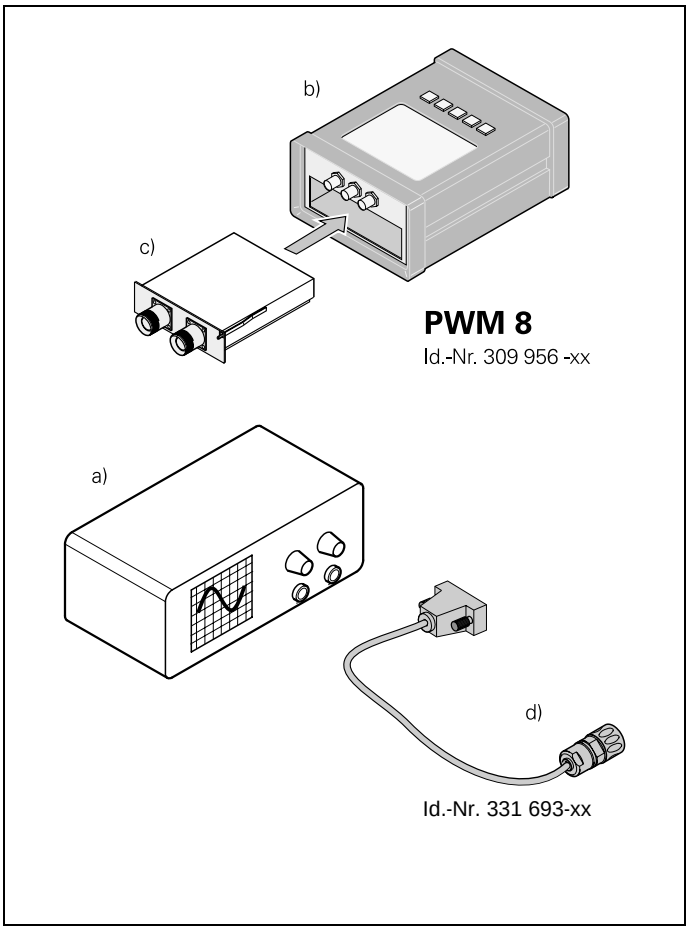
Inserire e bloccare il connettore Sub-D.

Enchufar y fijar los conectores Sub-D.

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Benötigte Messmittel zur Justage:
a) Oszilloskop
b) PWM 8
c) Einschub für 1 V_{SS}
d) Adapterkabel

Required equipment:
a) Oscillloscope
b) PWM 8
c) Plug-in module for 1 V_{PP}
d) Adapter cable



Systèmes de test nécessaires au réglage:
a) Oscilloscope
b) PWM 8
c) Carte pour 1 V_{CC}
d) Câble adaptateur

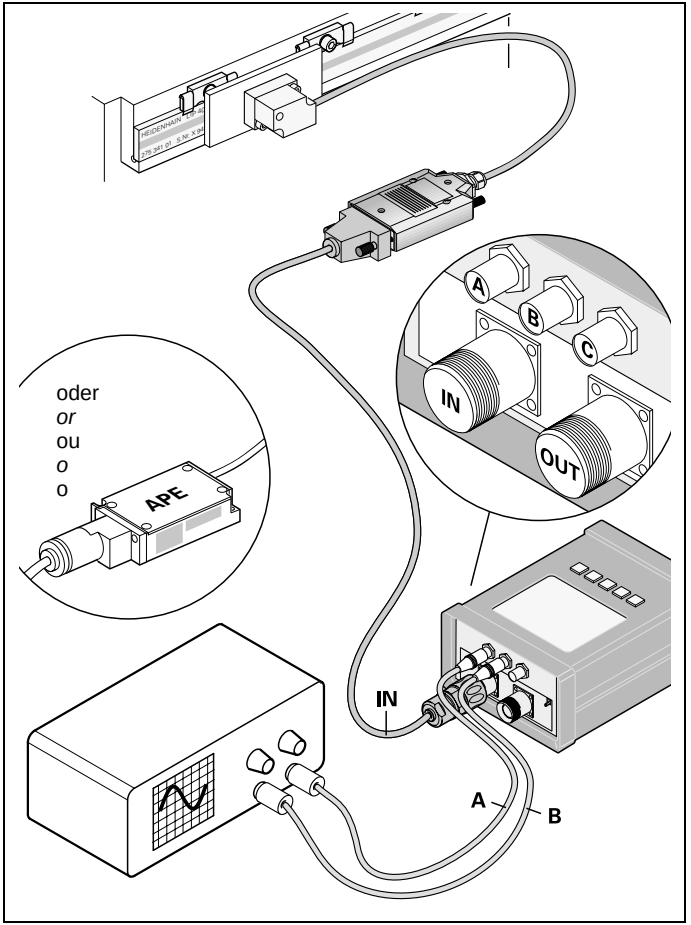
Strumenti die misura necessari per la taratura:
a) Oscilloscopio
b) PWM 8
c) Attacco per 1 V_{PP}
d) Cavo adattatore

Aparatos de medición necesarios para el ajuste:
a) Osciloscopio
b) PWM 8
c) Adaptador para 1 V_{PP}
d) Cable adaptador

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Anschluss des LIP 48 über das PWM 8 an das Oszilloskop.
Achtung:
Steckverbindungen nicht unter Spannung durchführen!

Connecting the LIP 48 to the oscilloscope through the PWM 8.
Caution:
Do not engage connectors while unit is under power!



Raccordement du LIP 48 à l'oscilloscope via le PWM 8.
Attention:
Les connexions ne doivent pas être réalisées sous tension.

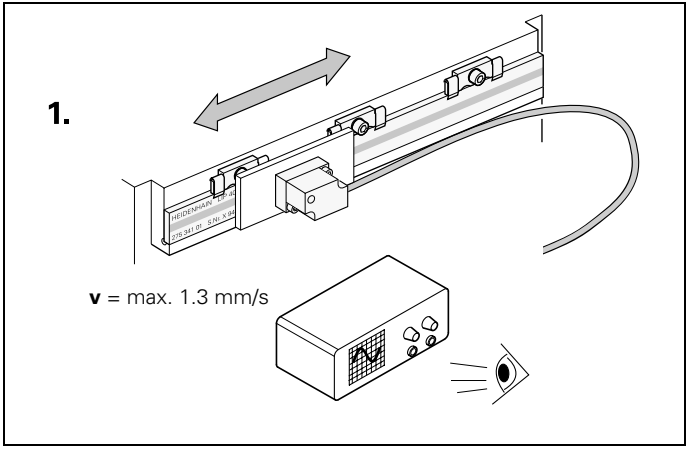
Collegamento della LIP 48 tramite PWM 8 all'oscilloscopio.
Attenzione:
non collegare sotto tensione.

Conexión de la LIP 48 al osciloscopio mediante el PWM 8.
Atención:
No realizar las conexiones bajo tensión.

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Zur Prüfung der Ausgangssignale Maßstab hin- und herfahren.
(**v** = max. 1.3 mm/s)

Slide the scale back and forth to test the output signals.
*(**v** = max. 1.3 mm/s)*



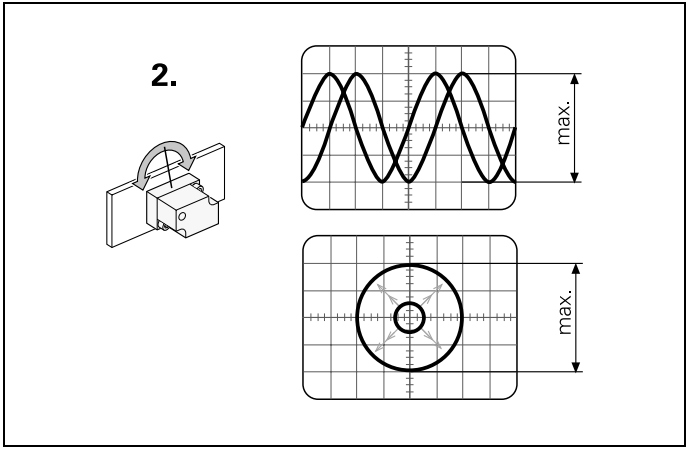
Déplacer la règle dans les deux sens pour contrôler les signaux de sortie.
(**v** = max. 1.3 mm/s)

Per verificare i segnali in uscita, spostare la riga avanti e indietro.
*(**v** = max. 1.3 mm/s)*

Para la comprobación de las señales de salida desplazar la regla de un lado a otro.
(**v** = max. 1,3 mm/s)

Durch Drehen des Abtastkopfes die Ausgangssignale auf größtmögliche Amplitude optimieren. Danach Befestigungsschrauben lose anziehen.

Adjust the output signals to the largest possible amplitude by turning the scanning head. Then loosely tighten the mounting screws.



Faire pivoter la tête captrice pour que les signaux de sortie aient l'amplitude la plus grande possible. Puis, serrer légèrement les vis de fixation.

Ruotare la testina per ottimizzare i segnali in uscita sull'ampiezza massima. Poi serrare le viti di fissaggio.

Girando el cabezal se optimizan las señales de salida a la máxima amplitud posible. Después apretar los tornillos de sujeción.

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A_{SS}, B_{SS}: Amplituden der Inkrementalsignale

$\frac{A}{B}$: Amplitudenverhältnis

PHA: Phasenwinkel

TV1, TV2: Tastverhältnisse

SYM.A, SYM.B: Symmetrieabweichungen

Können die angegebenen Toleranzen nicht eingehalten werden, nochmals Montagetoleranzen überprüfen.

A_{SS}, B_{SS}: *Amplitudes of the incremental signals*

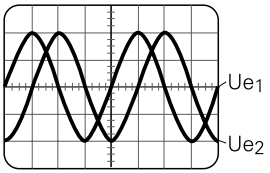
$\frac{A}{B}$: *Amplitude ratio*

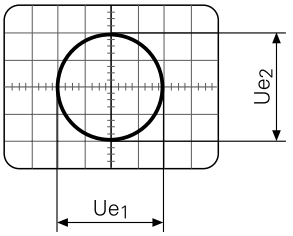
PHA: *Phase angle*

TV1, TV2: *On-off ratio*

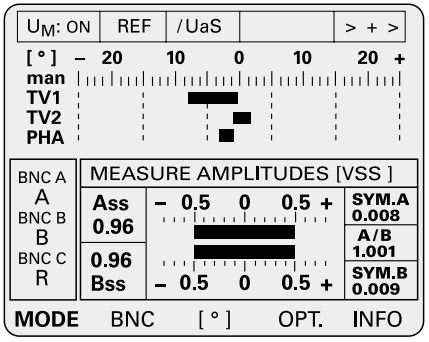
SYM.A, SYM.B: *Asymmetry*

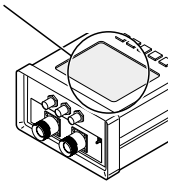
If the given signal tolerances cannot be maintained, recheck the mounting tolerance.





A_{SS}, B_{SS}	1 V ± 0.2 V
$\frac{A}{B}$	0.9 ... 1.1
PHA	90° ± 5°
TV1, TV2	± 5°
SYM.A	< 0.03
SYM.B	< 0.03





MODE ➤ AMPL. / *AMPL.*
MESSEN / *MEASUR*

A_{SS}, B_{SS}: Amplitudes des signaux incrémentaux

$\frac{A}{B}$: Rapport d'amplitude

PHA: Angle de phase

TV1, TV2: Rapports de cycle

SYM.A, SYM.B: Ecarts de symétrie

Si les tolérances indiquées ne sont pas respectées, contrôler à nouveau les tolérances de montage.

A_{SS}, B_{SS}: *ampiezza dei segnali incrementali*

$\frac{A}{B}$: *Rapporto tra le ampiezze*

PHA: *angolo di fase*

TV1, TV2: *rapporti di tastatura*

SYM.A, SYM.B: *scostamenti dalla simmetria*

Se non vengono mantenute le tolleranze indicate, ricontrollare le tolleranze di montaggio

A_{SS}, B_{SS}: Amplitud de las señales incrementales

$\frac{A}{B}$: Relación de amplitud

PHA: Angulo de desfase

TV1, TV2: Valores de las señales

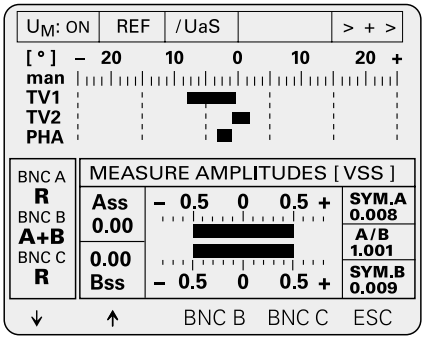
SYM.A, SYM.B: Desfases de simetría

Si no se pueden mantener las tolerancias indicadas, deben comprobarse de nuevo las tolerancias de montaje.

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Am PWM 8 die BNC Buchsen wie folgt belegen:
BNC A: R
(Referenzmarkensignal)
BNC B: A+B
(Summensignal A_{SS} + B_{SS})

Assign the BNC sockets on the PWM 8 as follows:
BNC A: *R*
(reference mark signal)
BNC B: *A+B*
(Sum signal A_{SS} + B_{SS})



Sur le PWM 8, affecter les prises BNC de la manière suivante:
BNC A: R (signal de référence)
BNC B: A+B
(Signal cumulé A_{SS} + B_{SS})

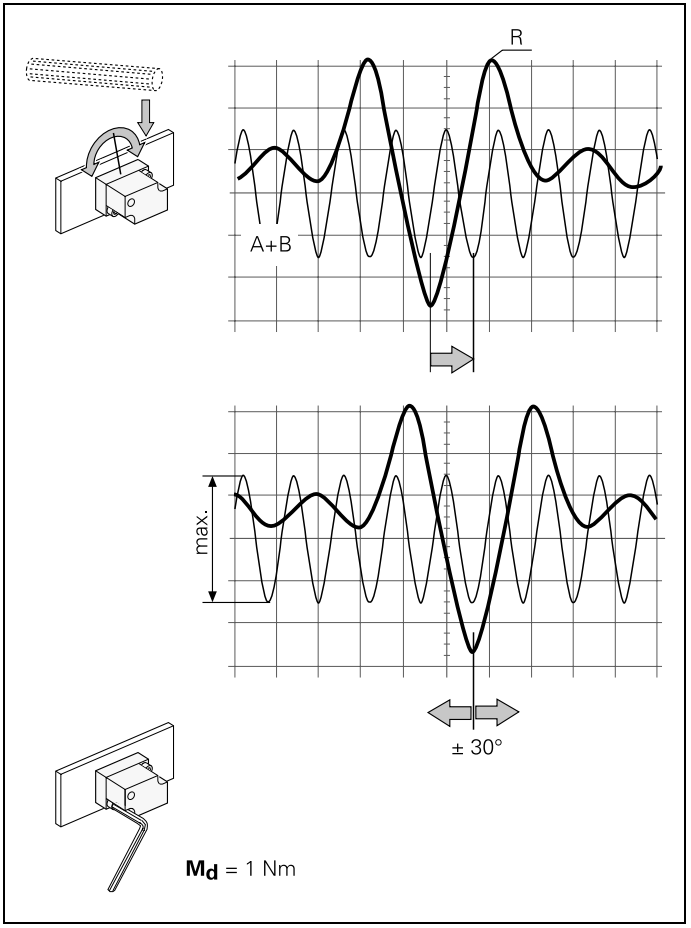
Sul PWM 8 collegare i BNC come segue:
BNC A: *R (Segnale indice di riferimento)*
BNC B: *A+B*
(Segnali di somma A_{SS} + B_{SS})

En el PWM 8 asignar los conectores macho BNC de la siguiente forma:
BNC A: R
(señal de la marca de referencia)
BNC B: A+B
(suma de las señales A_{SS} + B_{SS})

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Durch leichtes Klopfen Referenzmarkenlage justieren. Die Spitze des Referenzmarkensignals soll mit der Spitze des Summensignals fluchten.
Achtung:
Darauf achten, dass Inkrementsignale nicht kleiner werden.

Lightly tap to adjust the reference mark signal. The peak of the reference mark signal should be level with the peak of the sum signal.
Note:
Ensure that the incremental signals do not become smaller.



En tapotant légèrement, régler la position de la marque de référence. La crête du signal de référence doit être alignée sur la crête du signal cumulé.
Attention:
Veiller à ce que les signaux de référence ne diminuent pas.

Tarare la posizione degli indici di riferimento picchiettando piano. L'apice dei segnali degli indici di riferimento deve essere allineata con quella dei segnali di somma.
Attenzione:
i segnali incrementali non devono diminuire in ampiezza.

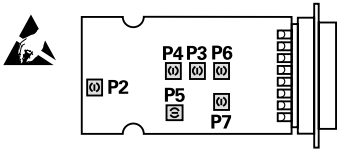
Ajustar la posición de las marcas de referencia presionando ligeramente.
El pico de la señal de la marca de referencia debe alinearse con el pico resultante de la suma de las señales.
Atención:
Comprobar que las señales incrementales no se reduzcan.

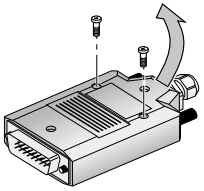
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Die Signale können bei Bedarf durch Potentiometer optimiert werden. Vorher Montage-toleranzen prüfen.
Referenzmarken-Breite auf 360° ± 30° mit dem Potentio-meter **P2** einstellen.

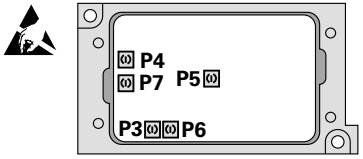
If necessary you can optimize the signals with a potentiometer. First check the mounting tolerances.
*Adjust the reference mark signals to 360° ± 30° with the potentiometer **P2.***

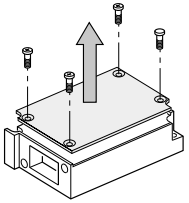
A_{SS}, B_{SS}	1 V ± 0.2 V	**P5**
$\frac{A}{B}$	0.95 ... 1.05	**P6**
PHA	± 3°	**P7**
TV1, TV2	± 3°	**P3/P4**
SYM.A	< 0.013	**P4**
SYM.B	< 0.013	**P3**





APE





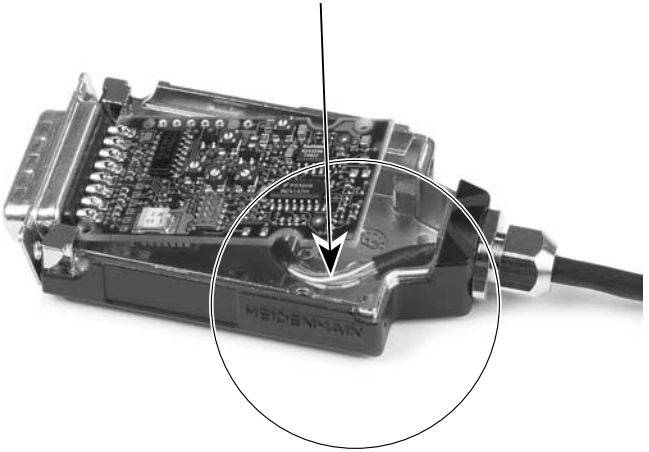
Si nécessaire, les signaux peuvent être optimisés par potentiomètre. Vérifier auparavant les tolérances de montage.
Régler la largeur du signal de référence sur 360° ± 30° à l'aide du potentiomètre **P2.**

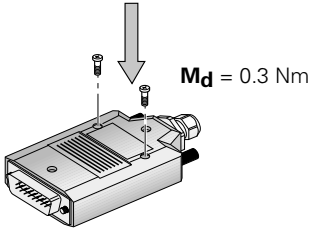
E' possibile ottimizzare i segnali tramite un potenziometro. Prima controllare le tolleranze di montaggio.
*Con il potenziometro **P2** portare l'ampiezza degli indici di riferimento a 360° ± 30°.*

Si es necesario pueden optimizarse las señales con el potenciómetro. Antes comprobar las tolerancias de montaje.
Ajustar con el potenciómetro **P2** la amplitud de las marcas de referencia a 360° ± 30°.

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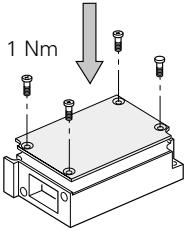
Auf die Lage der Kabeladern achten (nicht einklemmen)
Make sure not to pinch the cable wires
veiller à ne pas pincer les fils du câble
fare attenzione alla posizione dei fili
asegúrese de no pinzar los hilos de los cables





M_d = 0.3 Nm

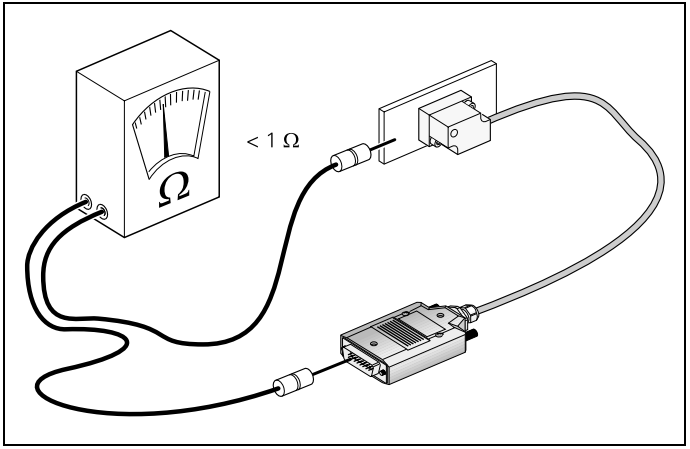
M_d = 1 Nm

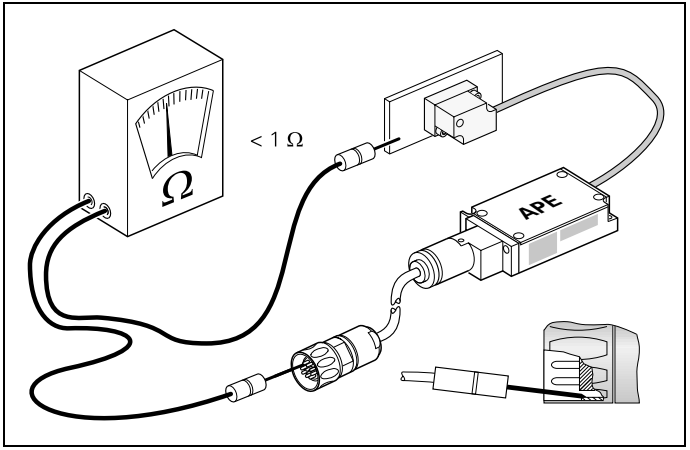


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Elektrischen Widerstand zwischen Steckergehäuse und Maschine prüfen.
Sollwert: < 1 Ω max.

Check the resistance between the connector housing and the machine.
Desired value: < 1 Ω max.



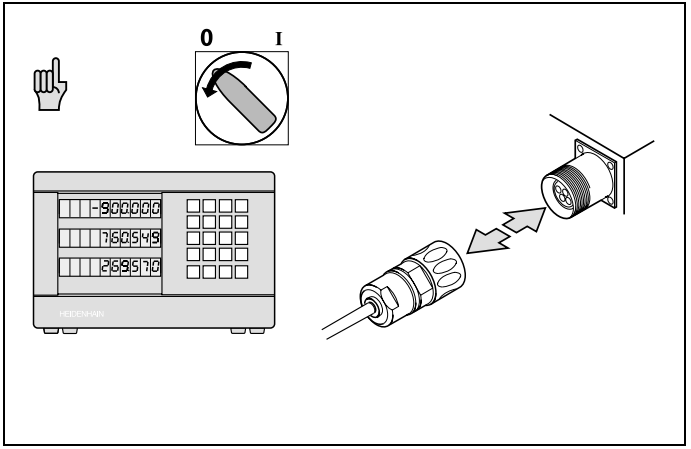


Tester la résistance électrique entre le carter de la prise et la machine.
Valeur nominale: < 1 Ω max.

Controllare la resistenza elettrica tra l'alloggiamento del connettore e la macchina.
Valore nominale: < 1 Ω max.

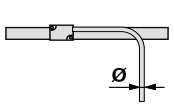
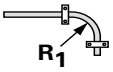
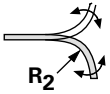
Comprobar la resistencia eléctrica entre la carcasa del conector y la máquina.
Valor nominal: < 1 Ω máx.

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0
I
-900000
760549
269570
HEIDENHAIN

Zulässige Biegeradien der Anschlusskabel.
R_1: Dauerbiegung
R_2: Wechselbiegung

Permissible bending radii of connecting cable.
R_1: for rigid configuration
R_2: for frequent flexing

		
Ø 4.5 mm	$R_1 \geq$ 10 mm	$R_2 \geq$ 50 mm
Ø 6 mm	$R_1 \geq$ 20 mm	$R_2 \geq$ 75 mm
Ø 8 mm 	$R_1 \geq$ 40 mm	$R_2 \geq$ 100 mm

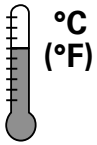
Rayons de courbure admissibles sur le câble de raccordement.
R_1: Courbure permanente
R_2: Courbure fréquente

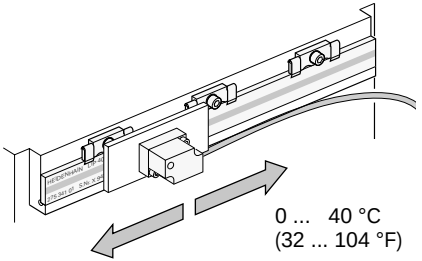
Raggio di curvatura consentito per il cavo di collegamento:
R_1: con curvatura fissa
R_2: con flessioni ripetute

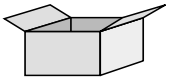
Radios de torsión admisibles en los cables.
R_1: Torsión contínua
R_2: Torsión variable

Betriebstemperatur
Lagertemperatur

Operating temperature
Storage temperature







Température de travail
Température de stockage

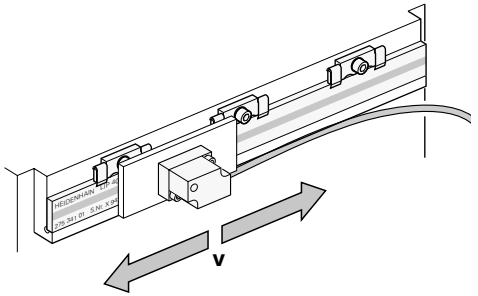
Temperatura di esercizio
Temperatura di magazzinaggio

Temperatura en funcionamiento
Temperatura en almacén

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Verfahrgeschwindigkeit

Traversing speed



v = max. 30 m/min

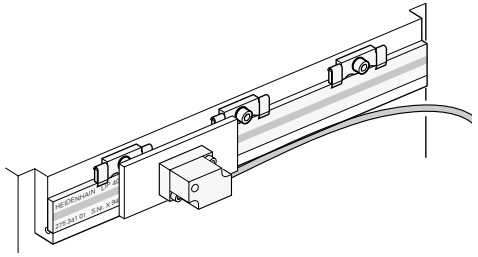
Vitesse de déplacement

Velocità

Velocidad de desplazamiento

Vibration/Schock

Vibration/Shock



EN 60 068-2-6 (55 ... 2000 Hz): max. 8 m/s^2
EN 60 068-2-27 (11 ms): max. 100 m/s^2

Vibrations/chocs

Vibrazioni/Shock

Vibración/Choque

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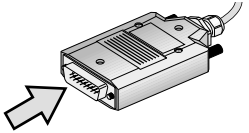
Spannungsversorgung

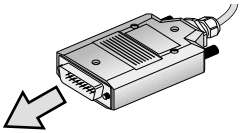
Power supply

Tension d'alimentation

Tensione di alimentazione

Tensión de alimentación





U_P = 5 V ± 5 %
(max. 190 mA)

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

EN 50 178

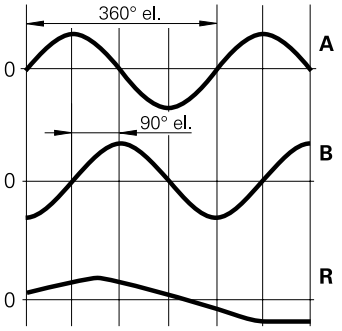
Ausgangssignale

Output signals

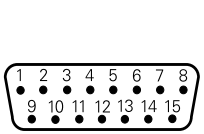
Signaux de sortie

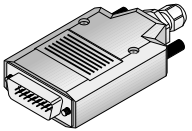
Segnali in uscita

Señales de salida



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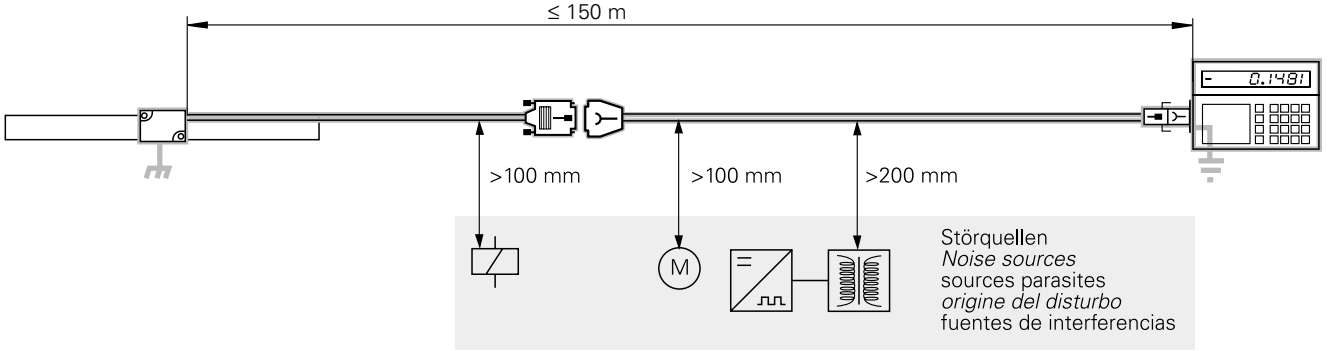




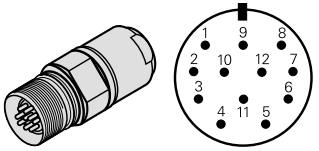
Schirm auf Gehäuse
Shield on housing
blindage sur boîtir
schermo sulla carcassa
blindaje a carcasa

	1	9	3	11	14	7	4	2	12	10	5, 6, 8, 15	13	/
	A		**B**		**R**		**5 V U_P**	**0 V U_N**	**5 V Sensor**	**0 V Sensor**	/	/	/
	+	–	+	–	+	–							
	braun *brown* brun *marrone* marrón	grün *green* vert *verde* verde	grau *gray* gris *grigio* gris	rosa *pink* rose *rosa* rosa	rot *red* rouge *rosso* rojo	schwarz *black* noir *nero* negro	braun/grün brown/green brun/vert *marrone/verde* marrón/verde	weiß/grün *white/green* blanc/vert *bianco/verde* blanco/verde	blau *blue* bleu *azzurro* azul	weiß *white* blanc *bianco* blanco	/	violett *violet* violet *violetto* violeta	gelb *yellow* jaune *giallo* amarillo

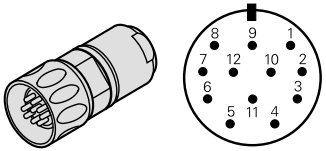
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Id.-Nr. 291 698-03

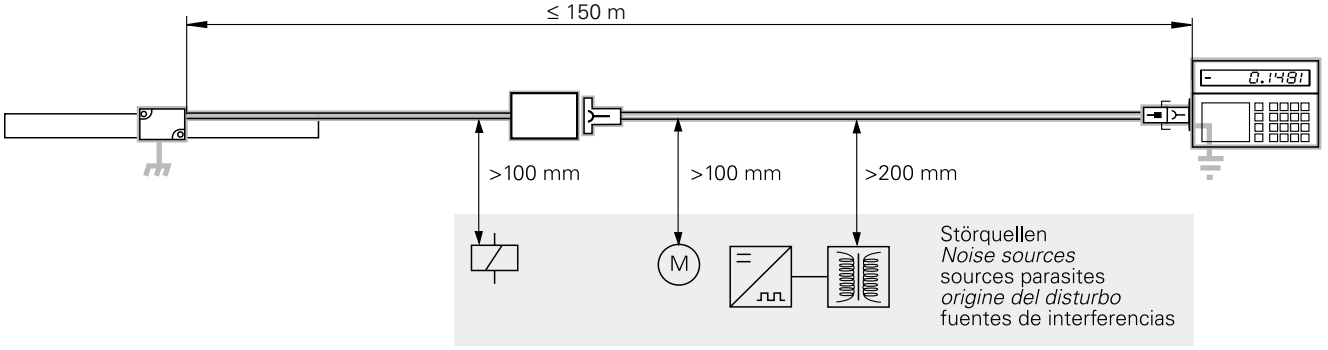


Id.-Nr. 291 697-07

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	9
	A		**B**		**R**		**5 V U_P**	**0 V U_N**	**5 V sensor**	**0 V sensor**	**$\overline{U_{aS}}$**	***I***
	+	–	+	–	+	–						
	braun *brown* brun *marrone* marrón	grün *green* vert *verde* verde	grau *gray* gris *grigio* gris	rosa *pink* rose *rosa* rosa	rot *red* rouge *rosso* rojo	schwarz *black* noir *nero* negro	braun/grün *brown/green* brun/vert marrone/verde *marron/verde*	weiß/grün *white/green* blanc/vert *bianco/verde* blanco/verde	blau *blue* bleu *azzurro* azul	weiß *white* blanc *bianco* blanco	violett violet violet viola violeta	gelb *yellow* jaune *giallo* amarillo

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