



# HEIDENHAIN

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

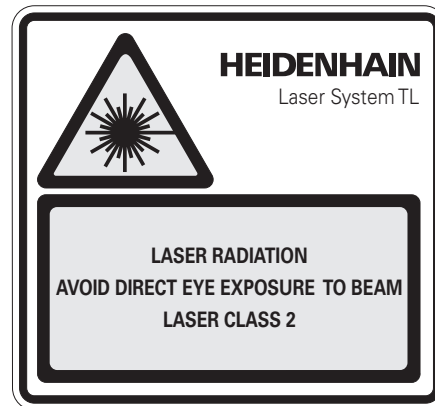
## **TL Micro** **TL Nano**

Lasersysteme  
*Laser Systems*  
Systèmes laser  
*Sistemi laser*  
Sistemas láser

5/2006



**Klasse 2: VDE 0837-IEC 60 825-1**  
**Class 2: VDE 0837-IEC 60 825-1**  
**Classe 2: VDE 0837-IEC 60 825-1**  
**Clase 2: VDE 0837-IEC 60 825-1**



**Achtung:**

Laserwarnschild (Lieferumfang) gut sichtbar an der Maschine anbringen!

**Caution:**

*Apply the laser warning label (included in delivery) at a well visible location on the machine!*

**Attention:**

Apposer l'étiquette d'avertissement (fourniture) sur un endroit bien visible de la machine!

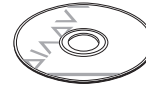
**Attenzione:**

*applicare la targhetta di avvertenza relativa al laser (inclusa nello standard di fornitura) in posizione ben visibile sulla macchina.*

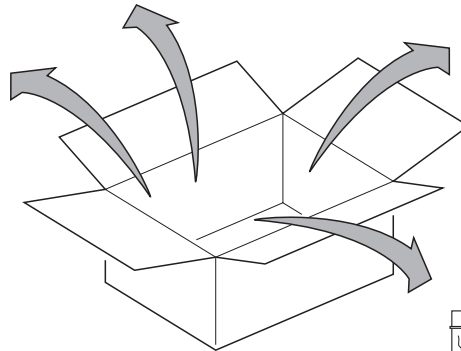
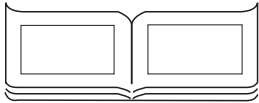
**Atención:**

¡Colocar en la máquina de forma visible la etiqueta de aviso del láser (suministrada con el aparato)!

**TL Micro 150/200/300**  
**TL Nano**



TL Software, Dokumentation  
*TL software, documentation*  
Logiciel TL, documentation  
*Software TL, documentazione*  
Software TL, documentación



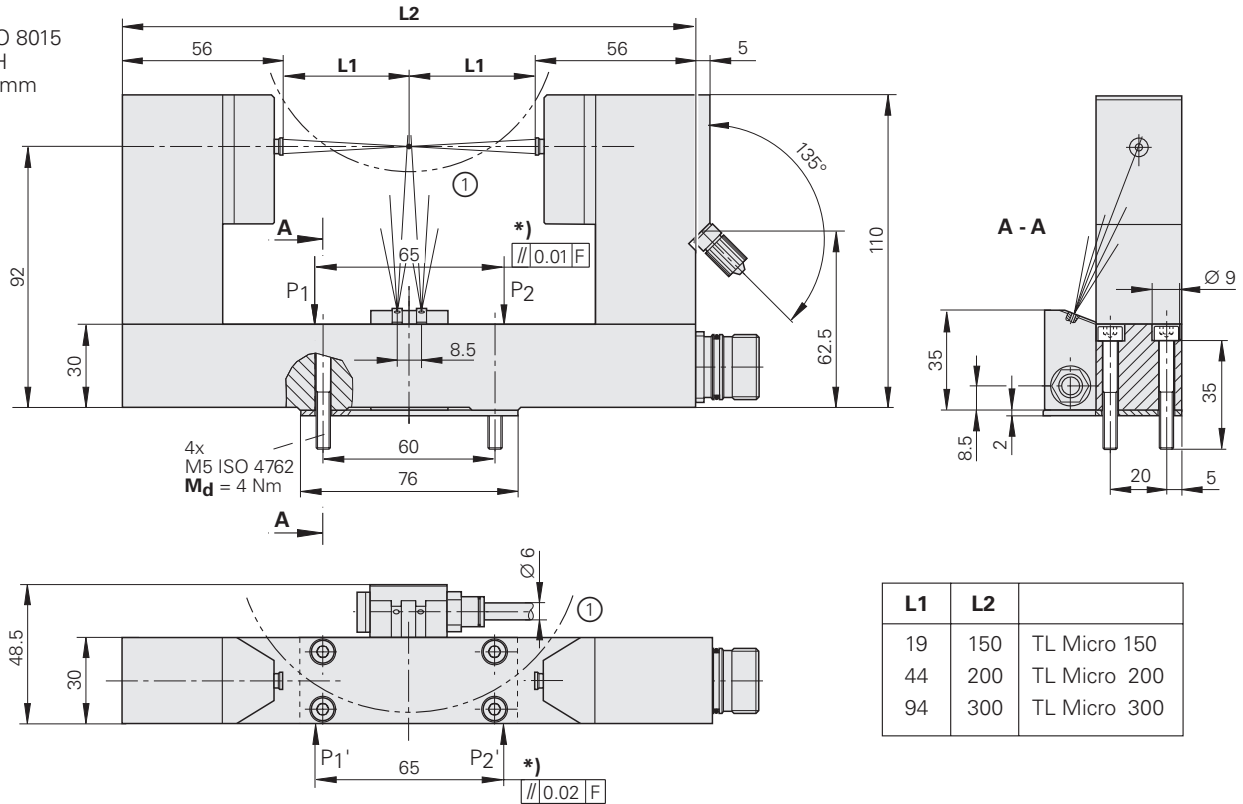
Kleinteile (Laserschild usw.)  
*Small parts (laser label, etc.)*  
Petites fournitures (étiquette laser, etc.)  
*Minuteria (targhetta laser ecc.)*  
Piezas pequeñas (etiqueta del láser, etc.)

# TL Micro 150/200/300

mm



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



Bei Kabelabgang unten Abblasvorrichtung vormontiert  
 When cable outlet is from below, the blower is pre-assembled  
 Sortie de câble au dessous, dispositif de soufflage pré-monté  
 Premontaggio all'uscita cavo sotto dispositivo di soffiaggio  
 Con salida de cable inferior, dispositivo de soplado premontado

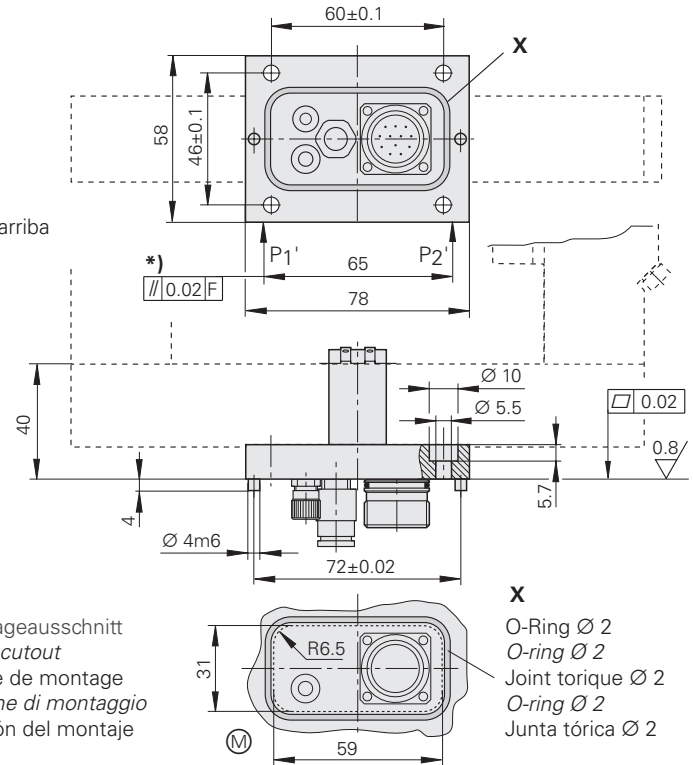
① = Messung des Werkzeugdurchmessers tangential von oben  
 Measurement of the tool diameter tangentially from above  
 Mesure du diamètre de l'outil tangentiellement à partir du haut  
 Misurazione del diametro utensile tangenzialmente dall'alto  
 Medición del diámetro de la herramienta tangencialmente desde arriba

\*) = Ausrichtung Gehäuse  
 Alignment of housing  
 Alignement du boîtier  
 Allineamento dello chassis  
 Alineación de la carcasa

F = Maschinenführung  
 Machine guideway  
 Guidage de la machine  
 Guida della macchina  
 Guía de la máquina

P = Messpunkte zum Ausrichten  
 Gauging points for alignment  
 Points de mesure pour dégauchissage  
 Punti di misura per allineamento  
 Puntos medición alineamiento

Ⓜ = Montageausschnitt  
 Panel cutout  
 Coupe de montage  
 Sezione di montaggio  
 Sección del montaje



**TL Nano**

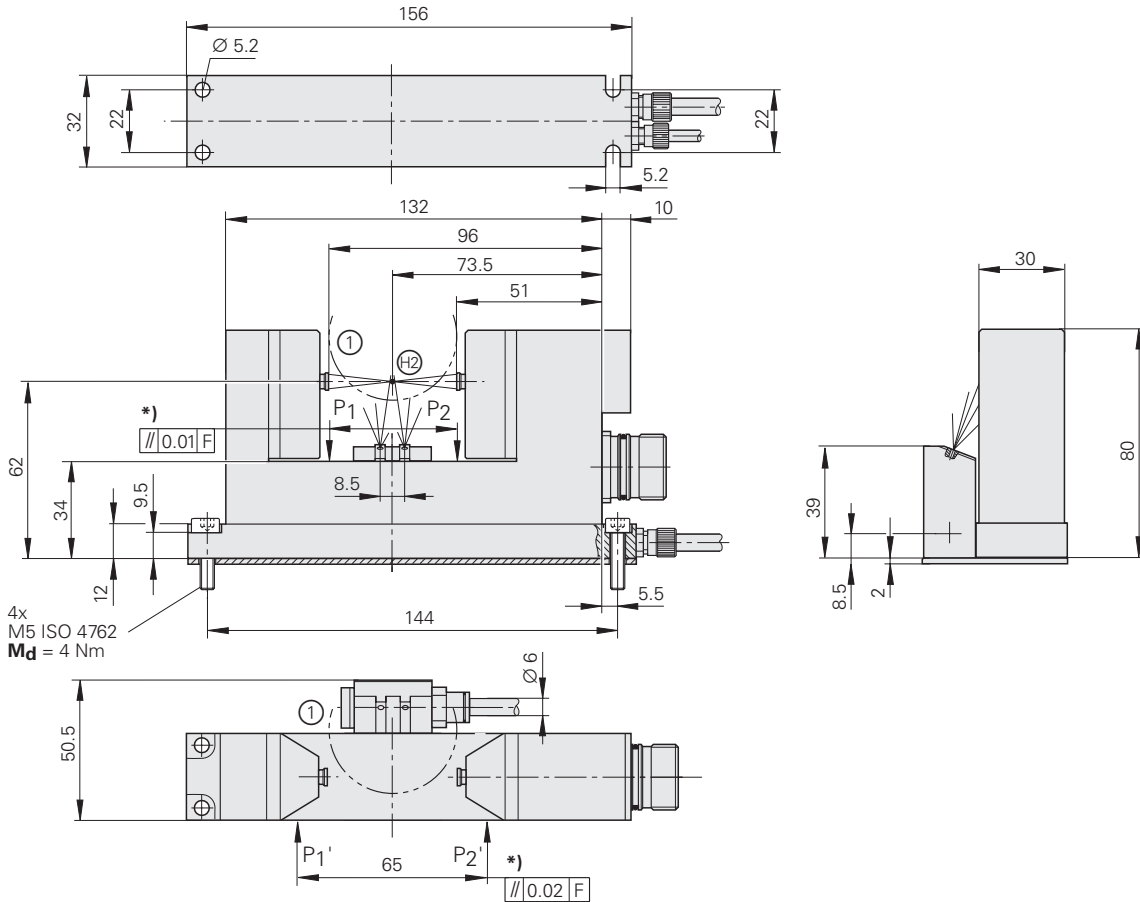
mm



Tolerancing ISO 8015

ISO 2768 - m H

< 6 mm:  $\pm 0.2$  mm



① = Messung des Werkzeugdurchmessers tangential von oben oder seitlich  
*Measurement of the tool diameter tangentially from above or laterally*  
Mesure du diamètre de l'outil tangentiellement à partir du haut ou latéralement  
*Misurazione del diametro utensile tangenzialmente dall'alto o lateralmente*  
Medición del diámetro de la herramienta tangencialmente desde arriba o desde el lado

Ⓜ2 = Messposition Trägermitte < ±0.5 mm  
*Measuring position at midpoint of carrier < ±0.5 mm*  
Position de mesure au centre du support < ±0.5 mm  
*Posizione di misura al centro del supporto < ±0.5 mm*  
Posición de medición en el centro del soporte < ±0.5 mm

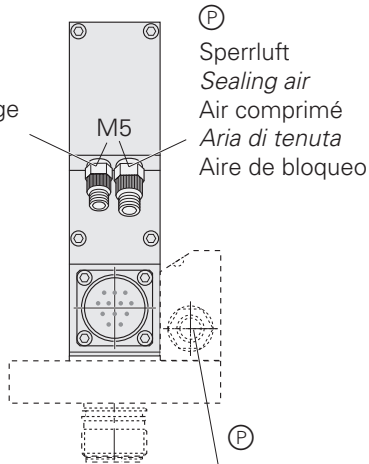
\*) = Ausrichtung Gehäuse  
*Alignment of housing*  
Alignement du boîtier  
*Allineamento dello chassis*  
Alineación de la carcasa

F = Maschinenführung  
*Machine guideway*  
Guidage de la machine  
*Guida della macchina*  
Guía de la máquina

P = Messpunkte zum Ausrichten  
*Measuring points for alignment*  
Points de mesure pour dégauchissage  
*Punti di misura per allineamento*  
Puntos medición alineamiento

Ⓟ = Pneumatik-Anschlüsse  
*Pneumatic connections*  
 Raccordements pneumatiques  
 Attacchi pneumatici  
 Conexiones neumáticas

Ⓟ  
 Verschlusskolben  
*Sealing plug*  
 Piston de verrouillage  
 Pistone di chiusura  
 Pistón de cierre

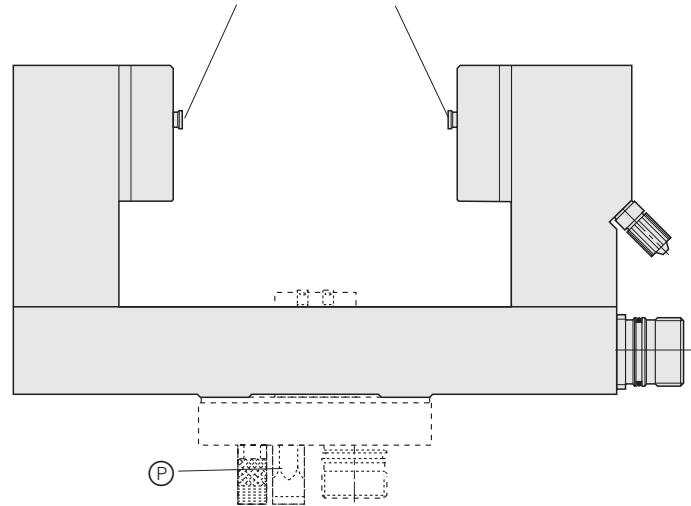


Ⓟ  
 Sperrluft  
*Sealing air*  
 Air comprimé  
 Aria di tenuta  
 Aire de bloqueo

Ⓟ  
 Abblasvorrichtung  
*Blower*  
 Dispositif de soufflage  
 Dispositivo di soffiaggio  
 Dispositivo de soplado

Empfänger R  
*Receiver R*  
 Récepteur R  
*Ricevente R*  
 Receptor R

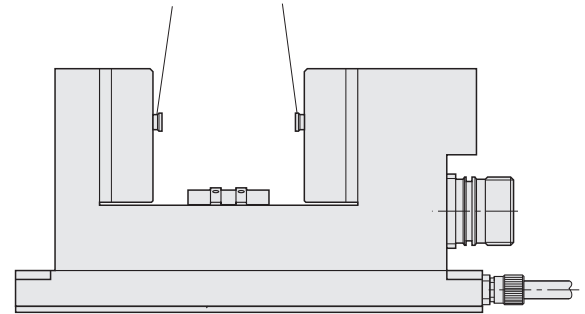
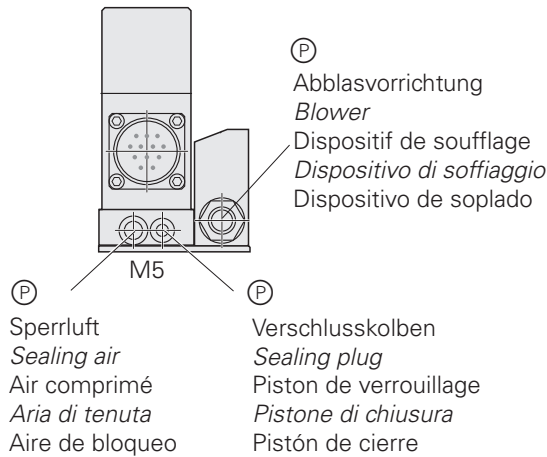
Sender T  
*Transmitter T*  
 Emetteur T  
*Trasmittente T*  
 Emisor T





Ⓟ = Pneumatik-Anschlüsse  
*Pneumatic connections*  
 Raccordements pneumatiques  
 Attacchi pneumatici  
 Conexiones neumáticas

Empfänger R      Sender T  
*Receiver R*      *Transmitter T*  
 Récepteur R      Émetteur T  
*Ricevente R*      *Trasmittente T*  
 Receptor R      Emisor T



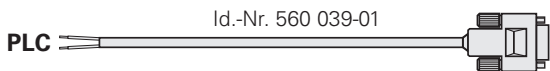
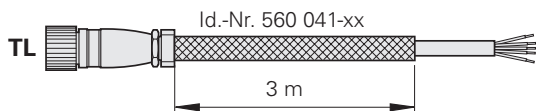
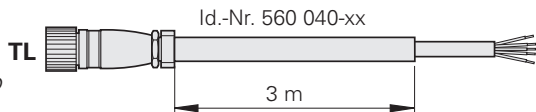
### DA 301 TL

Druckluftanlage  
 Compressed air unit  
 Unité de pressurisation  
 Impianto di pressurizzazione  
 Sistema de aire comprimido



Id.-Nr. 560 030-01

Verbindungskabel  
 Connecting cable  
 Câble de liaison  
 Cavo di collegamento  
 Cable de conexión

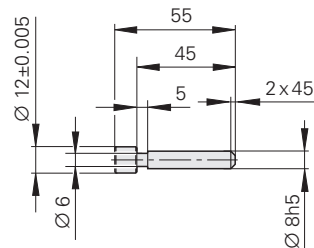


PLC

PLC

TNC  
(X13)

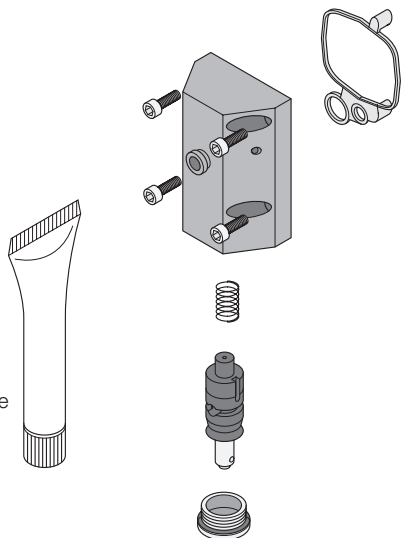
Referenzwerkzeug zur Kalibrierung  
 Reference tool for calibration  
 Etalon pour calibration  
 Utensile di riferimento per calibrazione  
 Herramienta de referencia para la calibración  
 Id.-Nr. 560 032-01



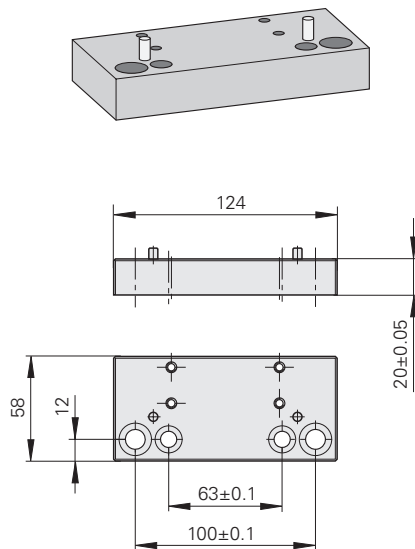
Zubehör optional · *Optional accessories* · Accessoires · *Accessori opzionali* · Accesorios opcionales

Wartungssatz  
*Maintenance kit*  
Kit de maintenance  
*Set di manutenzione*  
Juego de mantenimiento  
Id.-Nr. 560 034-01

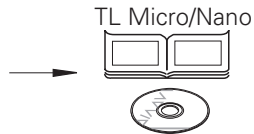
Fett  
*Fat*  
Graisse  
*Grasso*  
Engrasante



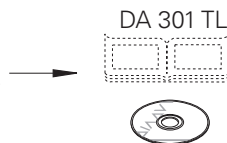
Befestigungsplatte für TL Micro  
*Fastening plate for TL Micro*  
Points de fixation pour TL Micro  
*Piastra di fissaggio per TL Micro*  
Pletina de sujeción para el TL Micro  
Id.-Nr. 560 02801



- A** Mechanische Installation TL  
*Mechanical installation TL*  
 Installation mécanique TL  
*Installazione meccanica TL*  
 Instalación mecánica TL



- B** Installation der Pneumatikeinheit DA 301TL  
*Installation of the DA 301TL compressed air unit*  
 Installation de l'unité de pressurisation DA 301TL  
*Installazione dell'unità pneumatica DA 301 TL*  
 Instalación de la unidad neumática DA 301 TL



- C** Elektrische Installation  
*Electrical installation*  
 Installation électrique  
*Installazione elettrica*  
 Instalación eléctrica

- D** Installation der Messzyklen  
*Installation of measuring cycles*  
 Installation des cycles de mesure  
*Installazione dei cicli di misura*  
 Instalación de los ciclos de medida



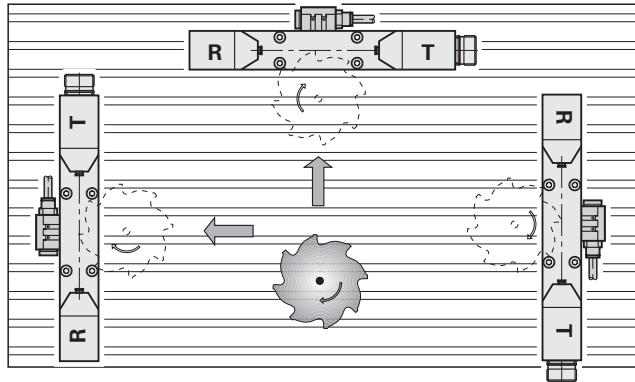
- E** Kalibrieren  
*Calibration*  
 Calibration  
*Calibrazione*  
 Calibración



CD

- Installation Manual Measuring Cycles
  - German: PDF
  - English: PDF
- Measuring Cycles
  - TNC 426\_430: Zip
  - iTNC 530: Zip
- Programming Manual Measuring Cycles
  - Czech: PDF
  - Danish: PDF
  - Dutch: PDF
  - English: PDF
  - French: PDF
  - German: PDF
  - Italian: PDF
  - Portuguese: PDF
  - Polish: PDF
  - Spanish: PDF

A.1



Orientierung zu den Achsen und zur Spindel. Vollständiges Durchfahren des Laserstrahls muss mit dem größten Werkzeug möglich sein. Sender und Empfänger lagestabil und vibrationsfrei an der Maschinenstruktur befestigen.

Vor Kühlmittel und Späneflug schützen sowie die Leitungen geschützt im Befestigungsflansch verlegen.

*Orient to the axes and spindle. Ensure complete freedom of travel with the largest tool.*

*Fasten the transmitter and receiver to the machine structure to ensure position stability and freedom from vibration.*

*Protect from coolant and flying chips, and configure the cable in the protecting mounting flange.*

Orientation par rapport aux axes et à la broche. Le passage complet du faisceau laser doit être possible avec l'outil le plus important.

Fixer l'émetteur et le récepteur de manière stable et sans vibrations sur la structure de la machine.

Assurer une protection contre le liquide de refroidissement et les projections de copeaux et disposer les conducteurs dans la bride de fixation en les protégeant.

*Orientamento agli assi e al mandrino. Possibilità di attraversamento completo del raggio laser con l'utensile di maggiori dimensioni.*

*Fissare trasmittente e ricevente in posizione stabile e priva di vibrazioni sulla struttura della macchina.*

*Proteggere da refrigerante e trucioli nonché posare i cavi in posizione sicura nella flangia di fissaggio.*

Orientación respecto de los ejes y del cabezal. Debe ser posible cruzar de forma completa el rayo láser con la mayor de las herramientas.

Fijar el emisor y el receptor de forma estable y libre de vibraciones a la estructura de la máquina.

Proteger del refrigerante y virutas, e instalar los cables de forma protegida dentro del cono de sujeción.

## A.2

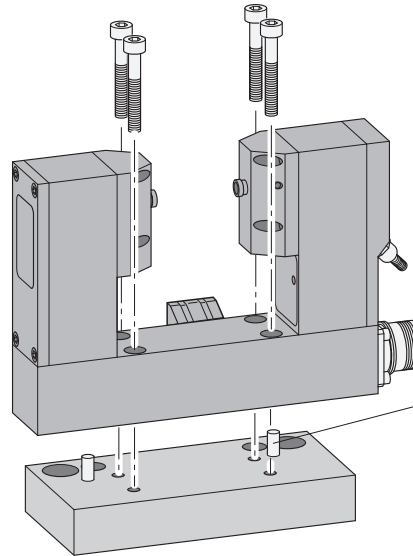
Option TL Micro mit seitlichem Kabelausgang:  
Montage mit Befestigungsplatte

*Option for TL Micro with lateral cable outlet:  
Fastening plate for mounting*

Option TL avec sortie de câble latérale:  
Montage avec plaque de fixation

*Opzione TL Micro con uscita cavo laterale:  
montaggio con piastra di fissaggio*

Opción TL Micro con salida de cable lateral:  
Montaje con pletina de sujeción



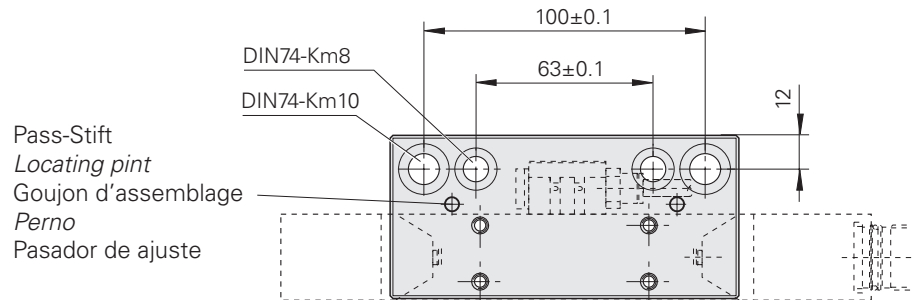
Auf Anschlag der  
Pass-Stifte achten!

*Ensure that the locating pins  
are completely inserted!*

Attention à la butée  
des goujons d'assemblage!

*Prestare attenzione alla  
battuta dei perni!*

¡Observar el tope del  
pasador de ajuste!!



**B**

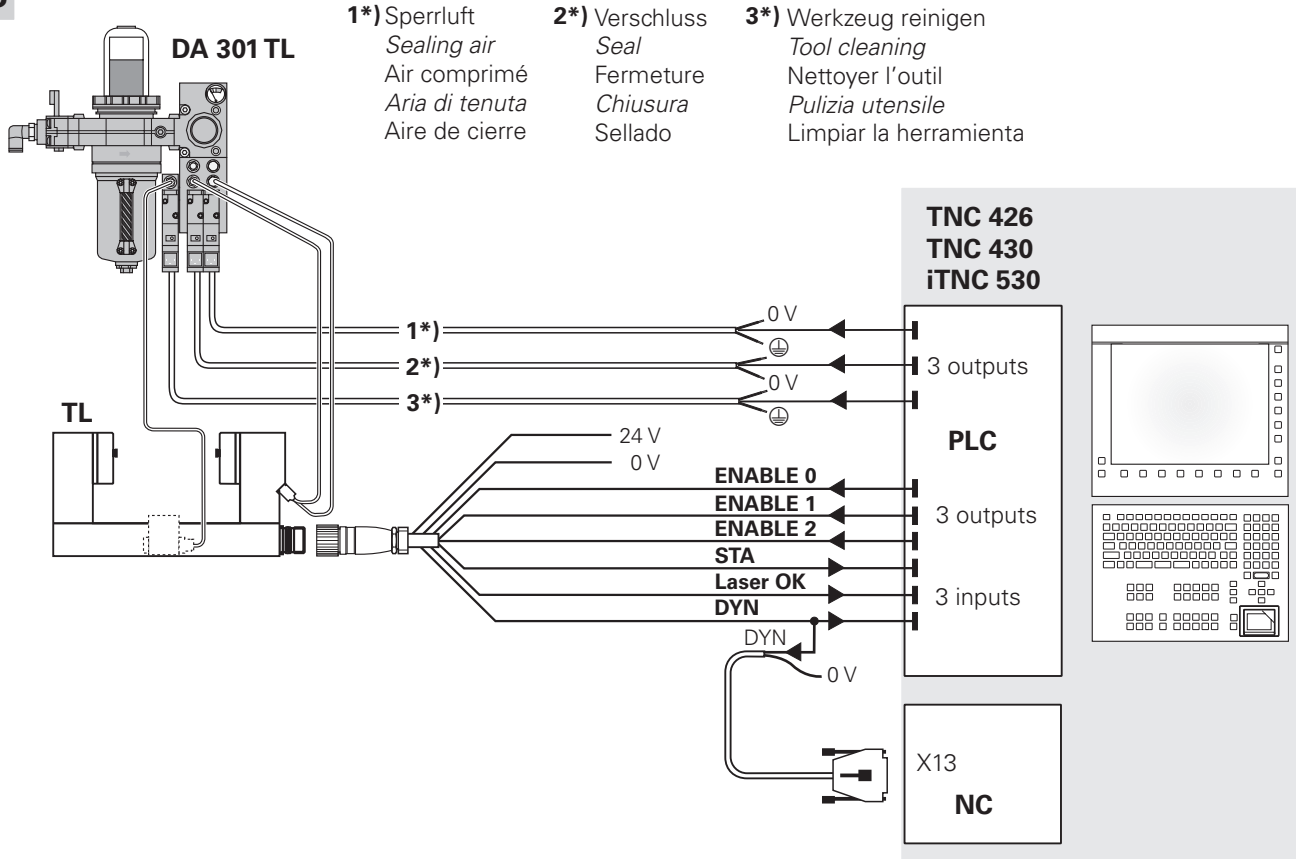


Montageanleitung DA 301TL beachten!  
*Refer to the Mounting Instructions for the DA 301TL!*  
Consulter les Instructions de montage DA 301TL!  
*Attenersi alle istruzioni di montaggio DA 301TL!*  
¡Prestar atención a las instrucciones de montaje del DA 301TL!

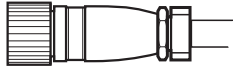


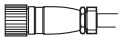

Vorhandene Schraubverschlüsse dürfen nicht gegen Schnellverschlüsse ausgetauscht werden!  
*Existing screw caps must not be replaced by quick-release fasteners!*  
Les raccords à vis existants ne doivent pas être remplacés par des raccords rapides!  
*I tappi a vite presenti non devono essere sostituiti con tappi a chiusura rapida.*  
¡Los racores existentes no pueden ser sustituidos por racores de enchufe rápido!



**C**











	2	1	4	12	6	3	5	7
	<b>Up 24 V</b>	<b>0V</b>	<b>ENABLE 0</b>	<b>ENABLE 1</b>	<b>ENABLE 2</b>	<b>DYN</b>	<b>STA</b>	<b>Laser OK</b>
	br BN	ws WH	ge YL	rs PK	vio VI	gn GN	gr GY	bl BL

<b>PLC – TNC (X13)</b>	<b>Input</b>	
	<b>DYN</b>	<b>0V</b>
	 br BN	 ws WH

<b>Schaltventile zur DA 301 TL</b> <b>Switchover valve to DA 301 TL</b> <b>Valves de commande vers DA 301 TL</b> <b>Valvole di comando per DA 301 TL</b> <b>Electroválvulas para el DA 301 TL</b>	<b>Output</b>		
	<b>1)</b>	<b>0V</b>	<b>2)</b>
	 sw BK	 sw BK	 gegn YL/GN 

1) Schaltsignal  
 Switching signal  
 Signal de commutation  
 Segnale di comando  
 Señal de contacto

2) Schutzleiter  
 Ground  
 Conducteur terre  
 Conduttore di protezione  
 Conexión a tierra



Bei Verwendung einer PLC-Leistungsplatine (PLC 5xx) sind evtl. Leistungswiderstände notwendig.  
Siehe CD: "Installation Manual Measuring Cycles", Kap. 2.3.

*Power resistors may be required if a PLC Input/output unit (PLC 5xx) is used.  
See CD: "Installation Manual Measuring Cycles", chapter 2.3.*

En cas d'utilisation d'une platine de puissance automate (PLC 5xx), des résistances de puissance peuvent s'avérer nécessaires;  
Cf. CD: „Installation Manual Measuring Cycles“, chap. 2.3.

*In caso di impiego di una scheda PLC (PLC 5xx) sono necessarie eventuali resistenze di potenza,  
vedi anche cap. 2.3 delle "Installation Manual Measuring Cycles", su CD.*

Al utilizar una pletina de autómatas PLC (PLC 5xx) son necesarias eventualmente resistencias de potencia.  
Ver CD: "Installation Manual Measuring Cycles", cap. 2.3.



CD

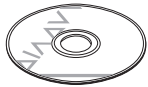
— Installation Manual Measuring Cycles

├ German: PDF

└ English: PDF

## D

Siehe CD: "Installation Manual Measuring Cycles", Kap. 3  
*See CD: "Installation Manual Measuring Cycles," chapter 3*  
Cf. CD: „Installation Manual Measuring Cycles“, chap. 3  
*Vedi CD: "Installation Manual Measuring Cycles", cap. 3*  
Ver CD: "Installation Manual Measuring Cycles", cap. 3



CD

- Installation Manual Measuring Cycles
  - German: PDF
  - English: PDF
- Measuring Cycles
  - TNC 426\_430
  - iTNC 530

**E**  Unter folgenden Umständen muss das Lasermess-System neu kalibriert werden:

- nach einer Inbetriebnahme, Reinigung oder Justage der Lasermess-Systems
- direkt vor präzisen Messungen

*The laser measuring system must be recalibrated under the following circumstances:*

- *After initial servicing, cleaning or adjustment*
- *Immediately before precision measurements*

Le système de mesure laser doit être recalibré dans les circonstances suivantes:

- après mise en route, nettoyage ou réglage du système de mesure laser
- directement avant d'effectuer des mesures précises

*Il sistema di misura laser deve essere ricalibrato in presenza delle seguenti condizioni:*

- *dopo una messa in funzione, pulizia o taratura del sistema di misura laser,*
- *direttamente prima di misurazioni precise.*

Bajo las siguientes circunstancias debe calibrarse de nuevo el sistema de medición láser:

- después de una puesta en marcha, limpieza o ajuste del sistema de medición láser
- directamente antes de mediciones precisas

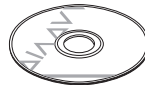
Siehe CD: "Programming Manual Measuring Cycles

See CD: "Programming Manual Measuring Cycles

Cf. CD: „Programming Manual Measuring Cycles

Vedi CD: "Programming Manual Measuring Cycles

Ver CD: "Programming Manual Measuring Cycles



CD

— Programming Manual Measuring Cycles

- Czech: PDF
- Danish: PDF
- Dutch: PDF
- English: PDF
- French: PDF
- German: PDF
- Italian: PDF
- Portuguese: PDF
- Polish: PDF
- Spanish: PDF



**U<sub>p</sub> = 24 V**

(max. 160 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)

### Eingangssignale

Rechteck-Signale 24 V–

- Freigabe Sender ENABLE 0
- Freigabe 1 Empfänger ENABLE 1
- Freigabe 2 Empfänger ENABLE 2

### Ausgangssignale

Rechteck-Signale 24 V–

- Schaltsignal dynamisch DYN
- Schaltsignal statisch STA
- Laser in Ordnung LASER OK

### Segnali in ingresso

Segnali a onda quadra 24 V–

- Abilitazione trasmittente ENABLE 0
- Abilitazione 1 ricevente ENABLE 1
- Abilitazione 2 ricevente ENABLE 2

### Segnali in uscita

Segnali a onda quadra 24 V–

- Segnale di comando dinamico DYN
- Segnale di comando statico STA
- Laser in perfette condizioni LASER OK

### Input signals

Square-wave signals 24 Vdc

- Transmitter release ENABLE 0
- Receiver release 1 ENABLE 1
- Receiver release 2 ENABLE 2

### Output signals

Square-wave signals 24 Vdc

- Dynamic switch signal DYN
- Static switch signal STA
- Laser functions OK LASER OK

### Señales de entrada

Señales cuadradas 24 V–

- Liberación emisor ENABLE 0
- Liberación 1 receptor ENABLE 1
- Liberación 2 receptor ENABLE 2

### Señales de salida

Señales cuadradas 24 V–

- Señal de conmutación dinámica DYN
- Señal de conmutación estática STA
- Láser en correcto funcionamiento LASER OK

### Signaux en entrée

Signaux rectangulaires 24V–

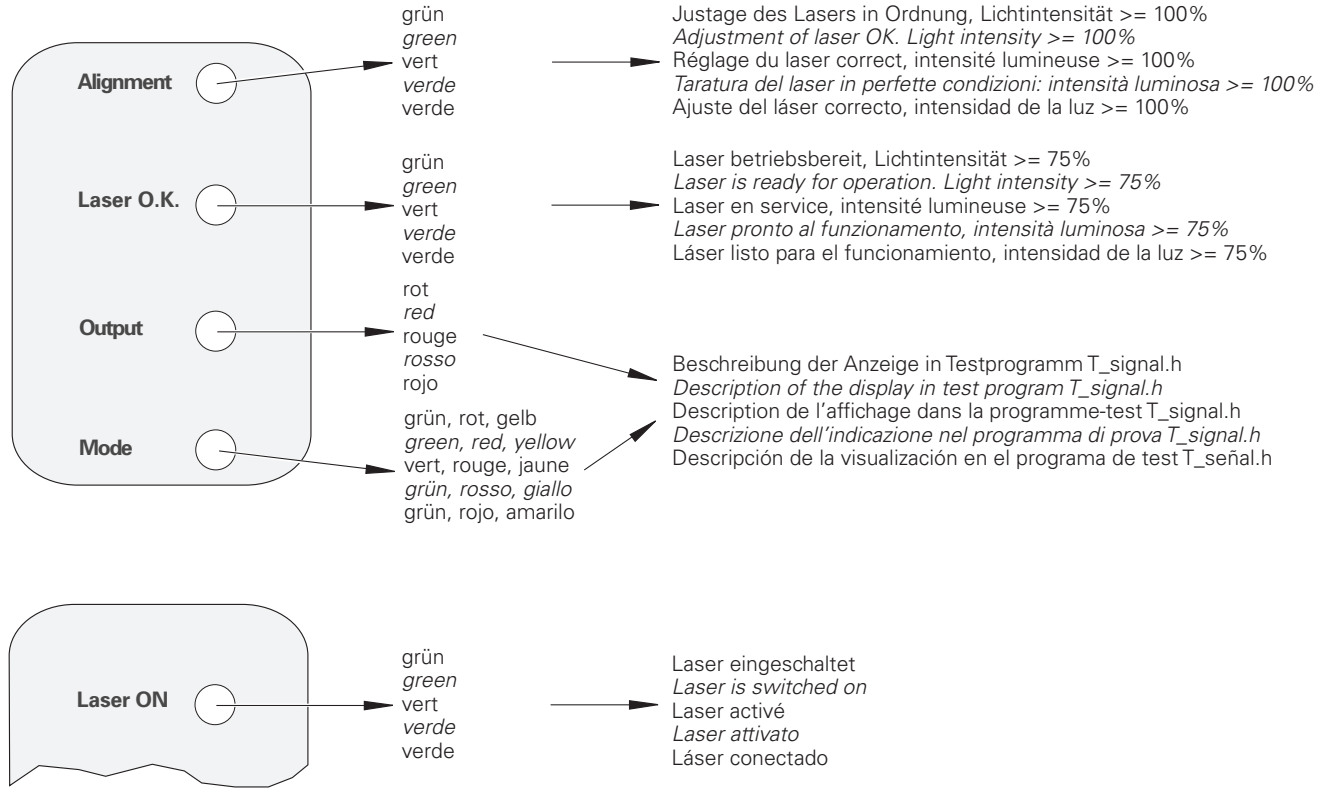
- Activation émetteur ENABLE 0
- Activation 1 récepteur ENABLE 1
- Activation 2 récepteur ENABLE 2

### Signaux de sortie

Signaux rectangulaires 24V–

- Signal de commutation dynamique DYN
- Signal de commutation statique STA
- Laser en service LASER OK

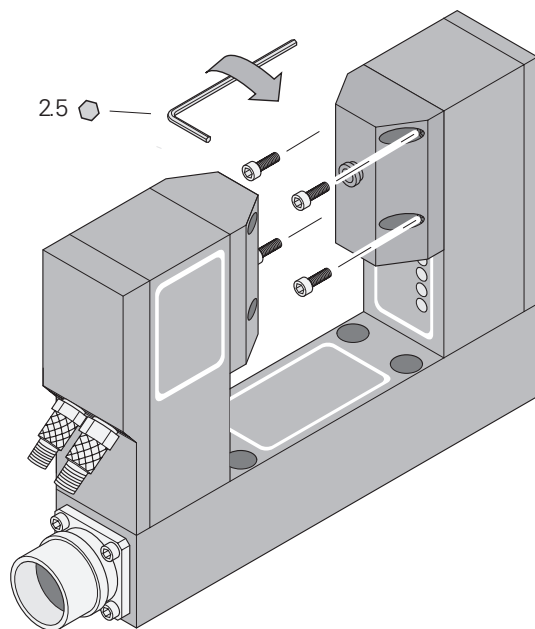
Statusanzeigen LED · LED status displays · Affichages d'état LED · Indicatori di stato LED · LED de visualizaciones de estado



1.



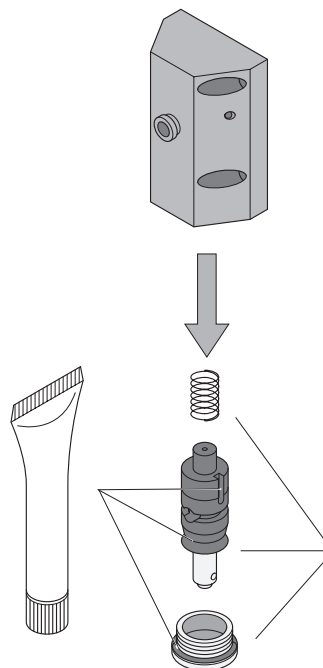
Laser deaktivieren  
*Deactivate the laser*  
Désactiver le laser  
*Disattivare il laser*  
Desactivar el láser



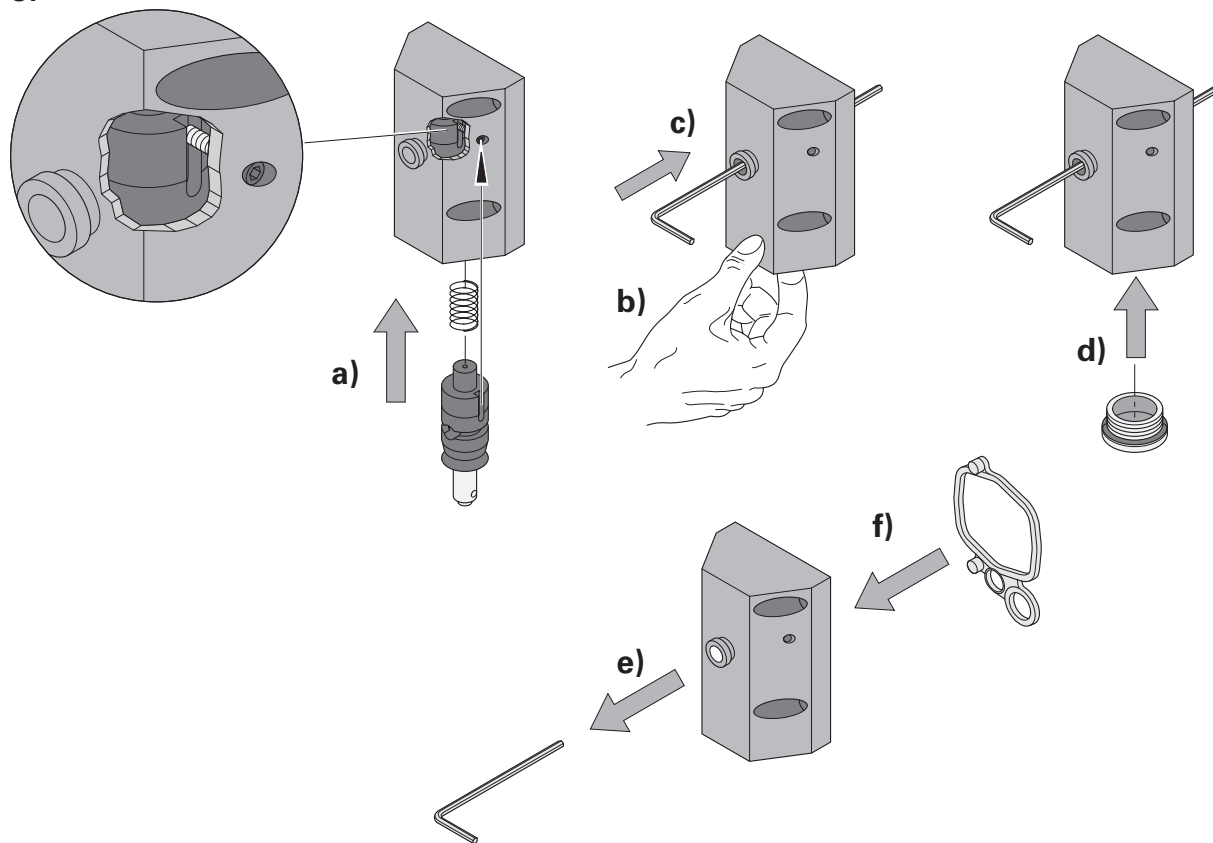
2.

Teile reinigen (empfohlenes Reinigungsspray OKI 2611) und fetten  
*Clean the parts (recommended cleaning spray: OKI 2611) and lubricate with grease*  
Nettoyer les pièces (spray nettoyant OKI 2611 recommandé) et les graisser  
*Pulire i componenti (detergente spray consigliato OKI 2611) e ingrassare*  
Limpiar las piezas (spray recomendado OKI 2611) y engrasarlas

Fett  
*Fat*  
Graisse  
*Grasso*  
Engrasante



3.





## 5.

Funktionskontrolle der Schutzblende

*Functional check of the contamination shutter*

Contrôle du fonctionnement de l'écran de protection

*Controllo funzionale del pannello protettivo*

Control de funcionamiento del panel de protección

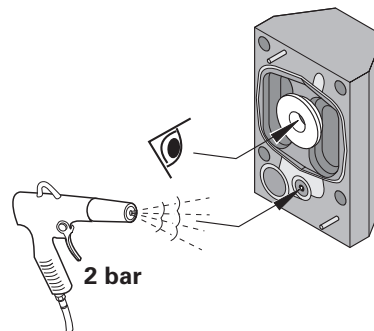
Sichtkontrolle, bei 2 bar muss die Schutzblende öffnen

*Visual check. The shutter must open at 2 bar*

Contrôle visuel, le cache doit s'ouvrir à 2 bars

*Controllo visivo. A 2 bar il parzializzatore si deve aprire*

Control visual. El cierre debe abrirse a 2 bar.



Druckluft! Alle Verschraubungen und Dichtungen prüfen!

Sicherheitsvorschriften beachten!

*Compressed air! Check all seals and screw fasteners!*

*Comply with the safety regulations!*

Air comprimé! Vérifier tous les raccords et joints!

fehlt

*Aria compressa! Controllare tutti i collegamenti a vite e tutte le guarnizioni!*

*Attenersi alle norme di sicurezza!*

¡Aire comprimido! ¡Comprobar todos los racores y juntas!

¡Tener en cuenta las normas de seguridad!

## 6.

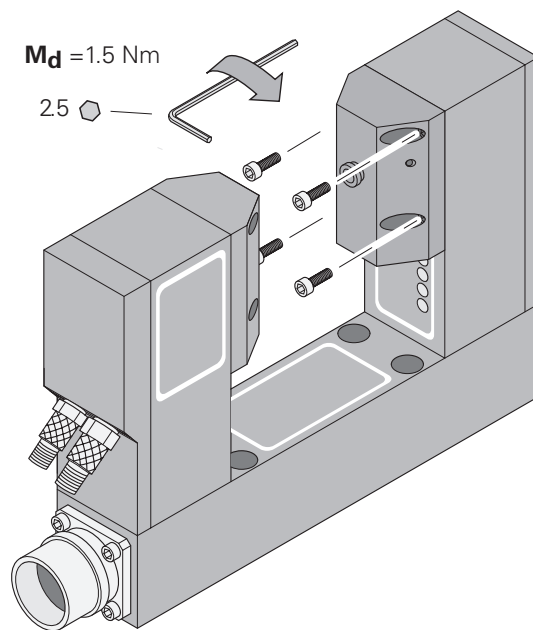
Wechselseitiges Anziehen der Schrauben beachten!

*Remember to tighten the screws crosswise!*

Attention au serrage latéral des vis!

*Osservare il serraggio alternato delle viti!*

¡Tener en cuenta el par de apriete alternativo de los tornillos!



# HEIDENHAIN

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