

EQI 1329

Specifications

Dimensions

Mounting

Accessories

Absolute Multiturn Encoder for Servo Drives


Mechanical design	Outside diameter 65 mm Blind hollow shaft or taper shaft Integration stage II
Absolute position values	131 072 positions per revolution 4096 distinguishable revolutions EnDat interface
Incremental signals	32 signal periods $\sim 1V_{PP}$
Special features	<ul style="list-style-type: none"> • For installation in synchronous and asynchronous motors • High torsional rigidity of shaft coupling



Specifications

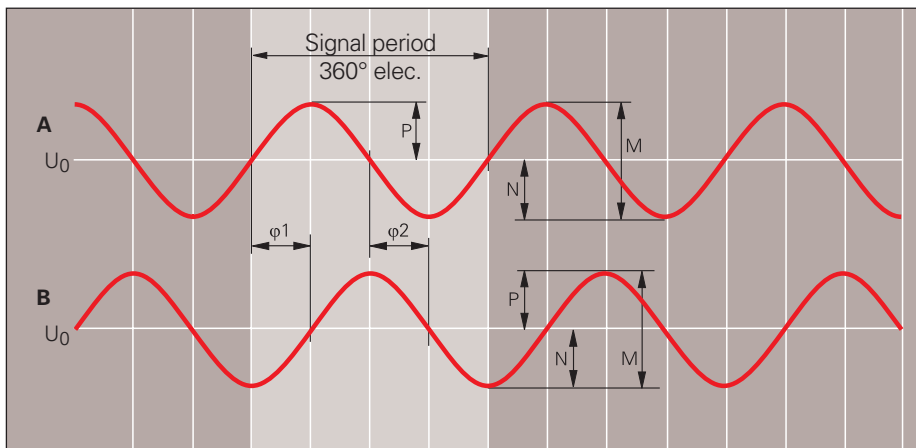
		EQI 1329	
Absolute position values¹⁾	131 072 positions per revolution 4096 distinguishable revolutions		
Interface	EnDat		
Code	Pure binary		
Electrically permissible speed for absolute position value with only serial data evaluation	5 000 rpm with ± 40 LSB accuracy 12 000 rpm with ± 56 LSB accuracy		
Incremental signals A, B	$\sim 1 V_{PP}$ (see also next page) 2 sinusoidal signals A and B		
Signal periods/Accuracy	32/± 280"		
Cutoff frequency -3 dB	≥ 6 kHz		
Power supply	5 V ± 5% max. 170 mA		
Electrical connection	PCB connector, 12-pin		
Max. cable length to subsequent electronics	150 m (at 300 kHz clock frequency)		
Shaft/Moment of inertia of rotor	Taper shaft Ø 9.25 mm Hollow shaft Ø 12.0 mm Ø 12.5 mm Ø 12.7 mm Ø 16.0 mm Ø 16.0 mm	Taper Length	$1:10/1.80 \times 10^{-6} \text{ kgm}^2$ $5 \text{ mm}/2.25 \times 10^{-6} \text{ kgm}^2$ $5 \text{ mm}/2.25 \times 10^{-6} \text{ kgm}^2$ $5 \text{ mm}/2.25 \times 10^{-6} \text{ kgm}^2$ $5 \text{ mm}/2.10 \times 10^{-6} \text{ kgm}^2$ $9 \text{ mm}/2.50 \times 10^{-6} \text{ kgm}^2$
Mech. permissible speed	≤ 12 000 rpm		
Permissible axis motion of measured shaft	-0.2/+0.4 mm with 0.5 mm scanning gap		
Vibration 55 to 2000 Hz Shock 6 ms	$\leq 100 \text{ m/s}^2$ (IEC 60 068-2-6) $\leq 1000 \text{ m/s}^2$ (IEC 60 068-2-27)		
Max. operating temperature	115 °C (239 °F)		
Min. operating temperature	-20 °C (-4 °F)		
Protection IEC 60 529	IP 20		
Weight	Approx. 0.13 kg (4.6 oz)		

1) Encoders with analog signals are to be operated with a minimum scanning cycle of 2 ms.
Encoders without analog signals require a scanning cycle of less than 800 µs

Incremental signals

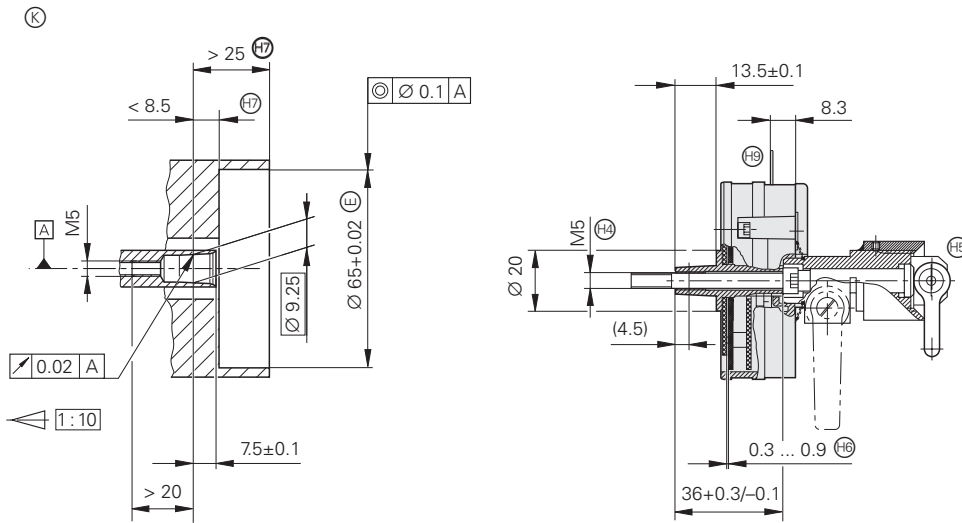
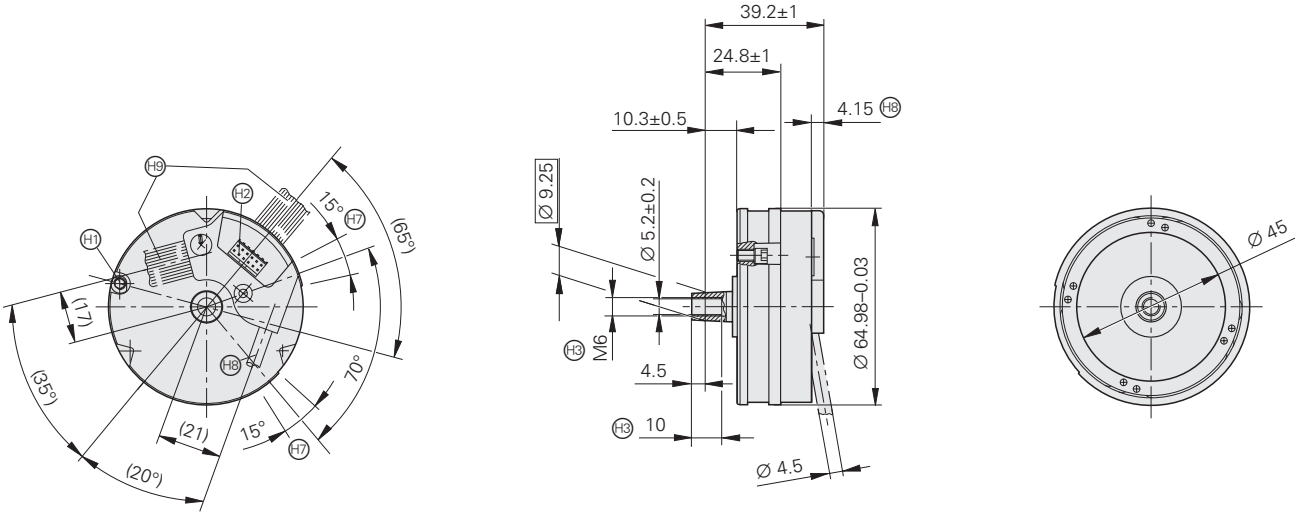
2 sinusoidal signals A and BSignal level M : $0.86 V_{PP}$ to $1.14 V_{PP}$ typically $1 V_{PP}$

Asymmetry

IP – NI / 2 M 0.009Amplitude ratio M_A/M_B : 0.95 to 1.05Phase angle $|\varphi_1 + \varphi_2| / 2$: $90^\circ \pm 3^\circ$ elec.**Amplitude control**

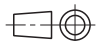
The amplitude control compensates the internal signal level changes so that they do not influence the signal level M of the output signals. The amplitude control can readjust from -45% to $+70\%$. To attain optimum output signals, it should be ensured during encoder installation that the adjusting control remains within ± 2 control steps of the nominal value. This can be achieved by correctly setting the scanning gap. (Compare "Mounting" on pages 6, 7.)

Dimensions of taper shaft



	Id. Nr.	Power supply
EQI 1329	359 154-08	5 V
	359 224-02	7 to 10 V

Dimensions in mm

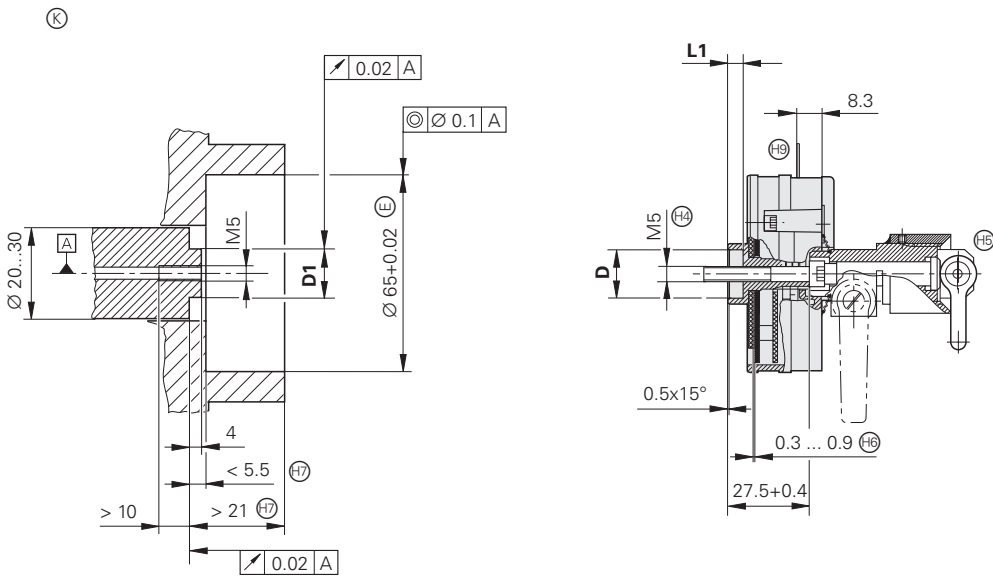
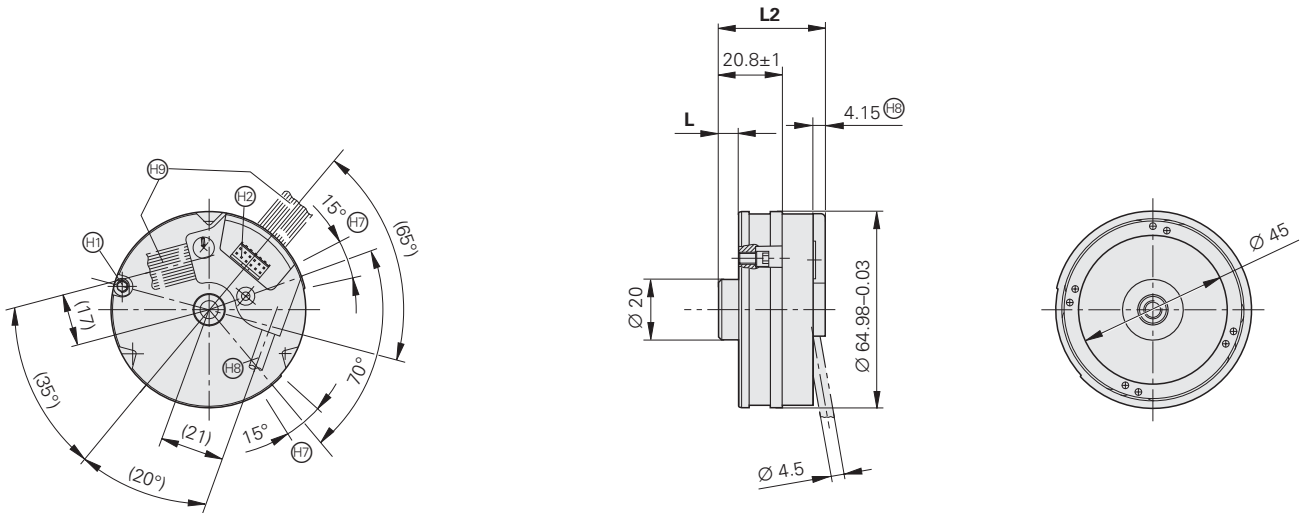


Tolerancing ISO 8015
ISO 2768 - m H

- [A] = Bearing of mating shaft
- (K) = Required mating dimensions
- (H1) = Mounting screw
- (H2) = Plug connector 12-pin
- (H3) = Back-off thread M6
- (H4) = Screw M5 x 50 ISO 4762

- (H5) = Setting tool for scanning gap
- (H6) = Permissible scanning gap range over all operating conditions
- (H7) = Clamping area
- (H8) = Cable exit for round cable
- (H9) = Cable exit for ribbon cable

Dimensions of hollow shaft



	Id. Nr.	Power supply	L	L1	L2	D	D1
EQI 1329	359154-07	5 V	6.4	5	35.25	12.7G6	12.7h6
			11.4	9	40.25	16G6	16h6
			6.4	5	35.25	16G6	16h6
			6.4	5	35.25	12G6	12h6
			6.4	5	35.25	15G6	15h6
	359224-03	7 to 10 V	6.5	5	35	12G6	12h6

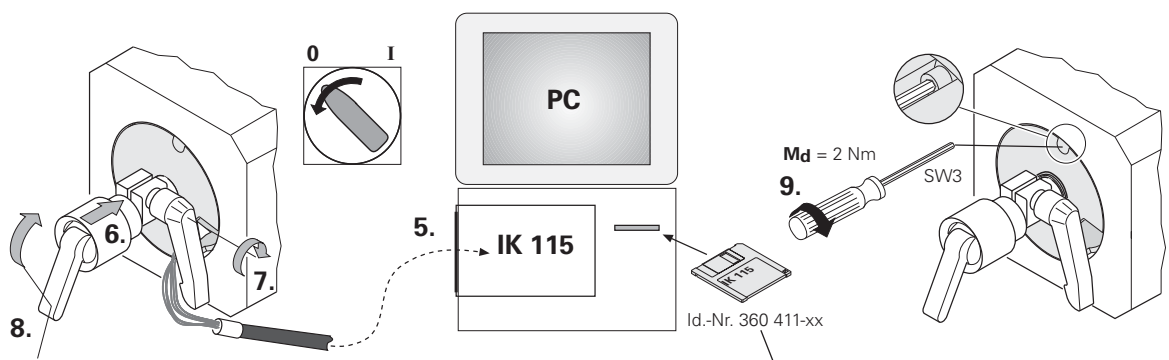
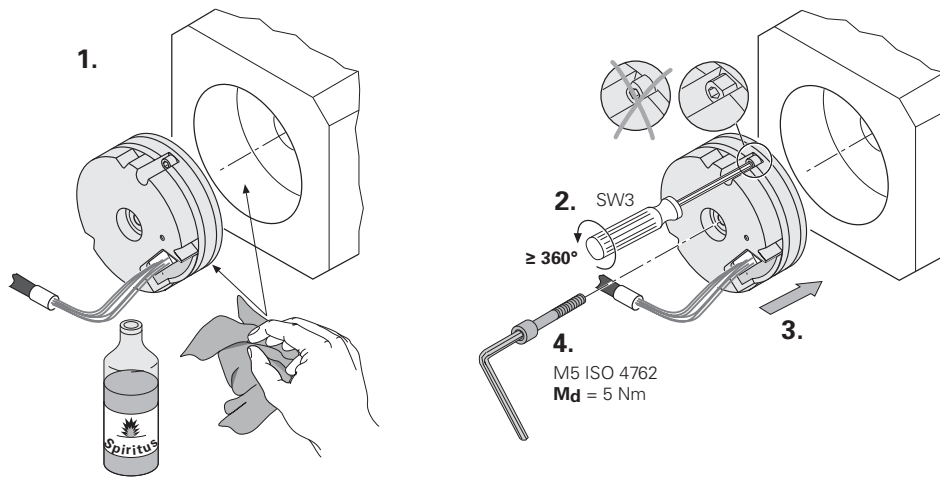
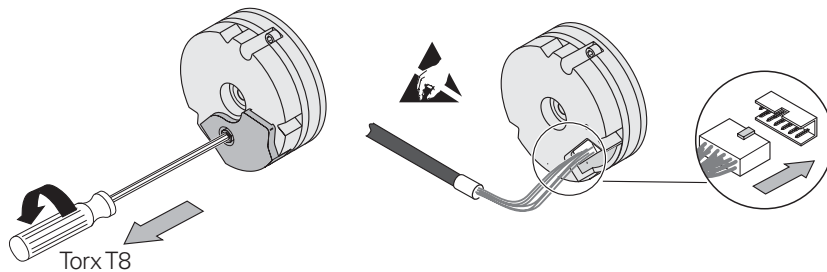
Dimensions in mm

Tolerancing ISO 8015
 ISO 2768 - m H

- Ⓐ = Bearing of mating shaft
- Ⓚ = Required mating dimensions
- Ⓜ = Mounting screw
- Ⓝ = Plug connector 12-pin
- Ⓟ = Back-off thread M6
- Ⓠ = Screw M5 x 50 ISO 4762

- Ⓢ = Setting tool for scanning gap
- Ⓣ = Permissible scanning gap range over all operating conditions
- Ⓡ = Clamping area
- Ⓤ = Cable exit for round cable
- Ⓥ = Cable exit for ribbon cable

Mounting



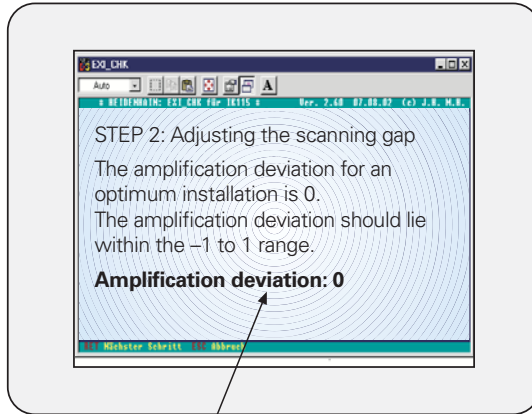
Use the lever to bring the amplification differences to within the tolerance range.

Note: Make sure the connector is in perfect condition

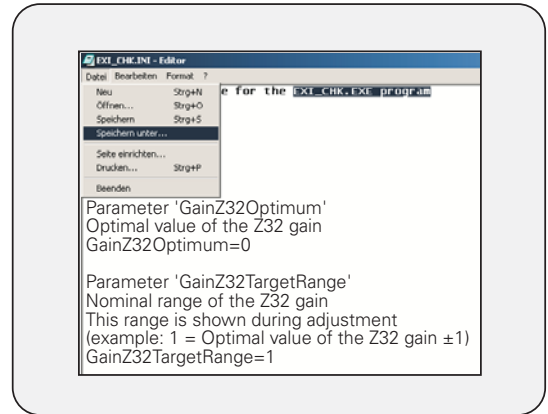
EXI_CHK.EXE installation software

Please always use the current EXI_CHK.EXE installation software. You will find it on the HEIDENHAIN home page www.heidenhain.de under: *Service>Download-Bereich>Diagnose Sets>Encoder Support>ECI/EQI/ProfiBus/progSSI>Software>ECI/EQI Encoders Test/Adjust Software - 360411xx*

Mounting



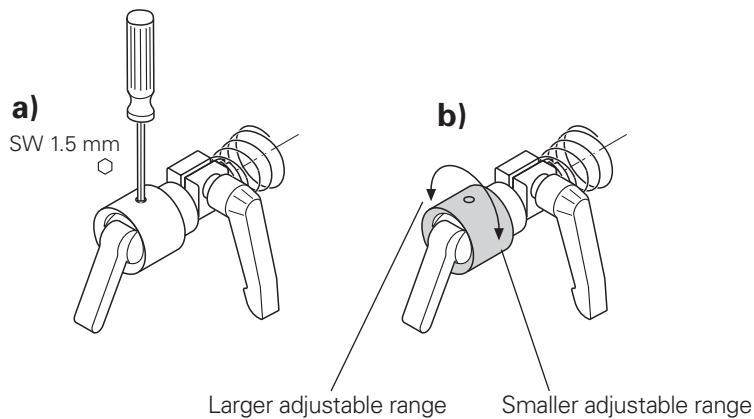
Standard: 0



Other defaults:

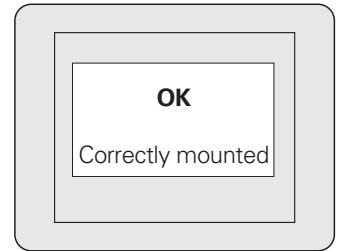
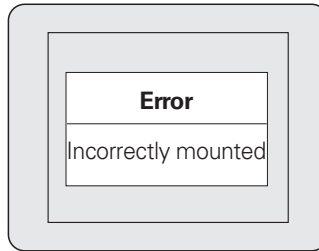
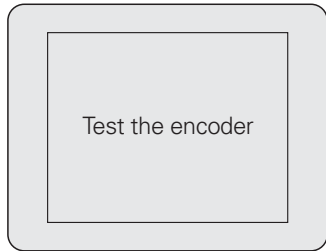
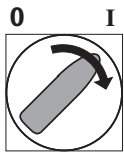
HEIDENHAIN Traunreut will inform you of other defaults for the amplification deviation. Save a new value with the EXI_CHK.INI editor, and start EXI_CHK again.

If the tolerance range cannot be reached, (a) release the setscrew using the adjusting aid, and (b) turn the setting ring. Repeat adjustment of the scanning gap.



Mounting

Inspection of mounting



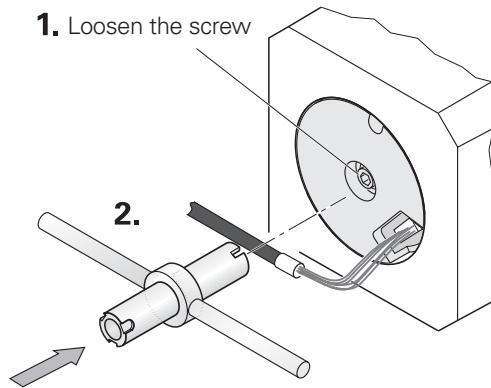
Turn motor shaft
3...5 revolutions
Approx. 6 rpm rotational speed

Repeat adjustment

Permissible readjustment in steps
MIN: -2
MEDIUM: 0
MAX: +2

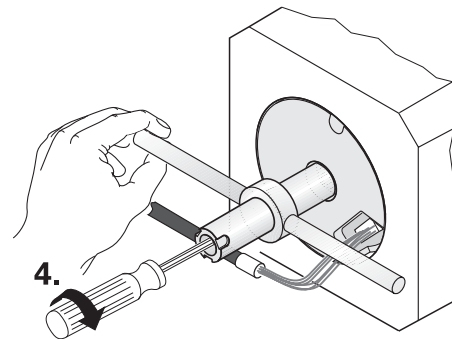
Datum adjustment (physical)

1. Loosen the screw



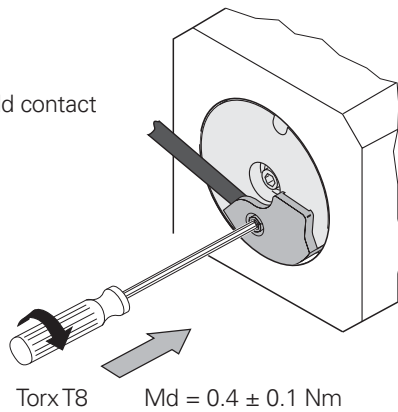
Id.-Nr. 352 481-02

3. Rotate the shaft counterclockwise until the angular value of the encoder is correct for motor commutation

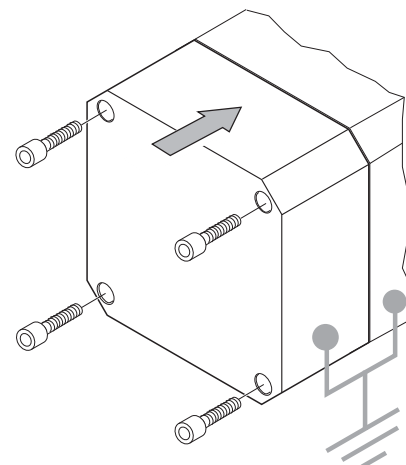


Md = 5 Nm

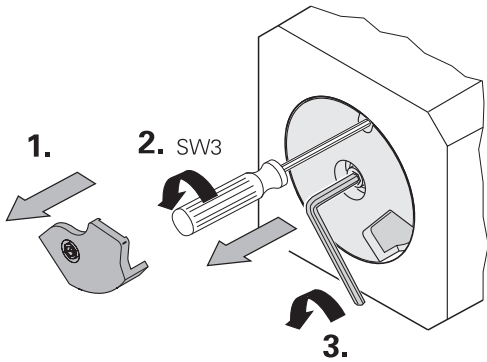
Ensure shield contact



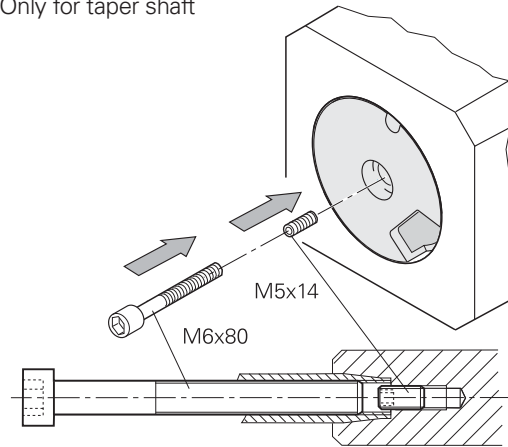
Torx T8 Md = 0.4 ± 0.1 Nm



Removal



Only for taper shaft



Accessories

Mounting package

Id. Nr. 361 037-xx
Includes:

Mounting aid

For adjusting the rotor position to the motor emf
Id. Nr. 352 481-02

Adjustment aid

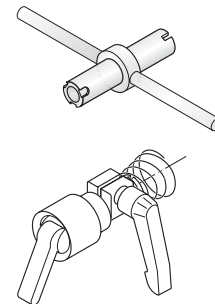
For setting the scanning gap
Id. Nr. 335 529-xx

PC software

Supports installation of the ECI 1317
Id. Nr. 360 411-xx

Connecting cable for IK 115

Id. Nr. 360 964-02



IK 115

PC adapter card for inspecting an absolute HEIDENHAIN encoder with EnDat interface or SSI interface.
Id. Nr. 344 777-xx






PC software

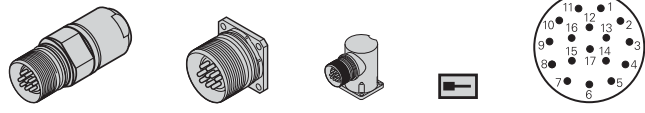

For support during installation of the EQI 1329
Id. Nr. 360 411-xx

Encoder input	1 x EnDat (absolute value and 1 V _{PP} incremental signals) or SSI for HEIDENHAIN encoders
Signal subdivision	Up to 1024-fold (for incremental signals)
Input frequency	Max. 400 kHz (incremental signal)
Interface	ISA bus
Dimensions	158 mm x 107 mm
Permissible cable length from encoder to IK	150 m (492 ft)
Software For Windows 95/98	Software included for testing and programming the encoder

Connecting elements and cables

Output cable complete with 12-pin PCB connector and right-angle socket, 17-pin		332 201-xx 16xAWG30/7; Crimp sleeve Ø 6 mm
Output cable with one connector with 12-pin PCB connector		332 202-xx 16xAWG30/7; Crimp sleeve Ø 6 mm
Adapter cable for IK 115		324 544-xx

Electrical connection

17-pin HEIDENHAIN coupling or flange socket						12-pin PCB connector 							
	Power supply					Incremental signals				Absolute position values			
	7	1	10	4	11	15	16	12	13	14	17	8	9
	1b	6a	4b	3a	/	2a	5b	4a	3b	6b	1a	2b	5a
	U_P	Sensor U _P	0V	Sensor 0V	Inside shield	A+	A-	B+	B-	DATA	DATA	CLOCK	CLOCK
	Brown/ Green	Blue	White/ Green	White	/	Green/ Black	Yellow/ Black	Blue/ Black	Red/ Black	Gray	Pink	Violet	Yellow

	Other signals	
	5	6
	-	-
	T⁺¹⁾	T⁻¹⁾
	Brown ¹⁾	White ¹⁾

Shield on housing; **U_P** = Power supply voltage; **T** = Temperature
Sensor: The sensor line is connected internally with the corresponding power line.
 Vacant pins or wires must not be used!

¹⁾ Only for motor-internal adapter cables

HEIDENHAIN

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For more information

- Brochure:
Position Encoders for Servo Drives