



Operating and Assembly Instructions

Incremental Hollow Shaft Encoder FGH 6

**Read the operating and assembly instructions prior to assembly, starting installation and handling!
Keep for future reference!**

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1 General

1.1 Information about the operating and assembly instructions

This operating manual provides important instructions for working with the device. It must be carefully read prior to starting all tasks, and the instructions contained herein must be followed.

In addition, applicable local regulations for the prevention of industrial accidents and general safety regulations must be complied with.

1.2 Scope of delivery

Incremental Hollow Shaft Encoder FGH 6, operating and assembly instructions.

1.3 Explanation of symbols

Warnings are indicated by symbols in this operating manual. The warnings are introduced by signal words that express the scope of the hazard.

The warnings must be strictly heeded; you must act prudently to prevent accidents, personal injury, and property damage.

**WARNING!**

Indicates a possible dangerous situation that can result in death or serious injury if it is not avoided.

**CAUTION!**

Indicates a possible dangerous situation that can result in minor injury if it is not avoided.

**CAUTION!**

Indicates a possible dangerous situation that can result in material damage if it is not avoided.

**NOTES!**

Indicates useful tips and recommendations as well as information for efficient and trouble-free operation.

**NOTES!**

Mounting and disassembly by means of a hammer or similar tools is not permitted (warranty void).

**DANGER!****Life threatening danger due to electric shock!**

Indicates life-threatening situation due to electric shock. If the safety instructions are not complied with there is danger of serious injury or death. The work that must be executed should only be performed by a qualified electrician.

1.4 Disclaimer

All information and instructions in this operating manual have been provided under due consideration of applicable guidelines, as well as our many years of experience.

The manufacturer assumes no liability for damages due to:

- Failure to follow the instructions in the manual
- Non-intended use
- Deployment of untrained personnel
- Opening of the device or conversions of the device

In all other aspects the obligations agreed in the delivery contract as well as the delivery conditions of the manufacturer apply.

1.5 Copyright



NOTE!

Content information, text, drawings, graphics, and other representations are protected by copyright and are subject to commercial property rights.

It is strictly forbidden to make copies of any kind or by any means for any purpose other than in conjunction with using the device without the prior written agreement of the manufacturer. Any copyright infringements will be prosecuted

1.6 Guarantee terms

The guarantee terms are provided in the manufacturer's terms and conditions.

1.7 Customer service

For technical information personnel are available that can be reached per telephone, fax, email, or via the Internet, see manufacturer's address on page 2.

2 Safety



This section provides an overview of all the important safety aspects that ensure protection of personnel, as well as safe and trouble-free device operation. If these safety instructions are not complied with significant hazard can occur.

2.1 Responsibility of the owner

The device is used in commercial applications. Consequently the owner of the device is subject to the legal occupational safety obligations and subject to the safety, accident prevention and environmental protection regulations that are applicable for the device's area of implementation.

2.2 Intended use

The device has been designed and constructed exclusively for the intended use described here.

Series FGH 6 incremental hollow-shaft encoders are used for measurement of rotations, for instance of electrical and mechanical drives and shafts.

Claims of any type due to damage arising from non-intended use are excluded; the owner bears sole responsibility for non-intended use.

2.3 Non- intended use

The device may not be used in explosion-threatened areas.

On the device no other mechanical load may be exercised except his dead weight and the oscillations without fail appearing during the company and pushes.

Examples of inadmissible mechanical charges (incomplete listing):

- Connection of transport or lifting means in the device, e.g., load hook for raising of an engine.
- Connection of packaging parts in the device, e.g., instep belts, tarpaulin, etc.
- Use of the device as a step, e.g., for going up of a person on an engine.

2.4 Personal protective equipment

For tasks such as assembly, disassembly or commissioning the use of personal protective equipment such as safety footwear and protective work clothing is required.

The regulations specified by the owner and that are locally specified apply.

2.5 Personnel

Only skilled technical staff is allowed to perform installation, mounting, disassembly and commissioning work.

2.6 Special dangers

Residual risks that have been determined based on a risk analysis are cited below.

2.6.1 Electrical current



DANGER!

Life threatening danger due to electrical shock!

There is an imminent life-threatening hazard if live parts are touched. Damage to insulation or to specific components can pose a life-threatening hazard.

Therefore:

Immediately switch off the device and have it repaired if there is damage to the insulation of the power supply.

De-energize the electrical equipment and ensure that all components are connected, for all tasks on the electrical equipment.

Keep moisture away from live parts. Moisture can cause short circuits.

2.6.2 Rotating shafts



WARNING!

Danger of injury due to rotating shafts!

Touching rotating shafts can cause serious injuries.

Therefore:

Do not reach into moving parts/shafts or handle moving parts/shafts during operation.

Do not open covers during operation. Prior to opening the covers ensure that all parts have come to a standstill.

2.6.3 Safeguarding against restart



DANGER!

Life-threatening danger if restarted without authorization!

When correcting faults there is danger of the power supply being switched on without authorization.

This poses a life-threatening hazard for persons in the danger zone.

Therefore:

Prior to starting work switch off the system and safeguard it from being switched on again.

3 Technical Data

3.1 Type plate

Type plate example:



The type plate is located on the side of the housing and contains the following information:

- Manufacturer, address
- Type
- CE-mark
- Serial number (S/N)
- Year of construction
- Pulse rate
- Degree of protection
- Supply voltage

3.2 Electrical and mechanical data

Pulse rates		Value		
Preferred pulse rates (nickel disks)		1024, 2000		
Pulse rates available		512, 1000, 1200, 1800, 2048, 2500		
Connection data				
Supply voltage		12 ... 30 V DC (Option: 5 VDC)		
No load-current		approx. 100 mA at 30 V (without Option)		
Outputs		Differential line-driver, resistant to sustained short-circuit, current limited, short-circuit.		
Pulse height (HTL)		approx. as supply voltage		
Internal resistance		50 Ω per output		
Pulse height (TTL)		5 V to RS 422		
Slew rate		50 V / μs		
Pulse duty factor		1 : 1 ± 5 %		
Square wave displacement 0°, 90°		to 50 KHz < 3 % to 150 KHz < 5 %		
Max. frequency		0 to 100 kHz. (to 150 kHz on request)		
Encoder temperature ranges				
Standard		0°C ... + 70°C		
Special temperature		-25°C ... + 85°C		
Special output voltage 5V (TTL)				
Pulse height		5V, RS422 compatible (TIA/EIA-Standard)		
Supply voltage		12 ... 30 V DC		
Protection class DIN EN 60529	Sealing	Mechanical speed	Description	Breakaway torque
IP 54	Special seal	≤ 4000 rpm	Protection against dust and water spray	approx. 30 to 50 Ncm
IP 66 only drive side	Radial shaft seal	≤ 1500 rpm	Protection against dust and water spray	approx. 60 Ncm
IP 66 both sides	Radial shaft seal	≤ 1100 rpm	Protection against dust and water spray	approx. 70 Ncm
Weight	Type K Type KK			6 kg 6,8 kg

Signal outputs																
<p>Basic version (n = pulses/revolution). One pulse channel (basic) with n direct square wave pulses, corresponding to the segment division and LED monitoring output.</p>																
<p>Option 90 2nd pulse channel as basic version, bit with 90° electrical phase shift.</p>																
<p>Option N Marker pulse, mechanically fixed. One square wave pulse per revolution.</p>																
<p>Option G Additional inverted output signals for basic and 90° channels, marker pulse puls LED check.</p>																
<p>Option F With 2 or 4 times as many pulses as basic version, No direction of motion can be derived from the multiple number of pulses. Required: option 90°</p>																
<p>Option B Fast and precise sensing of rotational direction at each edge of the basic and 90° channels. Required: option 90°.</p>	<p style="text-align: center;">Output</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>L</th> <th>R</th> <th></th> </tr> </thead> <tbody> <tr> <td>cw</td> <td>0</td> <td>1</td> <td rowspan="2" style="text-align: center;">Option B, B2</td> </tr> <tr> <td>ccw</td> <td>1</td> <td>0</td> </tr> <tr> <td>Still stand</td> <td>0</td> <td>0</td> <td style="text-align: center;">Option B2</td> </tr> </tbody> </table>		L	R		cw	0	1	Option B, B2	ccw	1	0	Still stand	0	0	Option B2
	L	R														
cw	0	1	Option B, B2													
ccw	1	0														
Still stand	0	0	Option B2													
<p>Option B2 As option B, but with standstill sensing.</p>																
<p>Option V Electronic pulse doubling of basic and 90° channels by multiple evaluation.</p>																
<p>Option L2 Power output up to 150 mA for basic channel, 90° channel and the corresponding inverted signals.</p>																
<p>Option J Reduced rotational frequency modulation by means of optically adjusted pulse disk.</p>																
<p>Option S Electronic overspeed switch with 2 programmable switching outputs, EGS4 version (see operating and assembly instructions EGS 4)</p>																

3.3 Type code

	FGH	I	6	K	1000	G	90 G	NG	2F	S	J	/50P
Incremental Hollow Shaft Encoder												
Synthetic bushing												
Series												
Connection K: Terminal box S: Industrial plug R: 12 pole. round plug C: 2 m connection cable L: fiber optics- technic 2x connection = redundant Encoder or Encoder with Option S e.G.. KK = 2 terminal boxes												
Pulses per revolution												
Basic signal output Basic channel 0° (A) Pulse channel 90° (B) Each with inverted signals												
Reference pulse with inverted signal 2 F: Option 2F 4 F: Option 4F B: Option B B2: Option B2 S: Option S EGS® 4 Technic 2nd terminal box L2: Option L2												
V: Option V J: Option J can be combined with V												
Drive shaft connection P: keyway S: pressure sleeve C: taper												

4 Transport, packaging and storage

4.1 Safety instructions for transport



CAUTION!
Improper transport can cause property damage!

4.2 Incoming goods inspection

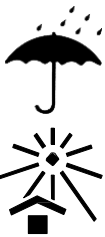
Check delivery immediately upon receipt for completeness and possible transport damage.

Inform the forwarder directly on receipt of the goods about existing transport damages (prepare pictures for evidence).

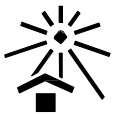
4.3 Packaging / (disposal)

The packaging is not taken back and must be disposed of in accordance with the respective statutory regulations and local guidelines.

4.4 Storage of packages (devices)



Protect from moisture
Keep packed goods dry and protected against moisture.



Protect from heat
Protect packaged goods from heat over 40°C and direct sunlight.

If stored for longer periods (> 6 months) we recommend sealing the devices in foil, possibly with a desiccant.



Attention:
Turn encoder shafts every 6 months 10 times to prevent a possible hardening of the grease-filling of the ball bearings, which may lead to the destruction of the device.

5 Installation and commissioning

5.1 Safety instructions

Personnel

Installation and commissioning must be carried out by skilled technical staff only.



It is essential to observe safety instructions of **chapter 2** before starting any tasks (installation/testing) on the device.

5.2 Mounting of the hollow shaft encoder (mechanically)

Mounting and disassembly by means of a hammer or similar tools is not permitted (warranty void).

5.2.1 Assembly instruction for hollow shaft devices

1. Mount the adapter flange and align precisely with dial gauge; if necessary optimize the alignment with ball pressure adjusting screws.
2. Secure the ball pressure screws with Loctite. Remove pressure screws that are not used, or likewise secure them with a thread-lock lacquer. Max. tightening torque for M12 approximately 25 Nm; for M16 approximately 35 Nm.



The hollow shafts have tapped holes on both sides at the front. For removal use screws to attach the mounting sleeve (Fig. 1), and the use a puller to draw off the unit. A suitable mounting sleeve is recommended for each plant area (specify on ordering).

Remove hollow shaft encoders using mounting sleeve only.



NOTE!

The radial deviation of the shaft (Fig. 2 Pos. 1) should not exceed 0,05 mm.

3. Use feather keys in accordance with DIN 6885.
4. Mount the torque bracket/torque arm on the housing.



NOTE!

Comply with the information provided in the supplemental data sheet entitled "Mounting Accuracy of hollow shaft encoders".

5. Check the mounting position relative to the terminal box, adjust if necessary.
6. Push the device onto the shaft that has been **lightly** greased.



CAUTION!

Danger of damage to shaft and hollow shaft encoder if improperly handled.
Ensure that there are no hard impacts on hollow shaft and housing.
Use the mounting sleeve.

7. Secure the device with axial tightening plate and 4x M5 x 16-DIN 912 fastening screws.
8. Fastening Axial tightening disc with 4x M4 x 20-DIN 912 fastening screws on the adapter shaft.
9. Tighten the fastening screws on the link head of the torque bracket. Fix the nuts in place with locknuts.
10. Check the attached torque brackets: The link rod must be easy to turn within the link head, and the link heads should not tilt. If this instruction is not followed there is a danger of bearing damage.
11. Connect the cabling in the terminal box (see chapter 12, connection diagrams).

5.2.2 Assembly of a hollow shaft encoder FGH 6 and additionally a further encoder in construction type B5 onto the NDE of the FGH 6



Assembly with metal bellows coupling:

1. Mount the adapter shaft onto the motor shaft.
2. Put the coupling (metal bellows coupling) on adapter shaft extension and fix the encoder with a set screw.
3. Put the hollow shaft encoder FGH 6 onto the shaft that has been **lightly** greased and fix with suitable axial tightening disc and screw. Details see chapter 5.2.1.
4. Put the to be coupled encoder onto the B14 flange of the hollow shaft encoder FGH 6. Put the shaft carefully in the coupling bore. (Attention: The bore in the B 14 flange must show in the direction of the set screw). Slide the rear encoder up to the mechanical stop and tighten it with suitable screws.
Tighten the rear set screw of the coupling through the access of the B14 flange.
Then close the access with a lock screw.
See dimension drawing HM 14 M 108191.

5.3 Connecting the hollow shaft encoder

5.3.1 Connections

Cable glands are closed with a stopper to protect the devices on transport and storage.

Cable connections:

Have to be executed according to the encoder type.

Connection diagrams have to be considered!

Use of connection cables with diameter of min. 14 mm – max. 15 mm is essential to ensure the protection class. Cable outlet should show preferably downwards.

5.3.2 Connection with integrated EGS® 4 technology in the second terminal box (option S)

The connections for the EGS® 4 technology are accommodated in the second terminal box of the hollow shaft encoder.



Important instruction

For the function of the hollow shaft encoder, the voltage supply for the EGS® 4 technology in the second terminal box is also to be connected.

Wiring arrangement and shielding:

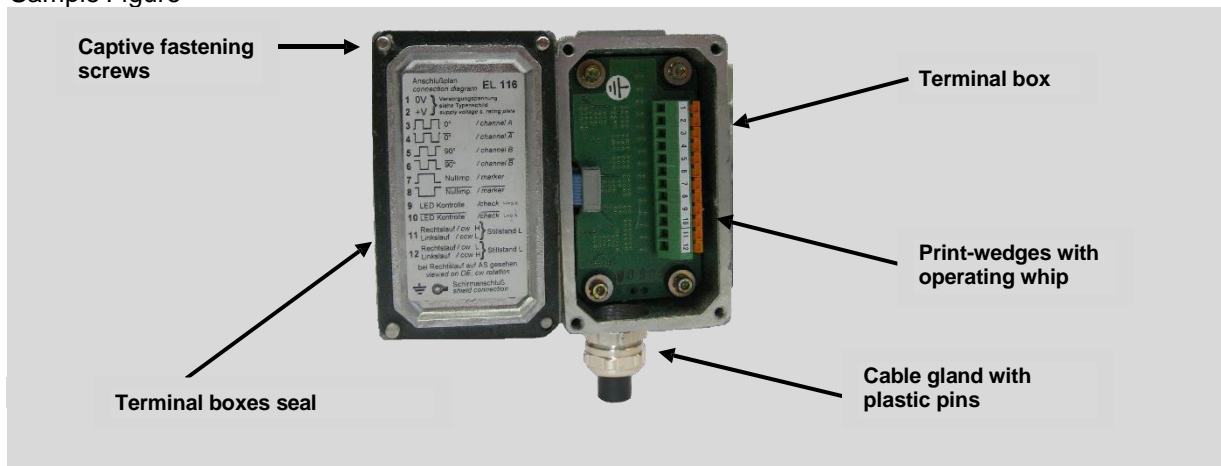
(EMC measurement)

The cable shielding must be connected on both sides.

The shield of the signal cable is directly connected to the housing of the encoder by the cable gland.

The common guidelines for EMI concerned cable routing have to be considered!

Sample Figure



Important instruction

The encoder can only be connected by competent persons.

Closing the terminal box cover

Check the seal of the terminal box cover, clean it if soiled. Then duly close the cover.



Cable must not be pinched

Attention with open terminal boxes.

Moisture should not get into the terminal box when connecting the cable.

5.3.3 Technical notes

Ambient temperature

The max. perm. ambient temperature depends on speed and protection class (shaft sealing) of the encoder as well as on frequency, signal cable length and mounting situation. See chapter 3.2

Protection class

To comply with the protection class the signal cable diameter must be appropriate to the cable gland! See chapter 5.3.1

6 Disassembly

6.1 Safety instructions



Personnel

Only trained, specialized personnel should perform any disassembly.

Attention: Observe safety instructions in **chapter 2** before starting any tasks.
(Installation/maintenance/disassembly)

6.2 Disassembly of the encoder

Disassembly of the hollow shaft encoder has to be done in reverse sequence to chapter 5.2.

7 Faults

7.1 Faults table

Faults	Possible cause	Remedy
Moisture in the terminal box	Soiled terminal box gasket or seal surfaces	Clean terminal box gasket and seal surfaces
	Damaged terminal box gasket	Replace terminal box gasket
	Cable gland/blanking plug not tightened	Tighten cable gland/blanking plug
	Unsuitable cable for cable gland	Use suitable cable and cable glands
No output signals	Supply voltage not connected	Connect supply voltage
	Connection cable reversed	Wire correctly
Output signals subject to interference	Unsuitable cable	Use data cable with conductors arranged as twisted pairs and common shield
	Cable shield not connected	Connect cable shield at both ends
	Cable routing not EMC compliant	Observe applicable EMC guidelines when routing cables
Signal interruptions	Signal end stage overloaded	Check pin assignment; observe connection diagram
		Do not assign unused outputs
	Outputs short-circuited	Do not connect outputs with supply voltage or GND
No function at hollow shaft encoders with EGS® 4 technology in the second terminal box (option S)	Supply voltage for the EGS® 4 technology not connected in the second terminal box.	Connect the power supply for the EGS® 4 technology in the second terminal box.

Contact Hübner-Service (page 2) if none of the remedies listed above provides a solution!

8 Testing

8.1 Safety instructions



Personnel

Skilled technical staff only are permitted to inspect the device and its installation.

Observe the safety instructions contained in **chapter 2** when inspecting or working on the device.

8.2 Maintenance information

The device is maintenance free. However the following tests are recommended to ensure optimal, problem free operation.

8.3 Quality control plan

Interval	Inspections
Yearly	Inspect the coupling for damage and ensure it is free of play
	Ensure the fastening screws are properly tightened
	Ensure cable connections and connection terminals are securely seated
Following approx 16 000 ... 20 000 hours of operation / higher levels of continuous load	Check deep groove ball bearings are running smoothly and listen for running noises

9 Disposal

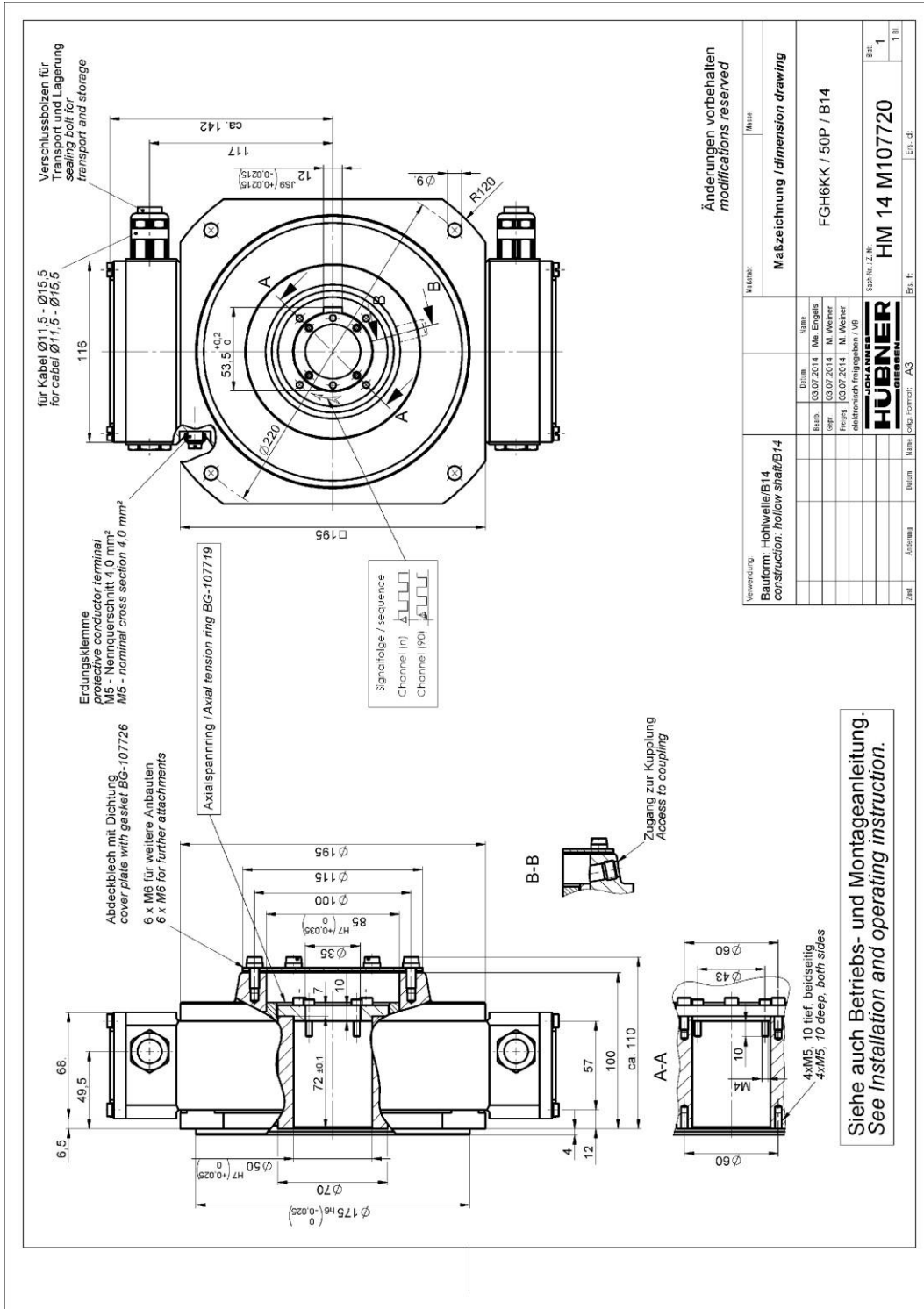
9.1 Disposal procedure

The manufacturer is not obliged to take back electronics waste. The device consists of hybrid components, and in part must be disposed of as special waste (electronic scrap) according to country-specific legislation.

Local municipal authorities or specialized disposal companies provide information on environmentally responsible disposal.

11 Dimension drawings

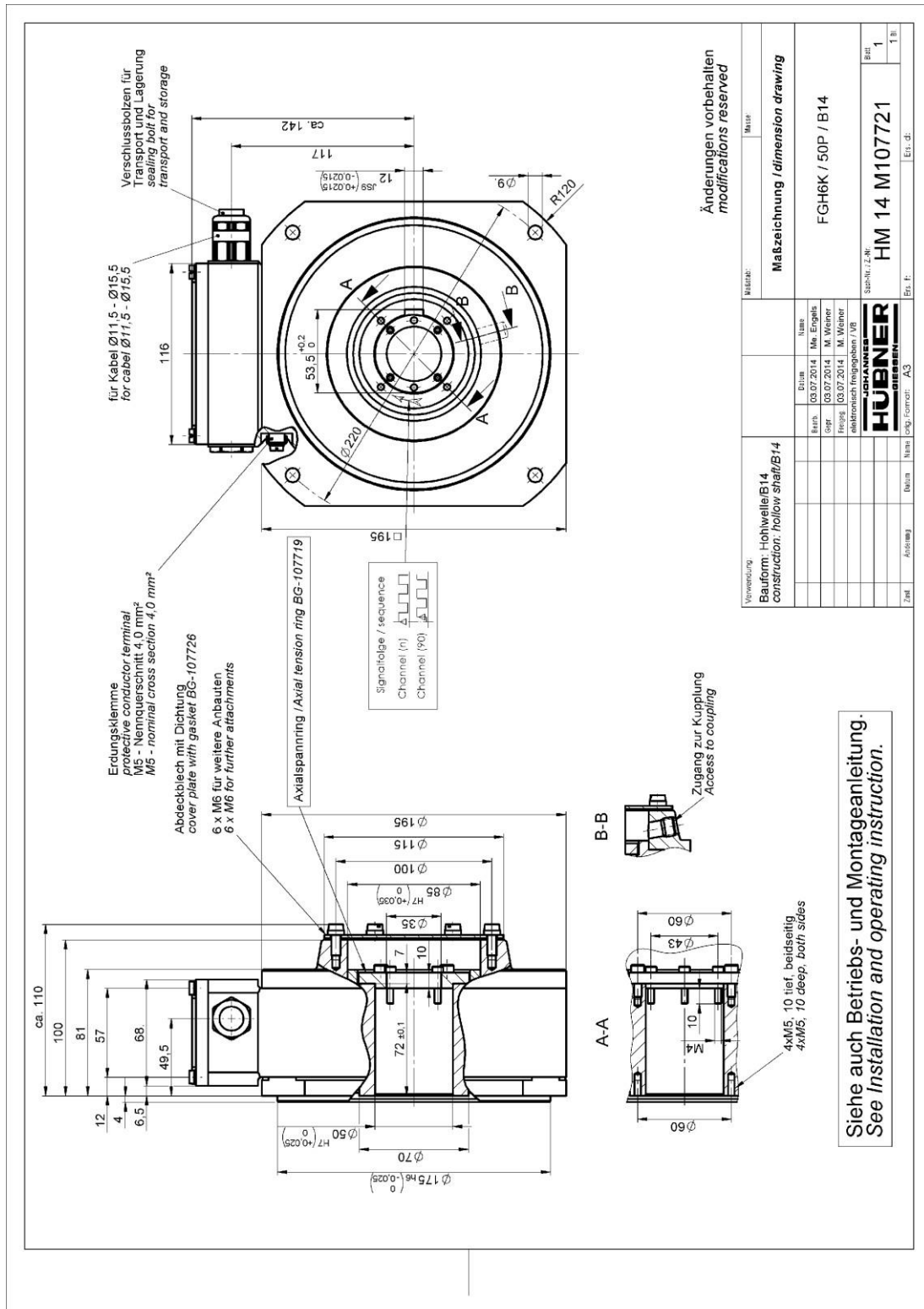
Special dimension drawings on request or see Internet.



FGH 6 KK.../50P/B14

KK Redundant version with B14 flange

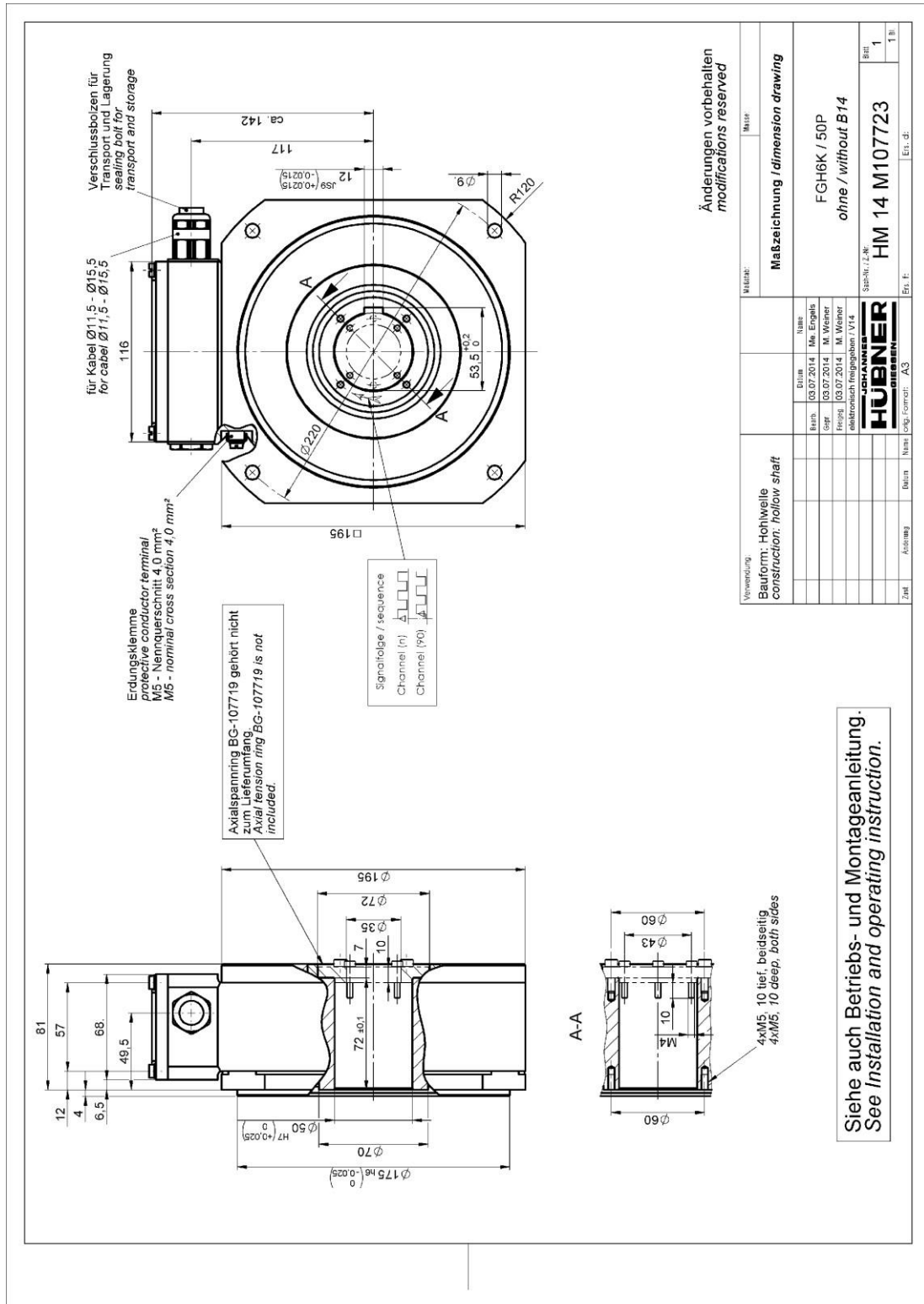
HM 14 M 107720



FGH 6 K.../50P/B14

B 14-flange

HM 14 M 107721

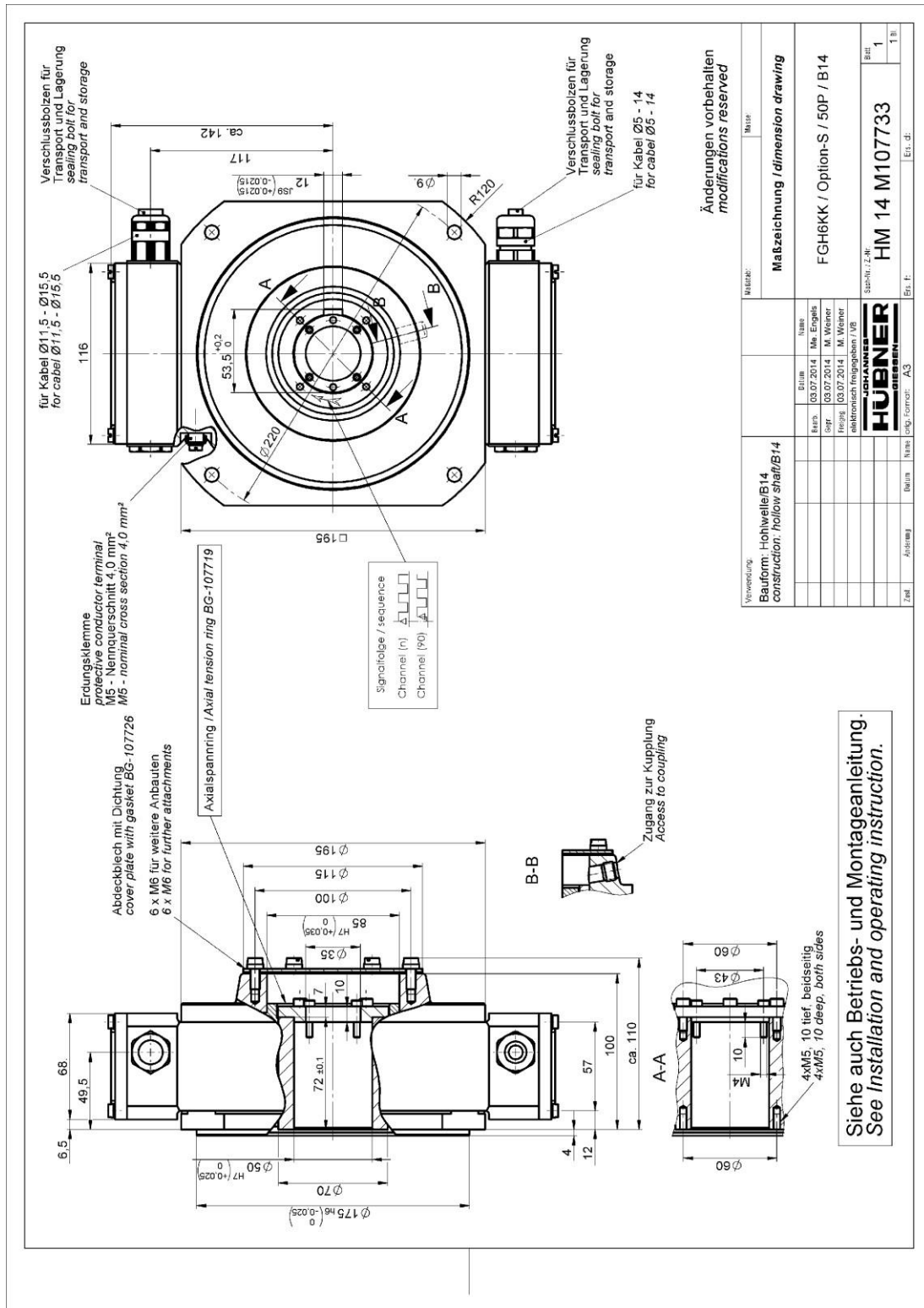


Änderungen vorbehalten
modifications reserved

Verwendung: Bauform: Hohlwelle construction: hollow shaft		Maßstab: Maßzeichnung / dimension drawing	
Zust.	Änderung	Datum	Name (eng./Format)
		03.07.2014	Ma. Engels
		03.07.2014	M. Wiesner
		03.07.2014	M. Wiesner
elektronisch freigegeben / V14			
JOHANNES HÜBNER GIESSEN			
SSP-Nr./Z.Nr. HM 14 M107723		Erl. d.	
Blatt: 1		1 B)	

Siehe auch Betriebs- und Montageanleitung.
See installation and operating instruction.

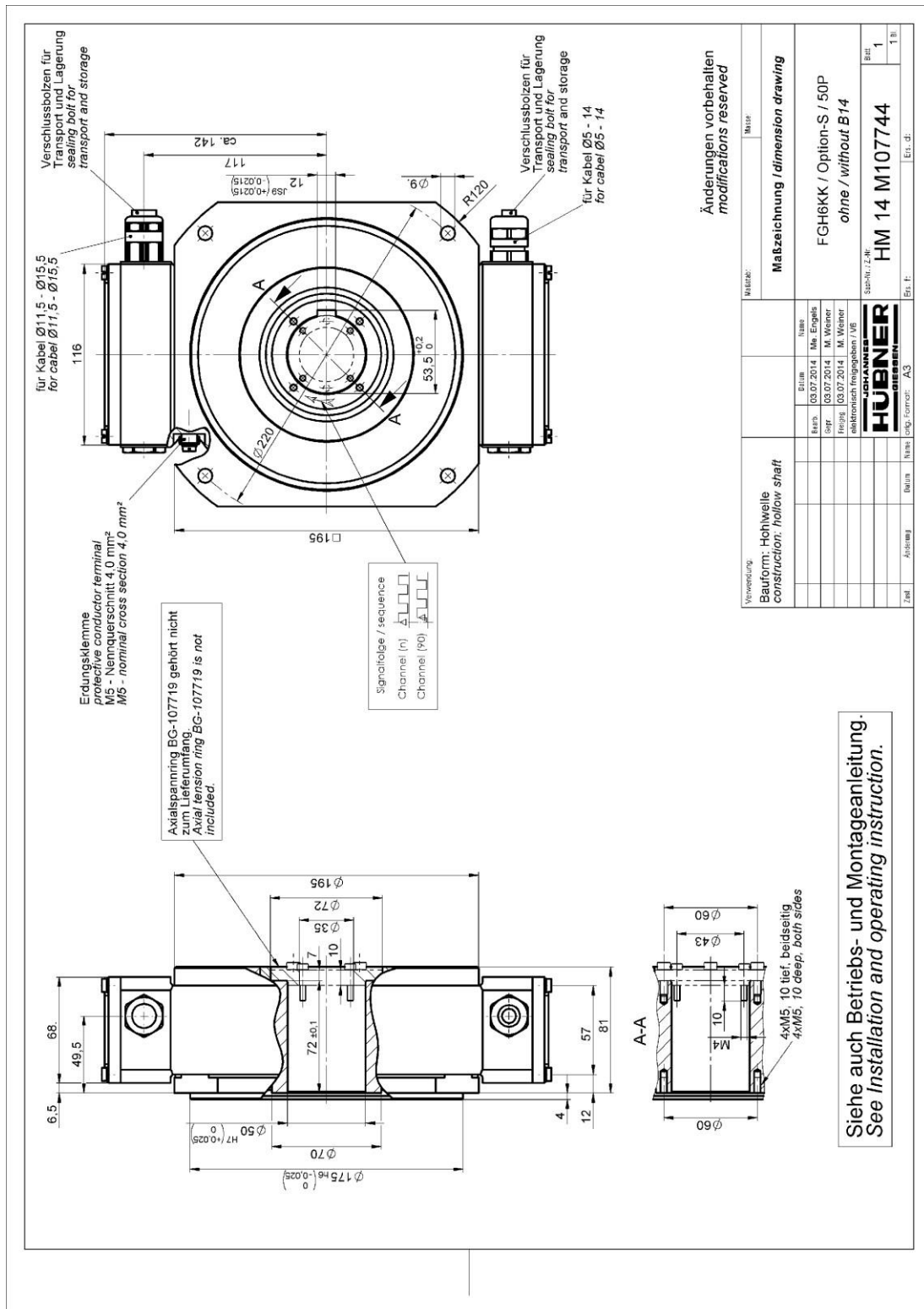
Incremental Hollow Shaft Encoder FGH 6



Siehe auch Betriebs- und Montageanleitung.
See *Installation and operating instruction.*

Verwendung: Bauform: Hohlwelle/B14 construction: hollow shaft/B14		Name: Me Englis	
Datum: 03.07.2014		Name: M. Wiener	
Gepr.: 03.07.2014		Name: M. Wiener	
Freigegeben: 03.07.2014		Name: M. Wiener	
elektronisch freigegeben: VB		Name: M. Wiener	
HUBNER GESBEN		Name: M. Wiener	
Spez. / Z.Nr.: HM 14 M107733		Name: M. Wiener	
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1 B)		Name: M. Wiener	
Ers. f.:		Name: M. Wiener	
A3		Name: M. Wiener	

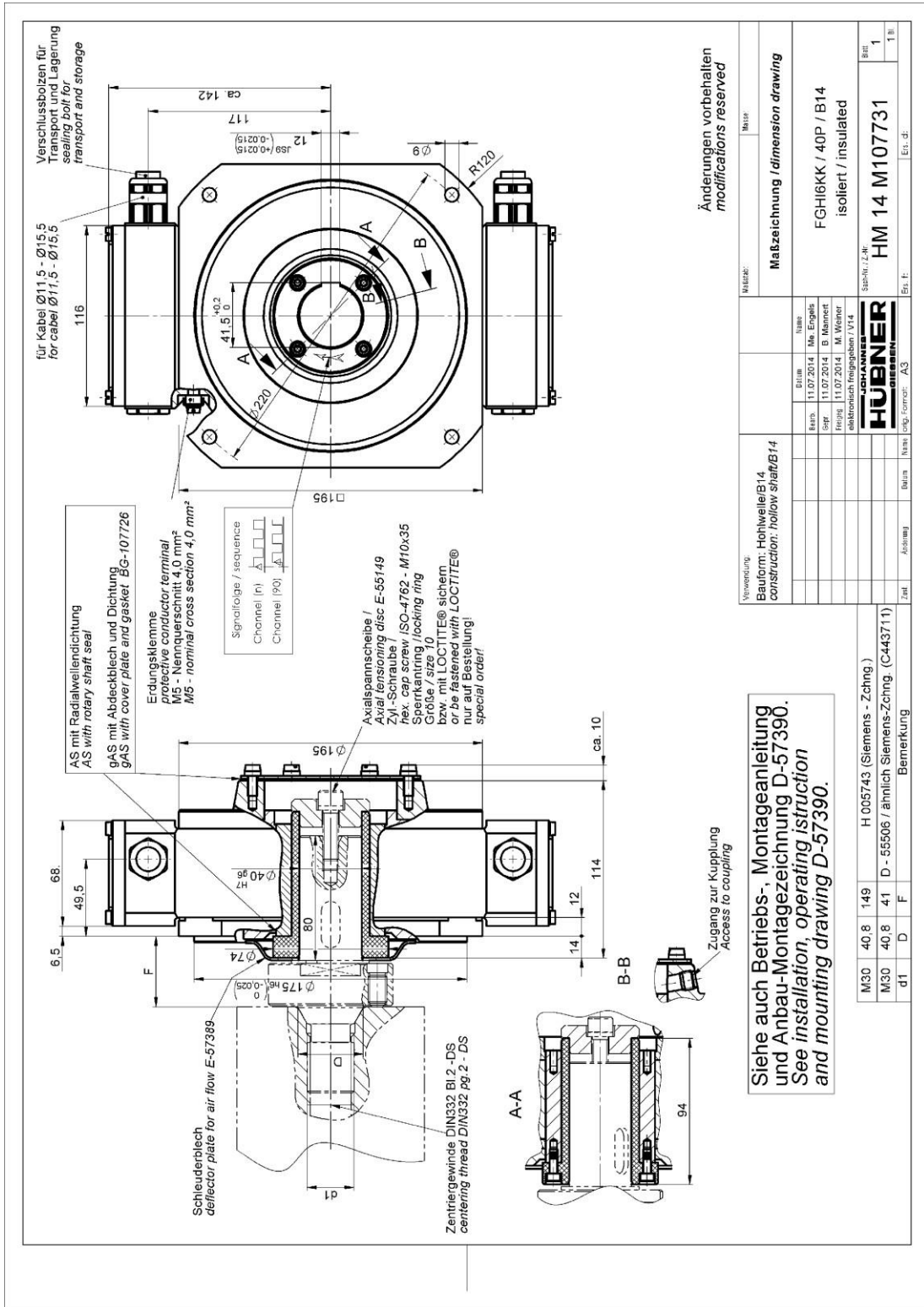
FGH 6 KK.../50P/B14 KK redundant version with B14-flange and integrated Option S HM 14 M 107733



FGH 6 KK.../50P

KK redundant version with integrated Option S

HM 14 M 107744



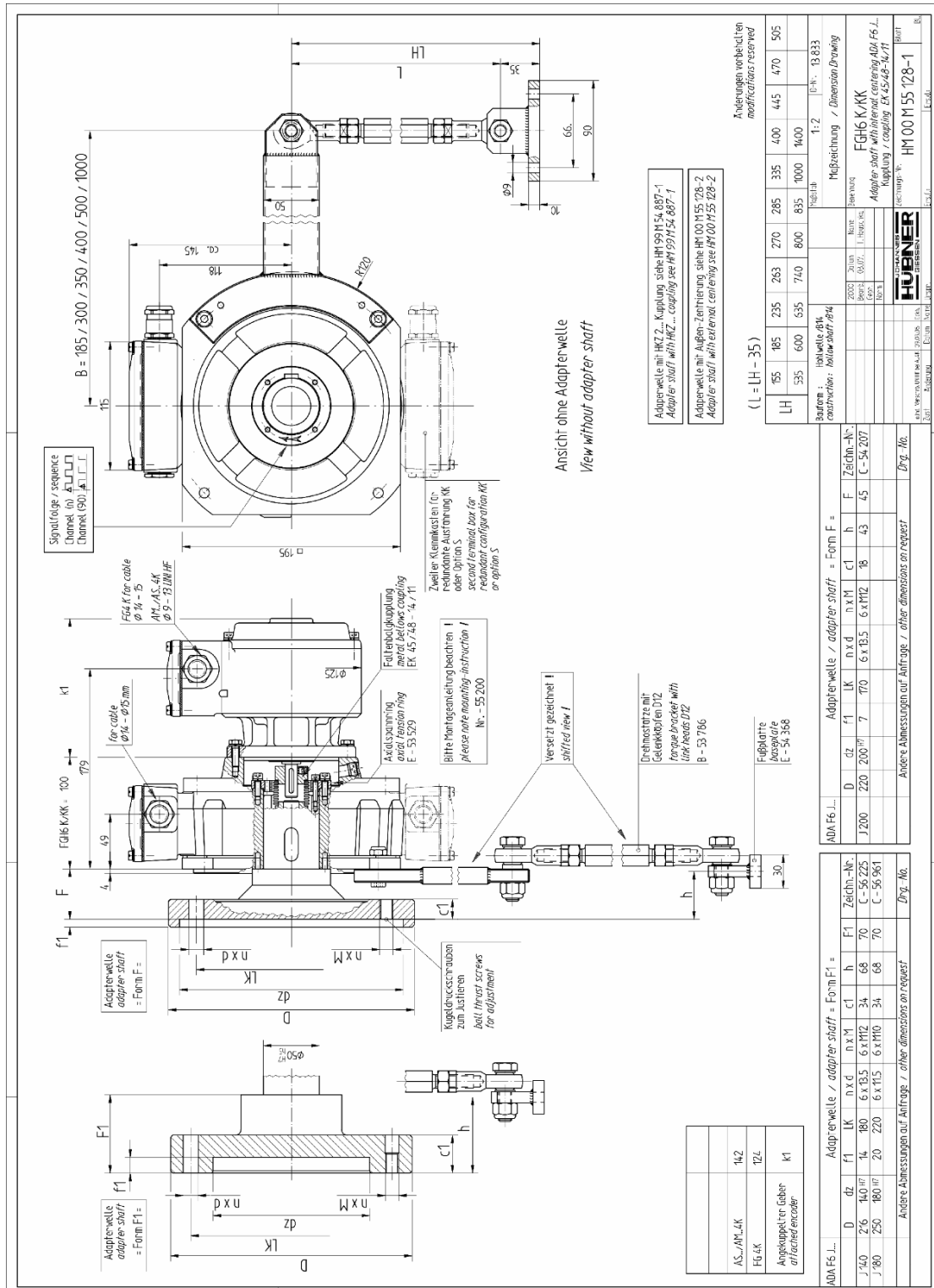
Änderungen vorbehalten
modifications reserved

Verwendung: Bauteil: Hohlwelle/B14 construction: hollow shaft/B14		Werkstoff: Material:	
Beitrag:	Blatt:	Materialezeichnung / dimension drawing	
11.07.2014	Ma. Engels	FGHI6KK / 40P / B14	
11.07.2014	B. Mannert	isoliert / insulated	
11.07.2014	M. Weiser	elektronisch freigegeben / V14	
HUBNER SIEMENS		Stück-/Z.Nr.: HM 14 M107731	
Name / Ing./Technik: A3		Blatt: 1	
Datum		Erl. d.:	
Anschl.		1 B	
Zeit			

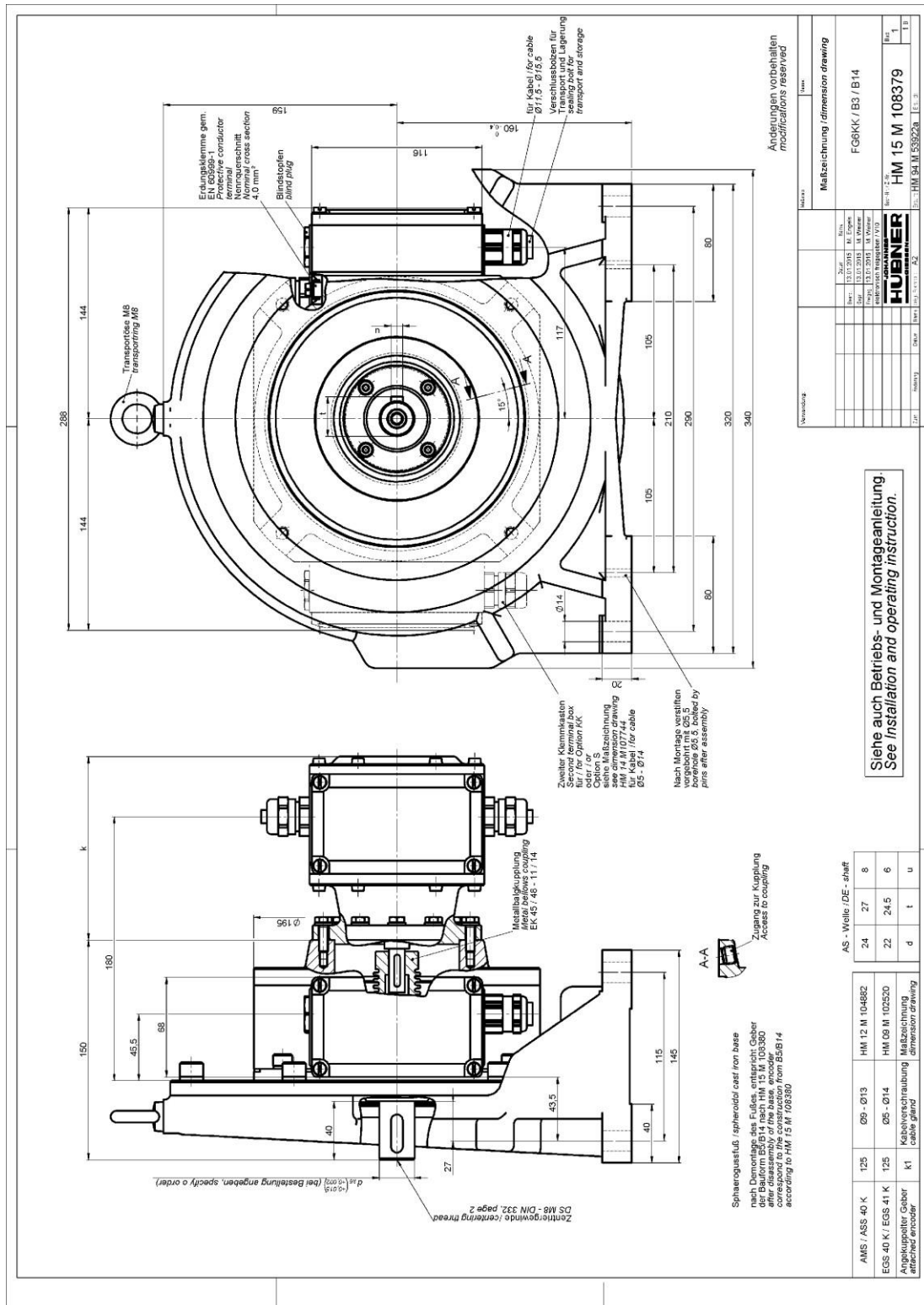
Siehe auch Betriebs-, Montageanleitung
und Anbau-Montagezeichnung D-57390.
See installation, operating instruction
and mounting drawing D-57390.

M30	40.8	149	H 005743 (Siemens - Zchnng.)
M30	40.8	41	D - 55506 / ähnlich Siemens-Zchnng. (C443711)
d1	D	F	Bemerkung

FGHI 6 KK.../40P/B14 KK redundant version with B14 flange HM 14 M 107731



Incremental Hollow Shaft Encoder FG H 6



Siehe auch Betriebs- und Montageanleitung.
See installation and operating instruction.

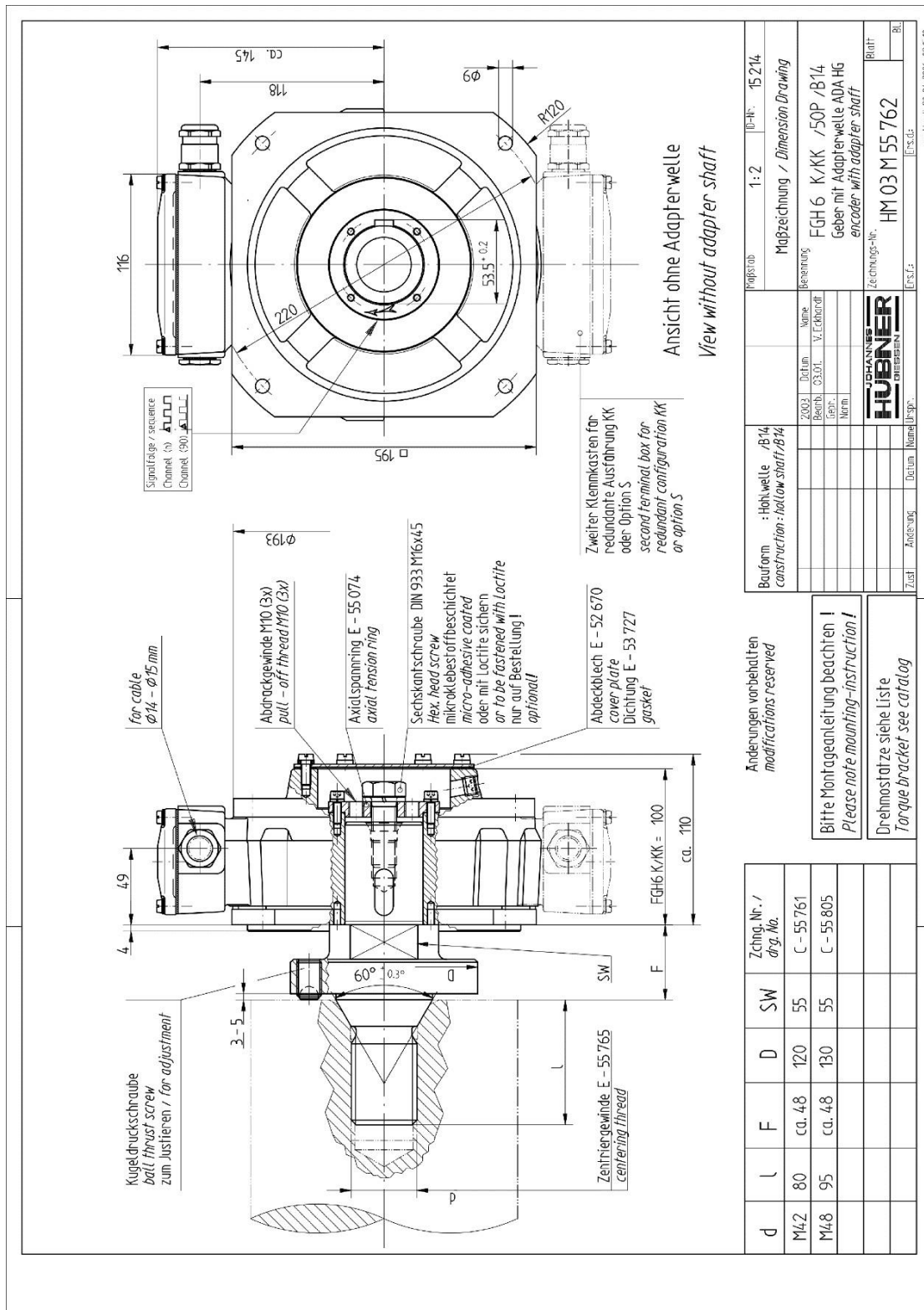
AMS / ASS 40 K	125	Ø9 - Ø13	HM 12 M 104882
EGS 40 K / EGS 41 K	125	Ø5 - Ø14	HM 09 M 102520
Angekuppelter Geber attached encoder	k1	Kabelverschraubung cable gland	Maßzeichnung dimension drawing

AS - Welle / DE - shaft	
24	27
22	24.5
d	t
u	u

FGH 6 K / (KK)
Construction type B3 / B14:

**KK redundant version or with
integrated option S**

HM 15 M 108379



12 Connection Diagrams

12-pol. Bandklemme Typ Phoenix
12-pole strip clamping type Phoenix

Schirmung:
Der Schirm der Signalleitung ist über die Kabelverschraubung direkt mit dem Gehäuse verbunden.
Shield:
The shield of the signal cable is directly connected with the housing of the encoder by the cable gland.

	EL 816	EL 816-1	EL 816-2	EL 816-3	EL 816-4	EL 816-5	EL 816-6	EL 816-7
0V	1	1	1	1	1	1	1	1
+ ... V ¹⁾	2	2	2	2	2	2	2	2
0°	3	3; 7	3	3	3	3	3	3
0° inv.	4	4; 8	4	4	4	4	4	4
90°	5	5; 9	5	5	5	5	5	5
90° inv.	6	6; 10	6	6	6	6	6	6
N	7	---	---	7	7	7	---	7
N inv.	8	---	---	8	---	8	---	8
M	9	11	9	9	8	9	9	---
M inv.	10	12	10	10	---	10	10	---
2F	---	---	7	11	9	---	---	11
4F	---	---	8	12	10	---	7	12
4F inv.	---	---	---	---	---	---	8	---
R	11	---	11	---	11	---	11	9
L	12	---	12	---	12	---	12	10
Schaltausgang 1	---	---	---	---	---	11	---	---
Schaltausgang 2	---	---	---	---	---	12	---	---

+ ... V¹⁾ Versorgungsspannung nach Typenschildangabe
supply voltage see rating plate

Verwendung: FG .. (A)K

Allgemein-toleranzen DIN ISO 2768m	OFZ nach DIN ISO 1302	Maßstab:	Werkstoff:
Datum: 03.06.14	Name: Diriam	Benennung: Anschlussplan Connection diagram	
Gepr. Norm		Zeichnungs Nr.: EL 816	Blatt: Bl.

Die Belegung der Anschlüsse Availability of options ist aus der Typen- see type description bezeichnung ersichtlich

z.B. e.g.: FG..K-1000 G - 90 G - N G

FGH 6 Standard Terminal box

Anschlusskabel direkt angelötet Connection cable soldered-on directly
6x2x0,56 paarig verseilt, geschirmt 6x2x0,56 twin-stranded, shielded

Versorgungsspannung supply voltage: rot red + (12 - 30)V, schwarz black 0V

Schirm ist mit Gehäuse verbunden shield is connected to casing

alternativ/alternative: Der Schirm der Signalleitung ist über die Kabelverschraubung direkt mit dem Gehäuse verbunden. The shield of the signal cable is directly connected with the housing of the encoder by the cable gland.

Typ : HE-2LVCC-CY AWG 20b
VDE 0881 zugelassen acc. to VDE 0881
Querschnitt cross-section: 0,56 mm²
Temperatur temperature: -30°C bis +105°C fest verlegt fixed installation, -10°C bis +105°C bewegt flexing
Außendurchmesser: Outside dia: 10,1 mm

Verwendung: FG...C

Allgemein-toleranzen DIN ISO 2768m	OFZ nach DIN ISO 1302	Maßstab:	Werkstoff:
Datum: 11.12.91	Name: Martis	Benennung: Anschlussplan Connection diagram	
Gepr. Norm		Zeichnungs Nr.: EL 205	Blatt: Bl.

Die Belegung der Anschlüsse Availability of options ist aus der Typen- see type description bezeichnung ersichtlich

z.B. e.g.: FG..C-1000 G - 90 G - N G

FGH 6 Standard Connection cable

13 Mounting instructions for coupling

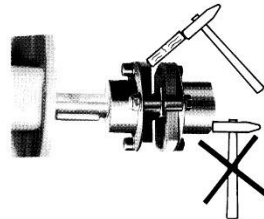
	Montageanleitung für Kupplungen Mounting Instructions for Couplings	NR. 54 690 S.1 Datum: 06/2009
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Kupplungsbohrung – Passung G7 oder H7 – d. h.: Toleranzfeld liegt oberhalb der Nulllinie.
= Kupplung muß leichtgängig aufziehbar sein =

Bohrungen vor der Endmontage prüfen evtl. nachreiben, dann leicht einfetten.

Mindestens eine Nabe, mit Radialgewindestift mit Spitze/Ringschneide, gegen Axialverschiebung befestigen. Gewindestift drückt auf Paßfeder, damit Welle nicht beschädigt wird.

Beachte: **zulässige Nachgiebigkeiten!** sind voneinander abhängig – siehe Rückseite



Coupling bore – fit – G7 or H7
 i. e.: tolerance range is above the reference line
= Fit the coupling smoothly =

Please refinish coupling bores prior to final mounting, if necessary finish-ream and grease bores slightly.

Provide axial fastening on shaft by radial set screw. Fasten at least one set screw with coned point/cupped gripping point to avoid axial offset. Set screw pushes onto the feather key to prevent shaft from damage.

Note: **admissible resilienties!** are dependent on each other see backside

Anbaufehler:

- bewirken Radialkräfte, diese können die Geberlager und die Kupplung beschädigen oder zerstören!
- Verschlechtern **Signalqualität!** Verstärkt **Oberwelligkeit und Drehschwebung!**

Je genauer der Anbau, um so höher die Lebensdauer der Kupplung/Geberlager, um so präziser die Ausgangssignale!

Mounting failures!

- **Misalignment** can cause radial forces which may damage the coupling or destroy the encoder bearings!
- **Signal quality can be affected, rotational frequency modulation and interferences (ripple) may occur.**

The more precise the mounting, the higher the service life of the coupling and the bearings of the encoders.

Kupplung Typ HK.. 5-

durch Deformation bei Montage, beim Überschreiten der zulässigen Nachgiebigkeiten kann der **Federstahl-Gleichsring Ø 54 mm** beschädigt werden.



Coupling Type HK.. 5-

by deformation caused by wrong mounting and if permissible resilienties will be exceeded, spring steel compensating element dia 54 mm can be damaged.

Balgkupplungen Typ EK.. / DKN..:

Bei der **Montage/Demontage kritisch**
 – **Bruchgefahr des Faltenbalges** – vor allem bei der Demontage feststehender Wellenzapfen.



Metal bellows coupling type EK/DKN..

Critical fitting/removal
 Bellows may brake above all while removing from the tight shaft extension.

Verwendung von rostlösendem Gleitspray o.ä., Radialgewindeschrauben vorher lösen. Kupplung vorsichtig an den Naben abdrücken. Reservekupplung einplanen.

For removal it is recommended to use an antirust/ anticorrosion spray and to unscrew the radial set screw. Press on the hubs carefully when removing the coupling. Spare coupling should be available

Steckkupplungen Typ HK7-HK45:

Bei der Montage ist die **axiale Lage** der **Kupplungshälften** zu **beachten**, ein **ausreichender Abstand** von 1 – 2 mm zum **Kunststoffstern** sind einzuhalten, damit dieser **nicht gequetscht** wird und die elektrische Isolierung erhalten bleibt. **Abstandsverhältnisse müssen ausgemessen werden**, damit **keine zusätzliche axiale Verspannkraft** entsteht, die sich sehr **nachteilig** auf die **Lagerlaufzeit** und auf die **Ausgangssignale** auswirkt!



Push-on coupling HK7 up to HK 45

For mounting please consider **axial position** of coupling halves. A **distance** of 1 – 2 mm to the **Plastic tooth ring** must be maintained in order to **prevent** it from **squeezing** and to protect the electrical insulation. **Distance relation of coupling parts must be measured** to avoid axial forces affecting both the **service life of the bearings** and the **output signals!**

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