


(Assembly) Instructions

Magnetic encoder of the series MAG 400 - 500

Read these (Assembly) Instructions
before beginning with mounting/installation or other work!
Keep for future use!



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Issued February 2011

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1 General Information

1.1 Information about these Operating and Installation Instructions

These Operating and Installation Instructions contain important information about handling the device. Read these Operating and Installation Instructions carefully before commencing any work; observe at all times.

In addition, you must observe all local accident prevention regulations as well as general health and safety rules that apply to the field of application of the device.

1.2 Range of supply

Magnetic encoder MAG 400 - 500

- Pulse wheel
- Scanning head with 2 m cable
- 1 distance foil 0,7 mm thick
- Fixing screws with suitable accessories
- (Assembly) Instructions

1.3 What the symbols mean

Warnings and cautions are indicated in these Operating and Installation Instructions by symbols. The warnings and cautions are introduced by signal words that express the level of danger. To prevent accidents, personal injuries and material damage you must observe the information provided and proceed with due care and attention at all times.



WARNING!

This draws attention to a potentially dangerous situation that can lead to death or serious injury if not avoided.



CAUTION!

This draws attention to a potentially dangerous situation that can lead to minor or light injuries if not avoided.



CAUTION!

This draws attention to a potentially dangerous situation that can lead to material damage if not avoided.



NOTES!

This emphasizes useful tips and recommendations as well as providing information to promote efficient and smooth operations.



NOTES!

Do not put out the pulse wheel to strong magnetic fields



DANGER!

Danger of death from electricity!

This indicates life-threatening situations from electrical shock. Failure to observe the safety instructions can lead to serious injury or death. The work must be carried out by a qualified electrician only.

1.4 Limitation of liability

All of the information, warnings and cautions contained in these Operating and Installation Instructions were drawn up based on applicable standards and regulations as well as our many years of experience and specialist knowledge. The manufacturer does not accept any liability for damages arising from:

- Failure to observe and comply with these (Assembly) Instructions
- Improper use
- Work carried out by unqualified personnel
- Opening the machine or mounted accessories

In all other respects the obligations agreed in the Contract of Sale as well as the manufacturer's Terms and Conditions of Sale apply.

1.5 EC Declaration of Conformity

The device has been tested in accordance with the EMC Directive 2004/108/EC.

1.6 Copyright



NOTES!

The texts, drawings, images and all other representations contained in these Operating and Installation Instructions are protected by copyright law and are subject to industrial property rights. It is strictly forbidden to make copies of any kind or by any means for any purpose other than in conjunction with operating the device without the prior written agreement of the manufacturer. Any unauthorised copying or use will lead to prosecution.

1.7 Conditions of warranty

The conditions of warranty are set out in the manufacturer's terms and conditions of sale.

1.8 Customer service

If you require technical information you can contact us by telephone, fax or e-mail. Please refer to the manufacturer's contact details on page 2.

2 Safety



This section offers an overview of all the important safety aspects to protect personnel and for the safe, trouble-free operation of the device. Failure to observe this information can lead to considerable danger.

2.1 Responsibility of the owner

The device is designed for use in industrial applications. Consequently, the owner of the device is subject to statutory obligations with regard to occupational safety as well as specific safety, accident prevention and environmental regulations applicable to the field of application in which the device is deployed.

2.2 Proper use

The unit must be used exclusively for the intended purpose for which it was designed and built as described here.

The incremental, magnetic encoder (MAG) without integrated bearings is designed to monitor speed, for example of drive shafts on ships, engines for excavators in mining operations, shaft connections used in tandem test engines, gas and water turbines as well as for motors and generators in general with large shaft diameters.

We do not accept liability of any kind for damages arising from improper use of the unit. The owner bears sole responsibility for any improper use.

2.3 Improper use

- Do not use the device in potentially explosive areas.
- The device must not be subjected to mechanical loads in addition to its own weight and unavoidable vibration and shock loads that arise during normal operations.

Examples for non-permitted mechanical loads (incomplete list):

- Fastening transport or lifting tackle to the device, for example a crane hook to lift a motor.
 - Fastening packaging components to the device, for example ratchet straps, tarpaulins etc..
 - Using the device as a step, for example by people to climb onto a motor.
- It is not permitted to use the device in locations higher than 3000 m above sea level.

2.4 Personal protective equipment

Wear personal protective equipment such as safety shoes and safety clothing to minimise risks to health and safety when carrying out work such as mounting, disassembly or commissioning. Adhere to all applicable statutory regulations as well as the rules and standards determined by the owner.

2.5 Personnel

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

2.6 Special dangers

The following section describes the residual risks as determined by a risk analyse.

2.6.1 Electric current



DANGER!

Danger of death from electricity!

There is an immediate danger of death from contact with live components. Damage to the insulation or individual components can be lethal.

Therefore: If the insulation is damaged turn off and isolate the power supply immediately; ensure the insulation is repaired. Before commencing any work on the electrical installation turn off and isolate the power supply to the installation. Ensure live components do not come into contact with moisture. Otherwise, this can lead to a short-circuit.

2.6.2 Rotating shafts / hot surfaces



WARNING!

Risk of injury from rotating shafts!

Touching rotating shafts can result in serious injuries.

Therefore: Do not tinker with moving parts/shafts or work on rotating shafts. Do not open covers during operations. Ensure no parts are moving before opening any covers.

2.6.3 Ensure the power supply cannot be reconnected



DANGER!

Danger of death from unauthorized reconnection of the power supply!

There is a risk that the power supply will be reconnected without authorization when carrying out work, for example rectifying faults. This represents a serious risk to the life of those in the danger zone.

Therefore: Turn off and isolate all power supplies to the equipment before commencing work. Ensure no power supply can be reconnected.

2.6.4 Exceeding the maximum speed



DANGER!

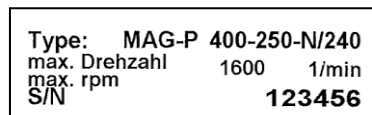
If the maximum speed is exceeded it is possible that the resulting centrifugal force could cause the pulse wheel to lose its mechanical integrity.

3 Technical data

3.1 Name plate

Scanning head

Pulse wheel



The nameplate is located on the outside of the housing; it contains the following details.

- Manufacturer, address
- Type, year of manufacture
- CE mark
- Serial number (S/N)
- Commission number (C/N)
- Number of pulses (CPR)
- Degree of protection (IP)
- Supply voltage

3.2 Electrical and mechanical data

Specification	Value	Unit
Supply voltage	12 – 30	V DC
No-load current	Max. 50 (with 24 V DC)	mA
Max. speed	1600	rpm
Max. frequency	13,3 (with 1600 1/min)	kHz
Output signals (optical)	0° signal (A) and inverted signal 90° signal (B) and inverted signal Error signal and inverted signal Marker pulse and inverted signal	
Pulse duty factor	1:1 ±3%	
Phase shift	90° ±5°	
Pulse rates	500 square pulses	

Mechanical installation	Adapted to customer shaft	Unit
Dimensioned drawing	See Chapter 8	
Degree of protection	IP66 (to DIN EN 60529)	
Axial tolerance	±3 (offset – pulse wheel/scanning head)	mm
Radial tolerance	0.2 - 1 (air gap – pulse wheel/scanning head)	mm
Temperature range scanning head	-40 ...+85 (permissible temperature at scanning head)	°C
Temperature range pulse wheel	-40 ...+85 (permissible temperature at scanning head)	°C

To avoid changes in the material properties of plastic materials, it is not allowed to undercut or exceed the specified temperature range at the scanning head.

The manufacturer reserves the right to make technical modifications.

4 Safety information concerning transport



CAUTION!

Material damage caused by improper transport!

Observe the symbols and information on the packaging:

- Do not throw - risk of breakage
- Keep dry
- Protect packages from heat above 40 °C, keep out of direct sunlight.

4.1 Goods inward inspection

Check the delivery immediately upon receipt for transit damage or short delivery.

Inform the carrier immediately on receipt if you determine that damage has occurred during transit (take photos as proof).

4.2 Packaging (disposal)

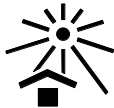
The packaging is not taken back; dispose of according to the respective valid statutory provisions and local regulations.

4.3 Storing packages (devices)



Keep dry

Keep packages dry and free from dust; protect from moisture.



Protect against heat

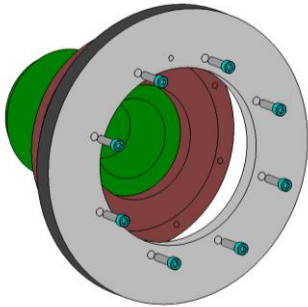
Protect packages from heat above 40 °C, keep out of direct sunlight.

If you intend to store the devices for a longer period of time (> 6 months) we recommend that you use protective packaging (with desiccant).

5 Installation and commissioning

The installation of electrical equipment including laying the cables must be carried out by skilled technical personnel only.

5.1 Fitting the pulse wheel



Step 1: It is imperative that you ensure the shaft is running true.

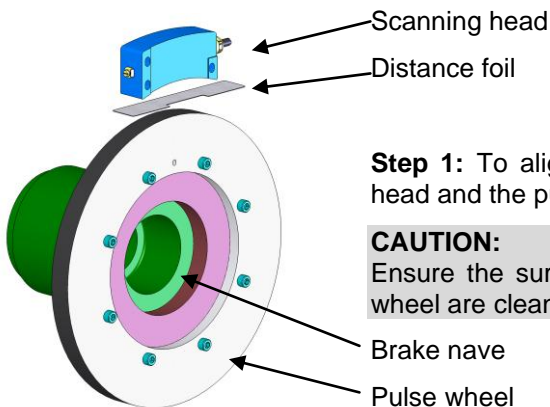
The shaft must run true to within a tolerance of 0.3, otherwise the magnetic encoder cannot be used.

Rework or replace the shaft, if necessary.

Step 2: Fit the pulse wheel and secure.

Please refer to the dimensioned drawing 'HM 10 M 103242 on chapter 8 for the 8 x M10 threaded hole pattern.

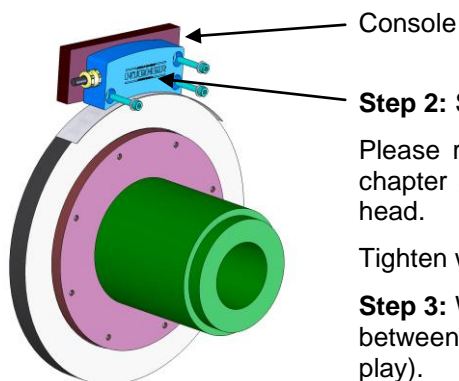
5.2 Fitting and aligning the scanning head



Step 1: To align, place the distance foil between the scanning head and the pulse wheel.

CAUTION:

Ensure the surfaces between the scanning head and the pulse wheel are clean.



Step 2: Secure the scanning head.

Please refer to the dimensioned drawing 'HM 10 M 103242 on chapter 8 for the 3 x M8 threaded holes to secure the scanning head.

Tighten with the accessories provided.

Step 3: When adjusting ensure the distance foil glides easily between the scanning head and the pulse wheel (max. 0.10 mm play).

Remove the distance foil when adjusting is complete.

6 Wiring diagram

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<p>Anschlusskabel 6x2x0,56 paarig verseilt, geschirmt Connection cable 6x2x0,56 twin-stranded, shielded</p> <p>Typ: HE-2LVCC-CY AWG 20b VDE 0881 zugelassen acc. to VDE 0881</p> <p>Querschnitt: 0,56 mm² Cross-section: 0,56 mm² Temperatur: -20°C bis +105°C Temperature: -20°C up to +105°C Aussendurchmesser: 10,1mm Outside dia: 10,1mm</p> <p>Schirm ist mit Gehäuse verbunden shield is connected to casing</p> <p>Weitere Kabel / Temperaturbereiche auf Anfrage other cables / temperature ranges on request</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2">Anschlusskabel Connection cable</th> <th colspan="2">Anschlussplan Connection diagram PN109-420 Connection diagram PN109-420</th> </tr> <tr> <td>1</td><td>A</td><td>schwarz</td><td>black</td> </tr> <tr> <td>2</td><td>B</td><td>rot</td><td>red</td> </tr> <tr> <td>3</td><td>C</td><td>orange</td><td>orange</td> </tr> <tr> <td>4</td><td>D</td><td>schwarz</td><td>black</td> </tr> <tr> <td>5</td><td>E</td><td>blau</td><td>blue</td> </tr> <tr> <td>6</td><td>F</td><td>schwarz</td><td>black</td> </tr> <tr> <td>7</td><td>G</td><td>gelb</td><td>yellow</td> </tr> <tr> <td>8</td><td>H</td><td>schwarz</td><td>black</td> </tr> <tr> <td>9</td><td>J</td><td>grün</td><td>green</td> </tr> <tr> <td>10</td><td>K</td><td>schwarz</td><td>black</td> </tr> <tr> <td>11</td><td>L</td><td>-</td><td>-</td> </tr> <tr> <td>12</td><td>M</td><td>-</td><td>-</td> </tr> </table>	Anschlusskabel Connection cable		Anschlussplan Connection diagram PN109-420 Connection diagram PN109-420		1	A	schwarz	black	2	B	rot	red	3	C	orange	orange	4	D	schwarz	black	5	E	blau	blue	6	F	schwarz	black	7	G	gelb	yellow	8	H	schwarz	black	9	J	grün	green	10	K	schwarz	black	11	L	-	-	12	M	-	-	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">Proj. Nr. PN109</td> <td style="width: 20%;">Proj. No.</td> <td style="width: 20%;">Datum 26.11.2008</td> <td style="width: 20%;">Date</td> <td style="width: 20%;">Bearbeitet F.Dittram</td> <td style="width: 20%;">Checked Ko</td> </tr> <tr> <td colspan="2">Benennung Anschlussplan/Connection diagram</td> <td colspan="2">Dateiname Document path</td> <td colspan="2">Zustand Status</td> </tr> <tr> <td colspan="2">Incremental Encoder</td> <td colspan="2">Incremental Encoder</td> <td colspan="2">Incremental Encoder</td> </tr> <tr> <td colspan="2">Connection cable</td> <td colspan="2">Connection cable</td> <td colspan="2">Connection cable</td> </tr> </table>	Proj. Nr. PN109	Proj. No.	Datum 26.11.2008	Date	Bearbeitet F.Dittram	Checked Ko	Benennung Anschlussplan/Connection diagram		Dateiname Document path		Zustand Status		Incremental Encoder		Incremental Encoder		Incremental Encoder		Connection cable		Connection cable		Connection cable	
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7 Safety notes for fitting and installing procedures

7.1 Risk of destruction by mechanical shock

Powerful impacts such as blows with a hammer can destroy the scanning head.

- Never use force. Everything fits together easily when fitted properly.
- Use appropriate puller tools to disassemble.

7.2 Risk of destruction by mechanical overloading

- Never position the magnetic encoder upright on the magnetic band.
- Ensure the magnetic band is not subjected to mechanical force.

7.3 Risk of destruction by sticky liquids

- Sticky liquids can damage the scanning head and the pulse wheel.
- Dismantling a magnetic encoder glued to the shaft can lead to its destruction.

7.4 Risk of destruction by external magnetic fields

External magnetic fields can destroy the magnetisation of the encoder.

Consequently, do not use magnetic holders, in particular during fitting/dismantling procedures.

7.5 Risk of damage by ferromagnetic particles

Ferromagnetic particles (for example metallic dust) can become deposited on the pulse wheel and lead to a loss of measurements.

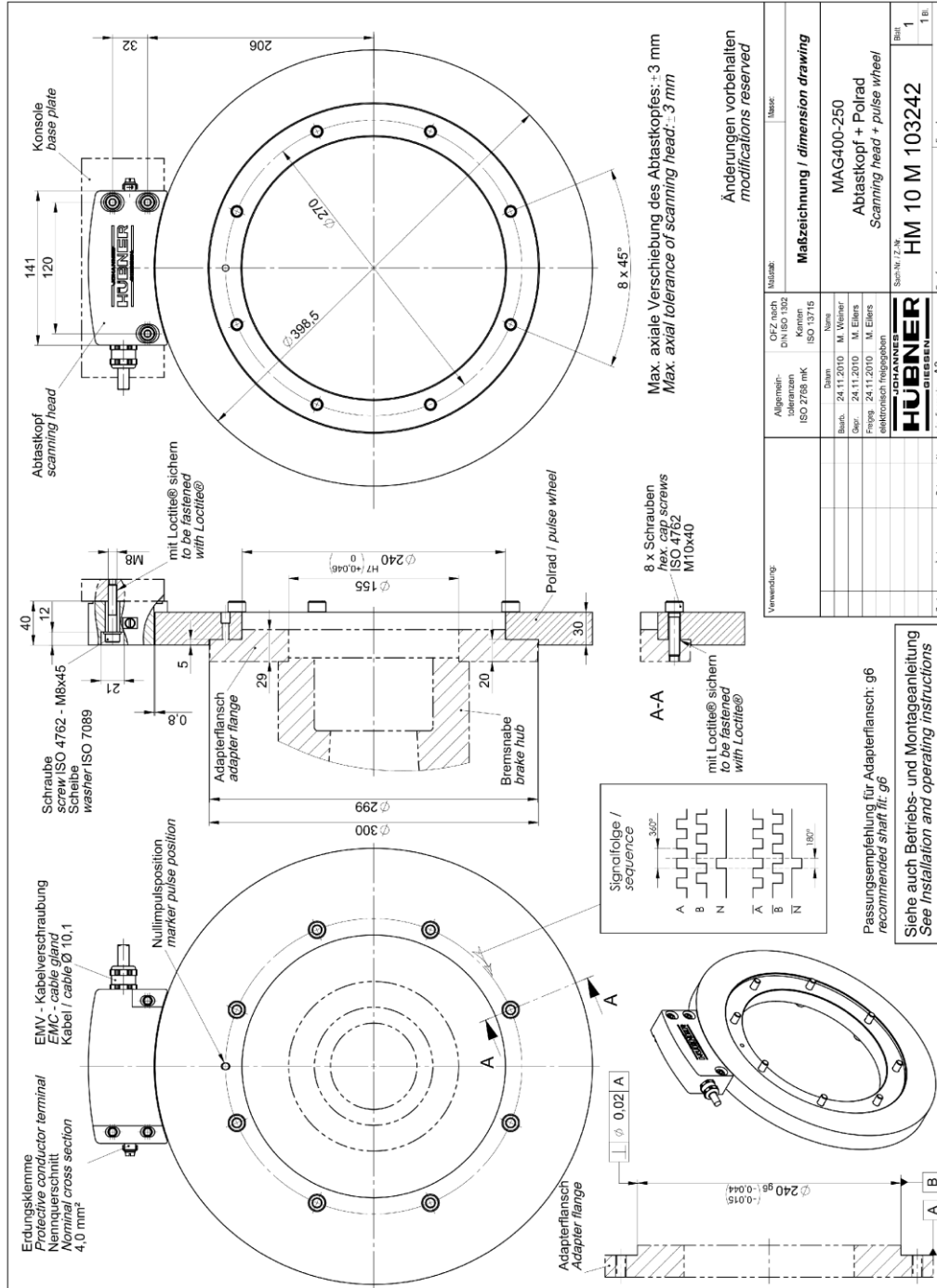
Use protective casing, if necessary.

7.6 Danger of explosion



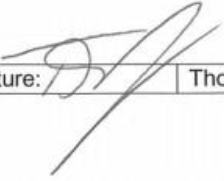
The magnetic encoder may not be used in explosion-threatened areas.

8 Dimensioned drawings

Further dimensioned drawings are available on our website or on request.



9 Declaration of Conformity

	EG – Declaration of Conformity (EMV RL 2004/108/EG)	
<p>We the manufacturer</p> <p>Johannes Hübner Fabrik elektrischer Maschinen GmbH</p> <p>Siemensstrasse 7 D-35394 Giessen</p> <p>hereby declare that the products listed below comply with the EMC Directive 2004/108/ EC.</p> <p>Product designation: Magnetic Encoder</p> <p>Type designation: MAG 400 - 500</p> <p>Following standards (or parts thereof) have been applied:</p> <p>DIN EN 61000-6-2/(03/2006) Generetic-Standard – Immunity for industrial environments</p> <p>DIN EN 61000-6-4/(09/2007) Generetic-Standard – transient - Emission standard for industrial environments</p> <p>EC Authorized representative Gerhard Esch QMD (Head of QM); address as above</p> <p></p>		
Signature:	Thomas Brandenburger member of the board	Date: 01.02.2011

Konformitätserklärung_MAG_400_500_EMV Index 00

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