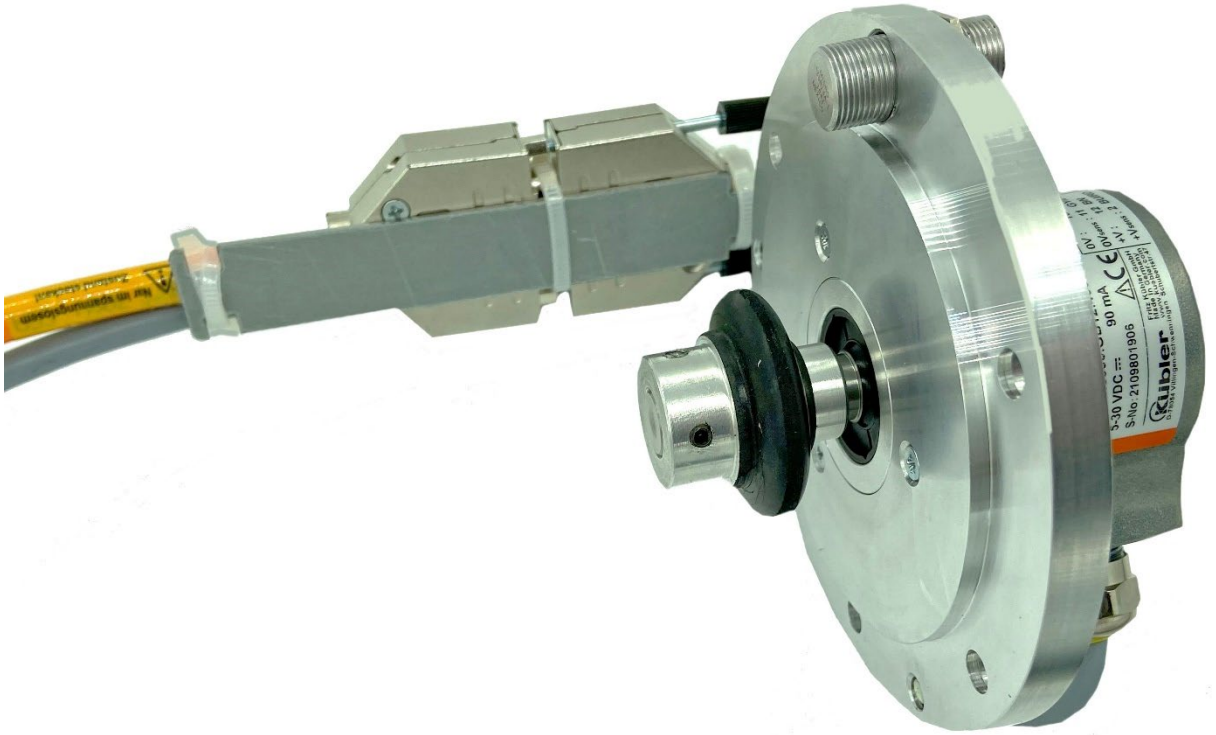
OPERATING MANUAL

Encoder-Sensor for Eco-Disc©-Machines of the MX6 – MX10 type



Retrofitting of encoders and sensors for the operation of Eco-Disc©-Gearless with GOLIATH-90 frequency inverters

KW Aufzugstechnik GmbH Encoder-Sensor for Retrofitting of MX-Machines Version V1.03 EN

KW AUFZUGSTECHNIK GmbH
Zimmersmühlenweg 69
D-61440 Oberursel / Germany

Phone +49 (0) 6171-9895-0
Fax. +49 (0) 6171-9895-03
Int. www.kw-aufzugstechnik.de
Mail. verkauf@kw-aufzugstechnik.de

Contents

1.0 System description

1.1 Product liability and guarantee

All work on the assembly and setting of the encoder-sensor system for the machines of the MX series in connection with the frequency converters of the GOLIATH-90 series may only be carried out by qualified specialists (electricians or electrotechnically trained persons). Please observe the safety instructions in these instructions.
This manual is for elevator technicians, which installs and commissions the control as well as at controller constructor, which inserts the controller into the switchgear and makes necessary wiring.
We guarantee for the accuracy of the product in the sense of the product informations published by us and this manual. It does not become warranty, legal responsibility, still any adhesion for economy or error free function for another purpose, than in chapter 1.2 defined granted.

Terms of guarantee

On the function of the equipment in accordance with this manual a warranty is granted by 24 months. A condition for the free repair are the proven attention of the manual with storage, transport, installation, start-up and enterprise. The general trading conditions of the company KW Aufzugstechnik GmbH are valid.

1.2 Intended use

The frequency inverter GOLIATH-90 is intended for the employment in lifts. Other application type are be coordinated with the company KW Aufzugstechnik GmbH. The following legal agreements are to be considered with the installation and enterprise:

- Low-voltage guideline 73/23/EG
- EN 81 -20 Number 5.6.6.2 and 5.6.7.3
- TRA 264.2
- Guideline 2014/33/EU Article IV A
- EN 81-20: 2020-06 and EN 81-50: 2020-06

1.3 Safety references

The operating instructions for the installation and commissioning of the encoder sensors for the Eco-Disc © drives on the GOLIATH-90 must be freely accessible to the operating personnel and it must be ensured that the operating personnel has read the operating instructions and how to use them is familiar with the assembly.
A condition is the intended enterprise of the frequency inverter GOLIATH-90 according to chapter 1.2.
In the case of ignoring this regulation the danger exists of heavy damages to property and person.
All work on the frequency inverter GOLIATH-90 may be accomplished only by qualified technical personnel.
The following safety regulations are to be considered:

DIN VDE0100, DIN VDE0110, IEC-364, IEC-664 and VBG 4.

Qualified technical personnel in the sence of this operating instructions are persons with
- Assemby
- Start up
- Maintenance
- Attention of the national rules for the prevention of accidents are trusts and can show appropriate vocational qualifications.

Never work under mains voltage – Danger of life!

Before you begin work on the frequency inverter GOLIATH-90, interrupt voltage supply by main switches and the appropriate safety devices and secure you against erroneous restarting!

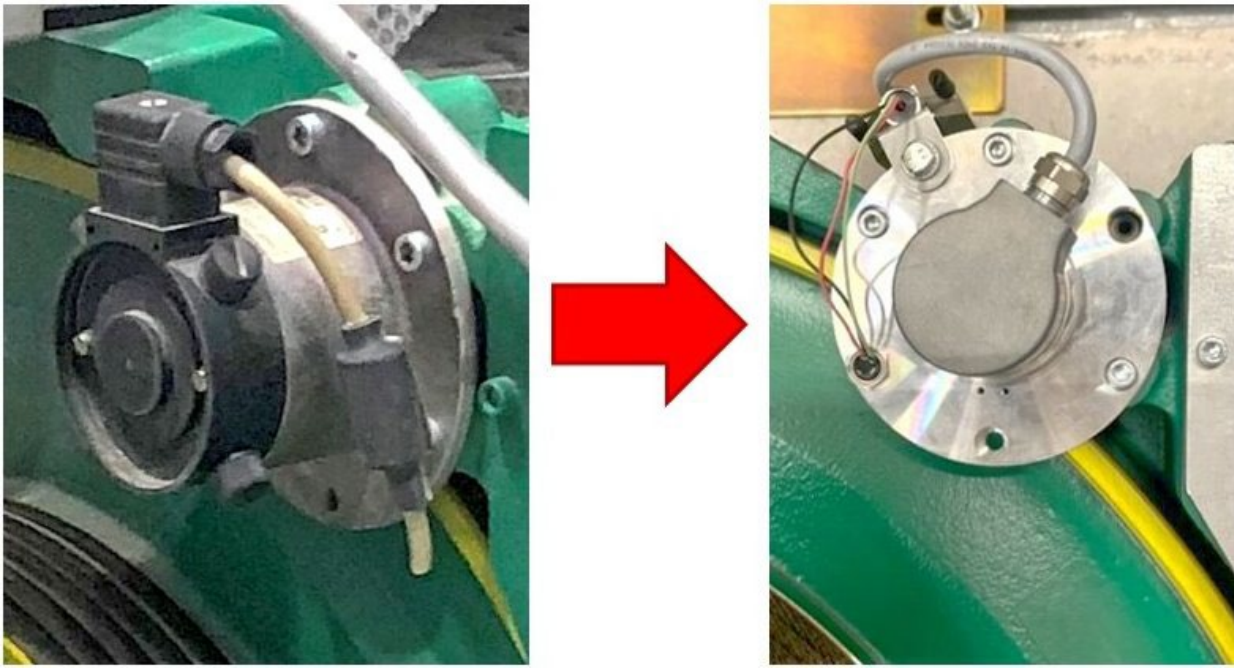
Survey the supply lines for tension free! Neighbouring clamps and components, which could be energized must be covered!

2.0 Assembly description

2.1 Aim of the retrofitting

With the existing tachometer generator it is impossible to operate the synchronous machines of the MX series with the GOLIATH-90 frequency converters. The existing tachometer generator must therefore be removed and replaced with an incremental encoder. There is also a Hall sensor on the new assembly to control the circumference of the disc in relation to the friction wheel.

OLD CONDITION **NEW CONDITION**



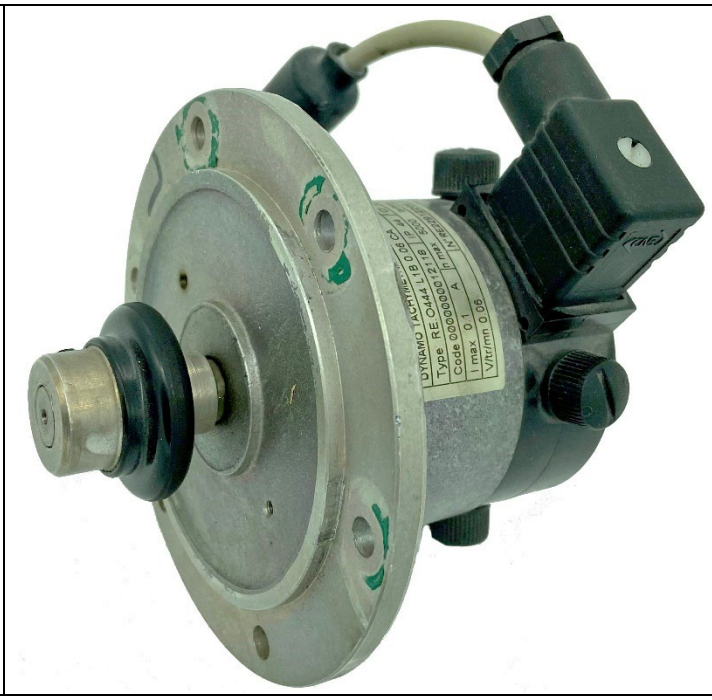
2.2 Scope of the retrofit set

The retrofit set contains all the materials needed to create the required state for operating the GOLIATH-90 frequency converter.

Scope of delivery of the retrofit set contents:	
Encoder-unit with friction wheel, connection-cable 5m MX06/ 10 - KW-No.: 1000663	
Hall-Sensor, Magnet, Montagelehre, tube of adhesive and connection-cable 5m MX06/ 10 - KW-No.: 1000664	
Sparepart - Magnet with marked side in RED KW-No.: 1000671	
Sparepart - Assembly jig for readjusting the distance between the Hall sensor KW-No.: 1000672	
Sparepart - tube of adhesive to fix the magnet KW-No.: 1000673	

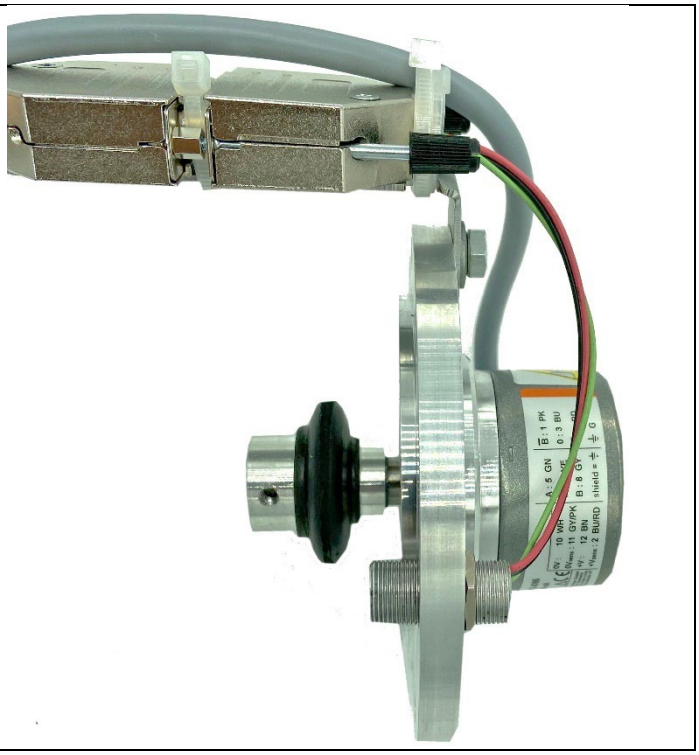
2.3 Dismantling the old tachometer generator

Before you start to dismantle the tachometer generator, make sure that the elevator car and the counterweight are fixed so that movement is impossible. Plan your deployment so that you can get into the elevator shaft without risk and start working on the drive while observing the health and safety regulations and preparing a risk analysis. Observe the instructions in section 1.3 Safety instructions!

In General: The ropes do not have to be laid down on the drive, but remain on the traction sheave without any relief! **Main supply switched off:** After the main switch and the secondary fuse have been switched off, check that there is no voltage! A restart is to be prevented. **Dismantling:** The speedometer cable is to be interrupted and then the 4 fastening screws are to be loosened. This allows the tachometer generator to be released. The screws are required to attach the new incremental encoder.	

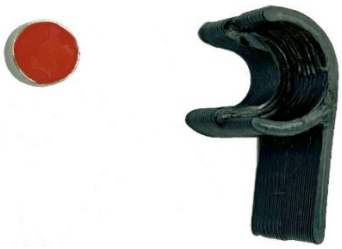
2.4 Installation of the new encoder sensor

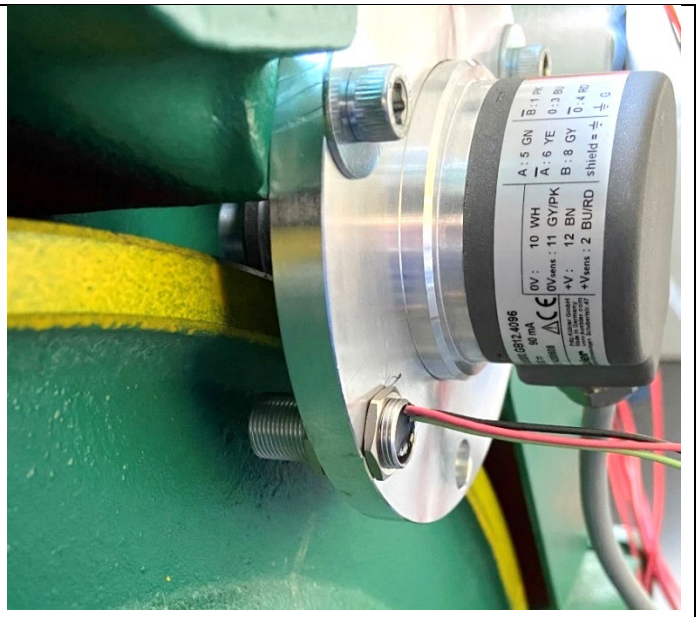
Please use the 4 existing screws to attach the new encoder unit.

In General: The same mounting holes as for the tachometer generator are used to mount the incremental encoder. **Position of the sensor:** The sensor, which is already built into the fastening ring, points downwards (see also the upper picture on page 6). **Friction wheel:** The encoder-sensor-unit is to be aligned in such a way that the friction wheel moves without great pressure on the rotating ring. However, the friction wheel must not move without a traction sheave. After perfect alignment, the fastening screws can be tightened with approx. 10 KN.	

Distance between the sensor and the traction sheave

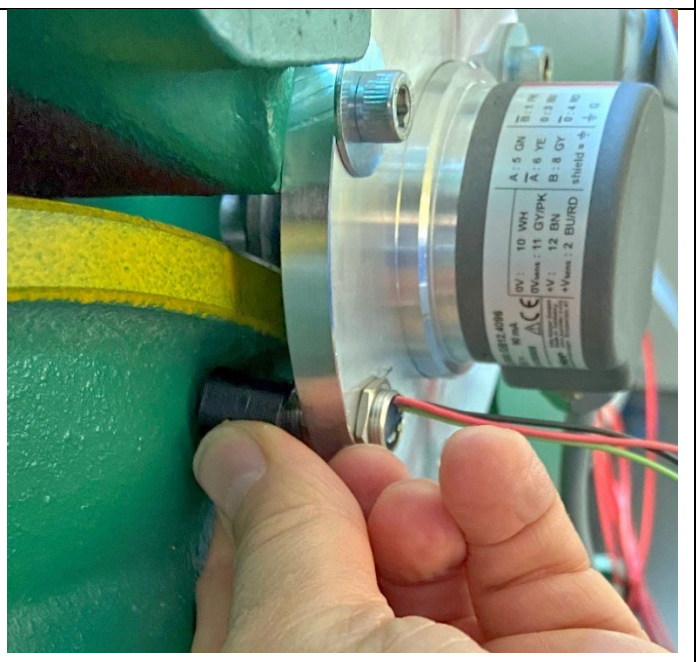
The sensor has already been set to the assumed distance at the factory. Nevertheless, the distance can differ in practice. That is why we have enclosed a distance guide for you. You can click this on the sensor, loosen the lock nut and, if necessary, turn the sensor in or out as far as it will go.





The Magnet

You have to stick a magnet to the traction sheave.
Two characteristics are important:
On the one hand, the magnet must be applied in such a way that the red marking is visible.
On the other hand, the position of the magnet should be exactly below the sensor.
Once you have fulfilled this task, take a drop from the tube of adhesive and finally fix the magnet.

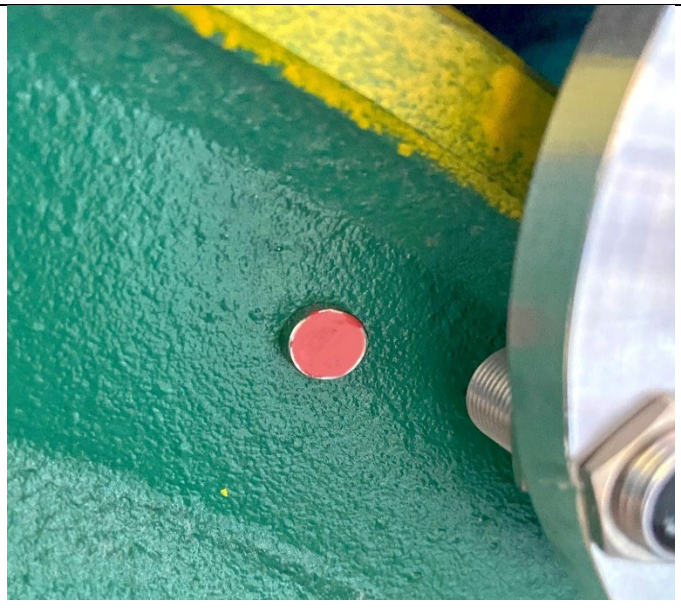


The result looks like the one on the right.

Nothing Left To Do…
In contrast to our competitors, you don't have to stick any more magnets or do any crazy learning trips to determine pole pair positions ...

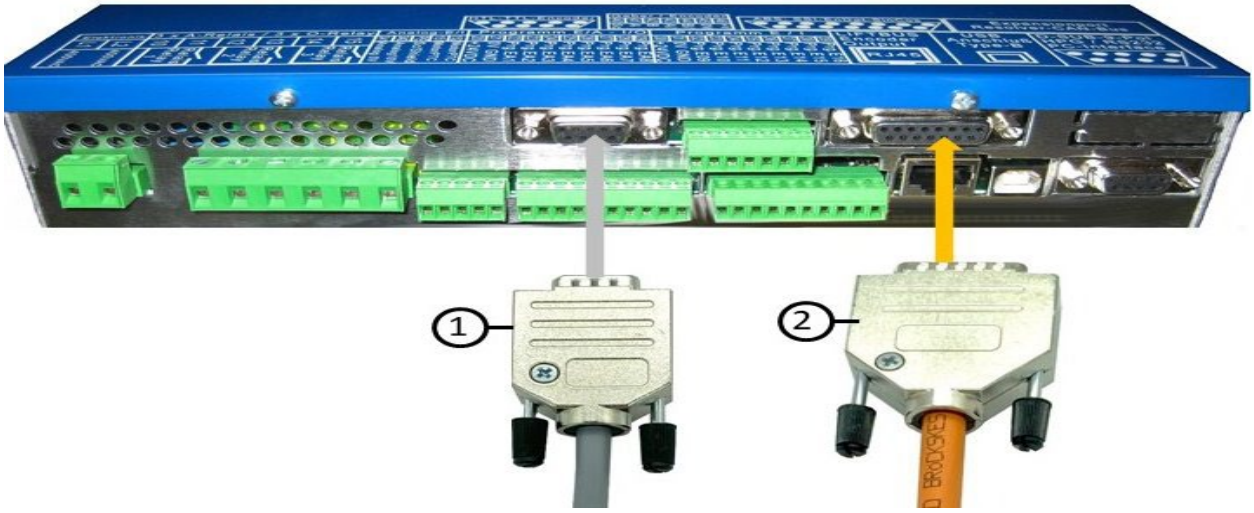
Our GOLIATH-90 measures the rotor position in the millisecond range (0.001 seconds!) Before each trip.

Even if you had opened the brake before driving and thus moved the car, the car always starts off perfectly😊.



2.5 Electrical connection of the encoder sensor on the GOLIATH-90

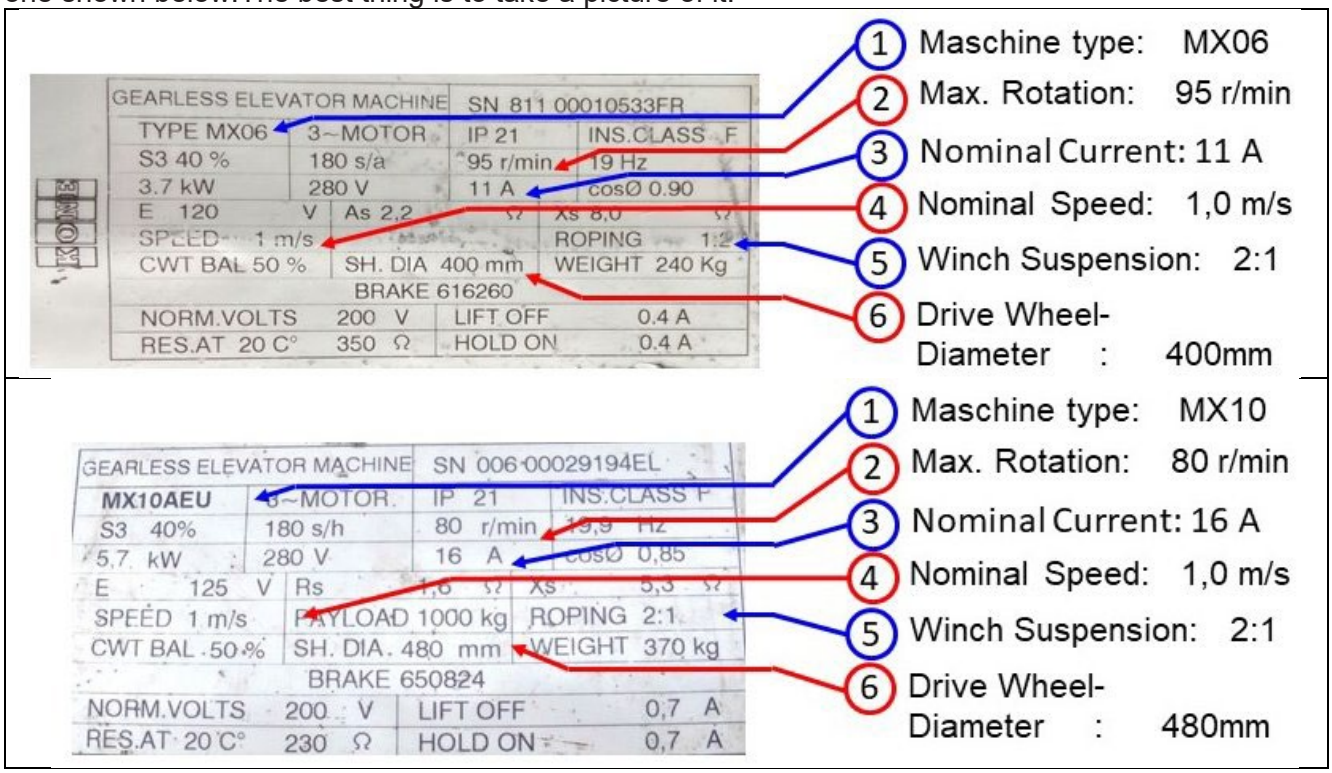
Now let's turn to the more pleasant sides. Before you attach the connector to the GOLIATH-90, make sure that the frequency converter is de-energized.
Please plug the 9-pin plug into the 9-pin socket and lock the plug!
The second connector, namely the 15-pin connector, goes into the corresponding 15-pin D-Sub socket. Please lock!



3.0 Parameterization

3.1 Data plate – Example MX06 and MX10

Before you set the parameters in the converter, you should read! You will find the data-plate of the MX-Gearless next to the encoder that has just been installed. The data label is similar to the one shown below.The best thing is to take a picture of it.

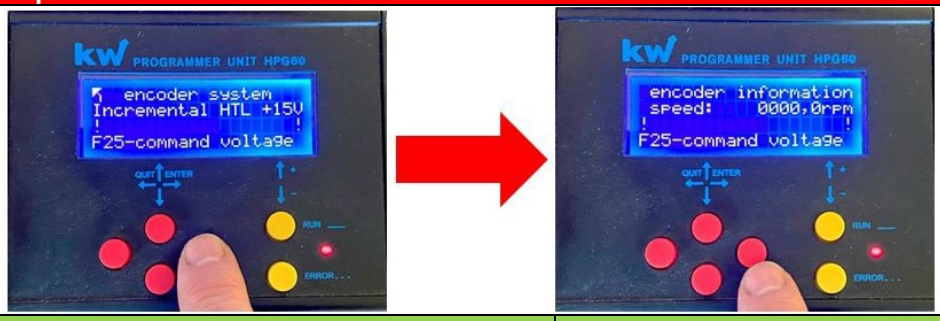


3.2 Parameter GOLIATH-90

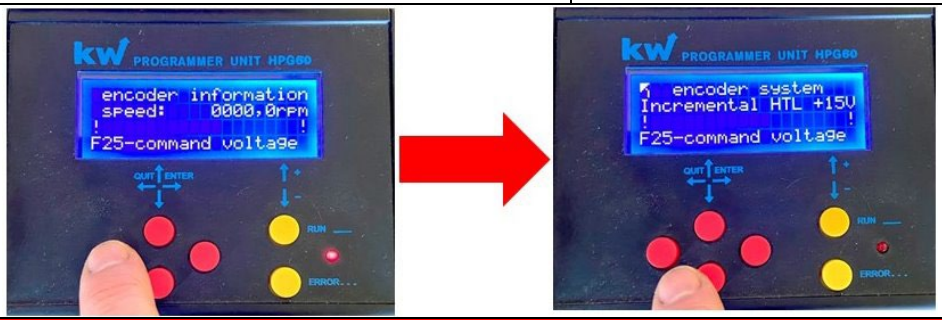
To set the converter you need an HPG-60, which you plug into the converter or the DAVID control. Of course, this can also be done with the KW control via the APP via WLAN or with KWeb via the Internet. In the case of third-party controls, you can set the inverter via the DCP bus connection via the control.

Menu A4 MOTOR / GEARBOX > Synchrone maschine	
If a preprogrammed motor type is set, all required parameters such as the number of motor poles, encoder offset and various control settings are automatically preset to this motor type.	
KONE: NMX-07 / NMX-11 / MX-05 / MX-05/10 / **MX-06** / MX-06/10 / MX-10	
Motor- Rating plate - Number of Poles:	Posted by type MX06
Motor- Rating plate - Maximum Rotation:	MX06: **95 U/min**
Motor- Rating plate - Nominal current	MX06: **11 A**
Motor- Rotation field	[**RIGHT**]
-> If motor runs into wrong direction (e. g. down with signal „UP“), use this function to change the direction of the rotation field.	
Encoder system: Here the variant with Incremental encoder was chosen:	**Incremental HTL +15V**

Jump to the submenu ENCODER-SYSTEM: > Pushbutton ENTER !



Encoder info: Speed: 0000,0UpM		-> Display of the current engine speed
Encoder info: wire-A: - wire-B:		-> Display of the current pulses A-B channel
Encoder info: Angle: xxx,xx°		-> Display of the current rotor position angle
Encoder info: Encoder Voltage Actual: 15,0V		-> Display of the current Encoder Voltage: 15,0V
Encoder info: Encoder Set Voltage : 15,0V		-> Display of the Encoder Voltage Setting: 15,0V
Encodersetting Incremental encoder Zero-puls: **OFF/ ON**		**MX06: ON**
Encodersetting Incremental encoder Friction wheel: **NO/ YES**		**MX06: YES**
Yes	Encodersetting Encoder Friction Wheel:	**37,02 mm** (Rubber wheel diameter)
	Encodersetting Encoder Friction Sheave:	**615,0 mm** (Traction sheave diameter)
	Encodersetting Monitoring Start:	**1500 ms** (Tolerance time Encoder monitoring)
	Encodersetting Monitoring Travel:	**500 ms** (Tolerance time Encoder monitoring)



Return into the Menu A4 Motor / Gearbox – Synchrone maschine: > Pushbutton QUIT !

Encoder pulses (number of pulses of the digital tacho-generator per resolution):	MX06: **4096**
Encoder- Direction (**Change** [**RIGHT**] <> [**LEFT**] at ” DIRECTION WRONG ”):	MX06: **LEFT**
Encoder- offset measure (First Travel/ Every Tr. / Once a Day/ Every xxxx Ride):	MX06: **Every Travel**
Winch transmission (See the gearbox rating plate for the correct gear ratio):	MX06: **1 : 001,0**
Winch drive wheel (Enter drive pulley diameter in (mm)):	MX06: **400 mm**
Winch suspension (Enter rope suspension [**From 1:1 to 8:1**]):	MX06: **2:1**

4.0 Function test

From here on, our GOLIATH-90 manual takes over and guides you through the first function tests and settings of the travel curve.

You can certainly do it without any problems. In the event that you still need support, our **hot-line**:

KW AUFZUGSTECHNIK GmbH
Zimmersmühlenweg 69
D-61440 Oberursel / Germany

Phone: +49 (0) 6171-9895-12
Mail : steuerung@kw-aufzugstechnik.de

You need our manuals - no problem - everything is free to download:

Internet : www.kw-aufzugstechnik.de /Downloads/..

Have fun and recommend us to others!