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# iQ-Bench / iQ-Bench-M

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User Manual

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# 1 INTRODUCTION

Important information: Read the manual carefully before using this device.

Inappropriate utilization may cause damages to the device, to the DUT (device under test) and/or other components of your setup.

Please keep these instructions in a safe place and pass them on to any future user.

## 1.1 Conformity

We, Image Engineering GmbH & Co. KG, hereby declare, that the “iQ-Bench/iQ-Bench-M” corresponds to the essential requirements of the following EC directive:

- Electromagnetic Compatibility - 2014/30/EU
- RoHS 2 - 2011/65/EU
- Low Voltage - 2014/35/EU

## 1.2 Intended Use

The iQ-Bench is designed to adjust the chart camera distance and is based on a linear guide that has the possibility of motorization.

- Only suitable for indoor use.
- Camera weight max. 5 kg (if your camera is heavier, please contact Image Engineering)
- Camera dimensions max. 50 cm x 50 cm x 40 cm (if your camera is larger, please contact Image Engineering.)
- Place your system in a dry and constant tempered environment.
- The optimal ambient temperature range is 15 to 30 degrees Celsius.

## 1.3 Product Variants

iQ-Bench - is the manual version. (Standard Bench – 3 m movement range, custom specifications on request)

iQ-Bench-M - is the motorized version. (Standard Bench – 3 m movement range, custom specifications on request)



## 1.4 Foreseeable Misuse

### 1.4.1 Departing from Described Setup

Important for the iQ-Bench-M:

The following steps must be performed in the correct chronology to allow frictionless commissioning.

Departing from the chronology may lead to an incorrectly working device.

1. Install the iQ-Drive Software
2. Connect iQ-Bench to power and via USB to the PC
3. Switch iQ-Bench on; the system drivers will be installed
4. After drivers are installed completely start the software
5. Load configuration .xml file ("IE\_Drive\_Configuration.xml" on the USB-stick)

### 1.4.2 USB Connection

Only an appropriate USB connection allows an error-free operation of the iQ-Bench. Use the included USB cables. If you need to extend the USB connection to a longer distance, please check if powered hubs/repeaters are necessary.

## 1.5 General Safety Information

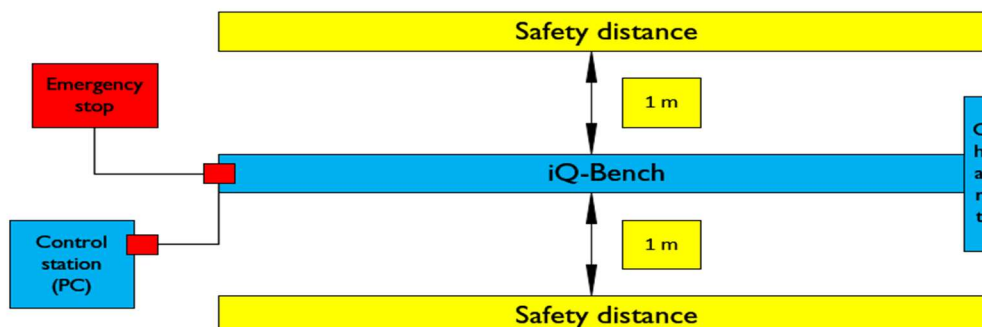
This information is important for the motorized version iQ-Bench-M:

There will be two emergency stops, one on the switching box and one portable one. It is recommended to place the portable emergency stop on the control station. If there are any errors or misconduct, press the emergency stops immediately. Do not place anything in the danger zone.



### DANGER!

It is important to maintain a safe distance of at least 1 m from the iQ-Bench during construction. Permanent personal injury or material damage may occur if the proper safety distance is not observed. We recommend using bollards to shut off the device at the safety distance (see optional equipment).



**DANGER!**

When changing the camera, you must switch off the power supply of the iQ-Bench.

While doing repair and maintenance work on the iQ-Bench, you must switch off the power supply.

Image Engineering GmbH & Co. KG is not responsible for any software or hardware changes made to the iQ-Bench. Please contact Image Engineering if changes are necessary.

Replace a damaged power cable immediately to avoid serious health risks. The manufacturer or other authorized personnel only should provide the replacement. Only plug the power cable into a socket that has a protective conductor. A protective conductor should also be used when using an extension cable.

If you do not observe the issues stated above, permanent personal injuries or material damage can occur.

**WARNING!**

Wearing tight clothing and avoiding jewelry is advised to reduce the risk of unintentionally catching the motor.

## 1.6 Inadmissible Usage

The configuration XML is created by Image Engineering to set the limit for velocity, acceleration, positioning and movement range. These settings cannot be changed. . Please contact Image Engineering if you want to change the settings.

- **Do not manipulate or disable the emergency stop.**
- **Do not extend the camera mount or the intended use will not be guaranteed.**
- **Do not put any objects on the linear guide.**



## 2 GETTING STARTED

### 2.1 Scope of Delivery

iQ-Bench: Bench, feet of the Bench, tools (see packing list), manual, camera mount

iQ-Bench-M: Bench, motor, switching box, feet of the Bench, tools (see packing list), manual, camera mount  
power cord, USB cable, iQ-Drive software/API

#### Optional equipment:

Bollards, to shut off the safety distance.

### 2.2 Set-up

iQ-Bench-M: the set up by Image Engineering or a trained Premium Reseller for iQ-Bench-M is mandatory

iQ-Bench: Follow the 3 steps on the next page to setup the iQ-Bench.

#### Tools needed for setup

- Set of Allen-keys (4mm, 6mm & 8mm)
- 13 mm, 19 mm Wrench
- Philips screwdriver size 2
- Flat screwdriver



## 1. Main assembly

Follow the instructions to set up your product:

Make sure that you have enough free space to set up the test bench.

Start by assembling the feet according to the tape marking.



With the help of another person, lift the bench out of the box and set it on the feet.



Secure the bench to the feet with hammer screws.



## 2. How to connect the aluminum bars and bench

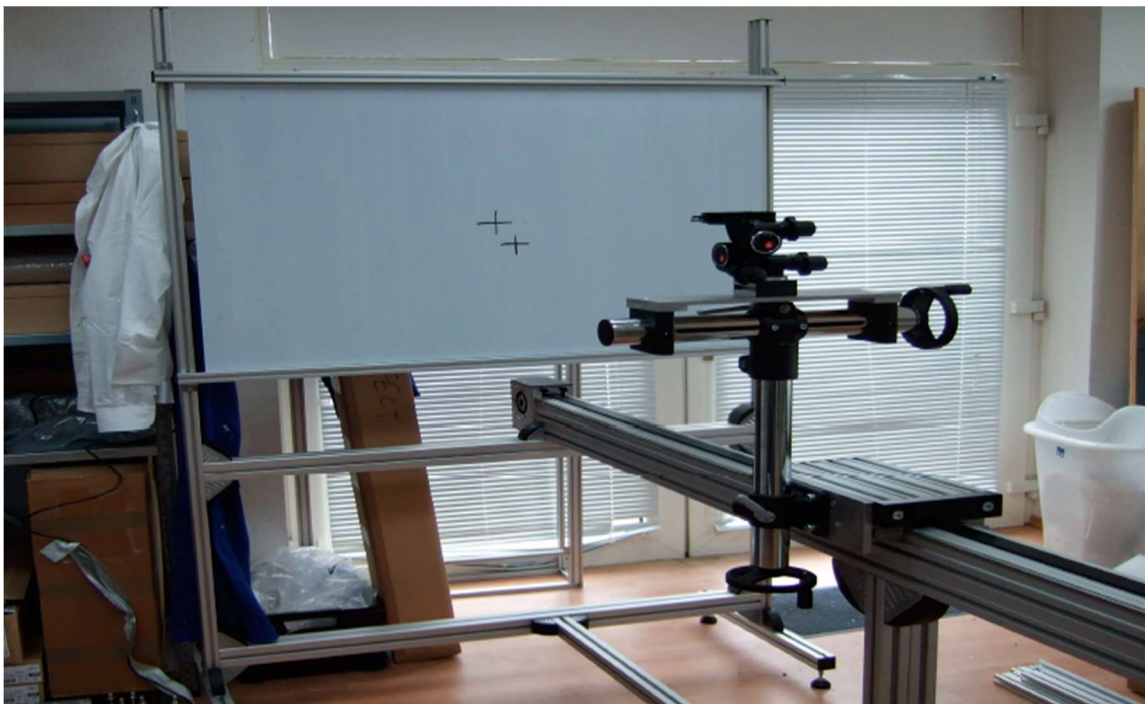
Connect the angle brackets using hammer screws.



First, put the aluminum bars in position THEN slide in the screw. Pull the screw to the very front position and tighten it by hand. Make sure the hammer slips into the correct position. When the screw is secured, you can use the wrench to tighten it.

## 3. Mount the camera mount

Secure the camera mount to the bench using the provided M10 screws.







## 3 OPERATING INSTRUCTIONS HARDWARE

### 3.1 Overview

iQ-Bench-M:

- Power switch
- 2 Emergency stops (one on the switching box and a mobile one)
- USB
- Power plug

### 3.2 Connecting the hardware

iQ-Bench-M:

Connect the power cord to the power supply on the switching box.

Connect the USB cable to the switching box and to your PC. The power switch is located in front of the switching box.

## 4 OPERATING INSTRUCTIONS SOFTWARE

### 4.1 Requirements

- PC with Windows 7 (or higher) operating system
- One free USB port

### 4.2 Software Installation

Install the iQ-Drive control software/API before connecting the hardware. Follow the setup instructions.

See the delivered iQ-Drive manual.

### 4.3 Starting the System

Start the iQ-Drive software/API by clicking the 'iQ-Drive.exe' or the iQ-Drive icon on your desktop. Make sure that both emergency stops are not engaged.

For more detailed information, see the delivered iQ-Drive manual.



## 5 ADDITIONAL INFORMATION

### 5.1 Maintenance

The images and texts in this chapter are from the "Bosch Rexroth AG" manuals 3 842 527 226 (2008.05) and 3 842 527 227 (2008.08).

#### Safety instructions for maintenance!



Installation and commissioning, operation, maintenance and repair work may only be carried out in accordance with the relevant safety instructions and regulations by qualified and specially trained personnel!

All security coverings that have been removed during repair work must be reinstalled before commissioning!

Always disconnect the energy supply (main switch, pressure relief valve, etc.) prior to any maintenance or repair work!

Precautions should be taken to prevent inadvertent power restoration, such as placing a suitable warning sign around the main switches, e.g. "Maintenance work in progress" or "Repair work in progress"!

All electrical connections must be made in accordance with the applicable national regulations. For Germany: regulation VDE 0100 (VDE, German Association of Electricians)!

Liability: In no event can the manufacturer accept warranty claims or liability claims for damages arising from improper use of the appliance or from intervention in the appliance other than that described in this instruction manual.

Exclusion of warranty: The manufacturer can accept no claims for warranties arising from the use of non-original spare parts! MT parts spare parts list 3 842 529 770.

Environmental protection: Always dispose of damaged parts in the correct manner when replacing parts!



### **Check the pre-tension of the toothed belt**

(Images and text below from "Bosch Rexroth AG" 3 842 527 227 (2008.08))

Check the pre-tension of the toothed belt (at high loads after the first 2000 h, then every 5000 h).

**(Comment: There is no high load (max. 5 kg camera), so the check for the pre-tension lasts for 5000 h.)**

Check the fastening of the toothed belt in the belt connector (visually, every 5000 h):

- Is it securely anchored?
- Deformation at first tooth gap? (evidence of overloading).

Check the toothed belt for wear (visually, every 5000 h)

Guide bearing maintenance - Assembly instructions 3 842 527 226

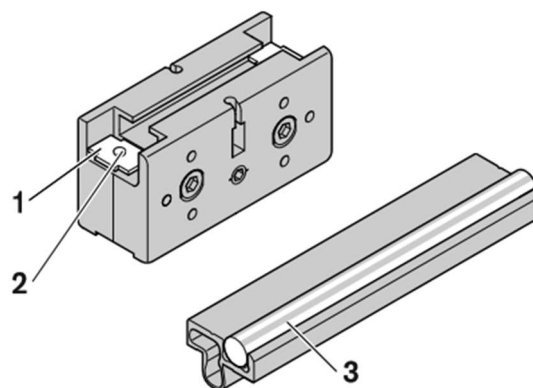
### **Lubricate the lubricating felt**

(Images and text below from "Bosch Rexroth AG" 3 842 527 226 (2008.05))

The lubrication should be implemented annually with the following grease: **„Klüber Isoflex Topas NCA 52“**.

*Illustration from "Bosch Rexroth AG"*

Fig 1



Delivery condition:

- Complete axles: lubricated
- Individual guide bearings: unlubricated

**(Comment: Standard Bench 3 m: The single bottom bracket and the complete axis are pre lubricated.)**

Fig 1:

- 1) Saturate the lubricating felts (1) with grease. Also press grease over the lubricating nipple (2) until it exits at the felt.
- 2) Lubricate the guide rods (3).



Lubricate the guide rods and the lubricating felts with **“Klüber Isoflex Topas NCA 52”**



Lubricate the guide rods and the lubricating felts with **“Klüber Isoflex Topas NCA 52”** (see the Fig 1)



## **Maintenance interval and maintenance work**

(Images and text below from "Bosch Rexroth AG" 3 842 527 226 (2008.05))



### **WARNING!**

Danger of injury to persons or property due to uncontrolled trolley movements.

1. Bring the trolley into the end position below, relieve the strain and secure.
2. Switch off the motor and secure against the restart. (For a mounted drive unit)

## **Maintenance interval**

When operating under normal conditions: after 6 months or 10,000km

When operating under extreme conditions: after 3 months or 5,000km

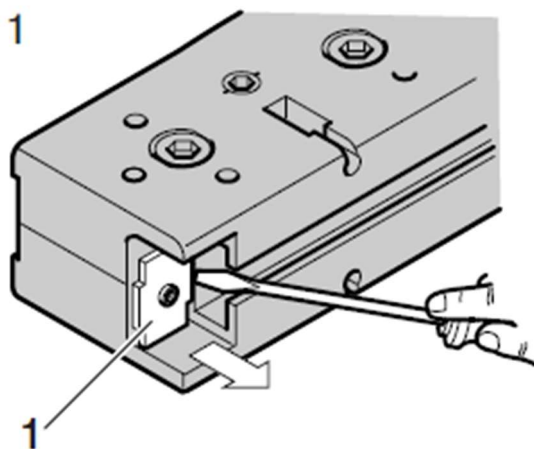
## **Maintenance work**

1. Check the fastening and play of the guide bearing and correct if necessary. (on page 3 of the "Bosch Rexroth AG" manual 3 842 527 226 (2008.05))

If the lubricating felt no longer springs (no wiping limit recognisable at the guide rod):

2. Loosen the lubricating felts at both sides and extract. (see Fig. 1)

Fig 1



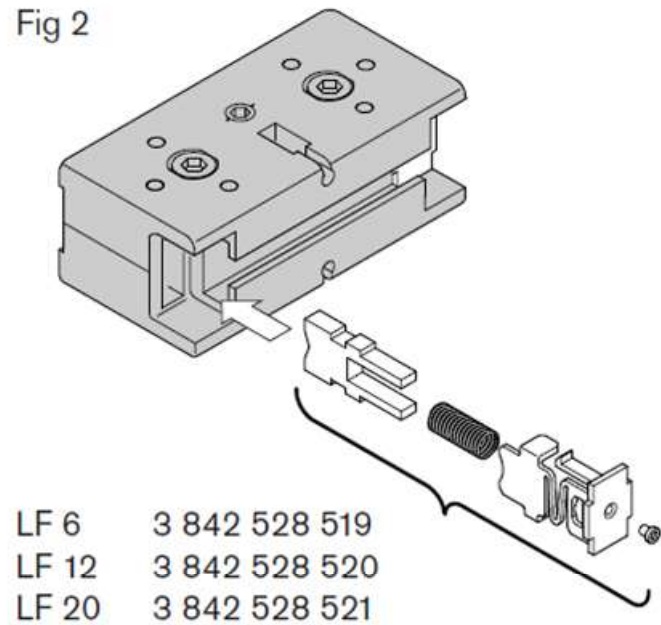
*Illustration from "Bosch Rexroth AG"*



3. Insert the new lubricating felts in such a way that the plastic guide engages at the felt. (see Fig. 2)

Fig 2

*Illustration from "Bosch Rexroth AG"*



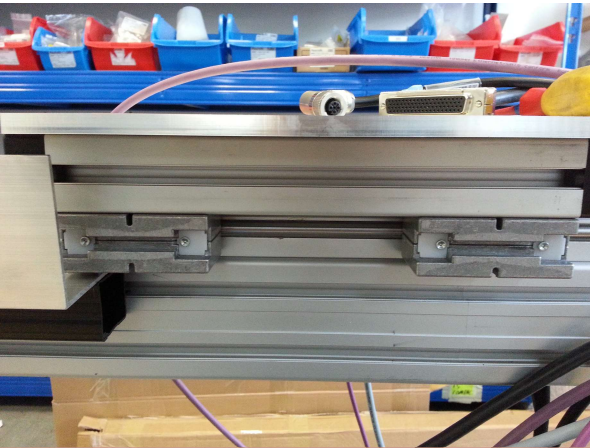
4. Re-lubricate the guide bearing and guide rods. (see **Lubricate the lubricating felt**)

In the case of wear and tear of the support roller or support roller bearing (running noise, play, fluctuating or changed test force, frictional rust):

5. Replace the guide bearing.



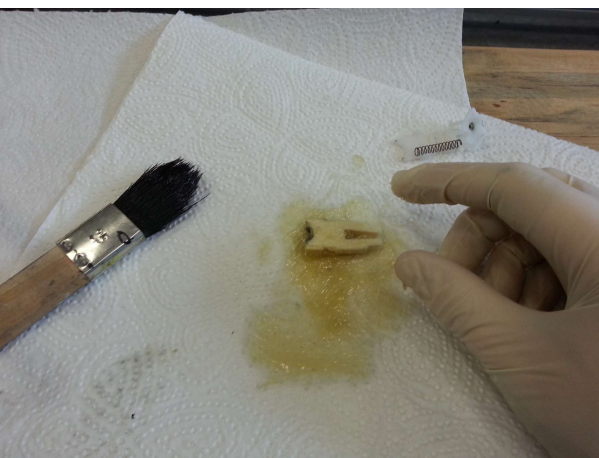
**Maintenance on the guide bearing: (see Maintenance interval and maintenance work)**



The lubrication should be implemented annually with the following grease: **„Klüber Isoflex Topas NCA 52“**.



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## 5.2 Storage and Transport

If you want to move the iQ-Bench-M, remove the motor and the switching box.

## 5.3 Disposal Instructions

After the service life of the iQ-Bench, it must be properly disposed of. Electrical and electromechanical components are included in iQ-Bench-M. Observe your national regulations and make sure that iQ-Bench-M cannot be used by third parties after disposing of it.

Contact Image Engineering if assistance for disposal is required.





## 6 TECHNICAL DATA SHEET

See annex for the technical data sheet. It can also be downloaded from the website of Image Engineering:

[www.image-engineering.com](http://www.image-engineering.com).