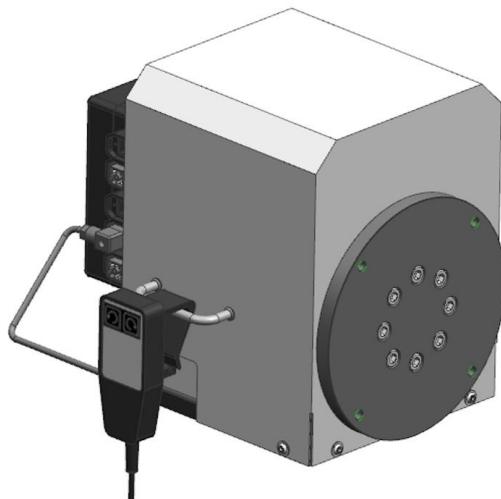




Rotating module DMHe 140 – electrically-operated

max. load 400 kg / max. torque 140 Nm



1 Description of the product

The DMHe 140 rotary module is an electrically driven axis of rotation for handling and positioning workpieces.

At the push of a button, the electric motor drives a worm gear. The drive is self-locking, so it reliably holds any intermediate position reliably without the need for an additional brake.

2 Validity of the documentation

This document applies to the following products:

Data sheet rotating modules . The following types or part numbers are concerned:

- 6508 140 E

3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with expert knowledge in electrical engineering.

Qualification of the personnel

Expert knowledge means that the personnel must

- be in the position to read and completely understand technical specifications such as circuit diagrams and product-specific drawing documents,
- have expert knowledge (electric, hydraulic, pneumatic knowledge, etc.) of function and design of the corresponding components.

2 An **expert** is somebody who has due to its professional education and experiences sufficient knowledge and is familiar with the relevant regulations so that he

- can judge the entrusted works,
- can recognize the possible dangers,
- can take the required measures to eliminate dangers,
- knows the acknowledged standards, rules and guidelines of the technology.
- has the required knowledge for repair and mounting.

4 Symbols and signal words

WARNING

Person damage

Stands for a possibly dangerous situation.

If it is not avoided, death or very severe injuries will result.

CAUTION

Easy injuries / property damage

Stands for a possibly dangerous situation.

If it is not avoided, minor injuries or material damages will result.

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Hazardous to the environment

The symbol stands for important information for the proper handling with materials that are hazardous to the environment.

Ignoring these notes can lead to heavy damages to the environment.


Mandatory sign!

The symbol stands for important information, necessary protection equipment, etc.

NOTE

- This symbol stands for tips for users or especially useful information. This is no signal word for a dangerous or harmful situation.

5 For your safety

5.1 Basic information

The operating instructions serve for information and avoidance of dangers when installing the products into the machine as well as information and references for transport, storage and maintenance.

Only in strict compliance with these operating instructions, accidents and property damages can be avoided as well as trouble-free operation of the products can be guaranteed.

Furthermore, the consideration of the operating instructions will:

- avoid injuries
- reduce down times and repair costs,
- increase the service life of the products.

5.2 Safety instructions

- Avoid collisions and blockades of the drive or the mounting parts.

These can lead to damages of the internal mechanics.

- Rotating movement of the flange plate and their mounting parts!

Adjust the speed of the drive as per the developed safety concept, general guidelines and standards or provide safety devices, if required!

- If the maximum torque is exceed, the drive will be switched off.

After reducing the torque, further movement in push-button mode is possible.

- Exceeding the maximum holding torque or shock loads can lead to damages in the gearbox.

Loss of self-locking and undesired movement of the work-piece are the consequences.

When fixing additional mounting parts, counterhold the front block.

- Exceeding the maximum duty cycle can lead to damages of the electric motor and the electronics. Pay attention to technical characteristics

- In case of damage or malfunction of the components, these must be put out of operation immediately!

- The product was developed, tested and built according to the applicable EMC standards.

In the beginning of the start up it has to be checked whether there are faults in or interactions between the components used.

NOTE
Qualification of the personnel, electronics

All works may only be effected by qualified personnel, that due to their specialist (electrical) training, can evaluate the assigned work and recognize potential dangers.

5.3 Personal protective equipment

 **For works at and with the product, wear protective gloves!**



For works at and with the product, wear safety shoes!

6 Application

6.1 Intended use

Rotating modules are designed for universal use in assembly and handling processes in the industry.

They are used for industrial applications in order to rotate work-pieces rationally, quickly and safely.

Furthermore the following are possible uses:

- Max. forces and / or torques only with the values indicated below technical characteristics.
- Use only within closed, low-dust rooms
- Use within the capacity indicated in the technical characteristics (see data sheet).
- Use as per operating instructions.
- Compliance with service intervals.
- Qualified and trained personnel for the corresponding activities.
- Mounting of spare parts only with the same specifications as the original part.

6.2 Misapplication

WARNING
Injuries, material damages or malfunctions!

- The product must never be opened. At the product no changes must be made, except the ones expressly mentioned in the operating instructions!

The use of the products is not authorised:

- For domestic use.
- For use at fairgrounds and amusement parks.
- In food processing or in areas with special hygiene regulations.
- In mines.
- In ATEX areas (in explosive and aggressive environments, e.g. explosive gases and dusts).
- If physical effects (welding currents, vibrations or others) or chemically acting media damage the seals (resistance of the seal material) or components and this can lead to functional failure or premature failure.

Special solutions are available on request!

7 Transport

⚠️ WARNING

Injury due to overturning product!

- Overturning product due to inappropriate means of transportation.
- Do not stand below the load during lifting and lowering, stay outside the danger zone.
- Use suitable means of transportation.
- Pay attention to the weight of the equipment.
- Pay attention that the product is safely located (centre of gravity see instruction sign).

⚠️ CAUTION

Damage caused by incorrect transport or means of transport!

Lift the product only at the provided devices.



For works at and with the product, wear protective gloves!



For works at and with the product, wear safety shoes!

The product is delivered on a transport pallet and may only be transported to its destination by corresponding floor-level conveyors (pay attention to the weight), or be lifted from the pallet (see fig.).

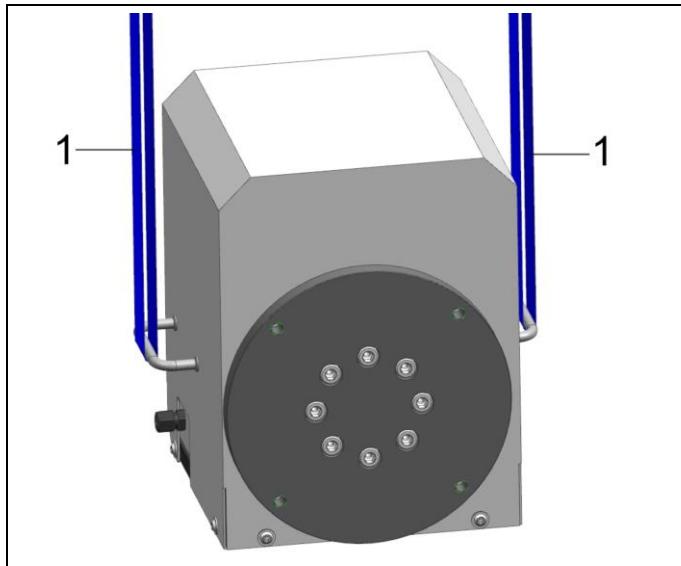


Fig. 1: Lifting points

1 Slings

8 Installation

8.1 Design

⚠️ WARNING

Injury by dropping parts!

Some products have a heavy weight and can cause injury when dropping.

- Transport products professionally.
- Wear personal protection equipment!

Weight specifications see chapter "Technical characteristics".

⚠️ CAUTION

Heavy weight may drop

- Some product types have a considerable weight. These have to be secured against dropping during transport.
- Weight specifications see chapter "Technical characteristics".

Transverse forces and forced conditions!

Side loads and forced conditions on the product lead to the premature failure.

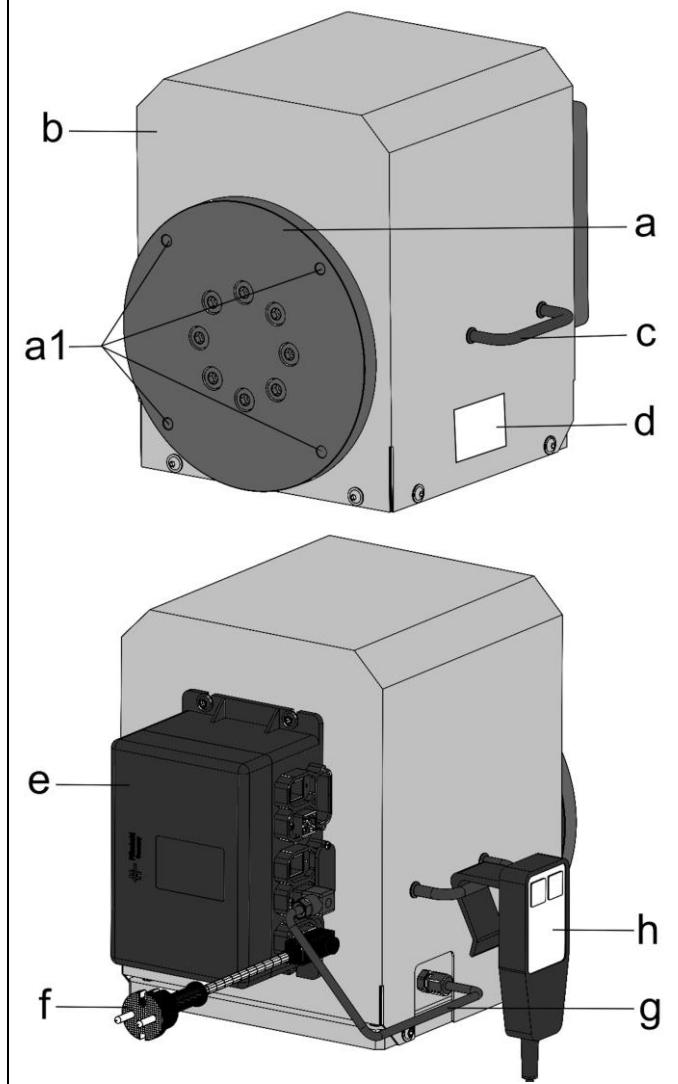
- Avoid forced conditions (overdetermination) of the product.
- Max. forces and torques see technical characteristics.

Max. adm. operating torque

The maximum operating torque at the operating shaft must not be exceeded.

This can be achieved e.g. by limiting the operating stroke of the customer's operating element (hand lever or pedal) by the floor.

8.2 Design



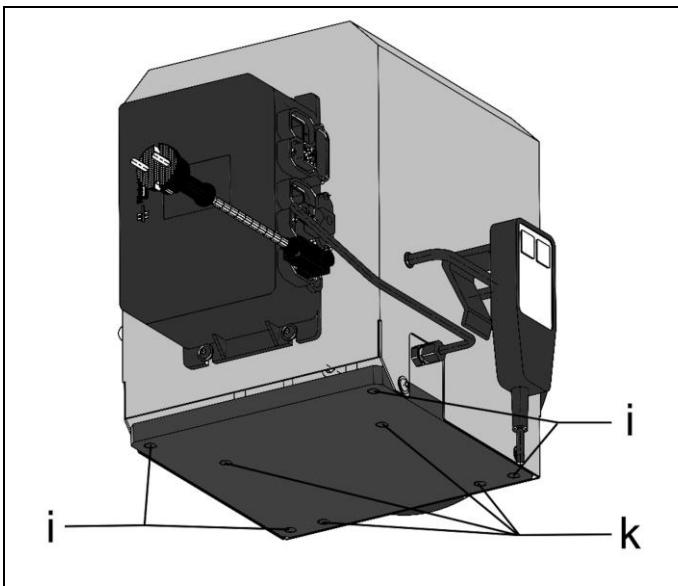


Fig. 2: Components

a Flange plate	g Rotating module connecting line
a1 Thread (4 x M10) to fix customer mounting components	h Hand panel
b Protection cover	i Thread (4 x M10) to fix the rotating module (hole pattern 200 x 200)
c Handle	k Thread (4 x M10) to fix the rotating module (hole pattern 140 x 140)
d Name plate	
e Control module	
f Mains cable	

8.3 Design of the accessory

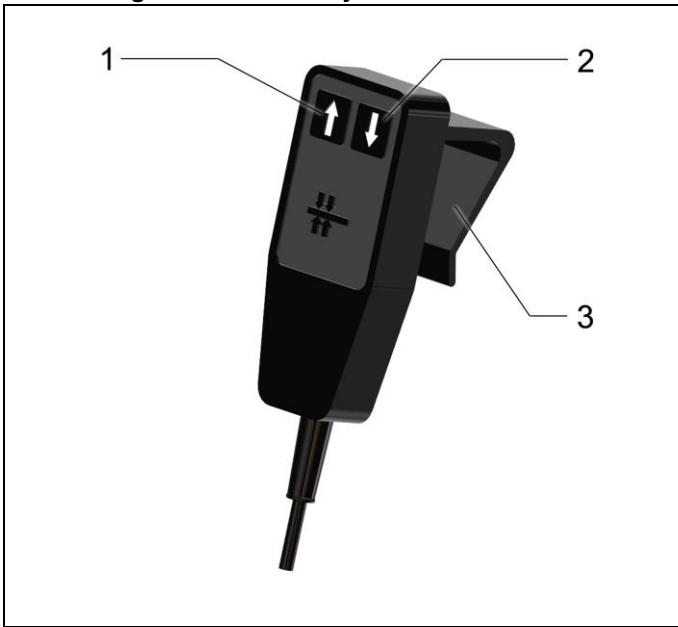


Figure 3: Hand panel

1 Push-button "sense of rotation clockwise"	3 Fastening hook
2 Push-button "sense of rotation counterclockwise"	

8.4 Fixing of the product

⚠ WARNING

Injury due to overturning product!

- Overturning product due to missing or incorrect fixing!
- Fasten bottom plate on the floor.
- When introducing torques within the load limit (see technical characteristics) we recommend to use an additional base plate (accessory) and to secure this plate correctly.

⚠ CAUTION

Damage to components

When mounting workpieces to the flange plate, make sure that the shaft of the screw does not protrude.

Otherwise the flange plate may become blocked.

Damage to internal components

Shock loads onto the drive axle can lead to damages.

When mounting the connecting construction, the flange plate must be secured externally.

💡 NOTICE

The position and mounting type depend on the design of the rotating module.

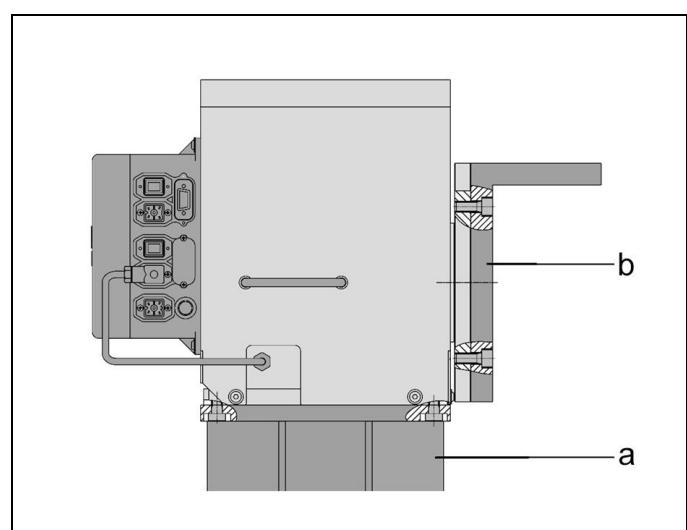


Fig. 4: Possible types of horizontal mounting

a Lifting module

b Angle bracket provided by the customer at the flange plate

8.5 Mounting of the customer's connecting construction

⚠ CAUTION

Protruding screws

When mounting workpieces to the flange plate, make sure that the shaft of the screw does not protrude.

Otherwise the flange plate can be blocked.

Shock loads during installation

Shock loads onto the output axis can lead to damages.

- When mounting the connecting construction, the flange plate must be secured externally.

1. Four threaded holes M10 at the flange plate are used for fixing the user's connecting construction.
All provided bore holes have to be used!

2. Fasten the connecting construction at the flange plate.
3. Observe max. screw-in depths and tightening torques on the installation drawing!

NOTE

Dangers due to the connecting construction of the customer

Dangers due to the connecting construction of the customer, as e.g. squeezing points have to be excluded by the customer's design.

In the case of eccentric loads, it is recommended to compensate these by counterweights. This prevents unregulated swinging of the load (changing - swivelling).

In off-position the indicated maximum torques may occur (see Technical characteristics).

The required forces and torques, around the axis of rotation, have to be considered by the operator.

9 Start up

WARNING

Injury by crushing!

Components of the product make a movement while they are in operation, this can cause injuries.

- Keep parts of the body and items out of the working area!

Injury by crushing!

Due to protruding components there can be pinch points during installation.

- Keep hands and fingers away from pinch points!

Injury / burning due to contact with energized parts!

- Before working on electric equipment, the energized parts must be de-energized and secured.
- Do not open protection covers at electric parts.
- All electrical works must only be realised by electricians.

9.1 Preparation for start up

Before start up, the following checks are required:

- Check if there are any transport damages at the rotating module.
- Check for firm seating of the plug.
- The cables must be fixed by the user so that no bending and tensile stress will act and the cables cannot be damaged in any way.
- The rotating module was developed and built according to the applicable EMC standards EN 61000-6-2 and EN 61000-6-4.

Check whether there are faults in or interactions between the components used.

9.2 Connecting the power supply

The product is ready for connection.

Check for a tight fit (check the tightening torques of the fastening screws).

Proceed as follows for the electrical connection:

1. Check that the supply power corresponds to the specifications of the product. (see technical characteristics: supply voltage)
2. Connect the mains cable (a) to an earthed socket.

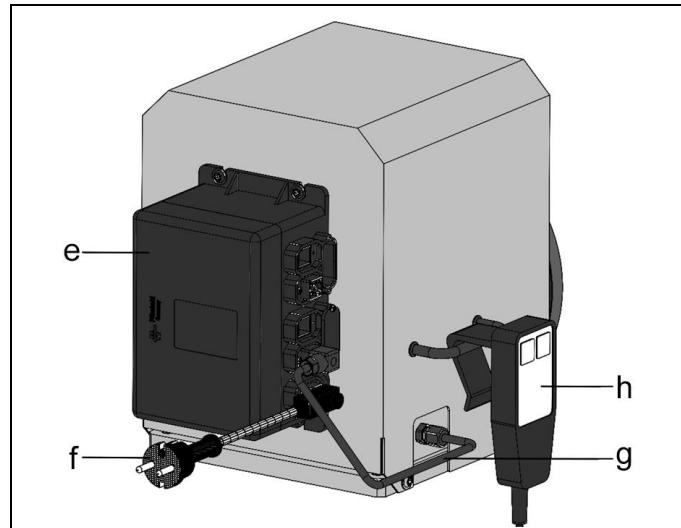


Fig. 5: Connecting the power supply

f Mains cable 3 x 1.5 mm²

10 Operation

WARNING

Injury by crushing!

Components of the product make a movement while they are in operation, this can cause injuries.

- Keep parts of the body and items out of the working area!

Injury by crushing!

Due to protruding components there can be pinch points during installation.

- Keep hands and fingers away from pinch points!

The control operates in so-called touch control mode.

When operating the direction buttons to the left or right, the drive makes the preselected rotation. If the button is released during movement, the drive stops immediately.

11 Maintenance

Maintenance work	Interval	by...
Cleaning, visual inspection of the rotating module	Daily	Operator
Check all fixing screws, retighten if required. Lubricating the rotating module.	Every six months	Expert
Check for smooth running with load over the entire rotating range.	Yearly	Expert
Manufacturer inspection (recommendation)	After 1,000,000 rotating cycles (1/4 turn), after 2 years at the latest.	ROEMHELD service personnel
Repair	in case of damages	ROEMHELD service personnel

NOTICE

Pay attention to the qualification of the personnel.

11.1 Cleaning

The following cleaning works have to be effected daily at the mechanical components.

1. Clean with cleaning clothes or cleaning rags.
2. Slightly lubricate the metallic components (plates, guides, etc.).

11.2 Half-yearly checks

- Check all fixing screws of the rotating module, retighten if required.
- Lubricate the rotating module with MOBILUX EP2.
- The use of the wrong lubricants can cause damage to the swivel drives, reduce life and will void the warranty!
Follow the instructions provided by the lubricant manufacturer.

11.3 Lubricating the rotating module

⚠ WARNING

Lubricating the rotating module

MOBILUX EP2 grease is used as the standard.
Use of the wrong lubricants can cause damage to the rotating drives, reduce life and will void the warranty!

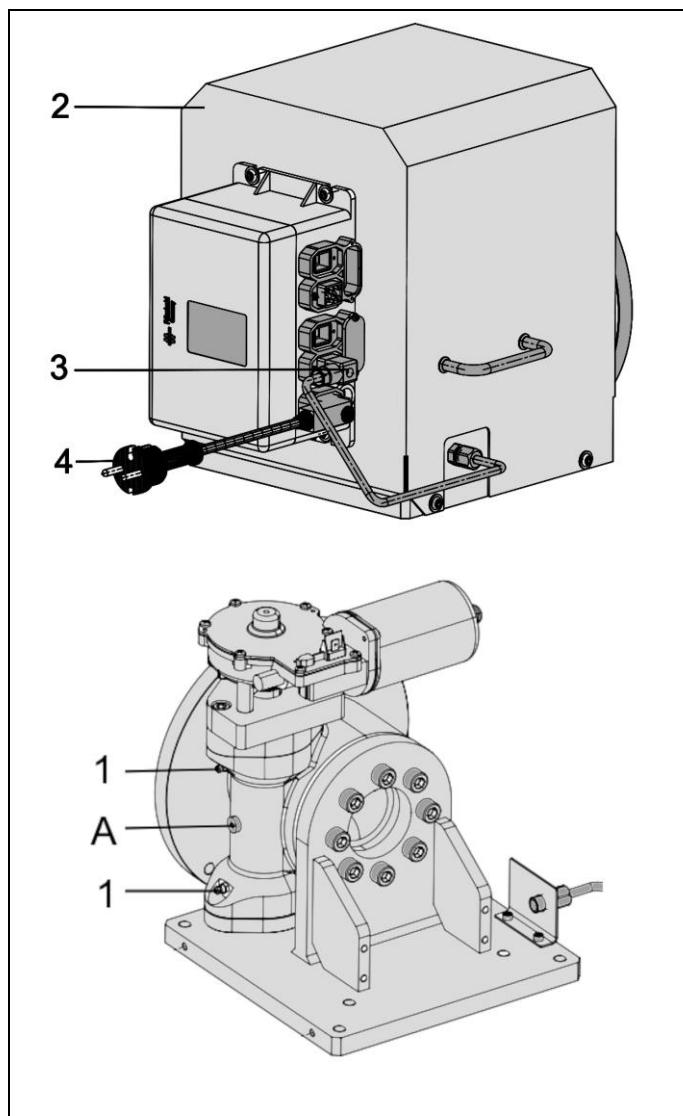


Fig. 6: Lubricating nipple

1 Lubricating nipple - worm shaft	3 Mains cable
2 Protection cover	4 Rotating module plug connection

- Disconnect mains cable item 3 from the rotating module
- Disconnect the rotating module plug connection item 4 from the control module
- Remove protection cover item 2
- Remove screw plug A
- Four to five pump strokes from a manual grease gun

⚠ NOTICE

Unscrew screw plug A during lubrication to prevent the seals from being pushed out.

11.4 Yearly checks

The power supply must be checked regularly by a specialist, but at least once a year for proper function.

11.5 Repair

⚠ NOTE

Repair works

- Repair works, as e.g. the change of the interior lifting jack may only be effected by the ROEMHELD service technicians.

11.6 Service life

In the case of high availability, the rotating modules should be checked at the latest after 1,000,000 rotating cycles (1/4 rotation) or after 2 years by ROEMHELD service personnel.

12 Trouble shooting

⚠ WARNING

Injury / burning due to contact with energized parts!

- Before working on electric equipment, the energized parts must be de-energized and secured.
- Do not open protection covers at electric parts.
- All electrical works must only be realised by electricians.

⚠ CAUTION

All work by service personnel only!

- All works only to be effected by ROEMHELD service staff.

12.1

Interference	Cause	Remedy
The product stops or does not start even if the button is pressed.	Energy supply is interrupted	Re-establish the energy supply
	Max. admissible torques exceeded	Reduce torques
	External blockade of the workpiece or the fixture	Remove blockade
Angular clearance of the flange plate too large	Wear or max. admissible torques exceeded	⚠ Caution! Work should be performed only by ROEMHELD service personnel.

13 Accessory

NOTE

Accessories

- See data sheet.

14 Technical characteristics

General characteristics

6508140E	
Max. admissible force	
Fx, [N]	4,000
Max. torque Mx, driven, [Nm]	140
Max. holding torque Mx, static, [Nm]	1000
Max. bending moment My, [Nm]	1200
Rotation angle	360° infinite without stop points
max. rotation speed, [1/min]	approx. 3
A cycle time of 3 sec. results from the starting and extending speed	
Max. duty cycle	15 %, 1 min On
Code class	IP50
Current consumption at max. torque, A	< 10
Supply voltage, V DC	230
Weight	23 kg
Surfaces:	Cover
	White aluminium lacquered
	Flange plate and clamping surface
	Black oxide
Control module	Black
	Console
Console	Black lacquered

In the case of eccentric loads, it is recommended to compensate for these with counterweights. In the off-position, the indicated maximum torques may occur.

NOTE

Further information

- For further technical data see ROEMHELD data sheet.

15 Disposal

Hazardous to the environment



Due to possible environmental pollution, the individual components must be disposed only by an authorised expert company.

The individual materials have to be disposed as per the existing regulations and directives as well as the environmental conditions.

Special attention has to be drawn to the disposal of components with residual portions of hydraulic fluids. The instructions for the disposal at the material safety data sheet have to be considered.

For the disposal of electrical and electronic components (e.g. stroke measuring systems, proximity switches, etc.) country-specific legal regulations and specifications have to be kept.

16 Declaration of conformity



Manufacturer

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Responsible person for the documentation:

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This declaration of conformity applies to the following products:
Data sheet rotating modules . The following types or part numbers are concerned:

- 6508 140 E

We hereby declare that the machine described in its design and construction as well as in the version we have placed on the market complies with the essential health and safety requirements according to the following EC directives.

The following additional EU directives were applied:

- **2006/42/EC**, Machinery directive [www.eur-lex.europa.eu]

2014/30/EU EMC - Electromagnetic compatibility [www.eur-lex.europa.eu]

The following harmonised standards have been applied:

Product Safety Act - ProdSG; [editor: Federal Ministry of Justice and Consumer Protection, Germany]

DIN EN ISO 12100, 2011-03, Safety of machinery; Basic concepts, General principles for design (replacement for part 1 and 2)

DIN EN 60204-1; 2007-06, Safety of machinery - Electrical equipment of machines, Part 1: General requirements

DIN EN 61000-6-2; 2005, Electromagnetic compatibility, immunity for industrial environments

DIN EN 61000-6-4; 2007, Electromagnetic compatibility, generic standards - emission standard for industrial environments

The technical documents according to the specified guidelines were created for the products.

The manufacturer obligates to provide the special documentation of the products to national authorities on demand.

If the product is modified and not approved by us, this declaration will become invalid.

Laubach, 01.11.2024



Ewgeni Schleining
Development Team Leader MH

Römhled GmbH
Friedrichshütte