



Lifting Module Twin-Strong

Manual-hydraulic and electro-mechanical version

Table of contents

| | | |
|---|----------------------------|----|
| 1 | Manual-hydraulic version | 1 |
| 2 | Electro-mechanical version | 10 |

1 Manual-hydraulic version



1.1 Description of the product

The stroke movement is obtained by a hydraulic lifting jack with single-lever actuation, with oil being pumped by means of a piston pump into a plunger cylinder.

During retraction the oil returns due to the weight of the load from the cylinder back to the reservoir. A defined speed reduction is effected.

The manual-hydraulic variant is particularly sturdy and durable. This variant meets high demands and withstands jerking and knocking loads in applications.

1.2 Validity of the documentation

This applies to the lifting modules Twin-Strong, manual-hydraulic version, as per data sheet M 4.501. These are the types and/or order numbers:

**8914-04-20-H, 8914-04-30-H, 8914-04-40-H,
8914-06-20-H, 8914-06-30-H, 8914-06-40-H**

1.3 Target group of this document

- Specialists, fitters and set-up men of machines and installations with hydro-mechanical expert knowledge.

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 of function and design of the corresponding components.

Table of contents

| | | |
|------|-------------------------------|---|
| 1.1 | Description of the product | 1 |
| 1.2 | Validity of the documentation | 1 |
| 1.3 | Target group of this document | 1 |
| 1.4 | Symbols and signal words | 2 |
| 1.5 | For your safety | 2 |
| 1.6 | Application | 3 |
| 1.7 | Transport | 3 |
| 1.8 | Installation | 3 |
| 1.9 | Start up | 5 |
| 1.10 | Maintenance | 6 |
| 1.11 | Technical characteristics | 7 |
| 1.12 | Disposal | 7 |
| 1.13 | Declaration of conformity | 8 |
| 1.14 | Declaration of conformity | 9 |

A specialist 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.

Tasks:

Operation, height adjustment (lifting and lowering) of the mounted parts, etc.

Qualification

No special requests, introduction on the basis of the operating instructions, danger instruction, minimum age 18 years.

The operator is responsible in the working area with regard to third parties.

The responsibility for different activities at the lifting unit have to be clearly defined and kept. Unclear competences are a security risk.

Tasks of the user:

- To eliminate possibly remaining sources of danger,

- To point out all sources of danger to the operator,
- To make the operating instructions available to the operator,
- To make sure that the operator has read and understood these instructions,
- To know and apply current safety regulations.

1.4 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.

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.

Note

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

1.5 For your safety

1.5.1 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.

1.5.2 Safety instructions

The product was manufactured in accordance with the generally accepted rules of the technology.

Observe the safety instructions and the operating instructions given in this manual, in order to avoid personal damage or material damage.

- Read these operating instructions thoroughly and completely, before you work with the product.
- Keep these operating instructions so that they are accessible to all users at any time.
- Pay attention to the current safety regulations, regulations for accident prevention and environmental protection of the country in which the product will be used.
- Use the ROEMHELD product only in perfect technical condition.
- Observe all notes on the product.

- Use only accessories and spare parts approved by the manufacturer in order to exclude danger to persons because of not suited spare parts.
- Respect the intended use.
- You only may start up the product, when it has been found that the incomplete machine or machine, in which the product shall be mounted, corresponds to the country-specific provisions, safety regulations and standards.
- Perform a risk analysis for the incomplete machine, or the machine.

Due to the interactions between the product and the machine/fixture or the environment, risks may arise that only can be determined and minimized by the user, e.g. :

- generated forces,
- generated movements,
- Influence of hydraulic and electrical control,
- etc.

1.5.3 Safety devices

The below safety devices are for the safety of the operators. As a matter of principle no safety devices may be detached, put out of action or modified.

Used safety devices

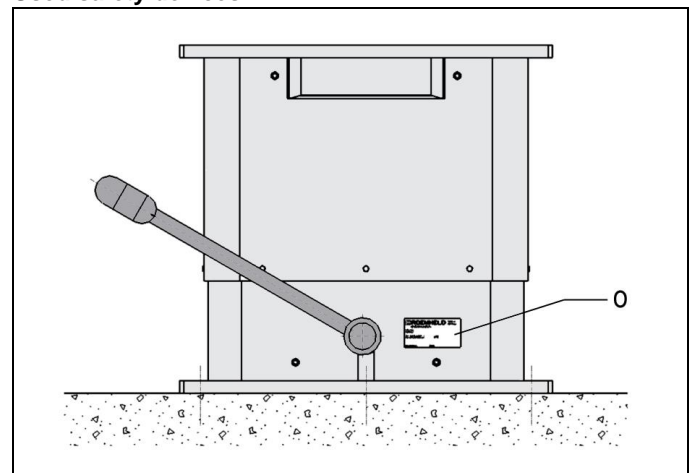


Figure 1: Positions of the safety devices

| | |
|---|--|
| O Name plate with indication of max. load | |
|---|--|

1.5.4 Check the safety devices

NOTE

Use the regulations

- To check the safety device use the check lists "General examination" and / or "Functional testing". Eliminate immediately recognised defects at the safety devices.

Testing intervals

- at the beginning of every shift
- once a week in case of continuous shift
- after each maintenance or repair

Testing content

- Function
- State and position
- Safe fixing

General examination

| | |
|----------------------------------|--|
| Covers | Number, available and undamaged |
| Screw plugs | Number, available and undamaged |
| Name plates with specifications | Number, available, readable and undamaged |
| Danger signs | Number, available and undamaged |
| Mandatory signs | Number, available and undamaged |
| Further safety devices available | available, undamaged and ready for operation |
| Testing date: | Tester (signature): |

(Number see "Position of safety devices")

1.6 Application

1.6.1 Intended use

The products are used in industrial applications to transform hydraulic pressure to lifting and lowering movements. They must only be operated with hydraulic oil.

Furthermore the following belongs to possible uses:

- Max. push load only with the lifting force indicated below technical characteristics.
- Position of the load's gravity centre within the top plate.
- Use only within closed, low-dust rooms
- Use within the capacity indicated in the technical characteristics.
- 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.

1.6.2 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 these products is not admitted:

- For domestic use.
- On pallets or machine tool tables in primary shaping and metal forming machine tools.
- In areas for which special guidelines apply, especially installations and machines:
 - For the use on fun fairs and in amusement parks.
 - In food processing or in areas with special hygiene regulations.
 - In mines.
 - In explosive and aggressive environments (e.g. ATEX).
- For other operating and environmental conditions.
- For applications other than vertical lifting of loads. Hanging operation (e. g. from the ceiling) is inadmissible.

Special solutions are available on request!

1.7 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).

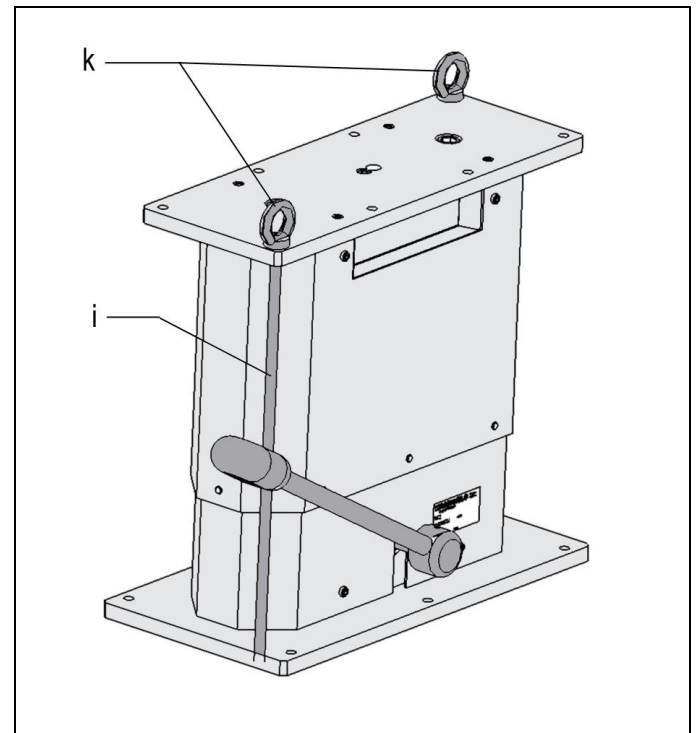


Figure 2: Transport lock, hydraulic

| | | | |
|---|--------------------|---|---------------|
| i | Threaded stud (2x) | e | ring nut (2x) |
|---|--------------------|---|---------------|

The product is secured and delivered on a pallet for transport. The product fixed on the pallet for transport may only be transported to the place of installation by means of a corresponding conveyor (pay attention to the min. lifting force).

Pay attention that the product is safely located on the hand-lift truck or fork lift truck.

The pallet must be lifted from the pallet by means of a conveyor. It is important to pay attention to the centre of gravity of the product

The lifting module is secured for transport with two threaded rods and ring nuts.

NOTE

Before the first start up, the transport lock (threaded studs and ring nuts) must be removed!

1.8 Installation

1.8.1 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.

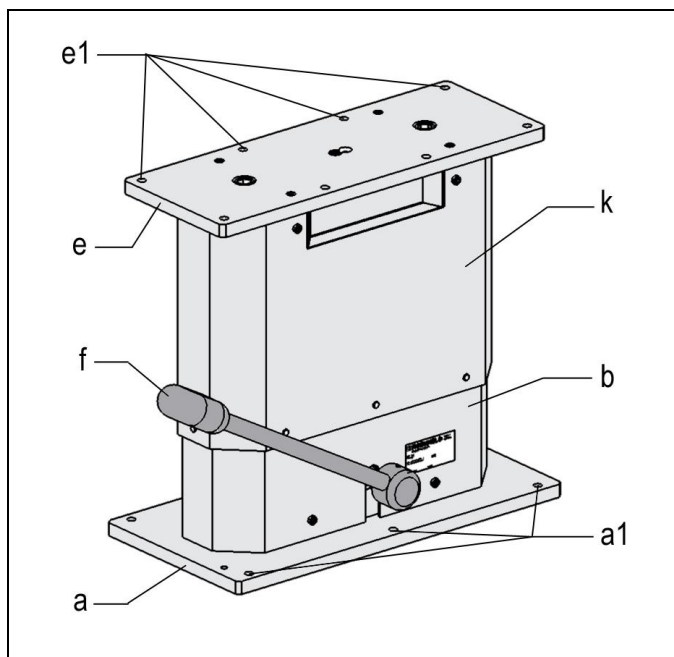


Figure 3: Components

| | |
|---|--|
| a Base plate | e Top plate |
| a1 Six holes (Ø 10.5) for fixing at the base construction | e1 Eight holes (Ø 10.5 with counterbore from below) to fix the fixture |
| b Upper cover | F Lifting jack with foot pedal |
| k Lower cover | |

1.8.2 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

Stroke module, pump lever not operate on bottom base plate

Foot pedal is pressed down below the lower edge of the base plate.

- The customer has to make sure that this will be prevented by the concrete floor or a corresponding base plate connecting construction.

1. Install the product so that for the required cleaning and maintenance works there is all around a clearance zone of at least 700 mm.
2. The product has to be mounted horizontally on a plane and solid concrete floor (concrete strength grade B 25) or a rigid connecting construction of the customer (flatness 0.20 mm).
3. Fasten the bottom plate of the product with hexagon socket head cap screws ISO 4762 - M10 onto the concrete floor or the connecting construction of the customer.
4. For this purpose professionally insert into the concrete floor heavy-duty dowels (e.g. Fischer part-no.: SL M-10 N).

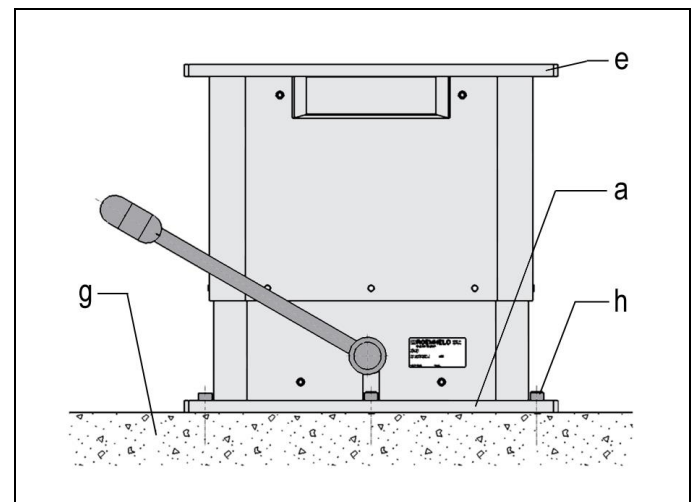


Figure 4: Principle of fixing

| | |
|--------------|---|
| a Base plate | g Concrete floor or connecting construction |
| e Top plate | h Fixing screws (6x) |

1.8.3 Mounting of the customer's connecting construction

WARNING

Injury due to overturning product!

- Overturning product due to eccentric load provided by the user!
- The centre of gravity of the user's load must be within the 4 fixing screws of the bottom plate.
- 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.

1. For fixing of the customer's connecting construction there are 4 bore holes (for M10 - Ø 10.5 mm) at the top plate. All provided bore holes have to be used!
2. Fasten the connecting construction at the top plate.

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.

1.9 Start up

WARNING

Poisoning due to contact with hydraulic oil.

Wear, damage of the seals, aging and incorrect mounting of the seal kit by the operator can lead to escapes of oil.

Incorrect connection can lead to escapes of oil at the ports.

- For handling with hydraulic oil consider the material safety data sheet.
- Wear protection equipment.

NOTE

To descend the lifting module a minimum load of approx. 200 N is required.

The lifting module must only used with push load.

The centre of gravity should be within the traverse of the fixing screws. If the centre of gravity is outside, the dowelled joint with the floor has to be dimensioned correspondingly. In such cases it is recommended to use a larger base plate. In case of eccentric load of more than 250 mm, the column cannot descend automatically because of too high friction forces.

NOTE

Admissible load

The product may only be used with push loads.

The centre of gravity should be within the traverse of the fixing screws.

If this is not observed, there may be a malfunction.

1.9.1 Operation

WARNING

Injuries due to non-compliance of the operating instructions!

- The product may only be operated, if the operating instructions - especially the chapter "Safety instructions" have been read and understood.

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 due to falling load!

The product does not have an emergency safety catch (safety device).

In case of overload, the load can fall down unbraked!

- The product must not be overloaded.

Injuries due to misuse, incorrect operation or abuse!

Injuries can occur if the product is not used within the intended use and the technical performance data.

- Before start up, read the operating instructions!

The operator is obliged to report immediately any changes at the product that may affect the safety to the safety expert or to the person who is responsible for safety and to stop operating the product.

1.9.2 Working place

The working place is designed in front of the lifting module.

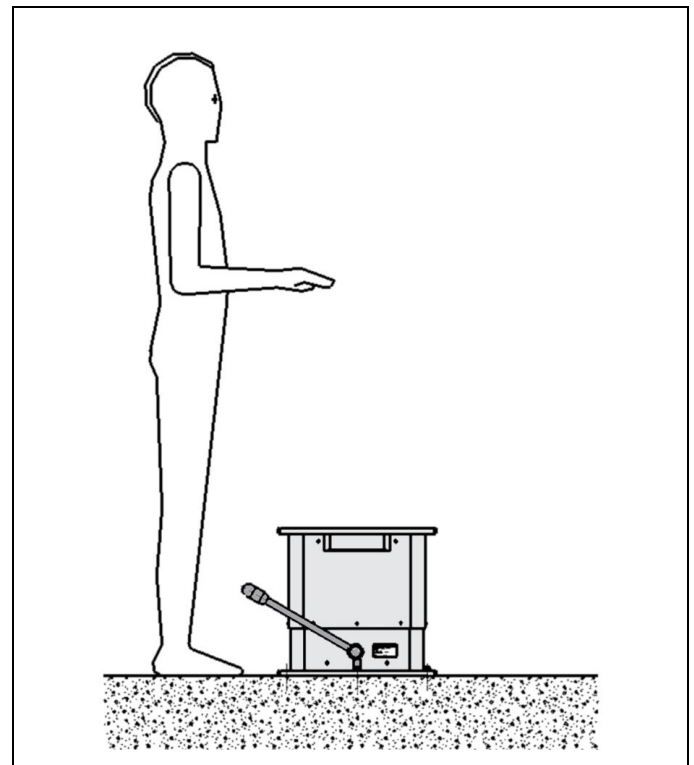


Figure 5: Working place, hydraulic

1.9.3 Behaviour in an emergency

In emergencies the product may not be operated.

1.9.4 Lifting

The stroke movement is produced by the internal, hermetically-sealed, hydraulic lifting jack with foot pedal with oil being pumped by means of a piston into a plunger cylinder.

To lift the top plate, the foot pedal has to be depressed by approx. 40° several times. The pedal returns to its off-position by means of a return spring.

1.9.5 Lowering

To lower the top plate, the foot pedal has to be pressed upwards by approx. 10°. Thereby the oil returns due to the weight of the user's load from the plunger cylinder into the reservoir, the top plate lowers.

1.10 Maintenance

1.10.1 Plan for maintenance

| Maintenance works | Interval | by... |
|---|--|------------------------|
| Cleaning, visual check of the lifting module and inspection of the guide unit | daily | operator |
| Control of the fixing screws, retighten if required. Control of the guide unit | half-yearly checks | expert |
| Check smooth running with little load over the entire stroke range | yearly | expert |
| Check smooth running with load over the entire stroke range | yearly | expert |
| Check the check valve of the internal lifting jack with load | yearly | expert |
| Revision by the manufacturer (recommendation) | after 50,000 cycles (lifting and lowering) | ROEMHELD service staff |
| Repair | in case of damages | ROEMHELD service staff |

Note

Pay attention to the qualification of the personnel.

1.10.2 Cleaning

WARNING

Danger of injury due to a lifting or lowering movement!

- Do not reach into the stroke area during the lifting or lowering movement.

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

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

1.10.2.1 Daily checks

WARNING

Danger of injury due to a lifting or lowering movement!

- Do not reach into the stroke area during the lifting or lowering movement.

- Visual check of the lifting module
- Check the guide unit for damages and possible running marks, repair if required.

1.10.2.2 Half-yearly checks

- Check all fixing screws of the lifting module, retighten if required.
- Check all cable fixings and fittings, retighten if required.
- Check the wear of the guide unit based on the guiding clearance. If the clearance exceeds 0.5 mm, the guiding elements have to be exchanged. (See chapter repair).

1.10.2.3 Yearly checks

To maintain the product in a safe condition and ready for operation, the function safety of the internal lifting jack has to be checked annually by an expert (see maintenance schedule).

1.10.3 Check smooth running of the product with little load over the entire stroke range

CAUTION

Function of the product!

If the product does not work perfectly, even if only partial stroke ranges are affected, the product must no longer be used.

- Observe the checking intervals.

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (10% of the nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.
- Press the foot pedal upwards until the top plate is completely lowered.

1.10.4 Check smooth running of the product with load over the entire stroke range

CAUTION

Function of the product!

If the product does not work perfectly, even if only partial stroke ranges are affected, the product must no longer be used.

- Observe the checking intervals.

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.
- Press the foot pedal upwards until the top plate is completely lowered.

1.10.5 Check the check valve of the internal lifting jack with load

NOTE

Operating set

If the top plate of the product lowers independently, it may no longer be operated!

- Press the foot pedal upwards until the top plate is completely lowered.
- Fix the test weight at the top plate (nominal load).
- Depress the foot pedal several times until the top plate is completely lifted.

- Top plate may not lower independently

1.10.6 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.

1.10.7 Trouble shooting

CAUTION

All work by service personnel only!

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

| Trouble | Cause | Remedy |
|--|------------------------------|-------------------------------|
| Top plate does not lift or lower after the operation of the foot pedal | Internal lifting jack defect | Replace internal lifting jack |
| Top plate lowers without operation of the foot pedal | Internal lifting jack defect | Replace internal lifting jack |

1.11 Technical characteristics

| Part no. | Stroke [mm] | A [mm] | A + stroke [mm] | Weight [kg] |
|--------------|-------------|--------|-----------------|-------------|
| 8914-01-20-H | 200 | 420 | 620 | 95 |
| 8914-0X-30-H | 300 | 520 | 820 | 100 |
| 8914-0X-40-H | 400 | 620 | 1020 | 105 |

| Lifting force | Pump strokes per 100 mm | Descent speed [mm/s] |
|---------------|-------------------------|----------------------|
| 4000 N | 7 | approx. 22 |
| 6000 N | 9 | approx. 22 |

| | |
|----------------------|------------------|
| Max. lifting force | 4000 N; 6000 N |
| Functional principle | Manual-hydraulic |
| Operation | Pedal |

Maximum lifting force and maximum admissible torque load

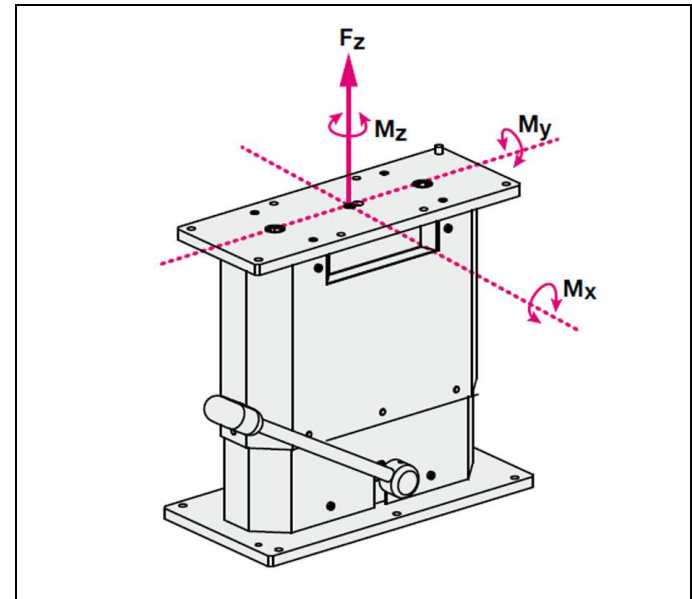


Figure 6: Lifting force and torque load

Maximum torque load:

Mx: 2000 Nm or **My:** 1200 Nm

Mz: 600 Nm

Tightening torques

The tightening torques for the fixing screws of the customer's connecting construction are to be taken from the VDI guideline 2230.

1.12 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.

1.13 Declaration of conformity



Manufacturer

Römheld GmbH Friedrichshütte
Römheldstraße 1-5
35321 Laubach, Germany
Tel.: +49 (0) 64 05 / 89-0
Fax: +49 (0) 64 05 / 89-211
E-mail: info@roemheld.de
www.roemheld.com

Responsible person for the documentation:

Dipl.-Ing. (FH) Jürgen Niesner, Tel.: +49(0)6405 89-0.

This declaration of conformity applies to the following products:

This applies to the lifting modules Twin-Strong, manual-hydraulic version, as per data sheet M 4.501. These are the types and/or order numbers:

8914-04-20-H, 8914-04-30-H, 8914-04-40-H,
8914-06-20-H, 8914-06-30-H, 8914-06-40-H

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]

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)

EN 1494; 2008, Mobile or movable jacks and associated lifting equipment

DIN EN ISO 4413, 2011-04, Hydraulic fluid power - General rules and safety requirements for systems and their components

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, 10.10.2023

i.V. 

Ralph Ludwig

Head of Research and Development

Römheld GmbH
Friedrichshütte

1.14 Declaration of conformity

**Importer**

Roemheld (UK) Limited
28 Knowl Piece, Wilbury Way,
SG4 0TY Hitchin

E-Mail: sales@roemheld.co.uk
www.roemheld.co.uk

Authorised person to compile the technical documentation:

Darren Rowell, 28 Knowl Piece, Wilbury Way, SG4 0TY Hitchin.

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This applies to the lifting modules Twin-Strong, manual-hydraulic version, as per data sheet M 4.501. These are the types and/or order numbers:

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- **Directive 2008 No. 1597**, Health and Safety

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SG4 0TY Hitchin, 10.10.2023



Darren Rowell
Managing Director,

Roemheld UK Ltd

2 Electro-mechanical version



Table of contents

| | | |
|------|-------------------------------|----|
| 2.1 | Description of the product | 10 |
| 2.2 | Validity of the documentation | 10 |
| 2.3 | Target group of this document | 10 |
| 2.4 | Symbols and signal words | 10 |
| 2.5 | For your safety | 10 |
| 2.6 | Application | 11 |
| 2.7 | Transport | 12 |
| 2.8 | Installation | 12 |
| 2.9 | Start up | 13 |
| 2.10 | Maintenance | 14 |
| 2.11 | Technical characteristics | 15 |
| 2.12 | Accessory | 16 |
| 2.13 | Disposal | 16 |
| 2.14 | Declaration of conformity | 17 |
| 2.15 | Declaration of conformity | 18 |

2.1 Description of the product

The lifting motion is generated by an electric motor with a spindle lifting gear.

The electrically operated variant is particularly suitable for positioning and adjusting tasks of working tables as well as for material supply and transport.

It excels by a smooth running.

Operation

Lifting and lowering is triggered by push-buttons with touch control contact. After release of the push-button, the motion will be immediately stopped.

2.2 Validity of the documentation

This applies to the lifting modules Twin-Strong, electro-mechanical version, as per sheet M 4.501. The following types or part numbers are concerned:

8914-04-20-E, 8914-04-30-E, 8914-04-40-E,
8914-06-20-E, 8914-06-30-E, 8914-06-40-E,
8914-04-20-I, 8914-04-30-I, 8914-04-40-I,
8914-06-20-I, 8914-06-30-I, 8914-06-40-I

2.3 Target group of this document

- Experts for installation and maintenance with electro-mechanical know-how.

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.

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,
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- has the required knowledge for repair and mounting.

2.4 Symbols and signal words

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CAUTION

Easy injuries / property damage

Stands for a possibly dangerous situation.

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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.

Note

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

2.5 For your safety

2.5.1 Basic information

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- generated movements,
- Influence of hydraulic and electrical control,
- etc.

2.5.3 Safety devices

The below safety devices are for the safety of the operators. As a matter of principle no safety devices may be detached, put out of action or modified.

Used safety devices

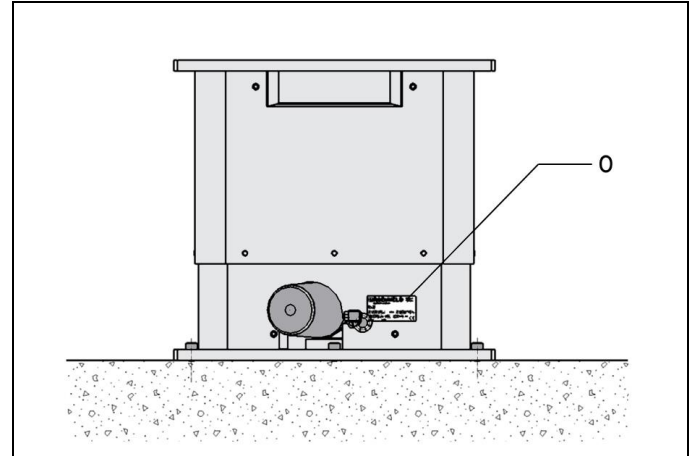


Figure 7: Positions of the safety devices

| | |
|---|---|
| O | Name plate with indication of max. load |
|---|---|

2.5.4 Check the safety devices

NOTE

Use the regulations

- To check the safety device use the check lists "General examination" and / or "Functional testing". Eliminate immediately recognised defects at the safety devices.

Testing intervals

- at the beginning of every shift
- once a week in case of continuous shift
- after each maintenance or repair

Testing content

- Function
- State and position
- Safe fixing

General examination

| | |
|----------------------------------|--|
| Covers | Number, available and undamaged |
| Screw plugs | Number, available and undamaged |
| Name plates with specifications | Number, available, readable and undamaged |
| Danger signs | Number, available and undamaged |
| Mandatory signs | Number, available and undamaged |
| Further safety devices available | available, undamaged and ready for operation |
| Testing date: | Tester (signature): |

(Number see "Position of safety devices")

2.6 Application

2.6.1 Intended use

The products are used in industrial applications to occasionally carry out lifting and lowering movements with an electric motor.

Furthermore, the following are intended uses:

- Use within the capacity indicated in the technical data (pay particular attention to the admissible torque load).
- 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.
- Max. push load only with the lifting force indicated below technical characteristics.
- Position of the load's gravity centre within the top plate.
- Use only within closed, low-dust rooms

2.6.2 Misapplication

⚠ WARNING

Injuries, material damages or malfunctions!

Modifications can lead to weakening of the components, reduction in strength or malfunctions.

- Do not modify the product!

The use of these products is not admitted:

- For domestic use.
- On pallets or machine tool tables in primary shaping and metal forming machine tools.
- In areas for which special guidelines apply, especially installations and machines:
 - For the use on fun fairs and in amusement parks.
 - In food processing or in areas with special hygiene regulations.
 - In mines.
 - In explosive and aggressive environments (e.g. ATEX).
- For other operating and environmental conditions.
- For applications other than vertical lifting of loads. Hanging operation (e. g. from the ceiling) is inadmissible.
- Not suitable for applications with strong impact loads or strong vibration.

Special solutions are available on request!

2.7 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).

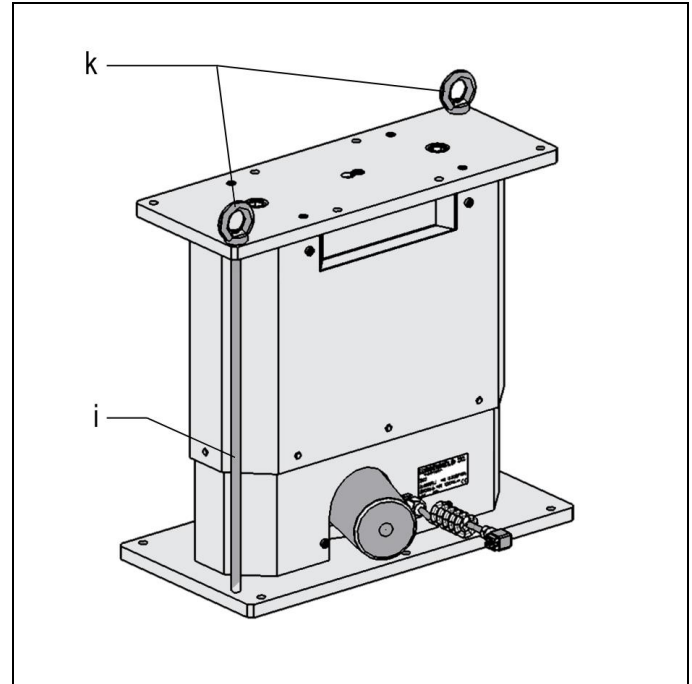


Figure 8: Transport lock, electrical

| | | | |
|---|--------------------|---|---------------|
| i | Threaded stud (2x) | e | ring nut (2x) |
|---|--------------------|---|---------------|

The product is secured and delivered on a pallet for transport. The product fixed on the pallet for transport may only be transported to the place of installation by means of a corresponding conveyor (pay attention to the min. lifting force).

Pay attention that the product is safely located on the hand-lift truck or fork lift truck.

The pallet must be lifted from the pallet by means of a conveyor. It is important to pay attention to the centre of gravity of the product

The lifting module is secured for transport with two threaded rods and ring nuts.

NOTE

Before the first start up, the transport lock (threaded studs and ring nuts) must be removed!

2.8 Installation

2.8.1 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.

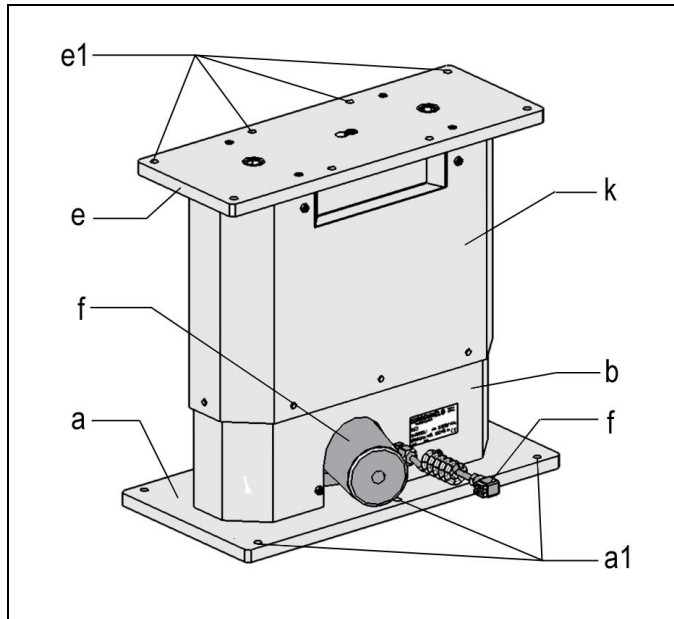


Figure 9: Components

| | |
|---|--|
| a Base plate | e Top plate |
| a1 Six holes (Ø 10.5) for fixing at the base construction | e1 Eight holes (Ø 10.5 with counterbore from below) to fix the fixture |
| b Upper cover | f Linear unit with socket |
| k Lower cover | |

2.8.2 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.

1. Install the product so that for the required cleaning and maintenance works there is all around a clearance zone of at least 700 mm.
2. The product has to be mounted horizontally on a plane and solid concrete floor (concrete strength grade B 25) or a rigid connecting construction of the customer (flatness 0.20 mm).
3. Fasten the bottom plate of the product with hexagon socket head cap screws ISO 4762 - M10 onto the concrete floor or the connecting construction of the customer.
4. For this purpose professionally insert into the concrete floor heavy-duty dowels (e.g. Fischer part-no.: SL M-10 N).

i NOTE

Use of multiple designated lifting modules with synchronization control

- When using several designated lifting modules with synchronization control, the following conditions must be met:
- All lifting units must be arranged parallel to each other and aligned. Especially in case of high loads on the system, considerable friction forces can occur in case of insufficient parallelism due to deformation of the system which can impair their function. Therefore a bearing with longitudinal compensation or elastic buffer is recommended.
- The load must be located so that a small difference in height of the lifting modules cannot lead to a possible danger of persons.

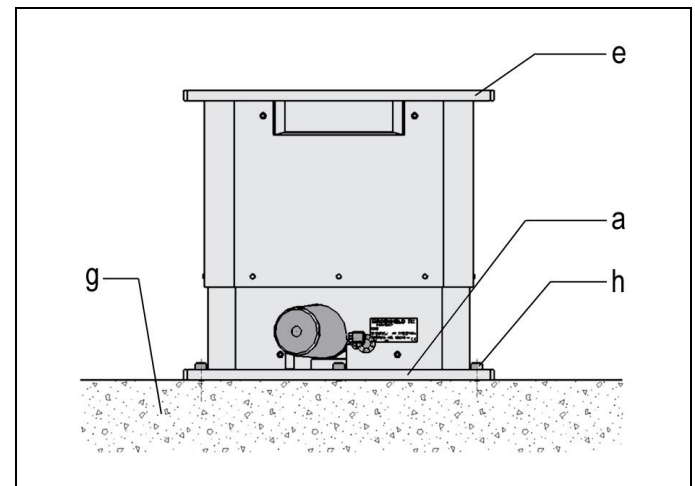


Figure 10: Principle of fixing

| | |
|--------------|---|
| a Base plate | g Concrete floor or connecting construction |
| e Top plate | h Fixing screws (6x) |

2.8.3 Mounting of the customer's connecting construction

⚠ WARNING

Injury due to overturning product!

- Overturning product due to eccentric load provided by the user!
- The centre of gravity of the user's load must be within the 4 fixing screws of the bottom plate.
- 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.

1. For fixing of the customer's connecting construction there are 4 bore holes (for M10 - Ø 10.5 mm) at the top plate. All provided bore holes have to be used!
2. Fasten the connecting construction at the top plate.

i 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.

2.9 Start up

⚠ 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.

Check tight seat (check seating torque of the fixing screws).

To operate the lifting modules one of the control modules listed in the following, a hand panel or foot switch and a mains cable is required.

NOTE

Use only original components

- The lifting modules must only be used in conjunction with the components which belong to the system. Components, which do not belong to the system or not permitted devices must under no circumstances be connected.

components

- control module
- Hand panel
- Foot switch
- Mains cables

No. of component see catalog sheet

NOTE

Connection of operating elements

- For the connection of the operating elements and the mains cable as well as the pin assignment see operating instructions BA M8200.

- 1 Connection of the lifting module to the supply unit. The cable bushing of the lifting module must be put into the provided plug connector in the housing of the control modul. Then the screw of the cable bushing has to be tightened with a torque of 0.4 Nm.
- 2 Correct fixing of the control modul near the lifting module.

2.9.1 Operation

⚠ WARNING

Injuries due to non-compliance of the operating instructions!

- The product may only be operated, if the operating instructions - especially the chapter "Safety instructions" have been read and understood.

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 due to falling load!

The product does not have an emergency safety catch (safety device).

In case of overload, the load can fall down unbraked!

- The product must not be overloaded.

Injuries due to misuse, incorrect operation or abuse!

Injuries can occur if the product is not used within the intended use and the technical performance data.

- Before start up, read the operating instructions!

⚠ WARNING

Risk of injury due to squeezing points in the connecting construction

The connecting construction has to be designed so that there are no squeezing points. The movement of the lifting modules can cause risks for the user in connection with squeezing points.

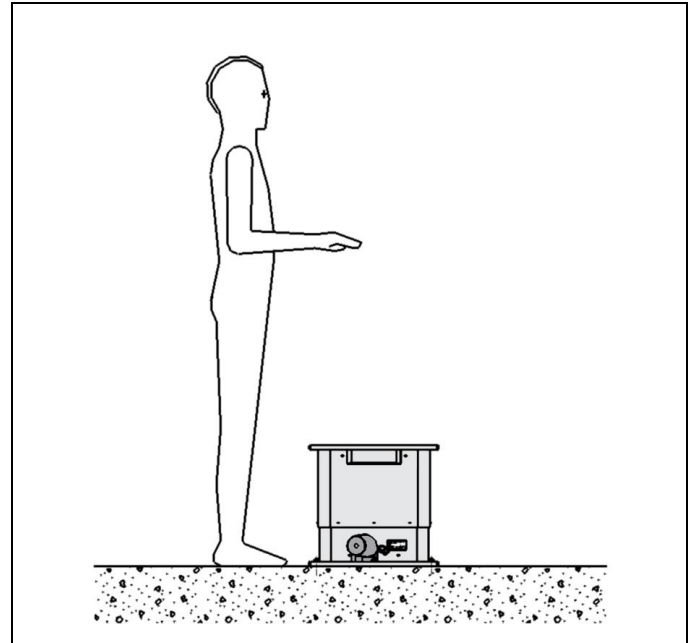


Figure 11: Working place, electrical

2.9.2 Lifting and lowering

It is operated in conjunction with a control module and operating elements. Further possibilities of operation and control can be found in the corresponding operating instructions.

By operating the direction key lifting (↑) or lowering (↓) at the hand panel or foot switch the lifting module will be extended or retracted. Due to the touch control, the respective direction key must remain actuated during the lifting or lowering.

An electronic current limitation in the supply unit protects the lifting module against overload. If for example in case of overload the lifting module is working longer than 1 second in the range of the current limitation, the lifting module will be switched off. The function is restored after release of the push-button operation.



Figure 12: hand panel and foot switch

2.10 Maintenance

2.10.1 Service life

The service life is:

250 operating hours (only time required for stroke) for the units 2 kN and 4 kN with duty cycle 15%, 1.5 min ON

60 operating hours (only time required for stroke) for the units 6 kN with duty cycle 15%, 1.5 min ON

2.10.2 Plan for maintenance

| Maintenance works | Interval | by... |
|--|--------------------|------------------------|
| Cleaning, visual check of the lifting module and inspection of the guide unit | daily | operator |
| Check all fixing screws and cable fixings and fittings, retighten if required. control of the guide unit | half-yearly checks | expert |
| The electrical components of the lifting module are to be checked by an expert at regular intervals, but at least once a year. | yearly checks | expert |
| Repair | in case of damages | ROEMHELD service staff |

NOTE

Pay attention to the qualification of the personnel.

2.10.3 Cleaning

WARNING

Danger of injury due to a lifting or lowering movement!

- Do not reach into the stroke area during the lifting or lowering movement.

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

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

2.10.3.1 Daily checks

WARNING

Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

- Visual check of the lifting module
- Check the guide unit for damages and possible running marks, repair if required.

2.10.3.2 Half-yearly checks

WARNING

Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

- Check all fixing screws of the lifting module, retighten if required.
- Check the wear of the guide unit based on the guiding clearance. If the clearance exceeds 0.5 mm, the guiding elements have to be exchanged. (See chapter Repair).

2.10.3.3 Yearly checks

WARNING

Danger of injury due to a lifting or lowering movement!

- Switch off the mains before cleaning and maintenance works.

The electrical components of the lifting module are to be checked by an expert at regular intervals, but at least once a year. The check includes:

- The perfect functioning
- The state of the component
- Check the Occupational Health and Safety Regulations of the trade associations (German DGUV Vorschrift 3)

2.10.4 Repair

Repair works, as e.g. the change of internal linear actuator may only be effected by the service technicians of the company Römheld.

2.10.5 Trouble shooting

CAUTION

All work by service personnel only!

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

| Trouble | Cause | Remedy |
|---|---------------------------------|--|
| Top plate does not lift or lower after the operation of the push-button | Interior linear actuator defect | Linear actuator to be replaced by ROEMHELD service personnel |
| Top plate lowers without operation of the push-button | Interior linear actuator defect | Linear actuator to be replaced by ROEMHELD service personnel |


2.11 Technical characteristics

| Part no. | Stroke [mm] | A [mm] |
|--------------|-------------|--------|
| 8914-0X-20-E | 200 | 420 |
| 8914-0X-30-E | 300 | 520 |
| 8914-0X-40-E | 400 | 620 |

E = integrated stroke end disconnection (not suitable for synchronization control)
with coiled connecting cable, 1.5 m

| Part no. | Stroke [mm] | A [mm] |
|--------------|-------------|--------|
| 8914-0X-20-I | 200 | 420 |
| 8914-0X-30-I | 300 | 520 |
| 8914-0X-40-I | 400 | 620 |

I = with incremental stroke measuring system (suitable for memory function)
with smooth connecting cable, 2.5 m

| | |
|--------------------------------------|--|
| Max. <u>lifting</u> force | 4000 N; 6000 N |
| Stroke | 200, 300, 400 mm |
| Functional principle | Electrical |
| Duty cycle | 15% ED |
| Code class | IP 54 |
| Control voltage | 24VDC |
| Protection class | II  |
| Lifting profile | Aluminium, colourless anodised |
| Lifting speed depending on the load: | 6 ... 4 mm/s |
| Operation | Hand panel or foot pedal (accessory) |
| Top and bottom plate | aluminium, black anodised |

| | |
|--------------------------------------|-------------------------------------|
| 3 brown + (extend) - (retract) | 4 blue - (extend) + (retract) |
|--------------------------------------|-------------------------------------|

2.12 Accessory

NOTE

Accessories

- See data sheet.

2.13 Disposal



Hazardous to the environment

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

Maximum lifting force and maximum admissible torque load

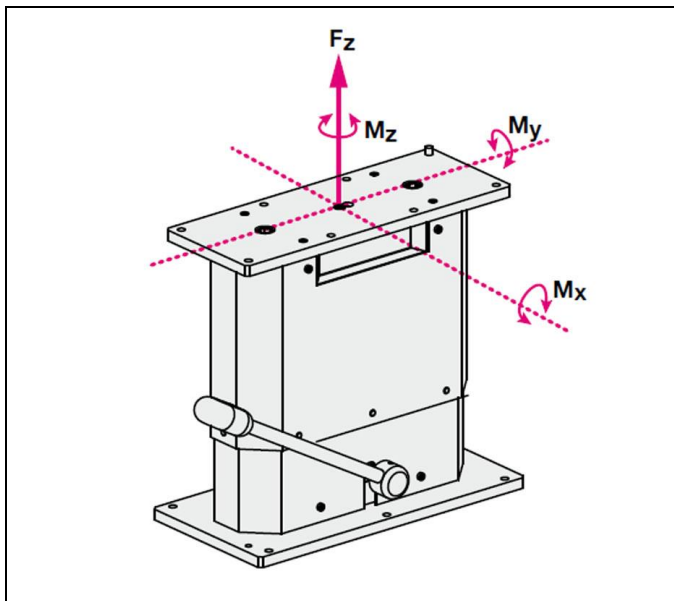


Figure 13: Lifting force and torque load

Maximum torque load:

Mx: 2000 Nm or **My:** 1200 Nm

Mz: 600 Nm

Tightening torques

The tightening torques for the fixing screws of the customer's connecting construction are to be taken from the VDI guideline 2230.

Emissions

The A valued continuous sound level is less than 75 dB(A) in operation.

Circuit diagram:

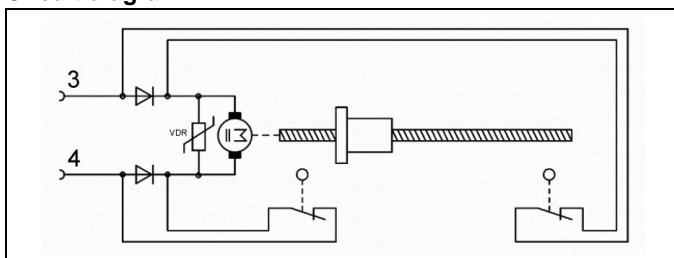


Figure 14: Lifting module standard (8911-0X-X0-E)

2.14 Declaration of conformity



Manufacturer

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E-mail: info@roemheld.de
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Responsible person for the documentation:

Dipl.-Ing. (FH) Jürgen Niesner, Tel.: +49(0)6405 89-0.

This declaration of conformity applies to the following products:

This applies to the lifting modules Twin-Strong, electro-mechanical version, as per sheet M 4.501. The following types or part numbers are concerned:

**8914-04-20-E, 8914-04-30-E, 8914-04-40-E,
8914-06-20-E, 8914-06-30-E, 8914-06-40-E,
8914-04-20-I, 8914-04-30-I, 8914-04-40-I,
8914-06-20-I, 8914-06-30-I, 8914-06-40-I**

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, 10.10.2023

i.V. 

Ralph Ludwig

Head of Research and Development

**Römheld GmbH
Friedrichshütte**

2.15 Declaration of conformity



Importer

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Authorised person to compile the technical documentation:

Darren Rowell, 28 Knowl Piece, Wilbury Way, SG4 0TY Hitchin.

This declaration of conformity applies to the following products:

This applies to the lifting modules Twin-Strong, electro-mechanical version, as per sheet M 4.501. The following types or part numbers are concerned:

**8914-04-20-E, 8914-04-30-E, 8914-04-40-E,
8914-06-20-E, 8914-06-30-E, 8914-06-40-E,
8914-04-20-I, 8914-04-30-I, 8914-04-40-I,
8914-06-20-I, 8914-06-30-I, 8914-06-40-I**

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.

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 UKCA directives.

The following additional UKCA directives were applied:

- **Directive 2008 No. 1597**, Health and Safety
- **Directive 2016 No. 1091**, Electromagnetic Compatibility

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)

EN 1494; 2008, Mobile or movable jacks and associated lifting equipment

DIN EN ISO 4413, 2011-04, Hydraulic fluid power - General rules and safety requirements for systems and their components

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.

SG4 0TY Hitchin, 10.10.2023



Darren Rowell
Managing Director,

Roemheld UK Ltd