

# Yale®



## Yale®

EN - Translated Operating Instructions (Also applicable for special versions)

**Electric wire rope winch**

**RPE**

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**CMCO**  
COLUMBUS MCKINNON

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## INTRODUCTION

Products of CMCO Industrial Products GmbH have been built in accordance with the state-of-the-art and generally accepted engineering standards. Nonetheless, incorrect handling when using the products may cause dangers to life and limb of the user or third parties and/or damage to the hoist or other property.

The operating company is responsible for the proper and professional instruction of the operating personnel. For this purpose, all operators must read these operating instructions carefully prior to the initial operation.

These operating instructions are intended to acquaint the user with the product and enable him to use it to the full extent of its intended capabilities. The operating instructions contain important information on how to operate the product in a safe, correct and economic way. Acting in accordance with these instructions helps to avoid dangers, reduce repair costs and downtimes and to increase the reliability and lifetime of the product. The operating instructions must always be available at the place where the product is operated. Apart from the operating instructions and the accident prevention act valid for the respective country and area where the product is used, the commonly accepted regulations for safe and professional work must also be adhered to.

The personnel responsible for operation, maintenance or repair of the product must read, understand and follow these operating instructions.

The indicated protective measures will only provide the necessary safety, if the product is operated correctly and installed and/or maintained according to the instructions. The operating company is committed to ensure safe and trouble-free operation of the product.

## PERMANENT SOUND PRESSURE LEVEL

The equivalent permanent sound pressure level at the workplace of the operating staff is  $\leq 73$  dB. It was determined with the use of the measurement surface sound pressure level method (distance from lifting device 1 m, 9 measuring points, precision class 2 DIN 45635).

## THEORETICAL SERVICE LIFE

The Yale RPE electric rope winch is classified in accordance with FEM 9.511 in the FEM Group 1Bm /M3. This theoretically results in a service life of 400 operating hours under full load.

Basic principles for the calculation of the theoretical remaining service life are given in DGUV Vorschrift 54. When the theoretical remaining service life has been reached, the hoist should be subjected to a general overhaul.

## REGULATIONS

Before the initial start-up, a check must be performed by a competent person as per the mandatory accident prevention rules applicable in the user's country, as well as in accordance with the recognised rules for safety and proper working.

In Germany, these are the accident prevention specifications of the Trade Association DGUV Vorschrift 54, DGUV Vorschrift 54, DGUV Regel 100-500 and VDE 0113-32/EN 60204-32:2008.

## SAFETY EQUIPMENT

The following safety devices are integrated to guarantee the safety of the Yale devices:

### • EMERGENCY Stop

By pressing the EMERGENCY Stop button, the total control is deactivated.

### **ATTENTION: The device is not free of tension!**

Turn the button in the direction of the arrow and pull it to unlock.

### • Motor brake

All Yale winches have an electromagnetically ventilated spring action brake, which closes automatically upon releasing the push button for UP or DOWN movement, as well as in case of a power failure.

### • Overload protection

The included slip clutch will be activated if there is an overload.

If the reason is a too big load, the load has to be reduced till WLL. Is the reason a stuck during the upward moving the load has to be lowered and the obstacle has to be removed.

## CORRECT OPERATION

The Yale RPE electric rope winch has been designed to lift, pull and lower loads up to the specified load capacity or traction force. The traction force or lifting capacity (nominal load) indicated on the device is the maximum load. This must not be exceeded. The maximum hoisting force or load capacity in a given situation is determined by the data of the used hoisting rope and the stop type.

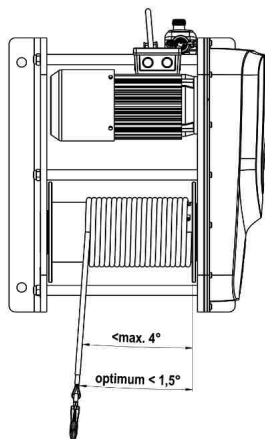
Any different or exceeding use is considered incorrect. Columbus McKinnon Industrial Products GmbH will not accept any liability for damage resulting from such use. The risk is borne by the user resp. operating company alone.

### **ATTENTION: The unit may be used only in situations in which the load carrying capacity of the device and/or the supporting structure does not change with the load position.**

The attachment point and its supporting structure must be designed for the maximum loads to be expected.

The selection and calculation of the appropriate supporting structure are the responsibility of the operating company.

While fastening a load, the material to be lifted or an optional pulley block must be positioned in such a way that the lateral deflection of the wire rope does not exceed  $4^\circ$  and, if possible, it should be less than  $1.5^\circ$ .



If the area in front of the load is not sufficiently visible, the operator must make sure that he is given help. Do not allow personnel to pass under a suspended load.



After lifting or tensioning, a load must not be left unattended or remain lifted for a longer period of time.

The operator may start moving the load only after it has been attached correctly.

The operator must not initiate a load movement until he is sure that there are no persons in the danger zone.

The operator must ensure that the hoist/trolley is attached in a manner that does not expose himself or other personnel to danger by the hoist, trolley, chain(s) or the load.

The units can be operated in ambient temperatures between  $-10^\circ\text{C}$  and  $+40^\circ\text{C}$ . Consult the manufacturer in case of extreme working conditions.

**ATTENTION: Before using the device at ambient temperatures of less than  $0^\circ\text{C}$ , make sure that the brake is not frozen by lifting and lowering a small load 2-3 times.**

Prior to operation of the load lifting attachment in special atmospheres (high humidity, salty, caustic, alkaline) or handling hazardous goods (e.g. molten compounds, radioactive materials) consult the manufacturer for advice.

When the unit is not in use, position the suspension above the normal head height, if possible.

Only use safety hooks with safety latches.

If the lifting device is used in a noise-intensive environment, it is recommended that the operator as well as maintenance staff wear ear protection.

The wire rope must always be mildly lubricated!

In order to ensure correct operation, not only the operating instructions, but also the conditions for inspection and maintenance must be complied with.

If defects are found or abnormal noise is to be heard stop using the hoist/trolley immediately.

**ATTENTION: Disconnect the power supply without failure before performing repair and maintenance work, even if the type of check rules this out!**

Maintenance work and the annual inspection of the units must not be carried out in explosive environments.

#### **ATTENTION: Residual risks**

There are residual risks that cannot be covered from the design:

- As the overload protection system is normally set in the factory to the maximum load capacity of the winch, the operator must check whether the live load of the fastening device corresponds to the value of the overload protection system or the live load of the winches. If the check reveals that a lesser value is required, the overload protection system must be reset either at the factory or by a trained person, or the specified live load of the winch must be reduced.

## INCORRECT OPERATION

(List is not complete)

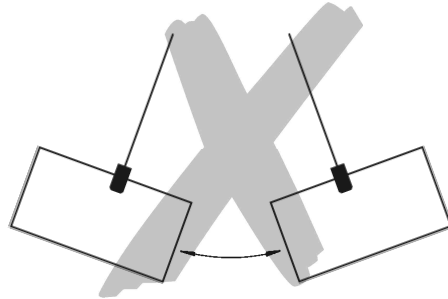
Do not exceed the rated load capacity (nominal load) of the unit, trolley (if applicable) as well as the supporting structure.

**ATTENTION:** When operating multiple ropes, the sum of the rated load capacities of the individual rope outlets should not exceed the total rated load capacity.

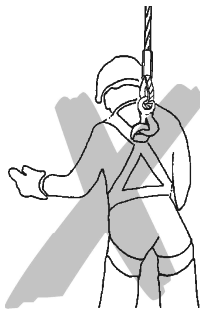
The unit must not be used for pulling free fixed loads. It is also prohibited to allow loads to drop when the rope is in a slack condition (danger of rope breakage).

Removing or covering labels (e.g. adhesive stickers), warning information signs or the rating plate is prohibited. Removed or illegible labels and instructions must be immediately replaced.

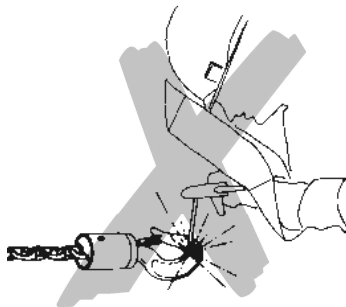
When transporting loads ensure that the load does not swing or come into contact with other objects.



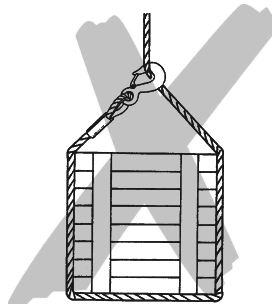
Excessive inching operation by short and frequent actuation of the control switch should be avoided.  
Do not use the hoist/trolley for the transportation of people



Performing welding jobs on the lifting unit, the rope drum and the rope is prohibited. The rope should never be used as an earth connection during welding.

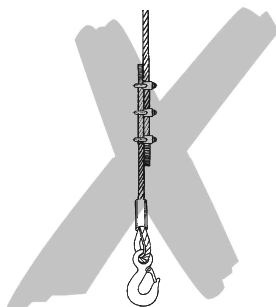


Lateral loading of the hoisting rope (inclined hoisting) that results in a deflection angle exceeding 4° on the rope drum is prohibited.  
The wire rope must not be used for lashing purposes (sling rope).

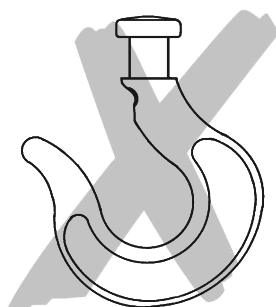


Do not pull the rope over edges.

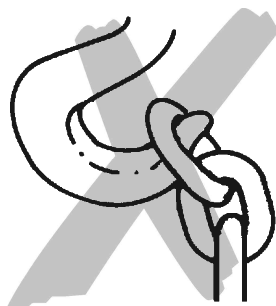
Do not tie knots in the rope or extend or shorten it by using rope clamps, screws or similar. Ropes must not be repaired.



The loose end of the rope must not be used for attaching loads.  
Removal of the safety clamp from the load hook is prohibited.



The wire rope should never be fully uncoiled during operation. At least 2.5 windings must always remain on the drum.  
The load must not be moved into areas which are not visible to the operator. If necessary, he must seek help.  
Any modification of the lifting device is prohibited. A unit modified without consulting the manufacturer must not be used.  
An optionally available rope guide should be used only if the rope drum is grooved and the wire rope has a maximum length so that, when fully coiled on the drum, it fills up only the first position.  
Never attach the load to the tip of the hook. The load must always be seated in the saddle of the hook. This also applies to the suspension hook.



Turning of loads under normal operating conditions is not allowed. If loads must be turned in normal operation, an anti-twist swivel must be used or the manufacturer must be consulted.  
Do not throw the hoist or trolley down. Always place it properly on the ground.  
Never reach into moving parts.  
Only one load lifting attachment may be suspended in the load hook of the hoist.  
The unit must not be operated in potentially explosive atmospheres.

## ASSEMBLY

Assembly and maintenance of the device is to be entrusted only to persons who are trained in the field in question and have been commissioned by the owner to assemble and service the device.  
These persons must know the common accident prevention rules, e.g. "Winches, lifting and hoisting devices (DGUV Vorschrift 54)", "Cranes – power driven winches (EN14492-1)" etc., and must be appropriately trained. They should also be familiar with the operating and installation instructions drafted by the manufacturer.

*NOTE: If the unit is operated in the open, it must be appropriately protected against adverse weather conditions (e.g. by roofing).*

**ATTENTION: If the device is to be used in a construction lift, the appropriate specifications and directives must be observed.**

### Inspection Before Assembly

Check for transport damage

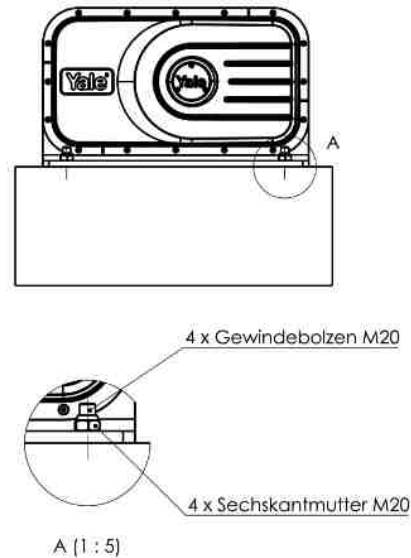
Check for completeness

- Check the wire rope or ropes for diameters matching the used electric rope winch.
- Check that the rated capacity data on the load hook in the used rope and device match.

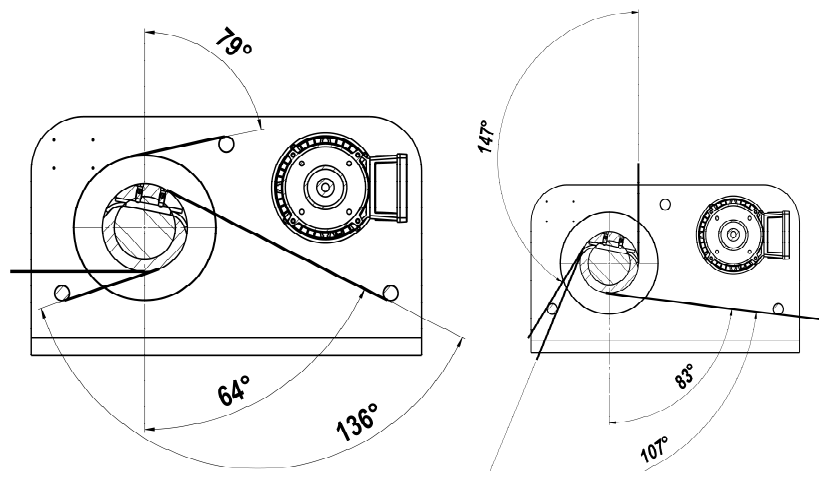
### Fixing the electric rope winch

**ATTENTION:** The owner must ensure that the supporting structure (e.g. brick wall, concrete roof, steel structure) can safely absorb the total operating forces.

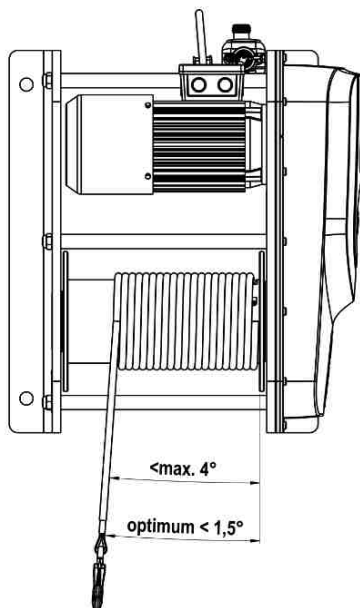
- The electric winch can be installed in any position as long as the drum is horizontal.
- The mounting surfaces must be flat and parallel so that the winch feet rest evenly on them. The winch must be mounted in such a way that it cannot move even under load.
- The wire rope must run at a sufficient distance from sharp edges such as a wall or frame.
- For assembly 4 pieces of M20 threaded bolts of strength class 8.8 has to be used. The tightening torque shall be 415Nm.



- The permissible rope departure angles must be observed.



- The lateral deflection angle must never be more than  $4^\circ$  - even when pulleys are used - but should not exceed  $1,5^\circ$ .



**ATTENTION:** This calculation assumes that the pulley is located at the centre between the extensions of the drum flanges. The further it is from this centre position, the bigger the minimum distance from the rope drum is.

• When installing the winch, the control stand or similar must be arranged in such a way that the operator is not endangered by the device itself, the load-bearing equipment or the load.

#### Fastening material

The screws must have a sufficient length, i.e. never hold by the threads, use the shaft instead (if necessary, use spacer washers).

The strength class must be minimum 8.8. Higher strength classes (10.9 and especially 12.9) are to be avoided, as these screws tend to embrittle, particularly in the galvanized model.

## ELECTRICAL CONNECTION

**ATTENTION:** Work at electrical installations may be carried out by electrical experts only. The local regulations have to be strictly observed, e.g. EN 60204-32 / VDE 0113.

#### Preparation

Before beginning work on electrical components the mains current switch must be switched OFF and secured against unintentionally being switched back on.

- Before connecting the device to the electrical system, check that the electrical data on the nameplate correspond to the local mains supply.
- A 4-core (3-phase device) or 3-core (1-phase device), insulated cable with a flexible braid (heavy rubber cable) must be used for the mains connection. The earth wire must be longer than the current-carrying wires. The cross-section must be min.  $1.5 \text{ mm}^2$  and the cable length a maximum of 50 m.
- Fuse protection for the different models are shown in the table.
- The ends of the cable must be fitted with wire end sleeves.

**ATTENTION:** The electric rope winch must be cabled fully before the cable is connected to the circuit breaker or the mains power supply.

#### Mains connection (1-phase device)

- Before connecting the device to the electrical system, check that the electrical data on the nameplate correspond to the local mains supply.

The mains supply cable must be an insulated cable with 3 flexible leads. The ground (earth) lead must be longer than the live leads. The cross section should be at least  $1.5 \text{ mm}^2$  and the cable length should be maximum 50 m. The fuses of the various models can be taken from the tables.

Cable ends have to be provided with wire end sleeves.

**ATTENTION:** The settings of the time relay (ZR) should not be disturbed!

**Open the housing only 3 minutes after disconnecting the device from the mains. There is risk of an electric shock from undischarged capacitors.**

After closing the terminal box, connect the cable to the disconnecter or to the mains.

#### Mains connection (3-phase device)

Before beginning work on electrical components the mains current switch must be switched OFF and secured against unintentionally being switched back on.

- Before connecting the device to the electrical system, check that the electrical data on the nameplate correspond to the local mains supply.



### Mains Supply Connection

- The mains supply cable must be an insulated cable with 4 flexible leads. The ground (earth) lead must be longer than the live leads. Cable ends have to be provided with end sleeves.
  - Please observe the following table without fail for minimum cross-sections of the power supply cable!
- Connection to the mains power supply is established in accordance with the wiring diagram on the cover of the terminal box, or displayed in the operating instructions manual.

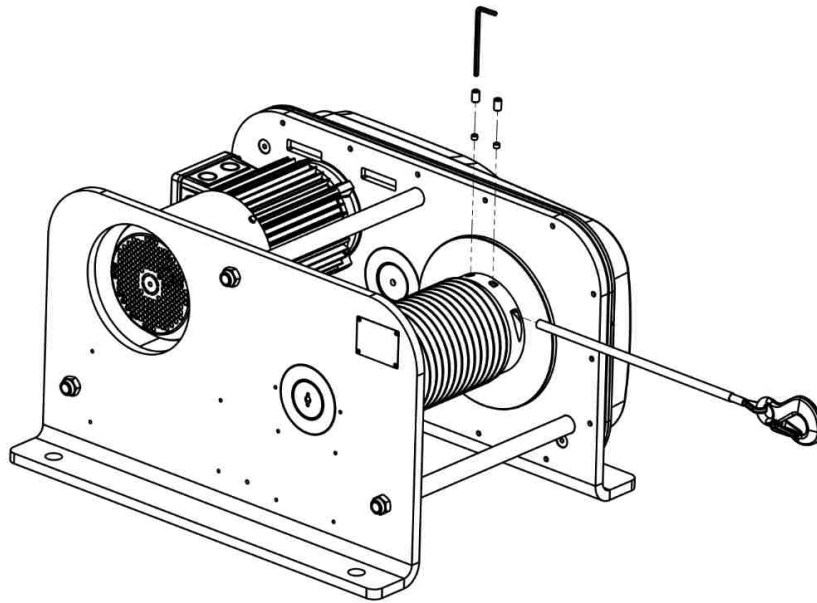
**ATTENTION:** *The electric rope winch must be cabled fully before the cable is connected to the circuit breaker or the mains power supply.*

### Control switch connection

- The length of the pendant control cable is determined by working conditions. Attach the tension relief wire in a manner that the pendant control cable hangs load-free. Cable ends have to be provided with end sleeves.
- Always use tension releasing cable sleeve, if the suspended cable is longer than 30 m!

### Check the motor's direction of rotation

The enclosed circuit diagram is drawn according to the current standard for a clockwise rotating field. If the operator's mains does not comply with this standard and if, after switching on the isolating switch or the power supply, the control pendant moves in the opposite direction to that in which it is wound up by pressing the ▲ key, switch off the unit immediately, disconnect it from the mains supply and swap two of the three phase connections in the switch box.



**Attention:** *Under no circumstances may the wiring in the pendant control be tampered with.*

### Wire rope installation

**Attention:** *Always wear protection gloves for handling wire ropes.*

- Only ropes have a minimum strength of 1770 N/mm<sup>2</sup> with shielding and in accordance with EN 12385-1 are to be used. A low spin rope must be used if the load can break free.
- Make sure that the wire rope has the correct diameter and an adequate length. Measure the rope length in such a way that at least 2 1/2 turns remain on the drum.
- Always uncoil the wire rope properly and without a spin (caused by the rotation with reel) Otherwise, the wire rope could get entangled while being coiled/uncoiled on the drum and become unusable.
- Examine the condition of the wire rope:
  - Cable eye/pressure grouting not damaged?
  - For ropes with hooks: the fuse hatch is intact, hooks are not bent?
  - Proper rope tip without visible damage along the entire length?

To mount the wire rope, insert the hook-less end into the provided hole in the drum and push such that the rope end does not protrude any more from the other end of the hole. Observe the direction of rotation of the drums. The wire rope end must be introduced into the mounting hole in such a way that it is not damaged by the chamfering of the hole during the winding on the drum. Eventually, both provided copper washers are to be placed in the screw holes to prevent the wire rope being damaged during the subsequent stretching. The two mounting screws are to be screwed into the appropriate threaded holes and tightened with the tightening torque specified in the table.

**NOTE:** *If the present rope winch is equipped with an optional rope guide, before fastening a wire rope it must be fully pushed to the drum side on which the rope fastening hole is located, so that the free rope end must be inserted through the rope guide plate only before it can be threaded in the rope fastening hole.*

**ATTENTION:** *A rope guide unit should only be used together with a grooved rope drum. In case of an installed rope guide, more wire rope should not be wound on the drum under any circumstances than the lowest position of the rope drum can hold. The holding capacity of the rope drum in the lowest position and not the wire rope length restricts the maximum lifting distance.*

By carefully actuating the UP button on the control switch, check whether the wire rope was routed to the correct end of the fastening hole. The rope must be wound tightly and uniformly. Cross-overs and entanglement are to be avoided. The optional rope guide guarantees this.

Finally, the rope is to be lubricated along its entire length with a suitable lubricant.

Use simple multi-purpose oil or grease for lubrication.

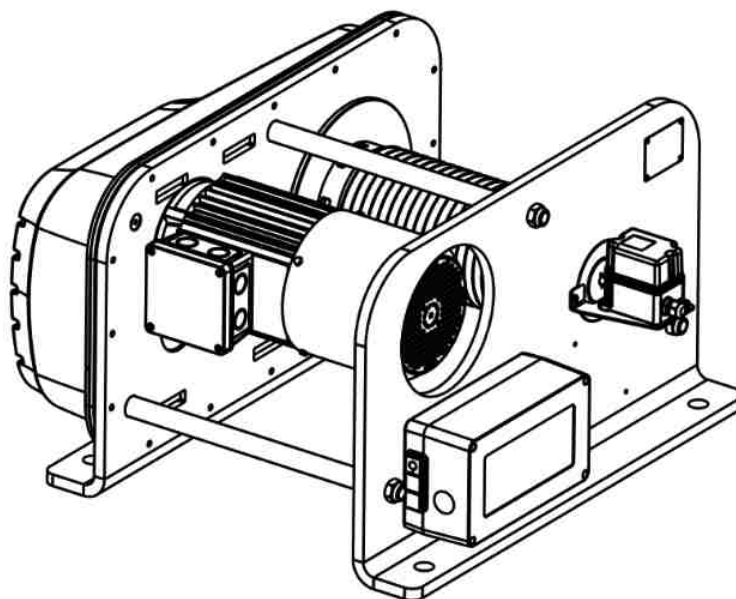
Molybdenum disulphide (MoS<sub>2</sub>) or PTFE containing lubricants are not to be used.

#### Adjustment of the gear limit switch (optional)

If the lifting unit to be installed is equipped with a gear limit switch, the switching points must be adjusted to the use situation without fail before the start-up. After adjusting these switching points, the rope winch and the load as well as the operator can be protected against damage or serious injuries.

This setting could not be defined by the manufacturer because of the unforeseeable number of possible use scenarios.

*NOTE: Depending on the customer's request, gear limit switches with up to 6 other actuation cams can be delivered. The gear limit switch translation is to be selected according to the switching space (distance between the highest and lowest switching point).*



#### Adjusting the slack rope switch (optional)

If the present rope winch is equipped with a slack rope switch, it must be adapted to the installation situation. In this connection, it is advantageous to the operation-ready winch if a light load is fastened and then lifted for a short duration.

For horizontal rope outlet, the shifting roller is to be placed on the taut, downward wire rope from the top. On the side of the rocker switch, where the switches are also placed, the control cam which is placed outside on the axle must be adjusted to the position of the rocker switch. To do this, loosen the radially placed threaded pin on the control cam and turn the control cam in the anti-clockwise direction, until the button switches.

*NOTE: The switch is designed as an opener. As long as the contact wheel of the switch lies approximately at the centre of the flattened piece of the switch cam, the sensor has not yet switched and all functions of the rope winch can be used without any restriction.*

**ATTENTION:** Depending on the rope outlet and the installation position, the trip roller must be pressed to the rope if necessary, through suitable measures (e.g. springs). Here, please make sure that the two rocker switches do not wrap each other!

## FUNCTION CHECK AFTER INSTALLATION

Before the electric rope winch is put into regular service, the following additional inspections must be made:

Are all screwed connections on rope winch and the (optional) equipment secured tightly and locked?

- Does the wire rope lie uniformly and taut on the drum? There should be no twists, kinks and cross-overs!
- If the unit has an optional rope guide, its smooth working must also be checked.
- Does the information provided on the control organs match the actual movement directions of the rope drum?
- Does the EMERGENCY STOP button work?
- Unwinding and winding first in unloaded and then in loaded condition:
  - Does the rope always have sufficient distance from the disturbing edges?
  - Is the rope always wound and unwound uniformly?
  - Do a minimum 2½ safety windings remain on the rope drum even after full unwinding of the suspension material?
- Does the slack rope switch respond properly? Is it moved to its starting position reliably by a re-tightened rope?
- Is the gear limit switch set correctly?

The correct settings of the individual switching points are determined by the use conditions. The top most switching point must reliably prevent the load hook from being drawn into the rope winch.

• Check the sliding clutch (optional, standard equipment in RPE 10-6) with a test weight (min. 125% of the rated capacity, max. 5 s).

Check the brake function when lifting and lowering. The braking distance must not be more than 50 mm.

The winch must also maintain its position under load, it should not slide.

## INSPECTION BEFORE INITIAL OPERATION

According to the existing national/international accident prevention or safety specifications, lifting units must be checked

- At least once per year by a competent person
- According to the risk assessment of the operating company,
- Before the initial start-up,
- Before restart following a shutdown
- After basic alterations.

Actual operating conditions (e.g. operation in galvanizing facilities) can dictate shorter inspection intervals.

The checks are essentially visual and functional, which should guarantee that the unit is in a safe condition and if necessary, faults and damages caused by e.g. improper transport or storage, can be identified and remedied.

The condition of components with regard to damage, wear, corrosion or other changes must be assessed, and the completeness and effectiveness of the safety devices must be determined.

Competent persons may be, for example, the maintenance engineers of the manufacturer or the supplier. However, the company may also entrust the inspection to its own appropriately trained specialist personnel. The inspections have to be initiated by the operating company.

Initial operation and recurring inspections must be documented (e.g. in the CMCO works certificate of compliance).

Paint damage should be touched up in order to avoid corrosion. All joints and sliding surfaces should be slightly lubricated. In case of heavy contamination, the unit must be cleaned.

## OPERATION

### Installation, service, operation

Operators delegated to install, service or independently operate the hoist must have had suitable training and be competent. Operators are to be specifically nominated by the company and must be familiar with all relevant safety regulations of the country of use.

### Inspection before starting work

Before starting work inspect the hoist/trolley, chains and all load bearing components every time for visual defects. Furthermore test the brake and make sure that the load and hoist/trolley are correctly attached by carrying out a short work cycle of lifting and lowering resp. travelling in both directions. Selection and calculation of the proper suspension point and beam construction are the responsibility of the operating company.

### Daily checks by the regulator

- Check the proper fastening of the Yale electric rope winch.
- Check the working of the UP and DOWN as well as the EMERGENCY STOP buttons.
- Check the working of the optionally installed gear limit switch: Have the set load heights been observed reliably?

### Weekly checks

As damaged ropes endanger work safety, the wire rope must be checked for damage once per week (in accordance with Chapter "Checking, Repair and Maintenance"). Replace if necessary.

To increase the life span of wire ropes, ensure cleanliness and mild lubrication.

### Checking the eye hook

Check the eye hook for deformities, cracks, damages, abrasion and signs of corrosion.

### Checking the gear limit switch (optional)

The settings of the gear limit switch are to be checked and, if necessary, adjusted to the concerned spatial situation.

### Checking the slack rope switch (optional)

The deposition of a load during the lowering operation is to be simulated so that the load hook is unloaded and as soon as it is easy to reach, maintained during permanent unloading. The slack rope switch must detect this unusual situation and deactivate the rope winch. Then, the control allows movement only in the opposite direction (lifting).

*NOTE: Normally, the slack rope switch responds only to an unloaded rope during the lowering operation!*

### Attaching the load

Attach the load to the hoist using only approved and certified slings or lashing devices. Never use the wire rope as sling rope. The load must always be seated in the saddle of the hook. Never attach the load to the tip of the hook. Do not remove the safety latch from the load hook.

### Increasing the load capacity by suitable pulley blocks.

If the single max. nominal load capacity in direct pull is not sufficient, it can be multiplied by the use of return pulleys/wire rope blocks based on the pulley block principle. The load is then distributed to several rope falls. The following requirements must be fulfilled:

- A competent person must establish that the load capacity of the return pulley is adequate.
- The return pulley must be provided with a device which prevents unintended opening.
- The return pulley must be rated for the same temperature range as the hoist.
- Only use hooks with a safety latch.
- The diameter of the return pulley must be at least 12 times the nominal rope diameter.
- The groove depth of the return pulley must be at least 1.5 times the nominal rope diameter.
- The return pulley must be provided with a rope guide ensuring that the rope remains in the groove of the return pulley also in the event of slack rope.

### Lifting/lowering the load

The load is lifted by pressing the ▲-button, it is lowered by pressing the ▼-button.

If the used unit is equipped with a gear limit switch (optional), then while assembling the electric rope winch, the different switching points or lifting heights (the number depends on the model of the gear limit switch, at least two) are adjusted. Upon reaching them, the lifting unit is switched off electrically. In this case, the lifting unit only responds when pressing the control button for movement in the opposite direction.

If the gear limit switch is designed with more than two switching points, additional switching points may have been defined in the lifting unit between the lowest and highest switching points. If one of these points is reached while coiling or uncoiling the wire rope on the drum, the lifting unit is similarly deactivated electrically, but movement in the same direction is possible. For this, the corresponding control button must be released and pressed again.

### Response to release of a slack rope switch

The slack rope switch is activated in most cases when a load is being lowered. The load remains suspended on an obstacle, it is stuck on an obstacle or is deposited on the floor. In all these cases, rope movement is possible only in the direction of the rope winch (control key ↑). If an obstacle blocks the way, it must be removed. The lowering operation can finally be continued.

### Stop and EMERGENCY STOP

To stop the load movement, release the UP or DOWN push button. The winch must stop. If the winch does not stop, press the EMERGENCY STOP switch and the crane switch!

**ATTENTION: After pressing the EMERGENCY STOP switch, the device is not electrically dead.**

If the unit does not respond to the release of the push button: Stop work immediately! Get the unit checked and repaired by a qualified electrician.

## INSPECTION, SERVICE & REPAIR

Service and inspections may only be carried out by a competent person.

The inspection must determine that all safety devices are present and fully operational and covers the condition of the hoist, lifting gear, accessories and supporting constructions.

The service intervals and inspections noted are for normal working conditions. Adverse working conditions, e. g. heat or chemical environments, can dictate shorter periods.

- The Yale RPE electric rope winch corresponds to the FEM Group 1Bm/M3 in accordance with FEM 9.511. This theoretically results in a service life of 400 operating hours under full load.

This is equivalent to 10 years under normal operating conditions. After this period the hoist requires a general overhaul. More information can be found in DGUV Vorschrift 54 or FEM 9.755.

**Attention: Maintenance work requires subsequent function testing with nominal load.**

- Visually check the pendant control switch and all cable for damage.
- Check the proper fastening of the rope winches to the supporting structure.
- Function check of the brakes (incl. triggering the EMERGENCY STOP button)
- Function check of the limit switches (optional)
- Function check of the overload circuit breaker (optional)
- Function check of the slack rope switch (optional)
- Function check of all installed safety devices

### Regular Inspections, Service And Testing

According to the existing national/international accident prevention or safety specifications, lifting units must be checked

- At least once per year by a competent person
  - According to the risk assessment of the operating company,
  - Before the initial start-up,
  - Before restart following a shutdown
  - After basic alterations. The concerned use conditions (e.g. operation in galvanizing facilities) can dictate shorter inspection intervals.
- Repair work may only be carried out by a specialist workshop that uses original Yale spare parts. The inspection (mainly consisting of a visual inspection and a function check) must determine that all safety devices are complete and fully operational and cover the condition of the unit, suspension, equipment and supporting structure with regard to damage, wear, corrosion or any other alterations.

Initial operation and recurring inspections must be documented (e.g. in the CMCO works certificate of compliance).

If required by the trade association, the results of inspections and appropriate repairs must be verified.

If the hoist (from 1 t lifting weight) is fitted on or in a trolley, or if the hoist is used to move a lifted load in one or several directions, the installation is considered to be a crane and the further inspections must be carried out, in accordance with DGUV Vorschrift 54 Cranes.

Paint damage should be touched up in order to avoid corrosion. All joints and sliding surfaces should be slightly lubricated. In case of heavy contamination, the unit must be cleaned.

**ATTENTION! Power supply must be disconnected while inspecting the device, unless the type of the examination excludes this!**

### Daily checks by the regulator

- Check the proper fastening of the Yale continuous winch to the suspension.
- Check the working of the UP and DOWN as well as the EMERGENCY STOP buttons.
- Check the working of the upper EMERGENCY limit switches: If the trigger is pressed manually during the upward movement of the unit, the load should stop immediately.

### Maintenance of the wire rope

**ATTENTION: Always wear protection gloves for handling wire ropes.**

Non-compliance with this specification will render the legal warranty or guarantee void of CMCO Industrial Products GmbH with immediate effect.

### Inspection of the wire rope

DIN 15020 sheet 2 "Principles Relating to Rope Drives; Supervision during Operation" and the relevant international and national regulations of the country of use are definitive for the maintenance and inspection of wire ropes.

- Check the rope for outer defects, deformations, kinks, broken individual wires or strands, crushing, swelling, rust damage (e.g. corrosion marks), strong overheating and heavy wear of the rope end connections (e.g. pressure sleeve).
- For safety reasons, a wire rope must be replaced if the wire breakages in the outer strands exceed a specified number. This is counted over a reference length of rope 11 times or 30 times the rope diameter. The maximum number of broken strands allowed depends on the NEM Group of the used hoisting unit and the structure of the wire rope.
- The wire rope must be replaced immediately, if a strand is completely broken, the rope is deformed, kinked, compressed or damaged or worn in any other way!
- The wire rope must be discarded, if the rope diameter has reduced on longer sections by 15% or more compared with the nominal dimension.
- A worn wire rope must be replaced by a wire rope with the same dimensions and quality.

### Lubricating the wire rope

- Make sure that the load chain is lubricated over its entire length, including the part of the chain in the housing of the hoist.
- In case of a constant lifting path of the chain, the change-over area from lifting to lowering movement must be carefully checked. Use simple multi-purpose oil or grease for lubrication. Molybdenum disulphide (MoS<sub>2</sub>) or PTFE containing lubricants are not to be used.
- During lubrication, the wear condition of the wire rope must also be checked.
- Make sure that the wire rope is lubricated over its entire length, including the part of the rope on the rope drum.
- In case of a constant lifting path of the chain, the change-over area from lifting to lowering movement must be carefully checked. Use simple multi-purpose oil or grease for lubrication. Molybdenum disulphide (MoS<sub>2</sub>) or PTFE containing lubricants are not to be used.
- During lubrication, the wear condition of the wire rope must also be checked.

### Replacement of the wire rope

To replace a wire rope, the electric rope winch must be connected to a power source. The wire rope should only be replaced by an authorized specialist workshop.

*NOTE: Replacement of a wire rope must be documented!*

The wire rope must be fully unwound from the drum, so that the drum-side end can be detached from the drum. To do this, detach the two mounting screws in the drum and take out and discard the two copper washers placed under them. Use new copper washers to mount the new wire rope! The wire rope to be replaced can now be taken out of the drum.

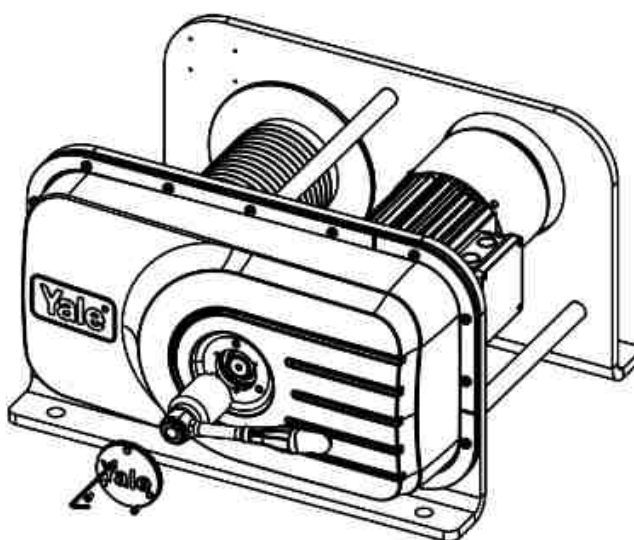
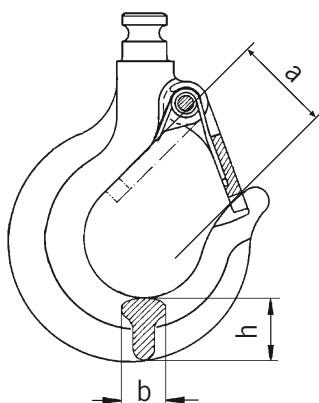
The subsequent steps of placing the new wire rope are described under INSTALLATION → Wire rope installation.

### Maintenance Load Hook

Check the load hook for deformation, damage, surface cracks, wear and signs of corrosion as required, but at least once a year. Actual operating conditions may also dictate shorter inspection intervals. Hooks that are rejected during the check must be immediately replaced with new ones. Welding on hooks, e.g. to compensate for wear is forbidden.

Hooks must be replaced when the mouth of the hook has opened more than 10% or when the nominal dimensions are reduced by 5% as a result of wear.

Nominal dimensions and wear limits are shown in the following table. If the limit values are exceeded, immediately replace the components.



#### Force-limit factor Of Overload Protection Device

The force-limit factor according EN 14492-2:2006 amounts  $\phi DAL=1,35$ . The maximum force occurring when the rated capacity limiter operates will be calculated as:

$$FLIM = (\phi DAL \times mRC + mH - mRC) \times g$$

$$\phi DAL = 1,35$$

mRC = Rated capacity of the hoist [kg]

mH = Hoist load [kg]

Hoist load mH: Load which includes all the masses of a load equal to the rated capacity of the hoist, the hoist medium and the fixed load lifting attachments, e. g. hooks, grabs, magnets, lifting beams, vacuum lifters.

g = Acceleration due to gravity (9,81) [m/s<sup>2</sup>]

**ATTENTION:** The settings of the overload circuit-breaker should be defined only by a competent person.

**ATTENTION:** The unit is ready for operation during this activity and there is a risk of physical injury caused by rotating parts.

**ATTENTION:** The result of the check and adjustment of the overload circuit-breaker must be recorded in the test log of the device.

#### Testing and Adjustment of overload device (Fig. 26)

- For a suspended test load, the adjusting nut is to be turned in the clockwise direction until the test load is lifted.

**ATTENTION:** The max. operating time of the overload circuit-breaker is 60 seconds. Then, the unit has to cool down to a room temperature (min. 20 minutes).

- Assembly takes place in the reverse sequence.

### Maintenance Of Gearbox

To service the gear, the gear cover must be removed. To do this, detach the nuts on the two retainers. The gear hood can then be removed.

The following aspects of the exposed gear must be checked:

- Hood and sealing for damage and cracks
- Gear wheels for visible faults such as wear, cracks, etc.
- Locking rings for stability

The gear must be re-lubricated after the inspection. We recommend using a graphite grease such as Klüber Grafloscon A-G1 Ultra or Reiner Chemie Ceplattyn 300.

### Servicing of motor and motor brake

#### Motor

Motor

Under normal conditions the motor is practically maintenance-free. Every 2.1/2 years the bearings are to be inspected, cleaned and repacked half-full with grease. We recommend K 3 N / KL 3 N DIN 51825 / DIN 51502.

#### Electromagnetic brake

Servicing the disc brake is reduced to checking and adjusting the brake air gap.

Depending on the efficiency of the drive motor, the RPE electric rope winches are equipped with two different brake systems:

Units with a motor output of 0.55 kW (RPE 2-13, RPE 5-6) have a so-called single contact area brake (EFB),

Units with a motor output of 1.1 kW (RPE 5-12, RPE 9-6, RPE 10-6) have a so-called double contact area brake (ZFB).

The two brake systems are to be serviced differently as they have different designs:

*NOTE: The type of brake system (EFB or ZFB) can also be found on the motor ratings plate under "Brake".*

#### Single contact area brake (EFB):

Servicing the disc brake is reduced to checking and adjusting the brake air gap.

The disc brake air gap should be between 0.2 and 0.6 mm. This guarantees a short reaction time and low noise emission.

A readjustment is necessary, if the wear of the brake lining has aggravated to such an extent that the maximum permissible air gap of the brake has been reached.

1. Remove the fan guard (15).
2. Remove abrasion dust with compressed air
3. Check the minimum thickness of the brake lining.

**ATTENTION: Change the fan module on reaching the minimum lining thickness of 1.5 mm.**

4. Place two spacer plates (thickness: 0.2 mm) between the magnet body (1) and the anchor plate (42).
5. Turn the screw (31) in the rotor shaft until the spacer plates can still be removed.
6. Remove the spacer plates.
7. Place the fan guard (15) and fasten it.
8. Connect the brake and check it.

#### Double contact area brake (ZFB):

The disc brake air gap should be between 0.3 and 0.6 mm. This guarantees short response times and low noise emission. The brake air gap must be readjusted if the wear of the brake lining has aggravated to such an extent that the max. permissible air gap of the brake is reached:

- Take out the fan guard after detaching the fastening screws.
- Pull the dust protection ring (80) out of the groove in the magnet body (1) and slide it over the motor-side bearing shield.
- Remove abrasion dust with compressed air.
- Check the minimum thickness of the brake disk.

**ATTENTION: The minimum thickness of the brake disc is 8.5 mm. Upon reaching this dimension at minimum one position of the brake disc, the unit must be shut down immediately and the brake disc must be replaced without any delay.**

- Loosen the hexagon bolt (6) by half a turn.

**ATTENTION: The hexagon bolts must be replaced with new ones after the 2nd adjustment at the latest.**

- Turn the hollow screw (5) approx. 1 mm into the magnet body (1).
- Tighten the hexagon bolts (6) until the brake air gap between the anchor plate and the magnet body is 0.3 mm (to be checked with a feeler gauge).
- Loosen the hollow screws (5) up to the fixed attachment on the bearing shield or additional friction disc (60) from the magnet body (1).
- Tighten the hexagon bolts (6) uniformly.
- Check the brake air gap again with a feeler gauge to determine size and uniformity, reset if necessary.

*NOTE: The brake air gap must be of the same size at all points. Hence, measurements must be carried out at several points around the brake disk.*

- Tighten the hexagon bolts (6) with a torque wrench (torque: 10.0 Nm)
- Install the O-ring (8) in the groove between the anchor plate (2) and the magnet body (1).
- Mount the fan guard and fix it with fastening screws.
- Perform function check.

**ATTENTION: Do not allow the brake friction pads to come in contact with lubricants, etc.**

**ATTENTION: While checking the air passage, the motor should be switched off and the unit should be without load.**

### **General maintenance of electric rope winch**

In particular check following parts:

- Threaded connections in general

Check all nuts, screws and locking devices for tightness.

**Repairs may only be carried out by authorized specialist workshops that use original Yale spare parts.**

**CMCO Industrial Products does not accept liability for damages resulting from the use of non-original parts or alterations and modifications made to the devices delivered by CMCO Industrial Products.**

**What is more, CMCO Industrial Products GmbH does not accept any liability and warranty for damages and operational faults that occur due to the non-observance of this operating instructions manual.**

## **TRANSPORT, STORAGE, DECOMMISSIONING AND DISPOSAL**

### **Observe the following for transporting the unit:**

- Do not drop or throw the unit, always deposit it carefully.
- Do not bend control switch cables and power supply cables.
- The wire rope is fully wound on the drum for transportation.
- Use suitable transport means. These depend on the local conditions.

### **Observe the following for storing or temporarily taking the unit out of service:**

- Store the unit at a clean and dry place where there is no frost.
- Protect the unit (including all attached parts) against contamination, humidity and damage by means of a suitable cover.
- Protect hooks against corrosion.
- Do not bend control switch cables and power supply cables.
- Protect the rope against corrosion by greasing.

If the unit is to be used again after it has been taken out of service, it must first be inspected again by a competent person.

### **Disposal:**

After taking the unit out of service, recycle or dispose of the parts of the unit in accordance with the legal regulations.

**Further information and operating instructions for download can be found at [www.cmco.eu](http://www.cmco.eu)!**



# Produktinformation (Übersicht der Komponenten)

- |   |                        |   |                    |
|---|------------------------|---|--------------------|
| 1 | Seitenschild           | 5 | Netzanschlusskabel |
| 2 | Bremsmotor             | 6 | Seiltrommel        |
| 3 | Abdeckhaube (Getriebe) | 7 | Distanzbolzen      |
| 4 | Steuerschalter, kpl.   | 8 | Seil               |
|   |                        | 9 | Traghaken          |

