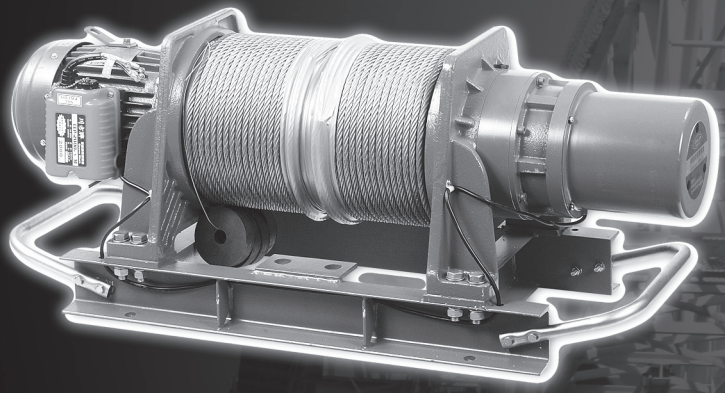
COMEUP

AC Winch



INSTRUCTION MANUAL

1975 Since

certified by TUV NORD according to ISO 9001:2008

COMEUP

Electric Grooved Winch

Limited One (1) Year Warranty Statement

Comeup Industries Inc. (COMEUP) warrants to the original purchaser that the mechanical components and electrical components of the COMEUP Electric Grooved Winch will be free of defects in material and workmanship for one (1) year. All COMEUP mounting kits and other accessories carry one (1) year limited warranty against defects in material workmanship.

This Warranty applies only to the original purchaser of the winch. To obtain any warranty service, the Purchaser under this Limited Warranty is requested to report COMEUP or his authorized distributors of any claims. The Purchaser must provide a copy of the proof of purchase bearing the winch serial number, date of purchase, owners name email, or Tel & Fax, address and registration number. Any product COMEUP determines to be defective will be repaired or replaced at COMEUP sole discretion without charge to Buyer upon Buyer's compliance with these procedures. Seller or its Authorized Distributors may make reasonable charges for parts and labour for repairs not covered by this Limited Warranty.

COMEUP takes the responsibility for all parts and components to be free from defects in materials and workmanship, but the following are hereby excluded and disclaimed:

(1). All warranties of wire rope assemblies after initial use.

(2). All warranties of fitness for a particular purpose.

(3). All warranties of the product's finish

(4). All warranties of merchantability

The Limited Warranty does not cover any failure that results from improper installation, operation or the Purchaser's modification in design. COMEUP reserves the right to change Product design without notice. In situations in which COMEUP has changed a product design, COMEUP shall have no obligation to upgrade or otherwise modify previously manufactured products.

COMEUP

Electric Grooved Winch

Thank you for purchasing a COMEUP Winch. This manual covers operation and maintenance of the winch. All information in this publication is based on the latest production information available at the time of printing.

General Safety Precautions

The winch has been designed to give safe and dependable service if operated according to the instructions. Please read and understand this manual before installation and operation of the winch.

Follow these general safety precautions:

- Confirm that the winch complies with the using conditions.
- Keep the winch secure strongly and the rope is not wound to be deviated to the drum.
- Don't use unsuitable pulleys or accessories concerned.
- Don't use unsuitable rope in construction, strength or having any defects.
- Pay attention to the grounding, it provides a path of least resistance for electric current to reduce the risk of shock.
- Check the winch for smooth operation without load before loading operation.
- Make sure the wire rope to be wound evenly in the first layer on the drum, rewind it if a mixed windings in existence.
- If a wire rope is found an uneven winding or accumulated at one side of the drum, align it adequately.

⚠ WARNING

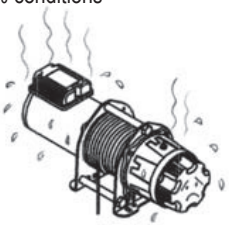
1. The winch is not to be used to lift, support or otherwise transport personnel.
2. A minimum of five (5) wraps of rope around the drum is necessary to support the load rated.
3. The owner and/or the operator shall have an understanding of these operating instructions and the warning before operating the electrical winch. Failure to follow these warnings may result in loss of load, damage to the winch, property damage, personal, or fatal injury.
4. The owner shall retain this manual for further reference to important warnings, installation, operating and maintenance instructions.

Ⅰ. Installation Precaution

▶ General Safety Precaution

⚠ DANGER	
⃠	The following environmental conditions may result in the possible causes of winch trouble.

● Low temperature below -10℃ ,high temperature above 40℃ or humidity above 90% conditions



※Cause malfunction of spare parts

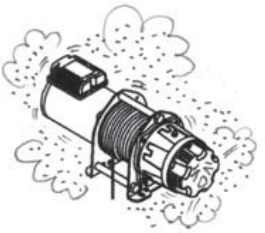
● In an organic chemistry or explosive powder conditions

※Cause explosion

● In heavy acid or salty conditions
● In rain or snow conditions

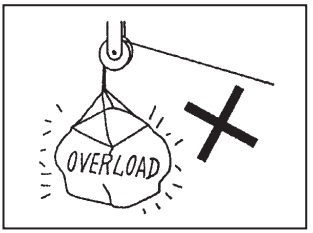
※Cause malfunction of spare parts

● In a heavy general powder condition

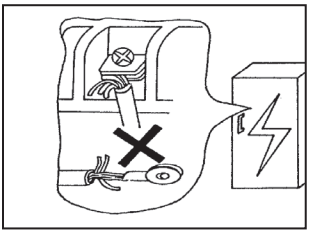


※Cause malfunction of performances

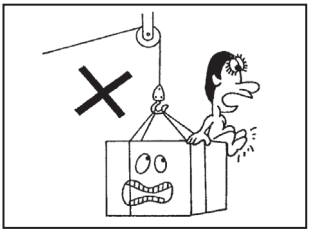
II. Handing Precautions



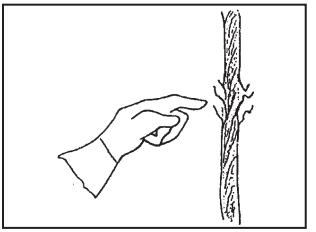
● It is forbidden to lift loads above the rated capacity of the winch



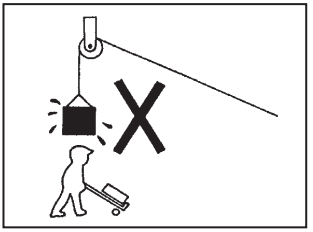
● Do connect the power lead on the main power source directly and fasten them



● Ban on transporting persons

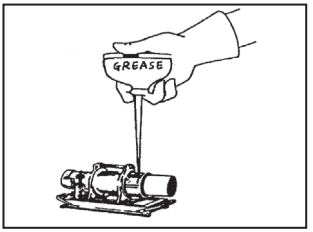


● Don't ignore fault accessories

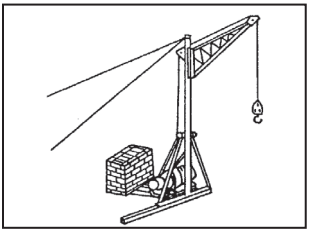


● Don't stand under winching operation

● Don't operate winch in rain or snow



● Do perform maintenance on schedule



● Do anchor crane with ballasted container and wire rope

III. Winching Principles

▶ Percentage Duty Cycle

⚠ WARNING	
⃠	Never lift over the rated percentage duty cycle.

The life of the winch is depending on the conditions of the load and working frequency. In the long time operation, make sure to use the machine within its continuous ratings. Continuous ratings means the percentage duty cycle (%ED) is subject to the rated voltage, rated frequency and a 63% of rated load.

$$\text{Percentage duty cycle (\%ED)} = \frac{Tb}{Tb + Ts} \times 100\ (\%)$$

Tb: total sum of overall loadings operating hours.

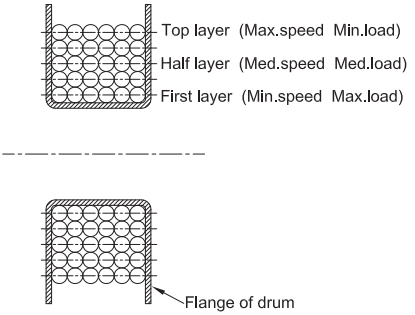
Ts: total sum of stopping hours.

Tb + Ts = approximately 1 to 10 minutes.

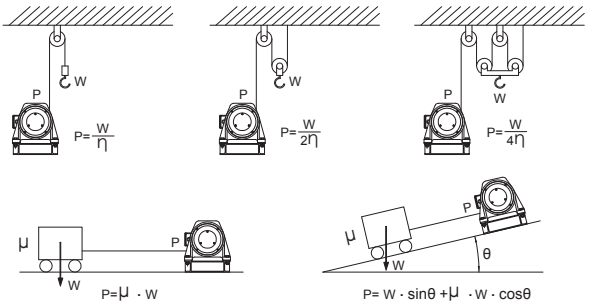
For this reason, all electric winches are rated at a 25% percentage duty cycle (%ED).

▶ Load Rated

Load and speed vary according to how much wire rope is on the drum. The first layer of rope on the drum delivers the slowest speed and the maximum load. A full drum delivers the maximum speed and the minimum load. For this reason, all electric winches are rated at their top layer of wire rope on the drum.



▶ Calculating Head Loads

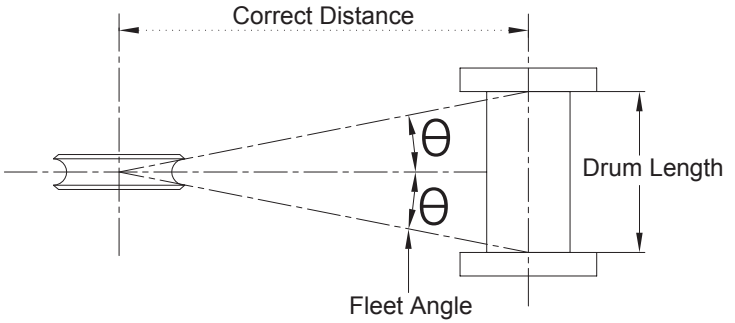


P: Rope tension
η: Sheave efficient
θ: Angle
W: Load
μ: Friction factor

Use a tackle block for double fall operation to increase the rated load by approximately 85% but its speed will be deducted by half accordingly.

▶ Calculating Fleet Angle

- The winch should be mounted as close to centre and as perpendicular as possible to the direction of the line pull. This will keep the wire rope fleet angle centre on the drum as small as possible.
- If the proper fleet angle is not maintained, the wire rope could wind onto one side of the drum.



Experience has shown that the best wire rope service is obtained if the maximum fleet angle is not more than 2° for grooved drum.

▶ D/d Ratio

It means ratio of pitch circle diameter of drum to the rope diameter.

In principle, a 12:1 D/d ratio is suggested for most pulling application and a 15:1 D/d ratio for lifting and lowering applications.

▶ Rope Safety Factor

The working coefficient of the wire rope shall be determined from the ratio of the minimum breaking force of the rope and the maximum possible lifting capacity.

In principle, a 3 times of rope safety factor is suitable for most pulling applications and a 5 times for lifting and lowering applications.

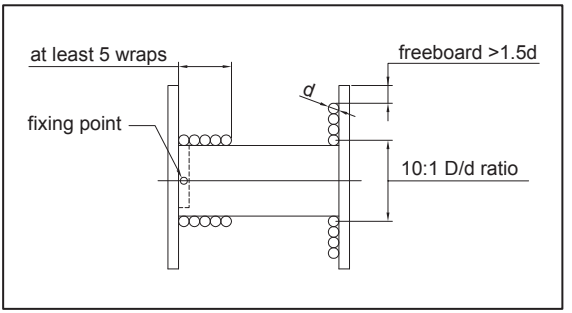
IV. Compliance with EU Directives

▶ Comeup Electric grooved winches comply with the following regulations

1. European Standards of EN 14492-1 for Power Driven Winches came to effect from 29th. December 2009
2. European Machinery Directive 2006/42/EC.
3. European Directive on Electromagnetic Compatibility (EMC) 2004/108/EC
4. European Low Voltage Directive (LVD) 2006/95/EC

▶ Extracts from the Directives & Comeup compliance:

1. EN 14492-1 Section 5.15.6 Wire Rope
   Wire rope minimum break to be twice winch rating
2. EN 14492-1 Section 5.7.2 Rope Drum
   Rope drum mean diameter to be 10 times the diameter of the wire rope and the flanged drum end plates shall protrude beyond the rope wound on the drum at the top layer by at least 1.5 x the nominal rope diameter.
3. EN 14492-1 Section 5.7.6 Rope Fastening onto the rope drum
   Rope attachment to withstand 2.5 times the winch rating
   Rope must have at least two wraps winding before fixing point
4. EN 14492-1 Section 5.15.5 Brake
   Winch to hold full rated load
5. EN 14492-1 Section 5.15.2 Rated Capacity Limiters
   Winch for lifting and lowering purpose with a rated capacity of 1,000 kg or more shall be fitted with a rated capacity limiter to prevent overloading of the winch



▶ To comply with EN 14492-1, the following optional accessories must be fitted to all winches

- Low voltage control
- Rope drum cover
- Remote control w/ an emergency stop button
- Up and down limits protection devices

When using and installing a winch, the owner or end user shall ensure that all legal requirements are completely complied with.

V. Workings

▶ Brake Adjustment

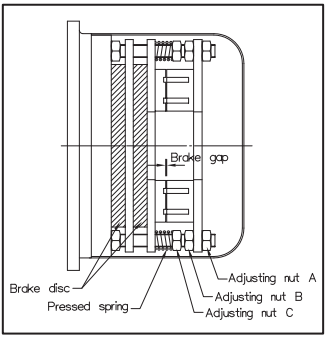
- For CEP-500-△M /500S-△M winches

  There is no brake adjustment function. Once the brake disc is considerable worn, replace it with new one.

- For CEP-1000S-△M /1000-△M /2000-△M /3001-△M /5000-△M series winches

  Condition: Brake distance is more than 1.5% of rope length to be wound-in during 1 min or the brake disc thickness is smaller than 8.5 mm, compared to the standard thickness of 9 mm.

Condition: Brake distance is more than 1.5% of rope length to be wound-in during 1 minute.



Procedures:

Step1. Loosen the adjusting nut B to have the nut A released. Rotating the nut clockwise to get a closed brake gap.

Step2. Rotate A bolt clockwise to get a proper brake gap at 0.35 mm for CEP-1000S/1000//2000 series winches and 0.6 mm for CEP-3001/5000 series winches.

Step3. Tighten the adjusting nut.

Step4. At first, tighten the adjusting nut C and then release it by proper wraps

CEP-1000S/1000 series…..9.5 wraps; CEP-2000 series…..8 wraps

CEP-3001 series……..5.5 wraps; CEP-5000 series…..6.5 wraps

▶ Grounding

To prevent the risk of electric shock, the power plug must be plugged into a matching outlet and grounded in good condition.

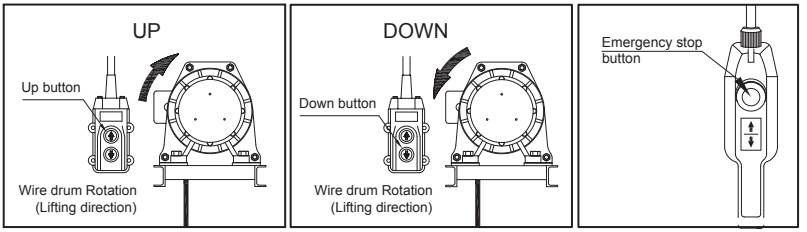
▶ Up and Down Switching

To lift a load, press ↑ button and drum will rotate as shown below operation.

To lower a load, press ↓ button and drum will rotate as shown below.

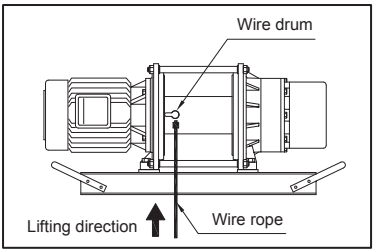
To stop winching, release ↑or ↓ button.

To have an emergency stop function, press the emergency stop button (option)



▶ Wire Rope Replacement

- Insert the wire rope into the hole of drum and fix it with a P. T. screw, then press the "UP" button of switch for rotate the drum in the lifting direction.
- Wind the wire rope accurately around the drum, and an irregular winding will cause the load to be swing, thus damaging the wire and reducing the lift of the winch



▶ Oil Replacement

Gear lubrication is an important component in insuring the long life of your winch. The type of lubricant will have a great influence. Winch are pre-lubricated at the factory and do not require initial lubrication. Re-lubrication interval depends upon service, working hours of a year or 250, o after repair or disassembly. The lubricant for gear box was recommended by Maltifax HT-740-0, a viscosity (cSt) is 615/38.4 at 40℃/100℃ or similar quality. Consult your local lubricant distributor on the selection that best fits your climate and application.

Model Series	CEP-500S-△M CEP-500-△M	CEP-1000S-△M CEP-1000-△M	CEP-2000-△M	CEP-3001-△M	CEP-5000-△M
Lubricant	HT-740-0	HT-740-0	HT-740-0	HT-740-0	HT-740-0
Q'ty	0.5 lt	0.74 lt	1.36 lt	3.41 lt	3.41 lt

▶ Standard Value for Electric Components

Model Series	Starting Capacitor.	Running Capacitor.	Brake Coil	Bridge Rectifier
CEP-500S-△M	250MFD 125VAC	25MFD 250VAC	107Ω DC110V	CBR-071
CEP-500-△M	X	X	434Ω DC220V	CBR-072
CEP-1000S-△M	125MFD 250VAC	15MFD 440VAC	436Ω DC200V	X
CEP-1000-△M				
CEP-2000-△M				

Brake Coil at 50 Hz					
CEP-3001-△M	AC Input Voltage:	220V	380V	415V	440V
	Black & Blue wires:	25Ω	96Ω	117Ω	115Ω
	Black & Red wires:	11Ω	42Ω	51Ω	51Ω
	Blue & Red wires:	14Ω	54Ω	66Ω	65Ω
CEP-3001-△M	AC Input Voltage:	220V	380V	415V	440V
	Black & Blue wires:	28Ω	108Ω	128Ω	126Ω
	Black & Red wires:	12Ω	48Ω	57Ω	56Ω
	Blue & Red wires:	15Ω	54Ω	71Ω	70Ω

VI. Cart Puller Capacity

▶ Choose the Right Winch

In most pulling applications you are dealing with a rolling road rather than pulling a dead weight. Resistance to rolling is mostly influenced by the load, rolling resistance, track gradient, track curvature, track conditions.

- **Load:** Calculate the total weight of the loaded cart to be moved simultaneously.
- **Rolling resistance:** Resistance to rolling is influenced by the wheel journals, type of lubrication used and the ambient temperature.
- **Track gradient:** For each one percent gradient, a rise of one meter for every 100 meter of track, the running line pull must be increased by 10 kg per ton.
- **Track curvature:** To overcome the effects of wheels binding against rails on curved sections of track, running line pull must be increased. For each degree of curvature, the running line pull must be increased by 1kg per ton.
- **Track conditions:** The condition of substandard track can vary considerably.

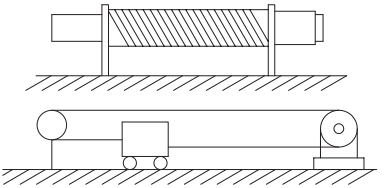
▶ Application Condition Example

1).Pulling of a rolling cart in and out of an oven using a single wire rope
2).50 ton total load being moved included weight of cart
3).Steel cart wheels with precision wheel bearing
4).New track, 5° curvature and 2% gradient

▶ Pulling Capacity Required

50 ton	Total weight being moved
x (10 kg+20 kg+5 kg)	10kg.....Pull required per ton being moved
1,750 kg	20kg.....For each one percent gradient, the running line pull must be increased by 10 kg/ton
	5kg.....For each one degree of curvature, the running line pull must be increased by 1 kg/ton
x 1.2	20%..... Contingency for unpredictable track or cart conditions
2,100 kg	.....Minimum calculated cart puller capacity

▶ Horizontal Load Reversing

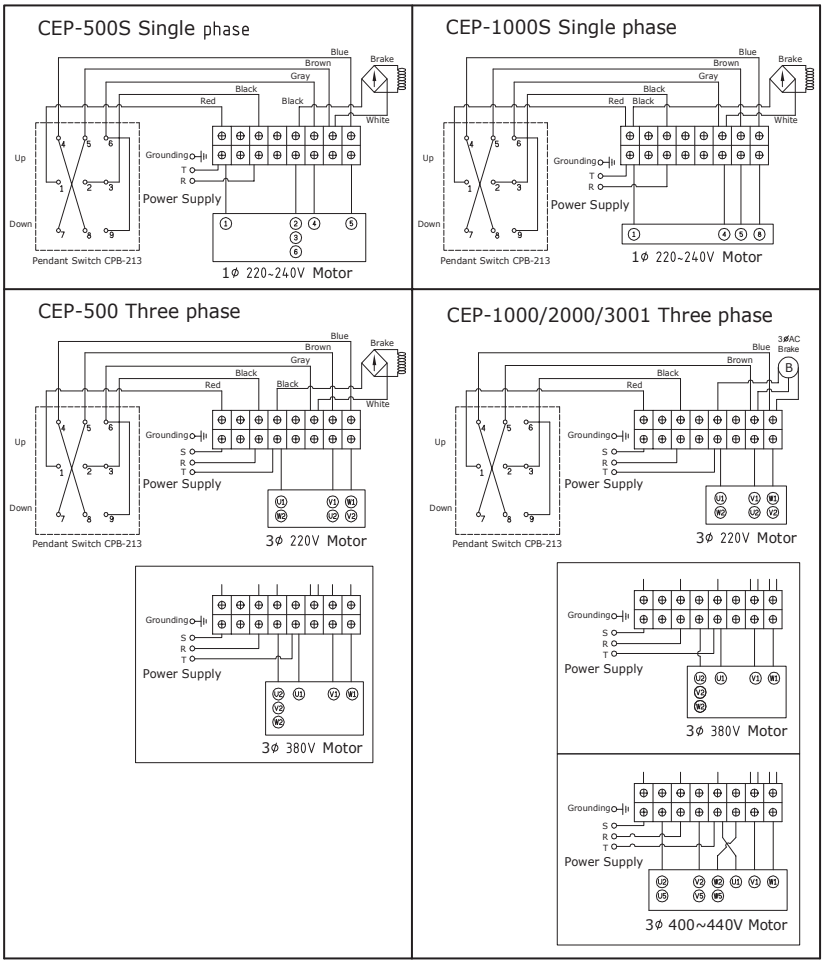


The horizontal load reversing allows 2 pieces of wire rope to be spooled onto the first layer of grooved drum. As one rope winds onto the drum and the other rope winds off an equal amount.

It is important to know how each of the wire rope will be coming off of the drum that allows the correct grooving to be provided.

VII. Wiring Diagram

Please note the following wiring diagrams just for the initial test purpose only.



VIII. Checking and Trouble Shooting

▶ Checking Reference

Remark：1. The specified person performs the checking of winch.

2. Divide the checking into daily checking and periodic checking.

3. The checking items and checking method in daily and periodic checking shall be carried out and different according to the using frequency.

Checking Items			Checking Methods	Classification of Checks			
				Daily	Periodical		
					3 Months / 20 Hours	1 year	3 Years / 250 Hours
1	Brake	Performance Wearing of lining, and pressed plate Brake or escaping of spring	Visual Decomposition check Decomposition check	▲			▲ ▲
2	Carbon brush	Wearing	Decomposition check		▲		
3	Motor	Condition of insulation Staining , damage Carbon powder accumulation	Measuring,10MΩmin Visual Decomposition check	▲	▲	▲	
4	Remote control	Working Outer damage of switch cords Attaching condition of earth line Condition of insulation	Manual Visual Visual Measuring,10MΩmin	▲ ▲ ▲	 ▲		
5	Safety device	Reverse winding prevention function Distortion of over winding lever Wrong rotary direction-winding	Visual Visual Visual	▲ ▲ ▲			
6	Wire rope	Kink phenomena Broken wires Decreasing of diameter more than 10% Deforming or corrosion	Visual Visual Visual Visual	▲ ▲ ▲ ▲			
7	Weight hook and hanger	Distortion Damage Loosening	Visual Visual Visual	▲ ▲ ▲			
8	Drum	Rupture of flange Wearing	Visual Visual	▲	▲ ▲		
9	Gear trains	Damage , warning Condition of oil feeding Lubrication for couplings	Visual Measuring Measuring	▲		▲ ▲	
10	Fastenings	Loosening	Manual	▲		▲	
11	Marking	Label and the like	Manual	▲			

▶ Trouble Shootings

Checking the winch for smooth operation by pressing ↑ or ↓ button of pendant switch.
When winch fails to start after several attempts, or if any defective operation to be happened, check followings.

Symptom	Possible Cause	Remedy
No reaction	Wrong connection	Connect correctly
	No power source	Check power source
Motor buzzes but does not start	Brake does not open	Check brake assembly
	Wrong connection	Connect correctly
	Burnt or communicated motor	Rewind or replace motor
Failing in restarting	Overload	Reduce the load
	Brake does not open	Check brake assembly
	Damaged wiring on the control box	Check the wiring diagram
Failing in lifting a load within the lifting capacity	Considerable voltage drop (It can provoke non-opening of brake)	Check voltage to make sure the voltage shall be falling within 5% of rated voltage
	Brake does not open	Check brake assembly
	Burnt or communicated motor	Rewind or replace motor
	Wrong motor cable in size and length	Collect the motor cable in size and use a bigger section of cable for longer distance
Brake does not open completely	Considerable voltage drop (It can provoke non-opening of brake)	Check voltage to make sure the voltage shall be falling within 5% of rated voltage
	Damaged brake coil	Measure the standard value and replace brake coil
	Improper brake gap	Adjust brake gap
	Brake disc wear down	Replace brake disc
Crossed rotation	Wrong connection	Connect the wirings correctly
Grease leakage	Damaged oil seal	Replace oil seal

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