

SAFETY HOIST™

CE OPERATION MANUAL

ELECTRIC WIRE ROPE HOIST



SAFETY HOIST Electric Wire Rope Hoist Introduction

The SAFETY HOIST Electric Wire Rope Hoist is designed for building sites, commercial and domestic, as well as various construction workplaces, such as warehousing, buildings, storage areas, factories in general, as well as domestic applications.

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1. Preface

- Please read this Instruction Manual carefully before you start using the electric Hoist. You will find many useful hints which will help you to keep the Hoist always in its first-class condition.
- You are kindly requested to read this manual thoroughly, to follow scrupulously the instructions given and for safety reasons, avoid controlling, adjusting or performing procedures other than those specified.
- This Hoist has been designed and built in full compliance with EN ISO 12100, ISO 14121 and EN 60204 standards on machine and further modification, with high-quality materials and particularly studying the possibilities to reduce as much as possible the risks of accident.
- Foreword to the operating instructions
The operating instructions are designed to familiarize the user with the Hoist and its designated use.
- The instruction manual contains important information on how to operate the Hoist safely, properly and most efficiently. Observing these instructions helps to avoid danger, to reduce repair costs and downtimes and to increase the reliability and life of the Hoist.
- The instruction manual is to be supplemented by the respective national rules and regulations for accident prevention and environmental protection.
The operating instructions must always be available wherever the Hoist is in use. These operating instructions must be applied by any person in charge of carrying out work with and on the Hoist, such as
 - operation including setting up, troubleshooting in the course of work, care of consumables
 - maintenance (servicing, inspection, repair) and/or
 - transport

This electric Hoist is designed and built in full compliance with the safety standard, please read carefully before installing the machine. You will find many hints to keep the machine in its best condition, also to avoid the risk of accident.
- In addition to the operating instructions and to the mandatory rules and regulations for accident
- Prevention and environment protection in the country and place of use of the Hoist, the generally recognized technical rules for safe and proper working must also be observed.

2. Safety Instruction

2-1 Safety regulations

2-1-1 General safety rules

1. This electric Hoist is designed for lifting products only. Do not apply the electric Hoist for lifting person.
2. The electric Hoist should be hung on a rigid suspended bar..
3. Installing the electric Hoist at a proper levelling condition to ensure the steel rope arranged neatly. This may avoid steel rope friction against the Hoist body due to regular winding.
4. Make sure your power source comply with the voltage indicated on the electric Hoist before connecting the power wires to the power source.
5. Connect the power wires. Tighten the terminals securely.
6. Make sure the electric Hoist has been properly grounded. The power circuit should be equipped with an electric shock breaker.
7. Before operating the electric Hoist, read and follow the instructions for allowable lifting weight, speed and voltage etc. Indicated on the attached plate.
8. Do not exceed the rated lifting capacity of the electric Hoist. Allowable lifting weight is indicated on the attached plate.
9. The electric Hoist should be operated by a skilled operator. Before operating the electric Hoist check again if all lock screws are tightened securely without loosening.
10. Before operating the electric Hoist check to see if the steel rope drum runs to the correct direction and the brake works normally.
11. Do not allow any person approaches under the electric Hoist, bracket or weight.
12. Select a proper location for mounting the electric Hoist, to prevent the lifting weight bumping against any construction, steel frame or construction beam etc while lifting.
13. Always keep the steel rope in a good condition. When applying the electric Hoist for lifting heavy load, keep the steel rope at least 3 turns wounded around the drum.
14. Lift weight vertically. Do not lift weight in a slant or horizontal direction. Do not have weight hooked on the steel rope for a long time.
15. Do not use the electric Hoist to pull out any object fixed in the floor or any construction.
16. When the electric Hoist is running, keep your hands or any object away from it to avoid danger.
17. Prevent control wire or power wire from hooking or contacting by the wire rope. This may avoid electric shock or any danger.
18. In case any malfunction or abnormal noise occurs during operation, stop the electric Hoist immediately. Check and repair it immediately for safety.
19. Do not alter the electric circuit or use any other replacement parts not supplied from the original manufacturer.. This avoids affection on the Hoist performance or any accident.
20. The operator is requested to fully obey the safety rules listed for safety protection.

2-1-2 Electrical safety rules

1. Before installing, please pay attention to the input rated voltage and current and make sure the Hoist is grounded, in order to prevent accident.
2. There must be a main power switch (main breaker) at main input side of electric control system.
3. Remember to disconnect the main power before repair, maintenance and clean.
4. Unauthorized or untrained personnel cannot repair or maintain any electric equipment.
5. The keys of electric box and mode select should be conserved by authorized personnel. Don't give the key or authorized code to unauthorized personnel.
6. Comply with the maintenance instruction to repair and maintain the electric equipment.
7. Before operating the Hoist, check all of the electric equipments and parts are broken or damaged or not. If there is something broken or damaged, replace a new one immediately and please note its original rated specification.
8. After connecting power, check the direction of motor rotation and the direction of Hoist is correct or not.
9. Please check whether the function of emergency stop button is normal or not. The emergency stop button is used under emergency situation to cut off power of Hoist. (Operator usually misunderstand that the Hoist is broken down when they forgot to release the emergency stop button.)
10. Please check whether the function of each safety parts is normal or not, such as emergency stop button, emergency stop wire, interlocking switch, main power switch, safety valve, limit switch, and etc.
11. Please check whether the screws of each terminal base are tightened or not. If the screws loose, screw them tightly.
12. The wiring practices of electric control system must be complied with circuit diagram.

2-1-3 Safety rules of Hoist

1. Don't misuse the Hoist, to avoid danger.
2. Before start the Hoist, make sure all the protecting covers are not breakdown and damage.
3. If the mechanism or any part breakdown, operator should stop the Hoist immediately and then examine and repair it.
4. If it results abnormal sound during operation, operator should stop the Hoist immediately and then examine and repair it.
5. If abnormal temperature phenomenon happens during operation, operator should stop the Hoist immediately and then examine and repair it.
6. Don't modify the original design of mechanical structure, in order to keep the best efficiency and security.
7. Please store the spare parts and tools well, and avoid moist and damage.
8. Untrained or unauthorized operator is prohibited operating, installing or maintaining Hoist.
9. Please maintain and repair the Hoist according to service instruction.
10. Please replace broken part according to the specification in part list.

2-2. Location of warning sign, CE mark, nameplate



CE symbol



Nameplate



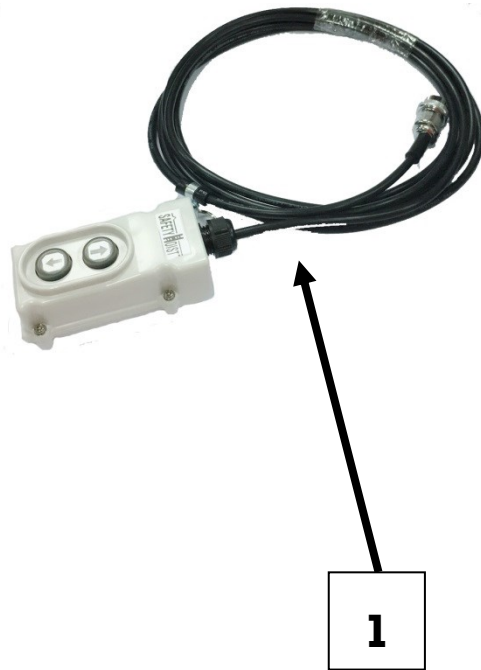
Nameplate

CE SAFETY HOIST™
ELECTRIC WIRE ROPE HOIST
WLL: 550 LBS

MODEL: DU-260L	SPEED: 75 ft/min
VOLT: 115/1/60	MOTOR: 1.3KW/9A
WIRE ROPE: 3/16" x 90ft	GROUP: FEM1Am
S/N: 18260/0001	

Safety Hoist Company
MADE IN TAIWAN

2-3. All safety related elements



ITEM	DESCRIPTION
1	CONTROL SWITCH SET

2-4. Checklist of electrical and safety function

Item	Content inspection and safety requirement	Result	Comment
1	Is every terminal protected by isolation plate (IP2X)?	YES	
2	Does technician follow the procedure number to wire?	YES	
3	Are the diameter of grounding wire and each circuit accord with safety requirement of designed electrical circuit?	YES	
4	Is fuse accord with safety requirement of designed electrical circuit?	YES	
5	Are these screws on electric box fixed tightly?	YES	
6	Is the electric box equipped with a ventilator (e.g. fan)?	YES	
7	Does the design of electric box conform to IP requirement?	YES	
8	Is all the function of every control switch and component described specifically on this operation manual?	YES	
9	Are input voltage, frequency, and phase marked correctly?	YES	
10	Is the machine earthed?	YES	
11	Is there an independent earth copper plate equipped inside electric box?	YES	
12	Is every function of control device regular?	YES	
13	Is the emergency stop device functional?	YES	
14	Is the rotary direction of motor or transmission correct?	YES	
15	Is the cover functional (fixed or movable)?	YES	
16	Is the machine set stable?	YES	
17	Have all the acute angle and fur been ground?	YES	
18	Has the machine been pasted a CE mark?	YES	
19	Has the machine been pasted a nameplate?	YES	
20	Has the machine been pasted related warning marks?	YES	
21	Have the listed related safety parts in TCF 1.6 been installed indeed?	YES	
22	Have all the safety information and attentions been provided completely for user?	YES	
23	Does the written language of manual and machine conform to local country?	YES	
24	Has the operation manual been provided?	YES	
25	Has the EC Declaration of Conformity been signed?	YES	

3. Mini Wire Hoist Description

3-1 General characteristics

3-1-1 Usages

Fit for various workplace applications, such as general factories, warehouse, construction, plumbing, and agriculture industries. Designed for unique rigging applications encountered at small venues, lightweight, quiet, and portable. Operates on 100V-120V or 220V-240V, which means you can plug it in just about anywhere.

3-1-2 Features

Braking: Dual braking system combines dynamic and mechanical braking, provides instant and safe braking.

Gearing: Precision machined gears heat treated for strength and durability, the ball or needle bearings at all rotating points run in oil bath lubrication for a quieter, smoother and cooler operation.

Push button: Easy to maintenance, simply layout of the control with 5M power cable as standard and emergency stop as option.

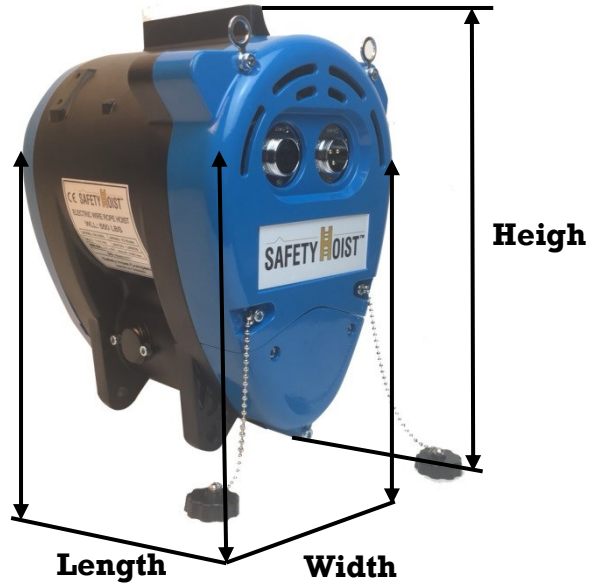
IP RATE: Heavy duty IP54 waterproof.

Hook: 360° swivel hook as standard

3-2 Specifications

Model	DU-260L
Dimensions	
Length (mm)	230
Width (mm)	190
Height (mm)	300
Capacity (LBS)	550
Voltage (V)	115
Standard Lift(m)	30
Control Cable(m)	5
Lifting Speed(m/min)	60HZ-23
Wire rope(mm)	5
Safety Factor	WLL X 1.25
Insulation Class	F
ED%	30%
No. Of Starts per hr	300
Power Cable (m)	5
Net Weight (kg)	16.5

3-3 Overall dimensions

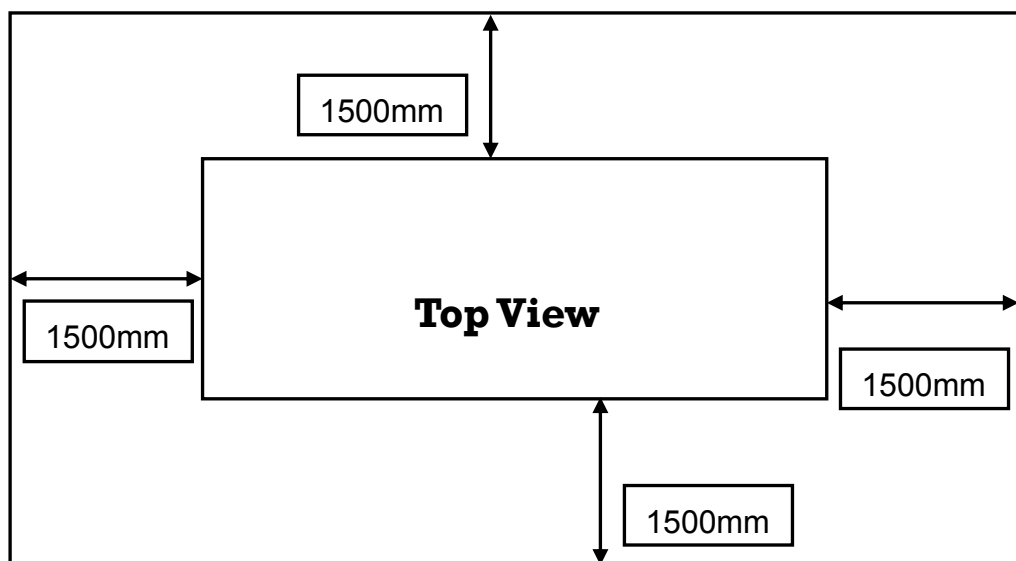


MODEL	Length	Width	Height
DU-260L	230mm	190mm	300mm

3-4 Working space required and operating position



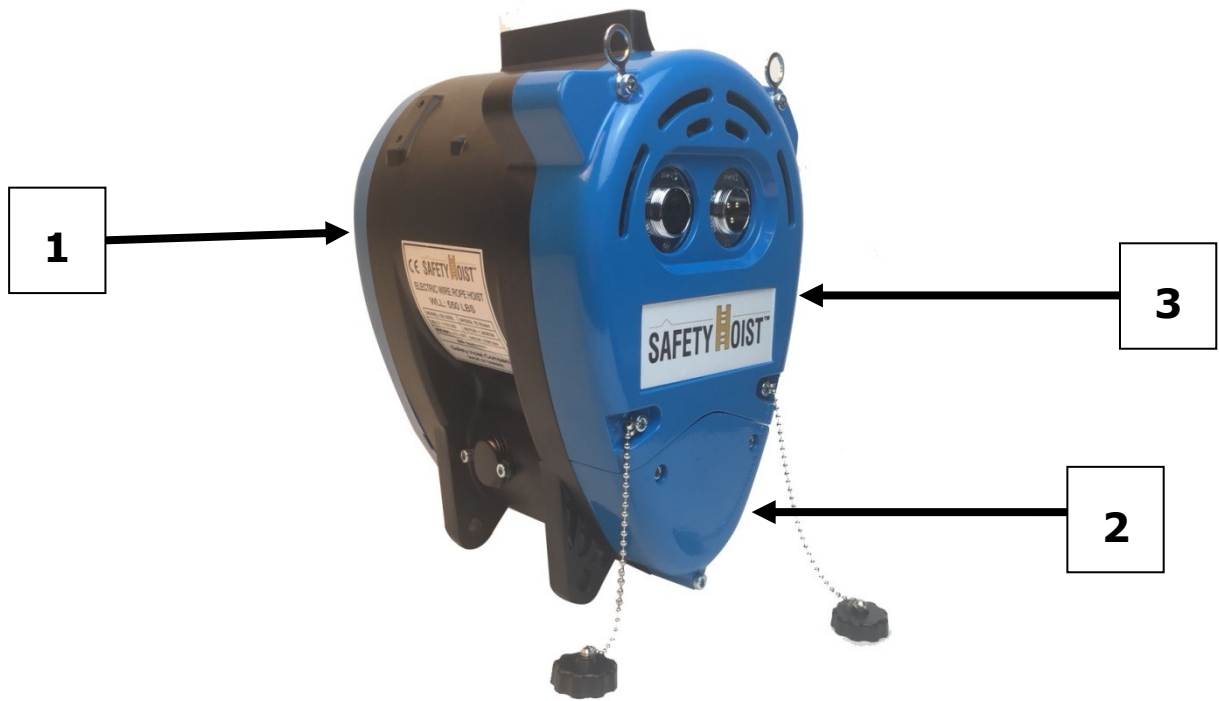
FRONT OPERATOR



FRONT OPERATOR



3-5 Main units and name



Item	Part's name
1	GEAR
2	MOTOR
3	Electric Department

4. Pre-use Preparation

4-1 Notice and inspection before operation

4-1-1 Mechanical Check

1. Are all transport protection facilities removed?
2. Is there any mechanical damage?
3. Are all the safety device, safety covers refitted from the set-up installation?
4. Are all Hoist unit correctly aligned and locked in position?
5. Are all mobile and rotating parts exempt of foreign bodies? Is there mobility unimpaired (tools wire, yarns, waste, etc.)

4-1-2 Electrical Check

1. Are all ground conductors connected?
2. Are all cables connected?
3. Is there any mechanical damage of electrical control operating and indicator units
4. Are all plug-in connection to the Hoist fitted correctly?
5. Are all the cable near mobile parts fixed correctly?
6. Are the cable fitting tightened?
7. Were wire rests and metal objects removed and cleaned away from switch box, junction box, control cabinets, and operating panel?
8. Are frequency inverters motor set for the correct V/Hz ratio if applied?
9. Are the drive rotating direction correct?

4-2 Expected use and limits of use

Specification of essential parts:

Please refer to the list of specification in operation manual.

This Hoist is expected to be used under industrial environment:

The well lighting, well ventilation, clean environment, dry, and maintains a normal temperature (-10°C to +50°C)

The Hoist needs the following supplies:

Electric power: single phase/ 100-120V or 220-240V/ 50Hz and 60Hz (or base on previous designation).

Working Duty (ED%):

30%.

No more than 20 minutes use within 60 minutes frame.

The required technique and experience during safety operation and use.

They should be a proficient operator or trained staff.

5. Transport, Install and Dismantle

5-1 Transport

Always carry the Hoist with two hands to prevent a strike.

Below table shows net weight and gross weight for each model of Hoist.



MODEL	NET WEIGHT	GROSS WEIGHT
DU-260L	16.5 KG	18.3 KG

5-2 Install

5-2-1 Environment Precautions

The following environmental conditions may adversely affect the Hoist

- Low temperature below -10°C
- High temperature above 40°C
- High humidity conditions above 90%



In organic, chemical, or explosive conditions



In wet weather conditions or snow
(Cause rust or short circuit)

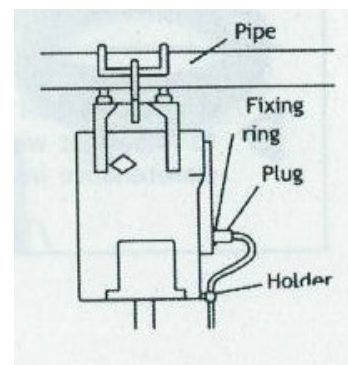


In heavy dusty conditions
(Cause malfunction or poor performance)

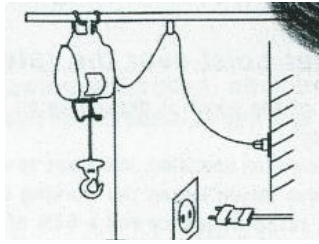


5-2-2 Power Cord Insertion

- Insert the power plug into the power receptacle of the Hoist, firmly hand tighten by turning the locking ring clockwise.
- Be sure to lock the cord onto the holder mounted on the Hoist.
- Do not allow the cords to be tangled into the wire rope and drum
- The normal length of the cord is 15 feet . Longer cords up to can be used, however to avoid any malfunction, or any decrease in power efficiency do not exceed a total length of 32 feet cord



Determining the appropriate cord based on length required



Grounding

- To prevent the risk of electric shock, the power plug must be plugged into a matching grounded socket.

Switch/Pendant cord connection

- Insert the pendant plug into the pendant receptacle of the Hoist and tighten it by turning the locking ring clockwise. Be sure to hook the cord on the holder.
- To extend the length of the cord connect an extension cord of 15feet max. Do not exceed 50feet in total

5-2-3 Continuous rating

Never use the Hoist beyond the 20 minutes permitted per hour.

The life of the Hoist depends on the conditions of the load and working frequency.

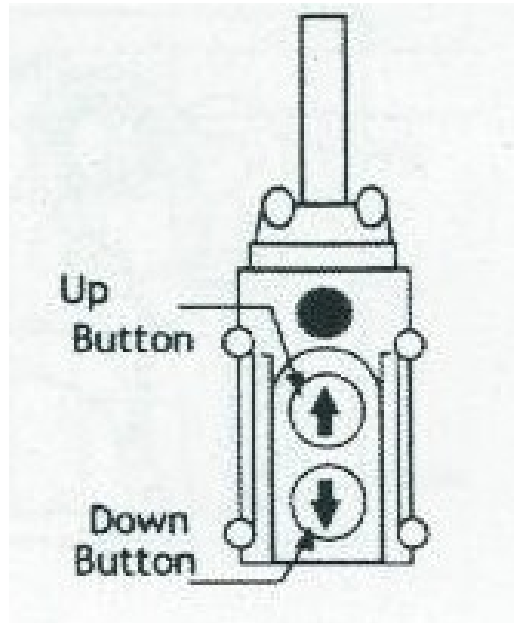
During long operating periods make sure to use the Hoist within its continuous rating.

Continuous Rating means the amount of allowable usage within one hour which is 25% or 15 minutes per hour or 300 starts per hour.

The maximum number of starts means the number of times the motor starts within the hour.

6. Operation

6-1 Control device: Control panel



6-2 Operating procedure

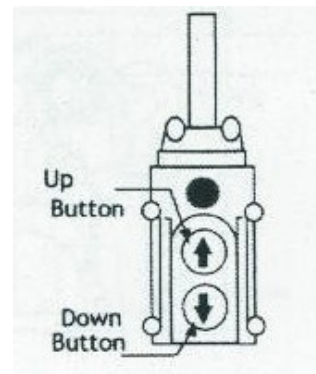
The person who is untrained or unfamiliar with the operation procedure is prohibited from operating machine.

Preparation before Working

- Check all safety and environmental conditions
- Ensure there are a minimum of five(5) wraps of wire wound around the drum
- Check the wire rope and discard should there be any signs of excessive wear, too many broken wires, corrosion, or other defects.
- One wire rope consists of 7 strands. One strand has 19 wires. So one of the 7 strands must not have more than 3 of the 19, damaged wires.
- Connect the main power source and ensure grounding.
- Do not lift loads exceeding the rated load.
- Always use power source at the rated voltage.

Up and Down Control Switch

- **To Lift a Load.** Press ▲ Button
- **To Lower a Load.** Press ▼ Button



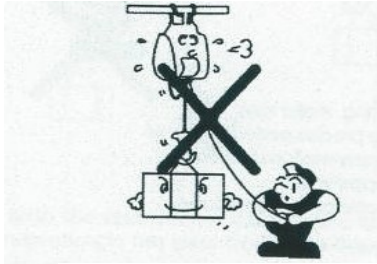
6-3 Handling Precautions

WARNING

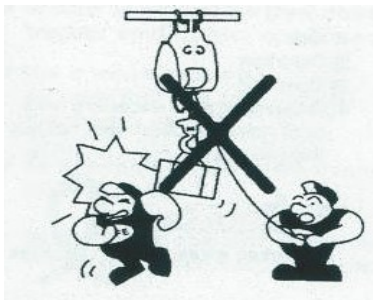
Pay close attention to the following instructions.

Incorrectly operating the Hoist may result in personal injury or equipment damage.

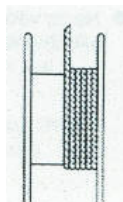
Never try to lift a load more than the rated



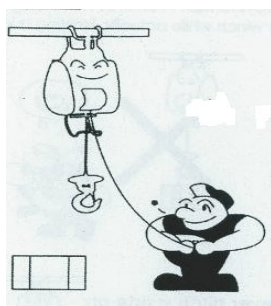
Don't work, walk or stand under and operating Hoist



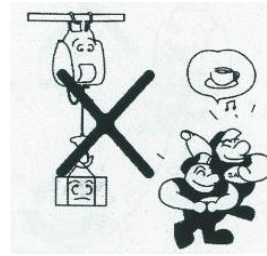
A minimum of five (5) wraps of rope around the drum is necessary to support the rated load



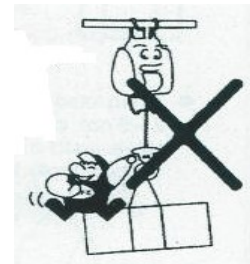
Prior to lifting make sure the brake is performing correctly.
If any malfunction is detected stop the operation immediately.



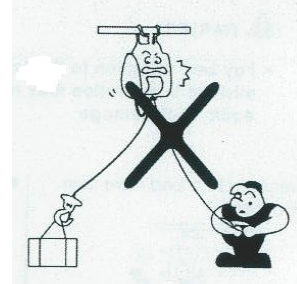
Always remain in control.
Never leave a load



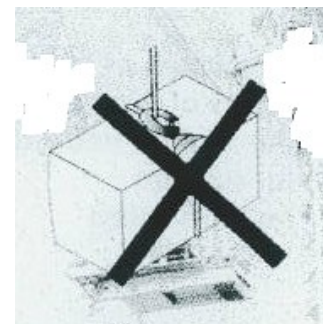
Never ride on the hook, sling, or load



Always look up when working the Hoist. Watch for overhead danger
Be sure to lift a load vertically. Any slack may allow wire to be tangled.

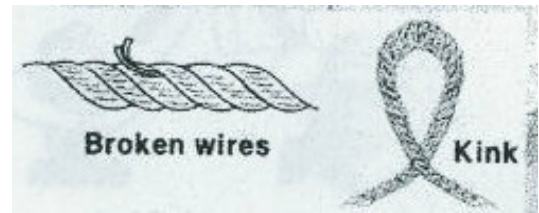


Never wrap the load with the wire rope



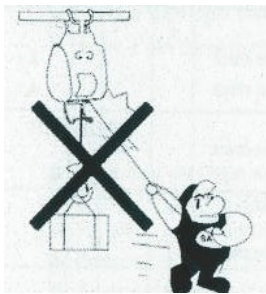
Wire rope with one or more of the following defects must be replaced immediately.

1. Kink
2. Distortion
3. Corrosion
4. Showing signs of excessive wear or if 1 of the 7 strands has more than 3 of the 19 wires damaged

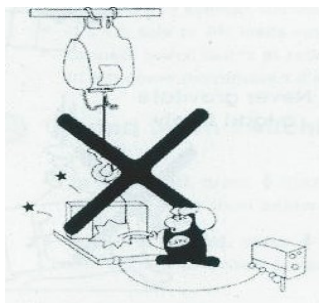


Do not pull the control pendant to move/pull a load

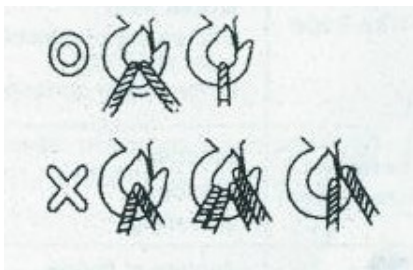
Do not exceed the continuous rating



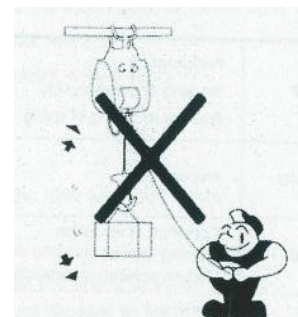
Never work on or weld on a suspended load



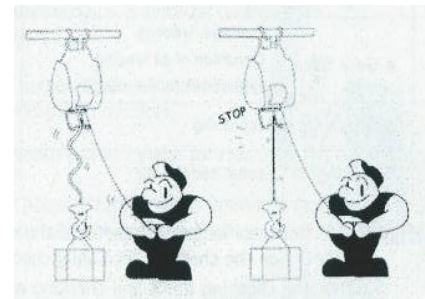
Ensure the slings are fixed in the centre of the swivel hook



Do not rapidly change from Lifting to Lowering



Stop operation immediately if the wire rope slackens.



Other Important Precautions

Stop operating the Hoist if there is an abnormal noise or vibration in the gear box.

Do not use the Hoist or the wire rope as grounding for a welding machine. Make sure the load being lifted is well balanced and secured before commencing.

7. Maintenance and Adjustment

7-1 Periodical Checking

	Parts	Checks	Checking Method	Timing			
				Daily	3mths/ 20 hrs	1 year	3 years
1	Brake	Performance Wearing of pressed plate Broken springs	Visual Decomposition Check Decomposition check		✓		✓ ✓
2	Carbon Brushes	Wearing	Decomposition Check		✓		
3	Motor	Condition of insulation Staining damage Carbon Powder accumulation	Visual Visual Decomposition Check	✓	✓	✓	
4	Control Assy	Working Outer damage of switch cords Connection of earth wire Condition of Insulation	Manual Visual Visual Visual	✓ ✓ ✓	✓		
5	Safety devices	Over prevention function Reverse winding prevention function Distortion over winding function Wrong rotary direction-winding	Visual Visual Visual Visual	✓ ✓ ✓ ✓			
6	Wire Rope	Kinking Broken wires Decreased diameter by more than 10% Deforming or corrosion	Visual Visual Visual Visual	✓ ✓ ✓ ✓			
7	Swivel hook & Hanger	Distortion Damage Loosening	Visual Visual Visual	✓ ✓ ✓			
8	Drum	Rupture of Flange Wearing	Visual Visual		✓ ✓		
9	Gear Case	Damaged Check oil level Lubrication for couplings	Visual Measuring Measuring	✓	✓ ✓		
10	Fastenings	Loosening	Manual	✓			

It is Important that:

- 1. Only Qualified persons can conduct any form of Checking**
- 2. Each Item listed above is to be carried out according to the specified Timing**

Swivel Hook

- Put a new wire rope through the hole of the round plate of the swivel hook
- Insert a sleeve pin through the thimble of the wire rope
- Insert a pin through the sleeve pin and bend it with pliers

Drum

- Insert a new wire rope w/clamp through the limit switch lever and insert it into the hole of the drum
- Put a P.T. screw into the hole of the drum and tighten it by a hexagon key
- Uneven winding of the rope may cause the load to swing thus damaging the rope and reducing its life span

Oil Lubrication

- The Hoist is prefabricated at the factory and do not require initial lubrication.
- Re-lubrication interval depends upon service.

Carbon Brush Replacement

- It is essential to check the carbon brushes periodically. If the length is less than 7.5mm, it is necessary to replace the carbon brushes immediately.
- When replacing, smoothly insert carbon brushes into carbon holders, then put brush caps into the holes.
- Before tightening the carbon brush holders, make sure they are positioned correctly.
- A set of carbon brushes consists of 2 pieces. Always replace 2 pieces on opposite sides of the Hoist body at the same time.

7-2 Braking and Winding Devices

7-2-1 Braking

- Braking is via a mechanical brake and an electronic generated brake. The brake distance from time of braking until stopping completely should be within 1.5 % of rope length wound during 1 minute.

This can be determined by simply timing the amount of rope that is wound in 1 minute and calculated by 1.5%.

- The rope speed with no load is faster than that with the rated load. The brake distance with no load will be longer, but still within 1.5% of rope length

7-2-2 Over-Winding Lift Prevention Device

- A special mechanism prevents over-winding when lifting. When the swivel hook touches the limit lever, lifting is automatically stopped.
- If the limit lever is set too close to the Hoist body, it will cause serious damage to the limit lever and Hoist body.

▪

7-2-3 Reverse-Winding Prevention Device

A special mechanism prevents reverse over-winding:

- When lowering if the rope is fully extended, this device will cause the wire rope to shift its position from the front, toward the back.
- To disengage this device the wire rope needs to be shifted back to the front position. To do this pull and hold the rope downward and press the ↑ button.

7-3 Troubleshooting

If the Hoist fails to start after several attempts or the Hoist's operation appears to be defective check the following:

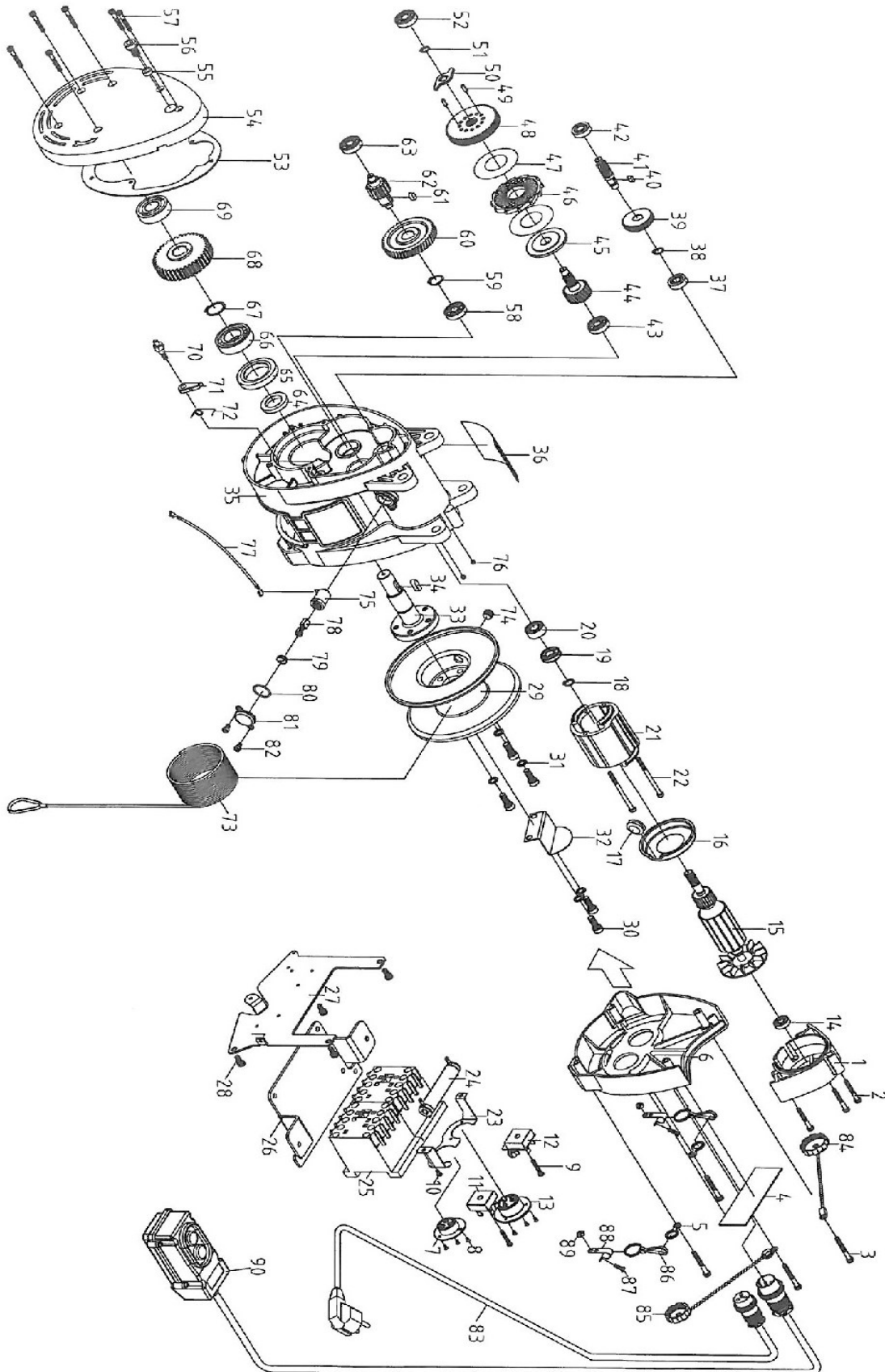
<i>Observed Anomaly</i>	<i>Possible Cause</i>	<i>Solution</i>
No Reaction after pressing the buttons on the control pendant	No power	Check power source
	Disconnection of plug, power cord or pendant cord	Replace or repair
	Damaged motor resulting from overload	Replace
	Burnt diode assy	Replace
	Considerable voltage drop	Adjust to rated voltage
	Wearing of carbon brushes	Replace carbon brushes
Brake distance too long	Wearing of lining, pressed plate and pawl	Replace
	Disconnection of electronic generated braking	Repair nut cord or Replace D type resistor
	Voltage Too high	Adjust to rated voltage
No over-winding Prevention while swivel hook touches limit lever	Disconnection of electronic generated braking	Repair nut cord or Replace D type resistor
	Malfunction of limit switch	Replace
Lifting speed too slow	Overload	Reduce Load
	Considerable voltage drop	Adjust to rated voltage and check the section of the power cord
Electrical leakage or shock	Burnt motor resulting from overload	Replace motor
	Wearing of carbon brushes	Replace carbon brushes and clean any carbon powder in the motor
	Water invaded motor or push button	Dry it or replace motor if badly saturated
Abnormal sound in gear box	Insufficient oil resulting from oil leakage	Replace oil seal and refill with sufficient oil
	Distortion of gear box	Repair

NB: All mechanical or electrical work must be carried out by a qualified tradesperson

8. Drawings and Part list

8-1 Assembly drawings and part list

MODEL: DU-260L - Assembly drawings

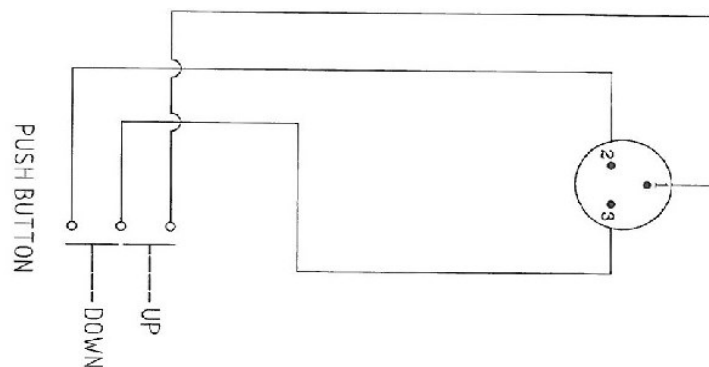
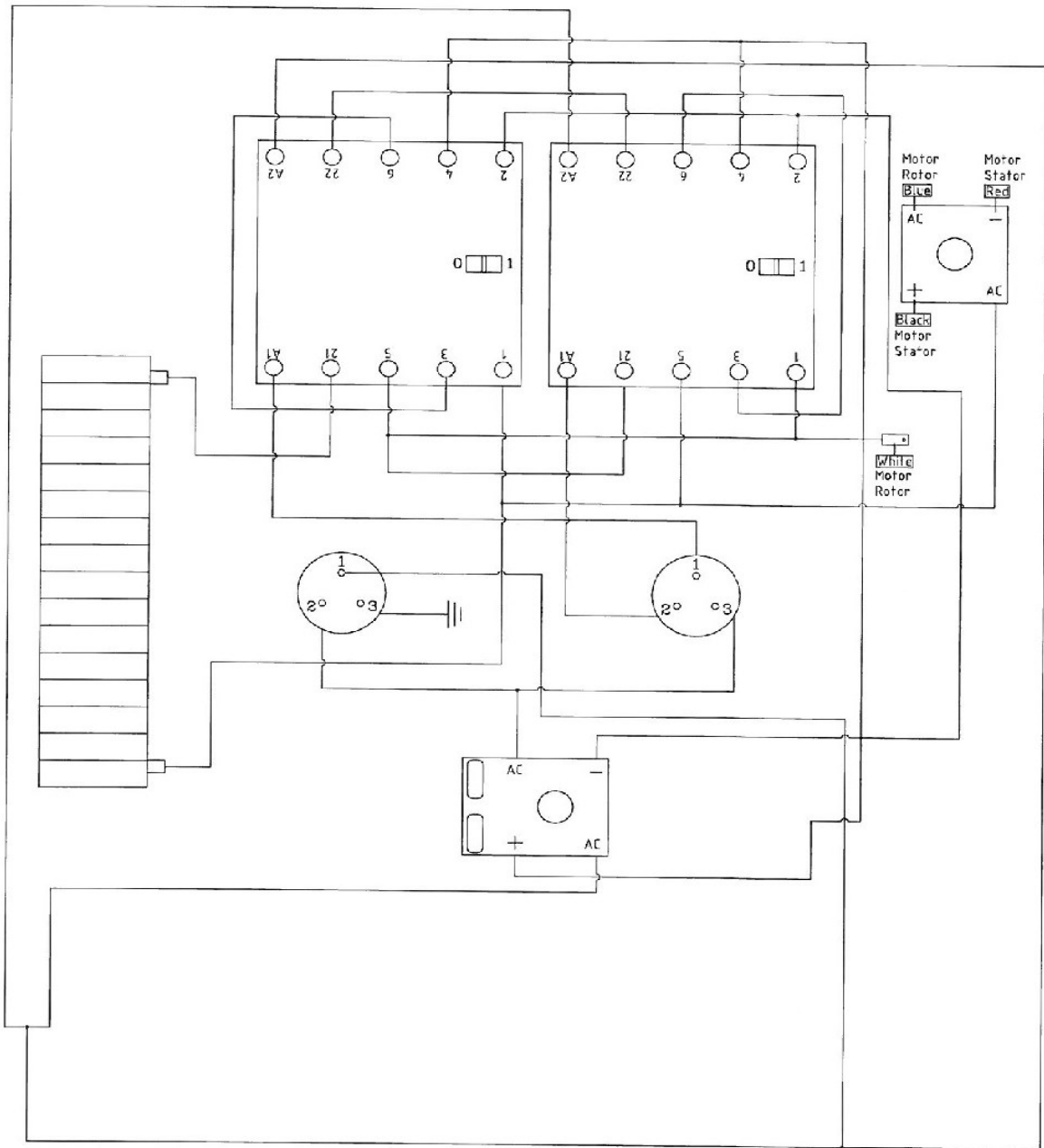


MODEL: DU-260L - part list

1	MOTOR COVER	38	SNAP RING	75	BASE OF CARBON BRUSH
2	SCREWS	39	FIRST SECTION GEAR	76	SCREW
3	SCREWS	40	KEY	77	CABLE
4	NAMEPLATE	41	FIRST SECTION GEAR SHAFT	78	CARBON BRUSH
5	TWIN-CIRCLE TYPE HOOK	42	BEARING	79	CARBON BRUSH COVER
6	COVER OF WIRING BOX	43	BEARING	80	O RING
7	POWER CABLE SOCKET	44	SECOND SECTION GEAR SHAFT	81	CARBON BRUSH PROTECTION
8	SCREWS	45	WASHER OF BRAKE	82	SCREW
9	SCREWS	46	BRASS BRAKE LINING	83	POWER CABLE
10	SCREWS	47	WASHER	84	PLT COVER PROTECTION
11	REGULATOR	48	SECOND SECTION GEAR	85	PLT COVER PROTECTION
12	REGULATOR W/ VARISTOR	49	COTTER PIN	86	LANYARD CLIPS
13	CONTROL CABLE SOCKET	50	ROTARY STOPPING SHEET	87	SCREW
14	BEARING	51	SNAP RING	88	BINDER OF CABLE
15	ROTOR	52	BEARING	89	WASHER
16	AIR GUIDING IRON COVER	53	PACKING PLANK	90	CONTROL SWITCH SET
17	Plastic tube	54	GEAR COVER		
18	SNAP RING	55	TUBE		
19	BEARING	56	SCREWS		
20	OIL SEAL	57	SCREWS		
21	STATOR	58	BEARING		
22	SCREWS	59	SNAP RING		
23	SOCKET RACK	60	THIRD SECTION GEAR		
24	RESISTOR	61	KEY		
25	MAGNETIC CONTACTOR	62	THIRD SECTION GEAR SHAFT		
26	CONTACTOR BASE	63	BEARING		
27	WIRING RACK	64	OIL SEAL		
28	SCREWS	65	OIL SEAL		
29	REEL DRUM	66	BEARING		
30	SCREW	67	SNAP RING		
31	WASHER	68	FOURTH SECTION GEAR		
32	PRESS SHEET OF WIRE ROPE	69	BEARING		
33	OUTPUT SHAFT	70	CLICK FIXING SCREWS		
34	KEY	71	CLICK		
35	MAIN BODY BASE	72	SPRING		
36	STICKER	73	WIRE ROPE		
37	BEARING	74	SCREW		

8-2 Electrical system drawings and part list MODEL:DU-260L

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