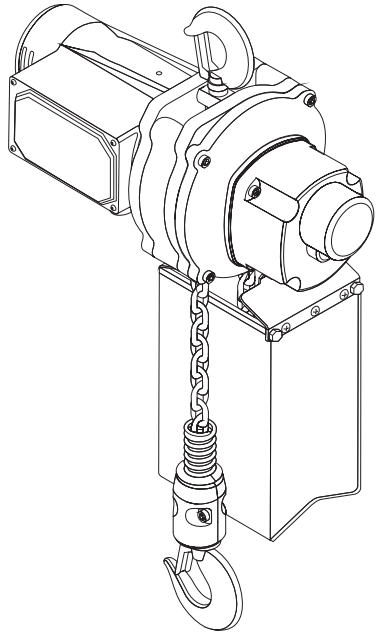
Instruction Manual

Mini Electric Chain Hoist H2.5 H5 H10



READY THIS MANUAL BEFORE USING THESE PRODUCTS

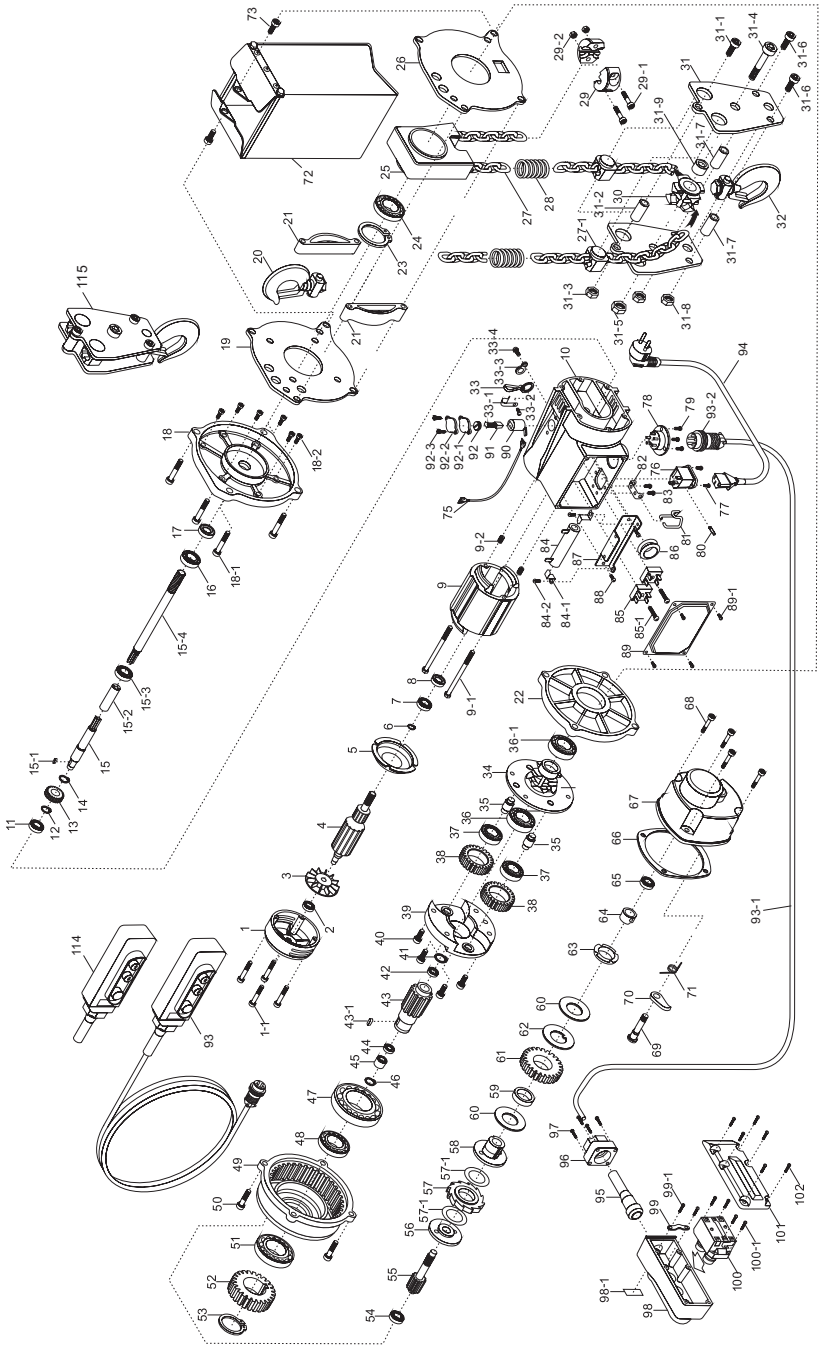
This manual contains important safety, installation, operation and maintenance information. Make this manual available to all persons responsible for the operation, installation and maintenance of the electric chain hoist.

Table of Contents

10. Parts list

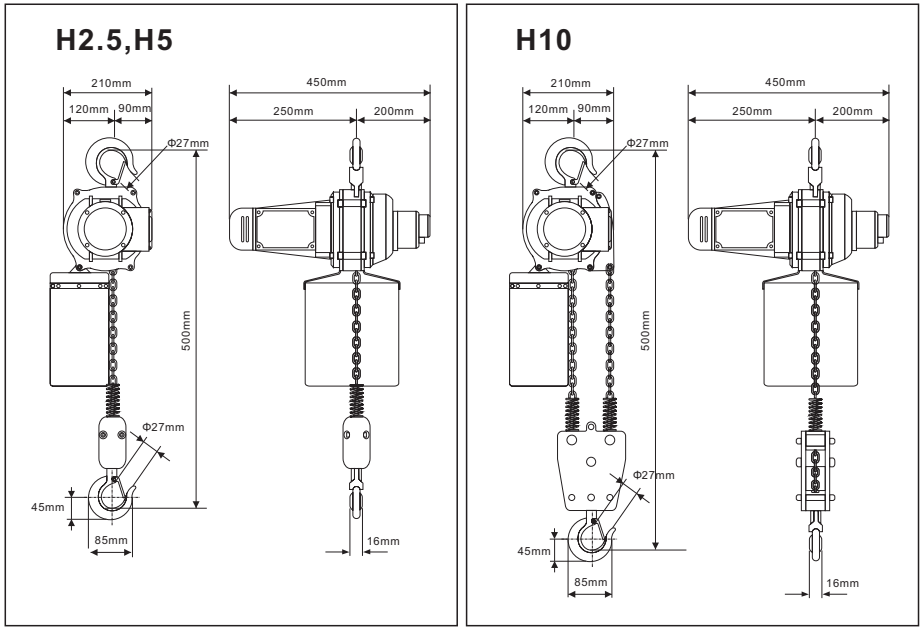
No.	Parts description	No.	Parts description	No.	Parts description
1	Motor Cover	31-6	Socket Bolt	69	Pawl Pin
1-1	Socket Bolt	31-7	Supporting Spacer	70	Pawl
2	Bearing	31-8	Locknut	71	Pawl Spring
3	Fan	31-9	Needle Bearing	72	Chain Bag
4	Rotator	32	Lower Hook	73	Chain Bag Fixing Screw
5	Air Guiding Cover	33	Switch Cable Hanger	75	Carbon Cable
6	Circlip	33-1	Switch Cable Clip	76	Power Connector Socket
7	Bearing	33-2	Screw	77	Screw
8	Oil Seal	33-3	Twin- Hole Hook	78	Switch Connector Socket
9	Stator	33-4	Screw	79	Screw
9-1	Socket Bolt	34	Load Sheave	80	Fuse
9-2	Headless Screw	35	Support	81	Power Cable Hanger
10	Motor Box	36	Bearing	82	Fix Plate
11	Bearing	36-1	Bearing	83	Screw
12	Circlip	37	Bearing	84	Resistor
13	First Reduction Gear	38	Planet Driven Gear	84-1	Resistor Feet
14	Circlip	39	Gear Support	84-2	Screw
15	First Reduction Pinion A	40	Socket Bolt	85	Bridge Regulator
15-1	Key	41	Circlip	85-1	Screw
15-2	Spline Housing	42	Oil Seal	86	Plastic Tube
15-3	Bearing	43	Sun Gear	87	Fixing Frame
15-4	First Reduction Pinion B	43-1	Key	88	Screw
16	Bearing	44	Oil Seal	89	Motor Box Cover
17	Oil Seal	45	Needle Bearing	89-1	Screw
18	Gear Cover Left	46	Circlip	90	Carbon Brush Hold
18-1	Socket Bolt	47	Bearing	91	Carbon Brush
18-2	Socket Bolt	48	Bearing	92	Carbon Brush Cap
19	Left Main Body Sheet	49	Gear Case	92-1	Protective Cover 1
20	Upper Hook	50	Socket Bolt	92-2	Protective Cover 2
21	Main Body Spacer	51	Bearing	92-3	Screw
22	Gear Cover Right	52	Second Driving Gear	93	Switch with Cable Set
23	Circlip	53	Circlip	93-1	Switch Cable with Connector
24	Bearing	54	Bearing	93-2	Switch Connector
25	Chain Sheave House	55	Second Driven Pinion	94	Power Cable Set
26	Right Main Body Sheet	56	Brake Seat	95	Cable Support
27	Chain (6.3MM)	57	Ratchet Disc	96	Cable Support Socket
27-1	Chain Guide	57-1	Brake Disc	97	Screw
28	Buffering Spring	58	Torque Gear Seat	98	Switch Box
29	Chain Stopper	59	Copper Cover	98-1	Sticker
29-1	Socket Bolt	60	Press Spring Disc	99	Cable Fix Plate
29-2	Nut	61	Torque Gear	99-1	Screw
30	Idle Sheave	62	Brake Washer	100	Internal Switch Connector
31	Lower Hook Frame	63	Torque Limited Nuts	100-1	Screw
31-1	Socket Bolt	64	Anti-receding Bushing	101	Switch Cover
31-2	Supporting Spacer	65	Bearing	102	Screw
31-3	Locknut	66	Gasket	114	Switch Without Cable
31-4	Socket Bolt	67	Gear Case	115	Lower Hook Assy (H10)
31-5	Locknut	68	Socket Bolt		

9. Spare parts drawing for H10



1. Specifications and Dimensions

Model		H2.5	H5	H10
Rated load		250kg	500kg	1000kg
Lifting height		3m	3m	3m
Chain size		6.3x19mm	6.3x19mm	6.3x19mm
Chain fall		Single	Single	Double
Lifting speed		12m/min	6m/min	3m/min
Power supply		Single-phase, 200-240V AC (100-120V) 50/60 Hz		
Motor	100-120V	1300W 12A		
	200-240V	1300W 6A		
Duty Cycle		ED 25% Max.on time: 15 min/hr.Max. number of starts: 150/hr.		
International protect		54		
Insulation class		F		



2. Precautions

2.1 General Safety Precautions

The chain hoist is 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 chain hoist.

Follow these general safety precautions:

- Confirm that the chain hoist complies with the using conditions.
- Keep the chain hoist secure strongly .
- Don't use unsuitable load chain, weight hook or pulleys concerned.
- Don't use unsuitable load chain in grade, 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 chain hoist for smooth operation without load before loading operation.

⚠ WARNING

1. The chain hoist is not to be used to life, support or otherwise transport personnel.
2. The owner and/or the operator shall have an understanding of these operating instructions and the warning before operating the electrical chain hoist. Failure to follow these warnings may result in loss of load, damage to the chain hoist, property damage, personal, or fatal injury.
3. The owner shall retain this manual for further reference to important warnings, installation, operating and maintenance instructions.
4. Hoist operators shall be trained to be aware of potential malfunctions of the equipment that require adjustment or repair, and to be instructed to stop operation.
5. Hoist operators shall be trained in proper rigging procedures for the attachment of load to the hoist hook.

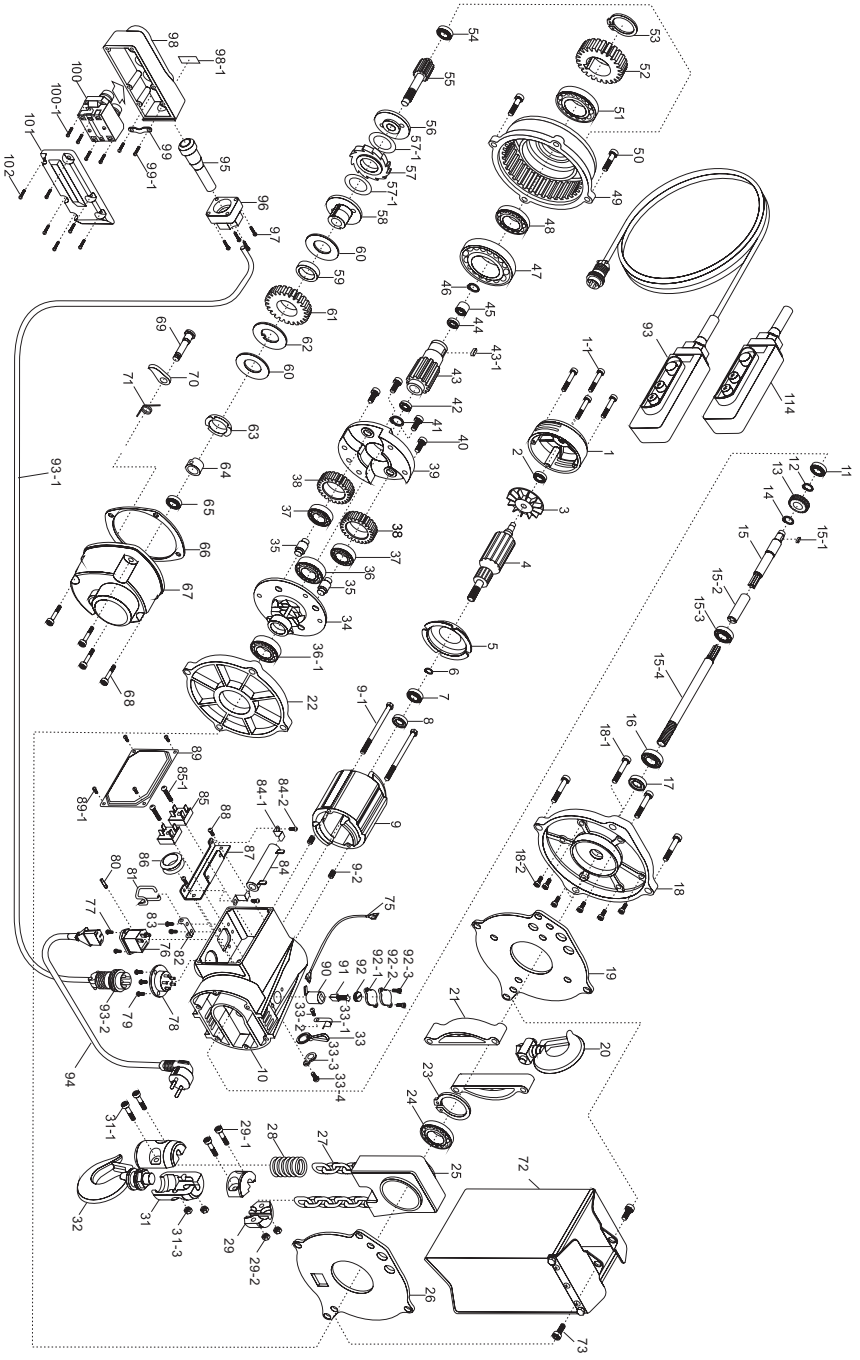
2.2 Environmental Precaution

⚠ WARNING

The following environmental conditions may result in the possible causes of chain hoist trouble.

- Low temperature below -10°, high temperature above 40° or humidity above 90% conditions.
- In an organic chemistry or explosive power conditions.
- In heavy acid or salty conditions.
- In the rain or snow condition.
- In a heavy general powder conditions.

9. Spare parts drawing for H2.5, H5



8. Trouble shootings

Before performing any trouble shooting on the chain hoist, de-energize the supply of electricity as hazardous voltages are present in the hoist and in connections between components.

Symptom	Possible cause	Remedy
Hoist will not operate	Loss of power or wrong voltage/frequency	Check power supply against the rating on the name plate
	Power cutoff switch cuts off the power	Reduce load to within rated capacity of hoist and reset by manual
	Motor overheated	Take a rest and perform the hoist according to its duty cycle percentage rated at 25%ED
	Motor burned out	Replace motor
	Brake does not release	Check or replace brake assembly
	Improper installation or wearing of carbon brush	Check or replace carbon brush
	Escape or open circuit of carbon brush lead	Check or replace carbon brush lead
Can lift, but fail to lower	Down circuit open	Check down limit switch for malfunction
	Malfunction of the Down contact of the pendant switch	Replace pendant switch
Can lower, but fail to lift	Down circuit open	Check down limit switch for malfunction
	Hoist overloaded	Reduce load to within rated capacity of hoist
	Considerable voltage drop	Applied voltage shall fall into ±10% of rated voltage on the name plate.
	Fault friction clutch	If abnormal operation or slippage occurs do not attempt to disassemble or adjust the friction clutch. Replace the malfunctioning friction clutch with a new or factory adjusted part.
	Malfunction of the Up contact of the pendant switch	Replace pendant switch
Short circuit	Melted B contact of pendant switch	Replace pendant switch
	Burnt diode	Replace diode and pay attention to its poles
	Burnt D type resistor	Replace resistor
	Having too much carbon powder on carbon brush holder	Disassembly the motor and clean carbon powder
	Burnt motor	Replace motor
Fail to lift the load rated	Hoist overloaded	Reduce load
	Considerable voltage drop	Applied voltage shall fall into ±10% of rated voltage on the name plate
	Incorrect carbon brush specification or too short	Replace carbon brush
	Burnt, deformation of carbon brush holder	Replace carbon brush holder
Load drifts excessively when hoist is stopped	The gap of ratchet brake is too large	Adjust the ratchet brake
	Malfunction of pressed spring of ratchet brake	Replace the pressed spring
Oil leakage	Improper installation of cap screw	Proper installation of cap screw
	Damaged or deformed oil packing	Replace oil packing
	Fail to install oil packing	Install oil packing

2. Precautions

2.3 Handing Precautions

- To prevent the risk of electric shock, the power plug must be plugged into a matching outlet and grounded in good condition.
- Never try to lift a load higher than the rated cap.
- Never hitch a ride on the hook, sling or load being moving.
- Chain hoist are not to be used for lifting or lowering people.
- Don't work, walk or stand under an operating chain hoist.
- Always remain in control. Never neglect the chain hoist while actually hoisting a load.
- While working, never stand under a lifting load or within the conveying area.
- Always look up when working around chain hoist, there is potential danger overhead.
- Never gravitate a load free.
- Be sure to lift a load vertically.
- Prior to starting of use, carry out the daily checking without fail, and after confirming the safety of function. If having a counter rotation incurred, make sure to correct its rotation direction.
- Prior to lifting. Make sure to have a precise performance of brake. If any malfunction of brake happened, stop the operation immediately.
- When load suspended in air, it will not allow to be welding.
- Load chain with any remarkable wears and elongations shall be removed or replaced immediately.
- Stop the operation if there is any queer noise or vibration in the gear box to be happened.
- Do not connect the load chain with the grounding of welding machine.
- While welding, do not have any contact with the welding objects because of having spark.
- Do not pull the switch.
- Do not over the rated intermittent period.
- Do not operate beyond the limits of the load chain travel.
- Be sure to fix a load chain in the center of load hook.
- Be sure to stop operation immediately when the load chain becomes fully slackened.
- Avoid catching the hook or lifting a load on a fixed obstruction.
- Always leave the pendant switch positioned immediately after use.
- Make sure that the load being lifting is well balanced and secured before starting.
- Avoid water splashes on the pendant switch and electrical circuits.
- Never wrap the load with the load chain.
- A power cut-off switch located below the house cuts off the power, please stop the hoisting immediately.
  Please reset the switch by hand after reducing a load by manual.
- The hoist is equipped an up mechanical torque limit device, it activates when over-riding operation found. It does not allow to activate for more than 6 seconds, otherwise it may damage the hoist endurance.

3. Special Features

USAGE:

The mini hoist can be widely used in hanging for engineering, hoist operations civil hydro power plant installed piping, warehousing and shipping the goods. It can be used to lift, raise and drag. It's compact, lightweight, economy and effective, and easy to obtain single-phase power supply.

Motor system:

Using brush less motor series excited of high efficiency industrial grade, there are two selected configurations of single-phase voltage (110/220V). its enameled heat levels up to 200 degrees, specially designed for long crane.

Brake system:

Dual brake system with one mechanical ratchet gear brakes and the other brake resistor short circuit controller, formula oiled copper disc brakes with high friction coefficient which needs no adjustment, immediately brake in power outage or malfunction, great safety and long life.

Security system

Cable stops automatically over the volume limit. Cable stops automatically when when inversing.

Electronic control system:

Direct control which saves tedious lines and has the advantage of easy maintenance, low failure rate, security and stability, control switch with separate power line and quick connector make it easy to carry.

Gear system:

Use drive bevel reducing gear of high efficiency, heat treated alloy steel gear with its intensity three times higher than the rated hoisting.

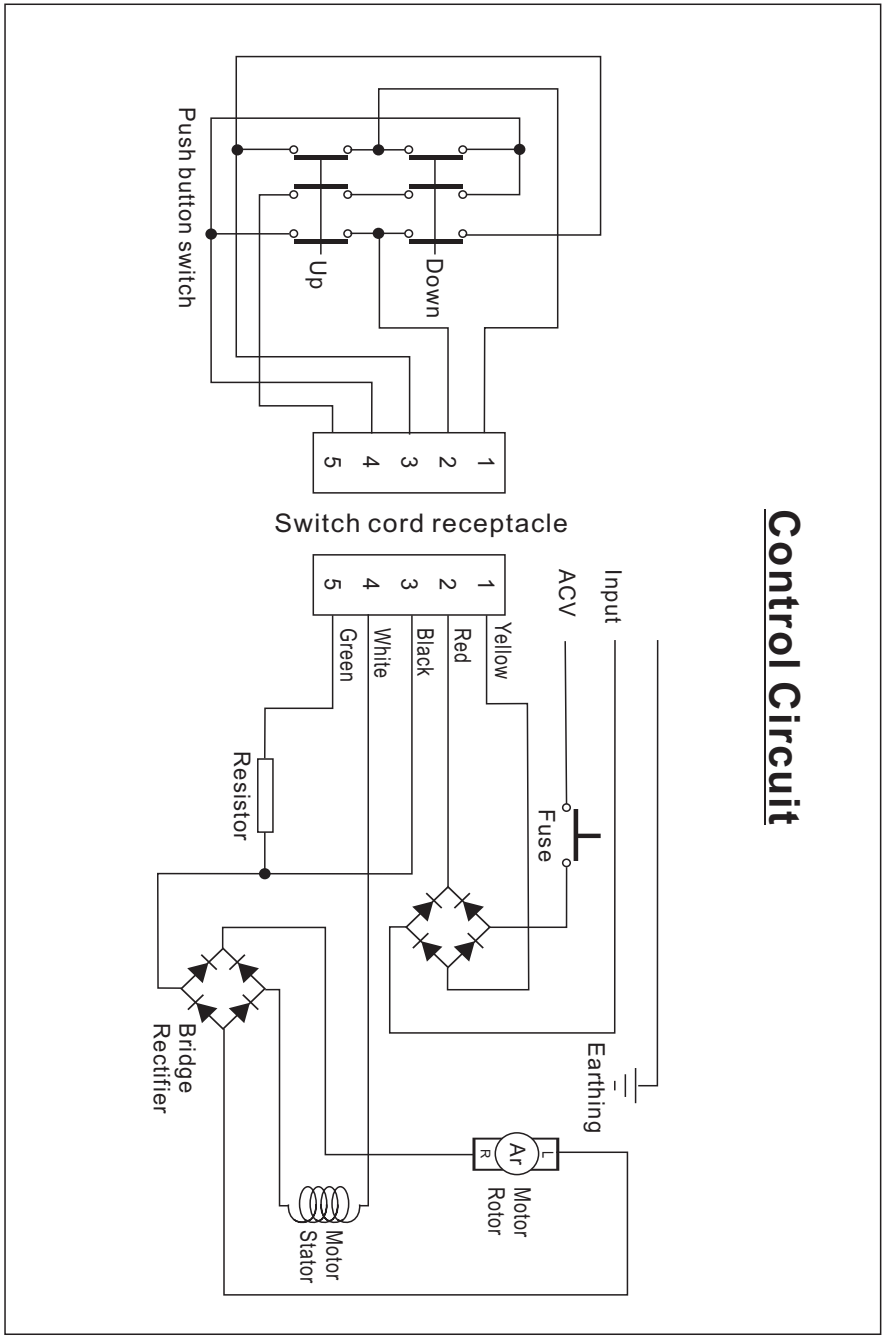
Parts of the main body case:

Die-casted in one piece, motor body and gearbox have the advantages of of strong toughness, computer CNC machining, high precision, low noise, and smooth operation, using automotive-grade power coating, It has nice appearance. It's compacted and light-weighted.

7. Checking Reference

Classification of checks				Checking Item		Checking Method	Checking Reference
Daily	Periodical						
	One month	Three month	One year				
			◎	Marking	Label and the like	Visual	Existence of label
		◎		Installation	Functional operating mechanisms	Visual	To be properly adjusted and free from unusual sounds when operation
◎				Control/ Switch	Working	Function	Reasonable actuation
◎					Housing	Visual	To be free from cracks
◎					Wiring	Visual	To be free from remarkable loose or damaged
◎					Cord	Visual, electricity	To be free from exposure of conductive wire
	◎			Motor	Condition of insulation	Measure with resistance tester	1MΩ min
◎					Staining damage	Decomposition check	To be free from abnormalities
		◎		Braking	Wearing of brake disc	Decomposition check	To be free from remarkable wear and damage
◎	◎				Performance	Visual	Distance to be not more than 1.5% of the lifting speed
	◎			Gear	Damage , wearing	Decomposition check	To be free from remarkable wear and damage
		◎			Lubrication condition	Lubricating	At least once per three months or 100 working hours for normal usage
◎				Load Chain	elongation of link length	Measure	5% minimum
◎					Decreasing of link diameter	Measure	8% of normal diameter max
◎					Kink phenomena run-out of foundation	Visual	To be free from kink phenomena
◎					Deforming or corrosion	Visual	To be free from abnormality
◎					Lubrication condition	Lubricating	The chain should be lubricated every week for normal usage
◎					Surface condition	Visual	To be free from rust, nicks, gouges, dents and weld splatter.
		◎		Sprocket / Idle Sheave	Reeving	function	Chain should be reeved properly through sprocket and idle sheave for double fall operation
◎				Frame	Housing and mechanical components	Visual, function	To be free cracks, rupture harmful deformation
◎				Load Hook	Housing and mechanical components	Visual, function	To be free cracks, rupture and harmful deformation by 5% maximum
◎					latch	Visual	To be free from deformed

6. Wiring diagram



4. Working method

4.1 Rated Percentage Duty Cycle (%ED)

⚠ WARNING **Do not exceed the rated intermittent period.**

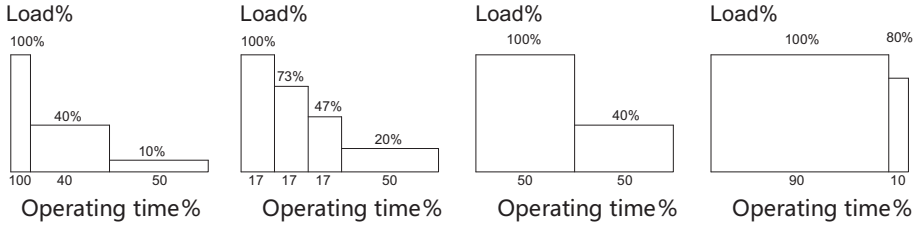
The service life of the product is significantly dependent on the frequency at which it is operated. To ensure long service life, operate the winch within its rated percentage duty cycle (%ED). The rated percentage duty cycle (%ED) is expressed by the duty factor (%ED) obtained at therated voltage and

$$percentage\ duty\ cycle(\%ED) = \frac{lifting\ time + lowering\ time}{lifting\ time + idle\ time + lowering\ time + idle\ time} \%$$

The maximum startup frequency represents the frequency of startup operations per hours, including inching operations. The rated speed, which indicates the average speed of winding up or down at a rated load. A cycle is limited at 10 minutes at most.

4.2 Determination of the FEM Classification

Load Spectrum	State of Loading	Cubic Mean Value	Average Daily Operating Time in hours	Calculated Total Operating Time in hours
Light	Occasional full load; Usually light load; Small fixed load	k ≦ 0.5	2 ≦	3,200
Medium	Occasional full load; Usually light load; Average fixed load	0.5＜k≦0.63	1 ≦	1,600
Heavy	Repetitive full load; Usually average load; Heavy fixed load	0.63＜k≦0.8	0.5≦	800
Very Heavy	Usually almost full load; Very heavy fixed load	0.8＜k≦1	0.25≦	400

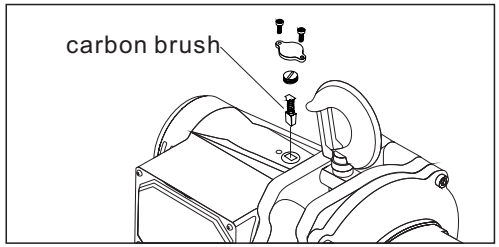


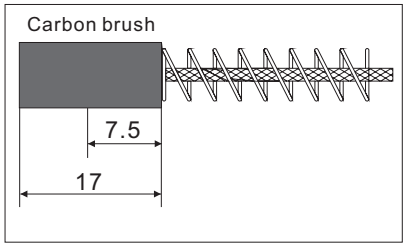
5. Maintenance and replacement

5.1 Carbon Brush Replacement

⚠ WARNING **Clean the accumulated powder of carbon brush periodically to ascertain the insulation resistance up to 1 MΩ.**

- It is essential to check the carbon brush periodically. If its length is left less than 7.5 mm resulting from wear, it is absolute necessary to replace carbon brush immediately.
- While replacing, smoothly insert carbon brush into carbon holder in the first place, then put brush cap into the hole.
- Before tightening the carbon brush holder, make sure to position O-ring.
- A set of carbon brush consists 2 piece of carbon brush. Ascertain to replace 2 pieces of carbon brush on opposite sides of winch body at the same time.





5.2 Oil Replacement

Gear lubrication is an important component in insuring the long service life of your chain hoist. The type of lubricant will have a great influence. Chain hoist are pre-lubricated at the factory and do not require initial lubrication. Re-lubrication interval depends upon service. Consult your local lubricant distributor on the selection that best fits your climate and application.

- **Load Chain:**
  For longer life, the load chain should be lubricated with ISO VG 220 or equivalent extreme pressure (EP) lubricating oil.
  The chain should be lubricated every week for normal usage.
- **Hook and Suspension Components:**
  Hooks and suspension components should be cleaned and lubricated ISO VG 220 or equivalent extreme-pressure (EP) lubricating oil at least twice per year for normal usage.
- **Gear box:**
  Using incorrect type/grade of gearbox oil or the wrong quantity of oil may prevent the hoist from working properly and may affect the ability of the hoist to hold the load.
  Gear box should be cleaned and lubricated with ISO VG460 synthetic gear lube for 100 working hours for an initial lubrication and at least once per months for normal usage.
  It requires 250 CC oil in quantity for every time changing.
- Clean and lubricate more frequently for heavier usage or severe

5. Maintenance and replacement

5.3 Load Chain Replacement

- Be sure that the replacement chain is the exact size, grade and constructions as the original chain. The new load chain must have an odd number links so that both its end links have the same orientation. Destroy the old chain to prevent its reuse.
- When replacing load chain, check for wear on mating parts such as sprocket , and replace parts if necessary.
- Remove all chain components including bottom hook kit from the old chain for reuse on new chain. Inspect and replace any damaged or worm parts.
- Single fall operation - Using a C-link to attach the new chain to the old end link on the no-load side. The new end link should be connected so the welded portion to pass over the sprocket.
- Double fall operation – Feed the end link on the load side of the new chain through the require chain components and idle sheave of load hook. Attach the remaining chain components to the chain guide rail for the proper locations.
- Operate the hoist down to move the chain through the hoist body. Stop when a sufficient amount of new chain is accumulated on the load side.