

Instruction Manual

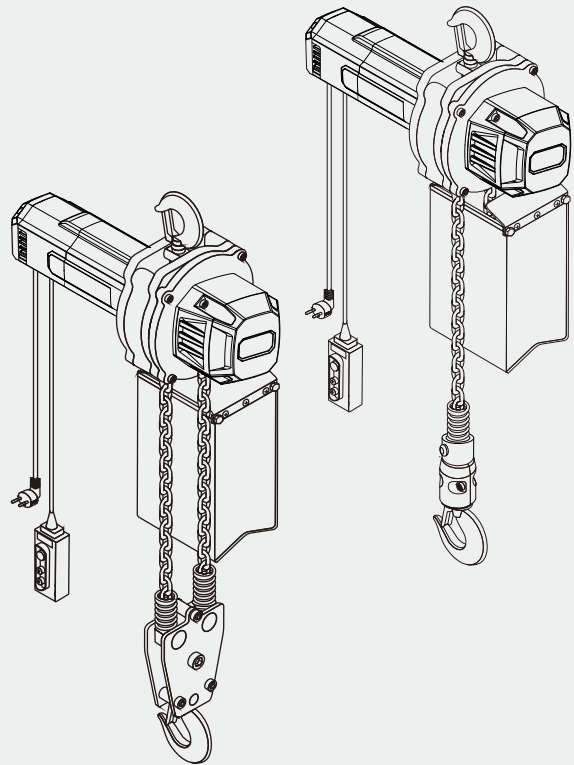
- Installation
- Operation
- Maintenance
- Parts

BLH2.5

BLH5

BLH10S

BLH10D



Brushless Electric Chain Hoist

READY THIS MANUAL BEFORE USING THESE PRODUCTS

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

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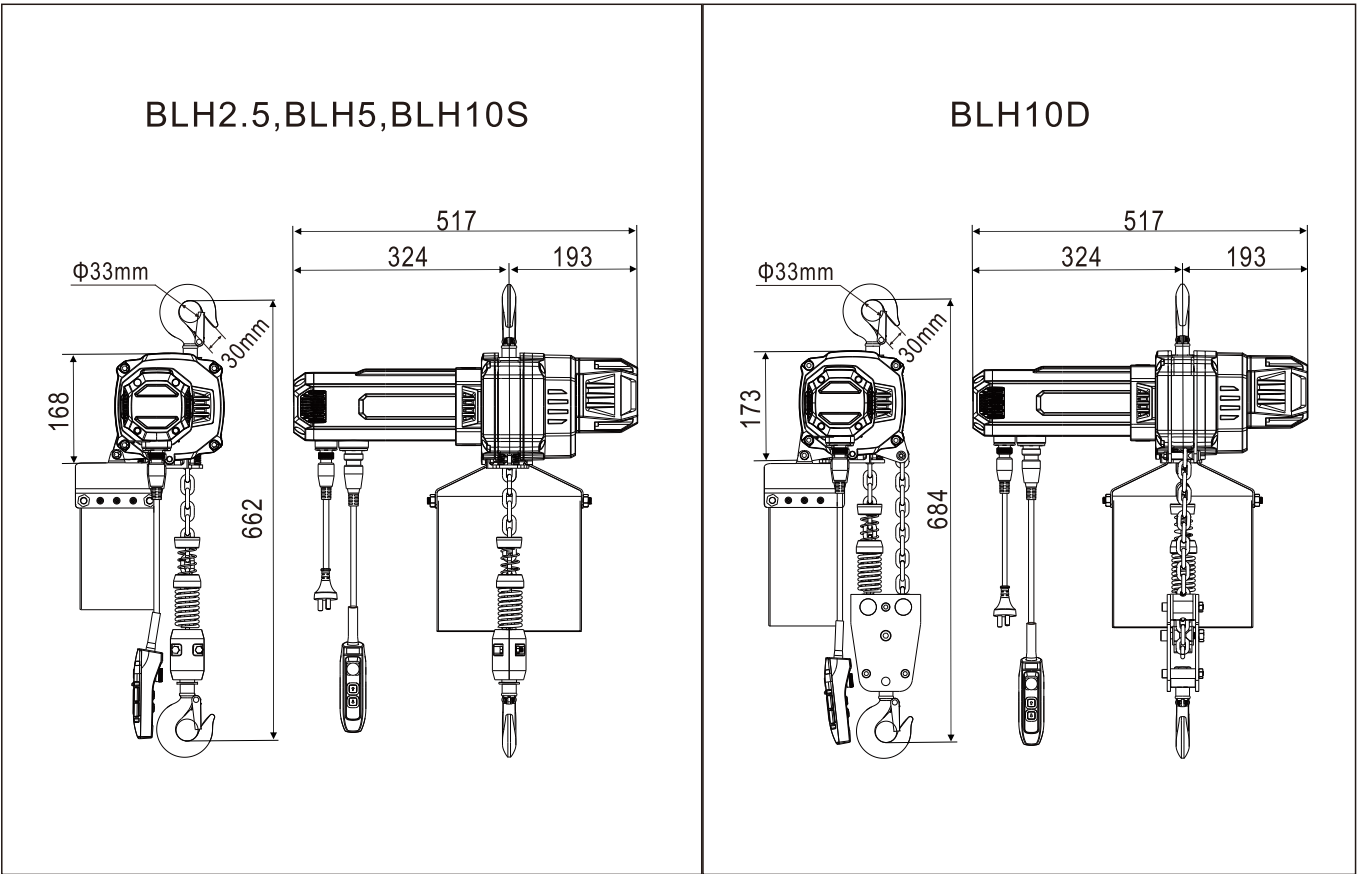
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1. Technical Information

1.1 Specifications

Model	BLH2.5	BLH5	BLH10D	BLH10S
Rated load	250kg	500kg	1000kg	1000kg
Lifting height	3m	3m	3m	3m
Chain size	6.3x19mm	6.3x19mm	6.3x19mm	7.1x20.2mm
Chain fall	1	1	2	1
Motor	1400W	1500W	2000W	2450W
Lifting speed	9m/min 18m/min	4.5m/min 9m/min	2.2m/min 4.5m/min	5m/min 8m/min
Power supply	Single-phase, 100V-120V, 200V-240V, 50/60Hz AC			
Pendant control length	4 m			
Power cable length	3 m			

1.2 Dimentions



2. Installation

2.1 Chain

Chain components including Buffering spring and Chain stop assemblies. Never operate the hoist with incorrect, missing or damaged chain components.

2.2 Load Chain Lubrication

- Always lubricate load chain weekly, or more frequently, depending on severity of service.
- Always make sure to apply ISO VG 46 or 48 or equivalent machine oil. Insufficient oil lubrication will accelerate Load Chain wear.

2.3 Mounting Hoist

Ensure that the suspension and the supporting structure are adequate to support the hoist and its loads. Hook mounted to a fixed location-attach the hoist's top hook to the fixed suspension point. If necessary consult a professional that is qualified to evaluate the adequacy of the suspension location and its supporting structure.

2.4 Electrical Connections

- Ensure that the voltage of the electric power supply is proper for the hoist.
- Before proceeding, ensure that the electrical supply for the hoist or trolley has been de-energized (disconnected).

2.5 Installation Checks and Trial Operation

- Confirm the adequacy of the rated capacity for all slings, chains, wire ropes and all other lifting attachments before use. Inspect all load suspension members for damage prior to use and replace or repair all damaged parts.
- Ensure that the hoist is properly installed to either a fixed point, or trolley, whichever applies
- If hoist is installed on a trolley, ensure that:
Trolley is properly installed on the beam, and stops for the trolley are correctly positioned and securely installed on the beam.
- Ensure that all nuts, bolts and split pins (cotter pins) are sufficiently fastened.
- Check supply voltage before everyday use. If the voltage varies more than 10% of the rated value, electrical devices may not function normally.
- Before operating read and become familiar with Section 3 - Operation.
- Before operating ensure that the hoist (and trolley) meets the Inspection, Testing and Maintenance requirements
- Before operating ensure that nothing will interfere with the full range of the hoist.

2.6 Environmental Precautions

The following environmental conditions may result in the possible causes of electric 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.

3. Operating instruction

3.1 instruction

- Hoist operators shall be required to read the operation section of this manual.
- Operator should also be trained in proper rigging procedures for the attachment of loads to the hoist hook.
- Hoist operators should be trained to be aware of potential malfunctions of the equipment that require adjustment or repair and to be instructed to stop operation if such malfunctions occur, and to immediately advise their supervisor so corrective action can be taken.
- Hoist operators should have normal depth perception, field of vision, reaction time, manual dexterity, and coordination.

3.2 Handling Precautions

- NOT lift more than rated load for the hoist.
- NOT work, walk or stand under an operating chain hoist.
- NOT use the hoist to lift, support, or transport people.
- NOT lift loads over people.
- NOT attempt to lengthen the load chain or repair damaged load chain.
- NOT operate unless load is centered under hoist.
- NOT use hoist with twisted, kinked, damaged, or worn chain.
- NOT use the hoist in such a way that could result in shock or impact loads on sheave.
- NOT use load chain as a sling or wrap load chain around load.
- NOT apply the load to the tip of the hook or to the hook latch.
- NOT allow the chain, or hook to be used as an electrical or welding ground.
- NOT operated beyond the limits of the load chain travel.
- Be familiar with operating controls, procedures.
- Make sure the unit is securely attached to a suitable support before applying load.
- Take up slack carefully and make sure load is balanced.
- Make sure all persons stay clear of the supported load.
- Protect the hoist's load chain from weld splatter or other damaging contaminants.
- Always look up when working around chain hoist, there is potential danger overhead.
- Warn personnel before lifting or moving a load.
- Warn personnel of an approaching load.

4. Maintenance and replacement

4.1 Lubrication

■ Load chain

- For longer lift, the load chain should be lubricated.
- The load chain lubrication should be accomplished after cleaning the load chain with an acid free cleaning solution.
- The chain should be lubricated every 3 months.

■ Needle bearing of Low hook Idle sheave

Bearing should be cleaned and lubricated at least once per year for normal usage. Clean and lubricate more frequently for heavier usage or severe conditions.

4.2 Outdoor Installation

- The storage location should be clean and dry.
- For hoist installations that are outdoors, the hoist should be covered when not in use.
- Possible corrosion on components of the hoist increases for installations where salt air and high humidity are present. Make frequent and regular inspections of the unit's condition and operation.

4.3 Mechanical Friction Clutch Assembly

If abnormal operation or slippage occurs, DO NOT attempt to disassemble or adjust the friction clutch assembly. Replace the worn or malfunctioning mechanical brake with ratchet brake as an assembly with a new one with factory adjusted part.

4.4 Electric Limit Switch

An electric hoist limit switch is a critical safety device that automatically cuts power to the motor and stops the hoist's movement when it reaches a predetermined maximum or minimum position, preventing over-travel and potential accidents.

All electric chain hoists are equipped with a low voltage control and limit switch for lifting and lowering (up and down limits).

Upper Limit Operation

During lifting, when the hoist reaches the bottom of limit stopper, the limit striker (right) contacts the limit stopper.

This action is pressing the limit switch inside chain hoist. The limit switch cuts off power. Chain hoist immediately stops lifting.

Ref. to Figure 4.4-1

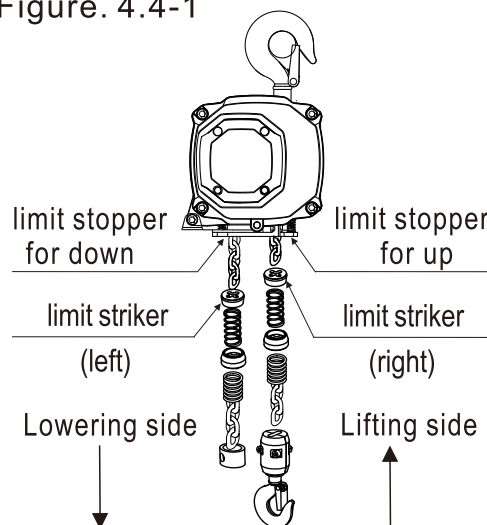
Lower Limit Operation

During lowering, when the hoist reaches the bottom of limit stopper, the limit striker (left) contacts the limit stopper.

This action is pressing the limit switch inside chain hoist. The limit switch cuts off power. Chain hoist immediately stops lowering.

Ref. to Figure 4.4-1

Figure 4.4-1



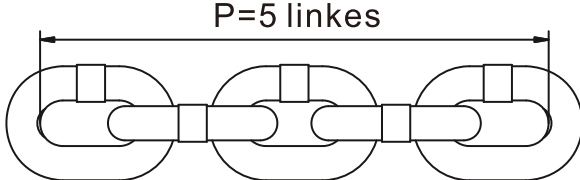
4. Maintenance and replacement

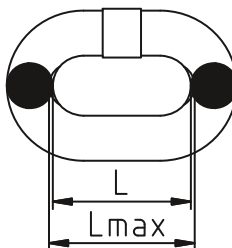
4.5 Chain Inspection

Inspect chain before each use. Between regular inspections, check visually daily for nicks, gouges, weld splatter, corrosion, or distorted links. Inspect chain thoroughly if it does not feed smoothly over load sheaves. Inspect as follows.

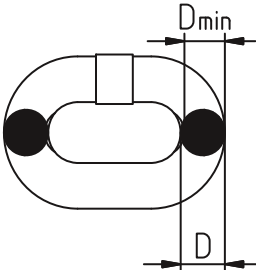
- Clean chain before inspection.
- Test hoist with load and observe operation of chain over load sheaves.
- Slacken chain and inspect contact points for excessive wear.

Use the following chart to determine when the chain must be replaced. Replacement of the entire chain is necessary if any of the previous page problems are found or the maximum dimensions on the charts that follow are reached. *Ref to Table 4.5-1*

Table 4.5-1 Chain Wear Dimensions					
P=5 linkes 					
Model	Chain Size	Normal Length		Discard Length	
	mm	mm	in.	mm	in.
BLH2.5,BLH5,BLH10D	6.3X19	95	3.74	97.4	3.83
BLH10S	7.1X20.2	101	3.98	103.5	4.07



Load Chain - One Link Length				
Dia.	Standard L		Max L	
	mm	(in)	mm	(in)
6.3 mm	19	0.75	19.9	0.78
7.1 mm	20.2	0.8	21.2	0.83



Load Chain - Diameter				
Dia.	Standard D		Max D	
	mm	(in)	mm	(in)
6.3 mm	6.3	0.25	5.7	0.22
7.1 mm	7.1	0.28	6.4	0.25

4.Maintenance and replacement

4.6 Replacing Load Chain

Over time, the load chain will wear or elongate. This can cause damage to hoist, breakage, or nonengagement of the load sheave. The following procedures describe replacing the load chain for single and Dual fall hoists.

These procedures should be performed by qualified persons only.

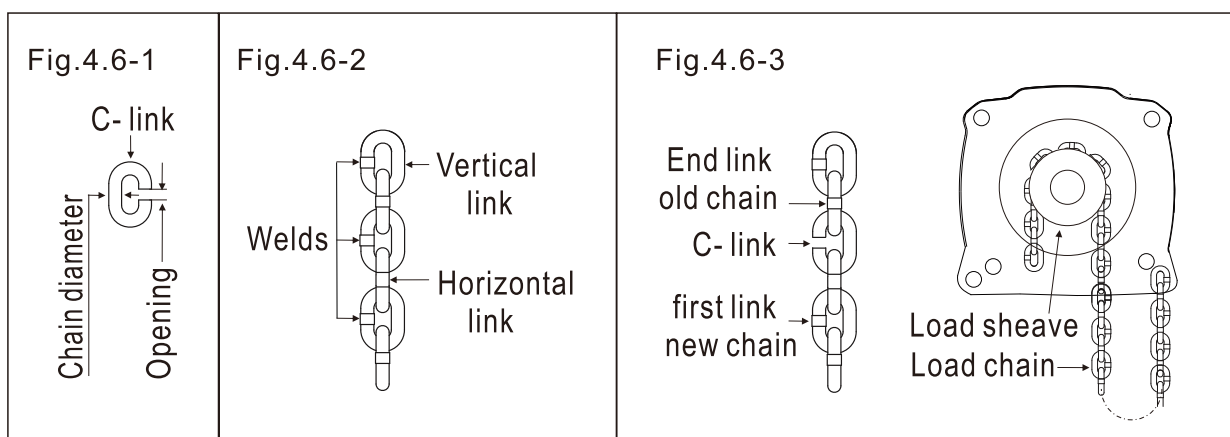
Making a C-Link

Replacing load chain will require the use of a C-link (in some cases, two C-links), which you can easily make as follows:

1. Cut a link from the old chain.
2. Cut the weld from the link leaving an opening approximately 1.25 times the diameter of the link material. *Ref. to Figure 4.6-1*
3. Grind the cut areas smooth and remove all burrs.

Single fall , Dual fall Chain Hoist

1. The link on the load side end must be a vertical link. If it is a horizontal link, the chain will have a twist in it. *Ref. to Figure 4.6-2*
2. The new load chain must have an odd number of links so that both its end links
3. Lower the load hook until only 1 to 2 feet of slack chain remains in the chain container.
4. Remove chain container.
5. On the slack side of the chain, remove the chain stop, spring, and limit block assembly. Keep these handy for later re-installing.
6. Using a C-link(s), connect the new chain to the old chain. If the end link of the old chain is horizontal, use two C-links. If the end link of the old chain is vertical, use one C-link. *Ref. to Figure 4.6-3*. Using the correct number of C-links will properly orient the chain, and ensure that the first link on the load side end is a vertical
7. Keep tension on both sides of the chain and lower the load hook to pull the new chain through the hoist. Do not let the chain twist or bind as it is being pulled through the hoist.
8. Stop hoist when 1 to 2 feet of new chain remains on the slack side.
9. Install the limit block assembly, limit block striker, spring, and chain stop on the slack end of the chain.
10. Continue lowering the load hook until the new chain clears the load hook. Inspect condition of both spring and hook.
11. Lower bottom hook until the limit switch stops hoist movement. Inspect the chain for any signs of twist.
12. Install chain container to the gear left plate and gear right plate by fastening two socket bolts.



5. Inspection and Maintenance Check List

- The specified person performs the checking of winch.
- Divide the checking into daily checking and periodic checking.
- The checking items and checking method in daily and periodic checking shall be carried out and different according to the using frequency.

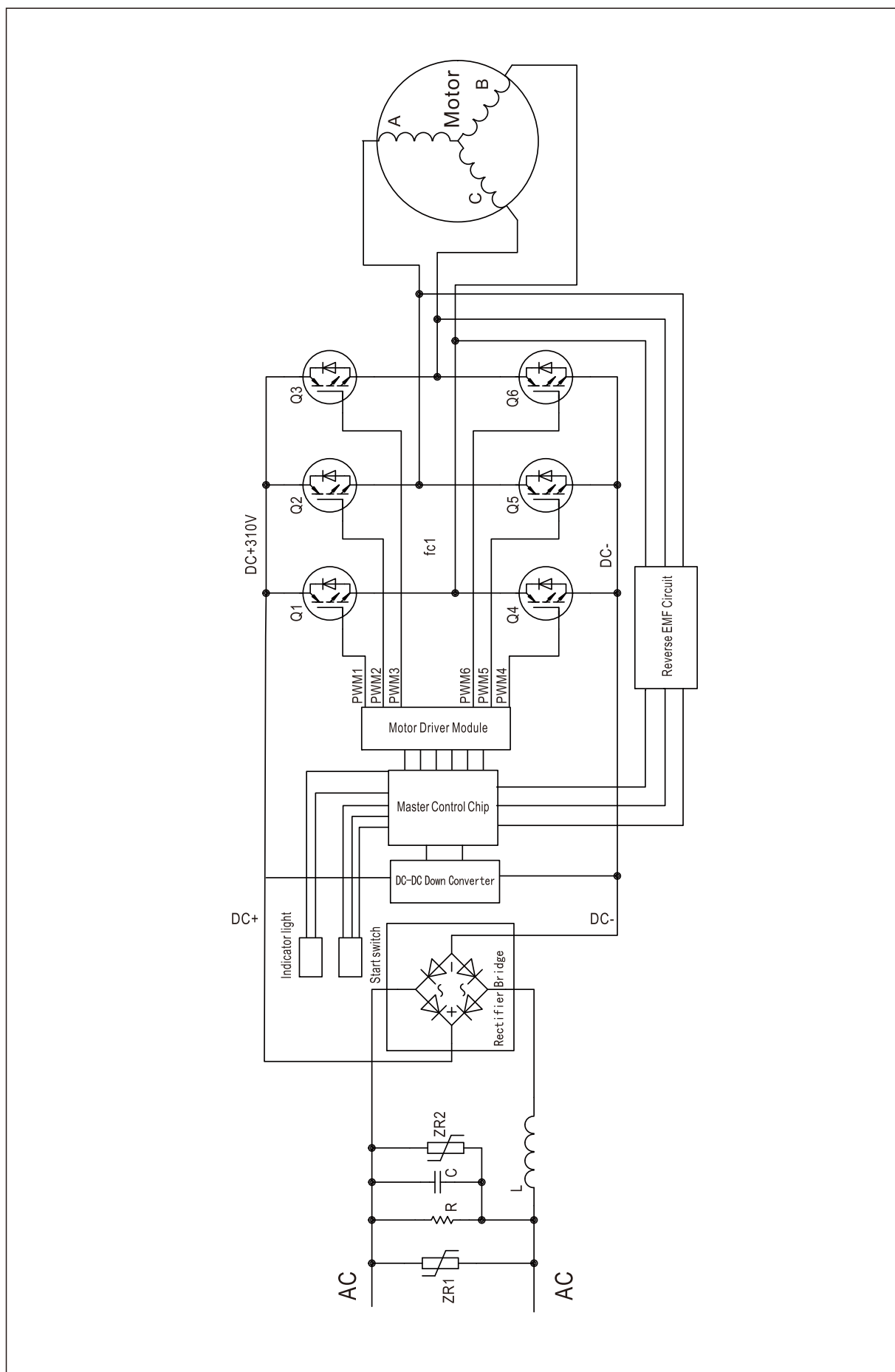
Item	Possible Deficiencies	Check		
		Daily	Monthly	Yearly
Functional operating mechanisms	Mechanisms should be properly adjusted and should not produce unusual sounds when operated	•	•	•
Hook	1.Surface has significant rust,weld, splatter, deep nicks, or gouges. 2.Hook opening is elongated beyond the permissible dimension (10% greater than standard), the hook is dangerously deformed. 3.Hook twisted more than 10 degrees. 4.Safety latch deformed.	•	•	•
Load chain-Surface	Rust, nicks, gouges, dents and weld splatter.	•	•	•
Load chain-Pitch and Wire Diameter	1. The “P” dimension is greater than maximum value listed in Table 4.5-1. 2. The “D” dimension shall not be less than minimum value listed in Table 4.5-1.			•
Load Sheave	Excessive wear, corrosion.	•	•	•
Chain Container	Cracks, excessive wear or other damage which may impair the strength			•
Nuts, Bolts, Screws	Nuts, Bolts and Screws should not be loose			•
Bearings, bushings, Pins, shafts	Bearings, bushing, pins, shafts should not be excessive wear, corrosion, cracks, distortion.			•
Gaskets and sealing	Gaskets and sealing enclosures must be in good condition and installed properly to preserve the IP rating of the hoist.			•
Universal check	1. All screws, chain guide, buffering spring devices. 2. Electric cable, power cable and pushbutton switch, Power and pushbutton switch Sockets, connectors.	•	•	•
Nameplates, Warning Labels	Nameplate and warning labels denoting functions should be legible.			•

6. Trouble shootings

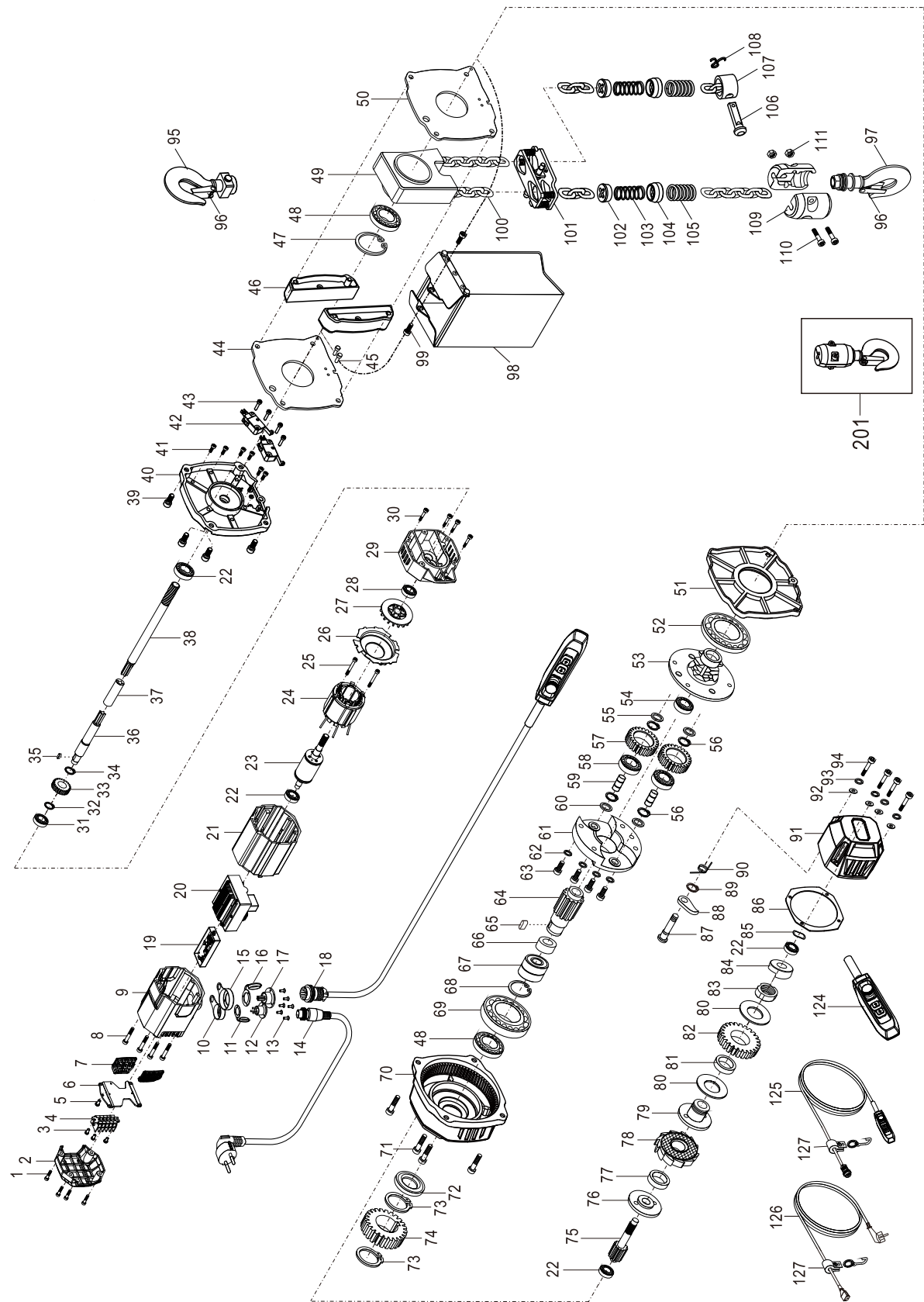
Before performing any trouble shooting on the electric chain hoist, de-energize the supply of electricity as hazardous voltages are present in the electric chain hoist and in connections between components.

Symptom	Possible cause	Remedy
Hoist not operate	No electrical supply to hoist	Check electrical system, connections, cords and fuses.
	Emergency Stop engaged	Disengage Emergency Stop button.
	Motor maybe damaged	Remove motor. Examine all parts and replace any that are worn or damaged.
Hoist does not lift load	Up circuit open	Check circuit for loose connections. Check up side of limit switch for malfunction.
	Hoist is overloaded	Reduce load to within rated capacity.
	Limit switch may be stuck	Check limit switch movment.
	Pendant contactor damaged	Replace contactor.
	Worm friction clutch	Replace friction clutch assembly.
	Faulty switch in pendant	Check electrical connections. Replace or repair as needed.
Hoist does not lowering	Down circuit open	Check circuit for loose connections. Check down side of limit switch for malfunction.
	Broken conductor in pendant core	Check each conductor in the cord. If one is broken, replace entire cord.
Hoist does not stop promptly	Lifting motor overloaded	Reduce load to within rated capacity.
	Brake not holding	Check Friction Clutch, it is necessary to replace a new Friction Clutch assembly.
Lack of proper lifting speed	Lifting motor overloaded	Reduce load to within rated capacity.
	Friction clutch intermittently slipping	Replace friction clutch assembly.
Motor overheats	Excessive load	Reduce load to within loading motor.
	Frequent starting or reversing	Excessive inching, jogging or reversing should be avoided since this type of operation will drastically shorten the life of motor , contactor and brake.

7. Wiring diagram



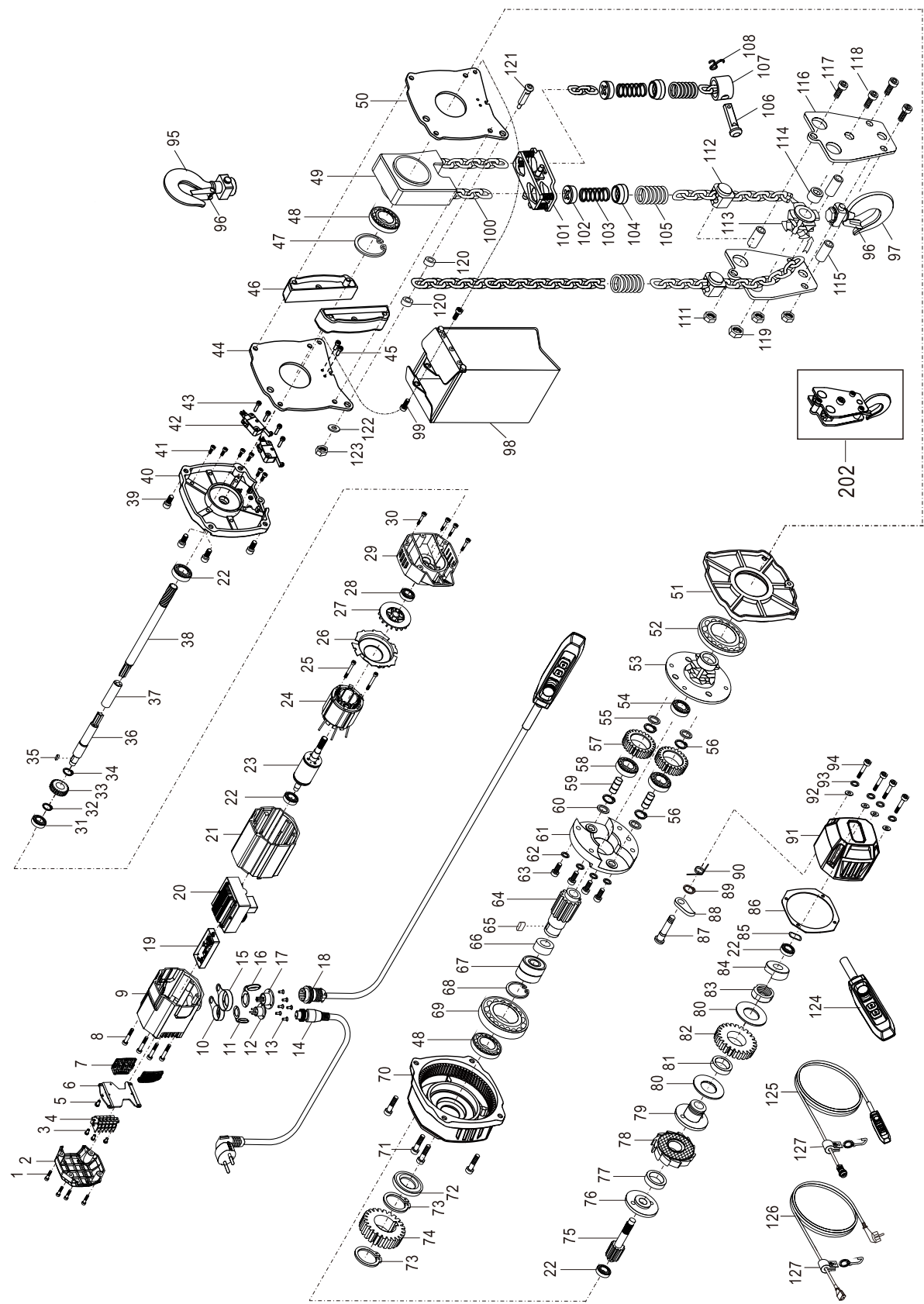
8.Part drawing (BLH2.5, BLH5,BLH10S)



8. Part Name (BLH2.5, BLH5, BLH10S)

No.	Part Name	No.	Part Name	No.	Part Name
1	Socket Bolt	40	Gear Left Cover	79	Torque Gear Flange
2	Electric Component Cover	41	Socket Bolt	80	Press Spring Disc
3	Screw	42	Limit Switch	81	Copper Bushing
4	Terminal Block	43	Socket Bolt	82	Torque Gear
5	Screw	44	Gear Left Plate	83	Torque Limited Nut
6	Terminal Block Board	45	Socket Bolt	84	Anti-receding Bushing
7	Motor Grille	46	Supporting Spacer	85	Washer
8	Socket Bolt	47	Retaining Ring	86	Gasket
9	Electric Component Case	48	Ball Bearing	87	Pawl Pin
10	Power Cable Support	49	Load Sheave House	88	Pawl
11	Power Socket Cap	50	Gear Right Plate	89	Retaining Ring
12	Power Socket	51	Gear Right Cover	90	Pawl Spring
13	Screw	52	Ball Bearing	91	Brake Case
14	Power Connector	53	Load Sheave	92	Plain Washer
15	Pendant Control Cable Support	54	Ball Bearing	93	Spring Washer
16	Pendant Control Socket Cap	55	Plain Washer	94	Socket Bolt
17	Pendant Control Socket	56	Retaining Ring	95	Top Hook
18	Pendant Control Connector	57	3rd Gear	96	Safety Latch assy.
19	Operating Controller	58	Ball Bearing	97	Bottom Hook
20	Motor Controller	59	Gear Shaft	98	Chain Container
21	Motor Box	60	Plain Washer	99	Socket Bolt
22	Ball Bearing	61	Gear Mounting Flange	100	Load Chain
23	Rotor	62	Spring Washer	101	Limit Stopper
24	Stator	63	Socket Bolt	102	Limit Striker
25	Socket Bolt	64	3rd Pinion	103	Limit Spring
26	Air Guiding Cover	65	Key	104	Limit Spring Holder
27	Fan	66	Oil Seal	105	Buffering Spring
28	Ball Bearing	67	Ball Bearing	106	Stopper Pin
29	Left Gear Box	68	Retaining Ring	107	Chain Stopper
30	Socket Bolt	69	Ball Bearing	108	Cotter Pin
31	Ball Bearing	70	Gear Box	109	Bottom Hook Hanger
32	Retaining Ring	71	Socket Bolt	110	Socket Bolt
33	1st Gear	72	Oil Seal	111	Lock Nut
34	Retaining Ring	73	Retaining Ring	124	Pendant Control
35	Key	74	2nd Gear	125	Pendant Control Assembly
36	1st Pinion A	75	2nd Pinion	126	Power Cable Assembly
37	Spline Housing	76	Brake Hub	127	Cable Hanger
38	1st Pinion B	77	Copper Bushing	201	Bottom Hook Assembly
39	Socket Bolt	78	Ratchet Brake set		

8.Part drawing (BLH10D)



8. Part list (BLH10D)

No.	Part Name	No.	Part Name	No.	Part Name
1	Socket Bolt	44	Gear Left Plate	87	Pawl Pin
2	Electric Component Cover	45	Socket Bolt	88	Pawl
3	Screw	46	Supporting Spacer	89	Retaining Ring
4	Terminal Block	47	Retaining Ring	90	Pawl Spring
5	Screw	48	Ball Bearing	91	Brake Case
6	Terminal Block Board	49	Load Sheave House	92	Plain Washer
7	Motor Grille	50	Gear Right Plate	93	Spring Washer
8	Socket Bolt	51	Gear Right Cover	94	Socket Bolt
9	Electric Component Case	52	Ball Bearing	95	Top Hook
10	Power Cable Holder	53	Load Sheave	96	Safety Latch assy.
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20	Motor Controller	63	Socket Bolt	106	Stopper Pin
21	Motor Box	64	3rd Pinion	107	Chain Stopper
22	Ball Bearing	65	Key	108	Cotter Pin
23	Rotor	66	Oil Seal	109	Lock Nut
24	Stator	67	Ball Bearing	111	Lock Nut
25	Socket Bolt	68	Retaining Ring	112	Chain Guide
26	Air Guiding Cover	69	Ball Bearing	113	Idle Sheave
27	Fan	70	Gear Box	114	Needle Bearing
28	Ball Bearing	71	Socket Bolt	115	Bottom Hook Space
29	Left Gear Box	72	Oil Seal	116	Bottom Hook Housing
30	Socket Bolt	73	Retaining Ring	117	Socket Bolt
31	Ball Bearing	74	2nd Gear	118	Socket Bolt
32	Retaining Ring	75	2nd Pinion	119	Lock Nut
33	1st Gear	76	Brake Hub	120	Spacer
34	Retaining Ring	77	Copper Bushing	121	Chain Connecting Bolt
35	Key	78	Ratchet Brake set	122	Plain Washer
36	1st Pinion A	79	Torque Gear Flange	123	Lock Nut
37	Spline Housing	80	Press Spring Disc	124	Pendant Control
38	1st Pinion B	81	Copper Bushing	125	Pendant Control Assembly
39	Socket Bolt	82	Torque Gear	126	Power Cable Assembly
40	Gear Left Cover	83	Torque Limited Nut	127	Cable Hanger
41	Socket Bolt	84	Anti-receding Bushing	202	Bottom Hook Assembly
42	Limit Switch	85	Washer		
43	Limit Switch	86	Gasket		

FCC Warning:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 0cm between the radiator and your body.