CE OPERATION MANUAL

Battery Chain Hoist

MODEL : DCH-250/DCH-500

CHI ZONG MACHINE CO., LTD.

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1. DCH-250/500 Battery Chain Hoist Introductions

Suitable for the areas without power supply, such as forest, farm, wilderness, under-construction buildings, plumbing, etc.

Also good for safety and rescuing applications, extremely efficient.

Lightweight, compact, easy carry, operation friendly, fine appearance, and (exclusive patented).

2. Specifications

Description / Specifications

Lifting Capacity : DCH-250: 250kg; DCH-500: 500kg

Load Chain : 4.0mm x 12mm (Grade 80)

Chain Reeve: DCH-250 1-Fall ; DCH-500 2-Fall

Speed : DCH-250: 4.5M/min; DCH-500: 2.2M/min

Power : DC-18V Rechargeable Li-ion Battery

Battery Performance : 20 Min. Continuously Use With Full Loading

Safety Device : LED Loading Indicator

Overloading Warning Buzzer : Buzzer Sounds When Overloading Occurs.

LED Battery Condition Indicator

Hoist weight (Unchained) : 7.5kgs/8.8kgs

Accessories In Box:	
Hoist w/ Load Chain	1
Chain Container	1
Trigger Switch With Cord	1
Upper Rigid Hook	1
Load Hook Set	1
DC 18V Li-ion Rechargeable Battery Pack	2
100V-240V Charger and Adapter	1
Portable Case	1
Instructional Manual	1

Packing:

Portable Case Size : 680mm x 160mm x 430mm

Inner (Color) Box Size : 690mm x 170mm x 440mm

Master (Carton) Box Size : 700mm x 180mm x 450mm

NW : 16kg ; **GW :** 17kg

3. Installation

- Unpacking: Once package has been opened, carefully inspect the hoist frame, hooks, chain and control for damage that may have occurred during shipment. If damage is found please contact your representatives immediately
- Pre-Installation Check:
  - Check for transit damage
  - Check that all fasteners and joints are tight and secure.
  - Check the capacity of the lifting unit and bottom block.
  - Check that all external wiring is in good order
  - Check that the load chain is in good order
- Lock battery pack onto trigger control. (Make sure your battery pack is fully charged)
- Link the control cable with the twin circle ring.
- Check the lifting or pulling performance with light load capacity.
- Check the brake system with light load capacity.

4. Working Method

- Check all safety and environmental conditions
- Before each use, visually inspect the hoist and all load bearing parts of the hoist, like hooks and load chain.
- Attach the chain hook to the main structural support member, either direct to an existing eyebolt or lug-plate, or using a bracket or beam clamp. It is also possible to use a sling or bridle. Avoid slinging on sharp edges.
- Check if both lifting direction work properly (lifting and lowering).
- Guide the chain carefully into the chain-guides when running it taut. Prevent the chain from twisting, knotting or piling upon the hoist body.
- Attach the chain container to the chain mounting fixer.
- Take slack chain from the floor and put this into the chain bag with as less twisting as possible.
- Attach the load to the suspended hoist. Use an eyebolt or lashing eye fixed to the load or proper sling that will not harm the load itself.
- Make sure the chain bag is hanging free of the load and the inlet of chain is not obstructed.
- Run the load chain up until it is just taut.
- Visually check the whole lifting structure from chain hook down along the load chain to the load.
- Check all suspension connections as well as the control cable.

- Remove all people from the area before you start lifting the load. Do not allow any people to stand under the moving load.
- Make sure you have a full visual view on the complete travel path of the load.

5. Handling Precautions

- Never try to lift a load more than the rated capacity
- Always remain in control. Never leave a load unattended
- Don't work, walk or stand under and operating hoist
- Never ride on the hook, chain, or load
- Always look up when working the hoist. Watch for overhead danger
- Prior to lifting or pulling make sure the brake is performing correctly.
- If any malfunction is detected stop the operation immediately.
- **Never pull of the controller quick connector during operation.**

6. Operational Environment and Conditions

- Keep area around machine well light (>500 lux) and dry.
- Wear leather gloves or similar protection device during handling, installation or cleaning.
- During handling, installation or cleaning, anyone should wear helmet for protection.
- Wear safety shoes during operating, handling, installation or cleaning.
- The actual noise measuring results in factory is about 77.5dB under without production. (condition: leave machine body 1m distance and at 1.6m height from the floor, and 80% of maximum speed). If the noise pressure is over 80 dB(A) while operating, please wear proper ear defender.
- The disposal of wastes, such as oil, coolant, and chips, must comply with the local regulations.
- If user wants to repair, fix or change the component or broken things, need to use the safety measure form the Manufacturer and wear PPE(Personal Protection Equipment).
- Unqualified operators are not allowed to operate the machine before they received a training course (including suitable and sufficient instruction in press mechanisms, the maintenance of fluid quality and filter changes, protective devices, accident causation and prevention, the work of the tool-setter, tool design and the use of closed tools and fixed enclosing guards). Unauthorized and un-qualified personnel are not allow to access to areas such as electrical cabinet, motor, transformers, and work area.
- The machine is prohibited to be used in potentially explosive atmosphere.
- Inadequate operation may cause damages to the machine itself and extreme cause serious accident to operator.
- Ambient air temperature:

+5˚c ~ +40˚c in free air, and the average ambient air temperature over a period of 24 hours shall not exceed +50 ˚c

Humidity: 30%~95%.

Altitude: up to 1000m above mean see level.

Transportation & Storage condition:

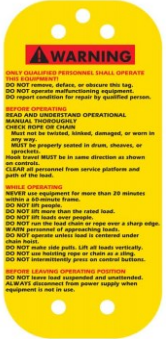
－25˚C ~ +55˚C, and for short periods not exceeding 24 hours up to +70˚c

The ground must be capable of absorbing the vibrations of other machines.

- If vibration problem can not be solved and still transfer to machine, then it should be quantify by using a vibrometer. The vibration level in the machine must be lower than 0.5G .

7.Location of warning sign, CE mark, nameplate

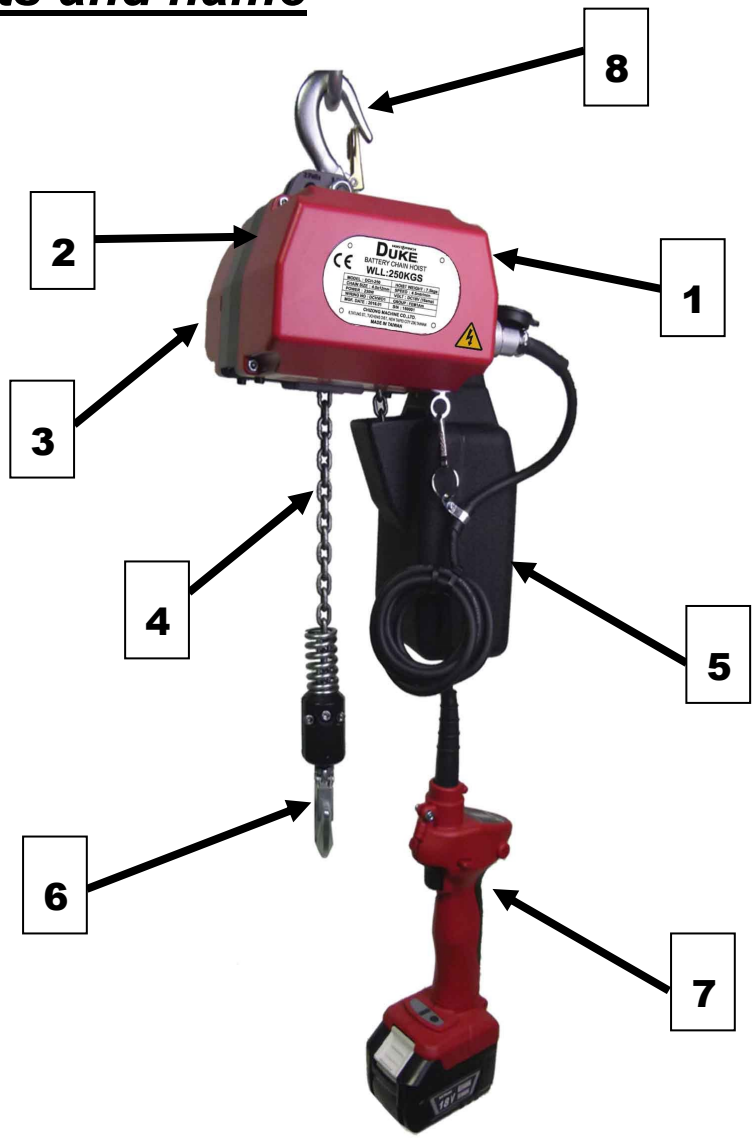
Electric shock

CE symbol
CE
Nameplate
DUKE BATTERY CHAIN HOIST WLL:250KGS MODEL : DCH-250 / HOIST WEIGHT : 7.5kgs CHAIN SIZE : 4.0x12mm / SPEED : 4.5mtr/min POWER : 230W / VOLT : DC18V (16amp) WIRING NO : DCHWD1 / GROUP : FEM1Am MGF. DATE : 2016.01 / S/N : 160001 CHIZONG MACHINE CO.,LTD. 6,TATUNG ST., TUCHENG DIST, NEW TAIPEI CITY 236,TAIWAN MADE IN TAIWAN
Warning label


8.All safety related elements

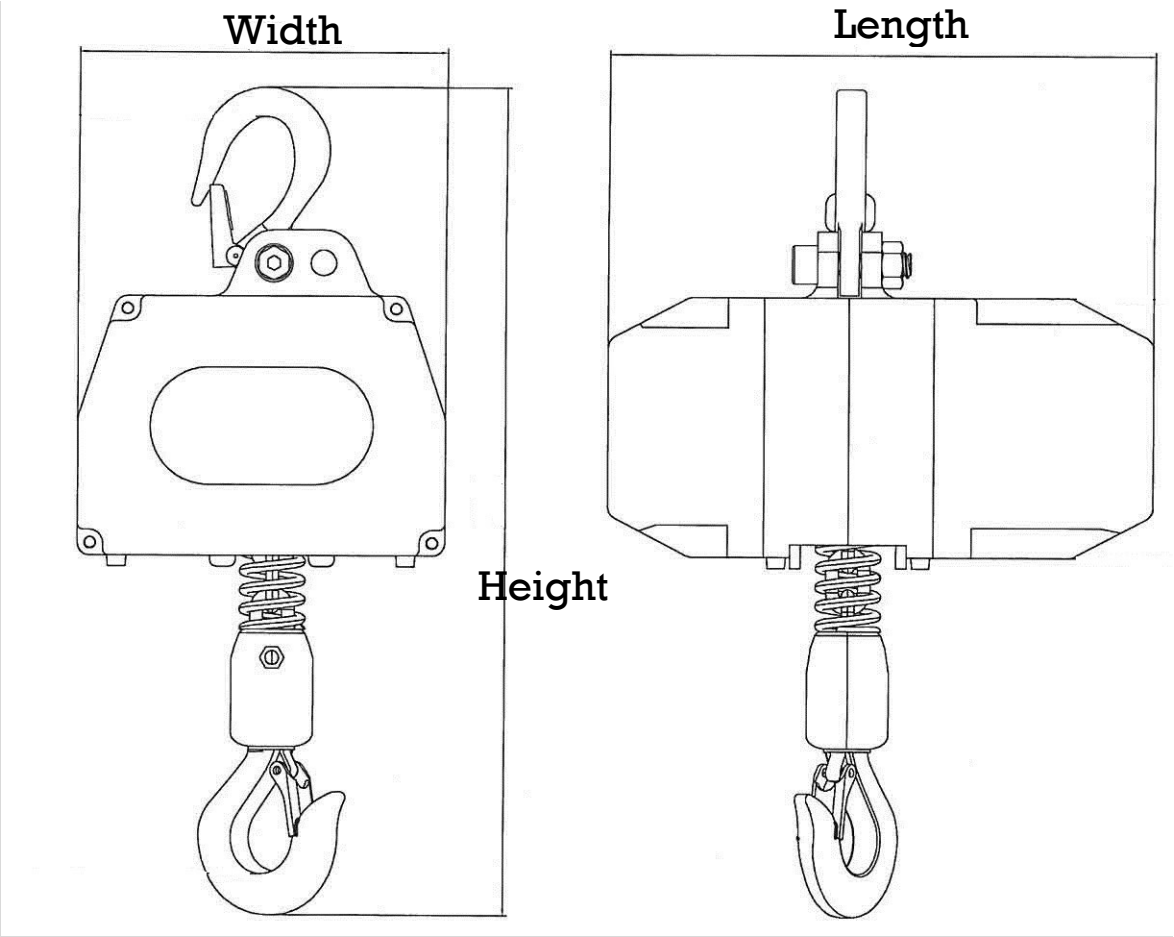
ITEM	DESCRIPTION
1	CHAIN GUIDE SPRING
2	OVERLOAD WARNING BUZZER
3	EMERGENCY STOP
4	FRICTION TORQUE LIMITER

9.Main units and name



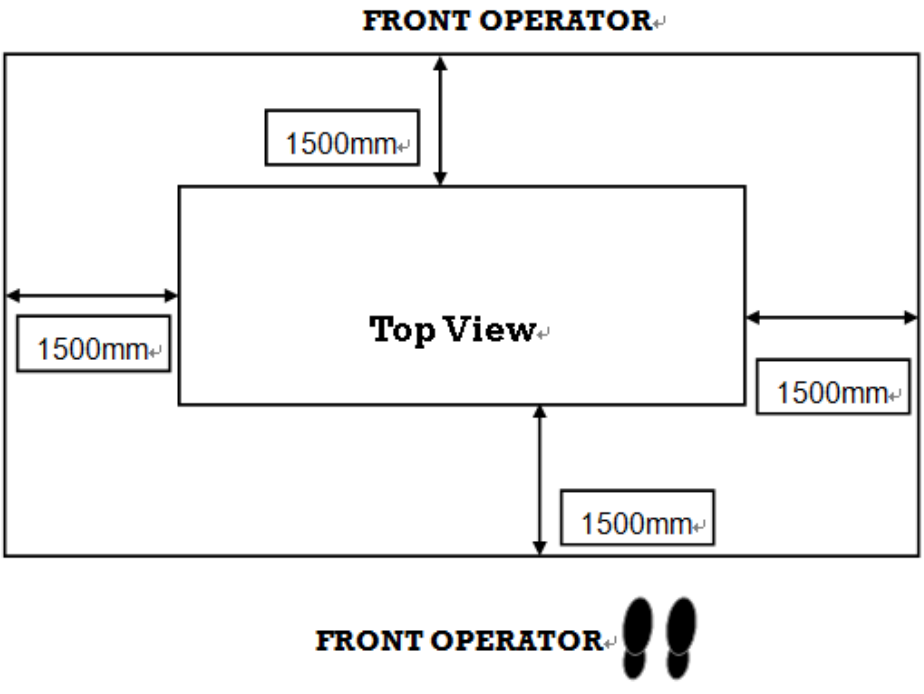
Item	Part's name
1	Hoist Body
2	Motor End
3	Gear End
4	4.0mm Chain
5	Chain bag
6	Lower Hook
7	Controller
8	Upper Hook

10.Overall dimensions



MODEL	Length	Width	Height
DCH-250	257mm	173mm	387mm
DCH-500	257mm	173mm	436mm

11. Working space required and operating position



12.Transport and Storage

- Chain hoists used in the touring sector are often moved from one venue to the next in repetitive use. This might cause more than average wear and tear on the hoist. Therefore a sturdy and protective transport facility (portable case) is strongly advised. This should give adequate support to the housing of the chain hoist in any direction, and have a separate compartment for the load chain.
- It is necessary to have a through visual check of all major components before each operation.

13.Warnings

(Not adhering to the following warnings may result in personal injury or equipment damage.)

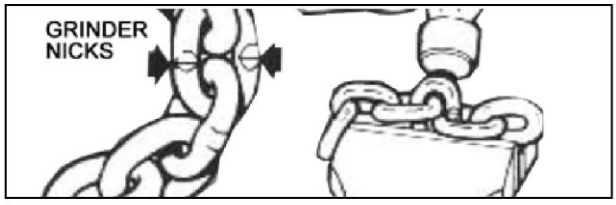
- Do not try to lift more than the rated capacity
- Do not ride on a moving loading
- Do not work, walk, or stand under an operating Hoist
- Stop the operation if there is a noise or abnormal vibration
- Avoid water or moisture on the trigger control
- Make sure the load chain is in good order
- Before use, make sure the load is balanced
- Always leave the trigger control in the safety stop position immediately after use
- Always remain in control. Never leave a load unattended
- Don’t work, walk or stand under and operating hoist
- Never ride on the hook, chain, or load
- Always look up when working the hoist. Watch for overhead danger
- Prior to lifting make sure the brake is prefer

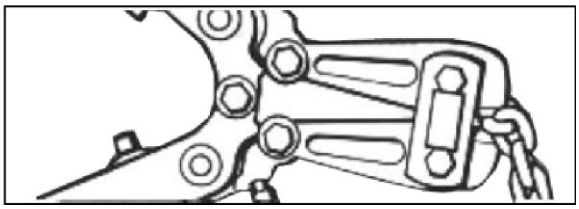
14.Generals

- **Overload Limiting Clutch:** The overload limiting clutch is designed to allow the intermediate gear to slip on an excessive overload. An overload is indicated when the hoist will not raise the load. Also, some clutching noise may be heard if the hoist is loaded beyond rated capacity.

Caution: If the load being lifted exceeds the lifting capability of the overload clutch, the motor will continue to run, causing overheating of both clutch and motor. Under no circumstance should the clutch be allowed to slip for more than a few seconds.

- **Chain Container:** For installations where the slack chain hanging from the hoist may be objectionable or hazardous, the use of a chain container is highly recommended
- **Load Chain:** The chain should feed smoothly into and away from the hoist and hook block If the chain binds, jumps or is noisy, First clean and lubricate the chain, if trouble persists inspect chain and mating parts for wear, distortion and other damages.
- **Load Chain Lubrication:** Always lubricate load chain weekly or more frequently depending on severity of service. Be sure the lubricant reaches the bearing surfaces between the links. Remove the excess oil from the chain.
- **Chain End Stop:** The end stop on the dead-end chain should be mounted on the 11th link. (No less than 11 links should be in between the dead-end and the chain stop).
- **Cutting Chains:** FEC load chain is hardened and therefore difficult to cut. The following methods are recommended when cutting a length of new chain from stock or cutting worn chain.
  - Use a grinder and nick the link on both sides, then secure the link in a vise and break of with a hammer.
  - Use a bolt cutter with special cutter jaws for cutting hardened chain.





- **Load Chain Cleaning:** Clean the load chain with acid-free solvent and coat with new ISO VG-320 or equivalent gear oil. Wipe excess Oil to prevent dripping. Never apply grease to the chain

15.Chain Replacement

- With Chain In Lifting Motor

1. With the unit placing on workbench or motor up position, run the hook to its up limit.
2. Remove the load block assembly from the old chain.
3. Make a “C” link, attach the new chain to the load end of the old chain.
4. Carefully pull the trigger and run the joined pieces of chain into the lifting motor until about 40cm of new chain comes out the other side.
5. Remove the “C” link and the old chain. Remove the chain stop from the old chain by a hex head screwdriver.
6. Attach the chain stop to the slack end of the new chain by capturing the 12th link with the two stop halves. Be sure there are no twists in the chain.
7. Attach the load block on new chain by a hex head screwdriver.

- Without Chain In Lifting Motor

1. With the unit placing on workbench, run the hook to its up limit.
2. Remove the load block assembly from the old chain.
3. Remove the chain stop from the old chain.
4. Carefully pull the trigger and detach the old chain out of the lifting motor.
5. Insert the new chain into the load sheave.
6. Feed the new chain into the chain hoist.
7. Allow about 40cm of chain below the chain hoist on the slack end.
8. Attached the chain stop and load block assembly. Be sure there are no twists in the chain.

16. 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	
5	Are these screws on electric box fixed tightly?	YES	
6	Is all the function of every control switch and component described specifically on this operation manual?	YES	
7	Is input voltage marked correctly?	YES	
8	Is the machine earthed?	YES	
9	Is there an independent earth copper plate equipped inside electric box?	YES	
10	Is every function of control device regular?	YES	
11	Is the emergency stop device functional?	YES	
12	Is the rotary direction of motor or transmission correct?	YES	
13	Is the cover functional (fixed or movable)?	YES	
14	Is the machine set stable?	YES	
15	Have all the acute angle and fur been ground?	YES	
16	Has the machine been pasted a CE mark?	YES	
17	Has the machine been pasted a nameplate?	YES	
18	Has the machine been pasted related warning marks?	YES	
19	Have all the safety information and attentions been provided completely for user?	YES	
20	Does the written language of manual and machine conform to local country?	YES	
21	Has the operation manual been provided?	YES	
22	Has the EC Declaration of Conformity been signed?	YES	

17. Inspections and Maintenance

To maintain continuous and satisfactory operation, a regular inspection procedure must be initiated to replace worn or damaged parts before they become unsafe. Inspection intervals must be determined by the individual application and are based on the type of service to which the hoist will be subjected to the degree of exposure to wear, deterioration or malfunction of the critical components.

The type of service to which the hoist is subjected can be classified as Normal, Heavy, or Severe.

- Normal Service: Involves operation with randomly distributed loads within the rated load limit, or uniform loads less than 65% of rated load for not more than 25% of the time.
- Heavy Service: Involves operating the hoist within the rated load limit which exceeds normal service.
- Severe Service: Normal or heavy service with abnormal operating conditions.
-

Two classes of inspection- frequent and periodic – must be performed.

- Frequent Inspections: These inspections are visual examinations by the operator or other designated personnel. Records of such inspections are not required. The frequent inspections are to be performed monthly for normal service, weekly to monthly for heavy service, and daily to weekly for severe service, and they should Include those items listed in below.
-
- Periodic Inspections: These inspections are visual inspections of external conditions by an appointed person. Records of periodic inspections are to be kept for continuing evaluation of the condition of the hoist.

Periodic inspections are to be performed yearly for normal service, semi-annually for heavy service and quarterly for severe service, and they are to include those items listed in below.
CAUTIONS: Any deficiencies are to be corrected before the hoist is returned to service. Also, the external conditions may show the need of disassembly to permit a more detailed inspection, which, in turn, may require use of nondestructive type testing.

PREVENTIVE MAINTENANCE

In addition to the above inspection procedure, a preventive maintenance program should be established to prolong the useful life of the hoist and maintain its reliability and continued safe use. The program should include the periodic and frequent inspections with particular attention being paid to the lubrication of the various components using the recommended lubricants.

Minimum Frequent Inspections

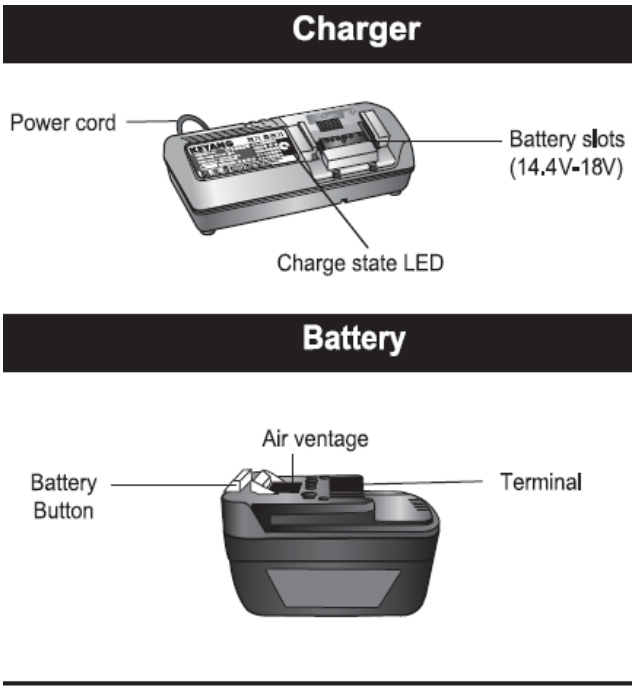
TYPE OF SERVICE			ITEM	
Normal	Heavy	Severe		
Monthly	Weekly to Monthly	Daily to weekly	a)	Brake for evidence of slippage.
			b)	Control functions for proper operation.
			c)	Hooks for damage, cracks, twists, excessive throat opening, latch engagement and latch operation.
			d)	Load chain for adequate lubrication, as well as signs of wear or damaged links.
			e)	Load chain for proper reeving and twists.

Minimum Periodic Inspections

TYPE OF SERVICE			ITEM	
Normal	Heavy	Severe		
Yearly	Semi. Annually	Quarterly	a)	All items in minimum frequent inspections
			b)	External evidence of loose screws, bolts or nuts.
			c)	External evidence of worn, corroded, cracked or distorted hook block, suspension screws, gears, bearings, chain stop and chain guide.
			d)	External evidence of damage to hook retaining nut and pin. Also check the upper suspension adapter making sure it is fully seated in the hoist frame and that both screws are tight.
			e)	External evidence of excessive wear of brake parts.
			f)	Checking the operation of the control station making sure the buttons operate freely and do not stick in either position.
			g)	Inspect the electrical cords and cables and control station enclosure for damaged insulation.
			h)	Inspect the suspension hook for excess free play or rotation. Replace worn parts as evidence by excess free play or rotation.

18. Important Safety Instructions for Battery Chargers

This battery charger is not suitable for Univolt batteries.
It should not be used to charger Ni-MH batteries.



CHECK BEFORE USE

1. The power source

- Observe correct main voltage. The voltage of power source must agree with the voltage specified in the name plate.
- Make sure the rated voltages in the electric winch and the battery are the same. When the rated voltage of the battery is higher than that of the electric winch, the motor can be damaged by fire.

2. Attachment of the battery

- Make sure the battery is attached correctly before you sure the winch.

⚠ Make sure the battery is attached in the body of the tool tightly before you start operation. When the battery is not attached tightly, it may be fallen during the operation and cause an injury in the top of your foot.

3. Polarity of the battery

When the polarity of the battery is not correct, it may cause the trouble of the switch. Also, the reversal of the rotating direction can bring a dangerous situation.

HOW TO CHARGE THE BATTERY

1. Insert the plug of the charger in the socket, and the charging indicating lamp will be flickered in green, red, and yellow in turn within one second. And then, the battery charger will be in the standby position.
2. Insert the battery in the battery charger considering the polarity, and the charging will be started immediately.

> **Note:** A new battery will work properly after five times of charging and discharging. Charge and discharge the battery, which is not used for a long time, for two to three times to function well.

3. When the battery working time is remarkably short despite full charging, the life of the battery may be over. Replace the battery immediately.

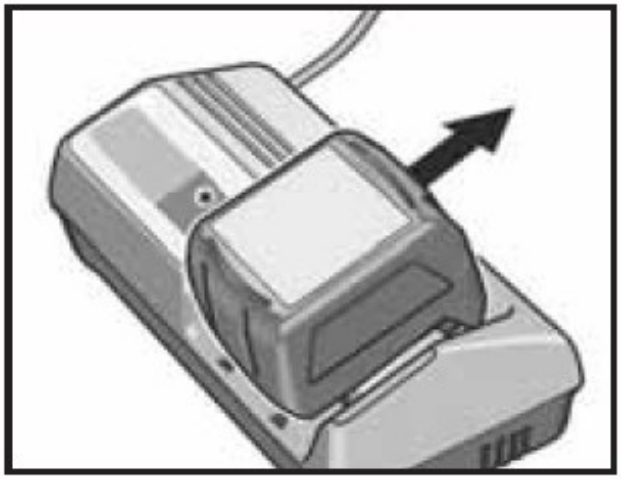
> **Warning:** Take care not to short-circuit the terminal of the battery. The short-circuit of the terminal may cause a fire or explosion doing a serious personal injury.

CHARGING PROCESS

Use only the specified battery and battery charger. Otherwise battery and charger can be damaged by fire, explosion, charging error or overheat.

CHARGE TIMES: Lithium Battery

Voltage	DC 18V
Capacity(Ah)	3.0Ah
Time in Mins	65



1. Charging indication:

- Green Blinks: Before charging
- Red Lights: While charging
- Green lights: Charging completed
- Red Blinks: Overheat standby
  (Battery overheat)
- Yellow Blinks: Charging impossible

> **Warning:** Be sure unplug the charger after finishing the charging

2. If charging of the heated battery us attempted immediately after it has been used or charged, indicator blinks in red (overheat standby). Also, cooling fan in the charger automatically starts running to cool the hot battery down to normal temperature and after the cooling, indication charges to red flowing and charging begins.
3. This charger detects charging status of the battery and always keeps the battery in full charge state.

INSTALLING AND REMOVING BATTERY

1. Installing:

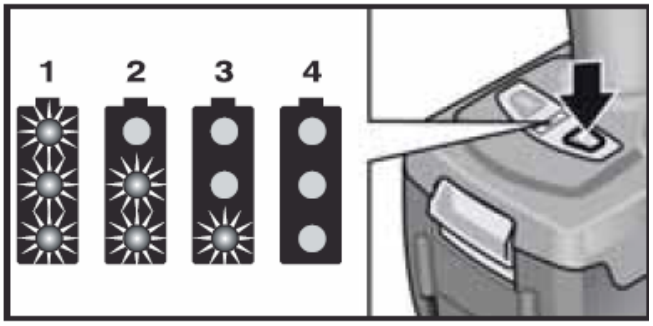
- Set the rotational direction switch at center position (locked state).
- Insert the charged battery into the slot below the handle until the battery securely latched with a click.

2. Removing:

- Push the battery button once and take it out to remove it.

CHARGE STATE OF THE BATTERY

The charge state can be checked on the LED by pressing
The charge state indicator button:



1 = Battery 70-100% charged
2 = Battery 30-69% charged
3 = battery less than 30% charged
4 = battery flat of defective

Charging Advice (IMPORTANT)

To obtain the best performance and lengthen the life of the battery pack it should be charged correctly. DO NOT charge the battery pack in an air temperature below +0°C (32°F), or above +40°C (104°F). This is important and will prevent serious damage to the battery pack. It is normal for the charger and battery pack to become warm to the touch while charging. The battery pack should be recharged when it falls to produce sufficient power to operate the tool - (when it loses its "grunt"). DO NOT CONTINUE to use a battery with low voltage or capacity. Immediately charge the battery.
Always keep the charger battery cavity clear. DO NOT put any metal objects into battery cavity as it may short circuit the charger.
Always unplug the charger from the power supply or turn off the power supply when there is no battery pack in the cavity. Unplug the charger before attempting to clean it.
To assist in the cooling of the battery pack after use, avoid placing the charger or battery pack in a warm environment such as in a metal shed, or an un-insulated vehicle or trailer.

CAUTION - BATTERY CHARGERS CAN CAUSE ELECTRIC SHOCK, SEVERE INJURY AND DEATH

- Please read all instructions before using the charger.
- This charger is designed for indoor use only.

- Do not probe with conductive metal objects during charging.
- Do not insert a cracked or damaged battery into the charger.
- Do not allow any liquid to get inside charger. Keep it away from water and moisture.
- Make sure the power supply is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- To reduce the risk of damage to the electric plug and cord when disconnecting the charger from the wall socket, pull by the plug rather than the cord.
- Use only the power supply supplied, to avoid any possible damage to the charger.

19. Guarantee / Warranty

Guarantee

We hereby certify that Duke battery Chain Hoist was manufactured and undergone quality control inspections and testing.

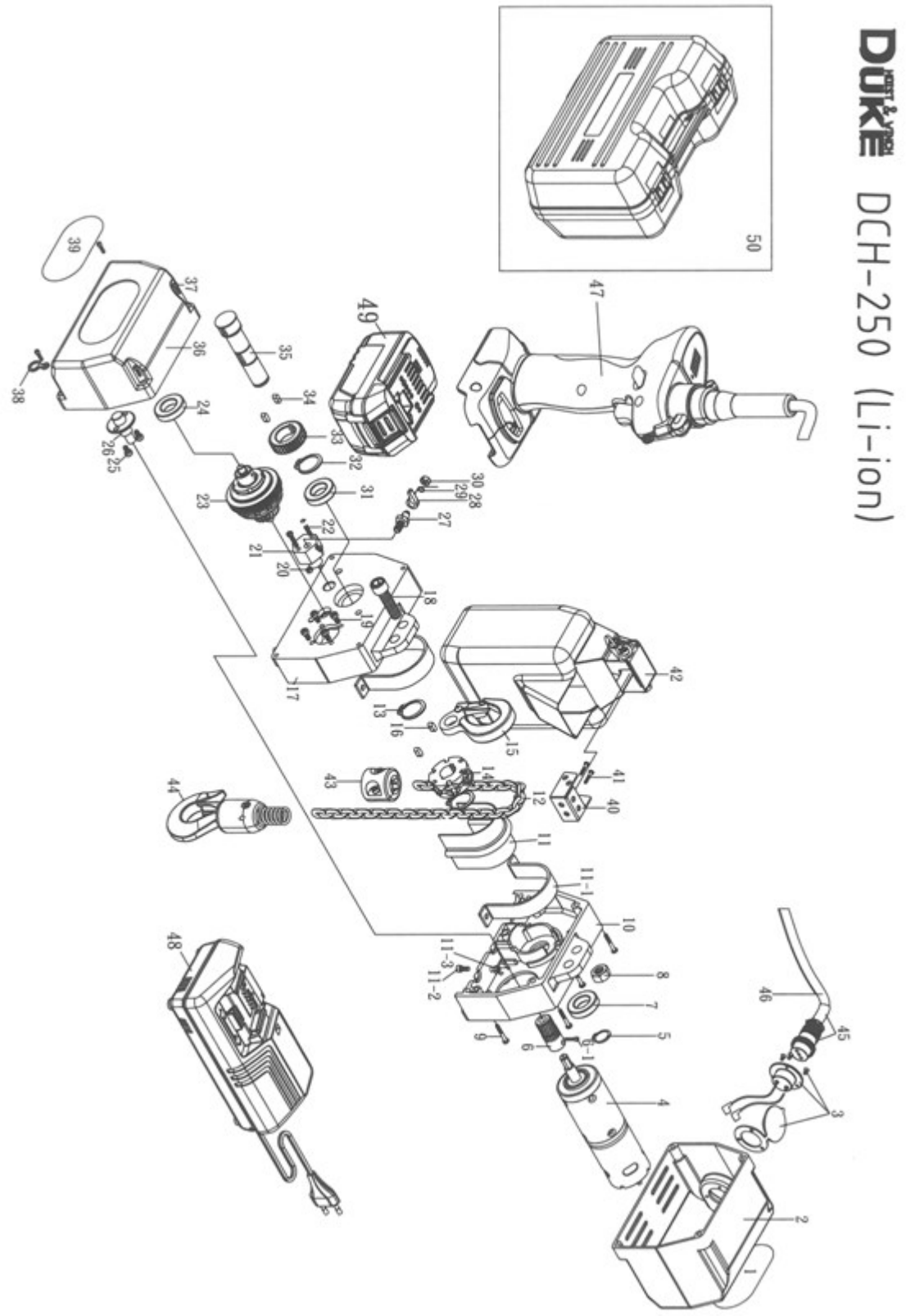
- Inspected/tested according to the WLL of 1.25 times
- Inspected for the operation of the overload clutch
- Inspected the brake load performance
- Tested to achieve the duty cycle (20 mins within an hour)
- Inspected the swivel hook and suspension hook.

Before operating the hoist, it is recommended to read these operating manual.
We fully guarantee that this hoist has been tested in accordance with the WLL, Safety Factor, and the Duty Cycle. Please check that your hoist is accompanied with an individual Test Certificate which directly relates to the serial number of your unit.

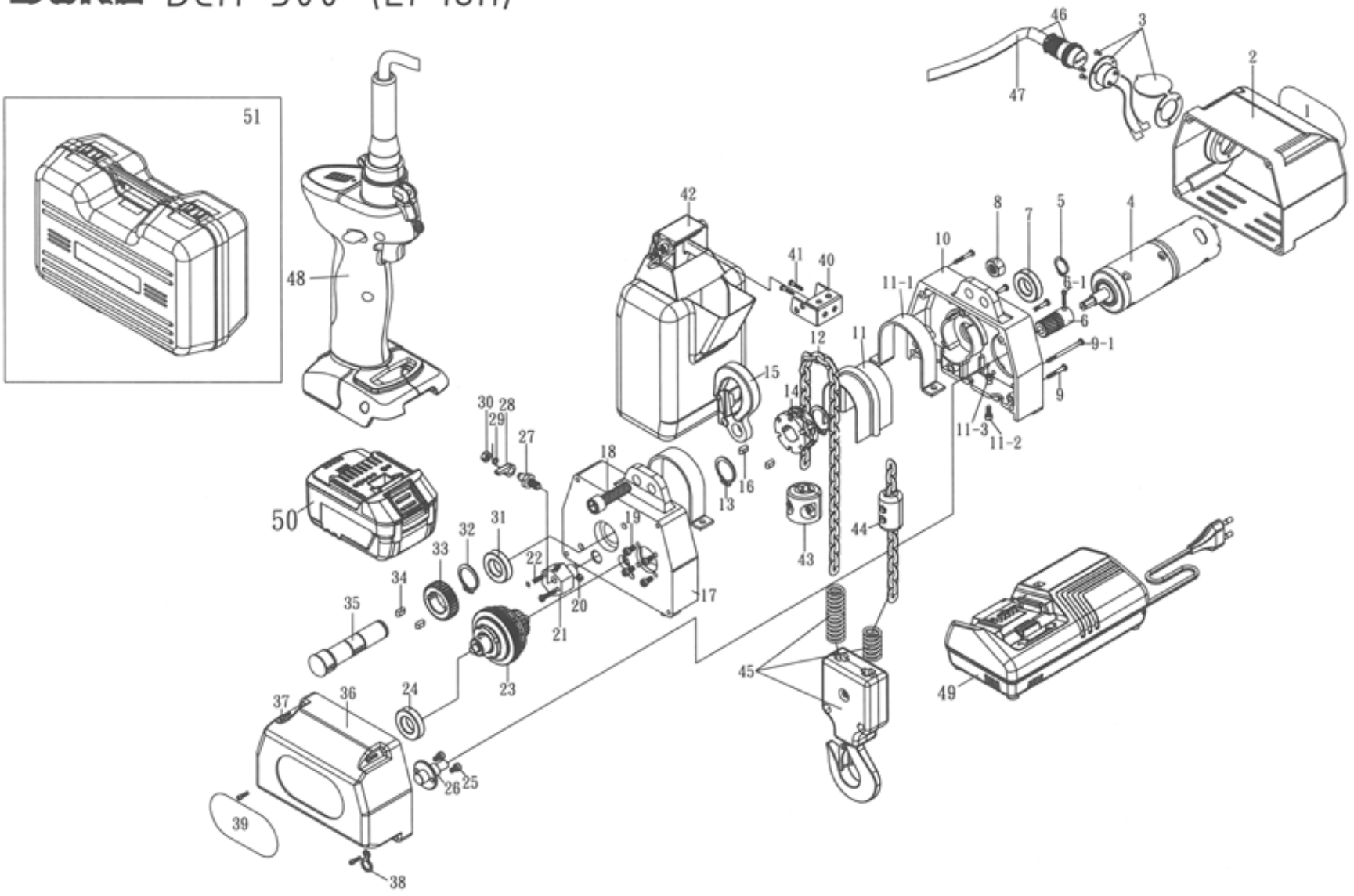
Warranty

The Duke battery Chain Hoist has a 12-month warranty (battery pack has 6 months) from date of purchase. Proof of purchase is required in order to claim warranty. All warranty is void if the repair required is due to negligence by the operator or for not following the correct operating instructions and warnings.

20 .Battery Chain Hoist (Exploded Art)



DÜKE DCH-500 (Li-ion)



21. Parts List

DCH-250 (LI-ION) PARTS LIST			
NO	DESCRIPTION	NO	DESCRIPTION
1	NAMEPLATE	33	GEAR
2	MOTOR HOUSING	34	KEY
3	QUICK CONNECTOR (MALE)	35	GEAR SHAFT
4	MOTOR	36	GEAR COVER
5	FIX SPRING	37	CLICK FIXING SCREWS
6	MOTOR SHAFTGEAR	38	CLICK
6-1	SCREW	39	NAMEPLATE
7	BEARING	40	CONTAINER FIXER
8	NUT	41	SCREW
9	SCREW	42	CHAIN CONATINER
10	MAIN BODY - MOTOR END	43	CHAIN STOPPED BLOCK
11	CHAIN GUIDE	44	LOWER HOOK ASSEMBLY
11-1	CHAIN GUIDE BOLSTER	45	QUICK CONNECTOR (FEMALE)
11-2	SCREW	46	3.5MM X 2C CABLE
11-3	NUT	47	TRIGGER SWITCH (LI-ION)
12	CHAIN	48	CHARGER (LI-ION)
13	SNAP RING	49	LI-ION BATTERY PACK
14	CHAIN WHEEL	50	PORTABLE CASE
15	UPPER HOOK		
16	KEY		
17	MAIN BODY - GEAR END		
18	BOLT		
19	SCREW		
20	NUT		
21	BRAKE FIXER		
22	SCREW		
23	GEAR BRAKE ASSEMBLY		
24	BEARING		
25	SCREW		
26	MOTOR SHAFT ARBOR		
27	CLICK FIXING SCREWS		
28	PAWL		
29	SPRING		
30	NUT		
31	BEARING		
32	SNAP RING		

DCH-500 (LI-ION) PARTS LIST

NO	DESCRIPTION	NO	DESCRIPTION
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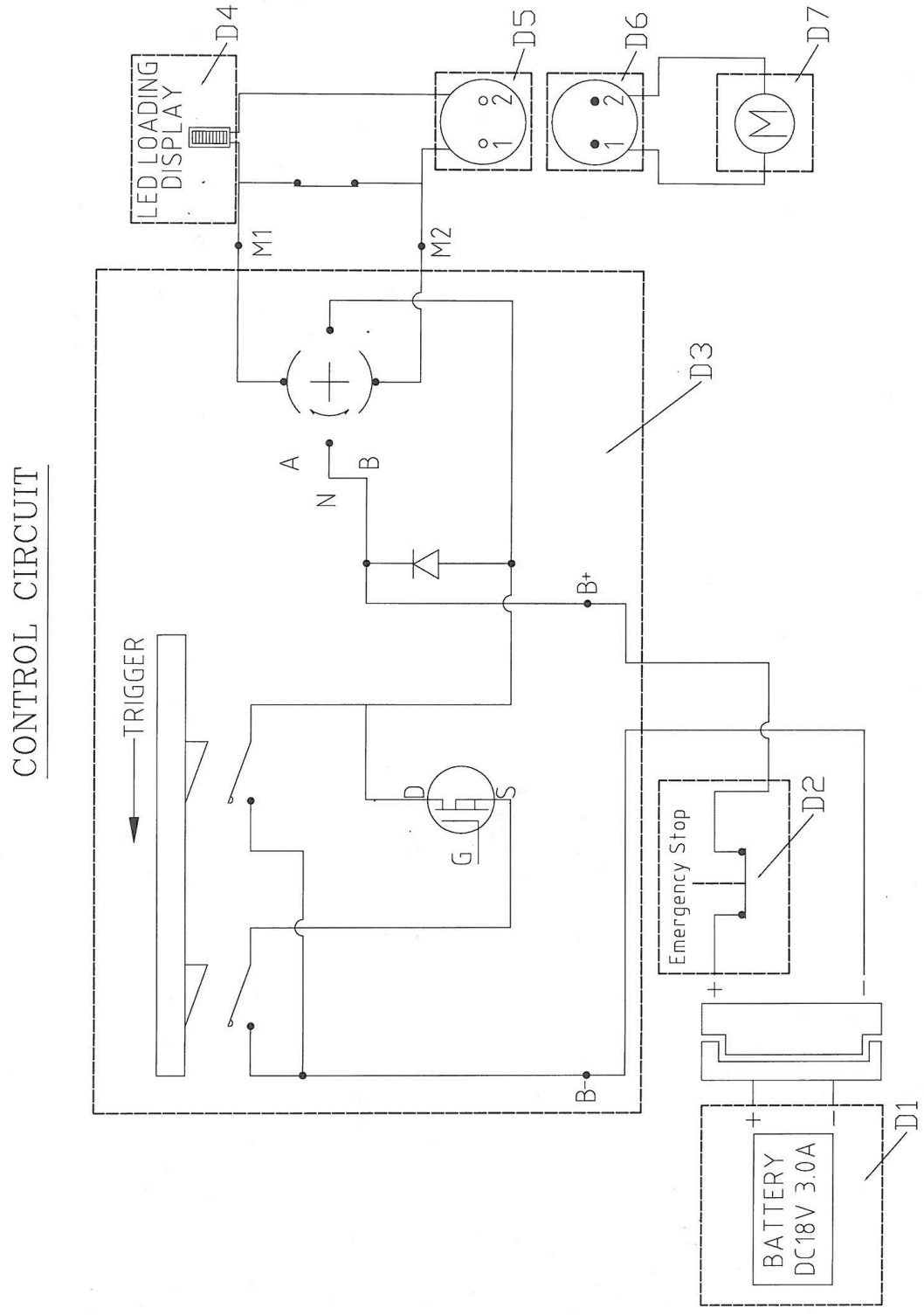
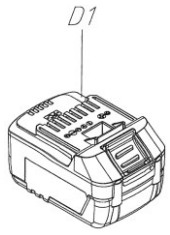
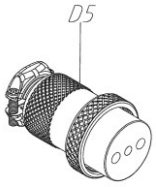
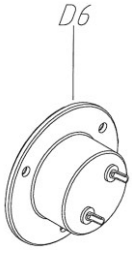
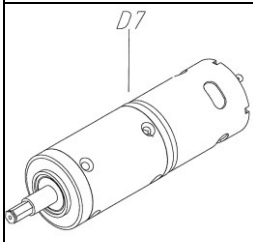
3	QUICK CONNECTOR (MALE)	34	KEY
4	MOTOR	35	GEAR SHAFT
5	FIX SPRING	36	GEAR COVER
6	MOTOR SHAFTGEAR	37	CLICK FIXING SCREWS
6-1	SCREW	38	CLICK
7	BEARING	39	NAMEPLATE
8	NUT	40	CONTAINER FIXER
9	SCREW	41	SCREW
9-1	CHAIN BOLT	42	CHAIN CONATINER
10	MAIN BODY - MOTOR END	43	CHAIN STOPPED BLOCK
11	CHAIN GUIDE	44	CHAIN FIXER
11-1	CHAIN GUIDE BOLSTER	45	LOWER HOOK ASSEMBLY
11-2	SCREW	46	QUICK CONNECTOR (FEMALE)
11-3	NUT	47	3.5MM X 2C CABLE
12	CHAIN	48	TRIGGER SWITCH (LI-ION)
13	SNAP RING	49	CHARGER (LI-ION)
14	CHAIN WHEEL	50	LI-ION BATTERY PACK
15	UPPER HOOK	51	PORTABLE CASE
16	KEY		
17	MAIN BODY - GEAR END		
18	BOLT		
19	SCREW		
20	NUT		
21	BRAKE FIXER		
22	SCREW		
23	GEAR BRAKE ASSEMBLY		
24	BEARING		
25	SCREW		
26	MOTOR SHAFT ARBOR		
27	CLICK FIXING SCREWS		
28	PAWL		
29	SPRING		
26	MOTOR SHAFT ARBOR		
30	NUT		
31	BEARING		

22. Electrical system drawings electrical and part list

MODEL: DCH-250/500 - Electrical system drawings



MODEL:DCH-250/500 – Electrical Part list

Item	Description	Specification
	LI-ION BATTERY PACK	DC 18V 3A
	EMERGENCY STOP	
	TRIGGER SWITCH	
	LED LOADING DISPLAY	
	CONNECTORS 2-PM	
	CONNECTORS 2-PM	
	MOTOR	