



Gzunda GZ10SL Bed Mover

Operating Manual

Gzunda GZ10SL Operating Manual—OM0011E/9

This manual contains important safety, installation and operating instructions for this unit. Read this manual thoroughly and completely, and retain for future reference. This unit can cause serious injury to personnel or damage to property if used incorrectly, therefore do not use this machine for any other purpose apart from its intended use. Using this unit incorrectly may void warranty.

Any damage audible or visible to this unit should be addressed at the time of discovery. Electrodrive Pty Ltd can provide parts and service support on request through its service partner company:

Serviced Equipment Pty Ltd

p: 1300 934 471

e: service@fallshaw.com.au

Made in Australia by:

Electrodrive Pty Ltd

2A Ayton Street, Sunshine North VIC Australia 3020

p: 1800 333 002 (within Australia)

p: +61 (03) 9300 8521 (International)

e: sales@electrodrive.com.au

w: www.electrodrive.com.au

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Introduction

The GZ10SL is a battery powered mobile towing unit to assist in the movement of heavy beds and trolleys, eliminating back or shoulder strain. It is designed to save operator effort when pushing or pulling beds and trolleys.

The GZ10SL includes the latest developments in DC motors with automatic electromagnetic park braking, as well as a high capacity programmable controller.

Features include quiet operation, ease of handling, high manoeuvrability, low maintenance, and the ability to handle heavy loads. The GZ10SL slows and parks automatically when the twist grip is released.

Under typical operation, the GZ10SL battery capacity should be adequate for a day's operation. Overnight charging is recommended, and in high-use situations additional "top-up" charging is advised. It is recommended to use the charger supplied with the GZ10SL when charging the sealed maintenance-free batteries. This charger is especially designed to set the charge rate, prevent gassing, and automatically cut switch to "trickle charge" when charging is complete.

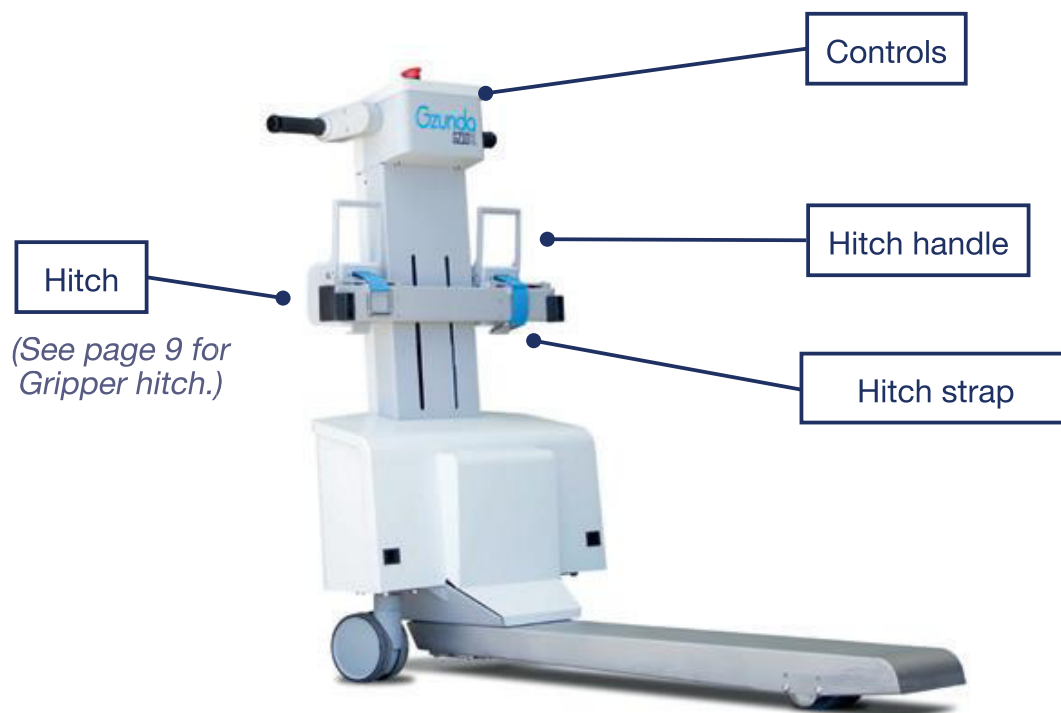
All bearings are pre-lubricated and sealed and should not require attention in normal use. Regular maintenance requirements on the vehicle are therefore minimal and are covered in this manual.

As with any machinery, safety considerations demand that the GZ10SL be handled with caution, and only operated by trained and authorised personnel. In addition, all loads must be placed securely on the bed or trolley, and the bed or trolley securely locked to the GZ10SL.

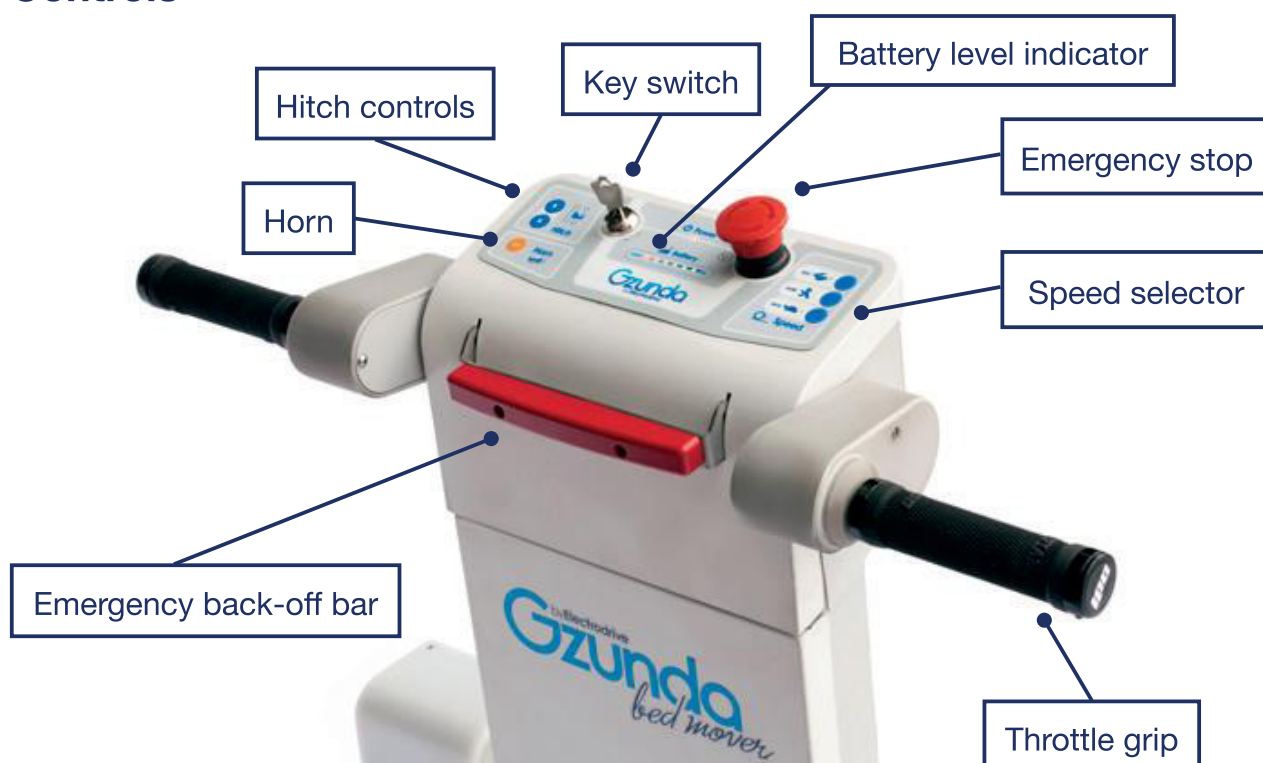


The GZ10SL must only be operated by trained and authorised personnel.

Operating instructions



Controls



Controls

Key switch

The key switch must be turned clockwise to switch the GZ10SL on. When on, the LED status indicator will be illuminated. If a fault occurs with the electronics, this LED light will flash an error code (refer to Appendix 2). It is important to note that the unit should be switched off and the key removed, whenever it is not in use. This eliminates the risk of unauthorised movement and also prevents an unnecessary use of battery power.

Emergency back-off bar

When the Emergency back-off bar is activated (depressed) while in motion, the GZ10SL will behave in one of two ways.

1. In reverse (towards the operator), the GZ10SL will stop and then move away from the operator for a short distance.
2. In the forward direction, the GZ10SL will reduce to a slow speed.



Any accessories installed that prevent the safe operation of the emergency back-off bar may create a crush hazard for the user.

Throttle grip

The throttle grip provides variable speed control. Releasing the grip stops the unit.

An automatic park brake is applied after a short delay after the grip has returned to its neutral position. Under no load, the park brake will maintain the GZ10SL in a stationary position. Under load, the brake may not be capable of holding the system stationary, particularly on a sloping surface.

Speed selector

The speed selector will always start in the slow position. Select a speed that you are comfortable using. The speed can be changed whilst driving. It is advisable that the operator select a slow speed when approaching a bed or trolley to hitch; entering a confined area; on a slippery or slightly sloped floor surface; turning, or reversing.

Battery level indicator

The battery level indicator indicates the amount of charge left in the batteries. When it appears to be running low, return the GZ10SL to the closest charging station to charge the batteries. Being aware of the level of charge of the batteries will eliminate the possibility of running low on power whilst away from the charging station. Red light only indicates no usable battery power remaining.

Horn

Push to sound the horn, release to turn off.

Brakes

Two braking systems operate in the GZ10SL. Firstly, when the throttle grip is released the GZ10SL is slowed electronically with dynamic braking until the GZ10SL and the accompanying load stops. In addition, after a short delay an automatic mechanical brake is activated to park the GZ10SL.

Park brakes release (optional)

In the case where the unit cannot be turned on due to a flat battery, use the park brake release switch located underneath the front cover beside the controller. Use this key switch to override the motor park brake, the machine can now be manually pushed to a different location. Remove the key from the park brake release and immediately place the machine on charge when unit is at the charging station. Confirm the charger has begun to charge the batteries, leave on charge for a minimum of eight hours. If the machine is still not working call an Electrodrive service agent.

Using the GZ10SL

Safety check

Before using the GZ10SL, the operator should complete the following safety check.

1. The charger is disconnected from the GZ10SL.
2. The emergency back-off bar works
3. The battery condition indicator shows adequate charge.
4. The braking system is in operation, so that when stopped, the unit cannot be manually moved, and that the unit slowly moves when the throttle is applied.
5. The GZ10SL hitch is not damaged and securely latches onto the bed frame.

Safe operation

1. The unit, when attached with a hospital bed, may present a hazard to other staff and moving hospital equipment during an emergency. Setting the proper speed and using the horn to attract attention is advised in such cases.
2. Even though the electromagnetic or other interference of the GZ10SL is not significant, it may still have an impact on some high accuracy hospital equipment. It is advised that you do not park or keep the GZ10SL too close to this kind of equipment when they are in use.
3. Always begin driving the GZ10SL on SLOW speed to ensure you maintain control. The GZ10SL has an intuitive control system, so it becomes easier to use the more you use it. Select a speed that is suited to the competency of the operator. If unsure, start with SLOW speed then adjust up accordingly.

Hitching and unhitching to a bed

The GZ10SL has two hitch options for hitching to hospitals beds and equipment, the Flexi-straps (anti-microbial) and the Gripper hitch.

Flexi-straps (anti-microbial)

The Flexi-straps (anti-microbial) suits various bed types. Adaptable to suit frames with bulky foot and head boards where the bed frame isn't fully exposed. The flex hitch is controlled from the control panel using the up/down buttons and by hand.

Hitching to a bed using Flexi-straps:

1. Adjust the height of the hitch so that it is aligned vertically with the bed frame using the up/down buttons on the control panel.
2. Release the locks on the hitch strap (handles in the raised position). Pull the straps out from the hitch box, and strap around the bed frame. Pulling the bed gently against the GZ10SL at this stage will improve the hitching. Lock the handles by moving them to the lower position. You will feel the resistance in the handle, indicating a firm grip of the bed.
3. Ensure to do this on both sides.
4. Ensure that the castors on the bed are in the neutral position and that the bed is not plugged into the wall or connected to external equipment. The bed is ready to be moved.

Unhitching from a bed:

1. Confirm the GZ10SL and bed are stationary, and on level ground.
2. Apply bed brakes.
3. Release the hitch straps and unhook from the bed. The GZ10SL can now be taken to the charging station, or to the next bed.

Gripper hitch

The standard Gripper hitch suits bed frames between 35-55mm thickness.

Hitching to a bed using Gripper hitches:

1. Ensure bed is on a flat surface and the castor brakes are locked so the bed cannot move.
2. Using the up/down buttons on the control panel, press the 'down' button until the Gripper bar is in its lowest position.
3. Drive the Gzunda up to the bed frame so that the Gripper hitch is directly under the bed frame.



-
4. Using the up/down buttons on the control panel, press the 'up' button until the grippers are completely closed over the bed frame and cannot move up any further.
 5. Ensure that the castors on the bed are in the neutral position and that the bed is not plugged into the wall or connected to external equipment. The bed is now ready to be moved.

Unhitching from a bed:

1. Confirm the GZ10SL and bed are stationary, and on level ground.
2. Apply brakes to lock the bed in position
3. Press the down button until both grippers are totally free from the bed frame. The GZ10SL can now be taken to the charging station, or to the next bed.



Always park the GZ10SL in a safe place.

Sleep mode

After a period of 30 minutes of inactivity, the GZ10SL will switch into a sleep mode to extend battery life. To resume operation, simply reset by turning key OFF then ON.

Charging

1. Use only the supplied battery charger to charge the unit.
2. Always position the unit to allow enough space to connect or disconnect the charger socket from the unit.

For detailed charging procedures refer to Appendix 6.

Maintenance

Batteries

If the GZ10SL is not being used for an extended period of time, it should be connected to the battery charger to check the battery level on a regular basis, and placed on charge overnight if required. This will ensure the batteries are kept in good condition.

The batteries are sealed and maintenance free. DO NOT attempt to open these batteries. If the GZ10SL is not charged as above, the batteries may be exhausted and have dropped below the charging threshold of the battery charger. The supplied charger cannot begin to charge the batteries unless they have a small amount of charge. If this occurs, contact Electrodrive or your local service agent.

A sign that the batteries need replacing is when they no longer hold charge.



Irregular charging may cause premature battery failure. The battery can only be replaced by a qualified technician.

Drive wheel

To replace the drive wheel:

1. Turn off the machine and remove the key.
2. Loosen the chain by releasing the fasteners holding the gearbox in place.
3. Release the pressure from the jacking screw.
4. Remove the four fasteners from the bearings adjacent to the drive wheel.
5. Lower the drive wheel assembly out from the tyne including shaft, sprocket and bearings.
6. Remove bearings from shaft and transfer to new drive wheel assembly.
7. Follow above instructions in reverse order to fit new drive wheel assembly.

Brakes

The park brake does not require regular maintenance. If the GZ10SL is not remaining stationary when in the OFF position, contact Electrodrive or your local service agent.

Motor

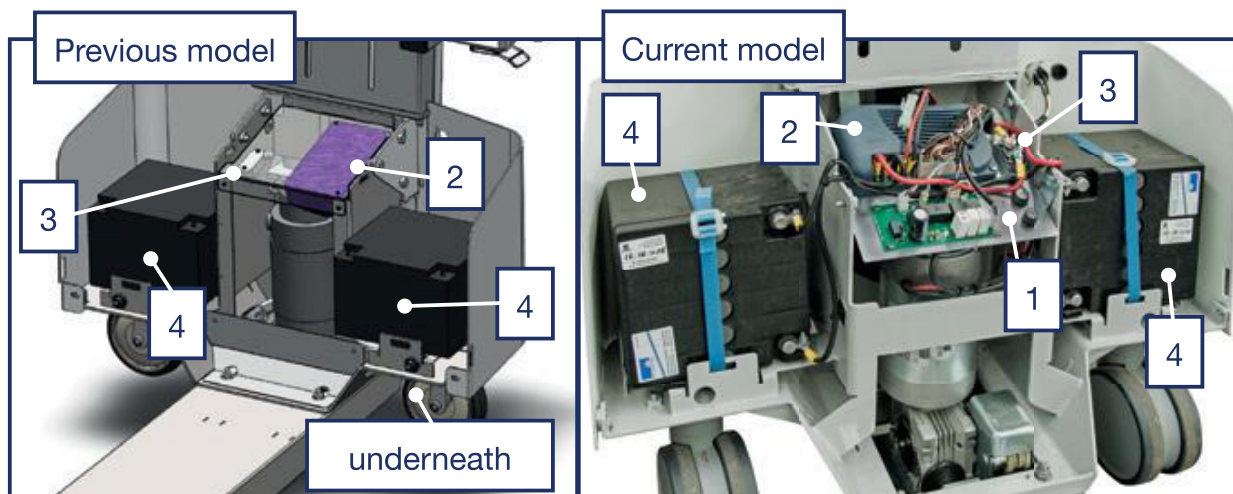
Motor brushes should be inspected every six months and replaced as required (see Appendix 3 for instructions).

Electronic speed control

This unit is factory programmed, and is not serviceable by the customer. The LED status indicator on the membrane console flashes to indicate a fault with the controller. The number of flashes will refer to a particular fault (see Appendix 2). Contact Electrodrive or your local service agent for diagnosis and advice.

Fuses

The control circuit is protected against inadvertent current overloads with a 1 Amp fuse. The charger circuit is protected by a 10 Amp fuse. These fuses are located next to the electronic controller on the electrical panel.



1. Fuses
2. Controller
3. Circuit breaker
4. Batteries

Circuit breaker

The GZ10SL is fitted with a self-resetting circuit breaker in case of momentary overload. This switch can be found next to the fuses as shown.

If the circuit breaker continues to trip multiple times in succession, test the machine, as the motor may be damaged. Continued use could damage the unit further.

The controller is also equipped with safety shut down capabilities and will limit the battery current as well as detect low battery voltage.

Cleaning

To clean exterior of machine wipe surfaces down with a warm damp cloth. A mild detergent may be used for harder-to-remove grime.



Do NOT use chemical solvents, highly concentrated caustic soda or abrasive cleaning agents. These may damage the surface quality and may affect the integrity of polyurethane and machine lubricant properties.

General

Any damage audible or visible to the GZ10SL should be addressed at the time of discovery.

When not in use the unit should be stored in a cool dry place. Please ensure it is not parked in a manner that obstructs access, causes a tripping hazard, or any other safety related issue.

Disposal of components or material

All replaced or damaged components should be disposed or recycled properly based on its category.

Warranty

Electrodrive Pty Ltd warrants that this product is free from defects in materials and workmanship for a period of twelve months from the date of dispatch from the Electrodrive plant.

If a defect is reported, Electrodrive will repair or replace the defective part, at its own discretion. This warranty does not apply if the GZ10SL has been misused, damaged, or modified in any way.

Modifications and misuse will void your warranty

The following activities (including, but not limited to) are examples:

Modifications

- The machine is re-wired by an unauthorized service agent
- The motor controller is re-programmed by an unauthorized service agent
- There are modifications to the body or frame of the machine
- Use of non-specified parts
- The machine is serviced by an unauthorized service agent

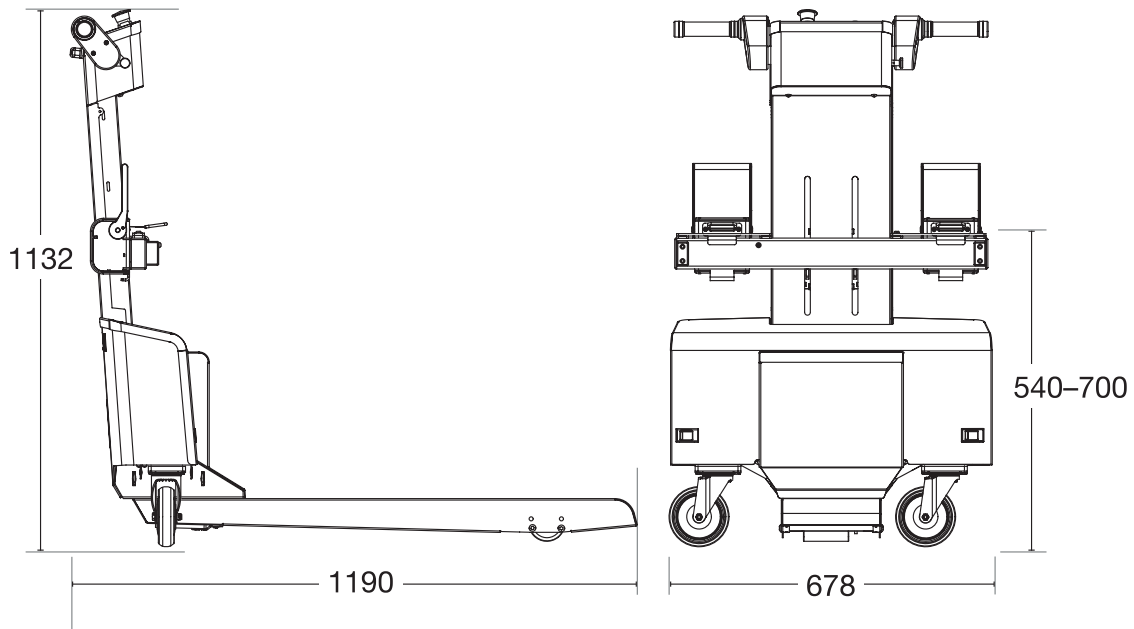
Misuse

- Shunting loads at speeds in excess of 2 km/h
- Overloading the unit either during towing or lifting
- Carrying people or other foreign objects
- Exposed to rain or other precipitation
- Using the emergency back-off system to change direction regularly
- Exposed to a corrosive environment
- Driven off road—potholes, gravel, etc.
- Driven on slopes with a steeper gradient than 1:12
- Not being charged adequately
- Using the emergency stop button as an ON/OFF button

General wear items not covered under warranty

- Tyres, tubes and castors
- Drive wheels, motors and motor brushes
- Hand grips

Appendix 1: Machine rating conditions



Model	Safe Working Load	Max Load
GZ10SL	500 kg	500 kg

The GZ10SL has been designed to move the rated weight capacity on a level firm surface. Variations in the working environment may impede the performance of the GZ10SL. Such parameters include (but are not limited to) the following:

- Ramps and sloped surfaces
- Soft surfaces (for example carpet)
- Slippery surfaces (gravel, water, oil on the ground, etc)



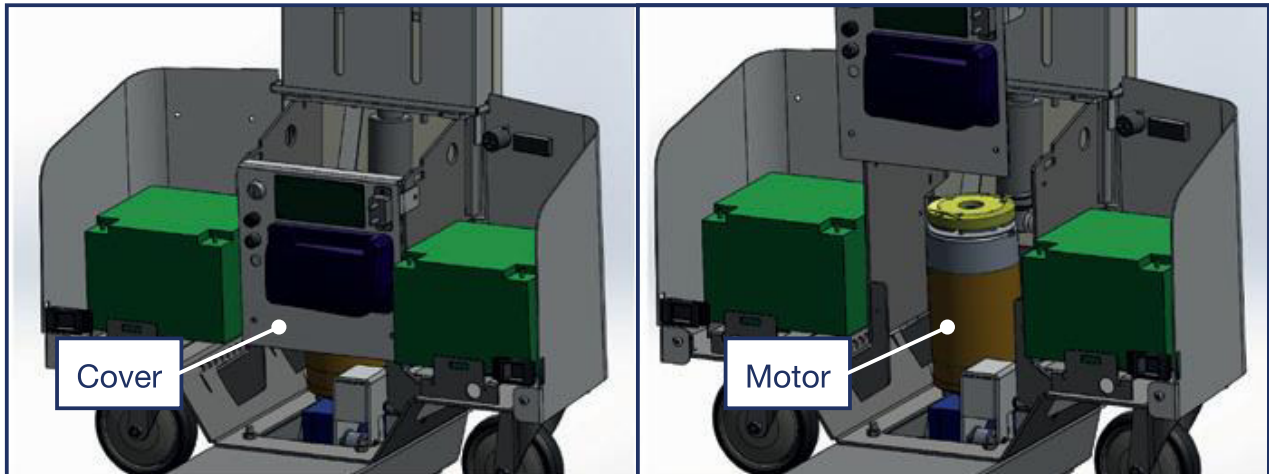
It is important that the GZ10SL NOT to be operated outside of the recommended conditions.

Appendix 2: Fault codes

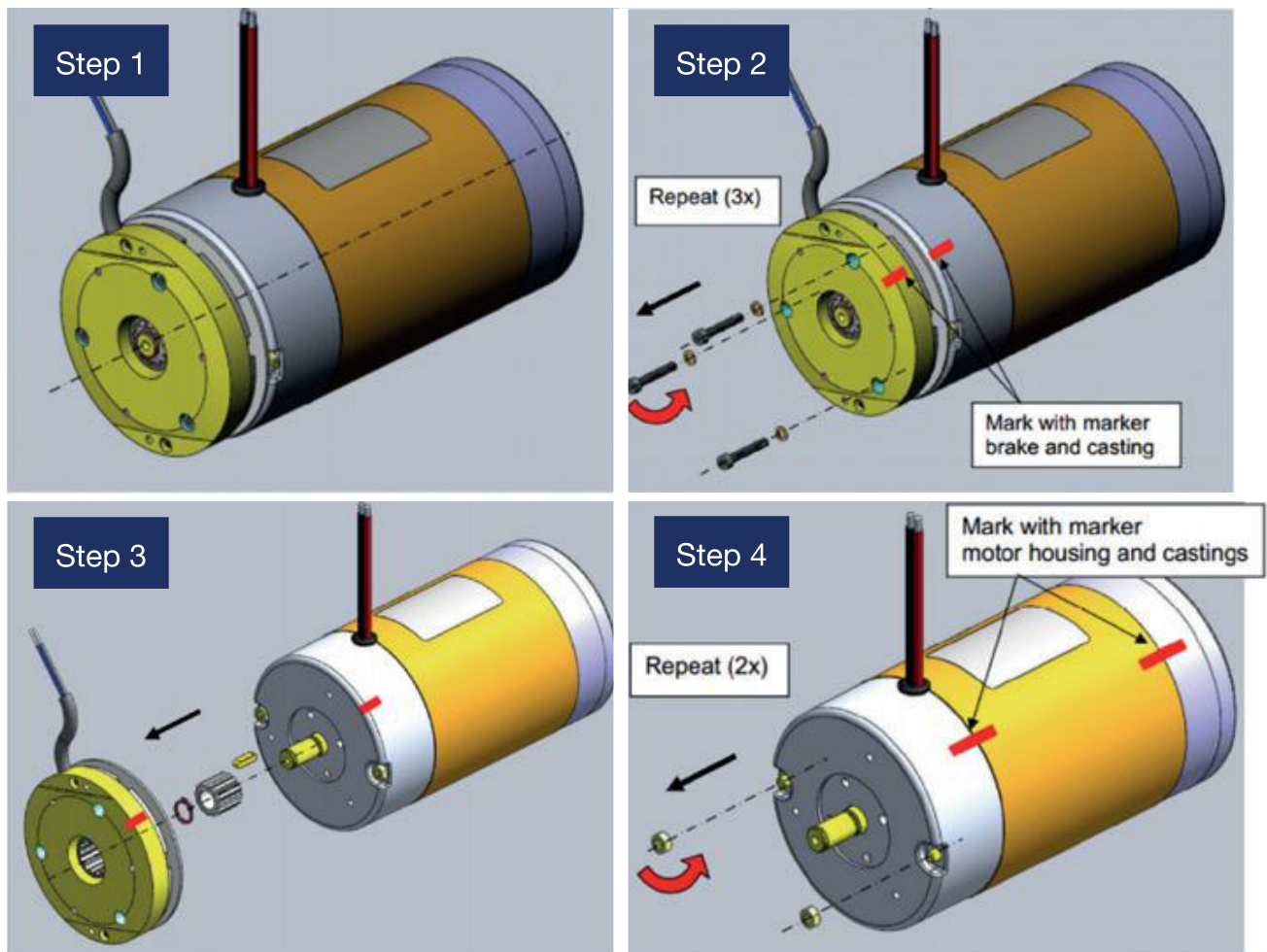
Fault Code	Explanation	Causes
☼ ☼	Over-temperature cutback	Machine overloaded Park brake not releasing properly Short in motor or wiring High ambient temperature
☼ ☼☼	Throttle pot fault	Throttle pot wires open or shorted Faulty throttle pot
☼ ☼☼☼	Speed governor fault	Speed governor wires open or shorted Faulty speed governor pot
☼ ☼☼☼☼	Battery voltage too low	Battery voltage < 17V
☼ ☼☼☼☼☼	Battery voltage too high	Battery voltage > 36V
☼☼ ☼	Main contactor controller failure	
☼☼ ☼☼	Contactor driver fault	
☼☼☼ ☼	HPD present > 10 seconds	Throttle out of adjustment
☼☼☼ ☼☼	Park brake fault	Park brake coil open circuited Controller failure
☼☼☼ ☼☼☼	Pre-charge fault	Low battery voltage Controller failure
☼☼☼ ☼☼☼☼	Park brake fault	Park brake coil shorted Controller failure
☼☼☼ ☼☼☼☼☼	High pedal disable (HPD)	Throttle not in neutral when key switch turned on
☼☼☼☼ ☼	Current sense fault	Short in motor or wiring Controller failure
☼☼☼☼ ☼☼	Motor voltage fault	Short in motor or wiring Controller failure
☼☼☼☼ ☼☼☼	EEPROM fault	Controller failure
☼☼☼☼ ☼☼☼☼	Output section fault	Short in motor or wiring Controller failure

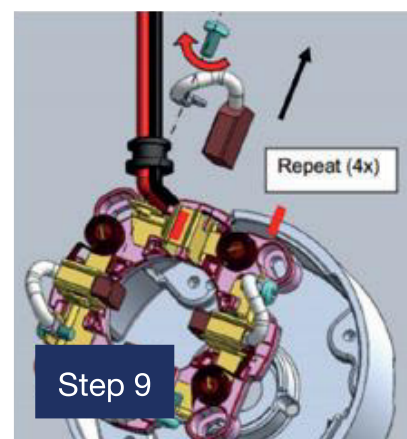
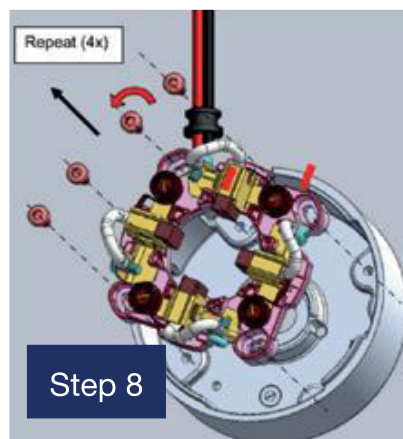
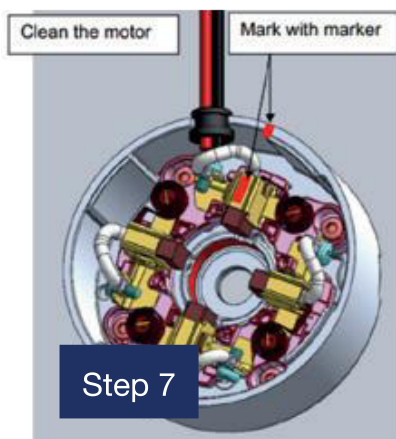
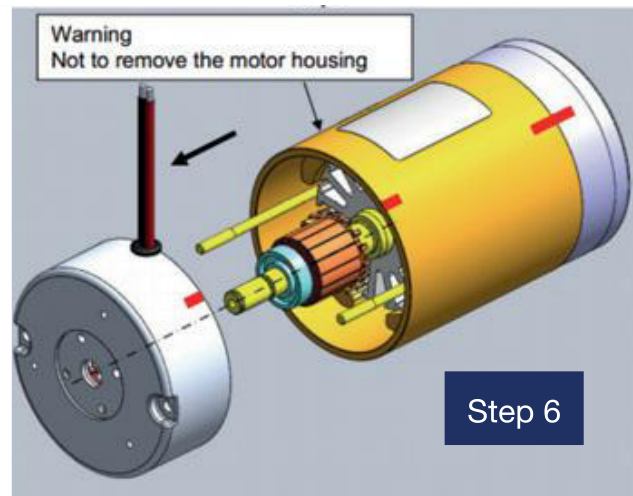
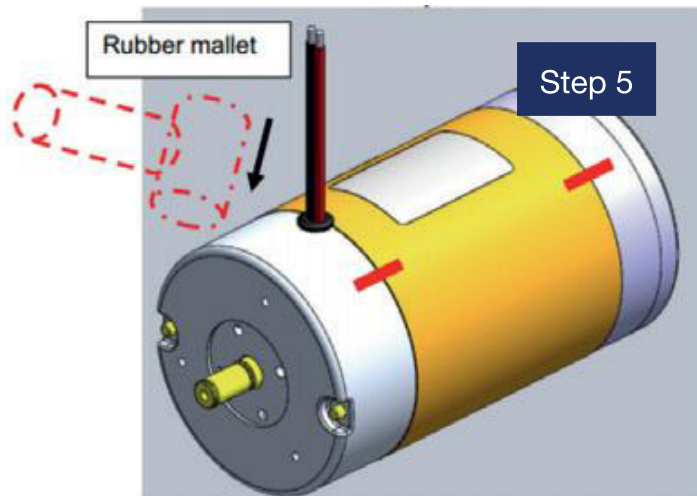
Appendix 3: Motor brush replacement

Remove the front cover of the GZ10SL.

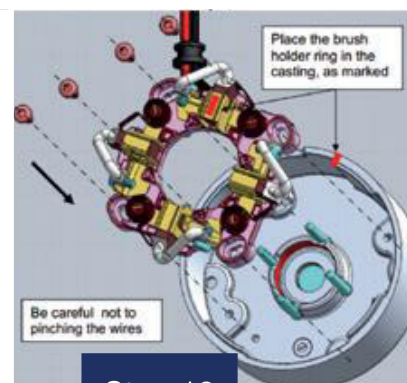
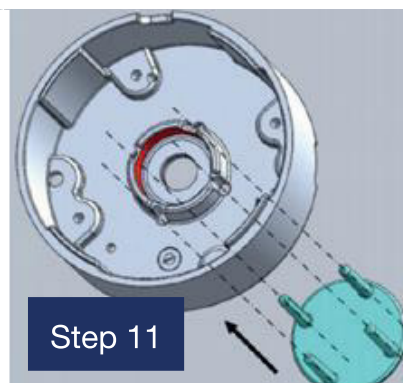
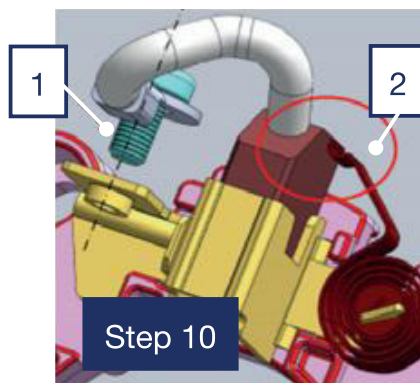


Remove the motor.



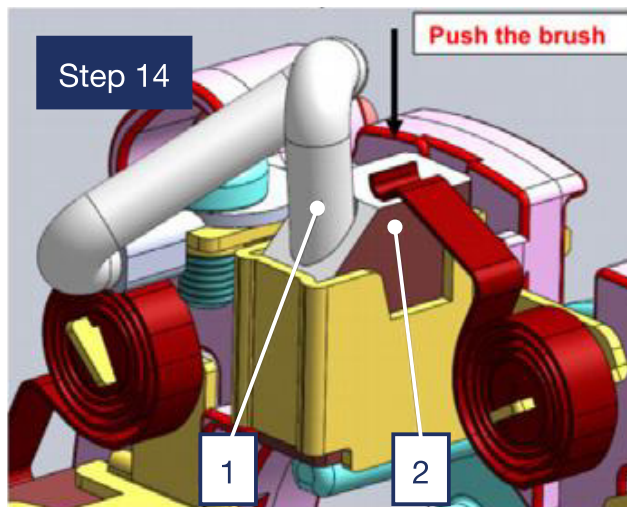
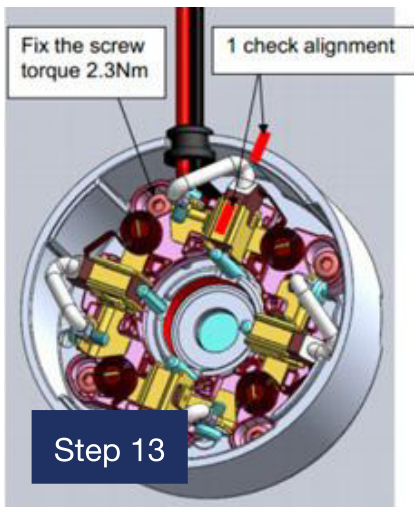


Reassemble the new brushes (4x)



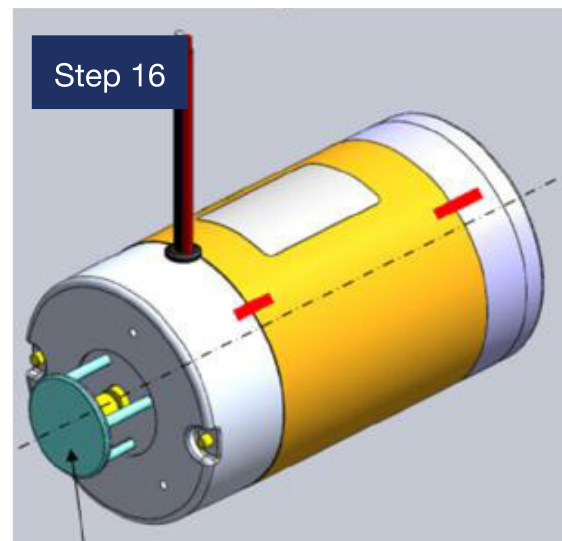
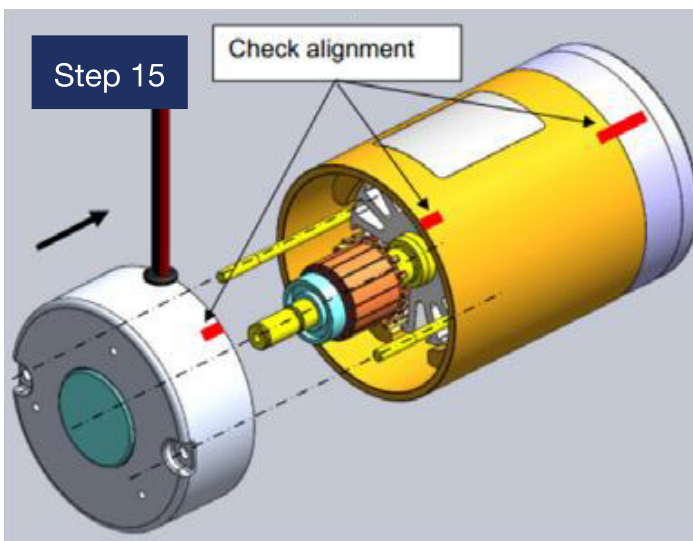
Step 10

1. Fix the screw torque 1.4 Nm
2. Place the brushes as pictured. Brushes locked.

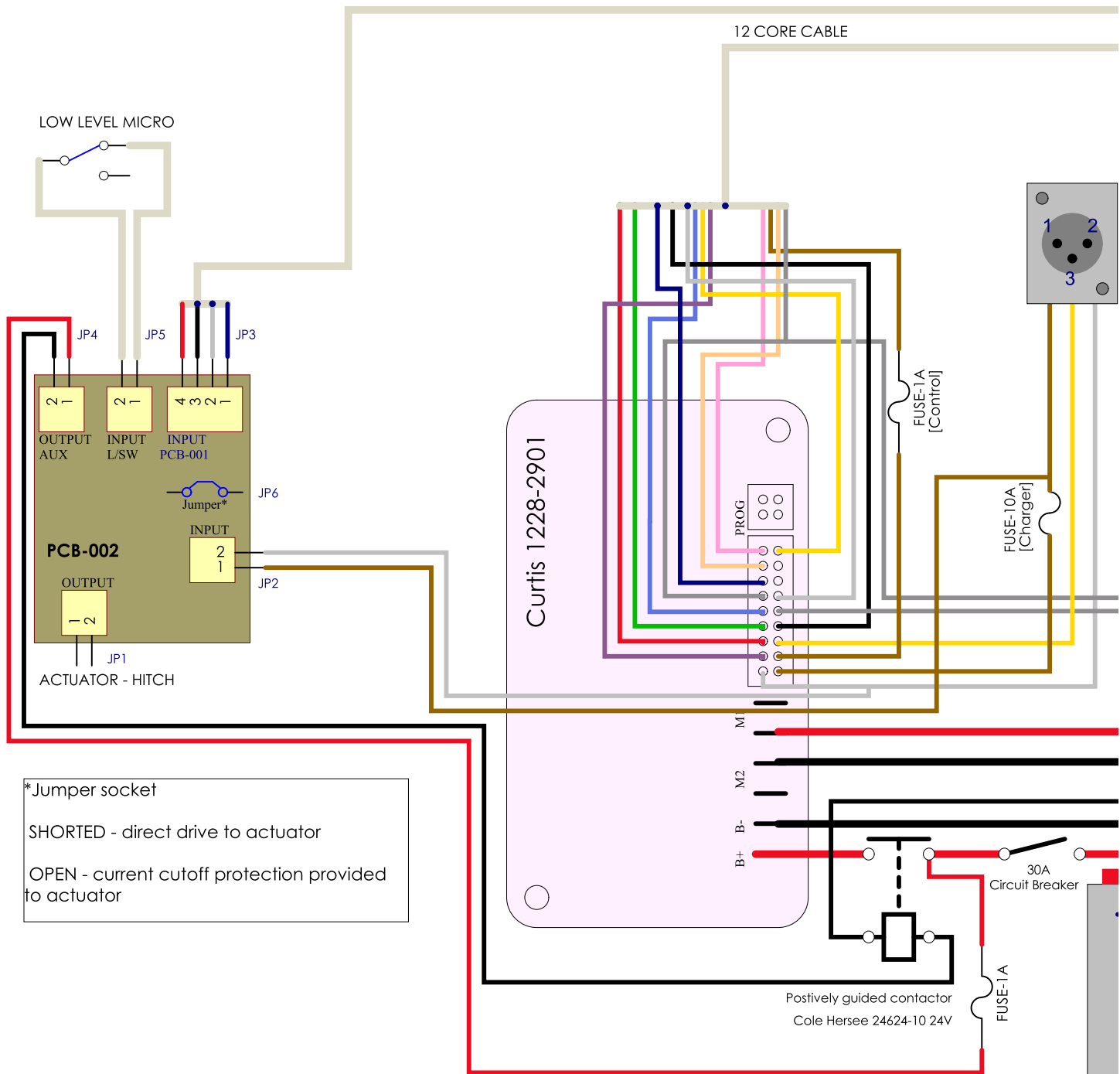


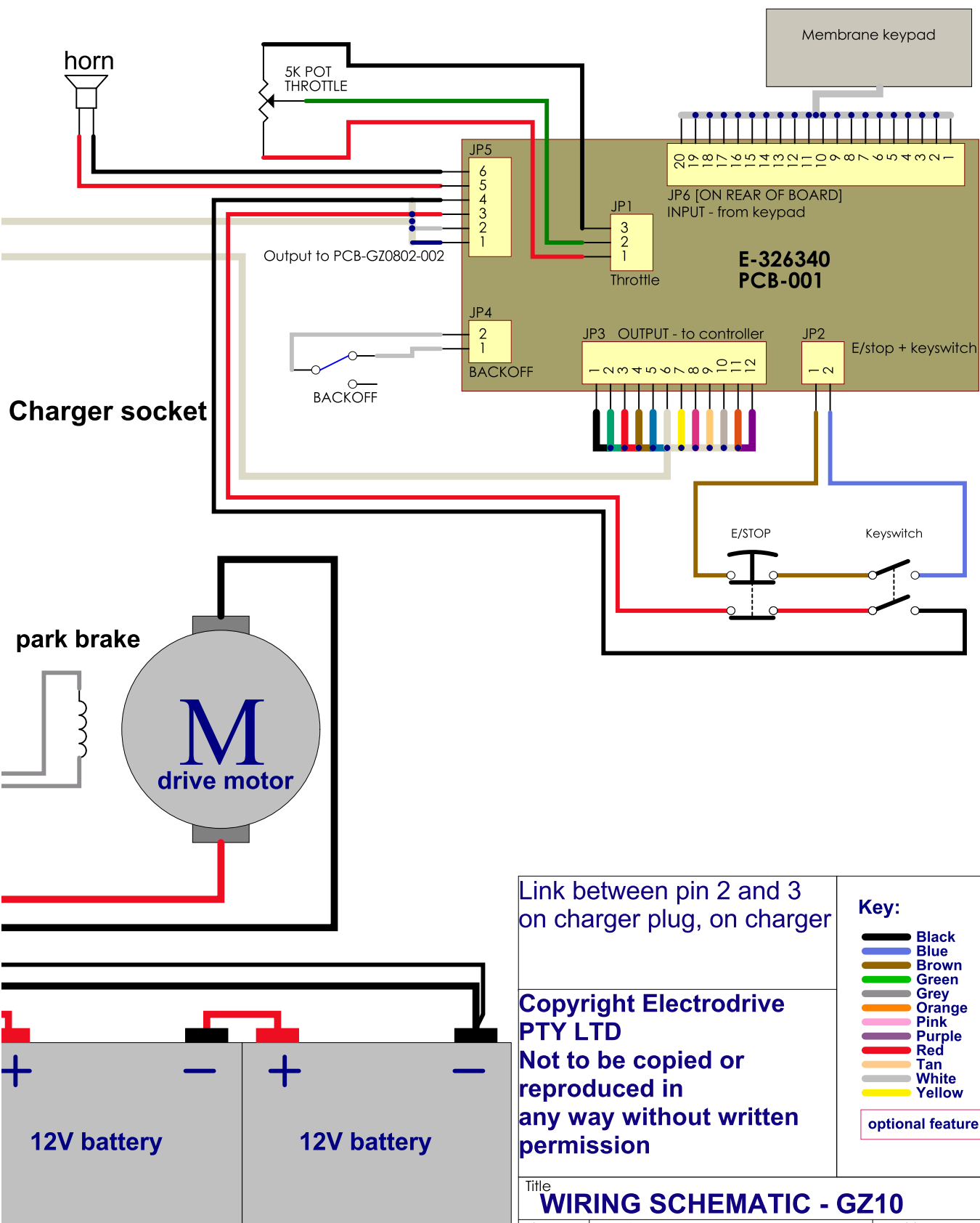
Step 14

1. Put the braid as shown in the picture.
2. Check that the spring push is on top of the brush.
3. Repeat for all brushes.



Appendix 4: Wiring diagram





Title WIRING SCHEMATIC - GZ10		
Size B	Number M050	Revision C
Date: 26/04/2012		Sheet of

Appendix 5: Hitch release instructions

The powered hitch function of the GZ10SL has built in safety controls to limit the output force of the hitch. When this force is exceeded, the hitch will stop.

1. In the event of the hitch stopping unexpectedly, press the “Lower” button on the hitch controls. This resets the safety circuit, and allows the hitch to function normally.
2. If, for some reason, the hitch is overloaded in its extreme low position, there is an alternative method of “driving” the hitch out of a bind. This will only work if the hitch is in its lowest position. Whilst holding the hitch “Lower” button on the controls, press the “Raise” button simultaneously. This will momentarily override the safety circuit to get the hitch working in its normal range.



Please note: These instructions should only be carried out by a qualified maintenance technician. If there is any uncertainty, please contact your local Electrodrive Authorised Service Agent for further advice. To avoid the hitch being unnecessarily overloaded, please avoid lowering the bed into the hitch.

Appendix 6: Charging procedures for SLA batteries

- Always charge batteries when work is complete and the equipment is not required for use.
- Opportunity charging is NOT recommended. This can also shorten battery life.
- Never leave batteries in a discharged state as this will shorten the batteries life.
- For maximum battery life, a battery must be recharged to 100% capacity. Recharging less than 100% may result in premature battery failure. Batteries are not covered under warranty if they are not recharged properly.
- If batteries are disconnected from the machine and not used for lengthy periods of time, it is recommended to give them a maintenance charge once every two months.

Charging setup

- Ensure you have the correct charger for the batteries. The correct voltage and current is important to ensure the full life of the batteries.
- Check all connections are tight and in good condition.
- The green charger LED will illuminate to confirm charging is in progress.
- If charger lights do not come on, call your service technician.
- When charger is plugged in, drive function of machine is automatically inhibited.

During charging

- Ensure there is enough airflow to help keep the batteries as cool as possible.
- If the batteries are swollen turn off immediately and call your service technician.
- Always leave batteries on charge until the charge is COMPLETE. This is indicated when charger LED turns off.

Charger manual

Please read BA1105—Battery Charger Operating Manual for more information.

Appendix 7: Spare parts list

Part number	Description
EDGM2015	Spacer – Castor spacer to suit the Gzunda
EDWH1131	Drive wheel with shaft and sprocket 075 mm D, 90mm GZ 192 mm shaft
EDGM1635	G/Box NMRV030 D63 B14 i7.5
EDMO1102	Motor Amer 300 watt motor with brake 24V MP75 B14
EDGM1680	G/Box output shaft single end NMRV030
EDSP1060	Sprocket 16T Bossed 06B, 14 mm bore, 5 mm
EDBA1000	Battery 12V 26Ah AGM sealed style
EDGM1380	Chain 06B1 3/8” GZ cut to length”
EDGM1770	GZ 505 chain idler nylon pulley
EDCS1070	Castor 125 mm, grey PU swivel plate mount PC guard std GZ
ED EL2052	Motor controller suit GZ10SL
EDEL2720	Key switch with Key-A126
EDEL2500	Fuse holder panel mount
EDFA1001	Levelling feet M8x60
EDEL1010	Actuator LA22 suit GZ10SL Hitch
EDGM1995	Plunger locking pin WIP-110
EDBA1105	Charger 24V 7 Amp
EDEL2822	Microswitch lever mini GZ10SL
EDEL2770	Membrane key pad to suit Gzunda
EDEL2380	Emergency stop button complete (Large)
EDEL1910	Circuit breaker 40 Amp
EDEL2855	Actuator current cut off PCB
EDGM1975	Locking latch—snap lock panel latches
EDEL3015	Potentiometer—5K self returning wig wag pot
EDGM1085	Bearing 6084LLU
EDGM1086	Circlip D1400-0200APKT
EDGM1160	Bearing set for Gzunda

Part number	Description
EDGM2035	Spring—GZ10SL gripper spring 0.8mm
EDGM2103	Spring—GZ10SL backoff tension spring #1
EDEL2810	Microswitch hitch slider lower limit
EDHT1701	GZ10 Universal Gripper — self adjusting 15-35 mm
EDHT1702	GZ10 Universal Gripper — self adjusting 35-55 mm
EDHT1700	GZ10 Universal Gripper — self adjusting 20-40 mm
EDCL1150	Cable loom controller GZ10SL
EDCL1151	Loom GZ10SL programmer lead
EDCL1152	Loom GZ10SL actuator loom
EDCL1153	Loom GZ10SL charger loom
EDCL1154	Loom GZ10SL throttle pot lead
EDGM1801	Handgrips—to suit GZ10SL (lock on style)

Service log

Service recommendations

To ensure this equipment is kept in a safe and reliable condition, it is important to follow a preventative maintenance program. Maintain a log of the service work on the cards below, and always use an approved Electrodrive service agent to conduct the works. Approved service personnel will be provided with all necessary documents and components in service repair, including but not limited to, circuit diagrams, component part lists, descriptions, service checklists and spare parts.

6 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

12 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

18 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

24 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

30 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

36 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

42 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

48 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

54 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

60 month service

Date of service		Service agent	
Machine serial number			
Summary of works			
Next service due			

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