



# Gzunda GZS Bed Mover

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## Operating Manual

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## Gzunda GZS Operating Manual—OM0003E/5

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:

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## Introduction

**The GZS 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 GZS 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 GZS slows and parks automatically when the twist grip is released.

Under typical operation, the GZS 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 GZS 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 GZS 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 GZS.



**The GZS must only be operated by trained and authorised personnel.**

# Operating instructions



## Controls



## Control panel



## Key switch

The key switch must be turned clockwise to switch the GZS 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.

## Safety brake (emergency back-off bar)

When the safety brake is activated (depressed) while in motion, the GZS will behave in one of two ways.

1. In reverse (towards the operator), the GZS will stop and then move away from the operator for a short distance.
2. In the forward direction, the GZS will come to a smooth stop.



**Any accessories installed that prevent the safe operation of the safety brake may create a crush hazard for the user.**

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## 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 GZS in a stationary position. Under load, the brake may not be capable of holding the system stationary, particularly on a sloping surface.

## Speed selection

The speed selection 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 you use a slow speed setting when approaching a bed or trolley to hitch, entering a confined area, a place with slippery or slightly sloped floor surfaces, 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 GZS 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 GZS. Firstly, when the throttle grip is released the GZS is slowed electronically with dynamic braking until the GZS and the accompanying load stops. In addition, after a short delay an automatic mechanical brake is activated to park the GZS.

## Brake release

In the case where the unit cannot be turned on due to a flat battery, use the brake release located at the back of the machine, next to the charging socket. 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 and leave on charge for a minimum of 8 hours. If the machine is still not working call an Electrodrive service agent.

## Using the GZS

### Safety check

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

1. The charger is disconnected from the GZS.

2. The safety brake 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 grip is gently rotated.
5. The GZS hitch is not damaged and securely latches onto the bed frame.

### Safe operation

1. The unit, when attached with a hospitable bed, may present a hazard to other staff and moving hospital equipment during an emergency. Setting the proper speed and use of the horn to attract attention is advised in such cases.
2. Even though the electromagnetic or other interference of the GZS 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 GZS too close to this kind of equipment when they are in use.
3. Always begin driving the GZS in SLOW speed to ensure you maintain control. The GZS 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

### Hitching to a bed

The GZS is fitted with an actuator-controlled hitch. The hitch is controlled from the control panel.

1. Adjust the height of the hitch so that it is aligned vertically with the bed frame.
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 GZS at this stage will improve the hitching. Push the handles down to lock the strap. You will feel the resistance on 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 GZS and bed are stationary, and on level ground.
2. Apply bed brakes.
3. Release the hitch straps and unhook from the bed.

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The GZS can now be taken to the charging station, or to the next bed.



**Always park the GZS in a safe place.**

## **Sleep Mode**

After a period of 30 minutes of inactivity, the GZS 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 battery charger from the wall socket.
3. Always position the unit to allow enough space to connect or disconnect the unit from the battery charger.

For detailed charging procedures refer to Appendix 6.

# Maintenance

## Batteries

If the GZS 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 GZS 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.**

## Brakes

The park brake does not require regular maintenance. If the GZS 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 (see below).



The fuses can only be replaced by qualified personnel or technician, refer to below fuse specifications for replacement guide.



**All the fuses can only be replaced with the same model or equivalent.**

Fuse Type	Technical Data	CCN	Conformity Standard (FUS)
10A (charger circuit) Bussmann AGC Series	Rated 10A, 250V, speed—F, breaking capacity—H	JDYX, JDYX2	UL (FUS), TUV, VDE, CSA IEC 60127
3A (Deadman circuit) Bussmann AGC Series	Rated 3A, 250V, speed—T, breaking capacity—H	DYX, JDYX2	UL (FUS) IEC 60127
1A (control circuit) Bussmann AGC Series	Rated 1A, 250V, speed—F, breaking capacity—H	DYX, JDYX2	UL (FUS), TUV, VDE, CSA IEC 60127

### Circuit breaker

The GZS is fitted with a self-resetting circuit breaker in case of momentary overload. This switch can be found next to the brake release.

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 hard 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 GZS 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, cause 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.

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

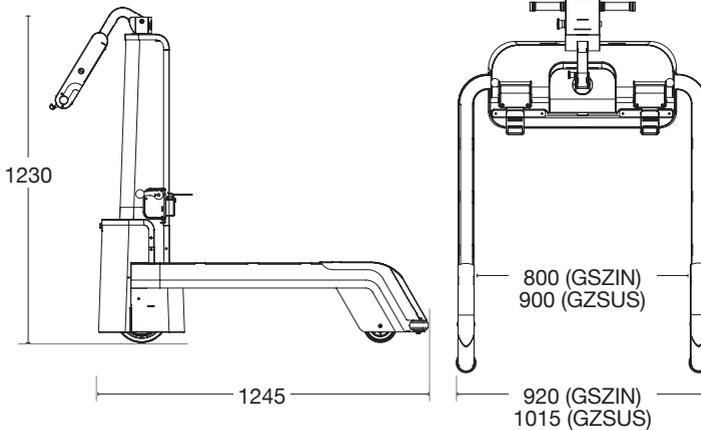
### Misuse

- 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
GZSIN (International)	600 kg	600 kg
GZSUS (US)	600 kg	600 kg

The GZS 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 GZS. Such parameters include (but are not limited to) the following:

Ramps and sloped surfaces

Soft surfaces (for example carpet)

Slippery surfaces (gravel, water, oil, etc on the ground)



**It is important that the GZS 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 < 17 V
☼ ☼☼☼☼☼	Battery voltage too high	Battery voltage > 36 V
☼☼ ☼	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 Keyswitch 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

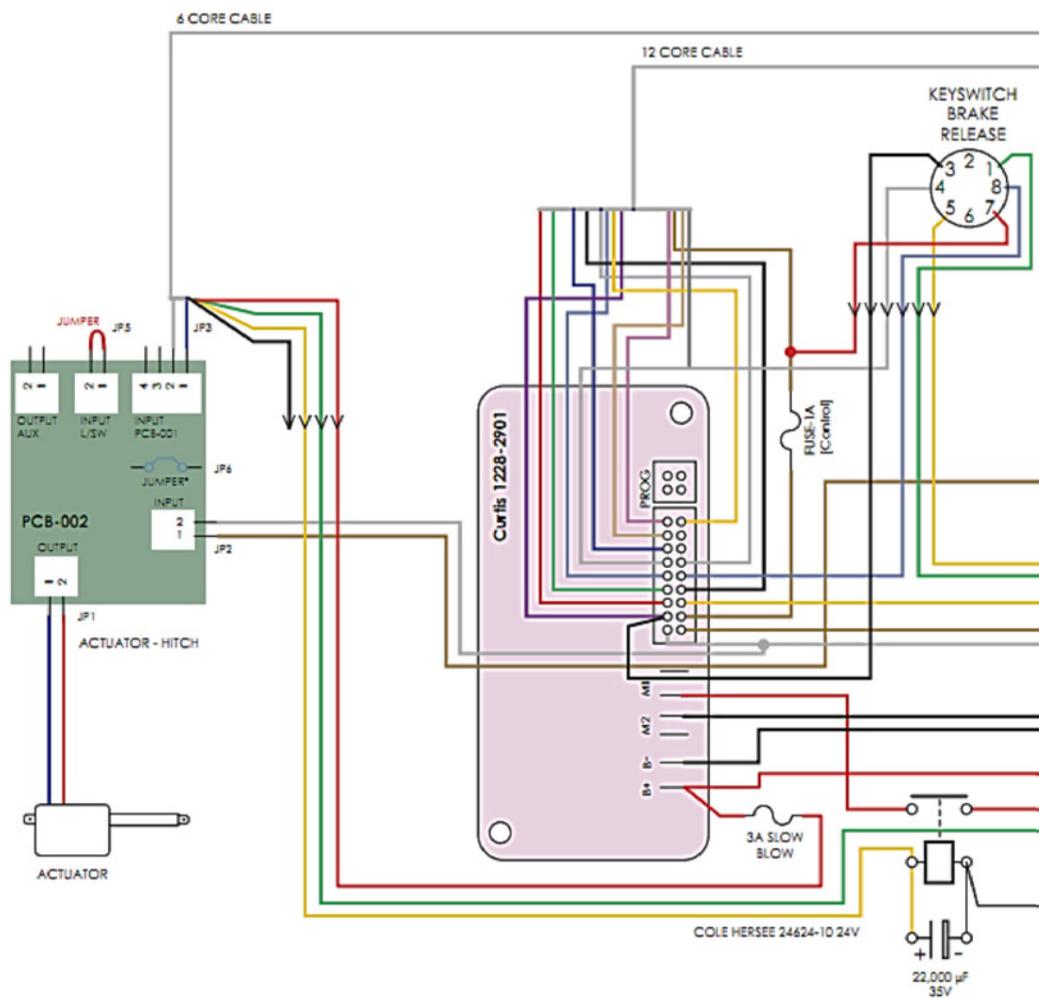
## Appendix 3: Motor brush replacement

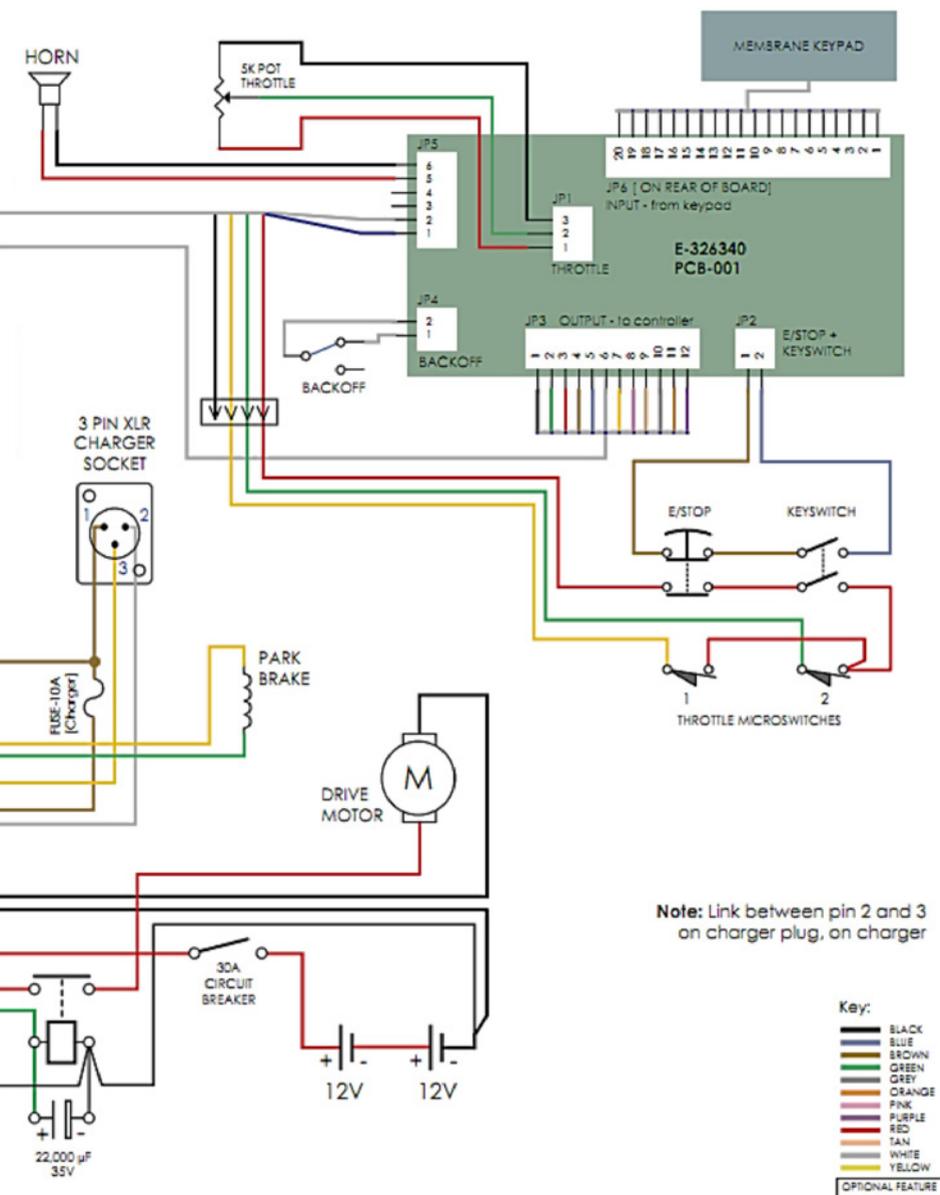
The motor brushes are located under the brush retaining band.



1. Remove the rear cover of the GZS.
2. Remove the brush retaining band from the motor.
3. Take out the old brushes. There are 4 brushes to replace.
4. Insert new brushes and replace brush retaining band.
5. Replace cover.

## Appendix 4: Wiring diagram





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## Appendix 5: 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 2 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 6: Spare Parts List

Part Number	Description
EDACTLA23	Actuator LA23 suit GZS hitch
EDWIRLA23	Actuator cable loom
EDWIRLA23LCK	Actuator cable lock
EDBATGEL33AH	Battery 12V 33Ah suit GZS
EDCIREXT18	Circlip External 18 mm
EDCIREXT12	Circlip External 12 mm
EDBRG206PILHOU	Bearing housing suit GZS steer column
EDBRG20630ID	Bearing suit GZS steer column
EDBRGROLTAP40ID	Bearing GZS Hub motor bearings
EDTDGQ75BSN	Cable control thread guard 30 mm ID
EDSEAGZS	GZS Base bearing seal
EDSTKGZSKIT	GZS decal set
EDMOTHUB300WS2	Hub motor 300W
EDSPRPLG7MM	GZS Handle position locking plunger
EDEL3285	Double Sided Tape
EDWHLJB125	GZS Tyne castor WHLJB125
EDFABGZS00001	GZS front tyne cover
EDAXBGZS	GZS tyne castor bush
EDM6X59XZP	Chicago bolt 59 mm long
EDMJQ75G	GZS tyne buffer castor MJQ75G
EDFABGZS00002	GZS hitch slider
EDFABGZS00003	GZS base top cover
EDFABGZS00004	GZS top back cover
EDFABGZS00005	GZS base front cover
EDFABGZS00006	GZS base back cover
EDFABGZS00007	GZS Top front middle cover
EDPINGZSPIVOT	GZS column pivot pin
EDCONGZSPROG	Controller 1228 programmed to suit GZS
EDEL2855	Actuator current cut off PCB
EDEL2500	Fuse Holder panel mount

<b>Part Number</b>	<b>Description</b>
EDEL2710	Spare Key Electrodrive—Tugs
EDEL1901	30A DC Circuit Breaker
EDEL3190	Socket—3 pin—Chassis mount (Charger)
EDEL3272	Solenoid 24V 65Amp Continuous UL approved
EDCAPULGZS	UL Compliance Capacitor
EDBKTCAPMNTGZS	UL Compliance Capacitor mount
EDSUBGZSHNDASY	GZS tiller head assembly
EDSUBGZSTHRTASY	GZS throttle assembly
EDBRGROL20ID32OD	GZS external throttle bearing 20 mm ID
EDPINGZSTHROT	GZS throttle shaft
EDBRGROL17ID30OD	GZS internal throttle bearing 17 mm ID
EDCIREXT16	Circlip External 16 mm
EDCIRINT32	Circlip internal 32mm
EDEL2822	microswitch-SM-1040
EDEL3015	Potentiometer—5K Self Returning wig wag Pot
EDSWTMCRTHRT	UL deadman throttle microswitch
EDCIREXT20	Circlip External 20 mm
EDSPRGZSBACKOFF	GZS backoff bar tension spring
EDEL2380	Emergency Stop Button Complete (Large)
EDEL2851	PCB Membrane control board
EDGM1801	Handgrips—to suit GZ10 [Lock on style] Handgrips (Silver)
EDEL2835	Nylon Mounting Spacer male/female M3
EDMCHGZSBACKOFF	GZS backoff buffer pad
EDSTKGZSMEM	GZS membrane control panel
EDPINGZSKNL	GZS Knuckle pivot pin
EDFABGZS00008	GZS base wheel cover
EDFABGZS00009	GZS hitch rail
EDPINGZSSLIDEPOST	GZS hitch slider post
EDFABGZS00010	GZS base top front cover
EDWIRGZSKIT	GZS wiring loom kit
EDHT1810-017-D	Flex hitch to suit GZS
EDBA1105	GZS Battery Charger

## EC Declaration of Conformity

Name of Manufacturer:	Fallshaw Holdings Pty Ltd
Address of Manufacturer	10A Burwood Ave, North Sunshine,
Authorized representative in EU:	Victoria, Australia, 3020
Address of Authorized Representative:	Leanlog Solutions 6A, rue Henri François Lot N°24 – 77330 Ozoir-la-Ferrière

In accordance with the following Directives:  
**93/42/EEC – The Medical Devices Directive**

I hereby declare under our sole responsibility that the **GZS Bed Mover** conforms with the applicable requirements of the following standards:

Ref. No.	Title/Requirements
IEC 60601-1: 2005 + CORR. 1 (2006) + CORR. 2 (2007) equivalent to EN 60601-1:2005	Medical Electrical Equipment Part 1: General requirements for basic safety and essential performance
EN 60601-1-2:2007 +AC: 2010 (IEC 60601-1-2: 2007)	Electromagnetic Compatibility
CISPR 11:2009 +A1:2010, Class B	EMC Emission
EN 61000-3-2:2006 +A1:2009 +A2:2009	
EN 61000-3-3:2013	
IEC 61000-4-2:2008	EMC Immunity
IEC 61000-4-3:2010	
IEC 61000-4-4:2012	
IEC 61000-4-5:2005	
IEC 61000-4-6:2013	
IEC 61000-4-8:2009	
IEC 61000-4-11:2004	
EN ISO 14971:2007	
IEC 61000-4-11:2004	
EN ISO 14971:2007	



**Jo Fallshaw**  
Managing Director/Fallshaw Holdings  
19 August 2015

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# 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			

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## 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			

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### 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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