
# Tug Axis 5T

## Operating Manual

Electrodrive

**Tug Axis 5T Operating Manual—OM0032E/1**

Issue date: 19/12/2024

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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# Contents

# Introduction

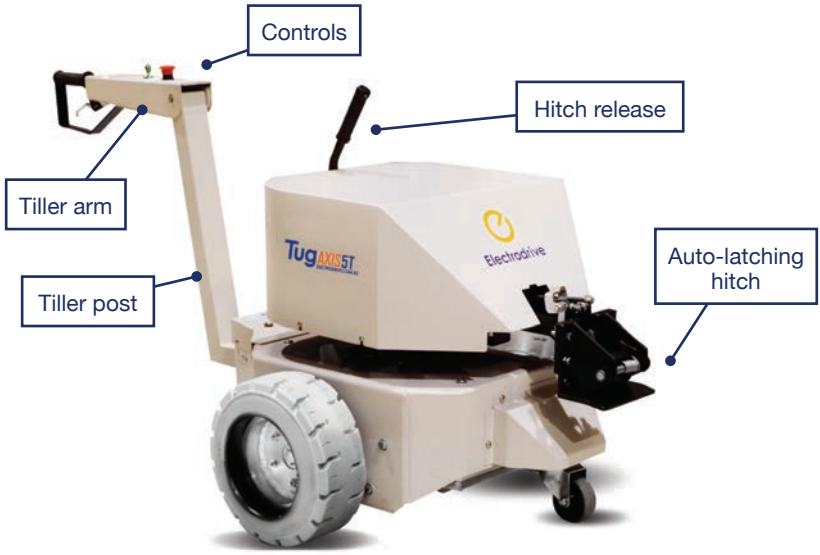
**Move your existing manual trolleys with the battery powered Tug Axis 5T.**

The Tug Axis 5T simply hooks on to your existing trolley with an auto-latching hitch. This converts your heavy trolley into a powerful, easy to move motorised unit. Productivity is greatly increased, and back or shoulder strain is eliminated.

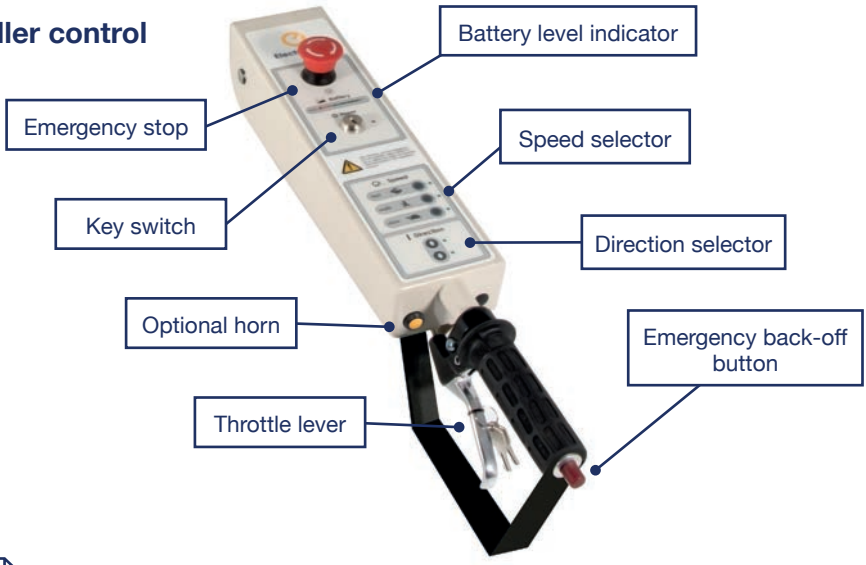
## Features

- Rated tow capacity: Up to 5000 kg.
- 24 Volt DC power.
- Variable speed drive unit.
- Electro-magnetic park brake.
- Travel speed—up to 4 km/h.
- Robust steel chassis.
- Tiller handle steering that folds up to reduce space when not in use.
- Programmable motor controller.
- Automatic charger.
- Multiple speeds.

# Operating instructions




## Tiller control



## Controls

### Key switch

The key switch must be turned clockwise to switch the unit on. When the unit is on, the LED status indicator will be illuminated and the strobe light will flash. 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 stop button and emergency back-off button

The controls have two emergency buttons.

1. Emergency stop button—in an emergency, push this button to stop the unit. To release, slightly twist the button and it will pop back up.
2. Emergency back-off button—when pressed, the tug will momentarily travel backwards to avoid pinning the operator against an obstacle, and then stop if the throttle lever is not released. If this button is pressed when the throttle is released, the tug will immediately stop. To reset the back-off function, switch off and switch back on).

**Only use the emergency buttons in an emergency.**

### Direction selector

Toggle the switch to select the desired direction of travel (forward/reverse).

### Throttle lever

This lever provides variable speed control from zero up to 100% of the governed speed. Releasing the lever will cause the tug to decelerate and stop within three seconds.

### 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 you operate this unit at a slow speed when entering a confined area.

**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 unit 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 (where fitted)**

Push to sound the horn, release to turn off.

**Charger socket**

The charger socket is located on the body panel of the unit, next to the tiller post.

**Brakes**

When the speed control lever is released, the unit is slowed electrically by dynamic braking until the machine and load comes to a complete stop.

**Capacity**

Refer to the serial sticker for the unit's safe working load, located on the body adjacent to the tiller post.

# Driving instructions

## Safety check

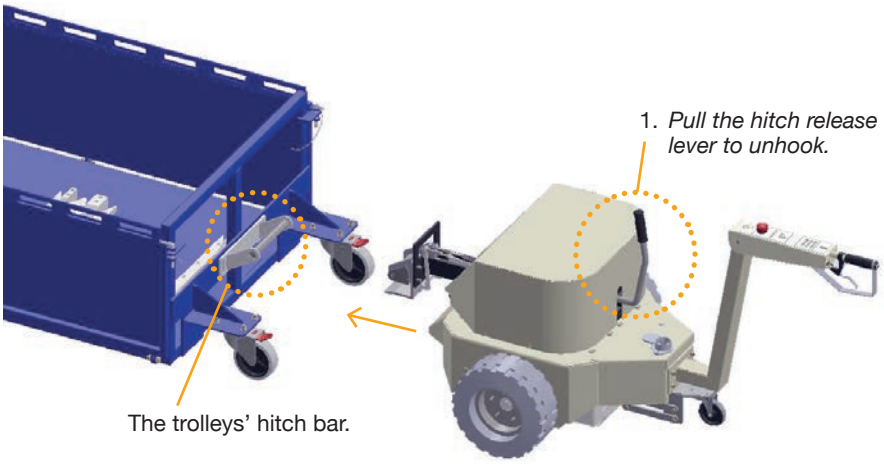
Before using the powered tug, the operator should complete the following check:

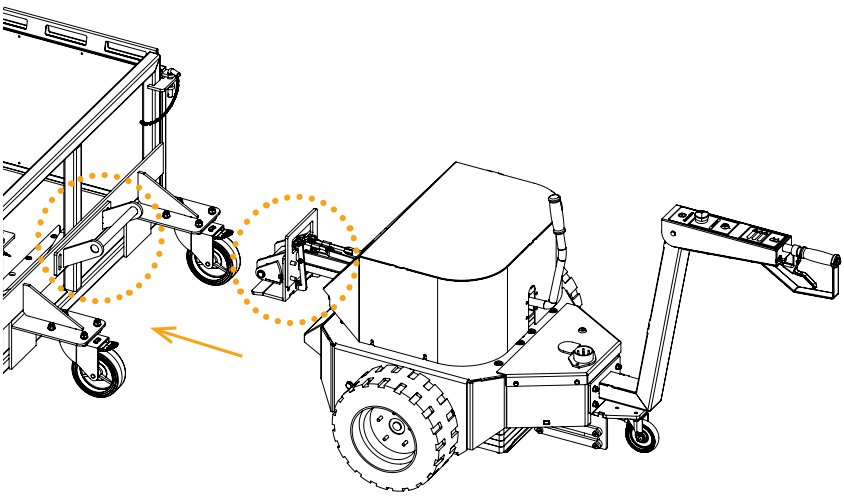
1. The battery charger is not connected.
2. The direction selector works.
3. The emergency stop button is released.
4. The brakes operate correctly when the throttle lever is released.
5. The battery indicator shows adequate charge.
6. There is no visible damage to the unit.
7. Back-off button works correctly.

## Hitching to a trolley

This tug is fitted with an auto-latching hitch. Other hitches are also available.

1. Facing the tug, unhook the hitch release handle and move it backward. This unlocks the auto-latching hitch.





2. Carefully reverse the tug back onto the trolley's tow bar until the tug hitch sits over the tow bar.
3. Once aligned, move the tug forward. This will automatically lock the tug hitch over the trolley's tow bar.

In all cases, ensure that the trolley being attached to has its brakes engaged (or chocked) and is free from obstruction. Inspect the trolley and ensure that the trolley castors are in good condition.

**It is STRONGLY RECOMMENDED that the operator lead the tug and trolley, rather than using the tug to "push" the trolley.**
This will ensure that the operator has a safe unobstructed view ahead. This will also make the tug and trolley easy to manoeuvre.

**Towing a trolley with castors in poor condition can overload the tug, and cause damage not covered under warranty.**

**This tug is not intended for use on surfaces with a gradient steeper than 1:8. Operating it on such inclines may increase the risk of accidents or injury and will void the warranty.**

## Unhitching

Always make sure the trolley is on a flat level surface and apply the castor brakes (if fitted) or chock the trolley wheels.

1. Unhook the hitch release handle by pulling towards operator to unlock the hitch.
2. Carefully drive the tug forward away from the trolley.

## Steering

The tiller arm provides easy steering. The tug with an attached trolley can be manoeuvred through tight areas.

**This unit's power transmission system is a transaxle arrangement.**

Obstruction or resistance to one wheel will cause driving power to be transmitted through to the wheel that is free. This may cause the tug to spin out of control. Please ensure a clear and clean path ahead when operating the tug.

## Charging

Ensure regular recharging of batteries (charging overnight after a day's usage is recommended). Irregular charging may cause the batteries to prematurely fail.

Leaving a machine in storage without charge for periods greater than a month can also lead to premature battery failure. This is not covered under warranty.

For detailed charging procedures refer to Appendix 2. Misuse of the battery will void warranty.

**Only use the battery charger supplied with this tug.**

The automatic features of the supplied charger ensures that the sealed gel batteries are not overcharged, and only a minimum amount of gas, if any at all, are expelled during charging.

# Maintenance

## Batteries

If this unit 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 unit 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.

## Tyres

The tyres are rubber, giving it punture-proof characteristics. For replacement tyres, please refer to the spare parts section in this document or contact Electrodrive.

## Motor and transmission

The transaxle is a sealed unit and does not require regular maintenance.

## Transmission

The tension in the transmission chain should be checked every 3 months. Ensure that the chain has no more than ±10 mm deflection. Light lubrication can also be applied in 3 month intervals.

## Brakes

The dynamic braking system does not require regular maintenance.

## Motor

Motor brushes should be inspected every six months and replaced every 2 years. Remove the brush retaining cover for access to the brushes, should they need replacing.

## Motor controller

This unit is not serviceable. Any difficulties experienced with speed control should be referred to Electrodrive.

## Throttle lever

The throttle lever and cable do not require maintenance. Should the lever or cable suffer damage they should be replaced. If the handle loosens with wear, the hinge nut can be gently tightened. However, first confirm that the lever is in the correct position as it may need to be reset. (Test by squeezing the lever slightly. The tug should slowly move, release and the tug should completely stop).

## Fuses

The control circuit is protected against inadvertent current over-loads. This fuse is located adjacent to the controller under the top cover.

## Self-resetting circuit breaker

This Tug is fitted with a self resetting circuit breaker in case of momentary over-load. This circuit breaker can be found beneath the top cover on the battery carrier. If the unit repeatedly over-loads, test the machine, as the motor may be damaged, and continued use could damage the unit further.

# 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. The battery has a six month warranty.

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

Please be aware that modifications and misuse will void your warranty. The following activities (including, but not limited to) are examples of these:

## Unauthorised maintenance

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

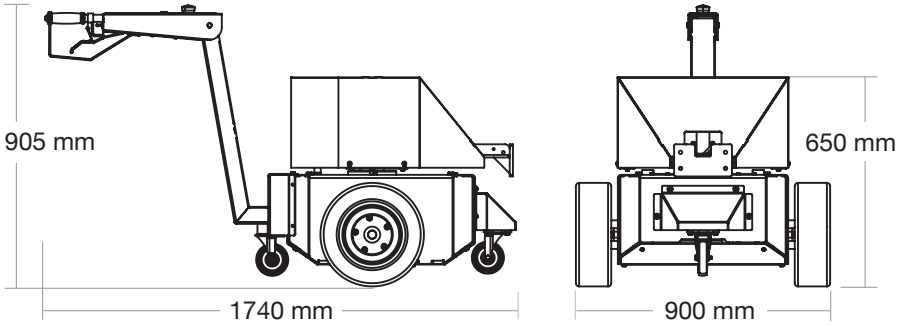
## Misuse

- 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, unless weatherproof option is installed.
- 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 1:8.
- Not being charged adequately.
- Using the emergency stop button as an ON/OFF button.

## General wear items not covered under warranty

- Tyres and castors.
- Drive wheels and motor brushes.
- Hand grips.

# Appendix 1: Machine rating conditions



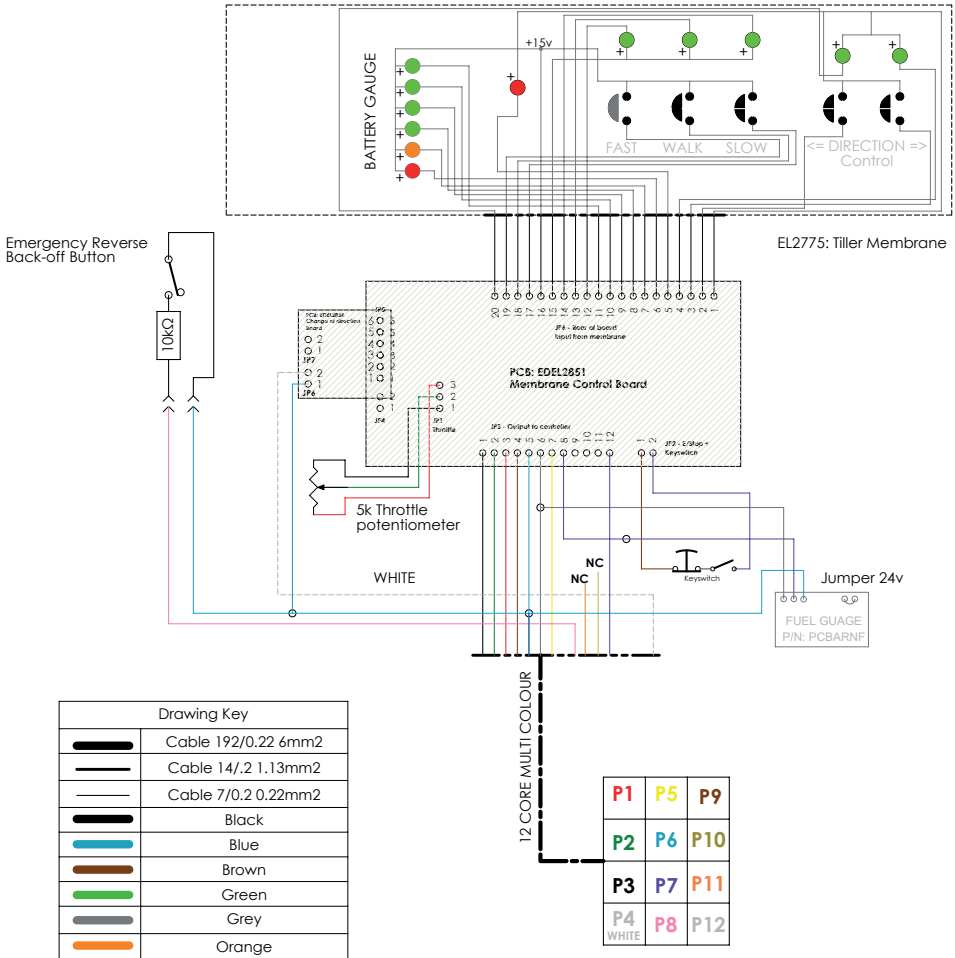

| Model | Working Load Limit | Max Load |
|---|---|---|
| TUGAXIS5TNH | 5,000 kg | 5,000 kg |

The Tug Axis 5T has been designed to move the rated weight capacity on a level firm surface. Variations in the working environment may impede the performance of this unit. Such parameters include (but are not limited to) the following:

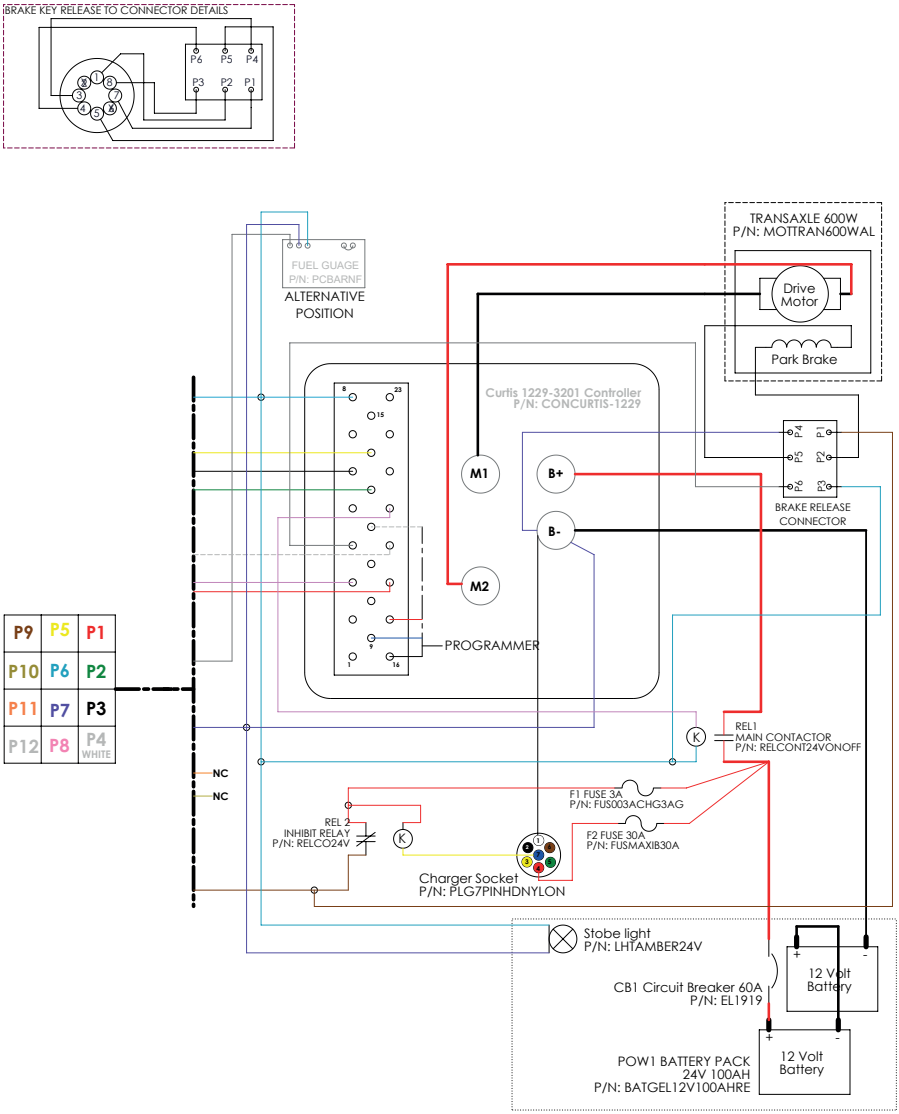
- Ramps and sloped surfaces.
- Soft surfaces (for example carpet).
- Slippery surfaces (gravel, water, oil on the ground, etc).

**It is important that the Tug Axis 5T IS NOT to be operated outside of the recommended conditions.**

# Appendix 2: Wiring diagram




| Drawing Key | |
|---|---|
| | Cable 192/0.22 6mm2 |
| | Cable 14/.2 1.13mm2 |
| | Cable 7/0.2 0.22mm2 |
| | Black |
| | Blue |
| | Brown |
| | Green |
| | Grey |
| | Orange |
| | Pink |
| | Purple |
| | Red |
| | Tan |
| | White |
| | Yellow |


BRAKE KEY RELEASE TO CONNECTOR DETAILS
P6
P5
P4
P3
P2
P1
FUEL GUAGE
P/N: PCBARNF
ALTERNATIVE
POSITION
TRANSAXLE 600W
P/N: MOTTRAN600WAL
Drive
Motor
Park Brake
Curtis 1229-3201 Controller
P/N: CONCURTIS-1229
M1
M2
B+
B-
BRAKE RELEASE
CONNECTOR
PROGRAMMER
P9
P5
P1
P10
P6
P2
P11
P7
P3
P12
P8
P4
WHITE
NC
NC
REL1
MAIN CONTACTOR
P/N: RELCONT24VONOFF
F1 FUSE 3A
P/N: FUS003ACHG3AG
F2 FUSE 30A
P/N: FUSMAXIB30A
REL 2
INHIBIT RELAY
P/N: RELCO24V
Charger Socket
P/N: PLG7PINHDNYLON
Stobe light
P/N: LHTAMBER24V
CB1 Circuit Breaker 60A
P/N: EL1919
12 Volt
Battery
POW1 BATTERY PACK
24V 100AH
P/N: BATGEL12V100AHRE
12 Volt
Battery

# Appendix 3: 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 BATCHA24V25A—Battery Charger Operating Manual for more information.

# Appendix 4: Spare parts list

| Part number | Description |
|---|---|
| EDACTGSTRU60STK | Gas strut 60 stroke |
| EDBA1030 | Tug 12V 70Ah battery |
| EDBATGEL12V100AHRE | Battery 12V 100Ah (upgrade option) |
| EDBRG20630ID | UC206 bearing suit shaft 30 |
| EDBRG206PILHOU | UCP206D1—pillow block cast |
| EDCIREXT20 | Circlip-external-D1400-0200 |
| EDCONCURTIS-1229 | Curtis controller 1229-3201 |
| EDEL1100 | Blanking plug—13mm |
| EDEL1910 | Circuit breaker—40Amp |
| EDEL1920 | Circuit breaker—80Amp |
| EDEL2339 | Emergency reverse system red |
| EDEL2380 | Emergency stop button complete |
| EDEL2500 | Glass fuse holder |
| EDEL2515 | Fuse holder—maxi blade fuse |
| EDEL2720 | Key switch with key-A126 |
| EDEL2775 | Membrane key pad suit tiller h |
| EDEL2835 | Nylon mounting spacer male/female |
| EDEL2851 | PCB membrane control board |
| EDEL2856 | PCB tiller fwd/rev direction s |
| EDEL2920 | Plug—4 way mini fit |
| EDEL3010 | Potentiometer—5K (internal) |
| EDEL3100 | Relay 24volt for 48v system |
| EDGM1142 | Bearing housing TT10 tow |
| EDGM1225 | Bearing TT10 tow suit 35mm Sha |
| EDGM1400 | Chain 08B1, 1/2" Tug HD 8B, TC |
| EDGM1480 | Circlip—tiller hinge 1/2" |
| EDGM1501 | Collar 1"x1/2" zinc plated |
| EDGM1810 | Handgrip 7/8" x 5"—tiller BL |

| Part number | Description |
|---|---|
| EDGM1950 | Spring—lock/tow lever |
| EDGM2010 | Rubber matting (1m width) |
| EDGM2040 | Spring—tiller handle position |
| EDGM2051 | Tiller pot spring straight leg |
| EDGM2150 | Throttle cable and act arm |
| EDGM2170 | Throttle lever |
| EDGM2171 | Throttle lever guard |
| EDGM2210 | Tiller pin—zinc plated |
| EDGM2306 | Circlip external 30mm |
| EDJUR100/JZP | J125 PU roller bearing |
| EDMOTTRAN600WAL | Transaxle 600watt |
| EDPLG7PIN-P-30A-P | Trailer charger plug 7PIN 30A |
| EDPLG7PIN-S-30A-A | Trailer charger sock 7PIN 30A |
| EDSP1020 | Sprocket 12T Bossed 08B, 20mm bor |
| EDSPHD08B34T | Sprocket heavy duty 34T 8B-CHAIN |
| EDWH1186 | Rim—8 x 3.3 suit press on ty |
| EDWH1463 | Tyre press on 13.5x5.5x8 |
| EDWIRTLHND | Loom—Tiller membrane loom |
| EDWIRTUGCLS5T | Wire loom—Tug Classic 5T |

# 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

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

## 12 month service

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

## 18 month service

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

## 24 month service

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

## 30 month service

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

## 36 month service

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

## 42 month service

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

## 48 month service

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

## 54 month service

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

## 60 month service

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

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