



Tug Tough 10T

Operating Manual

Tug Tough 10T Operating Manual—OM0015E-1

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 battery powered industrial Tug Tough 10T allows an operator to effortlessly move heavy wheeled loads and equipment, heavy duty construction, vehicles and aircraft.

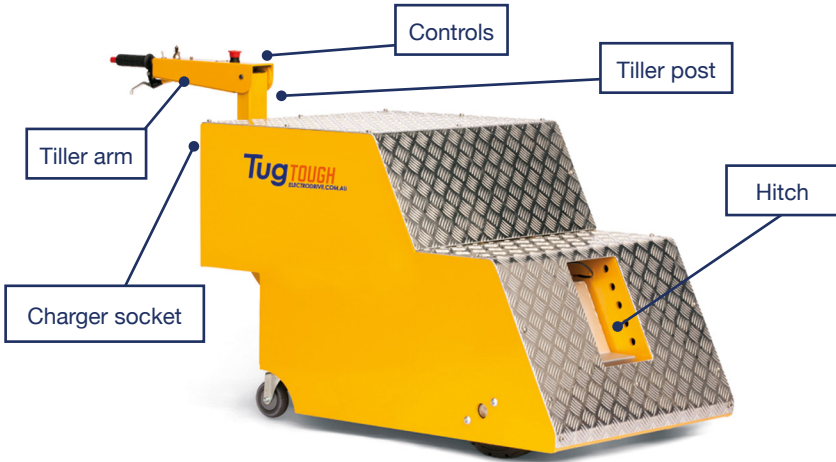
The Tug Tough 10T is a battery powered industrial truck for towing heavy trolleys. It simply hooks on to your existing trolley with a lock-tow hitch. This converts your heavy trolley into a powerful, easy to move motorised unit. Productivity is greatly increased, and back or shoulder strain is eliminated.

This heavy duty model includes the latest developments in DC geared motors with automatic dynamic braking, as well as a high capacity motor controller.

Features

- Rated to tow up to 10 000 kg.
- 48 Volt DC power.
- Variable speed drive unit.
- Electro-magnetic park brake.
- Travel speed—up to 2.5 km/h.
- Robust steel chassis.
- Tiller handle steering that folds up to reduce space when not in use.
- Programmable motor controller.
- Automatic charger.
- Speed selector.
- Horn.
- Quiet operation, ease of handling and high manoeuvrability.

Operating instructions



Controls



Key switch

The key switch must be turned clockwise to switch the unit on. When 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 buttons

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, toggle the key switch.



Only use the emergency buttons in an emergency.

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.

Direction selector

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

Speed selector

The speed selector limits the speed of travel. It can be adjusted from minimum (slow walk) to maximum (brisk walk). It is recommended that you set the speed selector to minimum when learning to operate this Tug, or when towing loads in confined spaces.

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.

Charger socket

The plug on the charger is fitted into the charger socket mounted on the body panel of the Tug, next to the tiller post.

Brakes

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

Horn

Push to sound the horn, release to turn off.

Capacity

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

Driving instructions

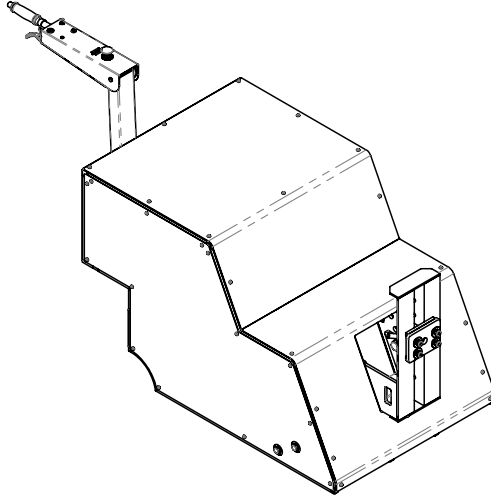
Safety check

Before using the 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 speed selector dial is set at 'low', or where desired by the operator.
5. The brakes operate correctly when the throttle lever is released.
6. The battery indicator shows adequate charge.
7. There is no visible damage to the unit.
8. Back-off button works correctly.

Hitching to a trolley

This Tug has a variety of hitches. In all cases, ensure that the trolley it is 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.



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



This Tug is not designed for use on inclined surfaces and doing so may pose a risk of accident or injury. Use this Tug on level ground only.

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.
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 relatively tight areas.



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.

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 a press on band, similar to those used on forklifts and other material handling equipment. They are puncture resistant. For replacement tyres, please refer to the spare parts section in this document or contact Electrodrive.

Transmission

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

The gear boxes are sealed and do not require service.

Brakes

The dynamic braking system does not require regular maintenance.

Motor

Motor brushes should be inspected every six months and replaced every two 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

The Tug is fitted with a self resetting circuit breaker in case of momentary overload. This circuit breaker can be found beneath the top cover on the main electrical control panel. If the unit repeatedly overloads, 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.

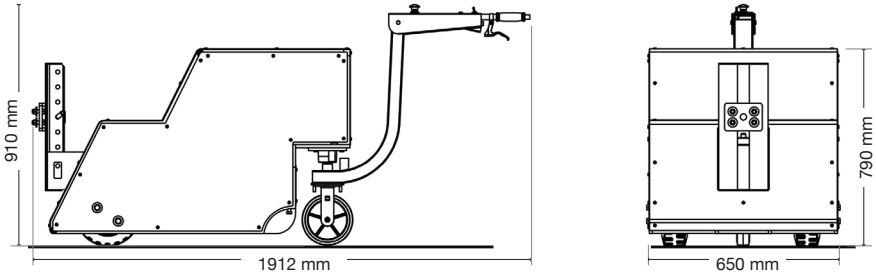
Misuse

- 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.
- Not being charged adequately.
- Using the emergency stop button as an ON/OFF button.

General wear items not covered under warranty

- Castors.
- Drive wheels and motor brushes.
- Hand grips.

Appendix 1: Machine rating conditions



Model	Working Load Limit	Max Load
TUGTOUGH10T	10,000 kg	10,000 kg

The Tug Tough 10T 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 Tough 10T IS NOT to be operated outside of the recommended conditions.

Appendix 2: 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.

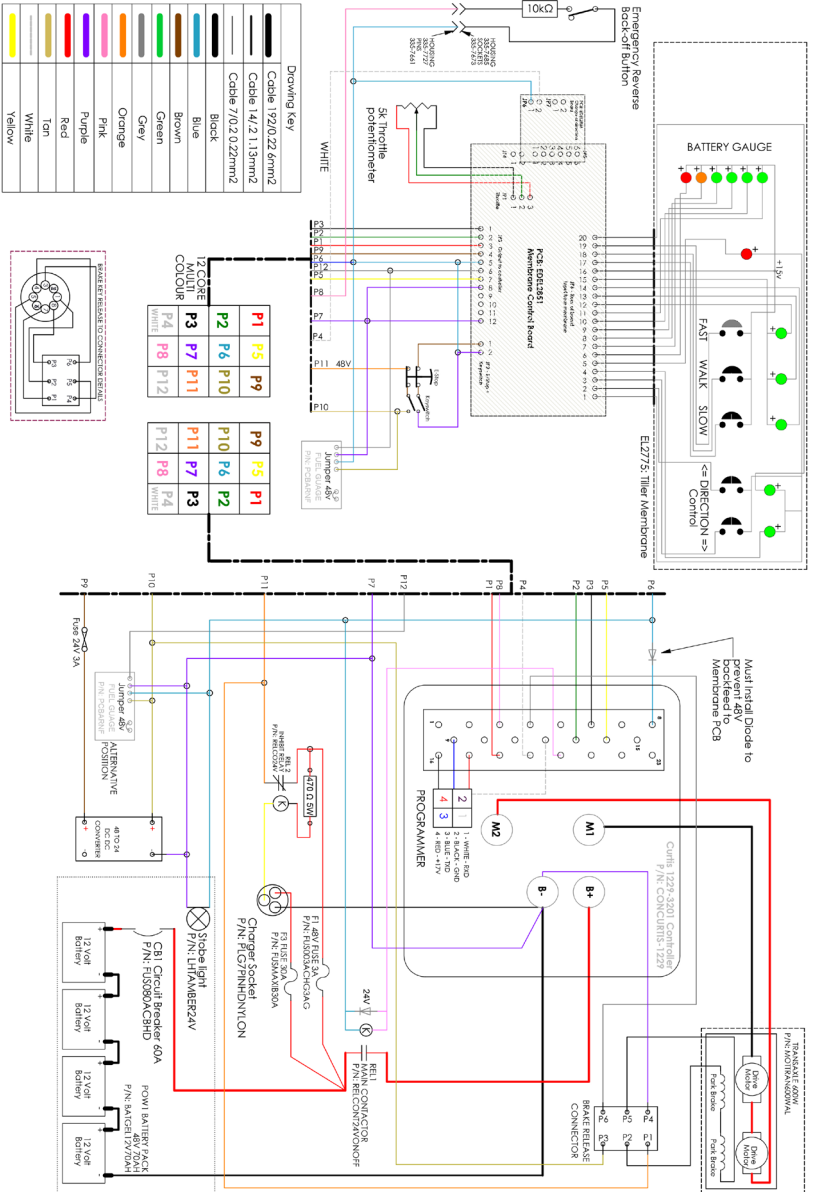
During charging

- 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 BA1121—Battery Charger Operating Manual for more information.

Appendix 3: Wiring diagram



Appendix 4: Spare parts list

Part	Description
EDMO1170	Motor EC600 600 watt continuous
EDBA1030	Battery 12V 70 Ah
EDCURTIS1229-4101	Curtis controller 1229-4101
EDDCDCCONVERTOR	48V, 24V Fixed Output Converter
EDBA1121	Charger: 48v 15A Zivan charge
EDRELSPSTNO24V80A	SPSTNO contactor 24V 80A
EDPCBARNF	Fuel gauge PCB
EDWH1460	Tyre press on 10x4x6—1/2 with tread Tokia
EDGM1676	G/Box NMRV063 i25 D71B14
EDGM1702	G/Box NMRV063 output shaft
EDGM1850	Hub—A400 Ford 1/2" Stud (5 bolt)
EDSP1025	Sprocket 12T Bossed 10B1, 25mm bore, 8kw
EDSP1273	Sprocket 26T Bossed 10B1, 40mm bore
EDEL2851	PCB membrane control board
EDEL2856	PCB tiller forward/reverse direction
EDEL3010	Potentiometer—5K (internal)
EDWIRTLRHND	Tiller handle loom 5 ton
EDWP1049F	Tiller handle fully wired.
EDWIRTLHND	Loom—tiller membrane loom
EDWIRTHROTTLE	Common throttle loom
EDWIRTLESTOP	Key switch/E-stop loom
EDEL1100	Blanking plug—13mm
EDEL2339	Emergency reverse system red
EDEL2380	Emergency stop button complete
EDEL2720	Key switch with key-A126
EDEL2775	Membrane key pad suit tiller handle
EDGM1810	Handgrip 7/8" x 5"—tiller BL
EDGM2051	Tiller pot spring straight leg

Part	Description
EDGM2150	Throttle cable & act arm
EDGM2160	Throttle cable only pre mod
EDGM2170	Throttle lever
EDGM2171	Throttle lever guard
EDWIRBRTCBM	Bariatric bed mover loom
EDFUS3ASLOWBLOW	Fuse slow blow: 3 Amp
EDEL2500	Glass fuse holder
STQ100G/MZH	M100 grey rubber ball bearing, thread guard
XUQ200/HZF	72200 PU-CI ball bearing
EDEL2910	Plug: 3 pin charger to suit 4
EDEL3210	Socket: 3 pin charger, panel
EDGM1142	Bearing housing TT10 tow
EDGM1225	Bearing TT10 tow suit 35mm Shaft
EDGM1410	Chain 10B1 5/8" HD TT10
EDGM1440	Chain half-link 5/8 pitch
EDGM1470	Chain link 10B-1

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			

Notes

Notes



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