



# HT-1500



## Operating and Maintenance Instructions



## Foreword

### General

The HT-1500 meets all the safety requirements that apply to the HT-1500. To safely use the HT-1500 you need to read this manual thoroughly, and follow all the instructions. This will prevent accidents and you keep your warranty rights.

Each HT-1500 comes with an operator's manual. This manual should always be kept in an accessible place. In case the operator's manual is lost or has become unusable, the operator needs to request a new copy from the manufacturer immediately.

Thank you for reading and complying with the operator's manual. If you still have questions and/or comments about the HT-1500 you can contact the manufacturer.

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## 2. Details of the HT-1500

### Description

The HT-1500 is an electric powered vehicle that is primarily designed for use in industrial environments. It can be used for personal transport (HT-1500) and transport of all kinds of goods. Due to its small size and turning circle, the HT-1500 is easy to maneuver, ideal for narrow roads in warehouses, hospitals, etc.

### Place of operation

The HT-1500 is intended for indoor or outdoor use, but never in the rain. The surface needs to be hardened or sufficiently sturdy. The condition of the surface affects the braking distance of the HT-1500, the driver ought to keep this in mind. The HT-1500 is suitable to use in temperatures of 5°C to 45°C. (41°F to 113°F)

### Impermissible use

The user, and never the manufacturer, is responsible for all the consequences if the HT-1500 is used improperly. The use for purposes other than those listed in this guide is prohibited. The HT-1500 may not be used in fire hazard areas or areas with explosive substances. The HT-1500 may not be used on public roads, or in refrigerated warehouses.

If you are unsure whether an operation is permissible it is required that you contact the manufacturer and request permission before the operation is carried out.



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### **Warning regarding non genuine parts**

All parts of the HT-1500 have been carefully selected or designed. All parts that are not supplied by the manufacturer are not tested or approved by the manufacturer. The usage of those parts may have a negative effect on the drivability of the HT-1500. The usage of those parts is at your own risk. We advise to only use genuine parts.

### **Direction definitions**

The directions front, back, left, right, forwards, reverse are defined from the drivers position, with the steering wheel in front of the driver.

### **Residual risks**

Despite all measures it cannot be excluded that dangers still may arise while handling of the HT-1500. The HT-1500 meets the present safety requirements. The non-excludable residual risk can be limited by exercising caution when operating the HT-1500. The residual risks may include, but are not limited to:

- Risk of accidents caused by use in unfavorable ground conditions such as slipperiness, on slopes, poor visibility, soft soil, etc.
- Human errors: negligent use and failure to observe the operating instructions.
- External dangers: hazards that do not directly arise as a result of using the HT-1500.

### **Quality control**

Before the HT-1500 is send to the customer, it will be assembled and tested by the manufacturer. This guarantees a correctly functioning product.

### **Model**

This manual is written for model HT-1500. During the production, assembly and maintenance there may have been changes to the design which are not mentioned in this manual. For more information you can contact the manufacturer.



### 3. Information for the company

#### Operator

The operator is the natural or legal person who uses the HT-1500, or on whose instructions the HT-1500 is being used. The operator is responsible for the compliance and checking safety requirements and needs to be in possession of these instructions.

#### Driver

The HT-1500 may only be driven by persons whose health allows it. This excludes persons with bone fractures, neck pain, other injuries and pregnant women. The driver needs to be at least 16 years of age. The driver is responsible for the usage during the operation of the HT-1500. The driver ought to observe his/her surroundings at all times. The operating instructions need to be readily available to the driver at all times.

#### Damages and defects

All damages and defects need to be reported to the maintenance personnel or operator immediately. When the HT-1500 cannot be used safely with certainty, it may not be used anymore until the damage or defect is corrected.

#### EC Declaration of Conformity

The manufacturer confirms that the HT-400 meets all the current EC Machinery Directive requirements with this EC Declaration of Conformity. The EC Conformity symbol has been applied to the machine plate that is attached to the HT-1500.



Modifying, adding, or changing the HT-1500 in another way may impermissibly compromise safety. In this event the EC Declaration of Conformity is deemed invalid.

#### Copyright

These operating instructions, or parts of it, may never be duplicated, translated or made available to third parties without the explicitly written permissions from the manufacturer.



## 4. Machine

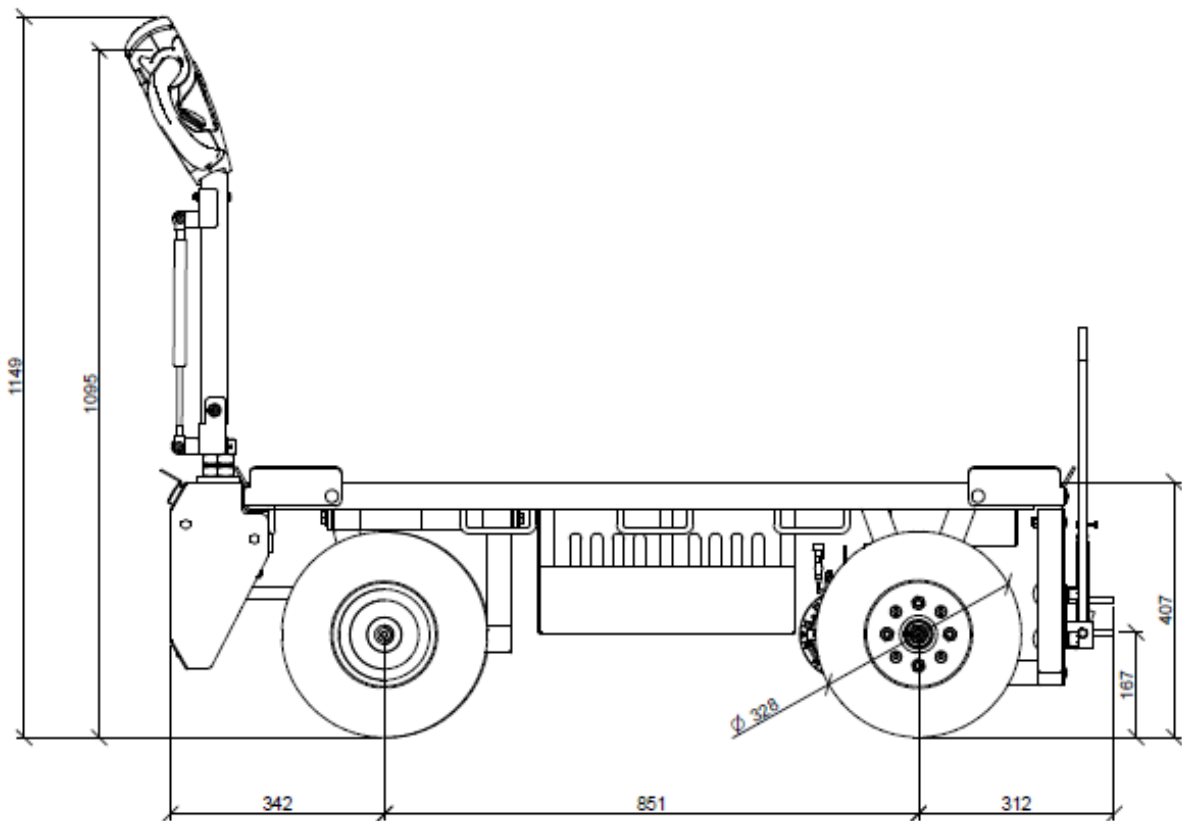
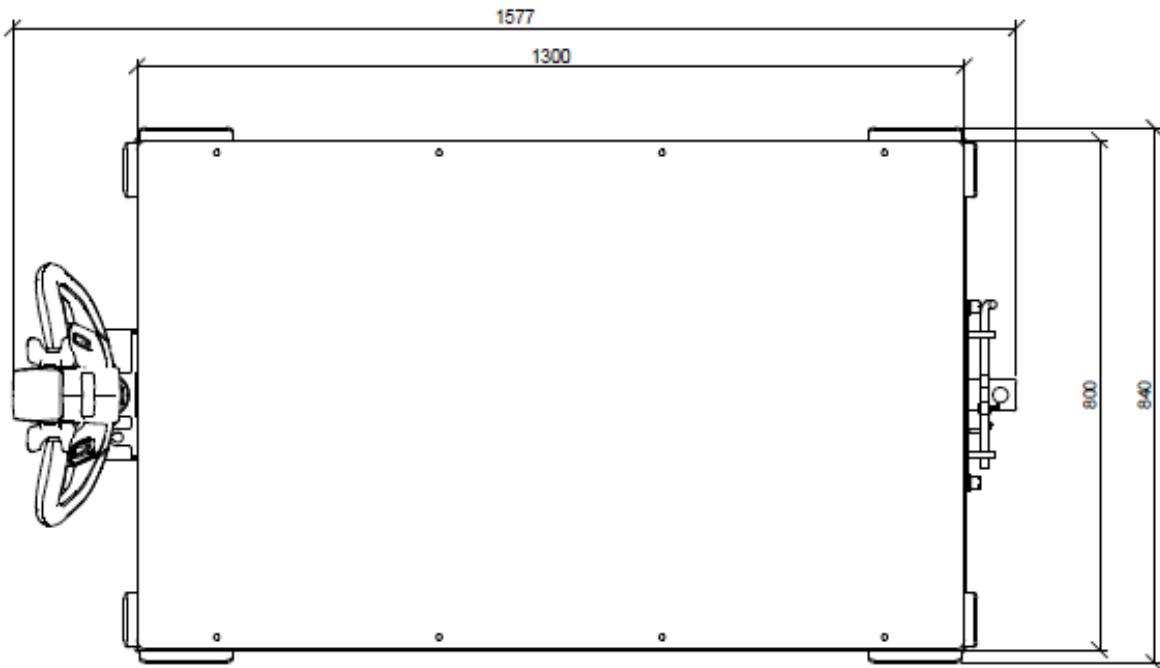
### Technical Specifications

Technical specifications HT-1500	
Manufacturer	Metazet
Dimensions (L x W x H)	1578 x 840 x 1152 mm
Dimensions Loading platform	800 x 1300 mm
Drive	Transaxle
Load capacity	750kg (Loaded equally )
Weight	325 Kg
Material	Steel
Finish	Powder coating
Max. speed (forwards, turtle)	3 Km/h
Max. speed (forwards, haze)	6 Km/h
Max. speed (backwards, turtle)	3 Km/h
Max. speed (backwards, haze)	6 Km/h
Time to reach max. speed	5 s
Type motor	Asynchronous motor
Power	1500 W
Battery type	AGM
Battery voltage	24V (2x 12V)
Battery capacity	24V-130Ah/20 – 110Ah/C5
Battery weight	2x 33 Kg
Battery charger	110/230V – 24V, 12A
Controller	Programmable controller 200A





**Dimensions HT-1500**





## Electrical circuit of the HT-1500

### Type plate (see HT-1500)

Every HT-1500 contains their own type plate:

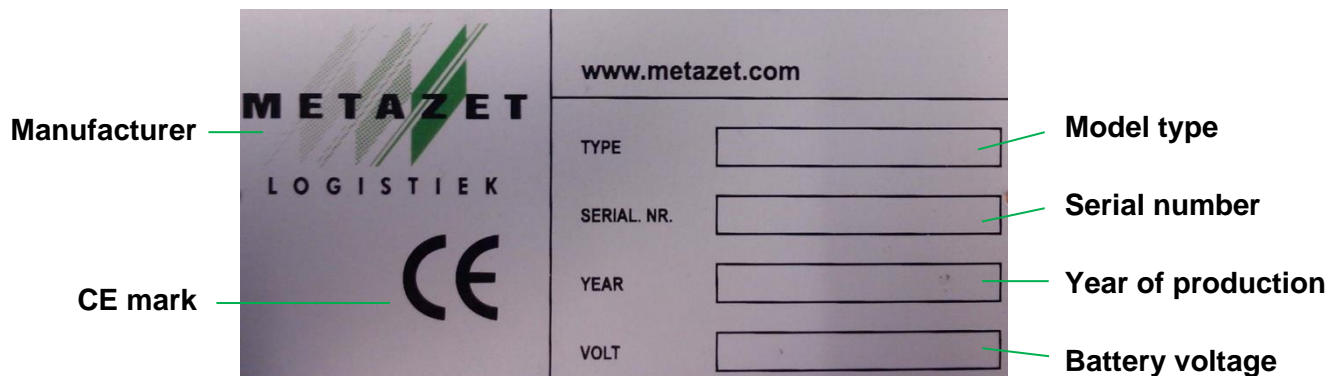


Figure 5.1 – Information plate

### Accessories

The HT-1500 is supplied with the following accessories:

- Keys for key switch
- Battery charger (including plugs)



## 5. Initial operation

Before using the HT-1500 you need to perform a few necessary checks.

### Turning on and off

Insert the key into the ignition. Turn right to turn the HT-1500 on. Turn the switch to the left to turn the HT-1500 off again.



Figure 5.1 – Key switch

### Battery indicator ( Figure 5.2 )

Check the battery indicator. If at least one green light is lightened up, the HT-1500 is ready for use. Don't charge your HT-1500 before it shows "half full" to extend battery lifetime.

The lifetime of the batteries depends on usage and charging frequency, this can vary per usage situation.




	Charged
	Charge soon as possible
	Charge immediately



Figure 5.2 – Battery-indicator

The battery indicator also indicates errors. When the lights are flashing, consult chapter 'Errors'.



### Warning and safety devices

Check beforehand if warning and safety devices, such as the horn and the mounting of the steering wheel, function adequately.

### Danger zone

Check before, and while driving, if there are no people or goods present in the danger zone. If danger is imminent the operator needs to give a timely warning signal. In case danger still persists the operator is required to shut off the HT-1500 at once.

The danger zone is the scope wherein persons run the risk of injury that could be caused by the movements of the HT-1500 and/or load. This zone also includes the area that can be affected by falling loads.

### Emergency switch

Check beforehand if the emergency switch functions properly. The emergency switch is located on top of the tiller head. Pressing this button will stop the HT-1500 and make any movements impossible. Restart the HT-1500 to lift the emergency shutdown again.



Figure 5.3 – Emergency switch

### Emergency stop ( Figure 5.4 )

Press in case of an emergency. To use the HT-1500 again, the user must turn the stop counter clockwise and pull it.



Figure 5.4 – Emergency stop

### While operating

Make sure that the risks are kept to a minimum while operating. This means to adjust the speed and path to the circumstances and surroundings accordingly. Ensure that there is always enough room to manoeuvre the HT-1500, and always keep sufficient distance in relation to others to brake in time. Always make sure there is proper visibility.



## 6. Usage

### Take operator position

Hold the tiller head with both hands. While pulling, always walk along with the tug at a sufficient pace and continue to hold the control element with both hands.

### Moving forward

Push the orange directional switch forwards with your thumb. The speed is dependent on the extent to which the lever is pushed forward. Always use caution to prevent jerking. When the directional switch is released, the HT-1500 breaks electrically.

#### **PLEASE NOTE:**

You have no direct control over the breaking process. Reduce speed in time to prevent injuries.

### Reverse

Push the orange directional switch downwards with your thumb. The speed is dependent on the extent to which the lever is push downward. Always use caution to prevent jerking. When the directional switch is released the HT-1500 breaks electrically.

#### **PLEASE NOTE:**

You have no direct control over the breaking process. Reduce speed in time to prevent injuries.



Figure 6.1 – Driving forward



Figure 6.2 – Driving backwards



### Speed switch

The HT-1500 is equipped with a speed switch, which can be found on the tiller head. There are two settings: the 'turtle' (slow), and the 'hare' (fast). Switch between the two settings by pushing the setting of your choice.



Figure 6.3 – Speed switch

### Steering

The HT-1500 is controlled by turning the steering wheel in the desired direction.

### Horn

The horn can be used by pressing the horn button.



figure 6.4 – horn

### Adjusting the tiller head

The steering angle of the HT-1500 is infinitely adjustable. To adjust the steering angle on the pull the handlebars to the desired position. When you let go of the steering wheel, it automatically returns to neutral





## 7. Charging the batteries

1. Connect the charger plug to the HT-1500 (figure 7.1).
2. Connect the charger to an AC power line. When connected, LED: C will light up. The charger can be used for 110 – 230 Volt. The charger will automatically switch to the right input voltage.
3. When the charger is connected it will start charging. For all the LED codes of the charger, see table 7.1
4. When 100% charged, disconnect the charger from HT-1500. (figure 7.2).



To release charger plug: First press the button above the socket. Never pull on the cable, only pull the plug out of the connector.



Figure 7.1 – Connect charger



Figure 7.2 – Disconnect charger

### Notes:

- Don't charge your HT-1500 before it shows "half full" to extend battery lifetime.
- The charger has a build-in security that prevents overcharging the batteries. There is no need to remove the charger immediately after charging.
- As long as the charger is connected to the AC power line, the HT-1500 is prevented from moving. Remove all connections to the charger socket before using the HT-1500, even when the charger is not powered.

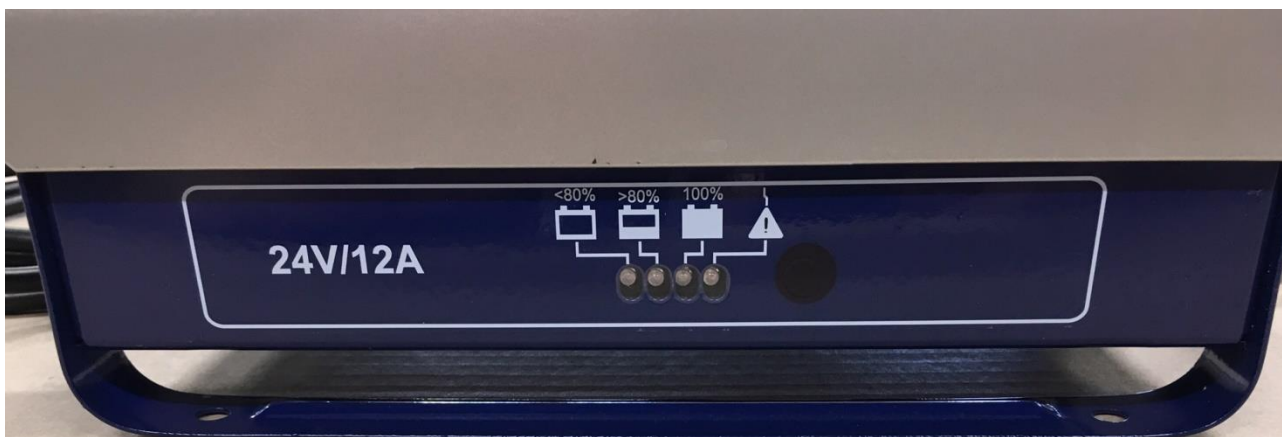


Figure 7.3 – Charger

LED-Display Charger					
Operating state during the charge process					Note
Deep-discharge start	blinken				
Main charge	X				
Recharge		X			
End of charge / Charge retention			X		
Operating state in chase of a fault					Error number
Battery missing				X	1
Battery error	blinken			X	2
Time error	X			X	3-4
Control error		X		X	10-14
Temperature error			X	X	6

Table 7.1










Troubleshooting	
Error number	Procedure
1,2,3,4	Check battery and battery wiring
6,11-13	Have the charger checked

Table 7.2





## 8. Safety

-  Do not use the HT-1500 if this can cause any risk for safety and/or health.
-  If the HT-1500 is damaged, don't use the HT-1500 until a certified person declares the damage can't cause any risk or until the damage has been repaired.
-  Please note that the HT-1500 will brake itself immediately when the throttle is released or when the emergency stop is activated, there is no additional braking system!
-  First make a test drive on an open secured terrain to learn how the HT-1500 handles and to get used to the acceleration and deceleration to be able to anticipate the braking distance!
-  Only drive at 'turtle' speed when carrying/pulling items. Max. total weight including driver and HT-1500 must never exceed 600Kg
-  To ensure safe usage, make sure to maintain the HT-1500 on a regular base. See chapter 9 'Maintenance'.
-  Always drive the HT-1500 with all wheels in contact with the ground. This prevents accidents
-  Removing the safety barriers is not advised, unless this is necessary for maintenance. The electric components under these barriers can be irreversibly damaged. Damage can lead the electrical shocks.
-  If the HT-1500 can't be used safely, always turn it off. Push the HT-1500 to a safe position. Always push with at least two persons, of whom one takes the driver position and steers the HT-1500.

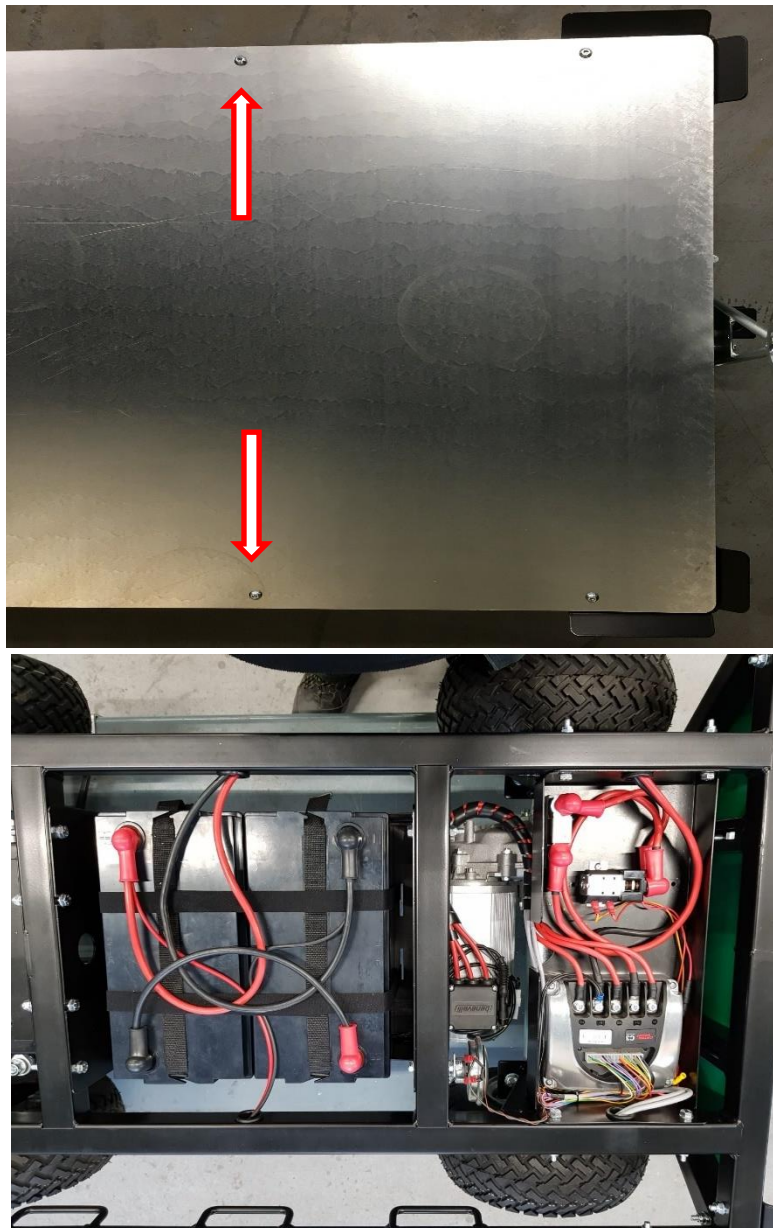


## 9. Maintenance

The maintenance of the HT-1500 is of great importance. Frequent inspections prevent accidents. The maintenance of the battery and the electrical system should be conducted by authorized personnel only, with all required personal protective equipment.

**PLEASE NOTE:** Always completely switch off the HT-1500 before you start the maintenance process.

To access the batteries and motor controller, remove the screws on the top of the plateau





**Maintenance every month:**

- All bolted connections: Make sure all bolted connections are properly tightened.
- Cleaning: clean the HT-1500 every month, do not use water or high pressure spray. Do not remove any parts while cleaning.
- Do not use flammable products for cleaning.

**Maintenance every 3 months:**

- Maintenance wheels
- Check the wheels for damage.
- Check the tires for pressure. The optimal pressure is 2.5 bar.
- Check the tires for wear and tears. Replace the tires if the profile depth is less 2 mm.

**Maintenance every 6 months:**

- Maintenance electric system
- Check all connections. Replace any damaged wires and connections. Also check the fuses. These are located under the control panel.

**WARNING:** Disconnect the batteries from the HT-1500 before servicing the electrical system.



## 10. Errors

The battery-indicator of the HT-1500 is used to show the status of the batteries and warnings concerning the electrical circuit of the HT-1500. When flashing, the HT-1500 is disabled because of an error. See below for a complete list of errors.

### LED codes battery-indicator

Indicator flashing slowly	Battery voltage low, charge batteries as soon as possible
Indicator blinks every 5 seconds	The controller has entered sleep mode, reset HT-1500
Indicator flashing rapidly	HT-1500 is in fault mode, see table 10.2 for the fault codes

Table 10.1

### LED codes battery-indicator – flashing rapidly

I	The battery needs recharging, there is a bad connection to the battery or the battery lockout function is active and the controller is in a restricted mode of operation. Check the connections to the battery. If the connections are good, try charging the battery.
II	There is a bad connection to the motor. Check all connections between the motor and the controller.
III	The motor has a short circuit to a battery connection. Contact your service agent.
IIII	The motor has a short circuit to a battery connection. Contact your service agent.
IIIII	The battery charge level has fallen below the Battery Lockout Level and the controller is inhibiting certain machine functions. Charge the batteries.
IIIIII	The controller is being inhibited from driving, possibly from an emergency stop. Restart the HT-1500.
IIIIII	A throttle fault is indicated. Make sure the throttle is in the neutral position before switching the HT-1500 on.
IIIIII I	A controller fault is indicated. Make sure that all connections are secure.
IIIIII II	An excessive voltage has been applied to the controller. This is usually caused by a poor battery connection. Check the battery connections.

Table 10.2



## 11. Spare parts

If one or more parts of the HT-1500 are faulty, you can order spare parts from the manufacturer. Use the spare part list on the next page.

The following parts are not on the spare parts list. You can specify these based on the list below:

### Fuses:

Fuse 160A MT061

Fuse Control panel 1.6A

### Cables:

Cable harness I-Drive - Steering

Connection batteries

Connection motor

### Steering:

Horn 749550-035

Speed switch 749299

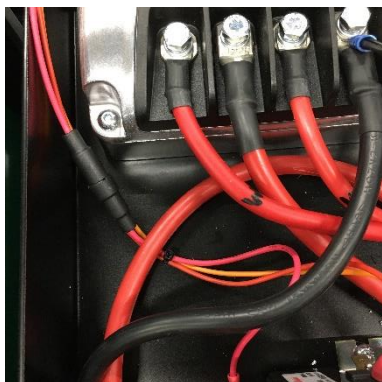


Figure 11.2 - Fuse 1,6A



Figure 11.3 – Fuse 160 A

For other parts see: **service drawing in the appendix**



## 12. Applied parts

In the HT-1500 are some parts which are not manufactured or supplied by Horti-Innovations Int. B.V. This operator's manual covers the most important features of these components. The manuals may be requested from the manufacturer. All therein regulations, instructions and notes also apply to the HT-1500.

These parts are:

- Batteries
- Battery Indicator
- Horn
- Ignition
- Electro motor
- I-Drive
- Charger
- Steering head
- Fuses



### 13. Solving problems

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
The HT-1500 does not start	The ignition switch is off.  One or more fuses are blown.  The cables are damaged or not properly connected.  Empty or damaged battery.	Put the key in the ignition and turn it to the right.  Check fuses. Replace if necessary. Check cables for damage, and bad connections. Replace if necessary.  Recharge or replace the batteries.
The HT-1500 starts, but does not drive.	Controller error. The charger is connected.	See chapter 'Errors' Disconnect the charger
The HT-1500 rattles while driving.	A bolt or screw is loose.	Tighten the bolt/screw.
The tiller head is loose.	A bolt or screw is loose.	Tighten the bolt/screw.
The batteries do not charge.	The charger is not connected. The charger has a blown fuse. The cables are damaged or not connected properly.	Connect the charger correctly. Replace the fuse in the charger. Check cables for damage and bad connections. Replace if necessary.
The HT-1500 drives jerky.	The cables are damaged or not connected properly.	Check cables for damage and bad connections. Replace if necessary.
The charger does not disconnect from the HT-1500.	The connection is secured.	Push the button on the plug when disconnecting.



## 14. Quick start guide

On the next pages you find the Quick start guide. This shows briefly the most important information. This guide is not a replacement for the manual, and does not offer any guarantee. This manual is the only document that will ensure you that it meets all the requirements. If conflicting information is given, it's always the manual with the correct information.