

Owner's Manual

Revision 2 16Aug09

The TeMax logo consists of the word 'TeMax' in a large, white, bold, sans-serif font, set against a red rectangular background that is tilted upwards from left to right. A small grey circle containing a white 'T' is positioned at the top right corner of the red background.

TeMax

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1. Introduction

The electric transport vehicle TeMax is driven by a 24V direct current motor with differential gear and powered by two sealed lead-acid batteries, rechargeable and connected in series. The speed is controlled by means of a twist grip throttle and the forward-reverse direction is controlled with a lever under the throttle to electronically change the direction of motor rotation.

With the standard wheelbarrow body the TeMax can carry dense materials such as sand, concrete, and paving stones. Larger sized wheelbarrow bodies allow large-volume materials such as hay or green cut to be transported. The body can be tipped to dump the contents and locked in place with a safety latch.

Depending on the attachments installed, the TeMax can be used for lifting and moving heavy objects, for snow removal, and for cleaning barn stalls. More options for increased versatility are being developed all the time!

The TeMax requires no license to operate or vehicle registration.

TeMax is a registered brandname with the German Office of Patents and Brands, Munich.

2. General Safety Information

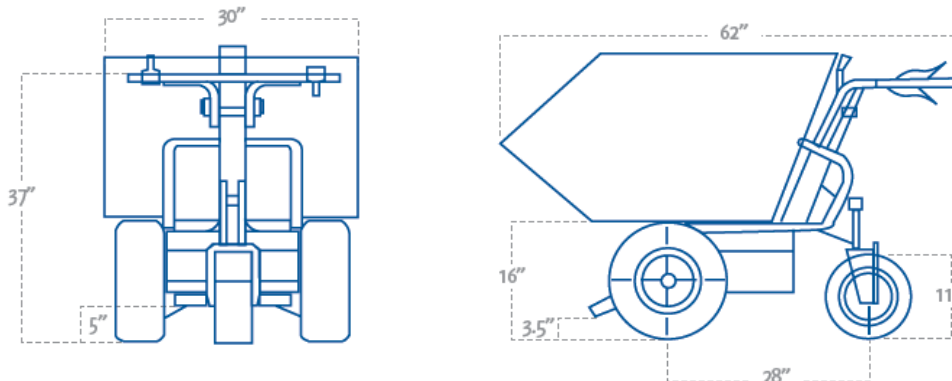
WARNING! DO NOT USE YOUR TEMAX UNTIL YOU HAVE THOROUGHLY READ AND UNDERSTAND THE OPERATING INSTRUCTIONS, THE WARNINGS, AND CAUTIONS CONTAINED IN THIS OPERATING MANUAL. FAILURE TO DO SO MAY RESULT IN FIRE, ELECTRIC SHOCK, OR SERIOUS PERSONAL INJURY.

- THE TEMAX IS NOT A TOY AND SHOULD NOT BE OPERATED BY CHILDREN.
- READ THE OPERATING MANUAL AND FAMILIARIZE YOURSELF WITH THE CONTROLS OF THE TEMAX BEFORE OPERATING.
- PRACTICE OPERATING THE TEMAX IN AN OPEN, UNCONFINED AREA UNTIL YOU ARE PROFICIENT IN STARTING, STOPPING, AND MAKING TURNS.
- THE TEMAX SHOULD NOT BE USED TO TRANSPORT PEOPLE OR PETS.
- DO NOT TRANSPORT HAZARDOUS OR FLAMMABLE MATERIALS IN THE TEMAX.
- THE TEMAX SHOULD NOT BE USED IN POTENTIALLY EXPLOSIVE ENVIRONMENTS.
- THE TEMAX SHOULD NOT BE DRIVEN ON STREETS AND PEDESTRIAN SIDEWALKS.
- THE TEMAX MAY BE USED IN RESIDENTIAL, COMMERCIAL, AND INDUSTRIAL ZONES.
- AVOID DRIVING THE TEMAX ACROSS SLOPED AREAS AS IT MAY TIP OVER.
- NOTHING EXCEPT THE BATTERY CHARGING PLUG IS TO BE INSERTED INTO THE CHARGING SOCKET NEXT TO THE POWER SWITCH.
- THE POWER SWITCH SHOULD BE TURNED OFF WHEN MANUALLY TRANSPORTING THE TEMAX, WHEN INSTALLING OR REMOVING ATTACHMENTS, AND WHEN CLEANING THE TEMAX.
- DO NOT OPEN THE BATTERY BOX EXCEPT TO INSPECT OR REPLACE THE BATTERIES. DO NOT ALLOW SPARKS OR FLAMES NEAR BATTERIES.
- AVOID DRIVING THE TEMAX THROUGH WATER DEPTHS OF MORE THAN 4 INCHES (10 CM) TO PREVENT DAMAGE TO THE ELECTRONIC CONTROLS.
- TO PREVENT UNAUTHORIZED USE OF THE TEMAX WHEN YOU ARE DONE USING IT, CLOSE AND LOCK THE POWER SWITCH COVER AND REMOVE THE KEY.

3. Technical Data

TeMax Basic Model				
Speed	3.7 mph (6 km/h) forward max. 1.8 mph (3 km/h) reverse max.			
Load capacity	max. carrying load 550 lb. (250 kg)			
Climbing ability	Climbing ability (% grade)	Load capacity when using 45Ah-batteries		
	40%	110 lb (50kg)		
	30%	220 lb (100kg)		
	20%	440 lb (200kg)		
15%	550 lb (250kg)			
TeMax weight		302 lb (137 kg)		
Lateral inclination until tipping	40%			
Electric drive	350 W, 24VDC motor with differential gear			
Battery	(2) 12V deep cycle rechargeable lead-acid gel Connected in series for 24V power			
Fuses	Electric circuit of motor	80A		
	Charging current circuit	6,3A (visible type fuse)		
	Control circuit	1A (visible type fuse)		
	Charger	non existing		
Dimensions (with 100 litre wheelbarrow body)	total:	handlebar folded		
	Length	62 in (1580 mm)	Length	50 in (1280 mm)
	Width	30 in (750 mm)	Width	30 in (750 mm)
	Height	37 in (940 mm)	Height	37 in (930 mm)
	Height tipping bucket	27 in (690 mm)		
Water and dust protection	IEC Standard 60529 rating: IP 54			
Operation temperature	-10°C to +40°C			
Air pressure of tyres	2.5 bars (36psi) front and back			

The serial tag is installed on the basic frame underneath the tipping plate. Besides the identifying the manufacturer it contains the model type, year of construction, product weight, and the serial number.



4. Initial Set-up

Upon delivery the TeMax is electrically operational. The wheelbarrow body (or other attachment) must be installed with the 4 included bolts.

The TeMax power switch is protected by a power switch cover. The key is attached to the operating manual.

5. Operation

Starting

Unlock and open the power switch cover. Power is applied to the TeMax by turning the main switch to the “|” position. Close the power switch cover during TeMax operation to avoid any damage to the logic circuit.



Forward movement

The left hand operates the safety switch, the right hand the throttle. Both hands should always be on the TeMax control grips to be sure that critical driving situations can be controlled.

Safety Switch



Throttle



Reverse



The speed of the vehicle is controlled with the twist grip throttle. While holding the safety switch down, turn the throttle counter-clockwise to drive the TeMax forward.

Reverse movement

With the safety switch held down, squeeze the reverse lever and turn the throttle counter-clockwise. The TeMax will drive in reverse at half of its forward speed.

CAUTION: THE TEMAX SHOULD BE AT A COMPLETE STOP BEFORE SQUEEZING OR RELEASING THE REVERSE LEVER. OTHERWISE THERE COULD BE AN ABRUPT CHANGE OF DIRECTION THAT MAY RESULT IN INJURIES TO PERSONS, DAMAGE TO THE DRIVE GEARS, OR DAMAGE TO THE LOAD.

Turning

The TeMax is turned by applying a sideways pressure on the hand controls in the desired direction of motion, while slowly driving in the forward or reverse direction.

CAUTION: TURNS SHOULD BE MADE AT SLOW SPEEDS ONLY TO AVOID THE LOSS OF CONTROL OR THE POSSIBILITY OF TIPPING THE TEMAX OVER.

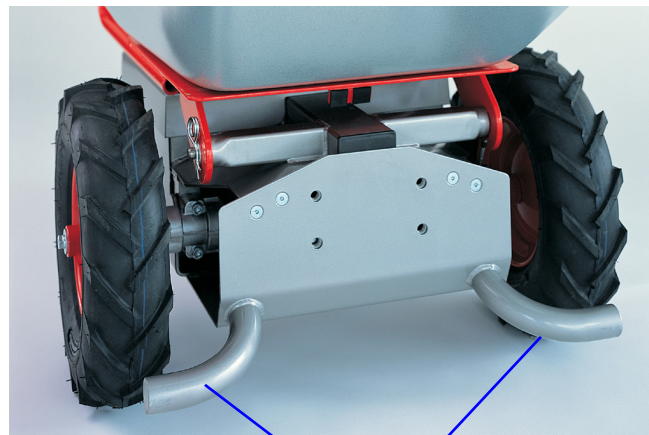
Stopping

The TeMax may be stopped by slowly releasing the throttle, allowing it to return to its starting position. By releasing the throttle more quickly the TeMax will come to a more rapid stop. Also, releasing the safety switch brings the TeMax to a rapid stop. Once the throttle is released and the TeMax stops moving, an electric parking brake is applied to hold the TeMax in position.

CAUTION: AVOID RAPID STOPS FROM HIGH SPEEDS, AS THIS MAY CAUSE THE TEMAX TO TIP FORWARD AND POSSIBLY UPSET ITS LOAD.

Obstacles

The TeMax can climb obstacles up to 3 inches (8 mm) high. Approach all obstacles at slow speed and gradually apply more power to the motor with the throttle as the obstacle is encountered. Once over the obstacle, reduce the throttle setting to achieve a normal driving speed.



Anti-tip bars

CAUTION: DO NOT DRIVE INTO OBSTACLES AT HIGH SPEED. THIS MAY CAUSE THE TEMAX TO STOP SUDDENLY AND TIP OVER OR UPSET THE LOAD.

DO NOT ATTEMPT TO CLIMB OBSTACLES GREATER THAN 3 INCHES (8 MM) HIGH. THE ANTI-TIP BARS WILL STRIKE THE OBSTACLE AND CAUSE THE TEMAX TO STOP SUDDENLY.

DO NOT REMOVE THE ANTI-TIP BARS. DOING SO WILL INCREASE THE RISK OF INJURY AND DAMAGE TO THE TEMAX. REMOVAL OR MODIFICATION TO THE ANTI-TIP BARS WILL VOID YOUR TEMAX WARRANTY.

Power

Reduction of speed or torque when carrying loads in the TeMax is an indication that the batteries require recharging. Do not continue to drive the TeMax under these conditions, as damage to the batteries could occur they are fully discharged. (See "Battery Charging" in section 12.)

The TeMax drive motor may become overloaded if recommended loads and slopes are exceeded or if the TeMax is driven against an immovable object. In the event of motor overload the power is reduced by the controller to prevent damage to the motor and electronics. If the power shuts down completely due to motor overload, turn the main power switch off for at least one minute to allow the electronics to cool off and reset themselves.

6. Climbing Hills

Refer to the "Technical Data" in section 3 for the maximum permissible loads at various slope grades. These load ratings are based on not just the available motor torque, but the holding power of the parking brake. (See "Parking Brake" in section 9.)

When driving the TeMax downhill the speed is governed electronically using dynamic braking to prevent the TeMax from accelerating out of control.

When starting on a hill, the TeMax may roll back slightly (one or two inches, depending on the load) when the throttle is first applied. This is normal and is caused by a short electronic delay between the release of the parking brake and the electronic controls applying power to the drive motor.

CAUTION: AVOID DRIVING THE TEMAX DOWN STEEP SLOPES, AS THIS MAY CAUSE THE TEMAX TO TIP OVER OR UPSET THE LOAD.

7. Operating Environment

The TeMax is designed to be used indoors or outdoors. Typical environmental conditions of heat, cold, humidity, rain, and snow do not affect its performance.

8. Turning off the Power

Power Switch

The TeMax power is switched off by turning the main switch to the "0" position. In this state the TeMax hand controls no longer function and the TeMax cannot be moved.

Power Saver

If, while the power switch is on, the TeMax is not moved for more than 10 minutes, the controller automatically turns the power off to save energy. To regain power, turn the power switch off (to the "0" position), wait 5 seconds, then turn the power switch on (to the "I" position).

9. Parking Brake

The TeMax is equipped with an electromagnetic parking brake. When the safety switch is depressed and the throttle is actuated, the brake is released automatically and the TeMax drives. When the TeMax is stopped and the throttle released the brake is automatically reapplied.

The parking brake is a fail-safe device: In the event of an unexpected loss of power the brake is applied to prevent the TeMax from rolling out of control.

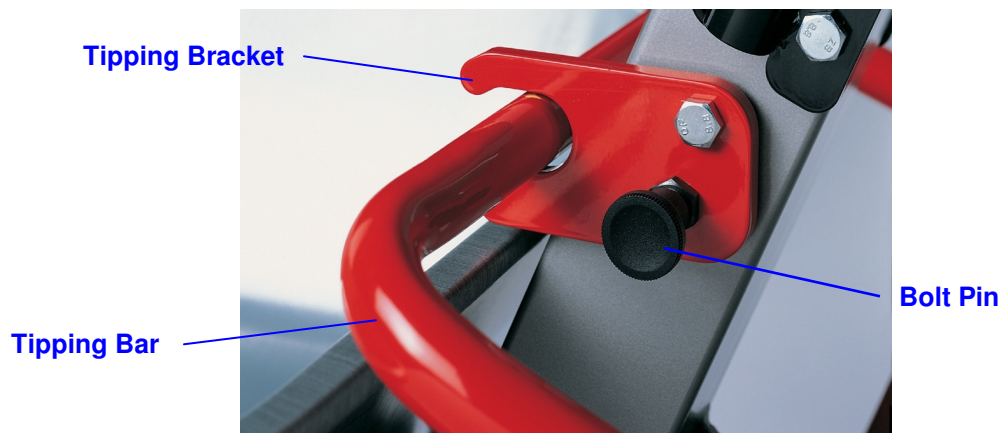
When the parking brake is engaged the TeMax cannot be moved in the forward or reverse directions. However, due to the inherent design of the differential gears, the TeMax may be turned or pivoted about the center axis of the differential.

CAUTION: AVOID STOPPING THE TEMAX ON AN INCLINE WHEN FACING DOWNHILL. DUE TO THE DIFFERENTIAL GEAR MECHANISM AND GRAVITATIONAL FORCES THE TEMAX MAY PIVOT OR ROTATE UNTIL IT FACES UPHILL.

10. Loading and Unloading

Loading

Verify that the bolt pin for the tipping bracket is secure as shown below. When loading the TeMax, be sure its position is safe and stable. Also make sure that the load distribution of the goods to be transported is well-balanced and will not shift during TeMax movement. Always adhere to the maximum load capacity for the TeMax model and terrain on which it will be used. (See "Technical Data" section 3).

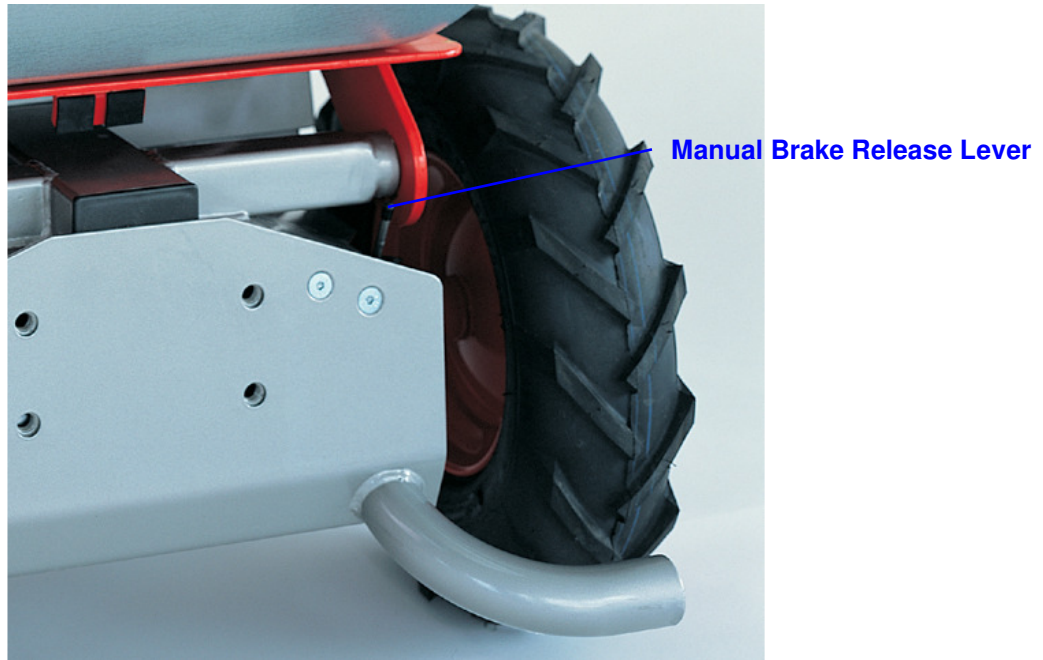


Unloading

To tip and dump the barrow pull the bolt pin on the tipping bracket and raise the barrow with the tipping bar. The center of gravity of the TeMax is designed in a way that manual tipping is possible even with heavy loads.

11. Manual Movement

In the event of a power failure, loss of electronic function, or discharged batteries the electromagnetic brake can be manually released to allow the TeMax to be moved manually. The manual brake release is located at the front left corner of the TeMax frame (just inboard from the left front tire). The lever should be pulled forward to release the brake. The TeMax can then be manually pushed.



If there is power to the motors when the brake is manually released (i.e. the batteries are charged and the power switch is on), the TeMax will be difficult to push manually.

CAUTION: DO NOT MANUALLY RELEASE THE BRAKE WHEN THE TEMAX IS STOPPED ON A HILL UNLESS BLOCKS ARE PLACED BEHIND THE DRIVE WHEELS TO PREVENT THE VEHICLE FROM ROLLING DOWNHILL.

12. Charging the Batteries

The batteries in the TeMax are either lead-acid gel batteries or absorbed glass mat (AGM) batteries. These batteries have the capacity to operate the TeMax throughout the entire work day. To maintain optimal capacity and battery life the batteries should be charged after every work day.

Charging

Before charging the batteries, turn the main power switch of the TeMax off. Plug the charger into a properly grounded outlet (110V/60Hz in US, 230V/50Hz in Europe). Then plug the charger's special three prong, low voltage plug into the charging port next to the TeMax main power switch. The charging cycle will begin automatically. The indicator light on the charger shows the relative state of charge of the batteries (empty – half – full). Upon completion of the charging cycle the charger automatically switches to a compensation cycle that keeps the batteries fully charged without the risk of overcharging.

Avoid fully discharging the batteries. Complete discharge significantly reduces battery life and may prevent the batteries from charging.

If the TeMax begins to slow down after less than a full day of work, this may be a sign that the batteries are becoming old and should be replaced.

CAUTION: DO NOT SHORT CIRCUIT THE BATTERY TERMINALS. THIS MAY RESULT IN PERMANENT BATTERY DAMAGE, FIRE, OR THE RISK OF BATTERY EXPLOSION.

CHARGE THE BATTERIES ONLY IN WELL VENTILATED AREAS.

BATTERIES ARE PERMANENTLY SEALED AND REQUIRE NO MAINTENANCE OTHER THAN CHARGING. DO NOT ATTEMPT TO OPEN THE BATTERIES FOR ANY REASON.

BATTERIES CONTAIN ACID AND LEAD AND MUST BE PROPERLY DISPOSED OF. FOLLOW LOCAL HAZARDOUS WASTE OR BATTERY DISPOSAL ORDINANCES.

WHEN BATTERIES MUST BE REPLACED, ALWAYS USE LEAD-ACID GEL BATTERIES OR ABSORBED GLASS MAT (AGM) BATTERIES. DO NOT SUBSTITUTE LIQUID ACID-LEAD BATTERIES AS THEY MAY LEAK WHEN THE TEMAX IS USED ON INCLINES.

DO NOT ATTEMPT TO USE YOUR TEMAX BATTERY CHARGER FOR ANYTHING BUT CHARGING YOUR TEMAX BATTERIES. ANY ATTEMPT TO CHARGE OTHER BATTERIES OR PROVIDE POWER TO OTHER DEVICES USING YOUR BATTERY CHARGER MAY RESULT IN FIRE, ELECTRIC SHOCK, OR OTHER SERIOUS INJURY.

DO NOT OPERATE OR STORE YOUR TEMAX BATTERY CHARGER IN A WET ENVIRONMENT. EXPOSURE OF THE BATTERY CHARGER TO MOISTURE MAY RESULT IN FAILURE OF THE BATTERY CHARGER, ELECTRIC SHOCK, OR OTHER SERIOUS INJURY.

13. Energy Consumption

The energy consumption of one charging process of a 45Ah-battery is < 1kWh. This corresponds to about 0,15 € (\$0.20). In other words, the TeMax can be operated for an entire day at a cost of about 0,15 € (\$0.20).

If the TeMax is on stand-by, which means that the main power switch is on but is not moved, the energy consumption is < 0,2Wh. After 10 minutes of stand-by the power is automatically shut off by the electronic controller (see section 8).

14. Maintenance Instructions and Cleaning

Maintenance

The TeMax is designed to be maintenance free. Batteries should be recharged daily after use. Periodically inspect the body assembly bolts and wheel assembly bolts to ensure they have not become loose during operation.

Cleaning

The TeMax can be washed off with water from a hose and a mild detergent. Turn off the main power switch before cleaning and keep the main operating switch cover closed when washing or rinsing the TeMax. Do not expose the control system or batteries to direct water spray.

15. Troubleshooting

No.	Problem	Cause	Measures to take
1.	TeMax does not operate	a.) Main switch not turned on b.) Left hand-operated safety lever not activated c.) Throttle was activated before safety lever d.) After 10 min the control was on stand-by e.) Parking brake is manually released f.) Fuse is faulty g.) Battery cable clamp is loose h.) Cables disconnected at the controller i.) Batteries not charged.	a) Switch on b) Activate the safety lever control in addition to the throttle. c) Turn throttle to 0-position, activate safety lever, and then turn throttle again d) Turn the main power switch OFF. Wait five seconds, then turn the main power switch ON again e) Engage the parking brake using the manual release lever f) Replace battery fuse 80A and replace controller fuse 1A g) Tighten the cable clamp. Follow all safety instructions h) Plug-in the cables again i.) Charge batteries
2.	Not enough power to haul loads	a) Batteries not charged or partially discharged b) Electronic control overheated c) Batteries are old or weak and cannot hold a full charge d) Vehicle overloaded e) Motor defect	a) Immediately connect to the charger b) Let the control cool for a few minutes and reduce the effective load c) Replace both batteries d) Reduce the effective load e) Replace motor
3.	Poor braking or no brakes	a) Manual release lever of the parking brake released b) The TeMax is overloaded and the parking brake can no longer hold it on steep terrain c) The brake disks of the drive are worn	a) Engage the parking brake lever again b) Reduce the load in the TeMax c) Remove the motor, send it to the supplier and have it repaired
4.	Charger light flashes or does not illuminate at all	a) Charger plug not connected / no supply voltage b) Fuse at the charger faulty c) Batteries faulty d) Charger is faulty	a) Connect the charger to a live AC outlet. b) Replace fuse (6A) at the charger c) Replace both batteries d) Replace charger

5.	TeMax runs out of power in less than a full day of use	a) The batteries are not charged completely. The charging time is too short. b) The tyre pressure is too low. c) The batteries are too old	a) Prolong the charging time. b) Correct the tyre pressure. c) Replace the batteries with new ones.
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16. Taking out of Service

If the TeMax is to be taken out of service for an extended length of time, the batteries should be first fully charged, then removed from the TeMax, and stored in a cool dry place.

If batteries are left in place during storage, the charger should be connected. The batteries will then remain fully charged as a result of the compensation charge function in the controller (See section 12).

17. Repair

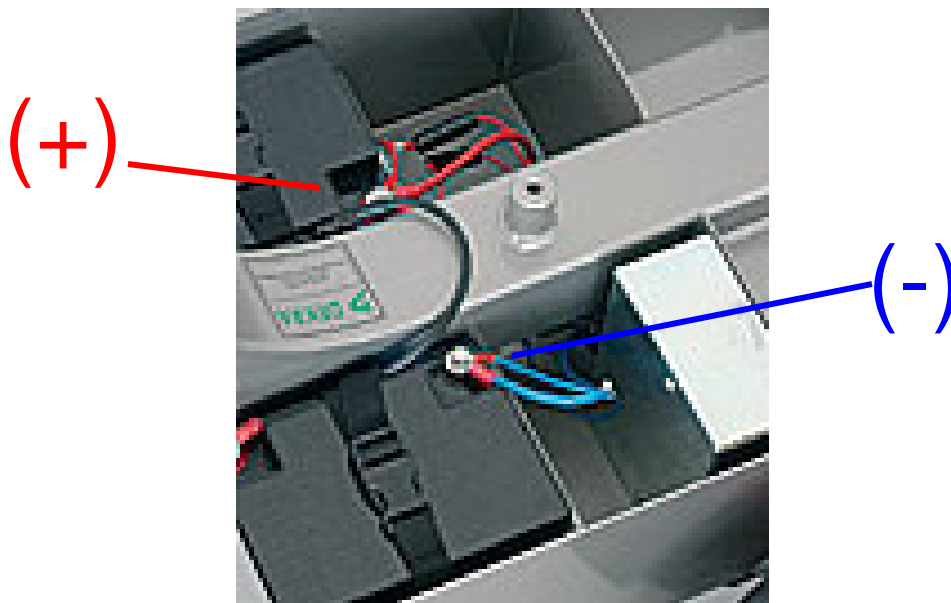
Replacement of the Wheels

Loosen, but don't remove the wheel hub screws while the TeMax is standing on its own wheels. Place a block under the frame of the TeMax to support it with its wheels off the ground. Remove the wheel hub screws and wheels. Install replacement wheel.

Replacement of the Batteries

Should battery replacement be necessary, be sure to replace both batteries at the same time. Never mix an old battery and a new battery to operate the TeMax, as this will reduce TeMax performance and quickly reduce the life of the new battery.

Turn of the main power switch. Tip the barrow fully forward to expose the battery box cover. Remove the screw in the center of the battery box cover and set aside. Carefully unbolt the cable clamps from both battery terminals. Remove the batteries and replace with new, comparable lead-acid gel or AGM batteries. Be sure to connect the positive (+) and negative (-) cable clamps to the correct terminals on the batteries.



CAUTION: REVERSING THE POLARITY OF THE BATTERY CONNECTIONS WILL CAUSE IMMEDIATE AND PERMANENT DAMAGE TO THE TEMAX CONTROLS.

DO NOT SHORT CIRCUIT THE BATTERY TERMINALS. THIS MAY RESULT IN PERMANENT BATTERY DAMAGE, FIRE, OR THE RISK OF BATTERY EXPLOSION.

BATTERIES ARE PERMANENTLY SEALED AND REQUIRE NO MAINTENANCE OTHER THAN CHARGING. DO NOT ATTEMPT TO OPEN THE BATTERIES FOR ANY REASON.

BATTERIES CONTAIN ACID AND LEAD AND MUST BE PROPERLY DISPOSED OF. FOLLOW LOCAL HAZARDOUS WASTE OR BATTERY DISPOSAL ORDINANCES.

WHEN BATTERIES MUST BE REPLACED, ALWAYS USE LEAD-ACID GEL OR AGM BATTERIES. DO NOT SUBSTITUTE LIQUID ACID-LEAD BATTERIES AS THEY MAY LEAK WHEN THE TEMAX IS USED ON INCLINES.

Replacement of the fuse (80 A) in the electric circuit of the motor

Disconnect batteries when working with any part of the electrical system of the TeMax.

The fuse is mounted in the battery bridge (black cable) and insulated with shrink tubing. To replace the fuse the shrink tubing must be cut open.

Loosen the two M5 x 5 screws and replace the faulty fuse. Slide a piece of shrink tubing over the wire before reconnecting the screws. When installing the fuse be sure the screws are fitted with a lock washer. After tightening the screws slide the shrink tubing over the fuse and connectors, then heat to shrink.

18. Transport

To transport the TeMax in a trailer, in a truck bed, or in a van straps should be used to secure the TeMax in place. Straps are needed whether or not the parking brake is set. Be sure the power switch is turned off when transporting.

19. Manufacturer's Limited Warranty

TeMove USA, Inc. warrants to the original retail purchaser that this TeMax product is free from defects in material or workmanship and agrees to repair or replace at their discretion, any defective product at no charge within the warranty period described below.

This warranty is intended for the original purchaser of the TeMax only. The warranty extends from the date of original retail purchase for two years if the product is used for family or household use; and 180 days if the product is used for any other purpose such as commercial, rental, or other revenue generating uses.

For warranty evaluation and service the TeMax must be returned to Temove USA, Inc. within the warranty period. Any costs for shipment or delivery of the TeMax to Temove USA, Inc. are to be paid by the purchaser. Proof of purchase will be required to substantiate any warranty claim.

The sole responsibility of Temove USA, Inc. with respect to warranty claims is the repair or replacement of defective parts or product and return shipment to the purchaser, and only Temove USA, Inc. is authorized to provide the warranty service.

This warranty does not cover any TeMax product or components that have been misused, abused, or subject to accidents or operation other than that which is described in the owner's manual. This warranty does not cover damage due to improper maintenance, neglect, modification, or alteration that adversely affects the TeMax's operation or performance or changes its intended use. This warranty does not extend to normal wear on the product and does not cover regular maintenance or replacement components including tires, tubes, and batteries.

TeMove USA, Inc. may, from time to time, make design changes and improvements to the TeMax product and accessories, but assumes no obligation to modify products previously manufactured.

All warranties, both express and implied, are limited to the time duration set forth above. Implied warranties such as merchantability or fitness for a specific purpose are disclaimed completely at the expiration of the appropriate two year or 90 day warranty period.

TeMove USA, Inc. assumes no responsibility for incidental, consequential, or other damages including, but not limited to, shipping expense or damage to the TeMax during shipment for warranty work, mechanic's time, telephone charges, rental of a similar product while the customer's TeMax is being serviced while under warranty, loss of revenue, loss of time due to inconvenience, and loss or damage to personal property.

This warranty gives you specific legal rights. You may have other rights that vary from state to state.