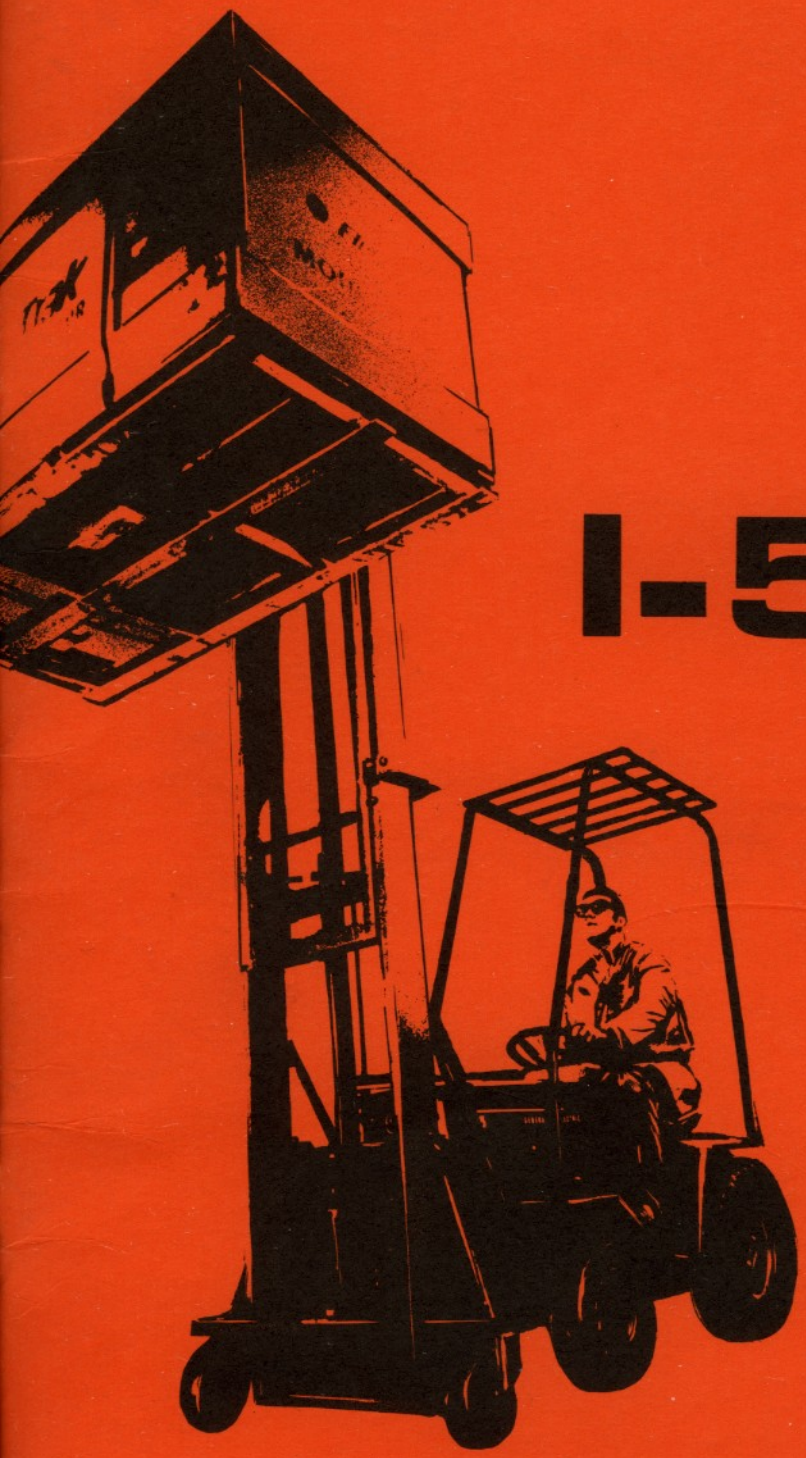
GEZ-5828



I-5

Elec-Trak®

INDUSTRIAL TRACTOR

OPERATOR'S MANUAL

GENERAL ELECTRIC

GENERAL ELECTRIC

MODEL NO.	SERIAL NO.
TRACTOR WT. - 600 LBS.	BATTERY TYPE - E0583
BATTERY WT. - 360 LBS.	AMP. HRS. - 170 @ 5 HRS.
GROSS WT. - 960 LBS.	AMP. HRS. MAX. - 220
DRAWBAR PULL - 900 LBS.	VOLTAGE - 36 VDC

FM APPROVED

TYPE E INDUSTRIAL TRACTOR
PAT. Nº D. 222,692 - OTHERS PEND.
MADE IN SCHENECTADY, N.Y., U.S.A.

Contents

This manual does not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purpose, the matter should be referred to your authorized ELEC-TRAK tractor dealer.

Introduction

This manual has been carefully prepared to instruct you in operating, maintaining, and lubricating your ELEC-TRAK® tractor. **IT IS VERY IMPORTANT THAT EACH OPERATOR FULLY UNDERSTANDS THE ENTIRE CONTENTS OF THIS MANUAL FOR SAFE, DEPENDABLE OPERATION AND TO PROLONG THE LIFE OF THE EQUIPMENT.**

Your ELEC-TRAK Industrial tractor and equipment dealer is equipped with a complete stock of genuine ELEC-TRAK tractor parts. He has factory-trained service personnel using the latest approved test and repair equipment and will service your tractor to assure safe, efficient, and economical operation. **UNAUTHORIZED SERVICE VOIDS WARRANTY. HOWEVER, BEFORE CALLING YOUR DEALER FOR SERVICE, SEE THE TROUBLESHOOTING CHECK LIST ON PAGE 19.**

WARRANTY REGISTRATION

To validate your registration, your dealer must complete and submit a Dealer Delivery Report to General Electric Company. To assure proper warranty coverage, be sure that your dealer prepares this form for you with a copy properly dated and sent to the General Electric Company at the address shown below:

General Electric Company
Outdoor Power Equipment Operation
Manager of Product Service
Corporations Park
Schenectady, New York 12345

When ordering parts, remember to specify model and serial number shown on the identification plate on top of the dash.

Plug-In . . . The key to automatic refueling

The ELEC-TRAK I-5 tractor is designed to refuel itself and always be ready for service if it is plugged in and the charger dial turned to the appropriate "Start" position. (See Page 12) *IT SHOULD ALWAYS BE PLUGGED INTO A 3-WIRE (GROUNDED) 115-VOLT OUTLET WHEN NOT IN USE.* When turned on, the charger automatically senses the power pack condition and adjusts the charging rate to the proper level to bring the power pack to a fully charged condition as fast as possible. The charger timer will continue to move for several hours after full charge is reached but the charge rate will be very low to assure equalization of all the individual cells.

It is important to put the tractor on charge during any short breaks in operation (10 minutes or longer), since the high rate of input during the early part of the recharge cycle adds considerable range to the work period.

NOTE

Prior to initial use of the ELEC-TRAK tractor, the user should completely familiarize himself with all tractor controls and the safety interlocks. (Pages 5 through 11.) (See Figure 1)

®TRADEMARK

SAFETY PRACTICES FOR THE OPERATION OF INDUSTRIAL TRUCKS

- Do not drive trucks up to anyone standing in front of a bench or other fixed object.
- Do not permit unauthorized personnel to ride on powered industrial trucks. Provide a safe place to ride where riding of trucks is authorized.
- When leaving a powered industrial truck unattended, fully lower load engaging means, place controls in neutral, shut off power, set brakes, remove key or connector plug. Block wheels if the truck is parked on an incline.
- Maintain a safe distance from the edge of ramps or platforms while on any elevated dock, or platform or freight car. Do not use trucks for opening or closing freight doors.
- Set brakes and put wheel blocks in place to prevent movement of trucks, trailers, or railroad cars while loading or unloading. It may be necessary to fix jacks to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. Check the flooring of trucks, trailers, and railroad cars for breaks and weakness before they are driven onto.
- Observe all traffic regulations, including authorized plant speed limits. Maintain a safe distance approximately three truck lengths from the truck ahead, and keep the truck under control at all times.
- Yield the right of way to ambulances, fire trucks, or other vehicles in emergency situations.
- Do not pass other trucks traveling in the same direction at intersections, blind spots, or other dangerous locations.
- Slow down and sound the horn at cross aisles and other locations where vision is obstructed. Travel with the load trailing if the load being carried obstructs forward view.
- Cross railroad tracks diagonally wherever possible. Do not park closer than 8 feet from the center of railroad tracks.
- Look in the direction of, and keep a clear view of the path of travel.
- Ascend or descend grades slowly.
- Under all travel conditions, operate the truck at a speed that will permit it to be brought to a stop in a safe manner.
- Do not engage in stunt driving and horseplay.
- Slow down for wet and slippery floors.
- Properly secure dockboard or bridgeplates before driving over them. Drive over them carefully and slowly and do not exceed their rated capacity.
- Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off the power, and set the brakes.
- Avoid running over loose objects on the roadway surface.
- While negotiating turns, reduce speed to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, turn the hand steering wheel at a moderate, even rate.
- When attachments are used, take particular care in securing, manipulating, positioning, and transporting the load. Operate trucks equipped with attachments as partially loaded trucks when not handling a load.
- Do not use open flames for checking electrolyte level in storage batteries or gasoline level in fuel tanks.
- Keep industrial trucks in a clean condition, free of lint, excess oil, and grease. Use noncombustible agents for cleaning trucks. Do not use low flash point solvents (below 100°F). Use high flash point solvents (at or above 100°F). Use precautions regarding toxicity, ventilation, and fire hazard connected with the agent or solvent used.
- Give special consideration to the proper functioning of tires, horns, lights, battery, controller, lift system (including load engaging means, chains, cable, and limit switches), brakes and steering mechanism. If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, report the matter immediately to the designated authority, and the truck should be taken out of service until it has been restored to safe operating condition.

OPERATION

WARNING

Operator should not "floor" or quickly depress the foot pedal speed control in starting from a standstill, especially if starting under load. This practice draws high current through the drive motor and can also result in a sudden snap start. The ELEC-TRAK I-5 tractor is much the same as an automobile; it is a large powerful machine which must be handled with care and judgement. Special care in starting and braking on ramps or inclines is imperative for safe operation since the balance shifts to make the machine less stable as the angle of the surface increases. Sudden starts uphill or stops when rolling down hill, could upset stability and cause possible damage to the equipment or injury to the operator. It should also be noted that a tractor will climb a steeper incline than it can safely descend, due to the shift of weight balance which results in more traction uphill but much less wheel grip going downhill. Starting should be done by gradually depressing the foot pedal until the cruise indicator lights steadily, and holding there for maximum torque and efficiency. Down-shifting to a lower gear range may be necessary if the starting load is high or if the tractor slows and the power use gage reads in the red.

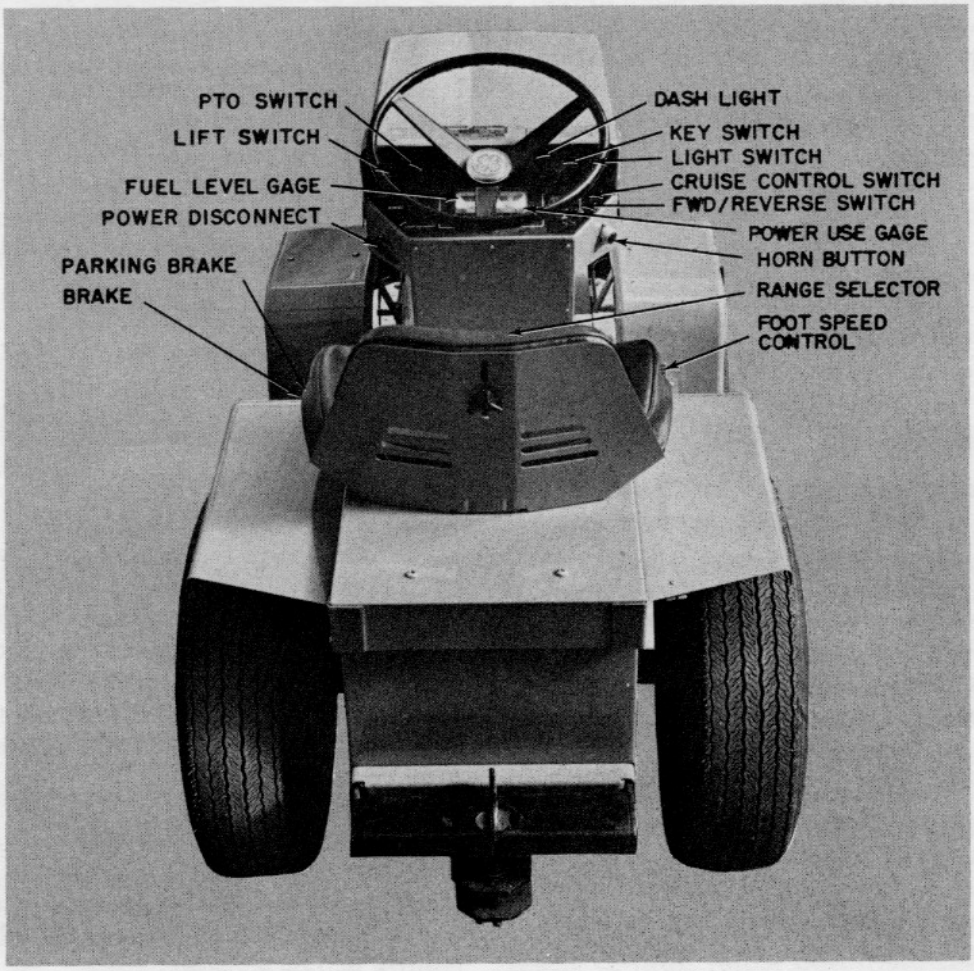


Figure 1. I-5 ELEC-TRAK Tractor

Elec-Trak

OPERATION

NOTE *The ELEC-TRAK tractor should be plugged in and brought to the full charge state as soon as possible after delivery. (See Page 12.)*

TO START

1. Set direction switch to forward.
2. Move range selector to desired position. (D2, D1, L, or LL).
3. Turn tractor key to "ON".
4. Release parking brake.
5. Depress foot pedal speed control slightly. Depress further for higher speed.

NOTE

Emergency stops can be made by fully depressing the brake pedal without releasing foot pedal speed control. Full depression of brake pedal switches drive power off for circuit protection.
Before drive power can be restored the foot pedal speed control and brake must be released. Depression of the speed control will then restore operation.

TO STOP

Remove foot from speed control pedal and/or depress brake pedal.

TO REVERSE

1. Stop tractor by removing foot from speed control pedal, and using brake if necessary.
2. Move direction switch to reverse, release brake and depress foot pedal speed control slightly. Depress further for higher reverse speed.

NOTE

New power packs have a "break-in" period. It is recommended that deep discharging be avoided for the first 5 operational periods. This will assure longer power pack life.
Deep discharging can be identified when the Fuel Level Meter reads in the red to the left of "E".

ATTACHMENTS

Use and care information for ELEC-TRAK attachments is found in the specific manual supplied with each attachment.

Heavy hauling, impact pulling, or operation of ground breaking implements requires the use of the heavy-duty rear pin-hitch (standard) or the optional sleeve hitch.

NOTE

Under no circumstances should automotive electrical equipment such as lights, horns, or any grounded frame device be attached to the ELEC-TRAK tractor unless approved. The tractor frame is not grounded and such devices could cause damage to the control system if used.

CRUISE CONTROL

For convenience, a cruise control is provided which will allow the tractor to be operated at a set power level without holding the foot pedal speed control down. This position also provides the most efficiency and highest torque. To operate, depress the foot pedal speed control until the cruise light glows steadily, then, while holding the cruise control button depressed, release the pedal. The tractor will then operate at the cruise position until interrupted.

Another way to engage the cruise control is to depress the foot pedal speed control to any point past that point which causes the lamp to glow steadily. While holding the cruise control switch down, release the foot pedal fully and the cruise control will be engaged.

To release the cruise control, depress the foot

pedal speed control until the cruise light goes out, then release. The cruise control may also be released by fully depressing the brake, turning off the key switch, changing the position of the direction switch to the opposite position with the speed control pedal released, disengaging the power disconnect, or leaving the seat.

DIRECTION CONTROL

Forward and reverse directions are determined by the forward-reverse switch. Moving this switch forward establishes forward motion and moving the switch backward establishes reverse motion when the foot pedal speed control is depressed. In reverse, a red light located on the dash panel illuminates to alert the driver that the direction controls is in reverse. This switch should only be moved when tractor movement has stopped.

TRACTOR KEY SWITCH

The clockwise "ON" position allows power to be applied to the drive motor and PTO operated equipment. The "OFF" position disconnects these electrical circuits. The charger, lift, lights, horn and accessory receptacle are active with the key in either the "OFF" or "ON" position.

RANGE SELECTOR

Range selector lever position determines one of four speed-torque ranges according to the pattern shown in Figure 2. The "LL" position is accessible by shifting through the "L" position.

Range Selection is made with a quick positive hand motion, but only after drive motor rotation has stopped.

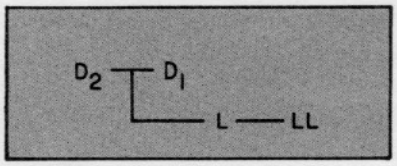


Figure 2. Range Selector Diagram

Designation	Use
LL – Low-Low (Up to 1.2 mph)	Extremely Heavy Hauling Continuous Slow-Speed Maneuvering Snow Throwing and Earth Engaging Operations
L – Low (Up to 3.6 mph)	Heavy Hauling Bucket Loading Pallet and Cargo Handling of Heavy Loads Earth Moving Rotary Broom Sweeping Power Vacuuming
D_1 – Drive One (Up to 6.5 mph)	Pallet and Cargo Handling of Medium Loads Power Vacuuming Rotary Broom Sweeping Heavy Mowing Snow Plowing Medium Hauling
D_2 – Drive Two (Up to 9.5 mph)	Pallet and Cargo Handling of Light Loads Light Hauling Transporting High Speed Mowing and Snow Plowing

NOTE

When the range selector gears do not move or mesh easily, a momentary application of drive power will reposition gears and allow shifting. Do this by giving the foot pedal speed control a slight push and release. Do not force gear changes if any interference is indicated. Be careful to have tractor path clear of objects or people in case movement occurs during this operation.

SPEED CONTROL

Control of speed is achieved with the foot pedal speed control. Initial downward movement starts the motor and further depression increases the

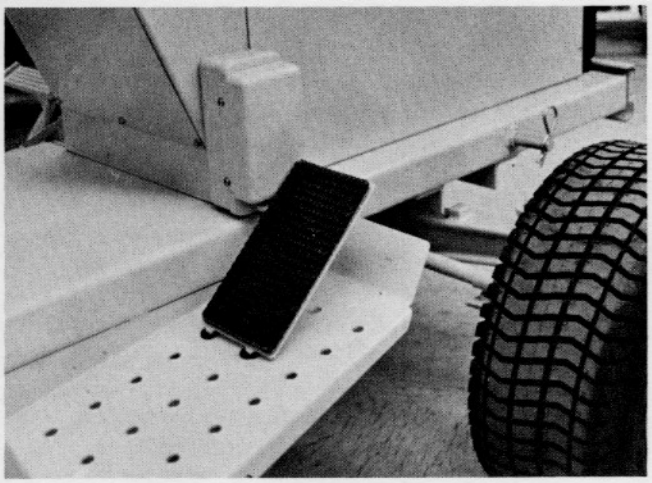


Figure 3. Foot Speed Control Pedal

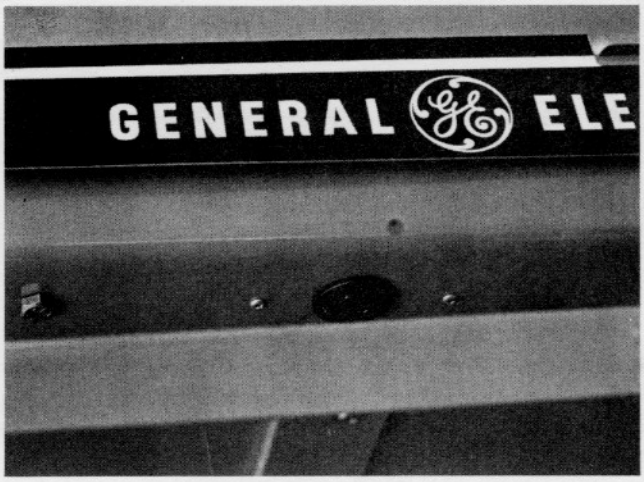


Figure 4. Accessory Receptacle

speed. When operating at the top speeds, an increased load, such as going up an incline, will require high motor power and will tend to cause the tractor to slow down. The I-5 control has an automatic "downshift" which increases the torque for best response to the load, increasing motor efficiency and maintaining speed of travel. (See Figure 3.) Operation in the cruise control or in the foot pedal speed control position that keeps the cruise light on provides the highest torque and motor efficiency (longest range).

ACCESSORY RECEPTACLE

The accessory receptacle on the ELEC-TRAK tractor lets you take your power source to your work. A variety of 36-volt electric power tools, made just for the ELEC-TRAK tractor are available from your GE ELEC-TRAK Industrial Dealer.

The accessory receptacle is located on the left side of the tractor under the edge of the hood to the rear of the PTO outlet as shown in Figure 4.

When using a hand power tool, apply the parking brake and insert the accessory plug into the special receptacle rotating it slightly to the right to lock it in place. Voltage to this receptacle is on regardless of key switch position. In the event that a power tool does not operate, be sure that the power disconnect is engaged and the manual reset circuit breaker button is pushed in. (See Figure 8).

NOTE

The 36-volt accessory receptacle is designed to prevent the use of standard 110-volt AC power tools. Use only approved 36-volt tools in the accessory receptacle.

Additional special accessory receptacles are installed by the dealer or owner when use of fork lifts or an accessory power pack is desired. Instruction for the wiring required are sent with the accessories.

BRAKE PEDAL AND PARKING BRAKE

The ELEC-TRAK tractor is equipped with a disc-type brake fixed on the transaxle. This brake is used for normal stopping as well as a parking brake. The brake is *not* automatically applied when drive motor power is interrupted. To apply the parking brake, it is necessary to fully depress the brake pedal and pick up on the rear of the parking brake lever until it engages the forward edge of the foot rest. When foot pressure is released, the brake pedal should remain in its depressed position. The parking brake is released by reapplying pressure on the brake pedal and moving the rear end of the

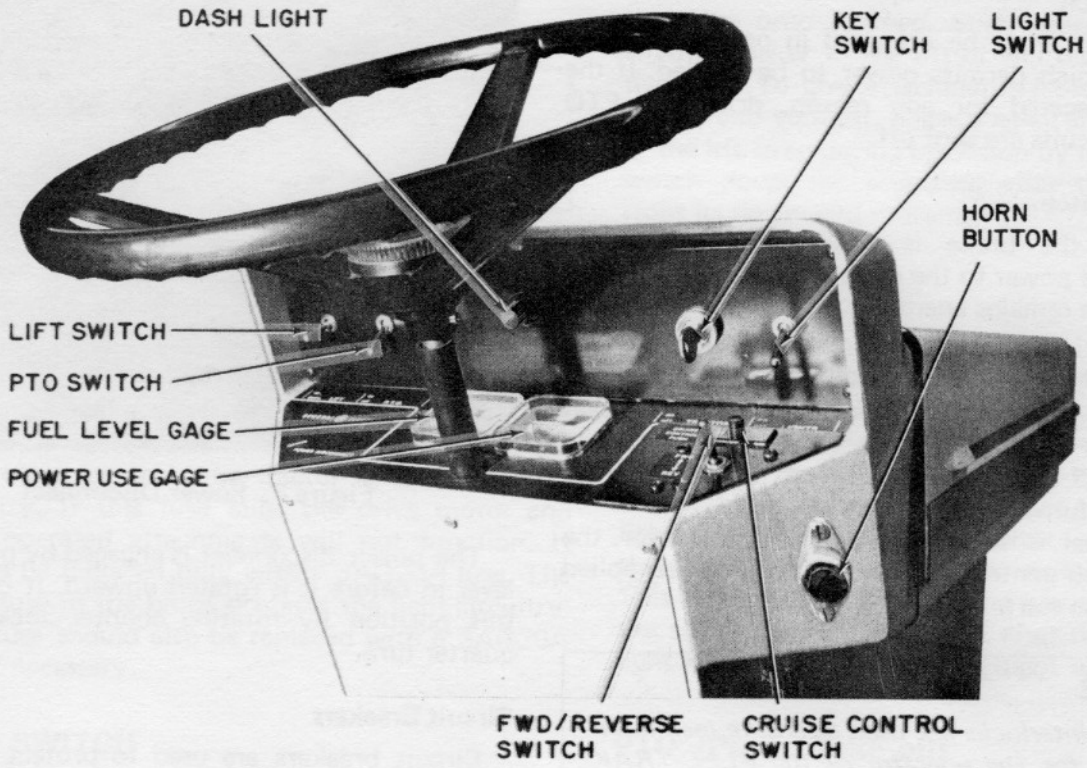


Figure 5. Control Panel

parking brake lever downward to its stop (See Figure 6).

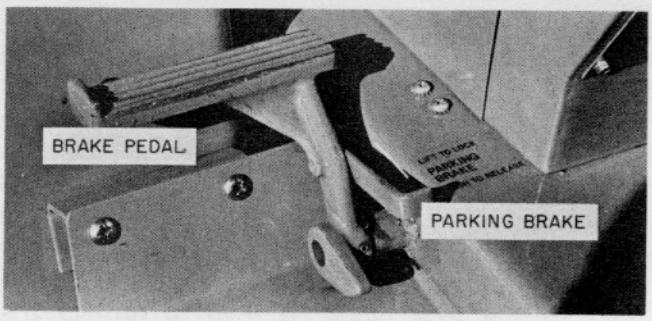


Figure 6. Brake Pedal and Parking Brake

The brake pedal also activates a switch which shuts off the drive motor circuit when the pedal is *fully* depressed. The tractor control is inoperative with the parking brake set. To restore drive motor power, fully release the brake pedal and then start by again pressing down on the speed control pedal.

NOTE

Always release the brake pedal fully before drive power is applied.

SAFETY INTERLOCKS

Seat Switch

The seat must be occupied in order to close a switch which permits power to be applied. If the seat is vacated for any reason, drive and PTO power circuits are shut off.

Brake Switch

When the brake is applied fully, a switch interrupts power to the drive motor only. The PTO receptacle remains energized.

Return-to-off

If power is interrupted to the PTO by the seat switch or turning off the key switch or power disconnect, it cannot be restored unless the PTO switch is turned off and then on again.

If power is interrupted to the drive motor, the foot speed control must be released and reapplied in order to start.

> **NOTE**
>
> *These interlocks are used to ensure maximum safety for the operator of the ELEC-TRAK tractor. They should never be removed from the circuits, and should be kept in good working order.*

ELECTRICAL PROTECTION

Power Disconnect

The power disconnect is an emergency device, which disconnects all electric power to the vehicle. It disengages power when you push the end of the lever downward (See Figure 7). Should any electrical malfunction occur, disengage this unit immediately and check the troubleshooting check list on page 19 before consulting your dealer.

ALL SERVICING OF THE TRACTOR SHOULD BE DONE WITH THE "POWER DISCONNECT" DISENGAGED. (CHARGING REQUIRES THE POWER DISCONNECT TO BE ENGAGED). NOTE SPECIAL INSTRUCTIONS WHEN USING AUXILIARY POWER PACK.

Figure 7. Power Disconnect

The power disconnect is engaged by pushing the lever in before it is rotated upward. It is locked in this position by rotating counter-clockwise one-quarter turn.

Circuit Breakers

Circuit breakers are used to protect the drive, lift and charger circuits from damaging overloads. These devices operate on both high current and high temperature to sense potentially severe conditions that could damage the circuits or components, and they remove power to the circuits under such conditions. After a short interval of time, the drive and lift breakers automatically reclose, but the charger breaker must be manually reclosed, then operation can be restored by following the normal starting procedure. Continued tripping is a signal to reduce the load or to search for a fault such as a locked motor rotor or an electrical problem that requires service. The automatic circuit breakers are located at or within the motors. (Manual reset circuit breakers are used on some of the attachments while the automatic types are used for others. See the specific attachment manual for additional information.)

The circuit breaker, located on the control panel next to the fuse block, is used to protect the charging circuit, as well as the accessory receptacle.

This manual reset breaker operates on over-current conditions in a similar manner to the motor breakers, but, when tripped, *must be reset by pushing the red reset button* (Figure 8).

> **NOTE**
> *Power pack charging cannot occur if this circuit breaker is open.*

FUSES

The lift circuit is also protected by a 3AG30ASB fuse located in the fuse block under the hood (Figure 8). If the lift motor fails to operate, check this fuse and replace it if necessary with one of indentical specifications. The center fuse in the same block protects the tractor control and PTO circuitry. If this fuse fails, the drive motor and PTO operated attachments will not function. It should be replaced only with a 3AG20A fuse. The third fuse in the block protects the light circuitry. This fuse should also be replaced with a 3AG20A fuse if necessary.

LIFT SWITCH

With an attachment properly mounted, the lift switch lever is held upward to raise the attachment, downward to lower it. Spring loading returns the switch to its center "OFF" position upon release. *Do not continue to power the lift after its raised limit has been reached.* Such abuse will trip the circuit breaker in the lift or will blow the protective fuse. To give attachments freedom to follow the ground contour, allow a small amount of slack in the lift strap during operation by holding the lift switch down for a second after the implement stops its downward movement.

LIGHTS

Operation of the tractor lights is independent of the key switch position, so that the lights can be used at night for lighting work areas or servicing front mounted attachments with the power safely turned off. In addition to lighting the dash panel, the dashlight serves as a reminder that the headlights are on. The reverse indicator lights to remind the operator that the direction switch is in reverse. This light is turned off by the key switch, should the switch be left in reverse after use. A rear tail light kit is available for safer night operation.

PTO (Power Take-off)

The dash-mounted PTO switch controls motorized attachments. Power is delivered through

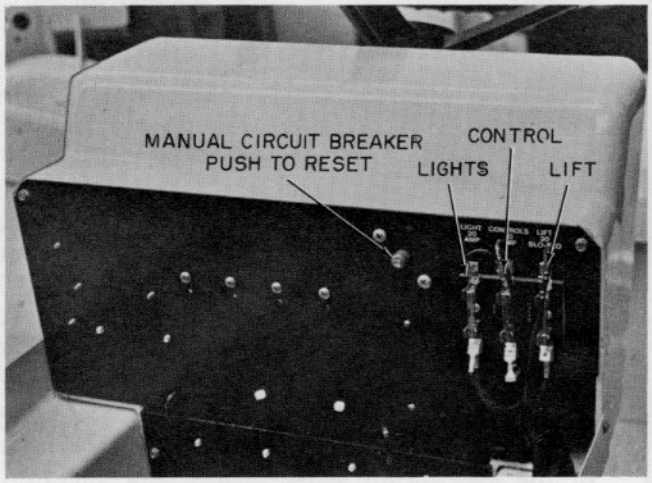


Figure 8. Fuses and Manual Circuit Breaker

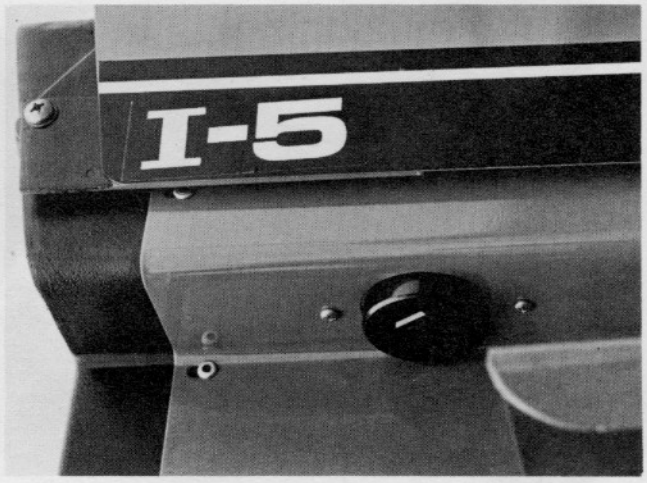


Figure 9. Front PTO Receptacle

the PTO receptacle located just under the left edge of the hood toward the front of the tractor (See Figure 9).

The PTO switch must be turned on after the key switch is turned to "ON". This is due to the safety interlock which prevents unintentional attachment start-up. If the driver leaves the seat with an attachment running, a safety interlock interrupts the attachment power. To restore attachment power, sit on seat and turn PTO switch to "OFF" and then to "ON".

REAR PTO

The rear PTO outlet is located under the right rear fender. (See Figure 10). It is controlled by the same dash-mounted PTO switch as the front PTO.

FUEL LEVEL GAGE

On the fuel level gage the green zone between the "E" (empty) and "F" (full) represents the range of the power pack. Readings in this zone are fractional portions of full range remaining. See Figure 5.

When the charger is in operation and nearing completion of its cycle, the "CHG" zone indicates the power pack is being fully charged. This assures you of proper charger operation. After the charging cycle is completed, the indication should be "F" or higher, to be interpreted as "full". Use of heavy work attachments or high loads on the tractor will cause the indicator needle to drop below "F" as the heavy drain period begins. The fuel level gage will always read lower during heavy power usage. When the gage consistently reads below empty, the load should be reduced until the indicator needle returns to the green area or the tractor is recharged enough to permit further operation.

While the right red zone represents "overcharge", the left one represents "overdischarge". If either of these zones are indicated after charging, check the troubleshooting tips on page 19. If proper operation is not restored by the suggestions there, disengage the power disconnect and consult your dealer.

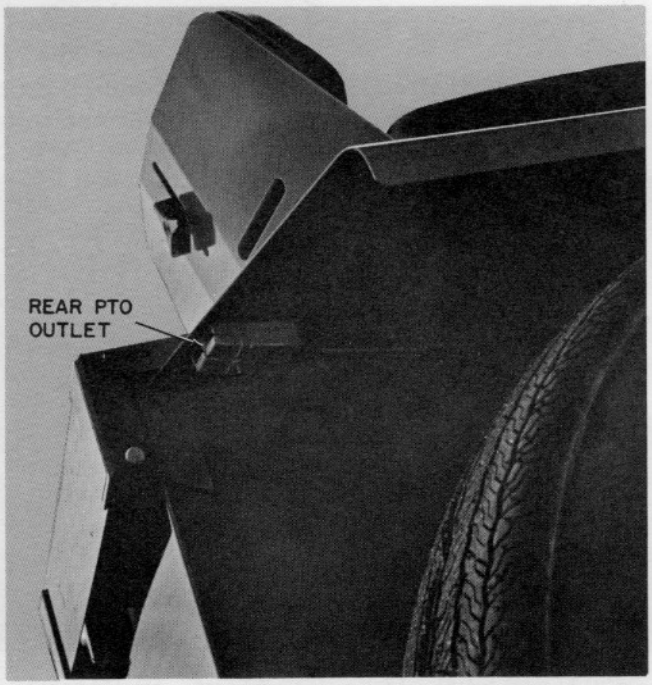


Figure 10. Rear PTO Receptacle

POWER USE GAGE

Proper use of the power use gage can extend the ELEC-TRAK tractor range considerably. Reference should be made to the upper scale when performing relatively light work such as mowing, transporting, hauling and sweeping, but the lower scale should be used for heavier operations. Continued operation with an indication in the red on the "HIGH" section of the appropriate scale should be avoided. Prolonged operation with this indication will result in more rapid discharge of the power pack and is usually due to improper choice of speed-torque range or a jammed attachment. Whenever possible, the speed control pedal should be maintained in the recommended "CRUISE" position (light on) for most efficient operation.

During normal operation, if the power use gage indicator remains in the green or lower yellow zone of the appropriate scale, proper gear selection has been made with the range selector and maximum range per recharge should be realized.

NOTE

The drive motor and its circuitry are protected by a circuit breaker. This automatic switch may open and shut-off power under extremely heavy loading. A few minutes wait is usually sufficient for the circuit breaker to automatically reset. If the circuit breaker continues to trip, reduce the load by shifting to a lower range.

HEAVY-DUTY REAR PIN-HITCH

The heavy-duty rear pin-hitch is used for heavy hauling but can be easily removed to attach accessory equipment that requires additional clearance.

The hitch is removed by first removing the nut and bolt securing the tongue to the tractor's bale, then removing both clevis pins which secure the hitch mounting arms into the frame. The hitch can then be withdrawn from the frame. Installation follows the reverse order. See Figure 11.

The easy-grip, spring-loaded-handle pin can be grasped easily from the operator's seat to release attached equipment.

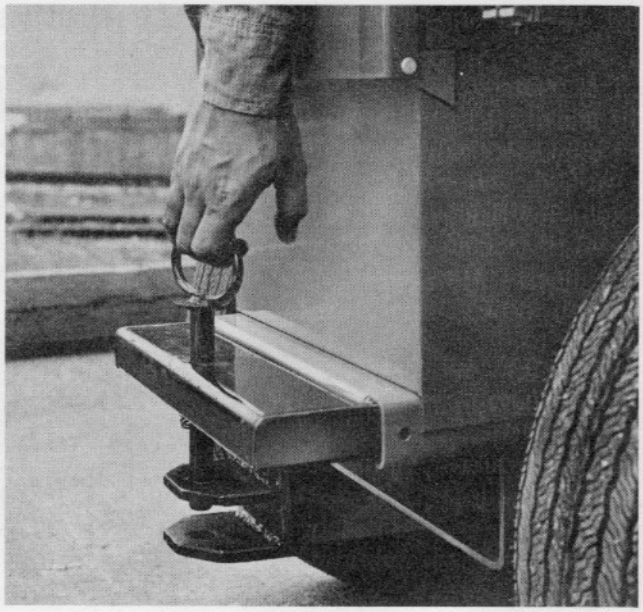


Figure 11. Heavy-Duty Rear Pin-Hitch

ACCESSORY FRONT BUMPER

The accessory front bumper is designed primarily for pushing through swinging flexible-type doors; however, the bumper assembly can be easily removed to allow clearance for certain attachments. It is removed by pushing both large frame-mounting clevis pins flush with the frame sides, and then drawing the bumper assembly straight away from the front of the tractor. Installation is made by following the reverse procedure. The bumper may be removed from the front implement mounting bracket for use with implements or attachments which may interfere with the bumper. See Figure 12.

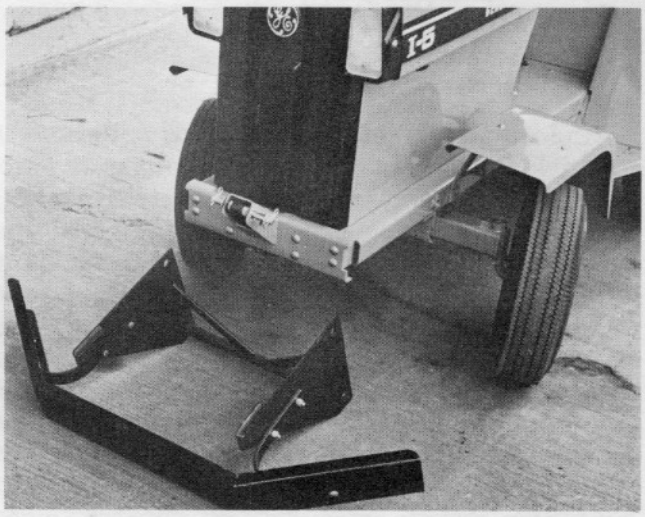


Figure 12. Front Bumper

BATTERY PACK CARE AND CHARGING

The battery pack is like a tank of energy. When using the tractor, this energy is drained. The charger replaces the used energy by properly converting and metering electricity into the battery pack. The charger is designed to restore full charge to the battery pack after one cycle of operation. Under normal conditions a full charge is nearly reached after 5 hours; however, the charger runs up to 19 hours to equalize cell voltages (when started on the "A" position. Older battery packs require less charging time.) A full timed charge for cell equalization should take place at least once per week.

The charger runs independently of the key switch. It is suggested that the key be removed to prevent unauthorized use of the tractor.

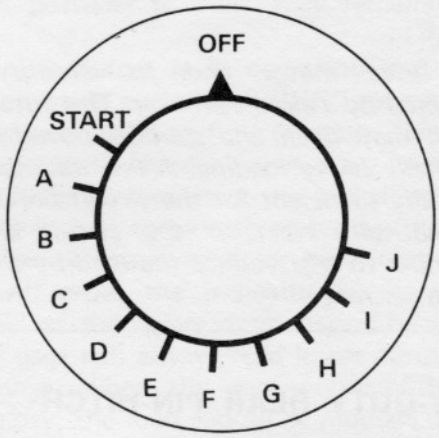


Figure 13. Charger Starting Positions

Charger Starting Positions (See Figure 13)

The amount of charging the battery pack needs is dependent on:

1. Accumulative number of hours of operation since the last charge.
2. Temperature of tractor storage area.
3. Age of the batteries.

The charger dial starting positions A through J vary the charging period from very long at A to about half as long at J with numerous starting positions in between. The best indicator of the battery pack's charging requirements is the amount of water to be added. If water must be added after one to three charges, the charger knob should be started at the next letter below that of the previous charge. The charger setting should not be varied more than one letter at a time, and two or more charges should be made before determining the need to use a new knob setting.

As the batteries age and go through more charging cycles, the charging period can be decreased.

As the temperature decreases, there is a need to *increase* the charge time. For example, a power pack discharge to the same level will require as much as 50 percent more charge time for full recovery at 30°F than at 70°F. In very cold weather the "A" position can usually be used for all charging.

In any event, it is better to overcharge (charge too long) than to undercharge as long as there is not a high loss of water during charging. See "Battery Pack Watering" instructions on page 13.

Charging

A *deeply discharged* battery pack requires the charger to draw approximately 14-amperes from the 115-volt line receptacle. To prevent 15-ampere fuses or circuit breakers from "opening" and interrupting power, it may be necessary to disconnect other appliances, tools, or lights from that circuit.

To start the charging operation, open the hood and plug the charger cord into any 3-wire, grounded, 115-volt receptacle and turn the charger knob to the "START" position determined as previously outlined (Figure 13). (New battery packs go through a seasoning period and must be charged longer).

When the battery pack is fully charged, the charger shuts off automatically. It is *not* necessary to remove the plug from the receptacle after completion of the charging cycle. However, the tractor charger may be unplugged at any time during or after the charging cycle if the tractor is needed.

BATTERY PACK CARE AND CHARGING

The charger line cord is equipped with a standard 3-prong plug which grounds the charger through the building electrical system. When only a 2-hole receptacle is available, an adapter must be used between the plug and receptacle *with the ground lead permanently fastened to the ground screw on the outlet* or other *tested* ground on your electrical system.

NOTE

The battery pack should not be charged in an area where the temperature is above 110° F to prevent overcharging.

BATTERY PACK WATERING

During the late stages of the charging cycle, there is a bubbling action or gassing process which allows some water in the electrolyte solution to evaporate. Remember that during the charging procedure *only water is lost;* so it is only necessary to *add water* to bring up the electrolyte level to the proper point. Distilled water or tap water that is low-to-average in mineral content is satisfactory for use in the ELEC-TRAK battery pack.

Water should be added only after the battery pack is charged. The only exception to this rule is if the water level should fall below the top of the plates. Sufficient water should be added to bring the electrolyte level just above the plates. The system should then be charged, and if necessary additional water added *after* charging. (This is because the electrolyte expands during charging.)

WARNING

Battery electrolyte can cause irritation of the skin and may damage clothing. Any contacted electrolyte should be immediately neutralized with a solution of baking soda and water, or washed thoroughly with soap and water.

Any electrolyte running out of the top of the cells is an obvious sign of overfilling. It is important that the electrolyte level be maintained above the plates, but never above the indicator ring. Overfilling can result in dilution of electrolyte, which reduces capacity and life of the power pack. Overfilling can also cause corrosion where spillage of electrolyte occurs. Automatic cell filler jugs are available at low cost.

Under normal conditions it only will be necessary to check the electrolyte approximately once per month. Use of the tractor in higher temperature locations or under very heavy use may require more frequent checks of the level. Also, after several years of use, it may be necessary to add water more often.

NOTE

The charging process evolves small amounts of hydrogen gas; therefore, normal precautions like those for gasoline refueling should be used whenever the ELEC-TRAK tractor is being charged. (No sparks or open flames near the tractor.) This gas concentration will not occur if there is free air circulation in the area where the tractor is stored or if the area is large so the concentration is reduced (i.e., a garage).

COLD WEATHER BATTERY CARE

The efficiency of a battery pack is somewhat less at lower temperatures. In order to obtain optimum performance of your ELEC-TRAK tractor during the winter months, and to properly care for the battery pack when not in use, the following recommendations should be followed:

Tractor in Storage

1. Fully charge battery by setting charger knob to appropriate indicator mark and letting charger operate until it shuts off.

BATTERY PACK CARE AND CHARGING

NOTE
Always be sure that the disconnect is in (engaged) when charging.

2. Add water to each cell of the batteries to the specified level as described in the previous section. It is important for best battery care to be sure (a) that the perforated plates which may be seen through the filling holes are covered by the water level to a depth of 1/4-3/8" before charging, and (b) that the water level is brought to the bottom level of the indicator ring after charging. In this way, overfilling is prevented but sufficient water is assured.

3. The tractor may be stored in the cold provided the battery pack is charged. A discharged battery can freeze in cold temperatures unless recharged at once. The following table illustrates the relationship between amount of charge and freezing temperature of the electrolyte.

Amount of Charge	Freezing Temperature of Electrolyte
100%	- 80F
75%	- 42F
50%	- 16F
25%	- 2F
10%	+ 7F

Self-discharge of a fully charged battery is practically non-existent below 40 degrees Fahrenheit, and it can be stored for several months without attention when not used and in any temperature less than 40F.

4. If stored in a warm area above 40F, the tractor should be recharged and the water level in the battery checked and adjusted about once a month.

5. After storage of more than a few weeks, it is advisable to give the tractor an overnight charge before using.

Tractor in Use

1. Start the winter in good condition by following steps 1 and 2 as previously outlined under Tractor in Storage.

2. Whenever possible, give the battery another charge before using if cold weather operation can be predicted. (The night of the snow storm if you plan to remove snow in the morning.)

3. Do not let the battery stay discharged in cold weather. As soon as the work is completed, put the unit on recharge. If idle time occurs between start and finish, plug the charger into an outlet while you are not using the equipment, even if for only a few minutes. (This is helpful in *any* weather to give maximum range and performance.)

4. There is little danger of overcharging the battery when it is cold, so extra charging in the winter is advisable when frequent use is expected.

MAKE IT A HABIT!
REMOVE KEY • PLUG IN • START CHARGER

SERVICE AND MAINTENANCE

The ELEC-TRAK I-5 tractor reduces your lubrication requirements tremendously since the electric motors are permanently lubricated and there are no clutches, idler pulleys or mower bearings to be greased.

Several high-friction points do require periodic lubrication to prolong life and give maximum operating satisfaction.

AFTER EACH 100 OPERATING HOURS—OR EVERY 6 MONTHS

After 100 operating hours, the transaxle filler plug should be removed and the fluid level checked (See Figure 14). The oil level should be to the bottom edge of the filler hole. If necessary, replenish with approved axle fluid only, i.e., SAE EP90.

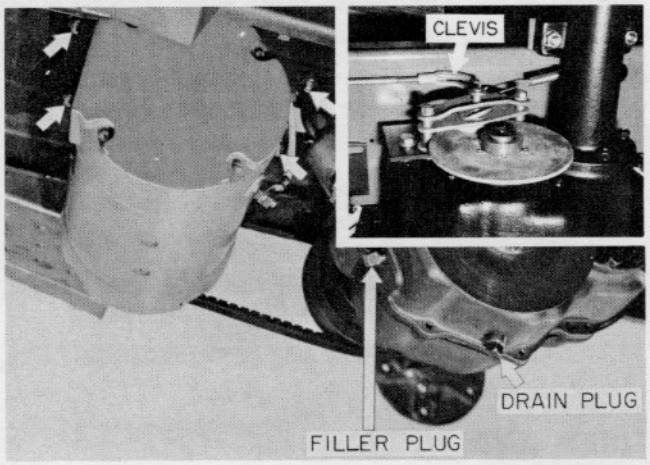


Figure 14. Brake, Transaxle, and Motor Mounting

Twice a year or every 100 operating hours the front spindles, the front wheel bearings and the front axle main pivot pin should be greased with a hand grease gun using a No. 2 multipurpose lithium grease (See Figure 15). Pump gun until dirt and old grease are flushed out and wipe all surfaces clean.

All linkages and bearings should be oiled with a heavy-duty (No. 30) machine oil. Major points to be considered include:

1. Brake pedal shaft and linkage connections.

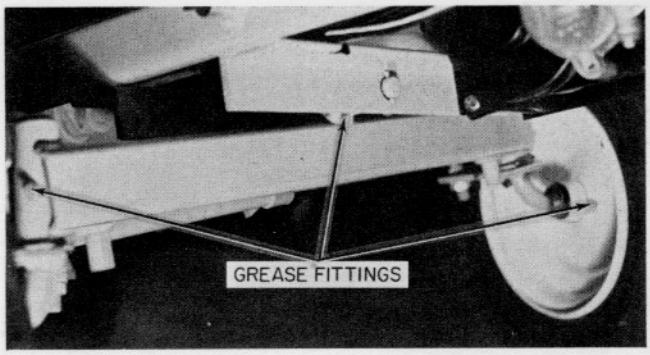


Figure 15. Front End Grease Fittings

2. Hood and seat hinges.
3. Attachment mounting pins.

Prevent dirt and dust accumulation, by wiping away all excess oil.

These lubrication intervals are meant to be a guide only. If the tractor is subjected to abnormal environmental conditions or greater-than-average use, the frequency of lubrication as well as other preventive maintenance measures should be adjusted accordingly.

VISUAL INSPECTION

Periodic inspection of the tractor is an important preventive maintenance measure. Make it a habit to visually check for loose fastening devices or any evidence of abnormal operation. Regular cleaning and polishing of exterior surfaces will give longer life and promote better work habits.

Adjustments, inspections, and maintenance procedures on both the tractor and attachments should be performed at regular intervals to assure trouble-free, economical operation.

DAILY INSPECTION

A daily inspection and starting routine should be followed to ensure the vehicle has all safety features in good operating condition:

1. Check control levers to see that they operate properly.
2. Test foot brake and all safety interlocks.
3. Check tires for general condition.
4. Check fuel level.
5. Check horn and accessories.

SERVICE AND MAINTENANCE

POWER PACK

In addition to power pack charging and watering as outlined, other services may be performed to give more desirable service.

Check the electrolyte level in the battery monthly. Add water only if necessary. To protect your warranty, no electrolyte should be added, except by your dealer.

City tap water or water of a low to average mineral content is acceptable for refilling. To prevent contamination of water, use the recommended ELEC-TRAK water-filling jug or clean glass or plastic containers with a funnel.

It pays to keep the battery pack covers clean. Removal of accumulations of dirt, and foreign particles will assure optimum electrical system performance. An occasional wiping with wet paper toweling is usually sufficient, or the battery pack can be flushed off with water which will drain out at bottom of tractor.

CAUTION

For personal and equipment protection, always unplug charger and keep dry when cleaning and flushing power pack surfaces.

DRIVE ASSEMBLY

Power is transmitted from the drive motor to the transaxle through heavy-duty, direct-coupled belts. The belts should be kept free of grease, oil, electrolyte, and dressings and checked occasionally for tightness to assure best performance.

If the belts become contaminated they should be wiped with a clean cloth. Any belt slippage is due to wet belts or loose adjustment. If belts become wet and slip, temporarily select a lower speed range (higher torque) until belts dry, and then resume normal operation. (An optional belt system cover is available if special needs dictate.)

BELT ADJUSTMENT

With the belts properly adjusted, a 10-pound force will deflect a belt approximately 1/4 inch.

If increased tension is required, proceed as follows:

1. Loosen the four carriage bolts holding the motor plate. Insert a 1/4" wedge under the forward part of the motor plate, and retighten the bolts finger tight (See Figure 14).
2. With the belts in place, force the motor and mounting plate forward as far as possible. Tighten the rear two carriage bolts.
3. Remove the 1/4" wedge, and tighten the front two bolts.
4. Recheck belt tension as outlined.

If it becomes necessary to replace one belt, it is recommended that both belts be replaced so drive power is shared equally.

ELECTRONIC CIRCUITRY

The bulk of the ELEC-TRAK tractor electronic circuitry is used for power control and switching, and is located on circuit cards contained in the control panel. Service on these cards is to be made by your dealer only.

NOTE

Loose connections account for many of the problems encountered with an electric vehicle. To eliminate these problems all electrical connections should be checked for tightness on a regular basis.

TIRES AND WHEELS

Proper tire inflation pressure is an important factor in determining tire life. Pressures should be checked and corrected, if necessary, on a monthly basis according to the following table.

Tire Inflation

Front . . . . . 20 psi

Rear . . . . . 20 psi

Pressure measurement should be made with a low-pressure gage.

Use with chains requires lower pressures for smoothest ride and maximum traction.

For continuous use in mowing, snow removal or grading applications, the optional 10.50 size rear tires are recommended.

BRAKE AND PARKING BRAKE

A fully depressed brake pedal or an engaged parking brake should prevent the tractor from rolling on average inclines. If the brake does not perform satisfactorily, the following adjustment may be made: (See Figure 14.)

1. Block the front wheels and move the range selector to neutral.
2. Remove the rear wheel on the brake side of the transaxle.
3. Remove the cotter pin from the brake clevis pin.
4. Remove the brake clevis pin.
5. Rotate the brake clevis to shorten the brake linkage. Shorten till the brake drags (test by manually rotating the brake disk), then back off one-half turn at a time until brake drag is eliminated. The clevis and clevis pin must be temporarily reinstalled to check brake drag.
6. Reinstall the clevis, clevis pin, and cotter pin on the brake actuating lever.
7. Reinstall wheel and test brake function.

BRAKE SWITCH

Proper brake switch adjustment causes the drive motor to shut off when the brake is depressed to 1/4 inch from its bottom stop. (See Figure 16.)

If adjustment is necessary, the brake switch is mounted on the underside of the frame immediately to the right of the brake pedal. Notice that the switch is actuated when its lever arm is deflected as the brake pedal is depressed. During this actuation, the lever arm rides on a shoulder bolt mounted on a slotted pawl. It is this bolt that must be repositioned in the slot to adjust the drive motor/brake cut-off point. After adjustment is made, check the cut-off point and readjust if necessary.

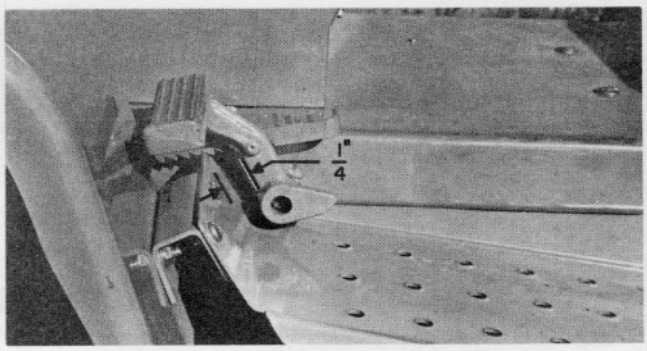


Figure 16. Brake Switch Adjustment

STEERING ASSEMBLY

The front axle and steering system of the ELEC-TRAK tractor are extremely rugged. Toe-in, and steering gear and linkage are carefully adjusted at the factory and should require no additional adjustments in normal service, barring improper operation. If any service becomes necessary, contact your dealer.

STORAGE

The tractor should be covered or under a roof in outside storage in snowy or rainy weather to give better protection and maintain performance and life of the equipment. Storage covers are available from your dealer which are custom tailored for the ELEC-TRAK tractor and the front mounted rotary mower.

Seasonal storage requires a minimum of preparation. The steps to be performed are as follows:

1. Wherever possible, store tractor in a cool, dry weather protected area or cover with the ELEC-TRAK storage cover.
2. Clean battery pack covers if necessary as outlined on page 16.
3. Plug charger into approved receptacle and start charger operation. Insure proper water level after first day (24 hours). (See page 13.)
4. Lubricate tractor and wipe oil on any parts that may be affected by rust.
5. Leave charger plugged in for the duration of storage period *and recycle its operation monthly.*

ElecTrak

SERVICE AND MAINTENANCE

The charge retention (without using additional electricity for recharging) of the battery pack can be extended considerably if stored in a very cool place. Lower temperature slows the self-discharge. At temperatures below 40°F, virtually no self-discharge occurs.

NOTE
At temperatures below 32°F the full charge state must be maintained to prevent cell electrolyte from freezing which may result in permanent damage to power pack.

PERIODIC SERVICE CHART

Service	Weekly	Monthly or Every 100 Operating Hrs.	Every 6 Months or 500 Operating Hrs.
Check battery pack water level	X		
Check tire pressures		X	
Check drive belt tension		X	
Check transaxle oil level			X
Clean power pack top surfaces if necessary	X		
Check fasteners and connectors for tightness			X
Grease wheels, spindles and steering assembly		X	
Oil exposed moving parts – brake pedal, hinges, etc.		X	

SPECIFICATION CHART

General

Width	36 inches
Length (Overall)	76 inches
Height (Overall)	42 inches
Weight	960 lbs.
Turning Radius (outside)	86 inches
Drawbar Pull	900 lbs.
Frame	Unitized
Accessory Outlet (36-volt)	Standard
Brake	Disc
Front Tires	4:80 – 8
Rear Tires	B78 – 13
Seat	Molded
Heavy-Duty Rear Pin-Hitch	Standard
Accessory Front Bumper	Standard
Horn	Standard
Headlights	Standard
Front Electric Lift	Standard

Drive System

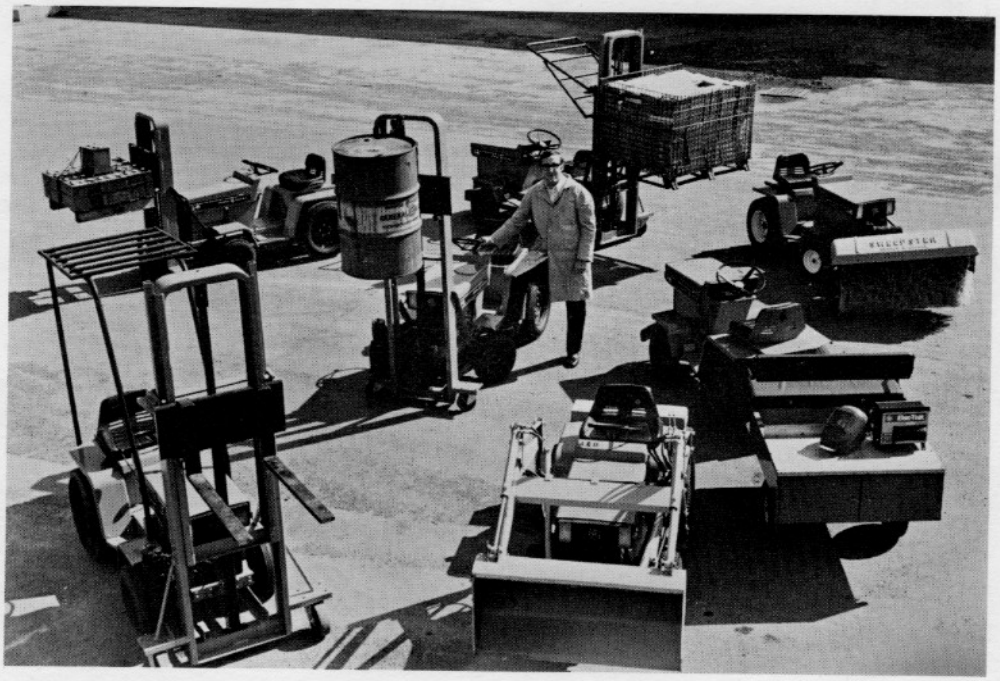
Heavy-Duty 36-volt	Standard
Transaxle	4 Speed
Transaxle Oil Capacity	4 U.S. Pints
Cruise Control	Standard
Speed Control	Foot Operated

TROUBLESHOOTING CHECK LIST

Indication	Possible Causes
Drive motor does not rotate and Fuel Level Gage does not indicate.	• Control fuse open. • Power Disconnect disengaged. • Circuit Breaker opened.
Drive motor does not rotate and Fuel Level Gage indicator is upscale.	• Key switch not "On". • Parking brake engaged. • Momentarily return speed control to neutral, then restart. • Check connections on either brake or seat safety switches.
Cruise control does not engage.	• Proper forward speed (cruise light on) not attained or passed before cruise switch is pressed.
Cruise control lamp does not light.	• Cruise switch released before foot speed control. • Bulb burned out.
Reduced tractor range.	• Charger not turned to proper "start" setting. • Brake dragging. Check adjustment. • Check water level in batteries. • Check drive belts for slipping. • Underinflated tires. • Improper range selection (power use gage reading high).
Battery Pack not charging.	• Power disconnect disengaged. • Circuit breaker opened. Reset manually. • 110 volt line receptacle inoperative due to open household fuse or circuit breaker. • Failure to turn charger knob to start position.

TROUBLESHOOTING CHECK LIST (Cont'd)

Indication	Possible Causes
Lights inoperative.	• Light fuse open. • Bulbs burned out.
Lift inoperative.	• Lift fuse open. • Lift motor connections loose. • Circuit breaker opened, wait briefly for automatic reset.
PTO equipment inoperative but other circuits operative.	• Sit on tractor seat, turn key switch to "On", turn PTO switch to "Off", then "On". • Check attachment plug-in.
Accessory tools inoperative.	• Power disconnect disengaged. • Circuit breaker open. Reset manually (See page 9.) • Check tool plug-in for loose connection.



SAFETY PRACTICES FOR MOWING

As with all power devices, prime responsibility for safe operation of the equipment rests with the operator. It is necessary that both operating instructions and the following safety information be fully understood by each operator before using the tractor and attachments.

- Become familiar with the location and function of all controls.
- Be sure the work area is clear of objects such as stones, metal objects, or sticks, which might be picked up and thrown by the mower.
- Regulate travel speed according to ground conditions.
- Don't forget to set the brake and shut off attachment power before you leave the tractor.
- Don't drive too close to creeks or ditches, in order to avoid the chance of tipping.
- Watch out for traffic when near roadways.
- Vehicles and attachments should be stopped and inspected for damage after striking a foreign object and the damage should be repaired before restarting and operating the equipment.
- Mow up and down the face of slopes; never across the face.
- Stay alert for holes and other hidden hazards.
- Watch where you're driving! Pay attention! The tractor is heavy and very powerful.
- Beware of steep slopes! Reduce speed on all side slopes and sharp turns to prevent tipping or losing control.
- Don't attempt to operate tractor when not in seat.
- Don't carry passengers without proper provisions.
- Keep people and pets at a safe distance, especially in the direction of mower discharge.
- Don't wear loose-fitting clothing that might get caught in moving parts.
- Never attempt to get off the tractor while it is in motion.
- Don't stop or start suddenly when going uphill or downhill. A sudden change of speed could upset the balance of tractor or operator.
- Keep tractor in good operating condition. Maintain all safety devices as indicated in this manual.
- Plug tractor charger cord into a normal 115-volt, 3-hole grounded receptacle. Do not use a 2-hole adapter unless properly grounded.
- Keep hands and feet clear of all rotating equipment.
- Disconnect power cord connections from tractor to attachment before handling or servicing power attachments.
- All safety devices are for your protection. Do not attempt to defeat them.
- Shut off power to attachments when transporting or not in use for safety and to conserve power.
- Take all possible precautions when leaving vehicle unattended; such as turning PTO switch to "Off", lowering attachments, setting parking brake, and removing key.
- Keep motors free of grease, leaves, or grass to prevent heat build-up.
- Use care when pulling loads or using heavy equipment.

  Use only approved drawbar hitch points.
  Limit loads to those you can safely control.
  Do not turn sharply. Use care when backing.
- When using any attachments, never direct discharge of material toward bystanders or allow anyone near vehicle in operation.
- When using tractor with mower:

  Mow only in daylight or in good artificial light.
  Check blade mounting bolts for proper tightness at frequent intervals.
- Keep all guards in place on mower.

WARRANTY
ELEC-TRAK INDUSTRIAL TRACTOR

General Electric Company warrants that it will repair or replace without charge, including cost of parts and labor for replacement, any part of the ELEC-TRAK industrial tractor, fork lift, bucket loader, dozer blade or other attachment with which this warranty is furnished which proves to be defective in material and workmanship within 3 months following the date of sale to the original purchaser for use. This warranty does not apply to the power pack, which is separately warranted and offers additional replacement coverage. These warranties do not apply to any repair or replacement made necessary by improper use or maintenance, or by abuse or accidental damage.

The foregoing warranty states the entire obligation of General Electric Company with respect to said products and is in lieu of any and all other warranties, express or implied. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT WILL THE COMPANY BE LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES.

WARRANTY
ELEC-TRAK INDUSTRIAL TRACTOR POWER PACK

General Electric warrants that it will replace without charge, f.o.b. factory, any individual ELEC-TRAK industrial tractor power pack unit with which this warranty is furnished if it fails because of defects in material or workmanship within 6 months following the date of sale *to the original purchaser* for use. Labor and service call charges during the first 3 months will be covered as stated in the tractor warranty. Service calls and labor after the first 3 months are the responsibility of the owner. This warranty does not apply to any replacement made necessary by improper use or maintenance, or by abuse or accidental damage. A replacement unit will carry the above 6 month warranty.

The foregoing warranty states the entire obligation of General Electric Company with respect to said products and is in lieu of any and all other warranties, express or implied. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT WILL THE COMPANY BE LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES.

GENERAL ELECTRIC COMPANY
OUTDOOR POWER EQUIPMENT OPERATION
CORPORATIONS PARK
SCHENECTADY, NEW YORK 12345

GENERAL ELECTRIC