



ELECTRIC LAWN AND GARDEN TRACTOR

R-36 RIDER

BATTERY MAINTENANCE AND SERVICE

OPERATING TIPS

PREPARED AS A SERVICE TO OWNERS
OF AVCO NEW IDEA LAWN AND GARDEN EQUIPMENT

BY
YOUR AVCO NEW IDEA
LAWN AND GARDEN DEALER

AND
AVCO NEW IDEA
FARM EQUIPMENT DIVISION

TO OWNERS OF AVCO NEW IDEA
LAWN AND GARDEN TRACTORS AND RIDERS

Quality and serviceability are built into your Lawn and Garden Tractors and Riders; but, their dependability and performance are directly related to the care and maintenance you, the owner and operator, give them.

This manual, used in conjunction with the operator's manual, will furnish you with all needed information for daily battery care and maintenance and proper operation of your equipment.

The information contained in this manual should be carefully studied and thoroughly understood. We suggest you retain it with your operator's manual and refer to it as often as needed.

BATTERY MAINTENANCE AND SERVICE

BATTERY SAFETY PRECAUTIONS

A small amount of hydrogen gas is generated by the charging process. To reduce the possibility of this gas igniting or harmful effects resulting from gas inhalation:



- Ensure that all cell plates are fully covered by electrolyte - to prevent internal arcing.
- Avoid smoking near batteries being charged.
- Ensure no sparks or open flame in battery charging area.
- Charge batteries in a well ventilated area.

BATTERY MAINTENANCE

BATTERY WATERING

ALWAYS CHECK FLUID LEVEL IN ALL BATTERY CELLS BEFORE CHARGING.

It is important that the perforated cell plates and separators, as seen through the filler ports, are covered by electrolyte solution (1/4 to 3/8") before charging and that all cells are filled to the indicator ring after charging.

This ensures adequate fluid level for efficient battery operating and prevents overfilling.

Low battery fluid level will:

- Shorten operating range
- Reduce battery service life

Overfilling will:

- Dilute electrolyte causing reduction in battery capacity.
- Cause corrosion from spillage

Normal fluid losses result from evaporation caused by heat generated during the discharging-charging cycle. Only water is lost by evaporation and only water need be added. Use either distilled or clean drinking water.

WARNING: Power pack 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.



BATTERY CHARGING

I. Procedure

- A. Remove switch key to prevent unauthorized use of the tractor.
- B. Raise the tractor hood, then plug the charger cord into any 110V grounded AC receptacle.

Most standard 110-volt AC electrical circuits are protected by fuses or circuit breakers. A deeply discharged power pack requires the charger to draw approximately 14 amperes from the 110V line receptacle. To prevent low 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 ensure battery charger operation.

- C. Ensure that the tractor Power Disconnect (Models 120, 150 & 200) is in the engaged (in) position.
- D. Set the charger timer knob to the starting position on the dial.

When the power 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.

II. Charging Time

Under normal conditions an 85% charge can be attained in approximately five (5) hours; but unless the batteries are fully charged and all cells equalized frequently, reduced battery life will result.

Power packs in use should be fully charged at least weekly (17 to 19 hours, full cycle on dial) or after every two or three charging cycles, whichever occurs first.

III. Charger Starting Positions - The amount of power pack charging needed is dependent on:

- A. Accumulative number of hours of operation since the last charge
- B. Temperature of tractor storage area
- C. Age of the batteries

The charger dial starting positions A through J vary the charging period from very long at A (approximately 19 hours) to about half as long at J with numerous intermediate starting positions.

The best indicator of power pack charging time limitation is the amount of water required. If water must be added after one to three charges, the timer knob should be started at the next letter below that of the previous charge. Two or more charges should be made at this setting before determining the need to use a different knob setting.

On new batteries, place timer knob on "Start" position, as the batteries age and go through more charging cycles, the charging period can be decreased.

As the weather temperature decreases, there is a need to increase the charge time. For example, a fully discharged power pack will require as much as 50% more charge time for full recovery at 30 degrees Fahrenheit than at 70 degrees Fahrenheit. 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.

Caution: To prevent overcharging, the power pack should not be charged in an area where the temperature is above 110 degrees Fahrenheit.

BATTERY CLEANING

Gases and overflowing electrolyte which may result from the charging process can cause a residue of oxidation to form on power pack surfaces.

The residue may increase the rate of battery self-discharge and attack the terminal posts, resulting in deterioration of the terminals.

This residue is best neutralized by sponging a solution of five tablespoons of baking soda to one quart of water onto the power pack surfaces. After a few minutes, wipe all surfaces dry and clean.

Remove the post terminal clamps and repeat the process for the terminal posts and clamps. After cleaning terminal posts and clamps, the double-ended wire brush supplied in the battery service kit should be used to clean the battery posts and the inside surfaces of the post clamps. After wire brushing is completed, reconnect the battery clamps to the posts and coat all post and outside clamp surfaces with suitable Battery Terminal Protection.

COLD WEATHER POWER PACK CARE

Power pack efficiency is reduced by low temperatures. To obtain optimum tractor performance and to ensure proper care of the power pack during cold temperatures, follow these procedures:

I. Tractor in Storage

- A. Fully charge the power pack (17 to 19 hours) and ascertain that all battery cells are filled to the indicator ring.
- B. Recharge the power pack at such intervals as needed to ensure that the electrolyte does not freeze.

If the power pack is stored in an area warmer than 40 degrees Fahrenheit, it should be recharged and the fluid level checked and adjusted monthly.

If stored in 40 degrees Fahrenheit or lower temperatures, it will require attention less frequently.

- C. After storage of several weeks, give the power pack an overnight charge before using the tractor.

II. Tractor in Use

- A. Start the winter with the power pack in good condition by following Steps A and B above.
- B. If cold weather operation can be predicted, give the power pack an additional charge before using it.

- C. Do not allow the power pack to remain in a discharged condition in cold weather; as soon as the work is completed, recharge it.

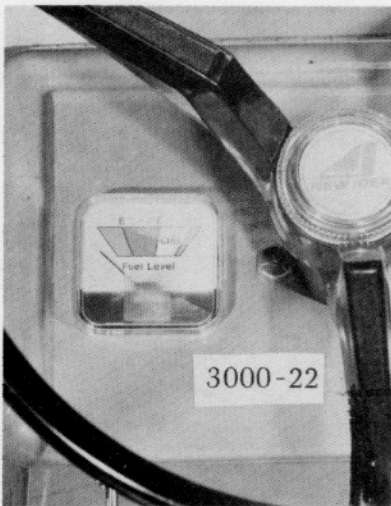
If idle time occurs during the job, charge the power pack while it is not in use, even if for only a few minutes. (This is helpful in any weather to give maximum range and performance.)

There is little danger of overcharging the power pack in cold weather.

- D. Battery efficiency at lower temperatures can be improved by parking the tractor in a heated area or by charging for a short time period just prior to use.

INCREASING OPERATING RANGE

Tractor operating range can be increased appreciably by charging the power pack for short intervals when the tractor is not in use (such as during breaks, lunch, etc.). The charger, in one hour, will replace approximately 20% of the current used in one hour of tractor operation.



When the Fuel Level Gauge and/or tractor operation indicates a low state of power, the power pack should be placed on charge. Frequent deep discharging will shorten the life of the power pack and should be avoided.

Possible Causes of Unsatisfactory Operating Range:

1. Operator failure to fully charge batteries after each use
2. Low fluid level in battery cells
3. Improper selection of speed ranges and/or throttle control positions, for operating conditions.

4. Improper brake adjustment resulting in brake dragging
 5. Operator "riding" the brake
 6. Drive belt(s) slipping
 7. Heavy grass growth or wet grass
 8. Hilly terrain
 9. Mower blades dull
 10. Improper cleaning of underneath side of mower housing
 11. Charger malfunction
 12. Defective battery
- } Least likely causes

HOW TO CHECK SPECIFIC GRAVITY (HYDROMETER)

To get full range, the batteries must be fully and uniformly charged. Specific gravity readings of all cells should be taken if short range is noted. After a full charge (overnight), readings should be about 1.260 plus or minus .010 for all cells. If batteries are new, several recharging cycles may be necessary to equalize cells to reach consistency in readings. Accurate specific gravity readings are important and the following precautions should be taken:

1. The hydrometer should be clean and in good condition. Old hydrometers become etched from acid and offer high resistance to the float moving up the glass. Hold vertical and jiggle the hydrometer to be sure it is floating free.
2. Draw up enough electrolyte to float the indicator freely without hitting the top. Do not maintain liquid level in the hydrometer by squeezing the bulb as this gives inaccurate readings.
3. Use a float with a numerical scale, not just color zones.
4. Wash hydrometer out with water after each use for best results.
5. Do not make specific gravity readings after adding water until thorough mixing has occurred. The charging process speeds this mixing.

OPERATING TIPS

I. Tractors and Riders

- A. Check and keep proper water level in batteries and keep batteries charged.
- B. Charge batteries during short breaks to increase battery range.
- C. Use the "Power Use" gauge (on large tractor models) as a guide for selecting the best transaxle gear ratio. For maximum range and best performance, select the gear ratio that allows the gauge needle to operate within the green area.
- D. To operate in the green area on gauge, select the proper operating gear for the job. On all tractor models, D-1 position is best for heavy or average mowing.
- E. On the larger tractors (EGT 120, 150 and 200), 3rd speed (on the speed selector) is the most efficient - provides maximum drive motor torque and power.
- F. Keep tires inflated to the recommended pressure per operator's manual.
- G. Follow operator's manual lubrication instructions.
- H. At least yearly, remove corrosion from battery and coat battery clamps (after installation to terminals) with Battery Terminal Protection Grease.

II. Mowers

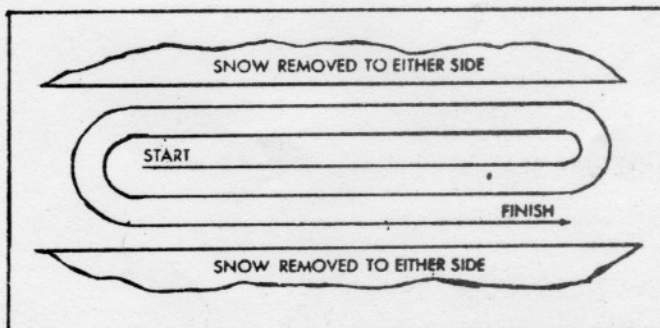
- A. On mid-mount mowers adjust the lift links to ensure that the mower mows level (front to rear); the front-mount mowers are adjusted by the bushings on the front caster wheels.
- B. Keep mower blades sharp and balanced. In sharpening blades, do not round the corners - keep square.
- C. Do not allow cut material to build up beneath the mower deck. WHEN REMOVING MATERIAL BUILD-UP OR WHEN MAKING MOWER ADJUSTMENT, ALWAYS REMOVE THE SWITCH KEY TO ENSURE THAT THE MOWER IS NOT STARTED ACCIDENTALLY.
- D. Avoid mowing in wet grass as much as possible.

III. Dozer Blade (Snow)

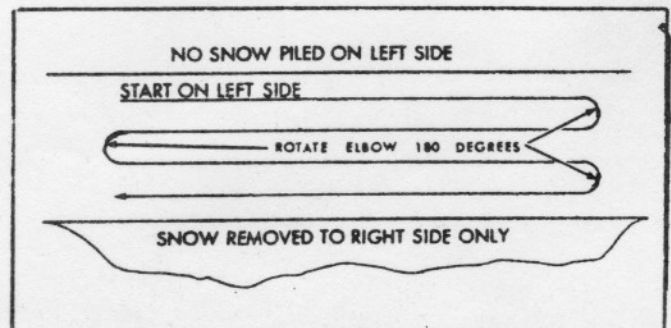
- A. Snow plowing is most efficiently done by making continuous runs at higher speeds with the blade angled to roll the snow off to the side; therefore, the transaxle should be in D-1 or D-2.
- B. On large frame tractors (EGT 120, 150 or 200) 3rd speed (on the speed selector) is the most efficient - provides maximum drive torque and power.
- C. On EGT 120-150-200 with electric lift, the most effective plowing can be done with minimum slack in the lift strap. This allows quick response of the blade to the lift movement.

IV. Snow Thrower

- A. To accomplish the most efficient snow throwing operation, the "L" range in the transaxle should be used; also, on large frame tractors (EGT 120, 150 or 200) 3rd speed is the most efficient - provides maximum drive torque and power.
- B. The swath of snow to be cleared on one pass should be regulated so the power usage gauge is in the yellow zone most of the time.
- C. A light coat of wax applied to the inside surfaces of auger housing and chute prevents snow and ice from sticking to it.
- D. Always overlap each pass for complete snow removal.
- E. For proper snow removal there is a definite pattern to follow - rotate chute as required.



Discharge to Both Sides



Discharge to One Side

- F. Keep chain and belt adjusted properly - disconnect P.T.O. power cord from receptacle before making adjustments.

MOWER CLEANING

Mower Safety Precaution:



- Always disconnect power cord from P.T.O. receptacle before handling the mower for any reason.

It is recommended that the underside of the mower deck be cleaned frequently to maintain maximum mowing effectiveness.

One of the major factors in power loss or low range and the opening of circuit breakers in mower motors is improper cleaning of the underside of the deck.

Inspect the underside of the deck frequently and remove the material that has adhered to the underside of the deck as required to keep cut material flowing freely from mower.

For thorough cleaning and inspection, the mid-mount mower should be removed from the tractor or rider - on front-mount mowers tilt the front edge of the mower up in a vertical position.

