

MAY 7 1973

OWNER'S MANUAL

for JACOBSEN[®] ELECTRIC RIDING ROTARY MOWER

34" ELECTRA MARK IV NO. 43040
SERIAL NO. 1601 AND UP

**READ THIS ENTIRE MANUAL
BEFORE ATTEMPTING TO
SET-UP, OPERATE, ADJUST,
OR SERVICE YOUR NEW
MACHINE.**

SEE YOUR JACOBSEN SERVICE DEALER

This manual is an operating and service guide for the owner. We recommend that you read it carefully before operating your mower and that you follow the simple adjustments and maintenance listed. We do not recommend that you make major repairs beyond necessary adjustments and simple parts replacements required to keep your unit in good operating condition.

For assistance in getting the most out of your unit, and for overhaul, winter or summer storage, tune-up, and repair service, we recommend your Authorized Jacobsen Dealer, who is prepared to help you.

HOW TO ORDER REPAIR PARTS

To eliminate error and speed delivery:

1. Write your NAME and ADDRESS on your order plainly.
2. Explain WHERE and HOW to make shipment.
3. Give PRODUCT NUMBER, NAME, and SERIAL NUMBER that is stamped on the NAME PLATE or SERIAL PLATE of your product.
4. Order by QUANTITY DESIRED, the PART NUMBER, and the DESCRIPTION OF PART.

5. Send your order to or visit your nearest JACOBSEN DEALER, AUTHORIZED SERVICE STATION, or AUTHORIZED JACOBSEN SERVICE DISTRIBUTOR as indicated in your SERVICE STATION DISTRIBUTOR'S DIRECTORY.
6. INSPECT ALL SHIPMENTS ON RECEIPT. If any parts are damaged or missing, file a claim with the carrier before accepting.
7. Do not return material to your nearest JACOBSEN DEALER, AUTHORIZED SERVICE STATION, or AUTHORIZED JACOBSEN SERVICE DISTRIBUTOR without a letter of explanation. Make a list of all returned parts, show your name and address, and include it with the shipment. TRANSPORTATION CHARGES MUST BE PREPAID.

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Jacobsen Manufacturing Company (hereinafter Jacobsen) guarantees to the original retail purchaser of new and unused Jacobsen Consumer products that the same are free from defects in workmanship or materials that may cause performance failure subject to the conditions hereinafter stated.

This guaranty is limited to a period of one year. It is further limited to a period of 45 days if the product is used for commercial or rental purposes. Both periods are from the date of purchase. Replacement of any defective part including labor free of charge, f.o.b. any Authorized Jacobsen Service Station,

shall constitute compliance by Jacobsen with this guaranty.

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to it any part or product not sold or approved by Jacobsen or (4) that has been damaged or improperly used, or not used in conformity with the applicable Jacobsen Owner's Manual for that product or (5) that has not been properly adjusted, lubricated or maintained by the user.

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JACOBSEN MANUFACTURING COMPANY
A Member Company of Allegheny Ludlum Industries
RACINE, WISCONSIN 53403





THE OPEI LABEL IS THE BUYERS ASSURANCE THAT A MODEL OF THIS MOWER HAS BEEN TESTED BY AN INDEPENDENT TESTING LABORATORY, AND FOUND TO CONFORM WITH THE SAFETY SPECIFICATIONS FOR POWER LAWN MOWERS PUBLISHED BY THE AMERICAN NATIONAL STANDARDS INSTITUTE.

SAFE OPERATION PRACTICES FOR ELECTRIC RIDING VEHICLES

1. Know the controls and how to stop quickly. READ THE OWNER'S MANUAL.
2. Do not allow children to operate the vehicle. Do not allow adults to operate it without proper instruction.
3. Do not carry passengers. Keep children and pets a safe distance away.
4. Clear the work area of objects which might be picked up and thrown.
5. Turn off mower and shift into neutral before attempting to start the motor.
6. Turn off mower and stop the motor before leaving the operator's position.
7. Turn off mower and stop the motor before making any repairs or adjustments.
8. Turn off mower when transporting or not in use for safety and to conserve power.
9. Take all possible precautions when leaving the vehicle unattended, such as turning off the mower, lowering the mower, shifting into neutral, setting the parking brake, stopping the motor and removing the key.
10. Do not stop or start suddenly when going uphill or downhill. Mow up and down the face of steep slopes; never across the face.
11. Reduce speed on slopes and in sharp turns to prevent tipping or loss of control. Exercise extreme caution when changing direction on slopes.
12. Stay alert for holes in the terrain and other hidden hazards.
13. Use care when pulling loads or using heavy equipment.
 - a. Use only approved hitch point.
 - b. Limit loads to those you can safely control.
 - c. Do not turn sharply. Use care when backing.
14. Watch out for traffic when crossing or near roadways.
15. When using mower, never direct discharge of material toward bystanders no allow anyone near the vehicle while in operation.
16. Disconnect the power cord connection from tractor to mower before handling or servicing mower.
17. Keep the vehicle and mower in good operating condition and keep safety devices in place.
18. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
19. Plug tractor charger cord into a normal 115-volt 3-hole grounded receptacle. Do not use a 2-hole adapter unless properly grounded.
20. Keep motors free of grease, leaves or grass to prevent heat build-up.
21. The vehicle and mower should be stopped and inspected for damage after striking a foreign object, and the damage should be repaired before restarting and operating the equipment.
22. Do not attempt to operate tractor when not in operator's seat.
23. When using mower:
 - a. Mow only in daylight or in good artificial light.
 - b. Check the blade mounting bolts for proper tightness at frequent intervals.
24. Do not wear loose fitting clothing that might get caught in moving parts.
25. Know what is behind you before backing up.
26. Do not use machine on a public road unless it is equipped per ASAE S279.3, lighting and marking standard.
27. Follow the manufacturer's maintenance recommendations implicitly. See "Maintenance and Lubrication".
28. It is recommended that your machine be thoroughly inspected at least once a year by a competent serviceman.
29. Keep the machine in locked storage to prevent children or others from playing or tampering with them. Always remove the ignition key when machine is stored.

FOREWORD

IT IS SUGGESTED THAT YOU READ THIS MANUAL THOROUGHLY IN ITS ENTIRETY BEFORE PUTTING YOUR NEW MACHINE INTO OPERATION. THESE OPERATING SUGGESTIONS AND MAINTENANCE INSTRUCTIONS, IF FOLLOWED, WILL PROLONG THE LIFE AND EFFICIENCY OF YOUR MOWER. THE MORE YOU FAMILIARIZE YOURSELF WITH THE UNIT AND ITS OPERATION, THE GREATER YOUR RESULTS WILL BE. KEEP THIS MANUAL IN A SAFE PLACE AND REFER TO IT OFTEN.

IF, AT ANY TIME, YOU HAVE ANY QUESTIONS ABOUT YOUR TRACTOR, REMEMBER YOUR TRACTOR-EQUIPMENT DEALER IS BEST QUALIFIED TO HELP YOU. HE HAS FACTORY-TRAINED SERVICE TECHNICIANS, REPLACEMENT PARTS, AND THE CORRECT TOOLS AND EQUIPMENT TO DO THE JOB RIGHT IN THE SHORTEST POSSIBLE TIME.



DEFINITION OF DIRECTION

Reference to "RIGHT" and "LEFT" side of mower is from operator's position when seated in normal operating position. Reference to "FORWARD" and "REARWARD" is likewise from the operator's position.

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OPERATING INSTRUCTIONS-TRACTOR

TRACTOR OPERATION

To Start: (See Fig. 1)

1. Make certain mower switch is in the "OFF" position.
2. Set parking brake:
To set parking brake, depress pedal firmly and pull up on parking brake knob located on center console. Remove your foot from the pedal. The brake pedal will remain in the depressed position.
3. Shift transmission to neutral.
4. Turn ignition to "START" position and release.

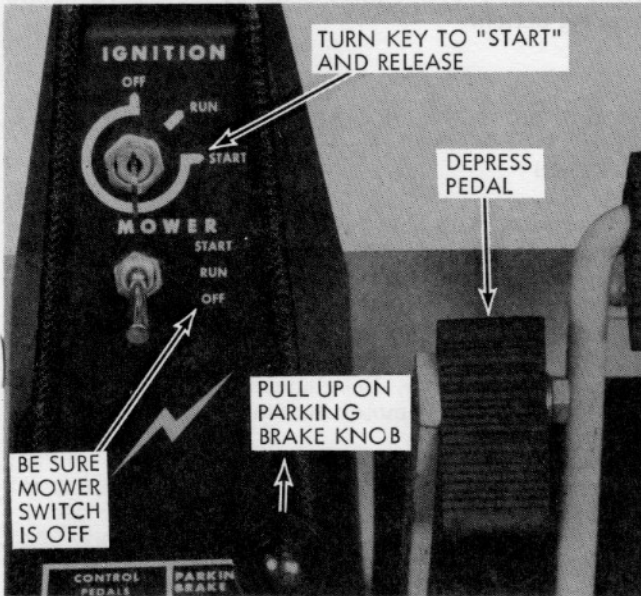


Figure 1.

To Drive: (See Fig. 2)

1. Shift transmission to forward or reverse.
CAUTION: NEVER SHIFT WITH VEHICLE IN MOTION OR WITH DRIVE PEDAL DEPRESSED.
2. Release parking brake:
To release the parking brake, place your foot on the brake pedal and push until the knob drops down to its normal position. (See Fig. 3).
3. Depress drive pedal. Ground speed will increase or decrease according to the amount of foot pressure applied.

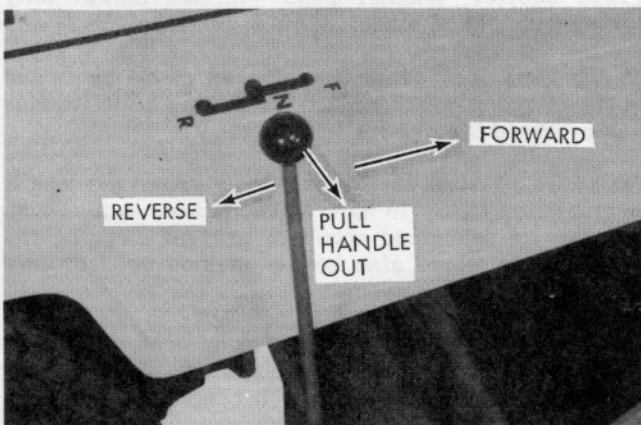


Figure 2.

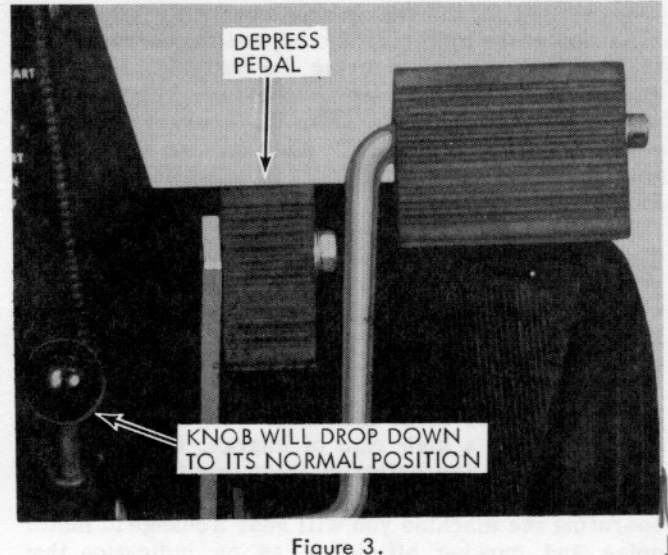


Figure 3.

To Stop:

Take your foot completely off the drive pedal and apply the brake.

To Park:

Set parking brake, turn ignition switch to "OFF" position and remove the key.

DANGER

Never operate the machine without the mower attached.

IMPORTANT

Do not sit or place any weight on the shroud behind the operator's seat.

CHARGER OPERATION

To start the charging operation, lift the shroud and plug the charger cord into any 3-wire, grounded, 115-v AC receptacle and turn the charger knob to the "ON" position.

Always start the charger in the "ON" position. It is not necessary to remove the plug from the house receptacle after completion of the charging cycle. However, the charger may be unplugged at anytime during or after the charging cycle if the tractor is needed.

IMPORTANT

Always rotate charger knob to the "STORAGE" position before plugging into or unplugging cord from house receptacle.

CAUTION

Always keep shroud in the "Raised" position during recharging.

When turned on, the charger automatically senses the condition of the batteries and adjusts the charging rate to the proper level to bring the batteries to a fully charged condition as fast as possible. The batteries will continue to charge after the charger knob has rotated to the "STORAGE" position, but the charge rate will be very low to assure equalization of all the individual cells.

The color coded meter on the battery charger tells you the condition of the batteries during the recharge cycle. The meter is nonfunctional when the charger knob is in the storage position or if the charger is not plugged in.

When the needle is in the "RED" zone the batteries are receiving a high rate of charge. Normally you should not run the batteries down this far to require such a high rate of charge. With experience in operating the machine you will hear a change in motor noise and mowing efficiency as an indication that recharging is required.

THE "GREEN" zone (NORMAL) indicates a normal rate of charge. The needle will move thru the green zone to the "YELLOW" zone (FINISH) when the batteries are sufficiently charged. The batteries are fully charged when the needle registers "OFF". However, in the off position there is still a very low rate of charge going into the batteries to compensate for normal self-discharge and equalization of all cells.

The battery charger should be plugged in and turned to the "ON" position after each use.

The charger cord is equipped with a standard 3-prong plug which grounds the charger through the home 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 on your electrical system.

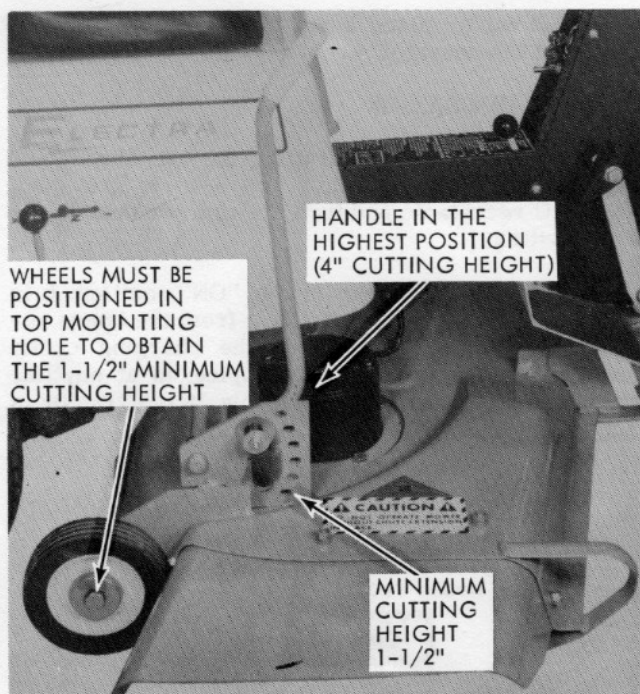


Figure 4.

OPERATING INSTRUCTIONS-MOWER

MOWER OPERATION

The mower switch is located on the dash console (See Fig. 1). The traction motor must be running before the cutter motors can be operated. To start the mower, move the mower switch to the "START" position and release (the switch will automatically return to the "RUN" position).

Turning the key switch off will cut off all power to both traction motor and cutter motors. However, for all normal use, the mower switch should be used to turn the mower off. When either switch is shut off, blade rotation immediately stops by means of dynamic braking action.

CUTTING

Always mow with sharp blades. The blades should be sharpened and balanced seasonally if subjected to average use, or whenever cutting quality deteriorates. Always disconnect the blade motors before servicing or adjusting the mower. After each sharpening, if mower vibration is noticeable, the blades should be checked for balance. Unbalanced blades will shorten the life of the blade motor bearings.

For good appearance of the mowed lawn, it is very important to have the mower adjusted correctly for height of cut (See Fig. 4). Cutting heights are obtainable from a minimum of 1-1/2" to a maximum of 4" in approximately 1/2" increments. Set the minimum cutting height by positioning wheels in the proper holes (See Illus. 5 of the Parts List section of this manual).

Experience in operating the equipment under various conditions is very important in obtaining maximum efficiency and the best appearance. After a few hours of operation, mower motor and blade loading can be easily determined by the sound and vibration produced. If the turf is very soft or the grass is very heavy the blade noise and mower vibration may increase signaling the operator of overloading. In this case, it is suggested that the lift lever be raised to the next notch in the quadrant. After mowing with the mower in this position, if it is desired to cut the grass shorter, another pass with the mower fully lowered should be made.

Never mow wet grass as this can cause chute and blade clogging which reduce the cutting effectiveness and overload the motors.

On average lawns that have merely grown too long it may be necessary to mow on two passes in the same manner as described above to prevent clogging the chute. This would also be the method used to mow very high grass or weeds.

When sections of rough terrain or an area which may contain small stones is encountered, the operator should constantly adjust the lift lever to the conditions to prevent damage to the equipment or injury to the operator or bystanders.

OPERATING SUGGESTIONS

Until you become familiar with your new machine, it is advisable at first to mow a level area. This will give you an opportunity to get the "feel" of the mower. At this time you will discover the proper speed for clean cutting of your particular lawn.

On all mowing tasks overlap each cut. For best results run the wheel of the mower along edge of uncut grass. This procedure will insure a complete cut and will leave only one wheel trace on the uncut grass.

The mower should be run on the first pass with the left wheels close to flower beds, walls, or foundations, so that the clippings will be blown in the opposite direction from these. Follow this practice also when mowing around trees or other plantings, and you will obtain a clean trim all around.

Turn to the left as much as possible so that grass clippings will be discharged evenly to the right over grass already cut. Turning to the right causes a build-up of grass clippings which prevents uniform cutting and causes an unnecessary load on the mower.

Operate mower at slow travel speeds for maximum maneuverability.

Streaking and crowning is caused by wheel tracks, limp grass, or grass cut too high. Cut grass shorter, more frequently. Do not cut when grass is wet. If grass is too long, cut twice. Make first cut about 1/2" above desired finished cut. To eliminate wheel tracks, overlap cut going in direction opposite to first cut.

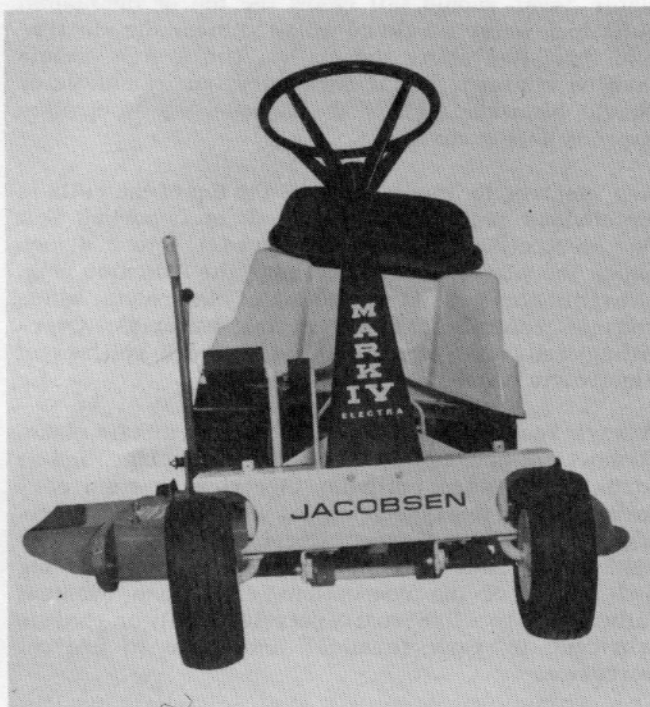


Figure 4A.

The mower will follow the front of the tractor (See Fig. 4A). This somewhat eliminates "smiles" or half moon brown spots. If this should still be a problem, increase height of cut and operate at slower travel speeds.

LAWN CARE

Even when used properly it is difficult for a mower to satisfy all the wide varieties of cutting conditions. Carefully review the following tips in order to obtain maximum performance.

While your electric riding rotary will mow any lawn and show it off to its best advantage, your satisfaction with the finished cut will also depend on proper lawn maintenance. Fertilization, weed control, and insect control all help maintain a good lawn. As it is impossible to cover all local conditions and personal preferences, we recommend consulting your local garden supply dealer as to lawn care instructions for your particular needs. Local county agents, along with park and golf course superintendents, are also excellent sources of information in this regard.

WATERING

It is recommended that lawns be watered in one deep watering to stimulate root growth, to equal 1 to 2 inches of rain each week when natural rain does not provide this amount. Light, frequent watering only promotes weak grass growth.

CUTTING HEIGHT

Conditions again vary with grass, climate and preference. As a general recommendation, cut grass about 2 inches high. Good lawn care promotes thick turf and will allow you to reduce cutting heights.

MAINTENANCE INSTRUCTIONS

LUBRICATION

Your electric riding rotary reduces lubrication requirements tremendously since the electric motors, transmission, and differential are permanently lubricated.

Several high-friction points do require periodic lubrication to prolong life and give maximum operating satisfaction. Lubricate twice each season or every 25 operating hours.

Apply a few drops of SAE 30 oil to the following points:

1. Steering shaft bushings.
2. Tie rod and drag link bushings.
3. Mower linkage points.
4. Brake lock pivot.
5. Vari-speed guides.
6. Cable pulley pivots.
7. Light coat on drive chain.
8. Tube pivot bushings.
9. Shroud pivot mounting.
10. Brake and drive pedal pivot.
11. Shift linkage pivot points.
12. Lift handle pivot.

Apply multipurpose grease using a hand grease gun to the following parts:

1. One grease fitting on bottom of vari-speed assembly.
2. Two grease fittings on front wheels.
3. Mower deck wheel mounting bolts.
4. Shift lever quadrant.
5. Mower deck quadrant.
6. Wheel spindle bushings.

Prevent dirt and dust accumulation by wiping away all excess grease or 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. Inside storage or covering of the tractor plus regular cleaning and polishing of exterior surfaces will give satisfaction in owning and operating your new machine.

TIRES

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

Pressure measurement should be made with a low-pressure gage. All tires should be equally inflated 12 - 16 psi.

MOWER HOUSING

It is recommended that the underside of the mower deck be cleaned frequently to maintain maximum mowing effectiveness and reduce the likelihood of blade clogging.

Much of the accumulated grass clippings can be removed by water pressure. Remove the wash hole plug on the top of the mower deck. Start the traction motor and turn on the mower. Run water into wash hole until spray coming from discharge chute is clear. Shut off water but continue to run the mower for a few minutes to dry the underside of the housing.

After a period of time it may become necessary to remove the mower housing from the tractor and scrape the underside with a putty knife to remove accumulated grass clippings.

MOWER BLADES

Periodically check the blades cutting edges. If the edges need sharpening, remove the blades as explained under "MOWER BLADE REMOVAL" in the service section of this manual. Also see "SHARPENING MOWER BLADES".

NOTE

Dull blades require more power and substantially reduce cutting time between recharging.

BATTERY CARE

Water should be added only after the batteries are 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 should be added. (This is because the electrolyte expands during charging).

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 1/4 to 3/8 inch above the plates but never above the indicator ring. Overfilling can result in dilution of electrolyte, which reduces capacity and life of the batteries. Overfilling can also cause corrosion where spillage of electrolyte occurs.

Always keep the batteries and their terminals clean. Removal of accumulated dirt, grass clippings, and so forth will assure optimum electrical system performance. An occasional wiping with wet paper towel is usually sufficient. Check to be sure battery cables are secure. Loose cables will cause arcing and pitting of the connections and cause eventual failure. Apply a light coat of petroleum jelly or chassis lubricant to each terminal and cable to prevent corrosion.

SAFETY GUIDELINES FOR BATTERIES

1. Under certain conditions the hydrogen gas given off by all electric storage batteries can, if not properly ventilated, cause an explosion and result in personal injury or damage to the tractor.

- Always leave the shroud in the raised position while charging the batteries to allow gas to escape.
2. Avoid charging next to an open flame or devices that may cause sparks.

DANGER

DO NOT use a match or a lighter to inspect the installation or water level.

ADJUSTMENT INSTRUCTIONS

SEAT

The operator's seat is adjustable 2" fore and aft. If adjustment is necessary, it is best accomplished by removing the shroud assembly from the tractor. (See "SHROUD REMOVAL" in the service section of this manual). Turn the shroud upside down and lay it on the floor. Loosen the seat mounting screws and slide the seat fore or aft as desired. Before tightening the screws make sure the slots in the seat mounting assembly line up with slots in the shroud. Tighten seat mounting screws and remount shroud to tractor.

BRAKE

Testing the brakes:

Set the parking brake. Move to the front of the machine and take hold of the steering column. Pull the machine and watch the rear wheels. If you can pull the machine forward without the rear wheels turning, the brakes are good. If the wheels turn with the machine, first check that the brake is fully depressed. If the brake is fully depressed, then check the pads on the disk brake. You can tell if the pads are worn down by looking at the brake actuator lever located on the left side of the transmission (See Fig. 5). If the pads require replacement, see "BRAKE FRICTION PAD REPLACEMENT" in the service section of this manual. If the pads are okay, but the wheels turn when parking brake is set, then adjustment of the brake cable is necessary.

Adjusting the brake:

1. Release the parking brake.
2. Remove dash console.
3. Reach thru opening in steering support and unhook the brake cable yoke from the slot in the brake arm.
4. Slide the yoke and spring down the cable and swing the end of the cable out thru the opening.
5. Attach a pair of vice-grips to the hex portion of the stud. If necessary, remove center console (See Fig. 5A).
6. With a wrench tighten the nut 1 to 2 turns.
7. Remount the yoke to the arm. Be sure to slide it all the way down the slot.
8. Test brake again. If further adjustment is required, repeat the above procedure.

3. Check the battery's liquid level regularly. Hydrogen gas can build up in the void space.
4. Accidents can also happen while installing the battery. While installing, be sure all switches for ignition and accessories are in the off position. Always attach the ground cable last to further prevent spark with the installation tool.

CAUTION

DO NOT over adjust. After any adjustment to the brake cable turn the brake disc to be sure it rotates freely with the brake in the disengaged position.

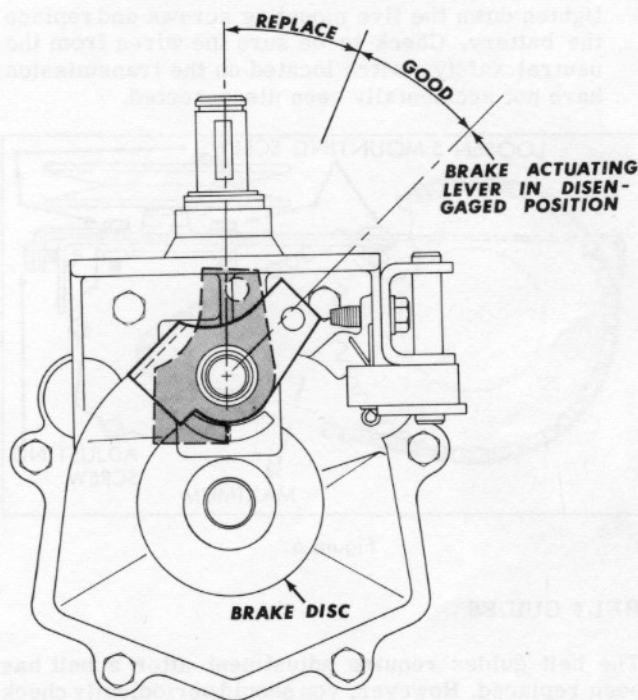


Figure 5.

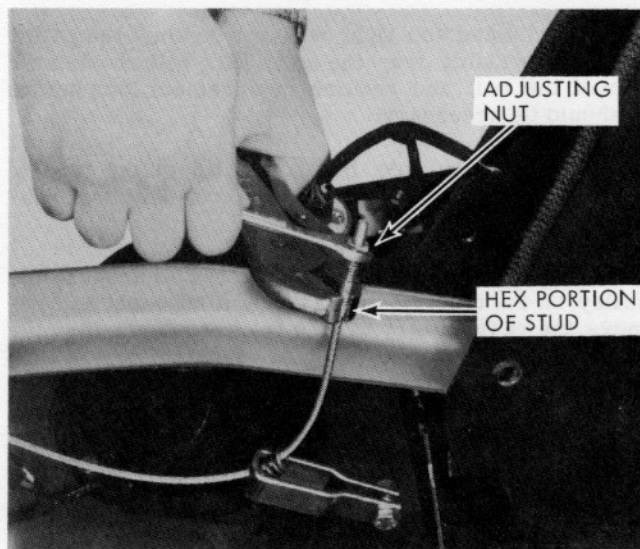


Figure 5A.

DRIVE CHAIN ADJUSTMENT

The drive chain should be adjusted to maintain a slack of $1/8"$ to $1/4"$ midway between the sprockets (See Fig. 6).

Make required adjustment as follows:

1. Remove rear battery from tractor.
2. From the opening left by the removal of the battery, reach in and loosen the three rearward transmission mounting bolts (one turn). Use a $1/2"$ open end or an adjustable wrench.
3. Move to the forward side of the transmission and loosen the two remaining mounting bolts (one turn).
4. Adjustment is now made by turning the transmission mounting plate adjusting screw:
 - a. to tighten chain, turn screw clockwise.
 - b. to loosen chain, turn screw counter-clockwise and push transmission rearward.
5. When proper adjustment of chain is obtained, tighten down the five mounting screws and replace the battery. Check to be sure the wires from the neutral safety switch located on the transmission have not accidentally been disconnected.

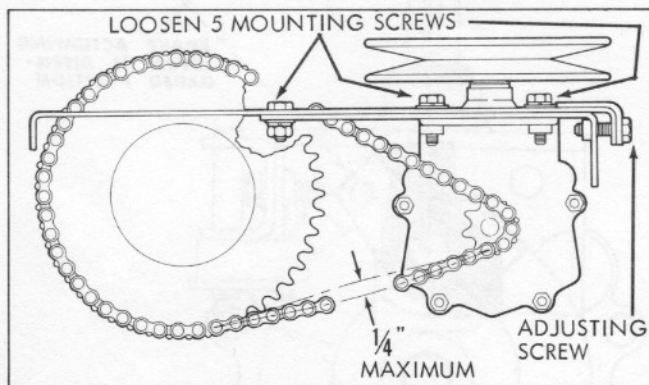


Figure 6.

BELT GUIDES

The belt guides require adjustment after a belt has been replaced. However, you should periodically check to be sure guides are positioned properly (See Fig. 7).

Guides adjusted too tight will rub against the pulley and will possibly fray the belt. This will shorten the life of the belt and require replacement long before it should be necessary.

Guides positioned too far from the pulley tend to cause the machine to "creep" without any foot pressure applied to the drive pedal.

To adjust the two belt guides located adjacent to the pulley on the traction motor, first disconnect and remove the rear battery for the tractor. Reach thru the opening and check the position of the guides. If they are not positioned as indicated in Fig. 7, loosen the mounting screw (or nut) and reposition as required.

To adjust the two belt guides located adjacent to the vari-speed pulley assembly, reach in from the opposite end and check the position of the guides. If they are not positioned as indicated in Fig. 7, loosen the jam nuts on the guides and reposition as required.

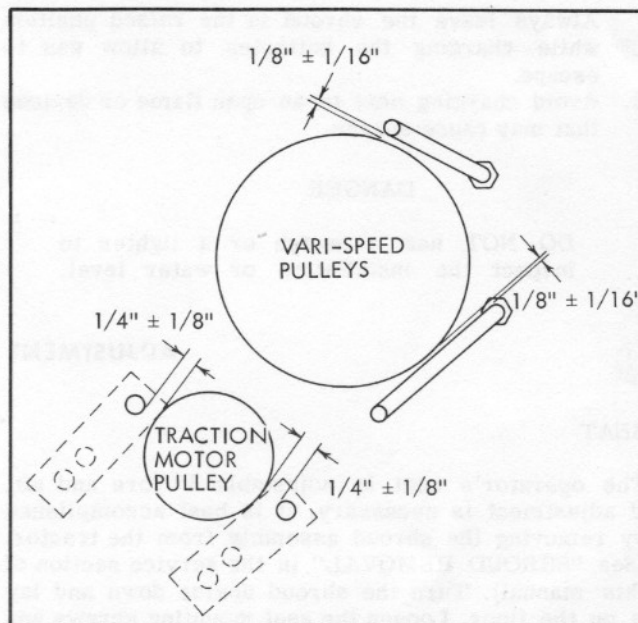


Figure 7.

MOWER DECK

A difference of $1/4$ to $3/8$ inch must always be maintained between the front and the rear of the cutter blades, WITH THE REAR BEING HIGHER AT ALL TIMES.

Check your mower as follows:

1. Move the machine to a level surface.
2. Turn off the ignition, remove the key and unplug the two cutter blade motors.
3. Check the tires for proper inflation. This will affect the attitude of the deck if a tire is under or over inflated.
4. Set the cutting height lever to the "HIGHEST" position.
5. Turn each blade to be certain they are not bent. Check to see if each blade is seated properly on the motor shaft. Straighten, replace or adjust the blades as required.
6. Turn both blades to the fore and aft position.
7. With a 6" ruler, measure the distance from the floor to the tip of each blade cutting edge. The measurement of the rear of each blade should be $1/4$ to $3/8$ inch more than that of the front of each blade.

Adjust your mower as follows:

1. Loosen the two bolts in each Front Arm Mounting Bracket (Ref. No. 32, Illus. 5).
2. To raise front of mower, push the brackets forward in their slots.
3. To lower front of mower, push the brackets rearward in their slots.
4. After proper attitude is obtained tighten bracket mounting bolts.

IF PROPER ATTITUDE HAS NOT BEEN OBTAINED AT THIS POINT, CONTINUE TO STEP 5 OR 6.

5. To lower front of mower:
 - a. remove the two bolts in each front arm bracket.
 - b. between the front section foot rest and the brackets, add washers as required to each bolt (See Fig. 8).
 - c. tighten bracket mounting bolts.

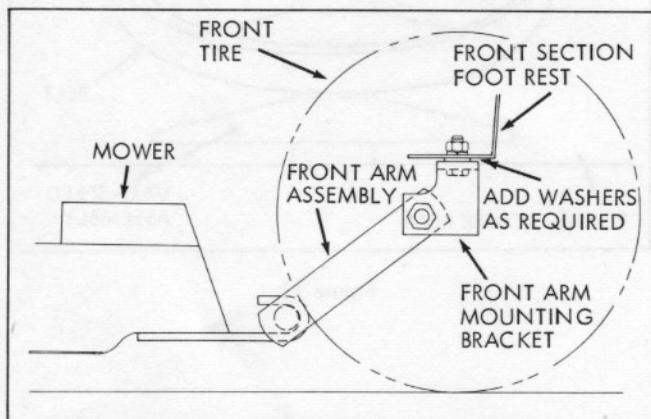


Figure 8.

6. To raise front of mower:
 - a. remove roll pin (Ref. No. 8, Illus. 1) from left and right spindle assemblies.
 - b. remove cotter pin (Ref. No. 29, Illus. 1) from steering linkage.
 - c. raise front of tractor and remove spindle assemblies.
 - d. to the spindles add washers as required (See Ref. No. 7, Illus. 1).
 - e. to assemble, reverse the steps above.

MOWER CUTTING HEIGHT

Move the machine to a level surface. Turn off the ignition, remove key, and unplug the two cutter blade motors.

Rotate the cutter blades to the fore and aft position. At this point check the height of the front tips of the cutter blades. This dimension should be approximately 4 inches. If it varies by more than 1/8 inch, loosen the bolt securing the chain cam to the frame and rotate the cam until the desired cutting height is obtained. (See Fig. 9). Retighten the bolt and plug in the mower blade motors.

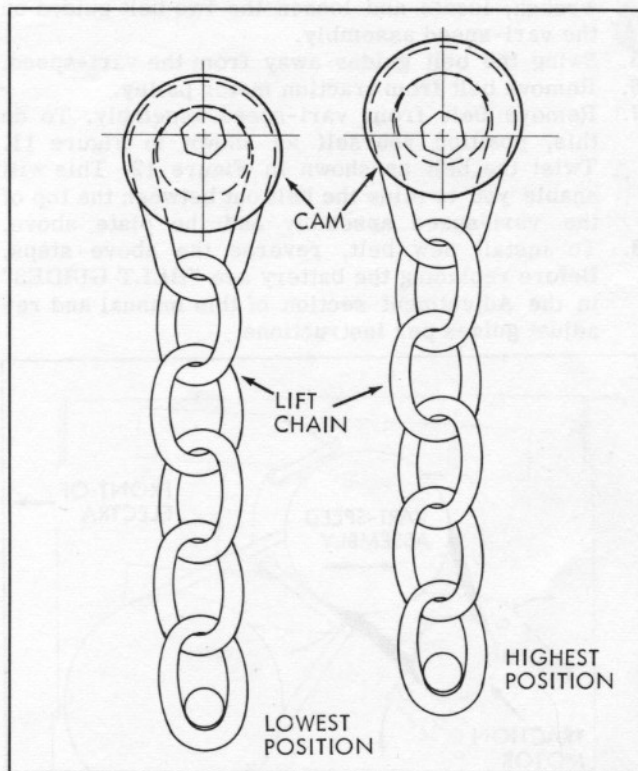


Figure 9.

SERVICE INSTRUCTIONS

DRIVE BELTS - REPLACEMENT

To replace traction motor belt: (See Fig. 10)

1. Disconnect and remove rear battery.
2. With a 1/2" wrench reach thru the opening left by the removal of the battery. Locate and loosen the two belt guides for the traction motor pulley.
3. Swing belt guides away from pulley.
4. Move to the opening at the front end. With a 1/2" wrench, locate and loosen the two belt guides on the vari-speed assembly.
5. Swing the belt guides away from the vari-speed.
6. Remove belt from traction motor pulley.
7. Remove belt from vari-speed assembly. To do this, position yourself as shown in Figure 11. Twist the belt as shown in Figure 12. This will enable you to slide the belt out between the top of the vari-speed assembly and the plate above.
8. To install new belt, reverse the above steps. Before replacing the battery see "BELT GUIDES" in the Adjustment section of this manual and re-adjust guides per instructions.

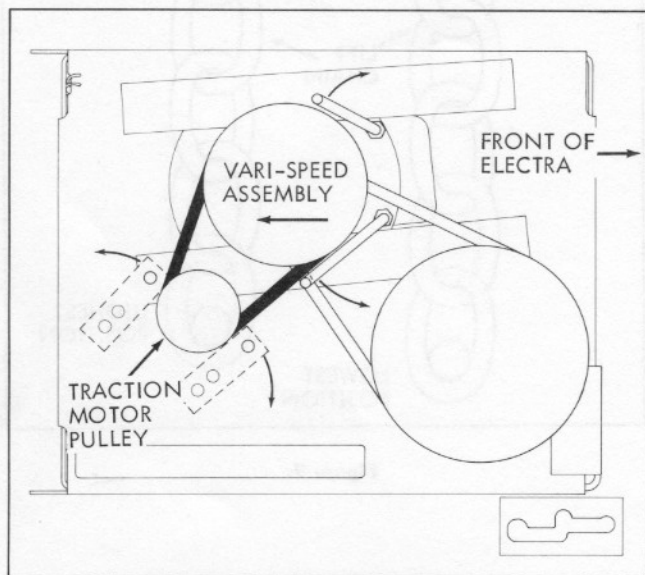


Figure 10.



Figure 11.

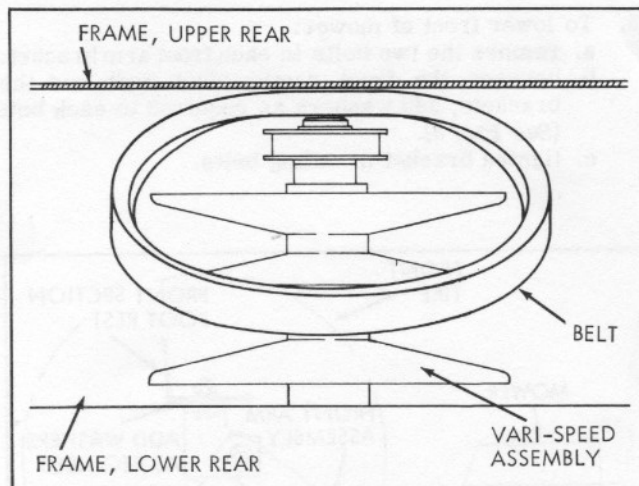


Figure 12.

To replace transmission belt: (See Fig. 13)

1. Complete steps 1 thru 6, "To replace traction motor belt".
2. Push the vari-speed assembly forward until the belt can be removed from the transmission pulley. To do this, it is helpful to remove the belt tension springs.
3. Remove the belt from the transmission pulley.
4. Remove the belt from the vari-speed assembly. (See Fig. 11 and 12).
5. To install new belt, reverse the above steps. Before replacing the battery, see "BELT GUIDE" in the Adjustment section of this manual and re-adjust as per instructions.

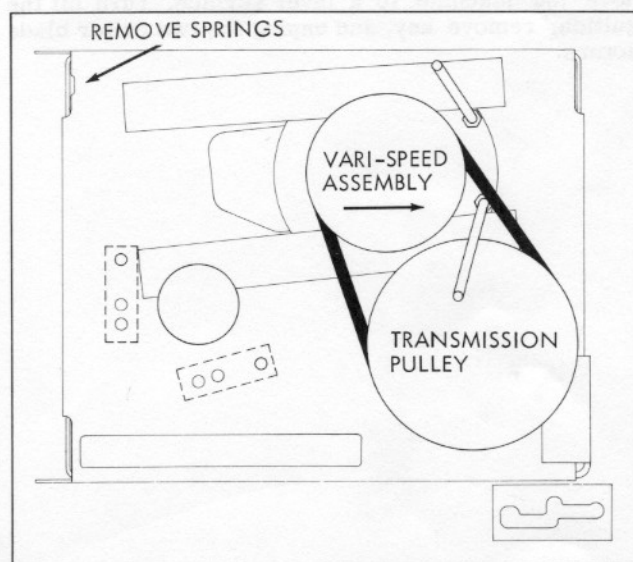


Figure 13.

BRAKE FRICTION PADS - REPLACEMENT

Figure 5 illustrates the range of movement of the brake actuating lever according to the amount of wear of the pads. The position of the shaded lever indicates that the pads are completely worn down and replacement is necessary.

1. Unhook the brake pedal return spring (Ref. No. 55, Illus. 4).
2. Remove brake cable assembly from actuating lever on transmission.

The reference numbers used in the following steps are for Figure 13A.

3. With a 3/8" socket or boxwrench remove shoulder bolt (Ref. No. 1), thereby removing the brake jaw (Ref. No. 2). Be careful not to lose the compression spring (Ref. No. 3) when you pull off the brake jaw.
4. From the jaw remove the friction pad (Ref. No. 4). Inside you will find a spacer (Ref. No. 5). Be sure spacer is centered and flat before inserting new pad.
5. Insert new friction pad in jaw and lay the assembly aside.
6. Slide off the brake disc (Ref. No. 6). Be careful not to lose the woodruff key (Ref. No. 7).
7. Now the remaining pad (Ref. No. 8) can be replaced.
8. To reassemble - reverse the steps above. Use loctite stud-lock (RED) on threads of shoulder bolt. Tighten to 10 - 12 Ft. Lbs. After assembly check to be sure disc rotates freely with brake actuating lever in the disengaged position.

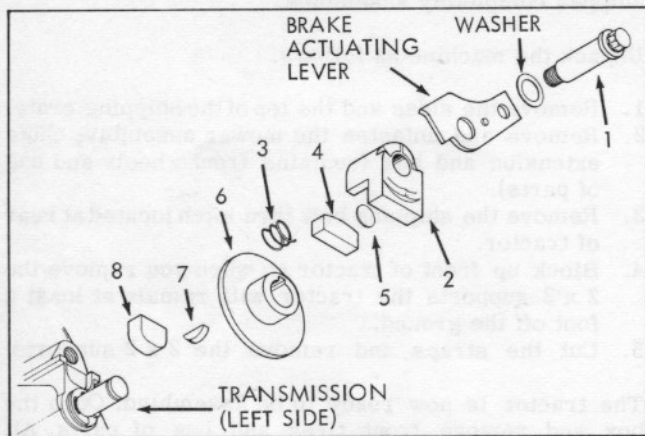


Figure 13A.

BATTERY CHARGER REMOVAL

Remove battery charger as follows:

1. Check to be sure battery charger is unplugged. Disconnect one of the battery cables on a negative terminal.
2. Remove the three charger mounting screws, lockwashers, and washers. The Tinnerman nut will not turn and will remain in place.
3. Lift charger straight up and remove it from the tractor. The lead wires from the charger are long enough so that the charger can be placed on the ground.
4. Disconnect the Red (or White) lead from solenoid "A" terminal 2. Disconnect the Black lead from

fuse terminal 7. (See Illus. 6, in the Parts List section).

5. To remount the charger, reverse the steps above.

FUSE - REPLACEMENT

There are two fuses located under the charger housing. A 100 AMP fuse for the traction motor and a 80 AMP fuse for the Cutter blade motors. If one of the fuses burns out, check the "TROUBLE SHOOTING GUIDE" in this manual for possible cause.

Install new fuse as follows:

1. Complete steps 1 thru 3 under "BATTERY CHARGER REMOVAL".
2. Loosen the two mounting screws holding down the fuse to be replaced.
3. Remove the two burned out fuse halves.
4. Insert new fuse and tighten securely.
5. Remount charger, making sure the cables enter the charger case thru the openings provided and that no wires are clinched.
6. Check operation.

CAUTION

Always disconnect one of the battery cables on a negative terminal prior to working with any of the electrical components.

TRACTION MOTOR REMOVAL

Remove traction motor as follows:

1. Check to be sure battery charger is unplugged. Disconnect and remove the rear battery.
2. Remove the vented cover on top of the motor and disconnect the three leads.
3. Remove the traction motor mounting hardware and belt guides.
4. Remove drive belt from motor pulley.
5. Loosen pulley set screw and slide pulley off of motor shaft.
6. Traction motor now can be removed from tractor.
7. To reinstall the motor, reverse the steps above. Before tightening pulley set screw be sure the motor pulley is in alignment with the top pulley of the vari-speed assembly. Also check belt guides as per instructions under "BELT GUIDES" in the Adjustment section of this manual.

SHROUD REMOVAL

Remove the shroud as follows:

1. Raise the shroud.
2. Unhook "overcenter" spring from one end or the other.
3. Pull the hairpins from each end of the seat pivot shaft.
4. From the right side, pull the arm on the seat mounting assembly until it is clear of the pivot shaft.
5. Take hold of the shroud (one hand on the seat back rest and the other at the front of the shroud) and maneuver the left arm clear of the pivot shaft.
6. Raise shroud and remove it from the tractor.
7. To remount the shroud, reverse the steps above.

MOWER HOUSING REMOVAL

To remove the mower housing, proceed as follows:

1. Unplug the two blade motors.
2. Lower the mower to the "low cut" position.
3. Remove the cotter pin and washer retaining the mower lift chain. Take the chain off the replace washer and cotter pin so they do not get mislaid. (See Fig. 14).
4. Remove linkage mounting hardware from rear hanger (See Fig. 14). Replace hardware in rear hanger so they do not get mislaid.
5. Move the mower housing forward until it becomes unhooked from the front arm assembly.
6. The housing is now detached and can be removed from beneath the machine,
7. To replace housing, reverse the above steps.

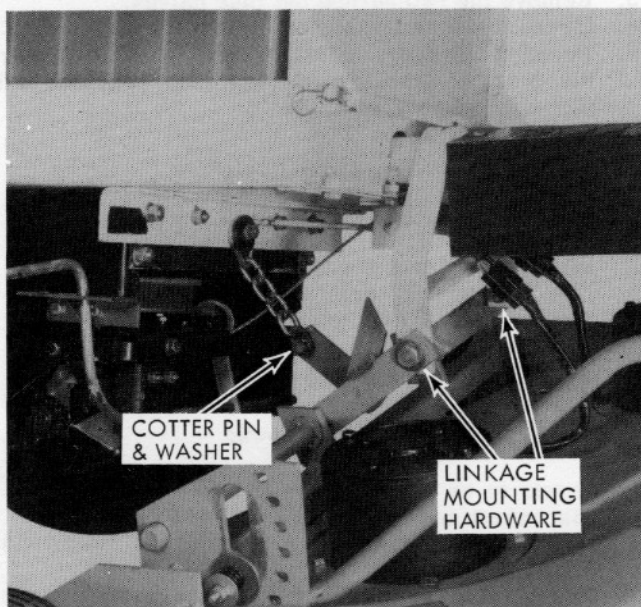


Figure 14.

MOWER BLADE REMOVAL

It is not necessary to remove the mower housing from the tractor in order to remove the blade(s).

Remove cutter blade(s) as follows:

1. Be certain ignition is off, key removed, and blade motors unplugged.
2. Set the cutting height lever to the "highest position".
3. With a 9/16" wrench reach under the mower housing and locate the mounting screw of the blade to be removed.
4. Remove mounting screw, lockwasher, and large flat washer from blade motor shaft. Use a 2 x 4 or other wooden article through the discharge opening to lock the cutter bar while loosening or tightening the screw. Keep hands away from cutting edges of the blades.
5. Remove blades for sharpening or replacement. When sharpening blades, grind equal amounts from each end to maintain balance. See "MOWER BLADE SHARPENING".
6. When replacing blades, cutting edges must face down.

7. Replace large flat washer, lockwasher, and screw. Tighten to 35 - 45 Ft. Lbs.

MOWER BLADE SHARPENING

When sharpening the cutting edges, follow the original angle of grind as a guide. The blades are furnished with a cutting angle as shown at "A" Fig. 15. Do NOT resharpen as shown at "B". It is extremely important that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade.

With cutting edges sharpened as shown at "A", Fig. 15, the blades will stay sharp for a longer period. The finished cut will be clean and not shattered, and your lawn will have a greener appearance.

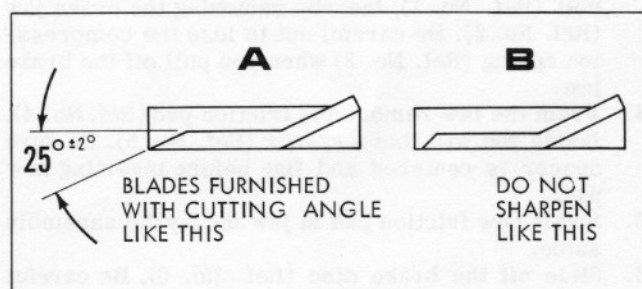


Figure 15.

UNPACKING AND SET-UP INSTRUCTIONS

With the exception of the front wheels, steering wheel, chute extension and mower assembly the tractor is shipped completely assembled.

Unpack the machine as follows:

1. Remove the sides and the top of the shipping crate.
2. Remove and unfasten the mower assembly, chute extension and box (contains front wheels and bag of parts).
3. Remove the shipping bolt thru hitch located at rear of tractor.
4. Block up front of tractor so when you remove the 2 x 2 supports the tractor will remain at least a foot off the ground.
5. Cut the straps and remove the 2 x 2 supports.

The tractor is now ready to be assembled. Open the box and remove front tires and bag of parts. All hardware required to assemble the tractor is located in the bag of parts.

FRONT WHEELS

From the bag of parts remove (2) dust washers, (4) washers, (2) 5/32 x 1-1/4 cotter pins and (2) hub caps.

Mount front wheels as shown in exploded view, Illus. 1, of the Parts List section. Check tire pressure and grease wheel bearings.

NOTE

Rear tires are over-inflated at the factory for shipping purposes. Before operation, check rear tires for proper air pressure.

STEERING WHEEL

From the bag of parts, remove (1) 1/4"x1" roll pin and (1) 3/4" washer.

Assemble steering wheel as shown in Illus. 1.

CHUTE EXTENSION

Position the chute extension on the right side of the mower housing inside the discharge opening. Align the four holes in the extension with those in the mower housing. Insert the carriage bolts upward through the holes in the extension and mower housing. Add flat washers, lockwashers and nuts. Tighten securely.

BATTERIES

The electrolyte needed for the batteries is not included with the tractor. Electrolyte can be purchased at most auto service stores, parts stores, etc.

Putting the batteries in service:

1. Lift up the shroud.
2. Before installing the electrolyte study the instructions on the carton.
3. Remove filler caps and fill battery with 1.265 specific gravity electrolyte to proper level. ALLOW BATTERY TO SET FOR 20 MINUTES.

WARNING

Take care to avoid contact with the acid of the battery electrolyte. It will cause painful and dangerous injury to eyes or skin in case of external contact. It will damage clothing and other articles if spilled or splattered. Before opening the electrolyte container or handling the electrolyte, study the antidote label on the container for instructions and procedure in case of accidental contact.

CAUTION

Under no conditions should battery be over-filled. We cannot be responsible for damages if this warning is not observed.

4. With the filler caps still removed, place the batteries on charge until reading is 1.265 - 1.270.

NOTE

If the temperature of the room, battery and electrolyte are below normal, a longer charging period will be required to bring the specific gravity up to 1.265 - 1.270.

5. Insert filler caps and close shroud.

The tractor is now ready for operation. Be certain you have read and understand the operating instructions in this manual.

TRACTOR IN STORAGE

Your 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 machine.

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 keep it covered.
2. Clean batteries and terminals as described in "Battery Care" in the "MAINTENANCE" section of this manual.
3. Plug charger into approved receptacle and start charger operation. Add water to each cell of the batteries to the specified level as described in "Battery Care". 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 electrolyte level to a depth of 1/4 to 3/8" before charging, and (b) that the level is brought to the bottom of the indicator ring after charging. In this way, overfilling is prevented but sufficient water is assured.
4. Lubricate tractor and wipe oil on any parts that may be affected by rust.
5. Check water level of each cell on a monthly basis.

When turned to the "ON" position the charger automatically senses the condition of the batteries and adjusts the charging rate to the proper level to bring the batteries to a fully charged condition as fast as possible. The charger knob will rotate to the "storage" position and the charge rate will be very low to maintain equalization of all the individual cells. The batteries will maintain a full charge as long as the charger is plugged in.

The charge retention (with charger not plugged in) of the batteries 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 (by keeping the charger plugged in) to prevent cell electrolyte from freezing which may result in permanent damage to batteries.

SPECIFICATIONS

ELECTRA MARK IV - PRODUCT NO. 43040

PROBLEM

TYPE	Electric riding rotary mower (Battery powered)
TRACTION MOTOR	Rotation is clockwise from shaft end with polarity shown in schematic. 36V. D.C. 1.35 H.P. (#MPC-4001 Prestolite).
TRANSMISSION	Single speed, forward and re- verse. Reduction - 2.62 to 1.00 Forward speed infinitely vari- able to 4.4 MPH. Reverse speed infinitely vari- able to 2.2 MPH. Heavy duty with heat treated gears and high density heavy duty bearings. (#3500 J. B. Foote Foundry CO.)
DIFFERENTIAL	45 tooth sprocket for ASA No. 41 chain and with powdered metal gears. (#100 Series, Peerless Div., Techumseh PRO. Co.)
BATTERY	Group 27, 12 volt deep cycle, electric vehicle type. 95 A.H. at 20 hr. rating. Electrolyte to fill - 1.60 gals. (#2790X Pres- olite or equal)
BATTERY CHARGER	Input: 115V. A.C. single phase, 60 cycle. Output: Proportional to battery pack requirements. Recharge time: (from full dis- charge) 80% in 5 hours, 100% in 12 hours. Features auto- matic charge maintenance. (Prestolite)
BRAKE	Foot operated mechanical disc brake. Hand set parking brake.
TIRES	Front: 11/4.00 x 5 pneumatic Rear: 16/6.50 x 8 pneumatic
WHEELS	Steel dish type
STEERING WHEEL	Polytemp high impact plastic.
TURNING RADIUS	27 inches.
SEAT	Vinyl covering material. Cushion material - Quasipre- polymer polyurethane foam. Seat is adjustable 2" fore and aft.
MOWER	Blade motors - .50 H.P. at 2800 RPM 34" cutting width. Height of cut adjustable from operator's seat with conven- ient hand lever. Suspended mower housing, free to lift when encountering obstacles.
WHEEL BASE	44 inches
OVERALL LENGTH	63 inches
WIDTH (tractor)	28-1/2 inches
WIDTH (mower)	45 inches
WEIGHT (operating)	518 lbs.
WEIGHT (shipping)	547.5 lbs.

NOTES



JACOBSEN MANUFACTURING COMPANY
A Member Company of Allegheny Ludlum Industries
RACINE, WISCONSIN 53403

