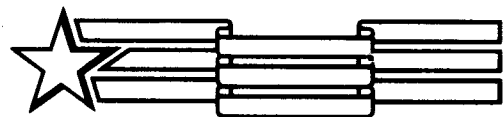


Ingersoll

ROTARY MOWERS
RM38, RM44, RM48
Operator's Manual 8-56000

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QUALITY IN THE AMERICAN TRADITION

Ingersoll Equipment Co., Inc.

Winneconne, Wisconsin 54986-9576



This Safety Alert Symbol Indicates Important Safety Messages In This Manual When You See This Symbol Carefully Read The Message That Follows and Be Alert To The Possibility Of Personal Injury Or Death

IF THIS MACHINE IS USED BY AN EMPLOYEE OR IS LOANED OR RENTED, MAKE ABSOLUTELY CERTAIN THAT THE OPERATOR(S), PRIOR TO OPERATING:

1. IS INSTRUCTED IN SAFE AND PROPER USE.
2. REVIEWS AND UNDERSTANDS THE MANUAL(S) PERTAINING TO THE MACHINE.

751253



WARNING

BEFORE STARTING ENGINE

STUDY OPERATOR'S MANUAL SAFETY MESSAGES
READ ALL SAFETY SIGNS ON MACHINE
CLEAR THE AREA OF OTHER PERSONS

LEARN & PRACTICE SAFE USE OF CONTROLS BEFORE OPERATING

IT IS YOUR RESPONSIBILITY TO UNDERSTAND AND FOLLOW MANUFACTURER'S INSTRUCTIONS ON MACHINE OPERATION, SERVICE, AND TO OBSERVE PERTINENT LAWS AND REGULATIONS. OPERATOR AND SERVICE MANUALS MAY BE OBTAINED FROM YOUR EQUIPMENT DEALER.

SAFETY MESSAGES



The safety messages contained in this manual are to be used together with the safety messages appearing in the tractor operator's manual. Be sure to review both carefully before operating the tractor-mower combination.



Regard your rotary mower as a piece of power equipment and be sure this manual is read and understood by all who operate it.



WARNING: Be sure that the attachment drive clutch is off, the engine is shut off, the key removed and the blades have stopped spinning before attempting to clean a plugged discharge chute.



Maintain your tractor and rotary mower in top operating condition.



CAUTION: Unbalanced blades are a hazard and will cause premature wear and failure of bearings and spindles. If the blades cannot be balanced by resharpener, replace them with new ones.



CAUTION: Clear the lawn or area to be mowed of sticks, stones or any hard objects which could come in contact with the blades and be hurled out the discharge opening.



CAUTION: Never get on or off the tractor while the mower is running.



CAUTION: Do not permit children or pets in the area while mowing and never direct the mower discharge at buildings, people, pets, windows or cars.



CAUTION: Give complete and undivided attention to the job at hand.



WARNING: Keep feet and hands away from discharge opening and make no repairs unless both the tractor engine and attachment drive are shut off and the key is removed from the tractor.



CAUTION: Stop engine, disengage attachment drive, set parking brake and remove the key when tractor is unattended.



CAUTION: Fill gas tank out of doors and avoid spilling gasoline. Do not fill tank with gasoline while smoking or while engine is running. Allow engine to cool several minutes before adding gasoline. Wipe up spilled gasoline.



CAUTION: Do not allow anyone other than the operator to ride on the tractor.



CAUTION: Stop and inspect the mower for damage immediately after striking a foreign object and repair damage before restarting and operating the machine.



CAUTION: Never allow children or young teenagers to operate the tractor and rotary mower.



DANGER: Spinning Blade. Keep clear. Contact can injure.



CAUTION: Disengage attachment drive clutch, stop engine and remove key and spark plug wire(s) before making adjustments.



WARNING: Improper operation of your tractor on hill-sides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.



CAUTION: Shut off engine, allow engine to cool and remove key and spark plug wire(s) before replacing mower drive belt.



CAUTION: Sharp mower blades. Wear gloves or wrap the mower blade with a rag when handling blades. Improper handling can cause cuts to the skin.



CAUTION: Disengage attachment drive clutch when someone approaches or whenever the mower is being transported.



CAUTION: Be sure you know how to stop the tractor and mower at a moment's notice.



WARNING: Flying debris. Operate mower only with discharge chute guard/cover or complete grass catcher in place. Debris may cause injury.

IMPORTANT: Always install new decals whenever the old decals are destroyed, lost, painted over or illegible. When individual parts are replaced that have decals attached, be sure to install a new decal with the new part. Replacement decals are available from your dealer.

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HILLSIDE (SLOPE) OPERATION



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.

Avoid operating tractor on hillsides and slopes. To minimize the possibility of accidents while operating on hills and/or rough terrain, obey a combination of rules, practices and good common sense.

These include:

1. Reading, understanding, and obeying all written safety messages appearing on decals on the machine and in operator's manuals.
2. Learning from your operator's manual and carefully from EXPERIENCE how to operate your tractor correctly. Know your tractor's limitations.
3. Knowing the terrain on which you are operating your tractor. There are terrain conditions on which your tractor cannot be operated!
4. Learning to expect changes in operating conditions. Adding or removing attachments or weight to your tractor will make your tractor perform differently. Rain, snow, loose gravel, wet grass, etc., change the tractive conditions of the terrain requiring changes in your operating technique or not to operate on that terrain.

The following paragraphs will cover these practices one at a time. Read and study them. The examples provided are not all inclusive but will give you a firm understanding of the requirements for avoiding accidents while operating your tractor.

Ingersoll Lawn and Garden Tractors are designed and built to comply with the Voluntary Standard ANSI (American National Standards Institute).

THE OPERATOR IS THE SOLE JUDGE AS TO THE DEGREE OF SLOPE ON WHICH THIS TRACTOR CAN BE SAFELY OPERATED. IF IN DOUBT THAT THIS TRACTOR CAN BE SAFELY OPERATED ON A PARTICULAR SLOPE, DO NOT OPERATE ON THAT SLOPE! COMMON SENSE MUST PREVAIL.

Read, Understand, Obey:

Safety messages are found on the tractor and in the operator's manuals. These must be understood by the tractor operator to be of value. Be sure that these messages are studied before starting and/or operating the tractor by an operator not familiar with this particular tractor.

Learn to Operate:

Learn your tractor's controls from decals on the tractor and from instructions in the operator's manual. Practice how to properly manipulate these controls. Practice must be done in a flat area, clear of obstacles and bystanders. Learn your tractor's operating characteristics and limitations. These include:

- a. amount of engine power available
- b. engine governor response
- c. tractive ability
- d. steering characteristics
- e. braking characteristics
- f. movement of travel lever
- g. forward and reverse ground speeds
- h. speed of attachment lift
- i. and others

Attempting any operation which approaches or exceeds the tractor's limitation is risking an accident.

Know the Terrain:

Know the terrain on which you are working. Find hidden obstacles by walking through and inspecting the area prior to operating your tractor on it. Mark obstacles, such as, rocks, ruts or holes with a 6 ft. long pole and red flag and stay well clear of these obstacles when operating.

Operate your tractor at a ground speed slow enough to insure complete control at all times.

Place the transmission in low gear and regulate the throttle control lever slowly and smoothly to maintain this safe speed. Do not stop on a hill or slope to change gears.

Always drive in a forward direction when proceeding downhill. Never drive up a hill. If necessary, back up a hill to the desired position. Always back up loading ramps and tilt bed trailers. If necessary to turn while on a hill, always turn downward.

Your judgement, based on operating experience is the final word in deciding if you should negotiate any given hill or slope. If you are in doubt about safety, **STAY OFF THE SLOPE.**

Under no circumstances should an inexperienced operator attempt to use your tractor on slopes or hill-sides.

You may encounter some terrain on which your tractor cannot be operated even if a different piece of equipment has operated there in the past.

Learn to Compensate for Changes in Operating Conditions:

Adding or removing attachments or ballast (such as wheel weights or fluid) change the weight and weight distribution of your tractor and, therefore, changes your tractor's operating characteristics.

Be alert to these changes. Practice operating the tractor after each change has been made.

Adding an attachment (weight) to the rear of the tractor reduces the weight on the front axle. Adding an attachment (weight) to the front of the tractor reduces weight on the rear of the tractor. You must add counterweight to the front if a rear mounted attachment is installed. You must add counterweight to the rear if a front mounted attachment is installed.

Tractive conditions will vary with weather and terrain and equipment.

Areas wet with dew or rain will be more slippery than when dry. Areas covered with loose gravel are more slippery than firm dry ground. Greater stopping distances are required in these slippery areas.

Spinning rear wheels tend to move the tractor sideways. The addition of tire chains will provide more traction to the rear wheels in the forward-reverse direction but less stability in the sideways direction. Chains will cause more abrupt starting and stopping.

The final word in safe tractor operation rests on your judgement.

If in doubt of your safety, **STAY OFF THE SLOPE.**

INTRODUCTION

This operator's manual is for the Model RM38, RM44, and RM48 rotary mowers. This operator's manual includes:

- a. Safety Rules
- b. Installation Procedure
- c. Operating Procedure
- d. Adjustments
- e. Maintenance

Read this manual before operating your rotary mower.

See your authorized dealer for parts or repairs.

The words "Right, Left, Front and Rear" as used in this manual indicate directions when you are in the operator's seat in the normal operating position.

NOTE: Ingersoll Equipment Co., Inc. reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

ATTACHMENT APPLICATION CHART

MODEL	SIZE	TRACTOR MODEL
RM38	38" (965 mm)	3010
RM44	44" (1115 mm)	3012, 3014, 3016, 3018, 4014, 4016, 4018, 4020
RM48	48" (1220 mm)	3014, 3016, 3018, 4014, 4016, 4018, 4020

BELT APPLICATION CHART*

TRACTOR MODEL	BELT PART NUMBER
3010, 3012 3014, 3016, 3018	C23358
4014, 4016 4018, 4020	C23808

NOTE: Mower drive belt and lift links are supplied with your tractor.

NOTE: Part numbers can change. See your dealer.

OPERATING CONTROLS



FIGURE 1

ATTACHMENT CLUTCH SWITCH

The rotary mower is started and stopped with the attachment clutch switch.

See your tractor operator's manual for correct use of your tractor controls.

HYDRAULIC ATTACHMENT LIFT LEVER

The rotary mower is raised and lowered with the attachment lift lever.

When mowing, put the attachment lift lever in the "LOWER" position until the lift arms are midway in the lift link slots.

See your tractor operator's manual for correct use of your tractor controls.

HEIGHT SELECTOR LEVER

The cutting height is controlled by the height selector lever.

TO INCREASE THE CUTTING HEIGHT: Disengage the pin and pull the height selector lever up.

TO DECREASE THE CUTTING HEIGHT: Disengage the pin and push the height selector lever down.

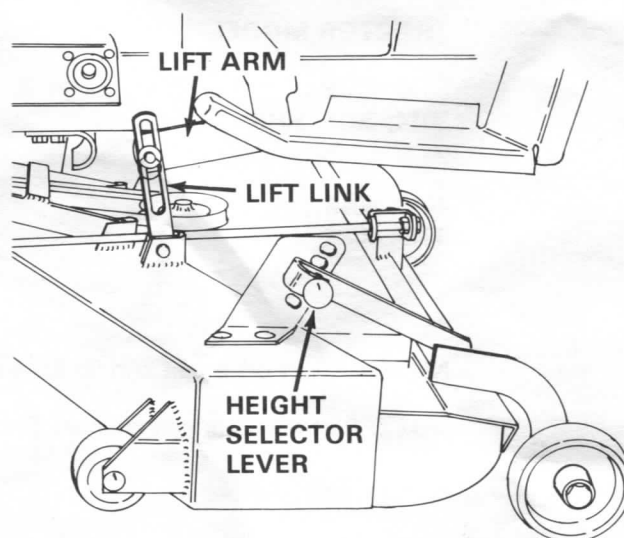


FIGURE 2

OPERATION

1. See the "ADJUSTMENTS" and "MAINTENANCE" sections of this manual before operating your rotary mower.
2. See your tractor operator's manual for correct use of your tractor controls.
3. Learn to operate the tractor and rotary mower in an area clear of persons and obstructions.
4. Check the work area for obstructions. Remove the small obstructions. Mark the large obstructions so you can see them. Do not hit the large obstructions.
5. Get on and get off the tractor correctly. Never use the lawn mower frame for a step.



WARNING: Be sure that the attachment drive clutch is off, the engine is shut off, the key removed and the blades have stopped spinning before attempting to clean a plugged discharge chute.

TO GET ON THE TRACTOR FROM THE RIGHT SIDE:

- a. put your right foot on the right foot rest
- b. put your right hand on the steering wheel
- c. put your left hand on the seat back
- d. swing your left leg between the steering wheel and seat



CAUTION: Never get on or off the tractor while the mower is running.



CAUTION: Never allow children or young teenagers to operate the tractor and rotary mower.



CAUTION: Clear the lawn or area to be mowed of sticks, stones or any hard objects which could come in contact with the blades and be hurled out the discharge opening.

TO GET ON THE TRACTOR FROM THE LEFT SIDE:

- a. put your left foot on the left foot rest
- b. put your left hand on the steering wheel
- c. put your right hand on the seat back.
- d. swing your right leg between the steering wheel and seat.

Use the reverse procedure to get off the tractor.



Regard your rotary mower as a piece of power equipment and be sure this manual is read and understood by all who operate it.

6. Start the rotary mower by setting the engine throttle at 1/3 speed and move the attachment clutch switch to the 'ON' position.



DANGER: Spinning Blade. Keep clear. Contact can injure.

7. Lower the lawnmower to the cutting position. Make sure the lift arms are located in the center of the slots in the lift links. This permits free movement of the lawnmower.

Do not put the attachment lift lever in the "FLOAT" position.



WARNING: Improper operation of your tractor on hillsides and slopes can be dangerous. Avoid improper operation! Read and follow the instructions given in the section titled "Hillside Operation" in this manual before operating your tractor.



CAUTION: Stop and inspect the mower for damage immediately after striking a foreign object and repair damage before restarting and operating the machine.

MOWING CONDITIONS

Mowing conditions can be different. You must use the correct operating methods according to the following chart:

CONDITION	METHOD
1. Short or thin grass.	<ol style="list-style-type: none">move the height selector lever to the cutting height needed.move the throttle lever to a position between $\frac{3}{4}$ and full throttle.adjust ground speed as needed.
2. Long or thick grass.	<ol style="list-style-type: none">move the height selector lever to the highest position.increase engine speed to the "FULL THROTTLE" position.reduce ground speed.cut long or thick grass twice.operate with the chute facing the cut area.
3. Wet grass.	<ol style="list-style-type: none">do not cut wet grass.
4. Rough terrain.	<ol style="list-style-type: none">raise the mower into the transport position.put the gauge wheels in the "M" position.operate the mower in the transport position to keep the gauge wheels off the ground.reduce ground speed.
5. Cutting near objects.	<ol style="list-style-type: none">use the left side of the rotary mower. The cut material will be moved away from the object.
6. When grass will not be swept.	<ol style="list-style-type: none">operate with chute facing the cut area.
7. When grass will be swept.	<ol style="list-style-type: none">operate with chute facing the uncut area. the grass will be in one strip and can be removed with a sweeper.
8. Wind.	<ol style="list-style-type: none">turn the tractor so the wind will move grass away from you.

ADJUSTMENTS

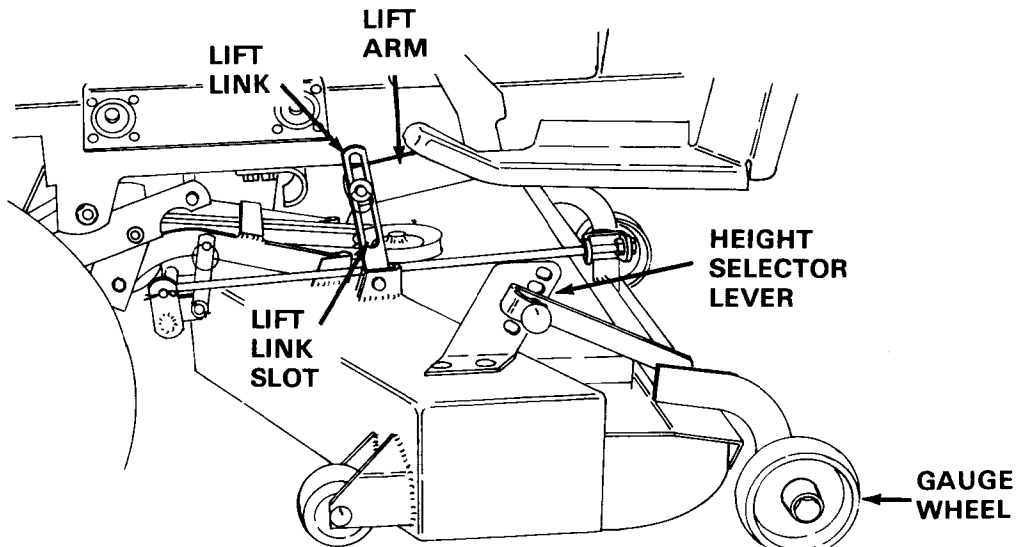


FIGURE 3

WARNING: Keep feet and hands away from discharge opening and make no repairs unless both the tractor engine and attachment drive are shut off and the key is removed from the tractor.



ROUGH TERRAIN

1. Operate the rotary mower in the transport position and with the height selector lever in the "M" position. This will keep the gauge wheels from contacting the ground.
2. Reduce ground speed.

DRIVE BELT TENSION

The belt tension is correct when the gap between spring coils is equivalent to two wire diameters.

TO INCREASE BELT TENSION: Turn the adjusting handle counterclockwise.

TO DECREASE BELT TENSION: Turn the adjusting handle clockwise.

IMPORTANT: Check the belt tension after the first hour of use. Adjust the belt tension if necessary. Before each use, check the belt tension and adjust if necessary.

HEIGHT SELECTOR LEVER

You can adjust the lawnmower height with the height selector lever.

TO CHANGE THE CUTTING HEIGHT:

1. Raise the lawnmower into the transport position. This will decrease the weight on the height selector lever.
2. Pull outward on the pin.
3. Move the lever up or down to the needed height.
4. Push the pin into the hole selected.

GAUGE WHEELS

SMOOTH TERRAIN

1. Always operate the rotary mower with the gauge wheels on the ground. Make sure all weight is off the lift links for the rotary mower. The lift links must move freely to cut level and even.
2. The gauge wheels must not contact the ground while the lawnmower is in the transport position.

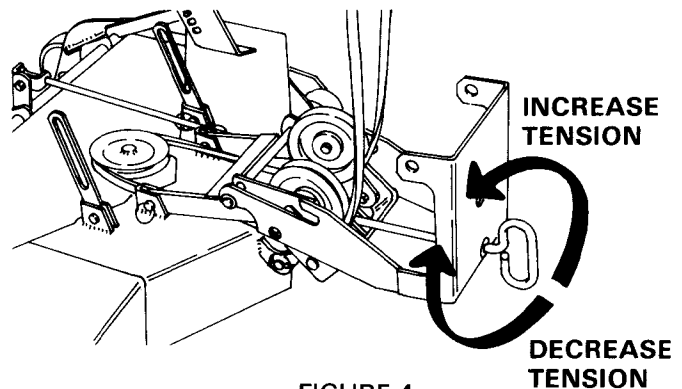


FIGURE 4

LAWNMOWER FRONT TO REAR LEVEL

Smooth cutting and minimum horsepower consumption are a result of a level rotary mower.

BEFORE STARTING THE PROCEDURE:

1. Put the tractor and rotary mower on a level surface, like a concrete floor.
2. Put the height selector lever in the "M" position.
3. Lower the lawnmower to the cutting position.

TO RAISE THE FRONT OF THE LAWMOWER:

1. Loosen the front nut on the leveling rod.
2. Turn the rear nut forward an equal number of turns.

TO LOWER THE FRONT OF THE LAWMOWER:

1. Loosen the rear nut on the leveling rod.
2. Turn the front nut rearward an equal number of turns.

TO CHECK FOR LEVEL:

1. Rotate the blades until they are parallel to the tractor frame from front to rear.
2. Make sure the nuts on the leveler rod are tight.
3. Measure the distance from the blade ends to the level surface. Make sure you measure as near the blade end as possible.

The lawn mower is level when both front and rear blade measurements are the same. The front end may be 1/8" (3 mm) lower than the rear end. Never permit the rear end to be lower than the front end. This will cause more than normal power consumption.

LAWN MOWER SIDE TO SIDE LEVEL

Make sure the problem is not the air pressure in the tires. The air pressure in both tires must be correct and equal.

Lawn mower side to side level is not adjustable.

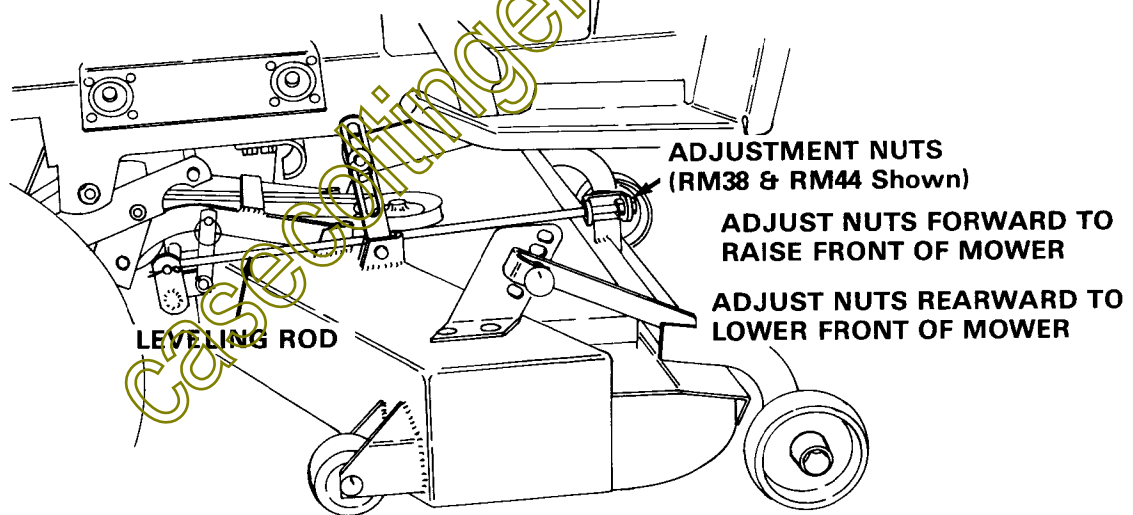


FIGURE 5

MAINTENANCE



CAUTION: Disengage attachment drive clutch, stop engine and remove key and spark plug wire(s) before making adjustments.

BLADE BOLTS

Before you operate the lawn mower for the first time, check the bolts holding the blades. The bolts must be tight. After the first eight hours of operation, check the bolts again. Each time the blades are removed, install new lock washers under the bolt heads. Tighten the bolts and check again after 8 hours of operation.

BENT BLADES

Check for a bent blade before you install the lawn mower on the tractor. Check the blades for damage after you hit foreign material.

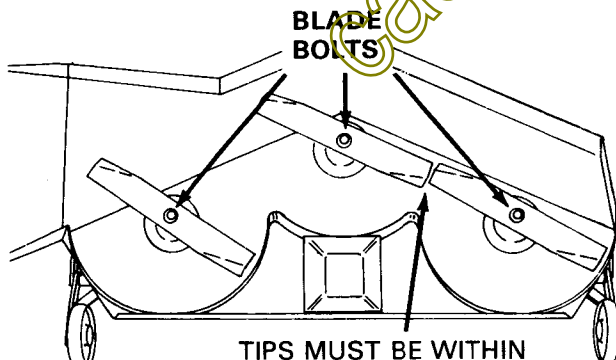
The ends of the blades must be aligned horizontally. A 1/8" (3 mm) difference is acceptable.

Align two blades as shown in Figure 6. Check all six ends in a similar way. Replace all bent blades.

Bent blades will leave strips of grass not cut.



CAUTION: Sharp mower blades. Wear gloves or wrap the mower blade with a rag when handling blades. Improper handling can cause cuts to the skin.



TIPS MUST BE WITHIN
1/8" (3 mm) OF THE
SAME HORIZONTAL LINE

FIGURE 6

SHARP BLADES

Stop the engine. Wait for all motion to stop. Be careful while you check the lawn mower blades. After each job check for damage or blade wear.

A blade that is worn can give a rough cut and brown areas of grass can result.

See Figure 7 for the correct angle of the cutting edge. The cutting edge must be at least 3-1/2" (90 mm) long.

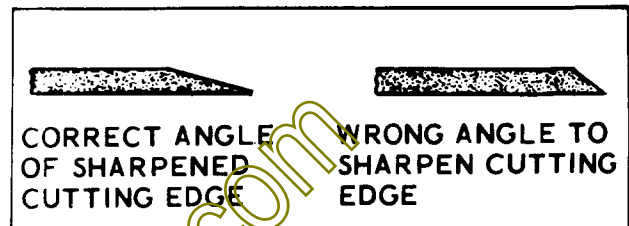


FIGURE 7

After grinding a blade, check for balance. Use a balance tool as shown. A balanced blade will stay in a horizontal position.

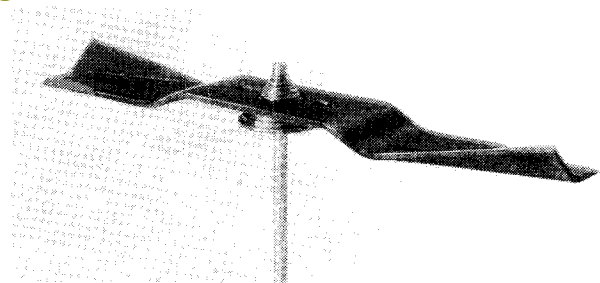


FIGURE 8



CAUTION: Sharp mower blades. Wear gloves or wrap the mower blade with a rag when handling blades. Improper handling can cause cuts to the skin.



CAUTION: Unbalanced blades are a hazard and will cause premature wear and failure of bearings and spindles. If the blades cannot be balanced by resharpening, replace them with new ones.

DECK BELT REPLACEMENT

1. Remove the deck belt guard.
2. Release the idler pulley tension. Put a 1/2" drive socket wrench into the hole in the idler plate. Rotate the wrench to loosen the belt.
3. Remove the old belt.
4. Put the new belt around the three spindle pulleys and idler pulley.
5. Manually rotate the belt. Check for free movement of the belt. Make sure the idler pulley has tension.
6. Install deck belt guard.

CLEANING UNDER THE LAWN MOWER

Large amounts of grass in the mower deck will:

1. cause more than normal horsepower consumption
2. cause an obstruction
3. cause a bad cutting job
4. cause corrosion
5. damage bearings or seals

Stop the engine. Wait for all motion to stop. Use caution when you check the lawn mower deck. Periodically check and clean the deck. Remove the grass wound between the blade mounting plates and spindle housings.



DANGER: Spinning Blade.
Keep clear. Contact can injure.

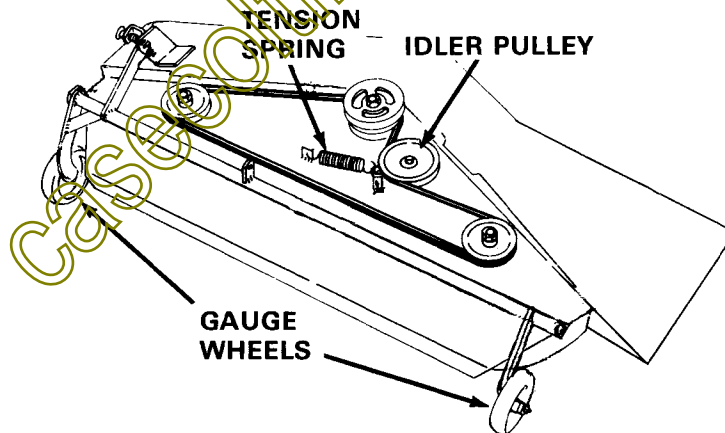


FIGURE 9 Belt Guard Removed for a Clear View

ASSEMBLY

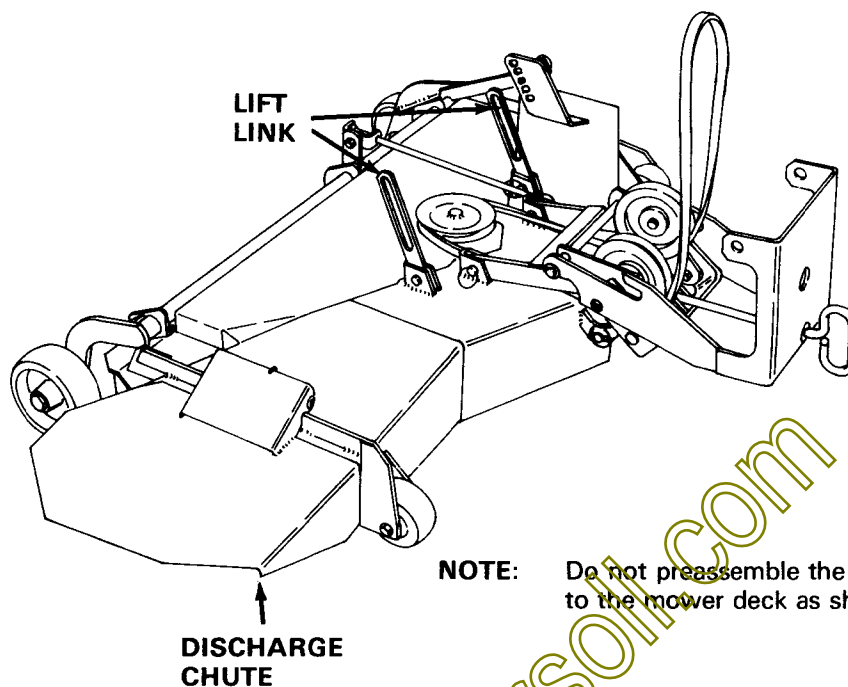


FIGURE 10

1. Remove components from the box.

NOTE: The drive belt and lift links for your mower are included with your tractor.

2. Use clevis pins and retaining rings to secure the lift links to the outer anchor points.
3. Install the discharge chute using the pin, spring and push nuts provided.



WARNING: Flying debris. Operate mower only with discharge chute guard/cover or complete grass catcher in place. Debris may cause injury.

NOTE: The spring must be positioned so it holds the chute downward.

INSTALLATION

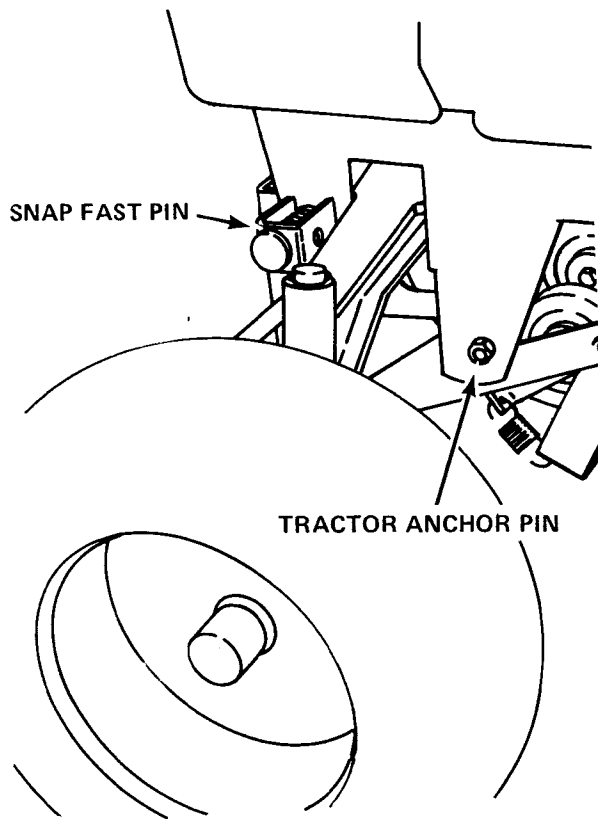


FIGURE 11

3. Slide the deck under the tractor from the left hand side.
4. Pull out and lock the snap fast pins in the open position.
5. Install the mounting bracket from the front:
 - a. guide the slots in the mounting bracket over the anchor pins in the tractor frame.
 - b. guide the snap fast pin holes in the mounting bracket into the snap fast receptacles in the tractor frame.
 - c. Release the snap fast pins to secure the mounting bracket.
 - d. guide the mounting arms into the inboard anchor points on the deck. Fasten the mounting arms using the clevis pins and retaining rings provided.
 - e. Lift the front of the deck, if necessary, and secure the links from the leveler cross shaft to the mounting arms. Use the clevis pin and retaining ring provided.
6. Lower the attachment lift to the fully lowered position.
7. Place the lift links on the outside of the lift arms and secure with the clevis pins (installed from the inside out), flat washer, and retaining ring provided.

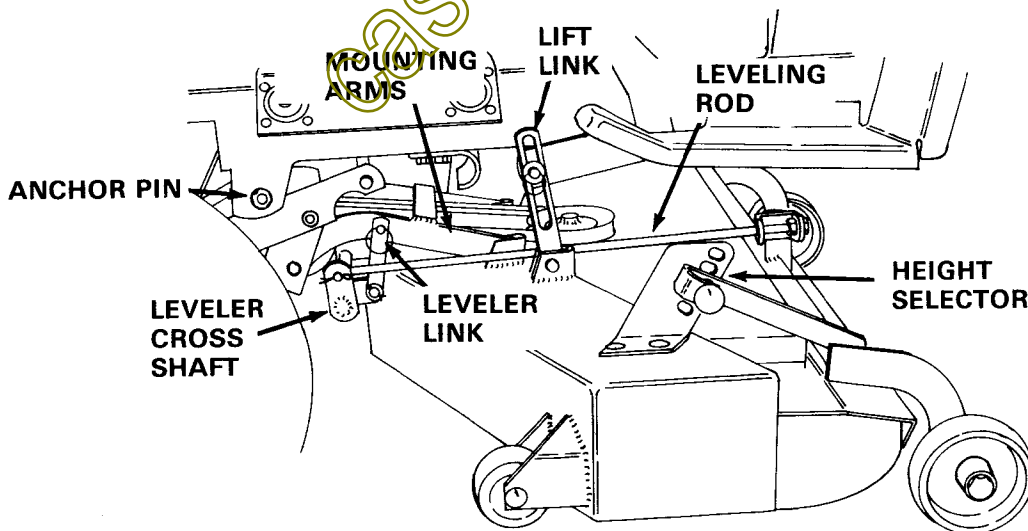



FIGURE 12

 **CAUTION:** Shut off engine, allow engine to cool and remove key and spark plug wire(s) before replacing mower drive belt.

8. Install the belt:

- a. stop engine and remove ignition key
- b. raise the hood and remove the spark plug wires
Allow engine to cool.
- c. pull belt up in front of the idler pulleys and around attachment drive clutch pulley.
- d. align belt on the idler pulleys.

- e. turn belt adjuster clockwise and put belt on the lawn mower input pulley.

9. Before starting engine:

- a. make sure the belt is correctly located on each pulley. See Fig. 13.
- b. Turn belt adjuster counterclockwise to tighten the belt. The belt tension is correct when the gap between spring coils is equivalent to two wire diameters.

IMPORTANT: Before operating the lawn mower, read and follow the adjustments and maintenance sections of this manual.

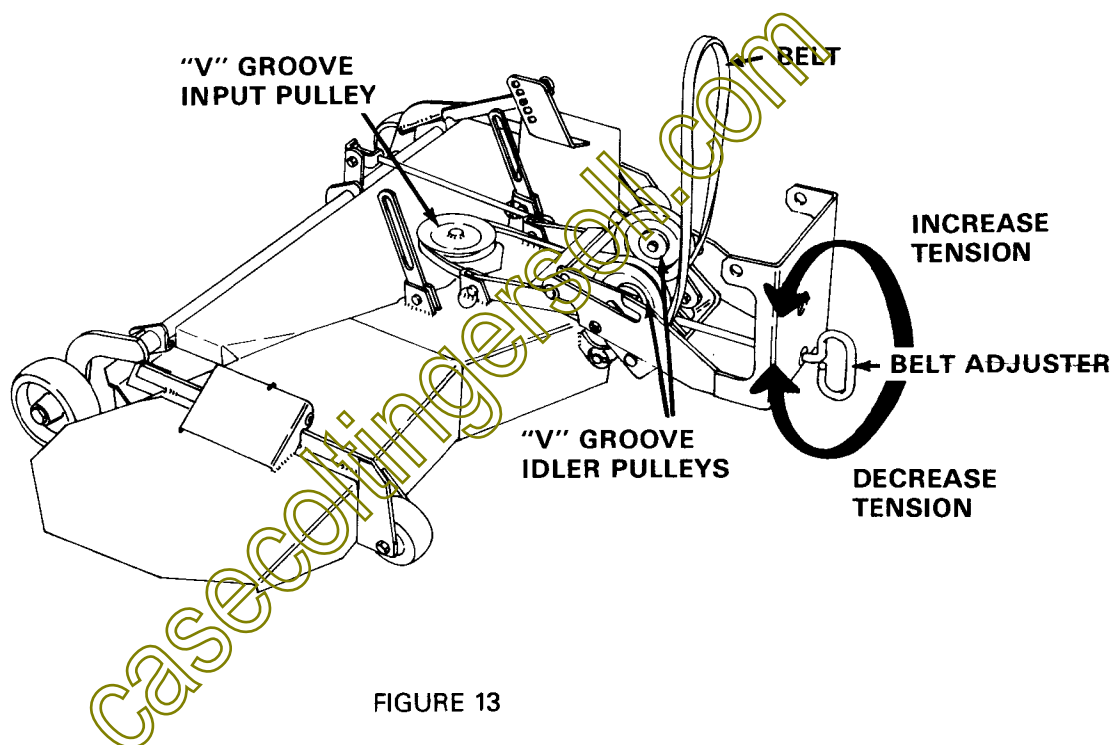


FIGURE 13

TROUBLESHOOTING CHART

LAWN MOWER NOT CUTTING EVEN OR LEAVING A STRIP OF GRASS

POSSIBLE CAUSE	CORRECTION
1. Obstruction in bottom of mower deck.	1. Remove deck and clean.
2. Blades not sharp.	2. Cutting edge must be sharp and at least 3-1/2" (89 mm) long.
3. Engine speed too slow.	3. Adjust engine speed to 3600 RPM.
4. Travel speed too fast.	4. Decrease travel speed.
5. Grass too long.	5. Cut twice. First at highest position then at needed height.
6. Drive or deck belt slippage.	6. Check belts. Adjust tension or replace.
7. Attachment drive clutch slippage.	7. Adjust or repair attachment drive clutch.

LAWN MOWER CUTS HIGH ON ONE SIDE

POSSIBLE CAUSE	CORRECTION
1. Lawn mower deck not level side to side.	1. check for equal tire pressure or worn gauge wheels.

TOO MUCH POWER CONSUMPTION AND CUTS BADLY

POSSIBLE CAUSE	CORRECTION
1. Blades not sharp.	1. Make blades sharp.
2. Lawn mower deck not level front to rear.	2. Deck must be level or no lower than 1/8" (3 mm) in front (first check air pressure in tires).
3. Blades installed upside down or wrong blades installed.	3. Install correctly. Blades rotate clockwise. Cutting edge must lead.
4. Blade not straight.	4. Replace blade.

CENTER BLADE ONLY CUTTING

POSSIBLE CAUSE	CORRECTION
1. Deck belt broken or idler spring disconnected.	1. Replace belt or spring as required.

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