

OWNER'S GUIDE

ASSEMBLY • OPERATION • MAINTENANCE • PARTS



Model 238R Shown

22" Self-Propelled Rotary Mowers

Model Numbers

- 121-232R000
- 121-233R000
- 121-234R000
- 121-236R000
- 121-238R000
- 121-524R000
- 121-526R000
- 121-528R000

Important: Read Safety Rules and Instructions Carefully



Made
in
AMERICA

WARNING: This unit is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester meeting applicable local or state laws (if any). If a spark arrester is used, it should be maintained in effective working order by the operator.

In the State of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. A spark arrester for the muffler is available through your nearest engine authorized service dealer or contact the service department, P.O. Box 360900, Cleveland, Ohio 44136.

IMPORTANT

RULES FOR SAFE OPERATION



THIS SYMBOL POINTS OUT IMPORTANT SAFETY INSTRUCTIONS WHICH, IF NOT FOLLOWED, COULD ENDANGER THE PERSONAL SAFETY AND/OR PROPERTY OF YOURSELF AND OTHERS. READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL BEFORE ATTEMPTING TO OPERATE YOUR LAWN MOWER. FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY. WHEN YOU SEE THIS SYMBOL—



HEED ITS WARNING.



DANGER:

Your lawn mower was built to be operated according to the rules for safe operation in this manual. As with any type of power equipment, carelessness or error on the part of the operator can result in serious injury. If you violate any of these rules, you may cause serious injury to yourself or others.



TRAINING

1. Read this owner's guide carefully in its entirety before attempting to assemble or operate this machine. Be completely familiar with the controls and the proper use of this machine before operating it. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Your rotary mower is a precision piece of power equipment, not a plaything. Therefore, exercise extreme caution at all times. Your unit has been designed to perform one job: to mow grass. Do not use it for any other purpose.
3. Never allow children under 14 years old to operate a power mower. Children 14 years old and over should only operate mower under close parental supervision. Only persons well acquainted with these rules of safe operation should be allowed to use your mower.
4. Keep the area of operation clear of all persons, particularly small children and pets. Stop engine when they are in the vicinity of your mower to help prevent blade contact or thrown object injury. Although the area of operation should be completely cleared of foreign objects, an object may have been overlooked and could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area.



PREPARATION

1. Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones and other foreign objects which could be picked up and thrown by the mower in any direction and cause serious personal injury to the operator or any others allowed in the area. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like.
2. Always wear safety glasses or eye shields during operation or while performing an adjustment or repair, to protect eyes from foreign objects that may be thrown from the machine in any direction.
3. Wear sturdy, rough-soled work shoes and close-fitting slacks and shirts. Shirts and pants that cover the arms and legs and steel-toed shoes are recommended. Do not wear loose fitting clothes or jewelry. They can be caught in moving parts. Never operate a unit in bare feet, sandals, or sneakers.
4. Before working with gasoline, extinguish all cigarettes, cigars, pipes and other sources of ignition. Check the fuel level before starting the engine. Gasoline is an extremely flammable fuel. Do not fill the gasoline tank indoors, while the engine is running, or until engine has been allowed to cool for at least two minutes after running. Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
5. Disengage the self-propelled mechanism or drive clutch on units so equipped before starting the engine.
6. The blade control handle is a safety device. Never attempt to bypass its operation. Doing so makes the safety device inoperative and may result in personal injury through contact with the rotating blade. The blade control handle must operate easily in both directions and automatically return to the disengaged position when released.
7. Never attempt to make a wheel or cutting height adjustment while the engine is running.
8. Never operate the mower in wet grass. Always be sure of your footing. A slip and fall can cause serious personal injury. Keep a firm hold on the handle and walk, never run. Mow only in daylight or in good artificial light.

9. For your safety, use the slope gauge included as part of this manual to measure slopes before operating this unit on a sloped or hilly area. If the slope is greater than 15° as shown on the slope gauge, do not operate this unit on that area or serious injury could result.



OPERATION

1. Do not change the engine governor settings or overspeed the engine. Excessive engine speeds are dangerous.
2. Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times as the rotating blade can cause injury.
3. Stop the blade when crossing gravel drives, walks or roads.
4. After striking a foreign object, stop the engine, remove the wire from the spark plug, and thoroughly inspect the mower for any damage. Repair the damage before restarting and operating the mower.
5. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
6. Shut the engine off and wait until the blade comes to a complete stop before removing the grass catcher or unclogging the chute. The cutting blade continues to rotate for a few seconds after the engine is shut off. Never place any part of the body in the blade area until you are sure the blade has stopped rotating.
7. Before cleaning, repairing or inspecting, make certain the blade and all moving parts have stopped. Disconnect the spark plug wire, and keep the wire away from the spark plug to prevent accidental starting.
8. Do not run the engine indoors.
9. Never cut grass by pulling mower toward you. Mow across the face of slopes, never up-and-down. Exercise extreme caution when changing direction on slopes. Do not mow excessively steep slopes. Always be sure of your footing. A slip and fall can cause serious personal injury.
10. Never operate mower without proper guards, plates or other safety protective devices in place.
11. Muffler and engine become hot and can cause a burn. Do not touch.



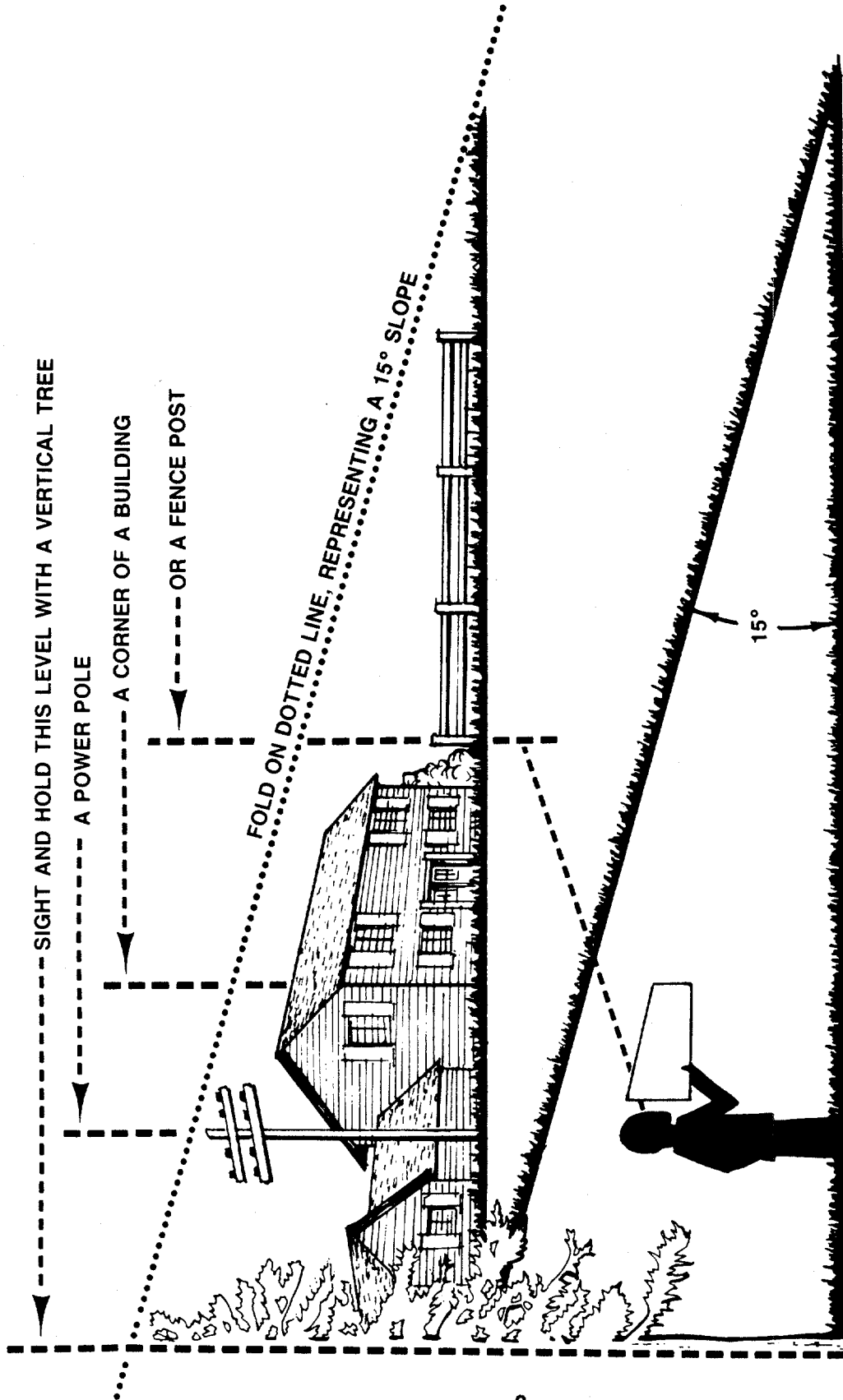
MAINTENANCE AND STORAGE

1. Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also visually inspect blade for damage (e.g. bent, cracked). Replace with blade which meets original equipment specifications.
2. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
3. Never store the mower with gasoline in the tank or gas containers inside of a building where fumes may reach an open flame or spark (e.g. gas hot water heater). Allow the engine to cool before storing in any enclosure.
4. To reduce fire hazard, keep the engine free of grass, leaves and excessive oil.
5. Check the grass catcher bag frequently for wear or deterioration. Replace a worn or damaged bag immediately. For safety protection, replace only with new bag meeting original equipment specifications.

SLOPE GAUGE

(Keep this sheet in a safe place for future reference.)

USE THIS SHEET AS A GUIDE TO DETERMINE SLOPES WHERE YOU MAY NOT OPERATE SAFELY.



Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2½ feet every 10 feet). A riding mower could overturn and cause serious injury. If operating a walk-behind mower on such a slope, it is extremely difficult to maintain your footing and you could slip, resulting in serious injury.

Operate RIDING mowers up and down slopes, never across the face of slopes.

Operate WALK-BEHIND mowers across the face of slopes, never up and down slopes.

CONTENTS OF HARDWARE PACK/PARTS IDENTIFICATION

Remove this sheet from your owner's manual and lay the hardware on the illustration for identification purposes. After assembly, keep the Slope Gauge which is on the reverse side of this sheet for future use. (Hardware pack may contain extra items which are not used on your unit.—Part numbers are shown in parentheses.)

A ATTACHING THE LOWER HANDLE

Hairpin Clips (714-0104)

B ATTACHING THE UPPER HANDLE

Curved Head Bolts (710-0671)

Split Washers 5/16" I.D. (736-0119)

Hex Nuts 5/16-18 Thread (712-0267)

C ATTACHING THE CABLE BRACKET AND THROTTLE CONTROL

Cable Bracket (17174)

Hex Bolt 1/4-20 x 1-7/8" Long (710-1216)

Spring Washer 1/4" I.D. (736-0175)

Hex Nut 1/4-20 Thread (712-0287)

D ATTACHING THE STARTER ROPE

Rope Guide (710-1205)

Hex Lock Nut 1/4-20 Thread (712-0324)

E SECURING THE CABLES

Cable Ties (726-0240)

Blade Control Handle

Throttle Control

Drive Control Handle

Upper Handle

Rope Guide

Lower Handle

Handle Mounting Brackets

Starter Rope

Engine

Spark Plug

Chute Deflector

(Model 238R Shown)

PARTS IDENTIFICATION

F ATTACHING THE DRIVE CLUTCH CONTROL CABLE

Phillips Head Screws (710-0841)

Plastic Cap (731-1059)



Cut Along this Line

ASSEMBLY INSTRUCTIONS

IMPORTANT: This unit is shipped **WITHOUT GASOLINE or OIL**. After assembly, service engine with gasoline and oil as instructed in the separate engine manual packed with your mower.

NOTE: Reference to right or left hand side of the mower is observed from the operating position. Refer to parts identification on page 4 for location of parts when assembling the mower.

Tools Required for Assembly

- (1) Pair of Pliers
- (1) 1/2" Wrench*
- (2) 7/16" Wrenches*
- (1) Phillips Screwdriver
- *Or two 6" Adjustable Wrenches

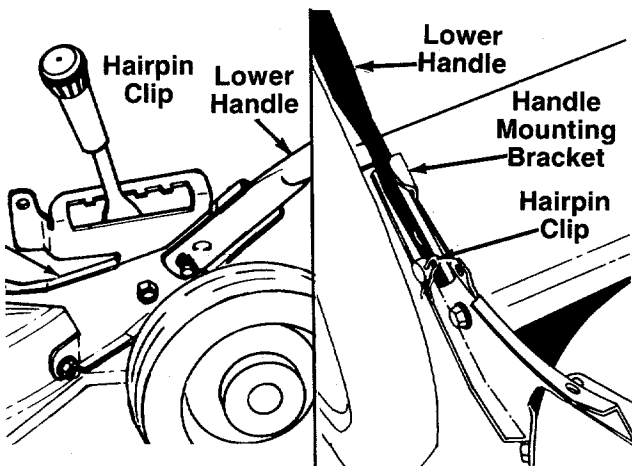


FIGURE 1.

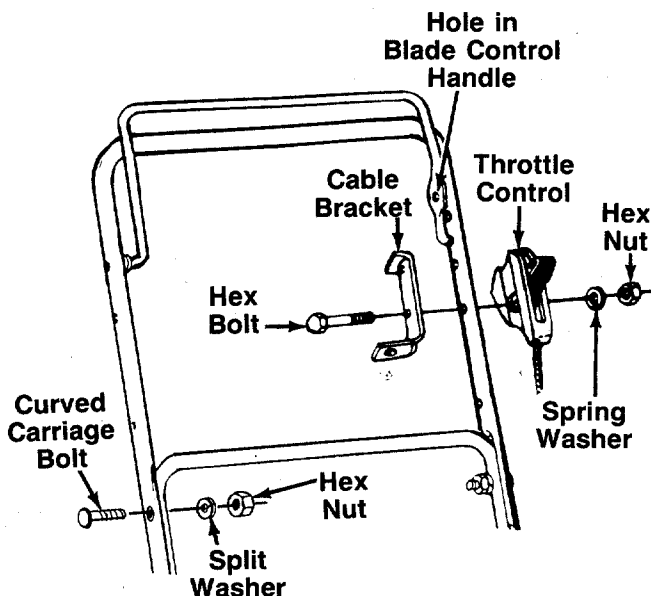


FIGURE 2.

UNPACKING

1. Remove the lawn mower from the carton by opening the top flaps and lifting the unit out. Be careful of the staples. Make certain all parts and literature have been removed from the carton before the carton is discarded.
2. Disconnect the spark plug wire and move away from the spark plug.
3. Stretch out all control cables and place on the floor. Be careful not to bend or kink the cables at any time during assembly.
4. Remove page four from this manual and lay the contents of the hardware pack on the illustration for identification.

ATTACHING THE LOWER HANDLE (Hardware A)

1. Hi-Wheel models: Your mower has been shipped with the wheels in the lowest cutting height position. Raise the mower to the highest cutting height position before assembling the lower handle.
 2. Attach the lower handle by placing the bottom holes in the lower handle over the weld pins on the handle mounting brackets on the rear of the deck.
 3. Using a pair of pliers, squeeze one leg of the lower handle against the handle mounting bracket. Insert the hairpin clip into the hole on the weld pin.
- ← See figure 1. Repeat on other side.

ATTACHING THE UPPER HANDLE (Hardware B)

1. Place the upper handle in position over the lower handle. The blade control handle (attached to the upper handle) must be facing up.
 2. Secure the upper handle to lower handle using the curved head bolts, split washers and hex nuts as shown in figure 2. Tighten securely.
- ←

ATTACHING THE CABLE BRACKET AND THROTTLE CONTROL (Hardware C)

The throttle control is attached to the engine. Attach the throttle control to the **left** side of upper handle as follows. See figure 2.

1. Route the throttle control cable inside the handle mounting bracket and beneath the lower handle.
2. Place cable bracket against left side of upper handle, lining up the hole in the bracket with the bottom hole in upper handle. Place 1/4" hex bolt through cable bracket and handle, from the inside to the outside.
3. Place throttle control on the hex bolt (outside of the upper handle), with the throttle lever facing upward. Secure with spring washer (cupped side against the throttle control) and hex nut.

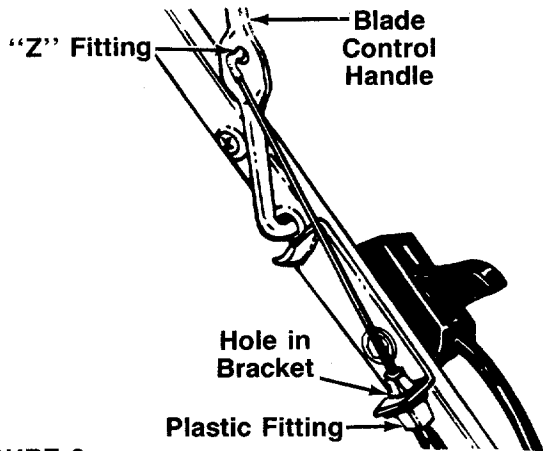


FIGURE 3.

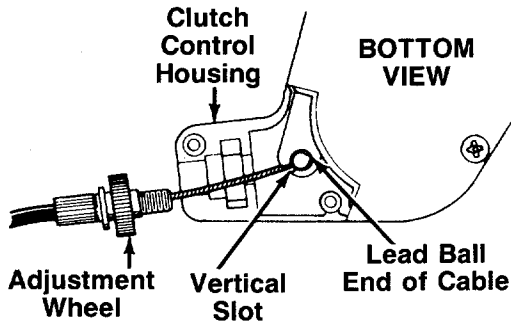


FIGURE 4.

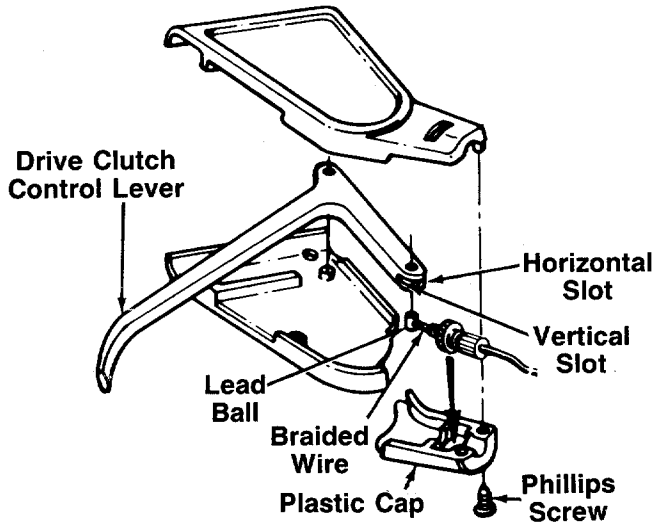


FIGURE 5.

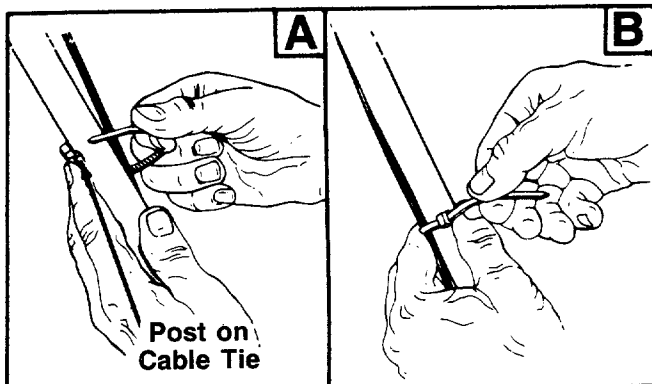


FIGURE 6.

ATTACHING THE BRAKE CABLE

1. The brake cable is attached to the engine, and has a "Z" fitting on the loose end. Route the brake cable below the lower handle. Place end of cable through the hole in the bracket as shown in figure 3. Be careful not to bend or kink the cable at any time. Push the plastic fitting until it locks into the hole in the bracket.



WARNING: Brake cable must be assembled as shown for proper blade brake operation.

2. Hook the "Z" end of the brake cable into the hole in the blade control handle from the inside to the outside as shown in figure 3.

ATTACHING THE DRIVE CLUTCH CONTROL CABLE (Hardware F)

The drive clutch control cable is attached to the deck. Route the cable under the lower handle. Attach the cable to the lever in the clutch control housing, located in the middle of the upper handle, as follows.

1. Place the lead ball end of the cable into the fitting provided in the end of the clutch control lever. Slip the braided wire into the vertical slot as shown in figure 4.

2. Slide the braided wire around in the horizontal slot. See figure 5.

3. Make certain the adjustment wheel is threaded onto the cable as far as possible as shown in figure 4. Place the adjustment wheel into the clutch control housing.

4. Secure the plastic cap to the clutch control housing using the two Phillips head screws. See figure 5.



WARNING: Drive clutch adjustment must be checked before the unit is operated, as described in the Operation Section.

SECURING THE CABLES (Hardware E)

Secure all cables to the left side of the handle as follows.



WARNING: When attaching the control cables, the cables must be routed to avoid contact with all sharp edges and hot surfaces to prevent damage to the cables, which will render the controls inoperative.

1. Insert posts on cable ties into holes provided on the handle, one on the upper handle and two on the lower handle. The holes may be either on the inside or outside of the handles. See figure 6A.

2. Secure the cables with the cable ties. See figure 6B.

3. Trim excess ends of cable ties.

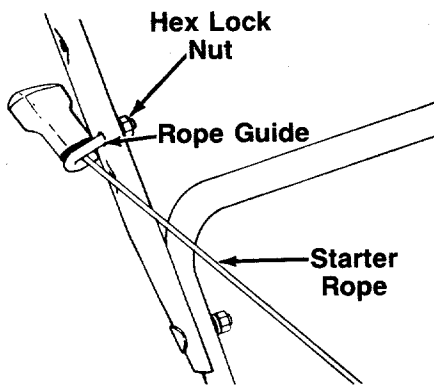


FIGURE 7.

ATTACHING THE STARTER ROPE (Hardware D)

1. The starter rope is inside the top of the engine. Additional rope may be wound around the starter handle. If so, unwind the rope from the handle.
2. With the spark plug wire disconnected and grounded, depress the blade control handle and pull the rope out of the engine.
3. Place the rope guide around the starter rope, so the rope guide bends downward as shown in figure 7.
7. Insert the rope guide into the handle, and secure with hex lock nut.

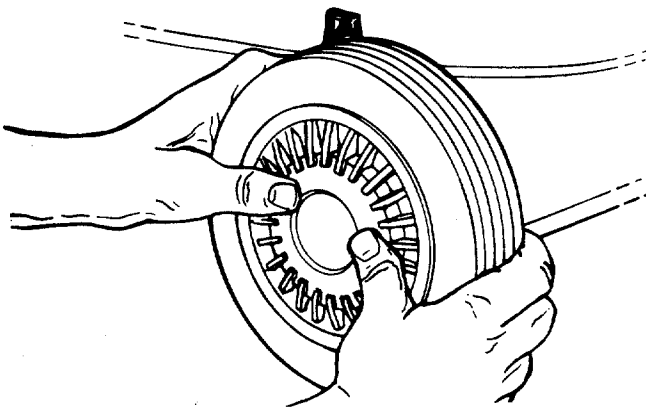


FIGURE 8.—Optional Hub Caps

INSTALLATION OF HUB CAPS (Optional)

1. If your mower is equipped with hub caps which have four tabs, line up the tabs on the hub caps with the holes in the wheels. Push to lock in position.
2. If your mower is equipped with 2" wide tires, place hub caps in position against the inner hub of the wheel. Press firmly around the center portion of hub cap in a circular motion, similar to installing a lid on a round, plastic container. See figure 8. The hub caps are flexible and will snap over the wheel hubs.

NOTE: It may be helpful to place the hub caps in hot tap water for several minutes to make them pliable before installing, especially if the temperature is less than 60°F.

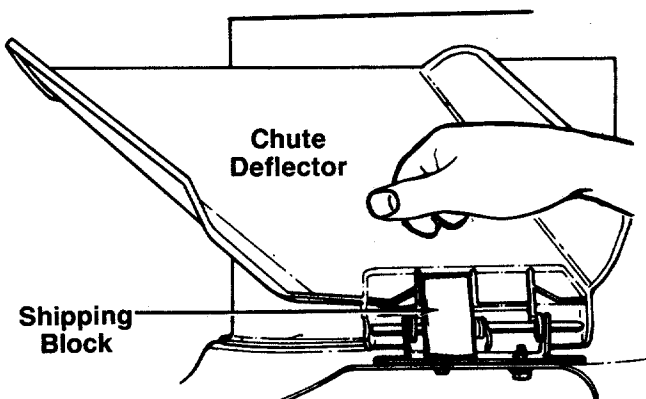


FIGURE 9.

FINAL ASSEMBLY OF MOWER

1. The chute deflector on your mower is held in an upright position by a block for shipping purposes only. This shipping block must be removed and discarded before the mower is put into operation. To remove the shipping block, move the spring-loaded chute toward the engine by pushing above the shipping block. See figure 9. Remove the block and carefully lower the chute into operating position, keeping fingers out of the way.
2. Make certain all nuts and bolts are tightened securely.

CONTROLS

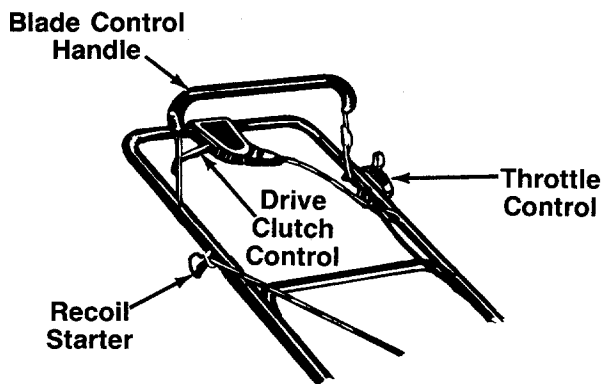


FIGURE 10.
BLADE CONTROL HANDLE



WARNING: This control mechanism is a safety device. Never attempt to bypass its operations.

The blade control handle is located on the upper handle of the mower. See figure 10. The blade control handle must be depressed in order to operate the unit. Release the blade control handle to stop the engine and blade.



WARNING: The blade will be rotating whenever the engine is running.

THROTTLE CONTROL

The throttle control is located on the side of the upper handle. It is used to regulate the engine speed.



WARNING: The throttle control cannot be used to stop the engine.

RECOIL STARTER

The recoil starter handle is attached to the handle. See figure 10. Stand behind the unit in the operating position to start the unit.

DRIVE CLUTCH CONTROL

Squeezing the drive clutch control engages the drive mechanism to the rear wheels. Releasing the clutch control stops the rear wheels from driving. Release the drive clutch control to slow down when negotiating an obstacle, making a turn or stopping. See figure 10.

OPERATION



FIGURE 11.

Keep hands and feet away from the chute area on cutting deck. See figure 11.

The operation of any lawn mower can result in foreign objects being thrown into the eyes, which can result in severe eye damage. Always wear safety glasses or eye shields. We recommend wide vision safety mask for over spectacles or standard safety glasses.



NOTE: For shipping purposes your mower is set with the wheels in a low cutting height position. For best results raise the cutting position until it is determined which height is best for your lawn. See cutting height adjustment section.

GAS AND OIL FILL-UP

Service the engine with gasoline and oil as instructed in the separate engine manual packed with your mower. Read instructions carefully.



WARNING: Never fill fuel tank indoors, with engine running or until the engine has been allowed to cool for at least two minutes after running.

BEFORE STARTING

1. Attach spark plug wire to spark plug. If unit is equipped with a rubber boot over the end of the spark plug wire, make certain the metal loop on the end of the spark plug wire (inside the rubber boot) is fastened securely over the metal tip on the spark plug. See figure 12.

Metal Loop on Spark Plug Wire

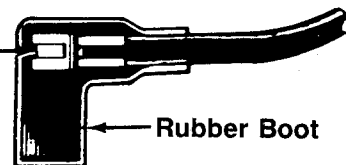


FIGURE 12.

2. Open fuel shut-off valve (if so equipped). Refer to separate engine manual.
3. Before each use, check for proper drive clutch operation by performing the following before starting the engine:

With the drive clutch control released, push mower forward. It should move freely. Pull mower backward. It should move freely.

If it does not and the rear wheels tend to lock up, the clutch may not be releasing completely. Do not start the engine until corrections have been made. Check the control cable for severe bend, kinks and binding, or grass build-up in the pulley groove. Correct and adjust as required.

TO START ENGINE AND ENGAGE BLADE



WARNING: When starting the unit for the first time, face the mower against a solid object such as a wall, fence, etc. Start the unit, and if it shows any signs of motion with the drive clutch control disengaged, shut the engine off immediately. Make certain the drive clutch control is adjusted so the drive belt is as loose as possible. Refer to the Adjustment Section.

1. Move throttle control lever all the way forward. (A warm engine may be started with the engine in FAST position.)
2. Standing behind the unit, depress the blade control handle and hold it against the upper handle as shown. See figure 13.
3. Grasp the recoil starter handle and pull back rapidly, extending rope fully. Return it slowly to the rope guide bolt.
4. After engine starts, move throttle control to desired engine speed.

NOTE: If any problems are encountered, refer to the Trouble Shooting Guide on page 14.

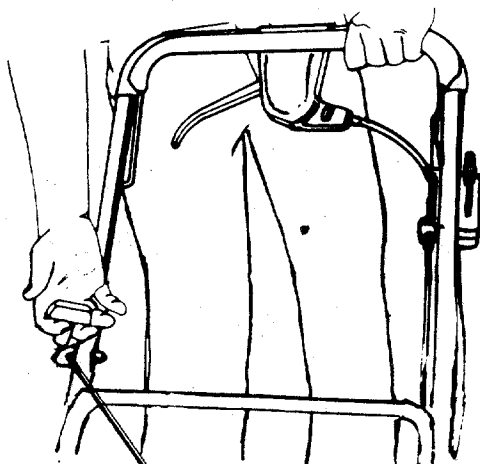


FIGURE 13.

TO STOP ENGINE AND BLADE

1. Move throttle control lever to SLOW position.
2. Release the blade control handle to stop the engine and blade.



WARNING: The blade continues to rotate for a few seconds after the engine is shut off.

3. Disconnect the spark plug wire and ground it against the engine to prevent accidental starting while equipment is unattended.

USING YOUR ROTARY MOWER

Be sure that lawn is clear of stones, sticks, wire, or other objects which could damage lawn mower or engine. Such objects could be accidentally thrown by the mower in any direction and cause serious personal injury to the operator and others.

For the best results, do not cut wet grass because it tends to stick to the underside of the mower, preventing proper discharge of grass clippings, and could cause you to slip and fall. New grass, thick grass or wet grass may require a narrower cut. Blade speed should be adjusted to the condition of the lawn.

The best mowing pattern is one that allows the clippings to discharge towards the uncut part of the lawn. This permits recutting of the clippings to further pulverize them. When cutting high weeds, discharge towards cut portion, then recut at right angles to first direction.

For best results, cut off one-third or less of the total length of the grass. Lawn should be cut in the fall as long as there is growth.

This mower is designed to be operated at full throttle to give you the best cut and do the most effective job of bagging the cut grass.



WARNING: If you strike a foreign object, stop the engine. Remove wire from spark plug, thoroughly inspect the mower for any damage, and repair the damage before restarting and operating the mower. Extensive vibration of the mower during operation is an indication of damage. The unit should be promptly inspected and repaired.

ADJUSTMENTS



WARNING: Do not at any time make any adjustment to lawn mower without first stopping engine and disconnecting spark plug wire.

CUTTING HEIGHT ADJUSTMENT

An adjusting plate and thumb lever at each front wheel provides cutting height adjustment. Each adjusting

plate has nine height positions. Height of cut will be changed when the thumb lever is moved from one position to another. Simply depress the lever towards wheel and move wheel and lever assembly to desired position. See figure 14.

The height adjustment handle for the rear wheels is located on the left side of the deck. The handle may be placed in one of nine cutting height positions. Push the handle to the left and then either forward to lower the cutting height or backward to raise the cutting height. See figure 14.

All wheels must be placed in the same relative position. For rough or uneven lawns, raise the cutting height of your mower.

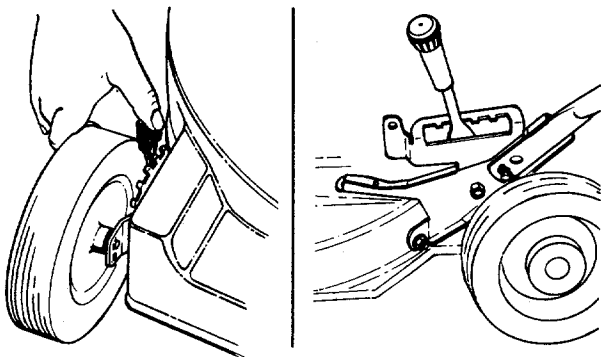


FIGURE 14.

DRIVE CLUTCH CONTROL ADJUSTMENT

Use the adjustment wheel located in the clutch control housing to tighten the drive belt if mower does not self-propel with the drive clutch control engaged, or if drive belt is slipping (unit hesitates while engine maintains the same speed). See figure 15.

In addition, the adjustment wheel may also be used to determine the position in which the drive clutch control is engaged. If it is more comfortable to have the drive engaged with the lever further away from the handle, tighten the drive belt.

Make certain to retest the unit for neutral as instructed in the Operation Section. Move the adjustment wheel in the opposite direction to loosen the drive belt if necessary.

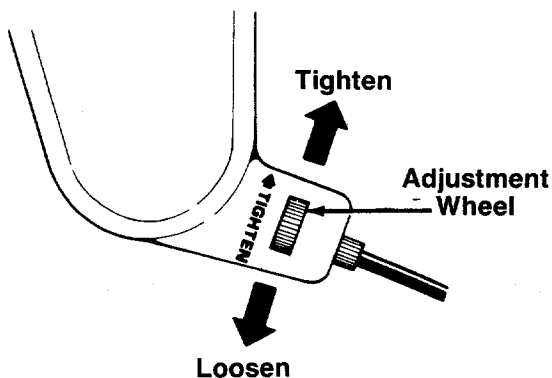


FIGURE 15.

THROTTLE CONTROL ADJUSTMENT

If the throttle control requires adjustment or if it has been replaced, adjust the throttle control as follows.

Briggs and Stratton Quantum Engines:

1. Remove the screw shown in figure 16A. Remove the cable clamp from the cable.
2. Push the throttle control lever on the handle all the way forward to CHOKE position. Make certain the throttle control lever remains in this position.
3. Push the control lever on the engine as far toward the rear of the engine as it will go. Secure the cable in this position with the cable clamp and screw.

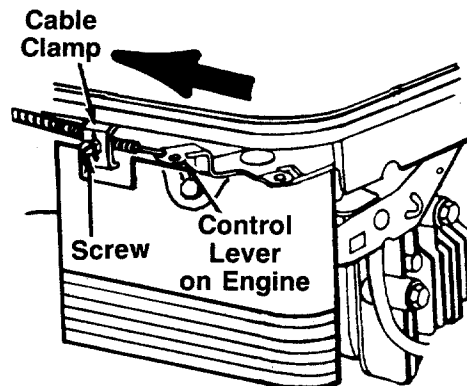


FIGURE 16A.—Briggs & Stratton Quantum Engines

Briggs and Stratton Sprint Engines and Tecumseh Engines:

1. Loosen (do not remove) the screw on the cable clamp so that the cable will move freely under the clamp. See figure 16B or 16C.
2. Place the throttle control lever on the handle all the way forward to START position.
3. Place the control lever on the engine in the full open position by pushing it as far toward the outside (Briggs and Stratton engines) or rear (Tecumseh engines) of the engine as it will go. Tighten the screw on the cable clamp to secure the cable in this position.

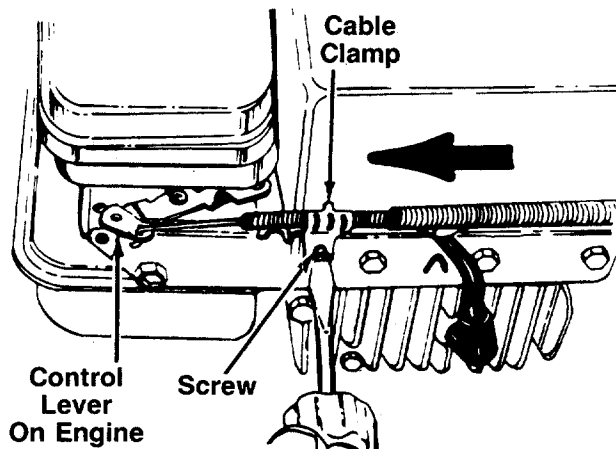


FIGURE 16B.—Briggs & Stratton Sprint Engines

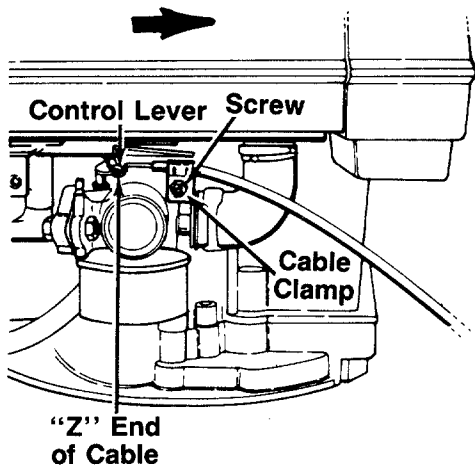


FIGURE 16C.—Tecumseh Engines

CARBURETOR ADJUSTMENTS



WARNING: If any adjustments are made to the engine while the engine is running (e.g. carburetor), keep clear of all moving parts. Be careful of heated surfaces and muffler.

Minor carburetor adjustments may be required to compensate for differences in fuel, temperature, altitude and load. To adjust carburetor, refer to the separate engine manual packed with your mower.

NOTE: A dirty air cleaner will cause an engine to run rough. Be certain air cleaner is clean and attached to the carburetor before adjusting carburetor. Refer to the separate engine manual.

LUBRICATION



WARNING: Always stop engine and disconnect spark plug wire before cleaning, lubricating or doing any kind of work on lawn mower.

Blade Control—Lubricate the pivot points on the blade control handle and the brake cable at least once a season with light oil. See figure 17. The blade control must operate freely in both directions.

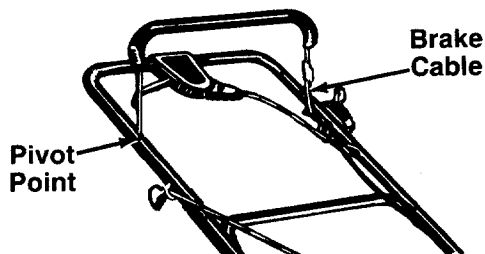


FIGURE 17.

Chute Deflector—The torsion spring and pivot point should be lubricated periodically with light oil to prevent any rust or binding. Deflector must work freely.

Wheels—Mower may be provided with ball bearing wheels. Lubricate at least once a season with light oil. Also, if the wheels are removed for any reason, lubricate the surface of the axle bolt and the inner surface of the wheel with light oil. A 4 oz. plastic bottle of light oil lubricant is available. Order part number 737-0170. Engine oil may also be used.

Engine—Follow engine manual for lubrication instructions.

Throttle—Periodically lubricate throttle control lever and throttle wire assembly with a few drops of light oil for ease of operation.

Transmission—The transmission is pre-lubricated and sealed at the factory. It does not require checking. If disassembled for any reason, fill with 2 ounces of Alvania grease, part number 737-0168.

MAINTENANCE



WARNING: Be sure to disconnect and ground the spark plug wire before performing any repairs or maintenance.

NOTE: When tipping the unit, empty the fuel tank and keep engine spark plug or muffler side up.

TROUBLE SHOOTING

Refer to page 14 of this manual for trouble shooting information.

CUTTING BLADE

When removing the cutting blade for sharpening or replacement, protect hands by using heavy gloves or a rag to grasp the cutting blade. Remove the bolt and bell washer which hold the blade and adapter to the engine crankshaft. Remove the blade and adapter from the crankshaft.

If the blade or blade adapter needs replacing, remove the two small bolts, lock washers and nuts which hold the blade to the adapter.



WARNING: Periodically inspect the blade adapter for cracks, especially if you strike a foreign object. Replace when necessary.

When sharpening the blade, follow the original angle of grind as a guide. It is **extremely important** that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade. An unbalanced blade will cause excessive vibration when rotating at high speeds, may cause damage to the mower and could break, causing personal injury.

It is recommended that the blade always be removed from the adapter for the best test of balance.

The blade can be tested by balancing it on a round shaft screwdriver. Remove metal from the heavy side until it balances evenly.

Before reassembling the blade and the blade adapter to the unit, lubricate the engine crankshaft and the inner surface of the blade adapter with light oil. Lubricating the bolt holes, bolts and inner surface of the nuts with light oil is also recommended. A 4 oz. plastic bottle of light oil lubricant is available. Order part number 737-0170. Engine oil may also be used.

When replacing the blade, be sure to install the blade with the side of the blade marked "Bottom" (or with part number) facing the ground when the mower is in the operating position.

Blade Mounting Torque

Center Bolt and Blade Adapter Bolts:
375 in. lb. min., 450 in. lb. max.

To insure safe operation of your unit, **all** nuts and bolts must be checked periodically for correct tightness.

DECK

The underside of the mower deck should be cleaned after each use to prevent a buildup of grass clippings, leaves, dirt or other matter. If this debris is allowed to accumulate, it will invite rust and corrosion, and may cause an uneven discharge of grass clippings at the next cutting.

The deck may be cleaned by tilting the mower and scraping clean with a suitable tool (make certain the spark plug wire is disconnected).

ENGINE

Refer to the separate engine manual for engine maintenance instructions.

Service **air cleaner** every 25 hours under normal conditions. Clean every few hours under extremely dusty conditions. Poor engine performance and flooding usually indicates that the air cleaner should be serviced. To service the air cleaner, refer to the separate engine manual packed with your unit.

The **spark plug** should be cleaned and the gap reset once a season. Spark plug replacement is recommended at the start of each mowing season; check engine manual for correct plug type and gap specifications.

Clean the engine regularly with a cloth or brush. Keep the cooling system (blower housing area) clean to permit proper air circulation which is essential to engine performance and life. Be certain to remove all grass, dirt and combustible debris from muffler area.

BELT REMOVAL AND REPLACEMENT

1. Disconnect the spark plug wire and ground it against the engine.
2. Drain the fuel tank or place a piece of plastic beneath the cap to prevent gasoline leakage.
3. Remove the transmission belt cover by removing three bolts. See figure 18.

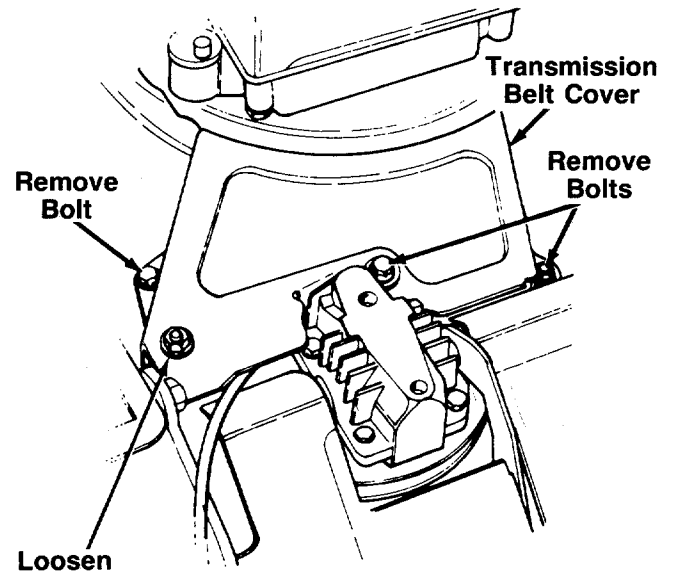


FIGURE 18.

4. Tip the mower back on its side. Block securely.
5. Remove the center bolt which secures the blade to the crankshaft. See figure 19. Remove the blade, blade adapter and pulley half. Remove the belt.
6. Remove the inside belt guard by removing two self-tapping screws. A 3/8" wrench is required. See figure 19.
7. Remove the belt from between the idler pulley and the belt guard on the idler pulley bracket. Refer to figure 19.

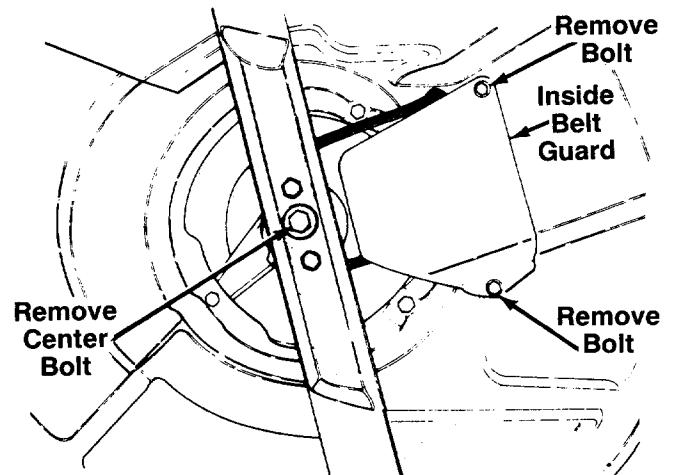


FIGURE 19.

8. Remove the belt from the transmission pulley.
9. Assemble the new belt as follows.
 - A. Push the idler pulley up out of the way as shown in figure 20.
 - B. Slide the belt in from the rear of the deck, and place it around the transmission pulley. See figure 20.
 - C. Release the idler pulley so it falls down into position. Slide the belt in between the idler pulley and belt guard on the idler pulley bracket as shown in figure 21.
 - D. Grease the crankshaft. Place belt between the two pulley halves, and reassemble the blade adapter and blade. Reassemble the inside belt guard.
 - E. Reassemble the transmission belt cover, following instructions in step 4 in reverse order.

NOTE: When reassembling the transmission belt cover, be certain the belt guard on the transmission cover is approximately 1/8" away from the belt. Make certain to tighten all nuts and bolts securely. If plastic was placed under the gas cap, be certain to remove it.

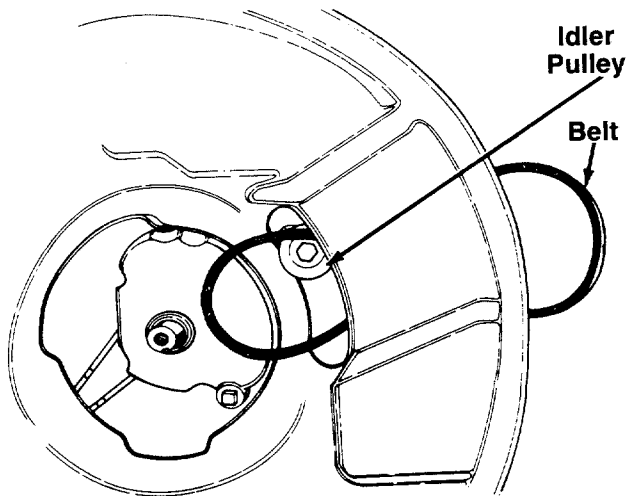


FIGURE 20.

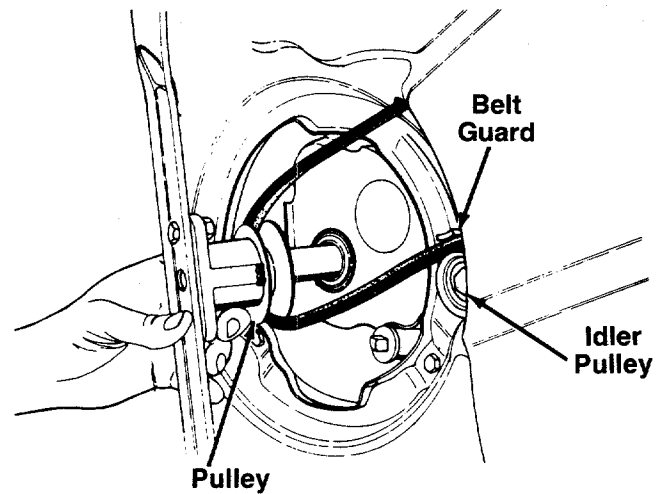


FIGURE 21.

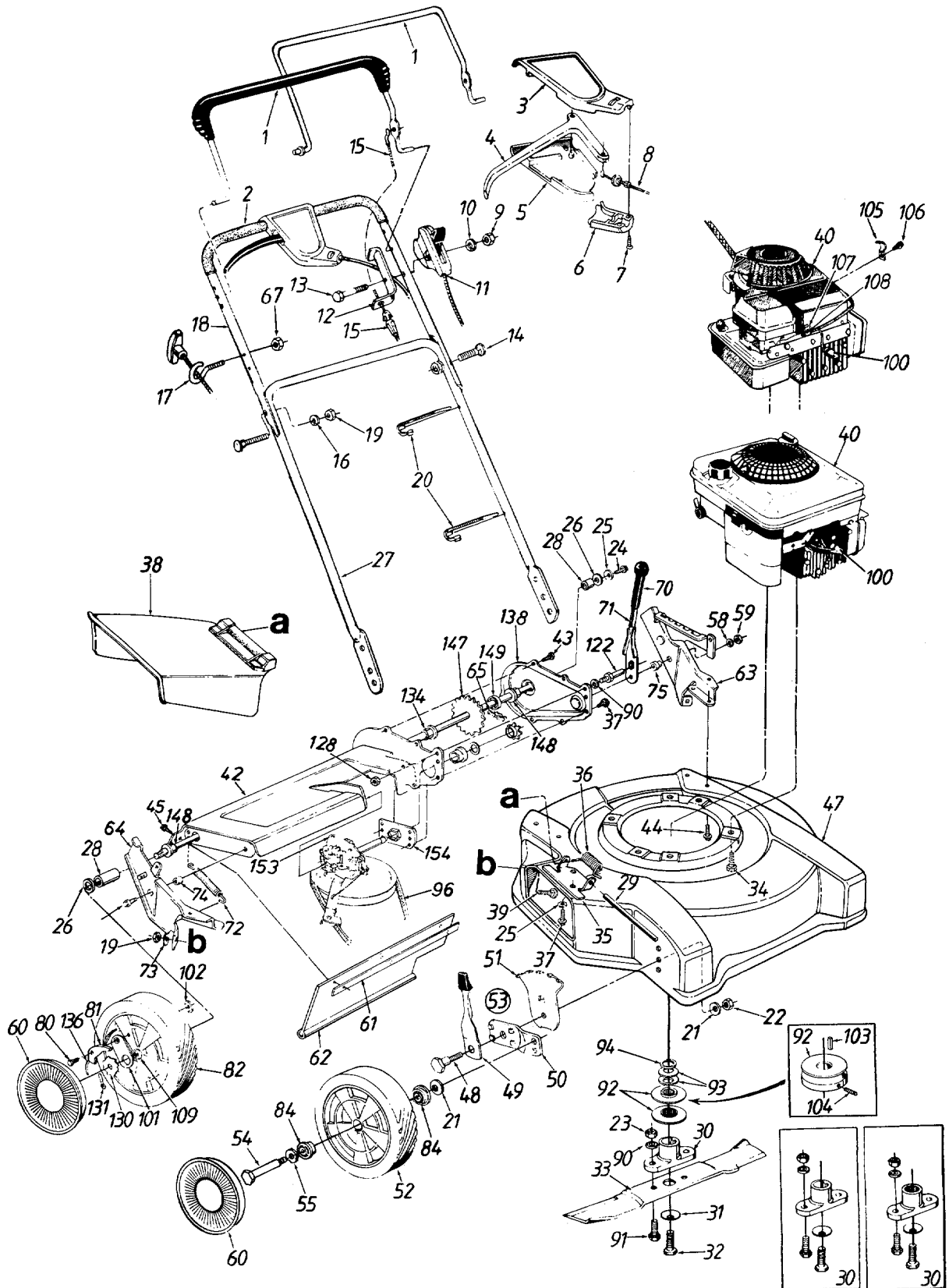
OFF-SEASON STORAGE

The following steps should be taken to prepare lawn mower for storage.

1. Clean and lubricate mower thoroughly as described in the lubrication instructions.
2. Refer to separate engine manual for correct engine storage instructions.
3. Coat mower's cutting blade with chassis grease to prevent rusting.
4. Store mower in a dry, clean area.

NOTE: When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rust-proof the equipment. Using a light oil or silicone, coat the equipment, especially cables and all moving parts.

Models 232R, 233R, 234R, 236R and 238R



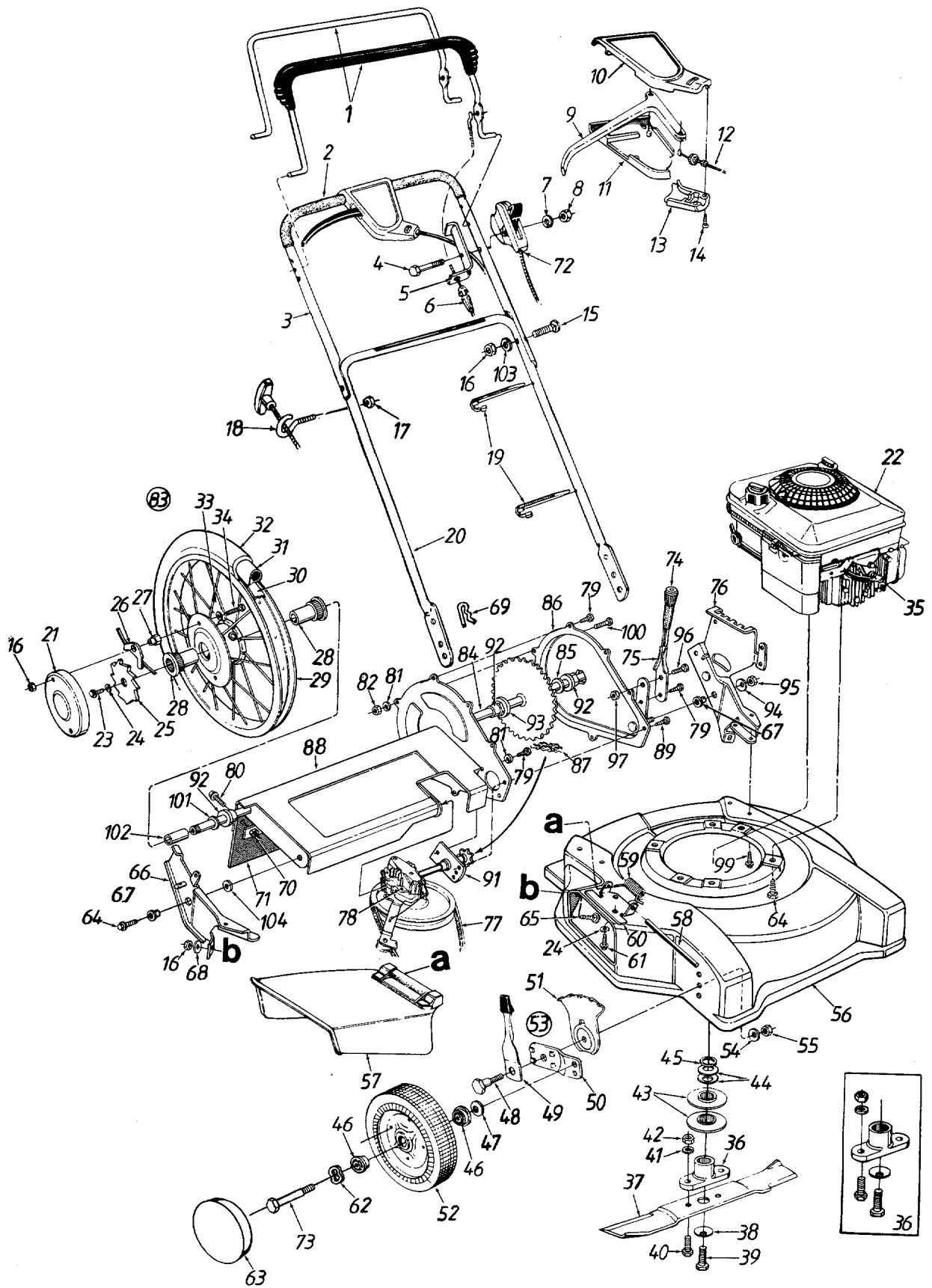
PARTS LIST FOR MODELS 232R, 233R, 234R, 236R AND 238R ROTARY MOWERS

PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
1		Control Handle Ass'y. (Std.)	48	738-0507B		Shld. Bolt .5" Dia. x .357
		Control Handle Ass'y. (Deluxe)	49	14832		Spring Lever Ass'y. w/Knob
2		Foam Grip (2 Req'd.) (Optional)	50	15262B		Pivot Bar
3		Upper—S.P. Control Cover	51	15261A		Height Adj. Plate
4		Control Lever	52	734-1513A		Wheel Ass'y. Comp.
5		Lower—S.P. Control Cover	53	14578		Height Adj. Ass'y. Comp.—R.H.
6		S.P. Control Cover		14579		Height Adj. Ass'y. Comp.—L.H.
7		FI—"C"—Sunk Hd. Tap Scr. #10 x .75" Lg.	54	738-0102		Shld. Bolt .498" Dia. x 1.45"
			55	736-0232		Wave Wash. .53" I.D. x .78"
8		S.P. Adj. Cable—48" Lg.	56	751-0463		Cable Clamp
9		Hex Nut 1/4-20 Thd.*	57	710-0436		Hex B-Tap Scr. #10 x .62"
0		Spr. Wash. .265" I.D. x .562"	58	736-0300		FI-Wash. .385" I.D. x .87"
1		Throttle Control Comp.—56.6"†	59	712-0296		Hex Patch L-Nut 3/8-24 Thd.
		Throttle Control Comp.—53.6"††	60	731-0981A		Hub Cap
		Throttle Control Comp.—41.6" (233R)	61	14835		Retaining Strip
			62	731-0672A		Rear Flap
2		Cable Mtg. Brkt.	63	16137A		L.H. Handle Wheel Brkt. Ass'y.
3	N	Hex Bolt 1/4-20 x 1.85" Lg.	64	16136A		R.H. Handle Wheel Brkt. Ass'y.
4		Curved Carr. Bolt 5/16-18 x 1.38"	65	713-0353		#48 Chain .5" Pitch x 30 Links
5		Control Cable 43" Lg. (B&S)	67	712-0324		Hex L-Nut 1/4-20 Thd.
		Control Cable 50.5" Lg. (Tec.)	70	720-0223		Grip
6		L-Wash. 5/16" I.D.*	71	732-0473B		Height Adj. Lever
7	N	Rope Guide Bolt	72	732-0481		Ext. Spring .5" O.D. x 3.8" Lg.
8		Upper Handle	73	736-0242		Bell-Wash. 5/16" I.D.
9		Hex Nut 5/16-18 Thd.*	74	750-0736		Spacer .383" I.D. x .503"
0		Cable Tie	75	750-0624		Shld. Spacer .5" Dia.
1		Bell-Wash. .38" I.D. x .88"	80	738-0137		Shld. Scr. .342" Dia. x .268"
2		Hex Nut 3/8-16 Thd.*	81	748-0188B		Pawl
3		Hex Nut 3/8-24 Thd.*	82	734-1510A		Wheel Ass'y. Comp.
4		Hex Bolt 1/4-20 x .62" Lg. (Grade 5)	84	741-0180		Ball Bearing 1/2" I.D.
			90	736-0169		L-Wash. 3/8" I.D.*
5		Bell-Wash. 1/4" I.D.	91	710-1055		Hex Bolt 3/8-24 x 1.0" Lg.
6		FI-Wash. .531" I.D. x .93"	92	756-0554		Keyed Pulley†
7		Lower Handle		756-0502		Splined Pulley Half (2 Req'd.)††
8		Spacer .513" I.D. x .703"	93	736-0450		Bell-Wash. 1.01" I.D.††
9		Hinge Pin	94	748-0332		Crankshaft Spacer††
0		Blade Adapter Kit (232R, 233R)	96	754-0369		"V"—Belt
		Blade Adapter Kit††	100	735-0639		Spark Plug Boot (Optional)
1		Bell-Wash. .39" I.D. (232R, 233R)	101	16855		Pawl Plate
		Bell-Wash. .46" I.D.††	102	712-0189		Weld Nut 1/4-20 Thd.
2		Hex Bolt 3/8-24 x 1.5" Lg. (232R, 233R)	103	714-0122		Sq. Key 3/16" x 3/4" Lg.†
			104	710-0497		Set Scr. #10-32 x .25" Lg.†
		Hex Bolt 7/16-20 x 1.5" Lg.††	105	12894A		Cable Clamp†
3		22" Blade	106	710-0429		Hex B-Tap Scr. #10 x .38" Lg.†
4		Hex L-Wash. Hd. Scr. 3/8-16 x 1.0" Lg.	107	751-0369		Cable Clamp†
			108	710-0227		Hex B-Tap Scr. #10 x .5" Lg.
5		Adapter Plate	109	741-0486B		Sleeve Brg. 1/2" I.D.
6		Torsion Spring	122	711-0805		Shld. Pin 3/8-24 x 1.43" Lg.
7		Hex Self-Tap Scr. 1/4-20 x .5"	128	712-0711		Hex Jam Nut 3/8-24 Thd.
8		Chute Deflector Ass'y.	130	748-0318		Ratchet Wheel 1.62" O.D.
9		Carriage Bolt 5/16-18 x .62" Lg.	131	714-0115		Cotter Pin 1/8" Dia.
0		Engine	134	741-0522		Hex Flange Bearing
1		Cable Clamp	136	10622B		Spring—Nylon
2		Chain—Axle Ass'y.	138	17053A		Chain Cover
3		Hex B-Tap Scr. 1/4 x .38" Lg.	147	738-0719A		Rear Shaft Ass'y. 21.94" Lg.
4		Hex Wash. Hd. B-Tap Scr. 5/16-18	148	741-0324		Hex Flange Bearing
			149	736-0160		FI-Wash. .531" I.D. x .93"
5		Hex AB-Tap Scr. 1/4 x .62"	153	717-0417B		Transmission Comp. (See Breakdown)
6		Hex B-Tap Scr. #10 x .38"				Hex Bearing Cup
7	N/638	22" Deck Ass'y.	154	16500A		

†Model 232R Only.

††Models 234R, 236R and 238R Only.

Models 524R, 526R and 528R

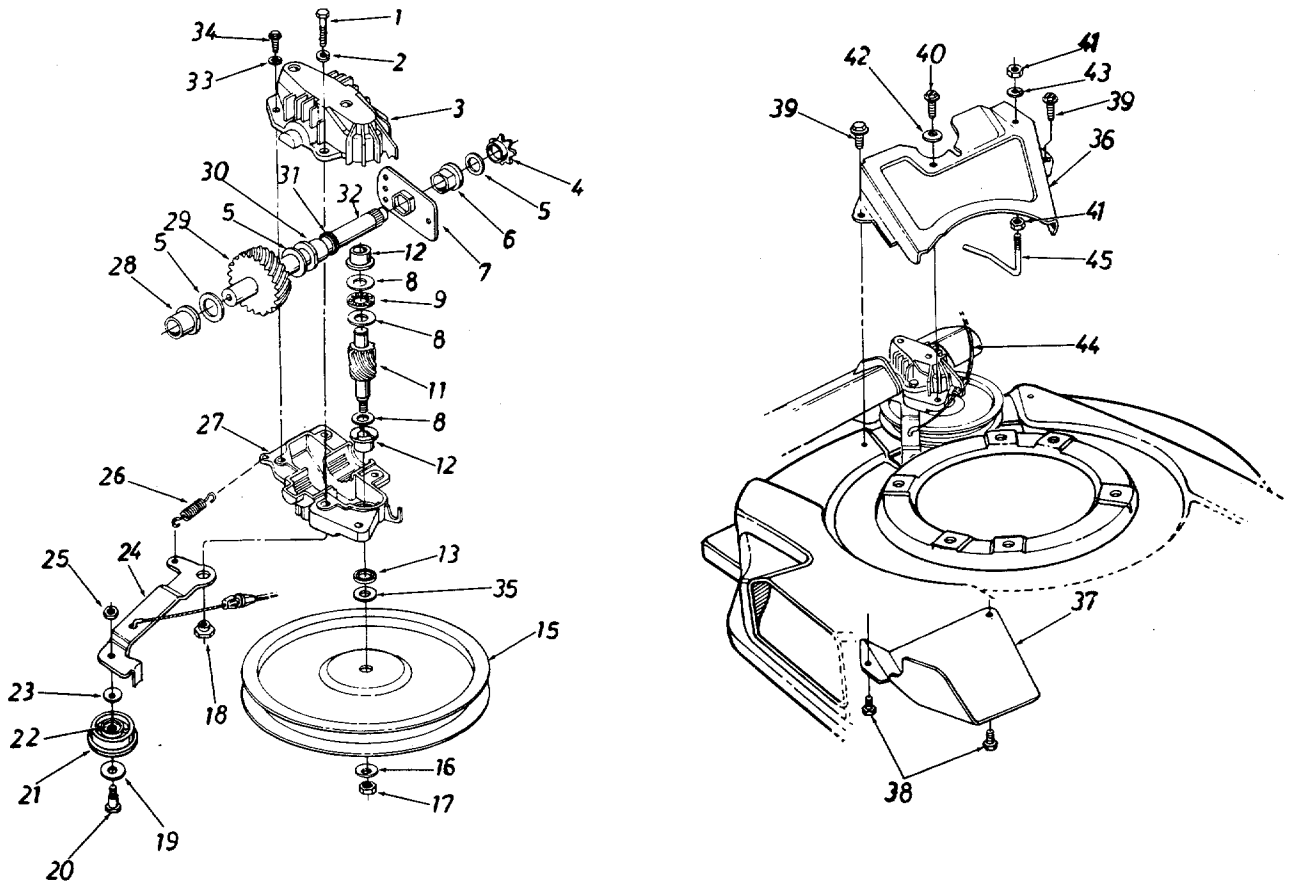


PARTS LIST FOR MODELS 524R, 526R AND 528R ROTARY MOWERS

PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
1 731-1135		Control Handle Ass'y. (Deluxe)	53	14578		Height Adj. Ass'y. Comp.—R.H.
747-0748		Control Handle Ass'y. (Std.)		14579		Height Adj. Ass'y. Comp.—L.H.
2 720-0225		Foam Grip (Optional)				(Not Shown)
3 749-0757	N	Upper Handle	54	736-0356		Bell-Wash. .39" I.D. x 1.38"
4 710-1216	N	Hex Bolt 1/4-20 x 1.875" Lg.*	55	712-0798		Hex Nut 3/8-16 Thd.*
5 17174	N	Cable Mtg. Brkt.	56	682-0001	N/638	22" Deck Ass'y.
6 746-0553		Control Cable—36" Lg.	57	731-1034		Chute Deflector Ass'y.
7 736-0175		Spring Wash. .265" I.D.	58	747-0710		Hinge Pin
8 712-0287		Hex Nut 1/4-20 Thd.*	59	732-0593		Torsion Spring
9 731-0620		Control Lever	60	17032		Adapter Plate
0 731-1057		Control Cover Half—Upper	61	710-0599		Hex TT-Tap Scr. 1/4-20 x .5"
1 731-1058		Control Cover Half—Lower	62	736-0232		Wave Wash. .53" I.D. x .78"
2 746-0712A	N	Self-Propelled Cable—44" Lg.				(Used w/Steel Wheel)
3 731-1059		Cable Mounting Cap	63	731-0981A		Hub Cap (5 1/2" Dia.)
4 710-0841		Fl-"C" Sunk Hd. Tap Scr. #10 x .75" Lg.	64	720-0249		Hub Cap (3 1/2" Dia.)
		Curved Carr. Bolt	65	710-0654A		Hex TT-Tap Scr. 3/8-16 x 1"
5 710-0671		5/16-18 x 1.38" Lg.	66	710-0260		Carriage Bolt 5/16-18 x .62" Lg.
6 712-0267		Hex Nut 5/16-18 Thd.*	67	16136A		Handle Brkt. Ass'y.—R.H.
7 712-0324		Hex L-Nut 1/4-20 Thd.	68	750-0624		Shld. Spacer .5" x .10"
8 710-1205	N	Rope Guide	69	736-0242		Bell-Wash. 5/16" I.D.
9 726-0240		Cable Tie	70	714-0104		Intern. Cotter Pin 5/16" Dia.
0 749-0372B		Lower Handle	71	16563A		Retaining Strip
1 14967		Wheel Cover	72	731-1172		Rear Flap
2 —		Engine	72	746-0820		Throttle Control Ass'y. Comp.— 49" Lg.
3 710-0812		Hex Bolt 1/4-20 x .75" Lg. (Gr. 5)	73	738-0102		Front Axle Bolt
4 736-0270		Bell-Wash. 1/4" I.D.	74	720-0223		Grip
5 748-0312		Wheel Ratchet	75	732-0655	N	Height Adjustment Lever
6 748-0315		Pawl and Spring Ass'y.	76	682-3004	N	Handle Brkt. Ass'y.—L.H.
7 712-0329		Special Hex Nut 5/16-18 Thd.	77	754-0369		"V" Belt
8 741-0485		Flange Bearing .63" I.D.	78	717-0417B		Transmission Comp.
9 734-1399		Rim Ass'y. Only 16" x 2.1"				(See Breakdown)
0 734-1400		Rimstrip 16" x 7/8"	79	710-0352		Hex B-Tap Scr. 1/4 x .38" Lg.
1 734-1397		Inner Tube 16" x 2.12"	80	710-0776A		Hex AB-Tap Scr. 1/4 x .62" Lg.
2 734-1396		Chevron Tire 16" x 2.125"	81	736-0329		L-Wash. 1/4" I.D.*
3 736-0104		Intern. L-Wash. 5/16" I.D.	82	712-0287		Hex Nut 1/4-20 Thd.*
4 710-0376		Hex Bolt 5/16-18 x 1.0" (Gr. 5)	83	734-1398		Wheel Ass'y. Comp.
5 735-0639		Spark Plug Boot (Optional)	84	713-0425		Sprocket and Axle Ass'y.
6 753-0485		Blade Adapter Kit	85	736-0256		Fl-Wash. .635" I.D. x 1.0" O.D.
7 742-0522		22" Blade	86	682-7501	N	Chaincase and Arm Ass'y.
8 736-0453		Bell-Wash. .46" I.D.	87	713-0257		#48 Chain 1/2" Pitch x 52 Links
9 710-0757		Hex Bolt 7/16-20 x 1.5" Lg. (Gr. 5)	88	682-7500	N/638	Rear Drive Support Ass'y.
0 710-1055		Hex Bolt 3/8-24 x 1" Lg.	89	710-0599		Hex Wash. Hd. TT-Tap Scr. 1/4-20 x .5" Lg.
1 736-0169		L-Wash. 3/8" I.D.*				Hex Bearing Cup
2 712-0241		Hex Nut 3/8-24 Thd.*	91	16500A		Hex Flange Brg. .631" I.D.
3 756-0502		Pulley Half (2 Req'd.)	92	741-0413		Spacer .63" I.D. x 1.25"
4 736-0450		Bell-Wash. 1.01" I.D.	93	748-0313		Fl-Wash. .385" I.D. x .87" O.D.
5 748-0332		Crankshaft Spacer	94	736-0300		Hex L-Nut 3/8-24 Thd.
6 741-0180		Ball Bearing 1/2" I.D. (Used w/Steel Wheel)	95	712-0296		Hex Bolt 3/8-16 x .62" Lg.
7 736-0105		Bell-Wash. .38" I.D.	96	710-0201		Flanged L-Nut 3/8-16 Thd.
8 738-0507B		Shld. Bolt .5"	97	712-0431		Hex B-Tap Scr. 5/16-18 x .5"
9 14832		Spring Lever Ass'y. w/Knob	99	710-0603		Hex Bolt 1/4-20 x .5" Lg.
0 15262B		Pivot Bar	100	710-0289		Fl-Wash. .632" I.D. x .943"
1 15261A		Height Adj. Plate	101	736-0302		Spacer .628" I.D. x .875"
2 734-1513A		Wheel Ass'y. Comp. (Steel)	102	750-0547		L-Wash. 1/4" I.D.
734-1512A		Wheel Ass'y. Comp. (Plastic)	103	736-0119		Fl-Wash. .38" I.D. x 1" O.D.
			104	736-0258		

*For faster service obtain standard nuts, bolts and washers locally.
If these items cannot be obtained locally, order by part number and size as shown on parts list.

Models 232R, 233R, 234R, 236R and 238R Models 524R, 526R and 528R



PARTS LIST FOR ROTARY MOWERS

REF. NO.	PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
1	710-0106		Hex Bolt 1/4-20 x 1.25" Lg.*	24	17052A		Idler Brk't. Ass'y.†
2	726-0329		L-Wash. 1/4" I.D.*	25	712-0138		Hex Patch L-Nut 1/4-28 Thd.†
3	717-0418A		Upper Hsg. Half	26	732-0357		Extension Spring 1.12" Lg.†
4	713-0400		#48 Sprocket 7 Tooth x 1/2 Pitch	27	717-0419A		Lower Hsg. Half
5	736-0336		FI-Wash. 5/8" I.D. x .030	28	741-0415		Flange Bearing .56 Dia.
6	741-0413		Hex Flange Brg. .631" I.D.	29	717-0422		33 Tooth Helical Gear
7	16500A		Hex Bearing Cup	30	741-0414		Flange Bearing .629 Dia.
8	736-0314		Thrust Wash. .382" I.D. x .70" O.D.	31	721-0213		Oil Seal .625 Dia.
9	741-0479		Thrust Bearing .375" I.D. x .812" O.D.	32	738-0607		Gear Sprocket Shaft
11	717-1216		11 Tooth Helical Gear	33	736-0722		L-Wash. #10 I.D.
12	748-0208A		Flange Bearing	34	710-0436		Hex B-Tap Scr. #10 x .62"
13	721-0212		Oil Seal	35	736-0410		Hex Washer .26" x .88"†
15	756-0330A		FI-Pulley 5.06" I.D.†	36	17718		Transmission Belt Guard†
16	736-0270		Bell-Wash. .265" I.D. x .75"†	37	17064		Belt Cover
17	712-0351		Hex Nut 1/4-28 L.H. Thd.†	38	710-0352		Hex B-Tap Scr. 1/4 x .38" Lg.†
18	738-0440		Shld. Spacer .375" Dia. x .170"†	39	710-0599		Hex AB-Tap Scr. 1/4 x .50" Lg.†
19	736-0344		FI-Wash. .390" I.D. x 1.0"†	40	710-0896		Hex B-Tap Scr. 1/4 x .62" Lg.
20	738-0826		Shld. Bolt .375" Dia. x .40"†	41	712-0287		Hex Nut 1/4-20 Thd.*†
21	756-0558		FI-Idler Plastic 1.50" Dia.†	42	736-0270		Bell-Wash. .265" I.D. x .75"†
22	741-0556		Needle Brg. .375" x .375"†	43	736-0329		L-Wash. 1/4" I.D.*†
23	736-0270		Bell-Wash. .265" I.D. x .75"†	44	746-0710		S.P. Cable—48" Lg.†
				45	747-0549		S.P. Belt Guard†
				—	717-0417B		Transmission Comp.

†Not Part of Transmission Complete



This instruction manual covers various models, and all specifications shown do not necessarily apply to your model. Specifications subject to change without notice or obligation.

NOTE: The engine is not under warranty by the mower manufacturer... If repairs or service is needed on the engine, please contact your nearest authorized engine service outlet. Check the "Yellow Pages" of your telephone book under "Engines—Gasoline."



CODE: N notates a **new part** (not previously existing). A three digit number is the **color code**. Specify color code as shown below if color or finish is important when ordering parts. [i.e., 638 for Red Finish].

Color Codes

456—Radiant Tangerine	629—Silver Flake
460—Green Flake	630—Metallic Blue
483—Charcoal Gray	637—Black
498—Yellow	638—Red
499—Beige	640—Green
621—Brilliant Fire Mist	646—CM Blue

The use of any accessory on this Rotary Mower other than those manufactured by the mower manufacturer is **not** recommended. GRASS CATCHER Model 086 is available as optional equipment for the mowers shown in this manual.



WARNING: To reduce the risk of injury, do not operate mower unless rear trailing shield and guard or entire grass catcher are in their proper place.

NOTE: Under normal usage bag material is subject to wear and should be checked periodically. Be sure any replacement bag complies with the mower manufacturer's recommendations. For replacement bags, use only factory authorized replacement bag No. 764-0271.

TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Action
Engine fails to start	<ol style="list-style-type: none"> 1. Blade control handle disengaged. 2. Spark plug wire disconnected. 3. Throttle control lever not in CHOKE or START position. 4. Fuel shut-off valve closed (if so equipped). 5. Fuel tank empty, or stale fuel. 6. Blocked fuel line (if so equipped). 7. Faulty spark plug. 8. Engine flooded. 	<ol style="list-style-type: none"> 1. Engage blade control handle. 2. Connect wire to spark plug. 3. Move throttle lever to CHOKE or START position. 4. Open fuel shut-off valve. 5. Fill tank with clean, fresh gasoline. 6. Clean fuel line. 7. Clean, adjust gap or replace. 8. Remove spark plug, dry the plug, and crank engine with plug removed and throttle in off position. Replace spark plug, connect wire and resume starting procedures.
Engine runs erratic	<ol style="list-style-type: none"> 1. Unit running in CHOKE or START position. 2. Spark plug wire loose. 3. Blocked fuel line (if so equipped) or stale fuel. 4. Vent in gas cap plugged. 5. Water or dirt in fuel system. 6. Dirty air cleaner. 7. Carburetor out of adjustment. 	<ol style="list-style-type: none"> 1. Move throttle lever to FAST position. 2. Connect and tighten spark plug wire. 3. Clean fuel line; fill tank with clean, fresh gasoline. 4. Clear vent. 5. Drain fuel tank. Refill with fresh fuel. 6. Clean air cleaner.† 7. Adjust carburetor.†
Engine overheats	<ol style="list-style-type: none"> 1. Engine oil level low. 2. Air flow restricted. 3. Carburetor not adjusted properly. 	<ol style="list-style-type: none"> 1. Fill crankcase with proper oil. 2. Remove blower housing and clean.† 3. Adjust carburetor.†
Occasional skip (hesitates) at high speed	<ol style="list-style-type: none"> 1. Spark plug gap too close. 2. Carburetor idle mixture adjustment improperly set. 	<ol style="list-style-type: none"> 1. Adjust gap to .030" 2. Adjust carburetor.†
Idles poorly	<ol style="list-style-type: none"> 1. Spark plug fouled, faulty or gap too wide. 2. Carburetor improperly adjusted. 3. Dirty air cleaner. 	<ol style="list-style-type: none"> 1. Reset gap to .030" or replace spark plug. 2. Adjust carburetor.† 3. Clean air cleaner.†
Excessive vibration	<ol style="list-style-type: none"> 1. Cutting blade loose or unbalanced. 2. Bent cutting blade. 	<ol style="list-style-type: none"> 1. Tighten blade and adapter. Balance blade. 2. Replace blade.
Mower will not discharge grass	<ol style="list-style-type: none"> 1. Engine speed too low. 2. Wet grass. 3. Excessively high grass. 	<ol style="list-style-type: none"> 1. Set throttle between 3/4 and full throttle. 2. Do not mow when grass is wet; wait until later to cut. 3. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath (1/2 width).
Uneven cut	Dull blade.	Sharpen or replace blade.

†Refer to separate engine manual packed with your unit.

Note: For repairs beyond the minor adjustments listed above, contact your local authorized service dealer.