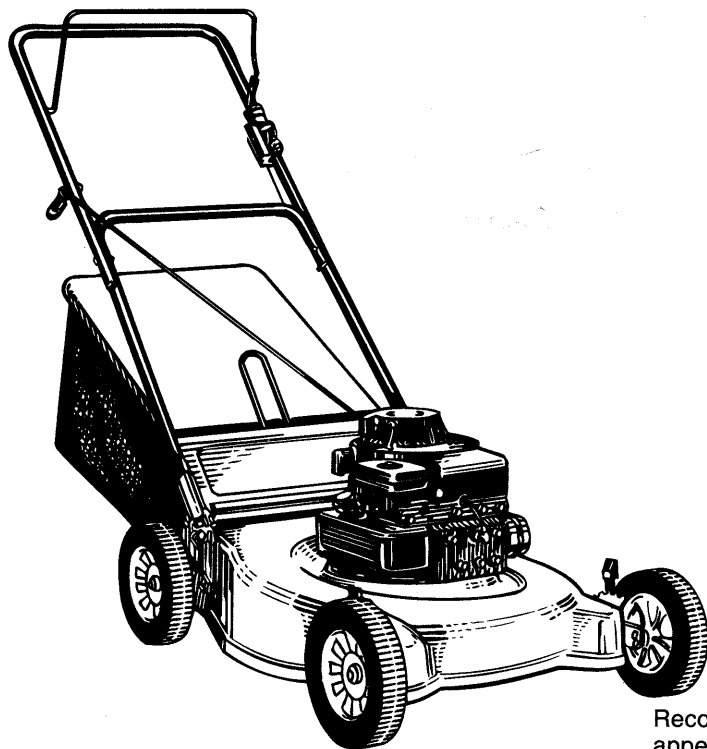


OWNER'S GUIDE

• ASSEMBLY • OPERATION • MAINTENANCE • PARTS •



(Model 413R Shown)

21" ROTARY MOWERS

Model Numbers
112-400R000
thru
112-428R000

IMPORTANT!

Record the **Model No.** and **Mfg. Code** which appear on your unit in the space below. You **must** have these numbers, along with the date of purchase, in order to receive warranty or service.

MEETS ANSI SAFETY STANDARDS

MODEL NO.

MFG. CODE

**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

SAFE OPERATION PRACTICES

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.
3. Never allow children to operate a power mower. 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.
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 to avoid entanglement in the moving parts. Never operate a unit in bare feet, sandals, or sneakers.
4. Check the fuel 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 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.
7. Never attempt to make a wheel or cutting height adjustment while the engine is running.
8. Never operate the equipment 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. 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. Do not operate this mower with the chute door open, unless the complete grass catcher or chute deflector is properly mounted on the mower.
12. Do not operate this mower with the chute door open, unless the complete grass catcher or chute deflector is properly mounted on the mower.

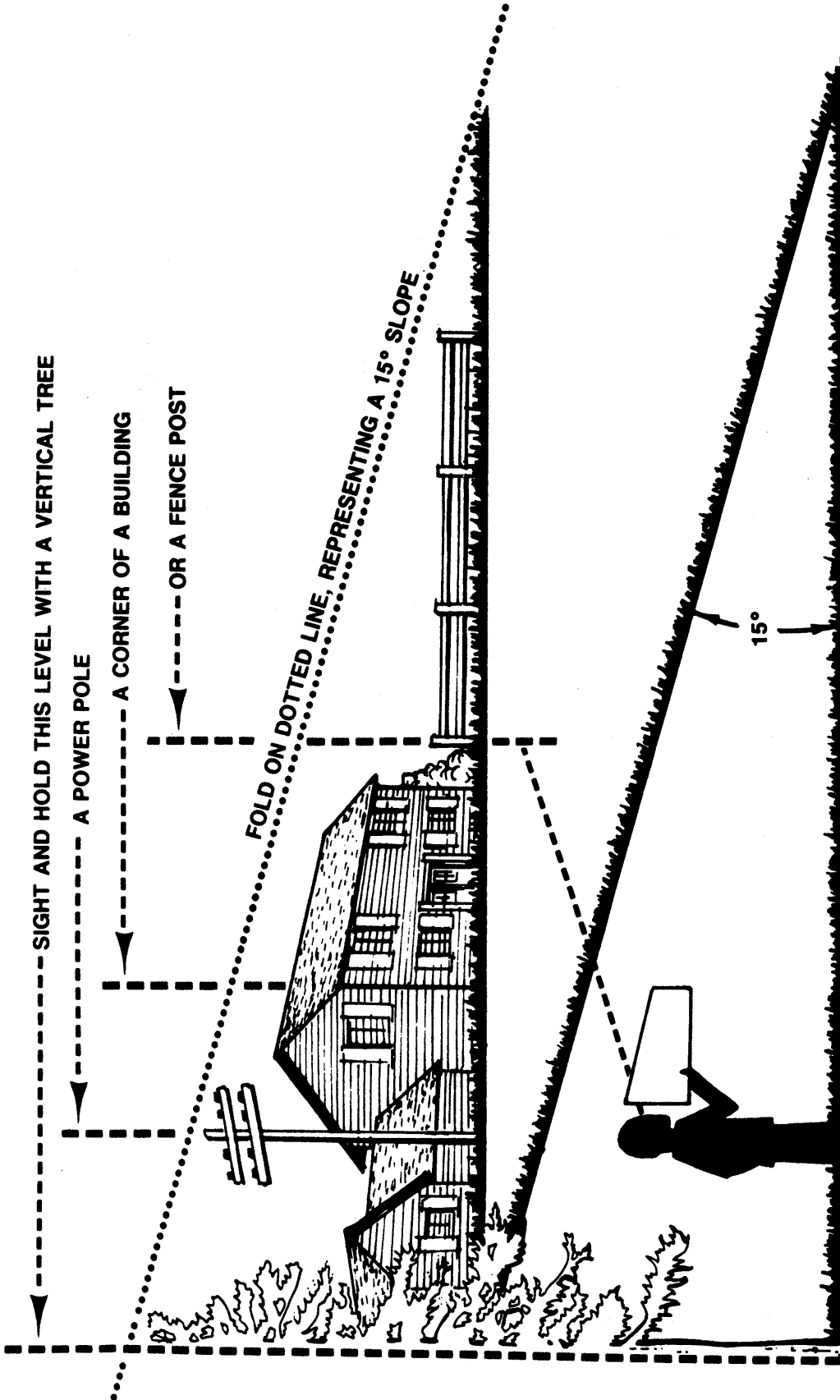
MAINTENANCE AND STORAGE

1. Check the blade and engine mounting bolts at frequent intervals for proper tightness.
2. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
3. Never store the equipment with gasoline in the tank inside of a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
4. To reduce fire hazard, keep the engine free of grass, leaves, or excessive grease.
5. Check the grass catcher bag frequently for wear or deterioration. For safety protection, replace only with new bag meeting original equipment specifications.

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

SLOPE GAUGE

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



Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 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.

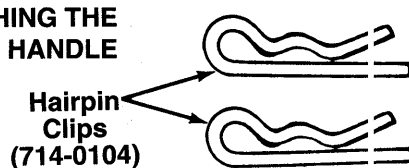
Operate RIDING mowers up and down slopes, never across the face of slopes.

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

CONTENTS OF HARDWARE PACK/PARTS IDENTIFICATION

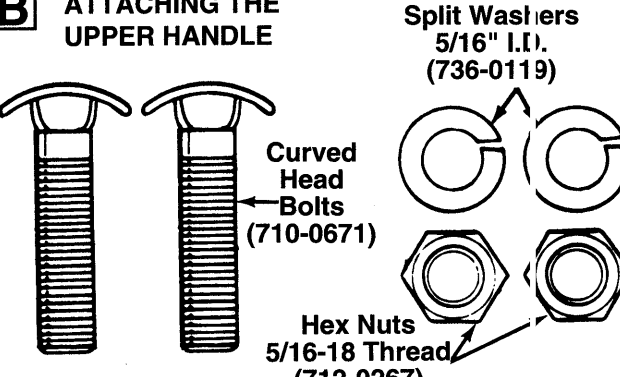
Remove this sheet from your owner's manual and lay the hardware on the illustration for identification purposes. After assembly, keep the Slope Gauge which is on the reverse side of this sheet for future use. (Hardware pack may contain extra items which are not used on your unit.—Part numbers are shown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

A ATTACHING THE LOWER HANDLE



Hairpin Clips (714-0104)

B ATTACHING THE UPPER HANDLE

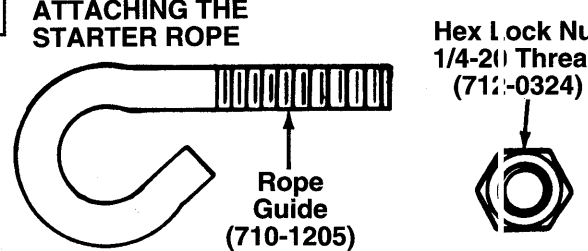


Curved Head Bolts (710-0671)

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

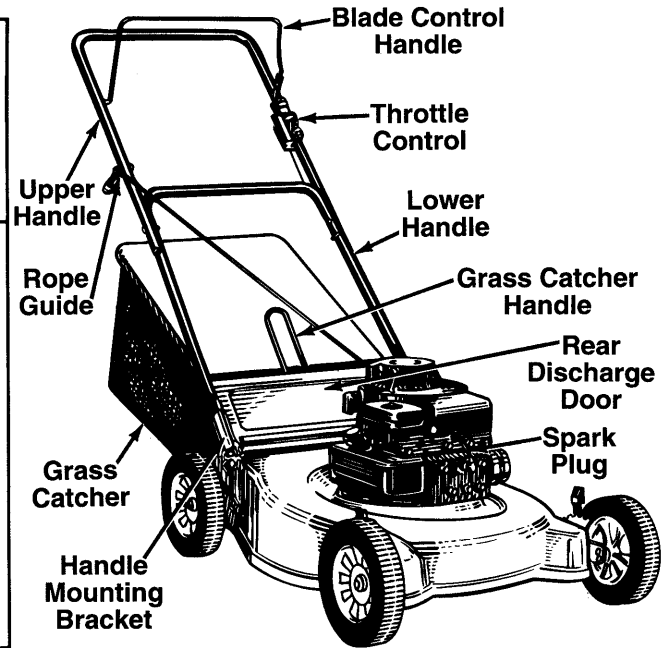
Hex Nuts 5/16-18 Thread (712-0267)

C ATTACHING THE STARTER ROPE



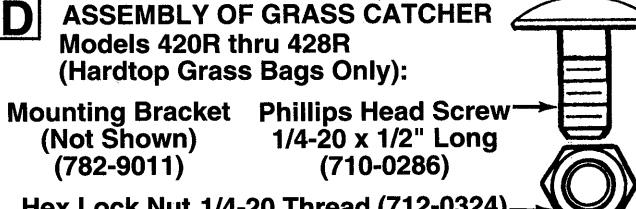
Rope Guide (710-1205)

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



PARTS IDENTIFICATION

D ASSEMBLY OF GRASS CATCHER
Models 420R thru 428R
(Hardtop Grass Bags Only):

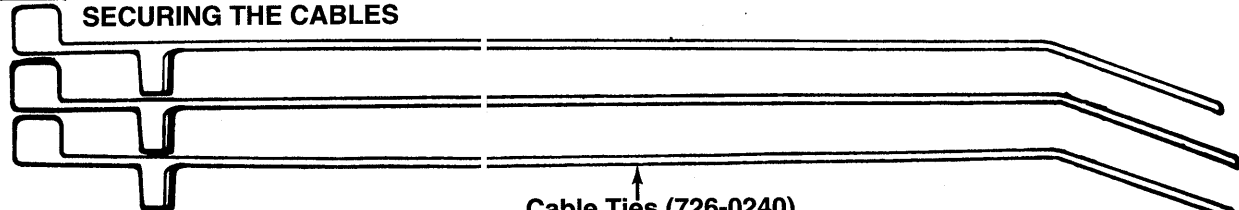


Mounting Bracket (Not Shown) (782-9011)

Phillips Head Screw 1/4-20 x 1/2" Long (710-0286)

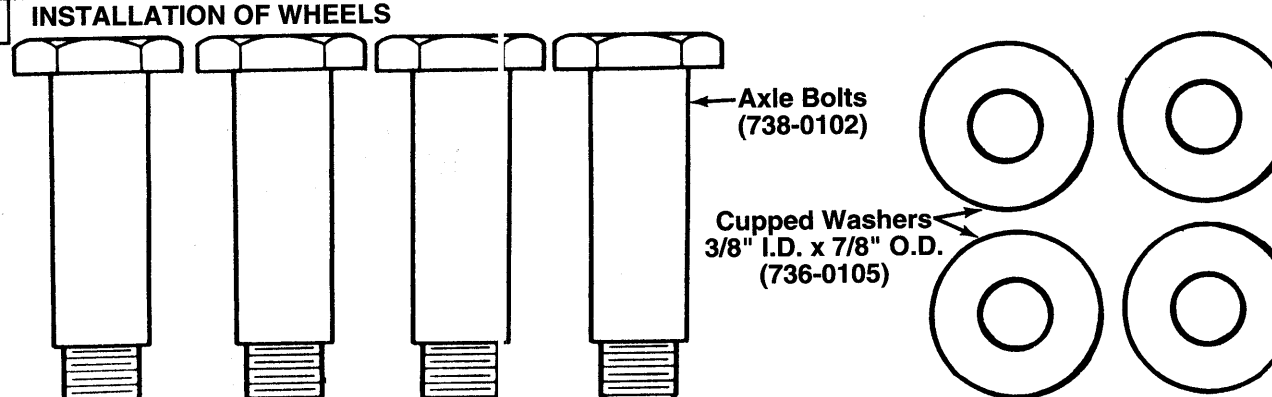
Hex Lock Nut 1/4-20 Thread (712-0324)

E SECURING THE CABLES



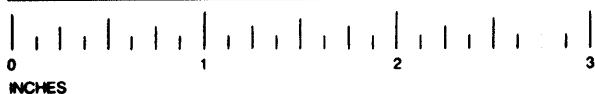
Cable Ties (726-0240)

F INSTALLATION OF WHEELS



Axle Bolts (738-0102)

Cupped Washers 3/8" I.D. x 7/8" O.D. (736-0105)



Cut Along

is Line

ASSEMBLY INSTRUCTIONS

This owner's guide covers various models of mowers. Follow only those instructions which pertain to your unit.

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 unit.

NOTE: Reference to right or left hand side of the mower is observed from the operating position.

Tools Required for Assembly

- (1) Pair of Pliers
- (1) Phillips Screwdriver
- (1) 1/2" Wrench*
- (1) 7/16" Wrench*

*Or two 6" Adjustable Wrenches

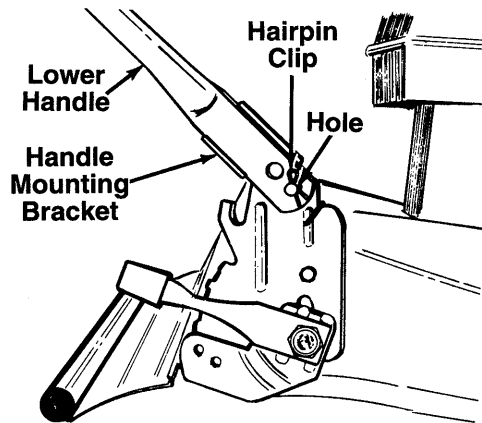


FIGURE 1.

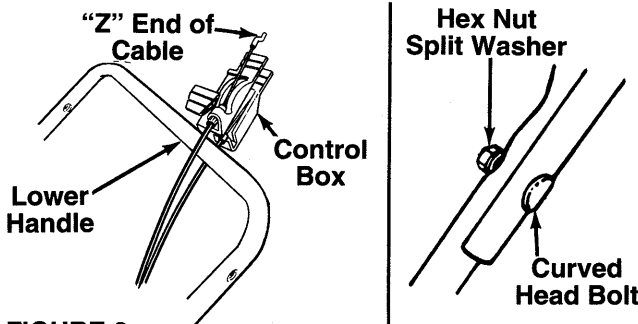


FIGURE 2.

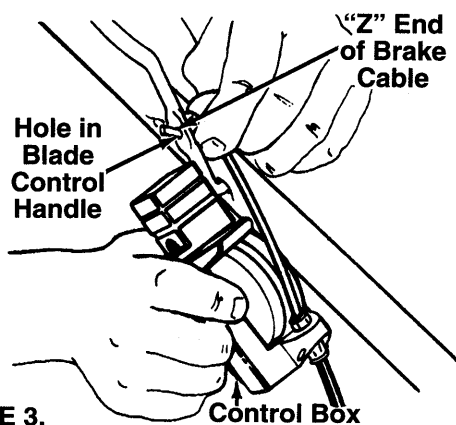


FIGURE 3.

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 with control box attached to the left side of the mower 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. Slide the control box over the lower handle so that the cable with the "Z" end is routed above the lower handle, and the other cable is routed below. See figure 2.
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 hole in the side of the blade control handle (attached to the upper handle) must be on the left side.
2. Secure the upper handle to the lower handle using the curved head bolts, split washers and hex nuts as shown in figure 2.
- ← 3. Holding the control box near the left side of the upper handle (control box must be inside the handle), hook the "Z" end of the brake cable into the control handle from the outside to the inside. See figure 3.

ATTACHING THE CONTROL BOX

Attach the control box to the upper handle as follows.

1. Remove the truss machine screw and hex lock nut from the middle of the control box using a phillips screwdriver. (Hold your finger over the hex lock nut so it stays inside the control box so you can unscrew the truss machine screw.)
2. Make certain the blade control handle is on top of the upper handle.
- ← 3. Holding the control box near the left side of the upper handle (control box must be inside the handle), hook the "Z" end of the brake cable into the control handle from the outside to the inside. See figure 3.

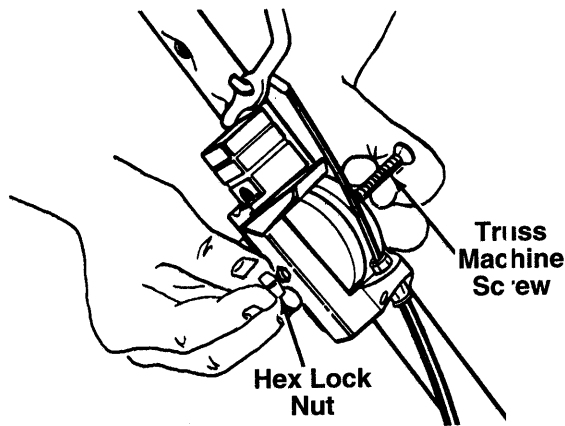


FIGURE 4.

- Place the control box on the upper handle just below the end of the control handle as shown in figure 4. Secure with hardware removed in step one by placing hex lock nut into the indent on the inside of the control box. Screw the truss machine screw into the hex lock nut.

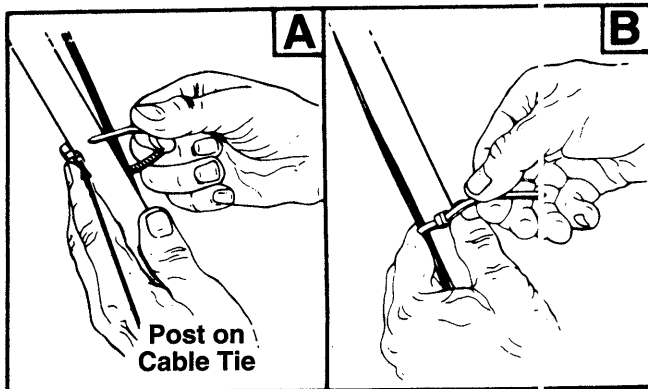


FIGURE 5.

SECURING THE CABLES (Hardware E)

Secure 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.

- Insert posts on cable ties into holes provided on the handles, 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 5A.
- Secure the cables with the cable ties. See figure 5B. Trim excess ends of cable ties.

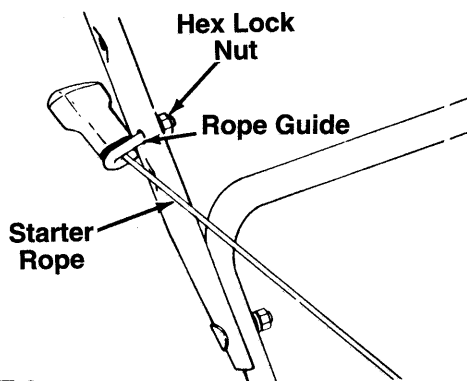


FIGURE 6.

ATTACHING THE STARTER ROPE (Hardware C)

- 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.
- With the spark plug wire disconnected and grounded, depress the blade control handle and pull the rope out of the engine.
- Place the rope guide around the starter rope, so the rope guide is positioned as shown (bends downward slightly). Insert the rope guide through the side of the upper handle, and secure with hex lock nut.

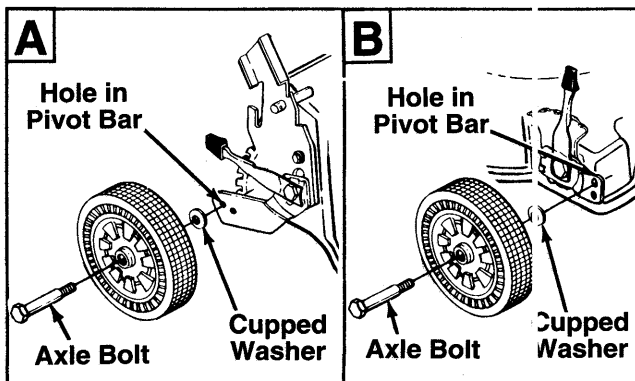


FIGURE 7.

INSTALLATION OF WHEELS (Hardware F)

- Insert axle bolts through wheels, then place cupped washers on bolts (crowned side of washers go against the wheels).
- Attach the wheels to the pivot bar on the height adjusters. Use the top hole in the pivot bar when assembling the front wheels; use the rear hole in the pivot bar when assembling the rear wheels. See figure 7.

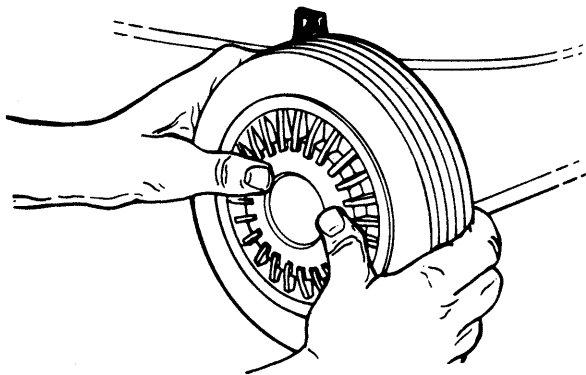


FIGURE 8.—Optional Hub Caps

INSTALLATION OF HUB CAPS (Optional)

Attach hub caps (optional) to wheels by placing in position against the inner hub of the wheel. For units with 2" wide tires, 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.

FINAL ASSEMBLY OF MOWER

Make certain all nuts and bolts are tightened securely.

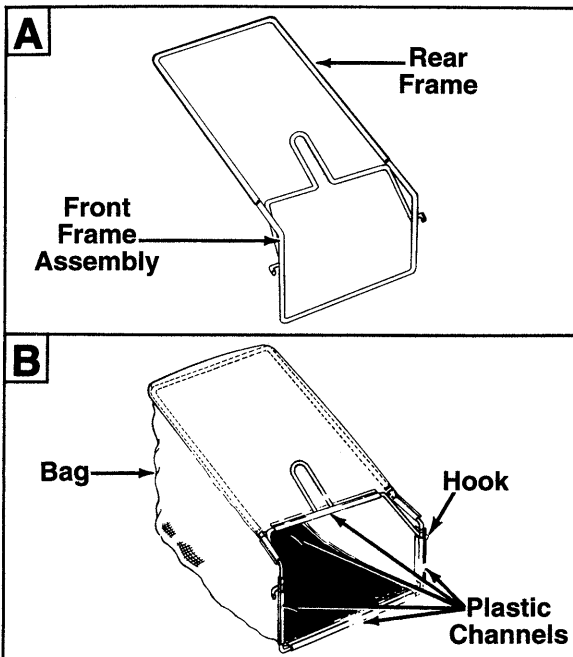


FIGURE 9.

ASSEMBLY OF OPTIONAL GRASS CATCHER

NOTE: Make certain the grass bag is turned right side out before assembling (warning label will be on the outside).

Models 410R thru 418R (Soft Grass Bag):

1. Join the rear frame and front frame assembly as shown in figure 9A.
2. Place bag over frame (black plastic side is the bottom of bag). Slip the openings in the side of the plastic channel on bag over the hooks on the grass catcher frame.
3. Secure bag to frame by working the plastic channels on bag over frame as shown in figure 9B. All of the plastic channels except center top of bag attach from the outside of bag. Center top of bag attaches from the inside of bag.

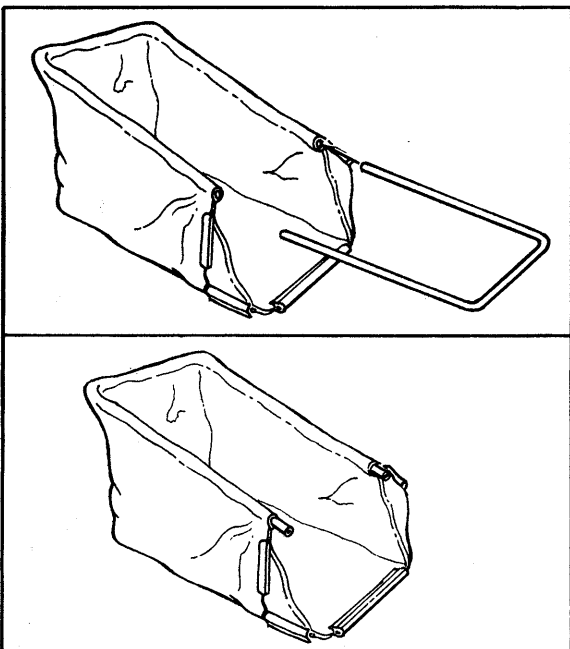


FIGURE 10.

Models 420R thru 428R (Hardtop Grass Bags):

1. Insert one end of the rear frame into the cloth channel on the edge of the grass bag. See figure 10. Feed all the material on one side of the frame before working it around frame.

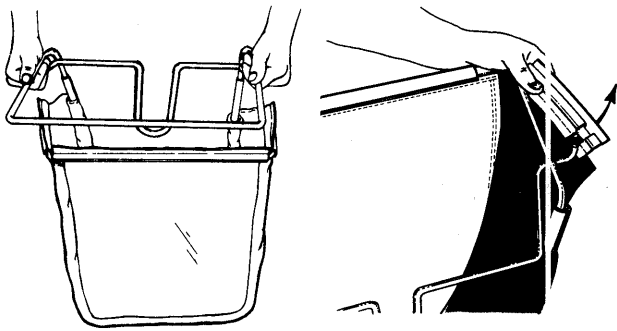


FIGURE 11.

2. Slide the ends of the front frame assembly into the ends of the rear frame as shown in figure 11.
3. Slip the openings in the side of the plastic channel on bag over hooks on the grass catcher frame. See figure 11.
4. Secure front of bag to front frame by working the plastic channels on sides and bottom of bag over frame.

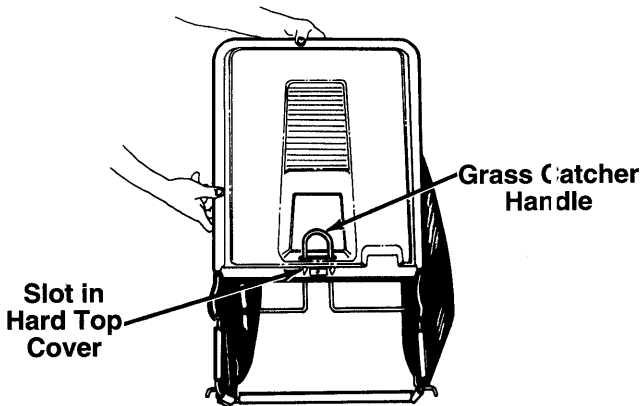


FIGURE 12.

5. Slide the handle on the grass catcher frame into the slot in the hardtop cover from beneath the cover. See figure 12.

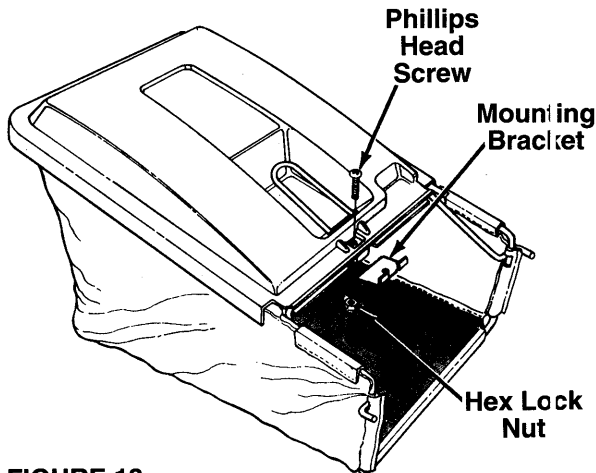


FIGURE 13.

6. Place the mounting bracket under the front of the handle, with the tabs on the bracket facing up. Insert phillips head screw down through the hardtop cover and mounting bracket. Secure with hex lock nut. See figure 13.

ATTACHING GRASS CATCHER TO MOWER

Lift the rear discharge door on the mower. Place the hooks on the grass catcher into the slots in the handle bracket assemblies. See figure 14. Release the rear discharge door.

To remove the grass catcher, lift the rear discharge door on the mower. Lift the grass catcher up, out of the slots in the handle bracket assemblies. Release the rear discharge door.

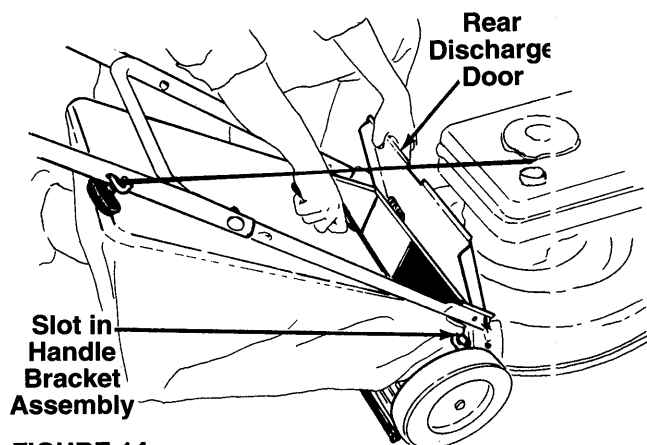


FIGURE 14.



WARNING: Never operate the mower unless the hooks on the grass catcher are seated in the slots on the handle bracket assemblies, and the rear discharge door rests firmly against the top of the grass catcher.

CONTROLS

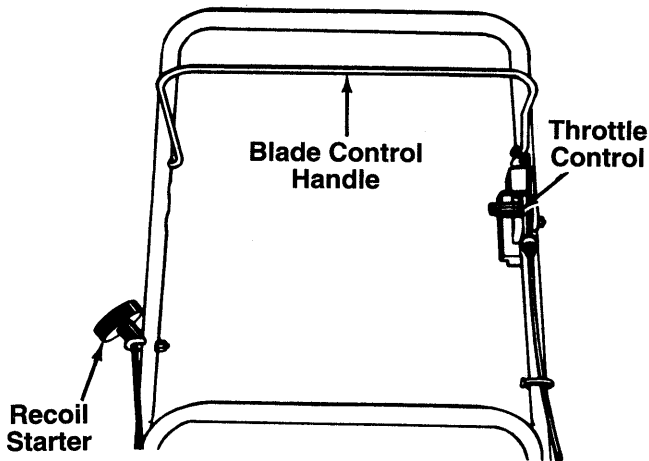


FIGURE 15.

BLADE CONTROL HANDLE



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



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 or on the engine. 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 15. Stand behind the unit in the operating position to start the unit.

OPERATION



FIGURE 16.

Keep hands and feet away from the chute area on cutting deck. See figure 16.

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.



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.

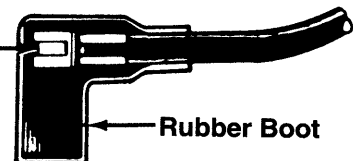


WARNING: Never fill fuel tank indoors, with engine running or until the engine has been allowed to cool for at least two minutes after running.

TO START ENGINE AND ENGAGE BLADE

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 16.

Metal Loop on Spark Plug Wire



Rubber Boot

FIGURE 16.

2. Move throttle control lever all the way forward.
3. If unit is equipped with a primer, prime engine as instructed in the separate engine manual.
4. Standing behind the unit, depress the blade control handle and hold it against the upper handle as shown. See figure 17.
5. Grasp the recoil starter handle and pull slowly until resistance is felt. Then pull handle rapidly to overcome compression, prevent kickback and start engine. Repeat if necessary.
6. After engine starts, move throttle control to desired engine speed.

NOTE: If any problems are encountered, refer to the *Trouble Shooting Guide* on page 16.

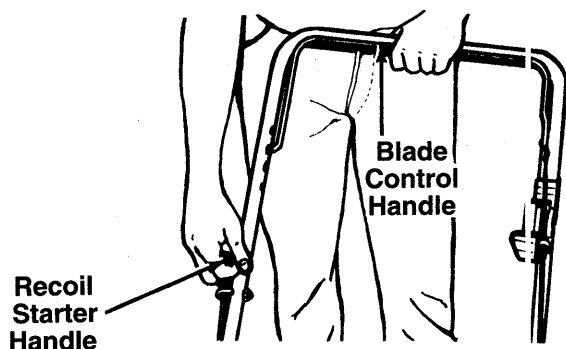


FIGURE 17.

TO STOP ENGINE AND BLADE

1. 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.

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

USING YOUR ROTARY MOWER



WARNING: Never operate your unit without either the rear deflector or entire grass catcher assembly in place.

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.

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.

USING YOUR MULCHER

(Mulching Kit is Optional Equipment)

For effective mulching, do not cut wet grass because it tends to stick to the underside of the deck, preventing proper mulching of grass clippings. New or thick grass may require a narrower cut. The ground speed should be adjusted to the condition of the lawn. If mowing has been delayed and the grass has been allowed to grow in excess of 4", mulching is not recommended. Mow using the grass bag (if so equipped) to reduce the grass height to 3-1/4" maximum before mulching.

To remove the mulching kit, simply lift the rear discharge door and remove the mulching baffle plug (Ref. No. 66 on page 14). Then attach the grass catcher (optional equipment).

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 wheel position 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 hole to another. Simply depress the lever towards wheel and move wheel and lever assembly to desired position. All wheels must be placed in the same relative position. See figure 18.

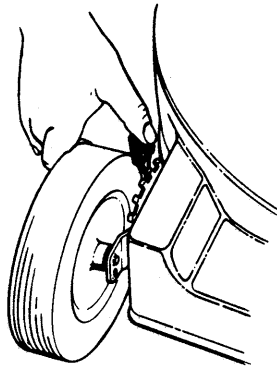


FIGURE 18.

THROTTLE CONTROL ADJUSTMENT

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

1. Remove the screw shown in figure 19. Remove the cable clamp from the cable.

NOTE: If you have a Tecumseh engine, simply loosen the screw shown in figure 19B so the cable will move freely beneath the clamp. It is not necessary to remove the screw and clamp completely.

2. Push the throttle control lever on the handle all the way forward as far as it will go, then back it off one "click." 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.

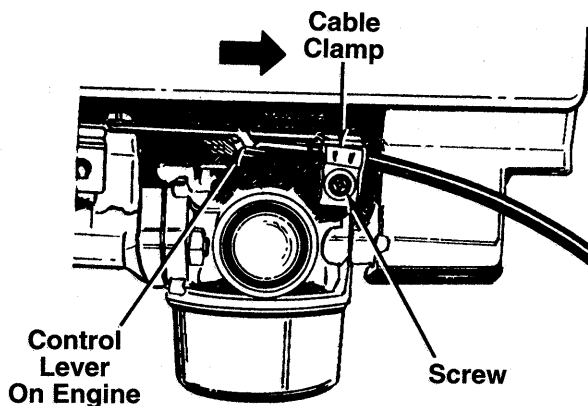


FIGURE 19A.—Briggs & Stratton Engines

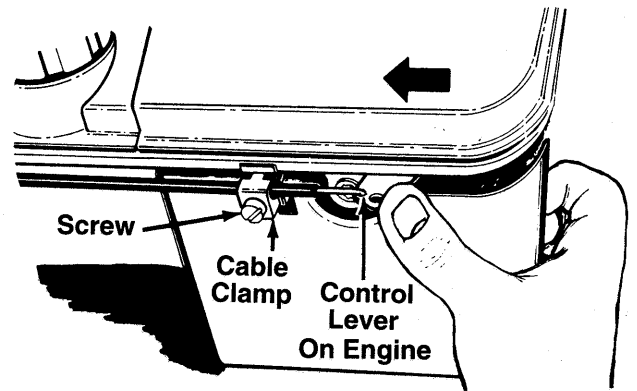


FIGURE 19B.—Tecumseh Engines

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 20. The blade control must operate freely in both directions.

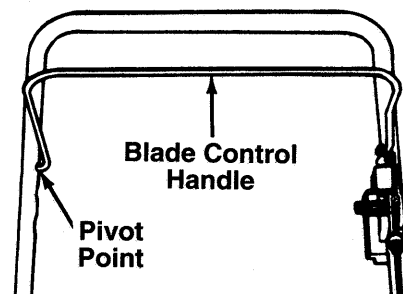


FIGURE 20.

Rear Discharge Door—The torsion springs and pivot points should be lubricated periodically with light oil to prevent any rust or binding. Door 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.

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 side up.

TROUBLE SHOOTING

Refer to page 16 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: 450 in. lbs. min., 600 in. lbs. max.

Blade Adapter Bolts: 200 in. lbs. min., 350 in. lbs. 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.

Maintain **engine** oil as instructed in the separate engine manual packed with your unit. Read and follow instructions carefully.

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.

REAR FLAP REPLACEMENT

The rear flap is attached to the back of the mower deck, and is designed to minimize the possibility that objects will be thrown from the rear of the mower toward the operator. If the rear flap becomes damaged, replace as follows.

To remove the old rear flap, cut off the flat end of the wire rod which secures it to the deck using a pair of side-cutters. Attach the new rear flap using the new rod provided with the rear flap, bending the ends of the rod over to secure.

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 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. Do not store next to corrosive materials, such as fertilizer.

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.*

OPTIONAL MULCHING KIT AVAILABLE

Mulching Kit model 190-082 is available as optional equipment for the mowers shown in this manual. The special high lift mulching blade and baffles will pulverize the grass clipping, making it unnecessary to bag the grass.

NOTE: The use of any accessory on this Rotary Mower other than those manufactured by the mower manufacturer is **not** recommended.



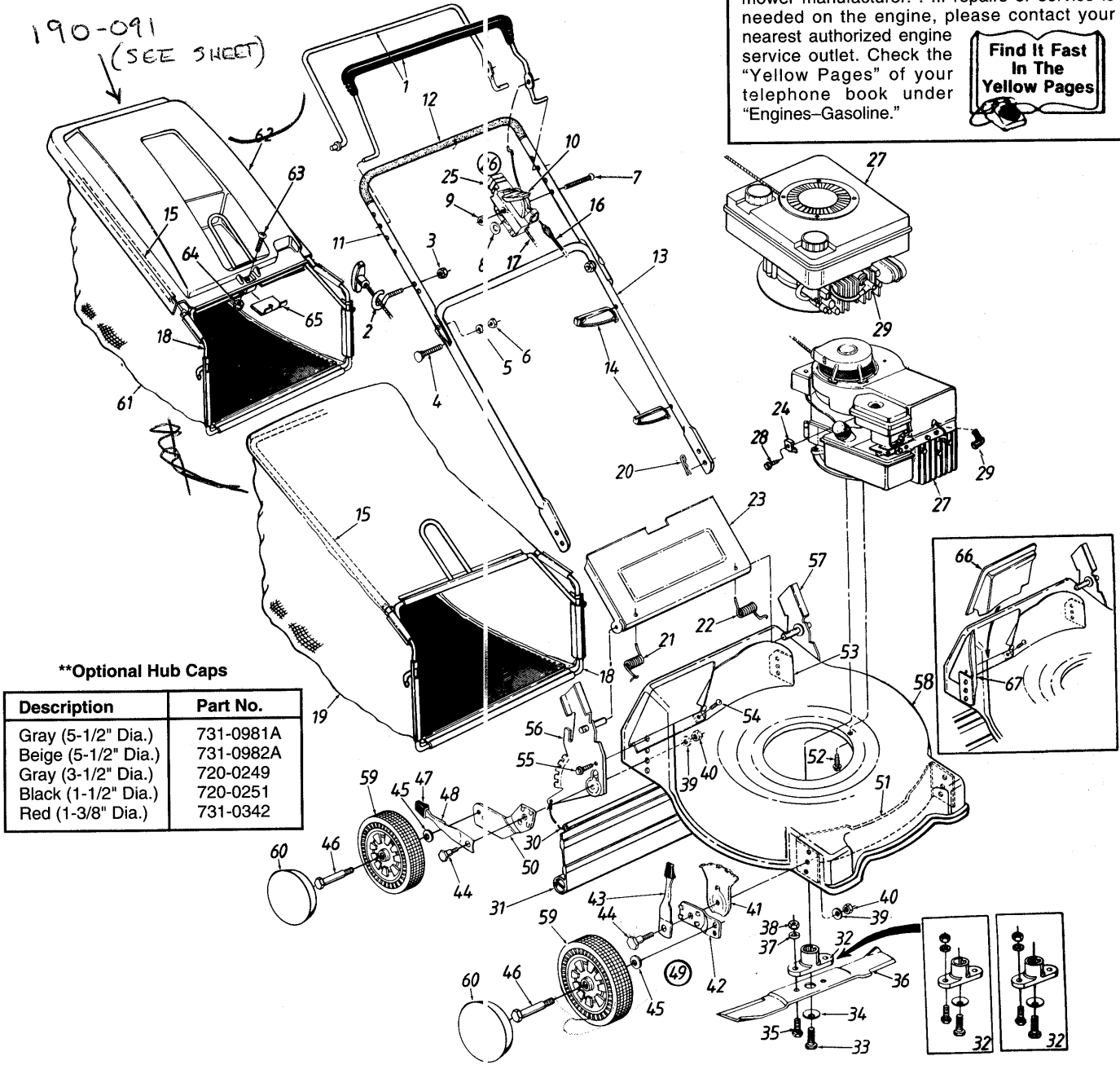
WARNING: DO NOT operate the mower without the entire grass catcher or rear discharge door in place. DO NOT operate the mower without the protective shield on the rear of the deck in place.

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.

Models 400R thru 428R

190-091
(SEE SHEET)

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."



****Optional Hub Caps**

Description	Part No.
Gray (5-1/2" Dia.)	731-0981A
Beige (5-1/2" Dia.)	731-0982A
Gray (3-1/2" Dia.)	720-0249
Black (1-1/2" Dia.)	720-0251
Red (1-3/8" Dia.)	731-0342

****FRONT WHEEL CHART**

Wheel w/o Bearings			Wheels With Bearings			
Tread***	Ass'y. Comp.	Axle Bolt	Tread***	Ass'y. Comp.	Bearings	Axle Bolt
Diamond	734-1698 (7")	738-0102	"S" Wave	734-1513B (Gray)	Ball Brg. 1/2" I.D.-741-0180 (2 per Wheel)	738-0102
	734-1697 (8")	738-0102		734-1517B (Beige)	Ball Brg. 1/2" I.D.-741-0180 (2 per Wheel)	738-0102
Waffle	734-1162A (8")	738-0102	"T" Tread	734-1259	Ball Brgs. 3/8" I.D.-741-0267, 1/2" I.D.-741-0484, Spacer 750-0434	710-1020
"S" Wave	734-1512A (8")	738-0102		734-1260	Ball Brg. 1/2" I.D.-741-0180 (2 per Wheel)	738-0102
Rib	734-1169 (8")	738-0144	Waffle	734-1645	Ball Brgs. 3/8" I.D.-741-0267, 1/2" I.D.-741-0484, Spacer-750-0434	710-1020
Bar	734-1609 (7")	738-0102				
	634-0020 (8") (Smooth Rim)	738-0102				
	734-1608 (8") (Spoked Rim)	738-0102				

***Tread Type: Waffle ; Rib ; Bar ; "T" Tread ; "S" Wave ; Diamond

PARTS LIST FOR MODELS 400R THRU 428R ROTARY MOWERS

REF. NO.	PART NO.	CODE	DESCRIPTION	REF. NO.	PART NO.	CODE	DESCRIPTION
	747-0824	N	Control Handle Ass'y. (Std.)	31	731-1236		Rear Flap
	647-0004	N	Control Handle Ass'y. w/Plastic	32	753-0484		Blade Adapter Kit (Keyed)
2	710-1205		Rope Guide Bolt		753-0485		Blade Adapter Kit (Splined)
3	712-0324		Hex L-Nut 1/4-20 Thd.	33	710-1044		Hex Bolt 3/8-24 x 1.5" Lg.
4	710-0671		Curved Carr. Bolt 5/16-18 x 1.38" Lg.		710-0757		(Used w/Keyed Adapter)
5	736-0119		L-Wash. 5/16" I.D.*				Hex Bolt 7/16-20 x 1.5" Lg.
6	712-0267		Hex Nut 5/16-18 Thd.*	34	736-0452		(Used w/Splined Adapter)
7	710-0605	N	Oval C-Sunk Mach. Scr.				Bell-Wash. .39" I.D.
8	736-0501	N	Spr. Wash. .66" I.D.		736-0453		(Used w/Keyed Adapter)
9	712-0291		Hex L-Nut 1/4-20 Thd.				Bell-Wash. .46" I.D.
10	746-0876	N	Throttle Lever	35	710-1055		(Used w/Splined Adapter)
11	749-0538C	N	Upper Handle	36	742-0306A		Hex Bolt 3/8-24 x 1" Lg.
12	720-0226		Foam Grip (Optional)		742-0563		21" Blade
13	749-0372B		Lower Handle	37	736-0169		21" Mulching Blade (Optional)
14	726-0240		Cable Tie	38	712-0241		L-Wash. 3/8" I.D.*
15	764-0310		Rear Catcher Frame	39	736-0356		Hex Nut 3/8-24 Thd.
16	746-0550		Control Cable—39" (400R, 402R, 410R, 412R, 420R, 422R)	40	712-0798		Bell-Wash. .39" I.D. x 1.38"
	746-0552		Control Cable—49" (403R, 405R, 413R, 415R, 423R, 425R)	41	15261A		Hex Nut 3/8-16 Thd.*
	746-0553		Control Cable—36" (404R, 406R, 408R, 414R, 416R, 418R, 424R, 426R, 428R)	42	15262B		Height Adj. Plate
17	746-0842	N	Throttle Control Wire—51" (400R, 402R, 410R, 412R, 420R, 422R)	43	14832		Pivot Bar
	746-0845	N	Throttle Control Wire—45" (403R, 405R, 413R, 415R, 423R, 425R)	44	738-0507B		Spring Lever Ass'y. w/Knob
	746-0843	N	Throttle Control Wire—55" (404R, 406R, 408R, 414R, 416R, 418R, 424R, 426R, 428R)	45	736-0105		Shld. Bolt .5" Dia. x .357"
				46	**		Bell-Wash. .38" I.D. x .88" O.D.
				47	720-0190		Axle Bolt
				48	732-0417A		Spring Lever Knob
				49	14578		Spring Lever
					14579		Height Adj. Ass'y. Comp.—R.H.
				50	14765		Height Adj. Ass'y. Comp.—L.H.
				51	782-5002		(Not Shown)
				52	710-0654		Pivot Bar
				53	782-5003		Front Baffle
				54	710-1017		Hex L-Wash. Hd. Scr. 3/8-16 x 1" Lg.
18	764-0311		Front Catcher Frame	55	710-0892		Rear Baffle
19	764-0309		Grass Bag				Torx Mach. AB-Tap Scr. 1/4 x .62" Lg.
20	714-0104		Int. Cotter Pin 5/16" Dia.	56	682-0503		Hex L-Wash. Hd. AB-Tap Scr. 1/4 x .62" Lg.
21	732-0678		Door Spring—R.H.	57	682-0502		Handle Brkt. Ass'y.—R.H.
22	732-0677		Door Spring—L.H.	58	782-0310		Handle Brkt. Ass'y.—L.H.
23	782-7000		Rear Discharge Door	59	**		21" R.D. Deck
24	751-0568		Cable Clamp (B&S)	60	**		Wheel Ass'y. Comp.
25	746-0875	N	Throttle Body	61	764-0433	N	Hub Cap
26	811-00185	N	Throttle Box Comp. (Incl. Ref. 7, 8, 9, 10, 25)	62	731-1322	N	Grass Bag††
27	—		Engine	63	710-0286		Hard Top Cover††
28	710-1237		Hex Wash. Hd. Scr. #10-32 x .62" Lg. (B&S)	64	712-0324		Pan Hd. Mach. Scr. 1/4-20 x .5" Lg.††
29	735-0639		Spark Plug Boot (Optional)	65	782-9011	N	Hex Nylon L-Nut 1/4-20 Thd.††
30	732-0766	N	Wire Rod	66	782-5007	N	Mounting Bracket††
				67	782-5004	N	Mulching Baffle Plug (Optional)
							Mulching Baffle—R.R. (Optional)

†Models 410R thru 418R only.

††Models 420R thru 428R only.

*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.

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

NOTE: 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.

Color Codes

456—Radiant Tangerine	637—Black
460—Green Flake	638—Red
483—Charcoal Gray	640—Green
498—Yellow	646—CM Blue
499—Beige	657—Teal
629—Silver Flake	

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 tank empty, or stale fuel. 5. Blocked fuel line (if so equipped). 6. Faulty spark plug. 7. 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. Fill tank with clean, fresh gasoline. 5. Clean fuel line. 6. Clean, adjust gap or replace. 7. 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	<ol style="list-style-type: none"> 1. Wheels not positioned correctly. 2. Dull blade. 	<ol style="list-style-type: none"> 1. Place all four wheels in same height position. 2. 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.

**FOR REPLACEMENT PARTS, CONTACT:
SERVICE DEPARTMENT • P.O. BOX 360900 • CLEVELAND, OHIO 44136**