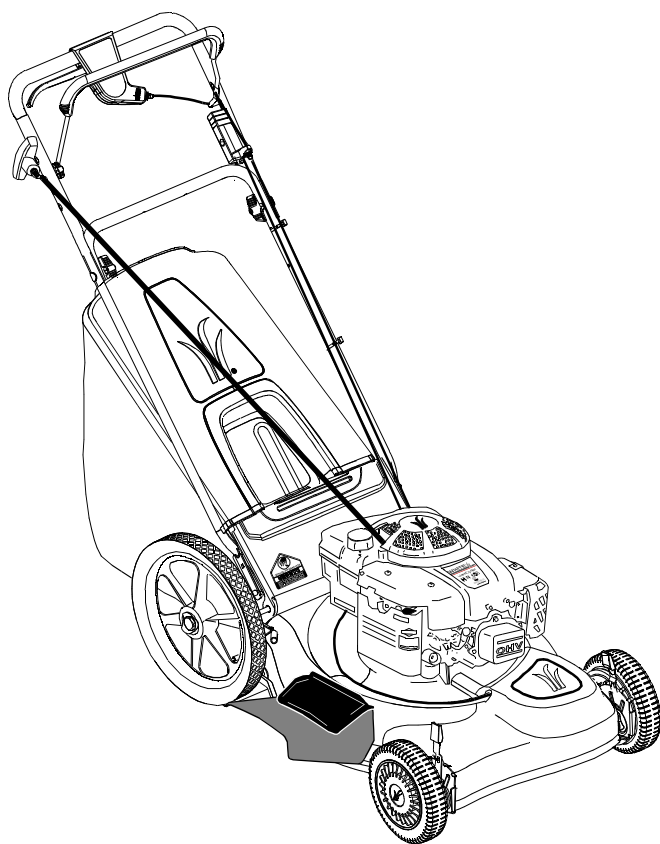




# Operator's Manual



## 21" Three-in-One Self-Propelled Mower

Model  
HW-656  
(12A-569I190)

**IMPORTANT:** Read safety rules and instructions carefully before operating equipment.

**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 361131 Cleveland, Ohio 44136-9722.

**WHITE OUTDOOR PRODUCTS COMPANY P.O. BOX 361131 CLEVELAND, OHIO 44136-9722**

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(12/99)

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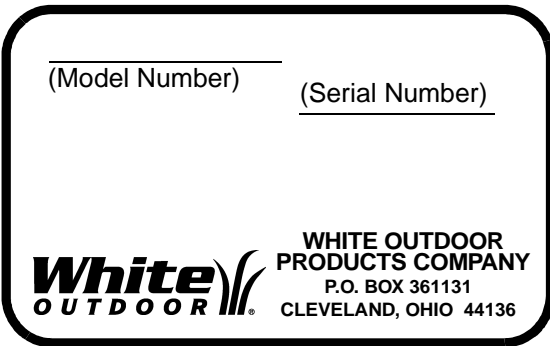
## FINDING MODEL NUMBER

This Operator's Manual is an important part of your new lawn mower. It will help you assemble, prepare and maintain the unit for best performance. Please read and understand what it says.



**Before you start assembling your new equipment**, please locate the model plate on the equipment and copy the information from it in the space provided below. The information on the model plate is very important if you need help from our Customer Dealer Referral Line or an authorized White Outdoor dealer.

- You can locate the model number by standing at the operating position and looking down at the rear of the mower. A sample model plate is explained below. For future reference, please copy the model number and the serial number of the equipment in the space below.



Copy the model number here: \_\_\_\_\_

Copy the serial number here: \_\_\_\_\_

## CALLING CUSTOMER SUPPORT

If you have difficulty assembling this product or have any questions regarding the controls, operation or maintenance of this unit, please call the Customer Dealer Referral Line.



Call **1- (800)-949-4483** to reach a Customer Support representative. Please have your unit's model number and serial number ready when you call. See previous section to locate this information. You will be asked to enter the serial number in order to process your call.

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## SECTION 1: 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. This lawn mower is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.



**WARNING:** The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

### GENERAL OPERATION

- Read this operator's manual carefully in its entirety before attempting to assemble this machine. Read, understand, and follow all instructions on the machine and in the manual(s) before operation. 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.
- 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.
- 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 responsible individuals who are familiar with these rules of safe operation should be allowed to use your mower.
- 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.
- 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, slippery or light weight (e.g. canvas) shoes.
- Always wear safety glasses or safety goggles 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.
- Thoroughly inspect the area where the equipment is to be used. Remove all stones, sticks, wire, bones, toys 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. To help avoid a thrown objects injury, keep children, bystanders and helpers at least 75 feet from the mower while it is in operation.
- Do not put hands or feet near or under rotating parts. Keep clear of discharge opening at all times as the rotating blade can cause injury.
- Many injuries occur as a result of the mower being pulled over the foot during a fall. Do not hang on to the mower if you are falling; release the handle immediately.
- Never pull the mower toward you while you are walking. If you must back the mower away from a wall or obstruction first look down and behind, and then follow these steps:
  - a. Step back from the mower to fully extend your arms.
  - b. Be sure you are well balanced with sure footing.
  - c. Pull the mower back slowly, no more than half way toward you.
  - d. Repeat these steps as needed.
- Do not operate the mower while under the influence of alcohol or drugs.
- Do not engage the self-propelled mechanism on units so equipped while starting engine.
- 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 the disengaged position when released.

- 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. If you feel you are losing your footing, **RELEASE THE BLADE CONTROL HANDLE IMMEDIATELY** and the blade will stop rotating within three seconds.
- Mow only in daylight or good artificial light.
- Stop the blade when crossing gravel drives, walks or roads.
- If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
- 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.
- Never operate mower without proper guards, grass catcher, plates or other safety protective devices in place.
- Muffler and engine become hot and can cause a burn. Do not touch.
- Only use accessories approved for this machine by the manufacturer.
- Read, understand, and follow all instructions provided with the approved accessory.
- If situations occur which are not covered in this manual, use care and good judgment. Contact your dealer for assistance. Telephone 1-800-800-7310 for the name of your nearest dealer.

## Slope Operation

- 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 degrees as shown on the slope gauge, do not operate this unit on that area or serious injury could result.

### Do:

- Mow across the face of slopes; never up and down. Exercise extreme caution when changing direction on slopes.
- Watch for holes, ruts, hidden objects, or bumps. Tall grass can hide obstacles.
- Always be sure of your footing. A slip and fall can cause serious personal injury. If you feel you are losing your balance release the blade control handle immediately and the blade will stop in less than 3 seconds.

### Do not:

- Do not mow near drop-offs, ditches or embankments. The operator could lose footing or balance.

- Do not mow slopes greater than 15 degrees as shown on the slope gauge.
- Do not mow on wet grass. Reduced footing could cause slipping.

## Children

- Tragic accidents can occur if the operator is not alert to the presence of children. Children are often attracted to the mower and the mowing activity. Never assume that children will remain where you last saw them.
- Keep children out of the mowing area and under the watchful care of a responsible adult other than the operator.
- Be alert and turn mower off if a child enters the area.
- Before and while moving backwards, look behind and down for small children or other objects.
- Never allow children under age 14 to operate the mower. Children 14 years of age and above should read and understand the operation instructions and safety rules in this manual.
- Use extreme care when approaching blind corners, shrubs, trees, or other objects that may obscure your vision of a child or hazard.

## Service

- Use extreme care in handling gasoline and other fuels. They are extremely flammable and the vapors are explosive.
- Use only an approved gasoline container.
- Never remove gas cap or add fuel while the engine is running. Allow engine to cool at least two minutes before refueling.
- Replace gasoline cap securely and wipe off any spilled gasoline before starting the engine as it may cause a fire or explosion.
- Extinguish all cigarettes, cigars, pipes and other sources of ignition.
- Never refuel machine indoors because flammable vapors will accumulate in the area.
- Never store the machine or fuel container inside where there is an open flame or spark such as a gas water heater, space heater, or furnace.
- Never run an engine inside a closed area.
- To reduce fire hazard, keep mower free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage. Allow mower to cool at least 5 minutes before storing.
- 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.
- Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade for damage (e.g., bent,

cracked or worn). Replace with blade which meets original equipment specifications listed in this manual.

- Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
- Never tamper with safety devices. Check their proper operation regularly.
- 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 starting and operating the mower.
- Never attempt to make a wheel or cutting height adjustment while the engine is running.

- Grass catcher components are subject to wear, damage and deterioration, which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace with manufacturer's recommended parts, when necessary.
- Mower blades are sharp and can cut. Wrap the blade(s) or wear gloves, and use extra caution when servicing them.
- Do not change the engine governor setting or overspeed the engine. Excessive engine speeds are dangerous.

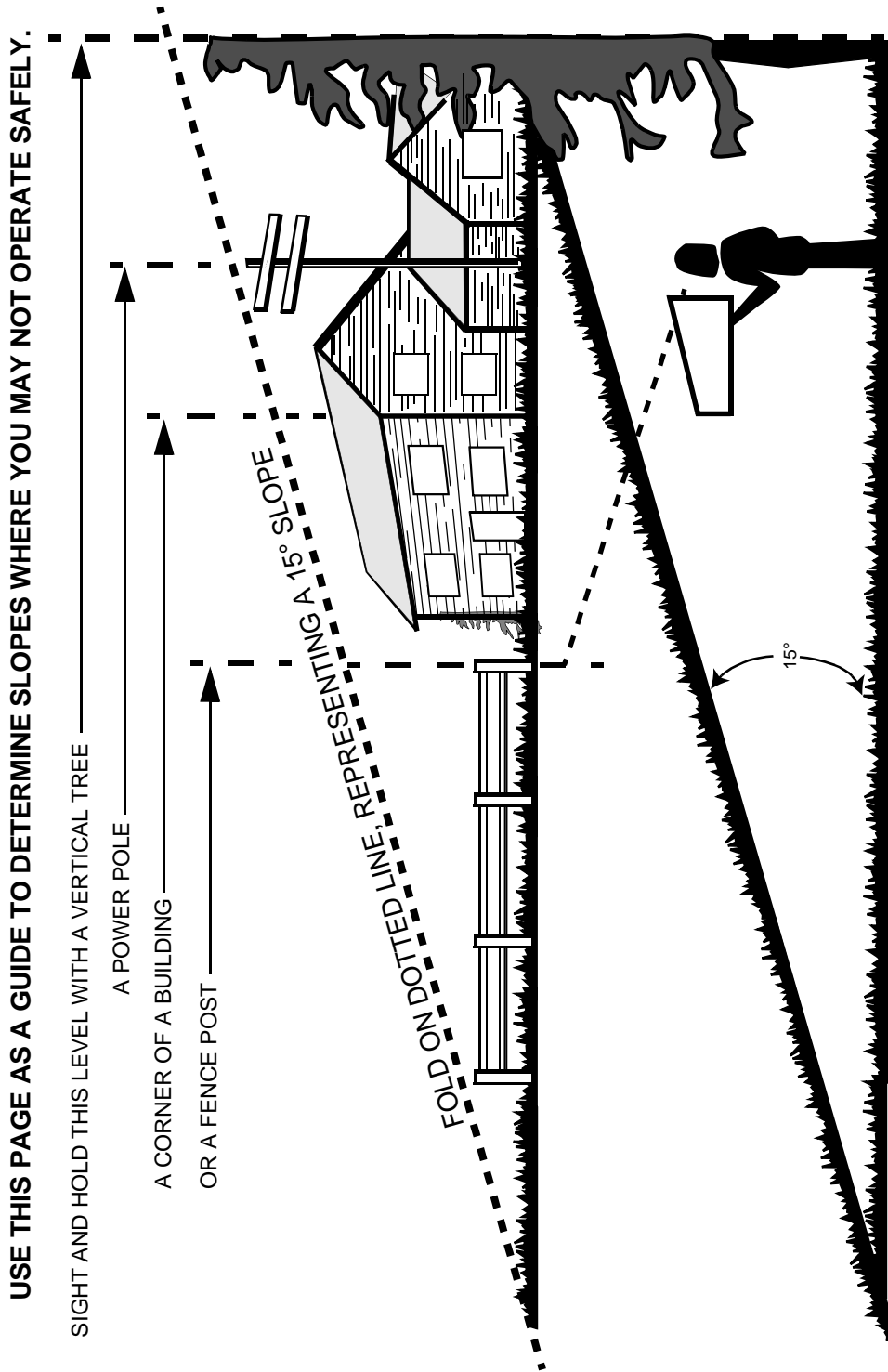
## Your Responsibility

- Restrict the use of this power machine to persons who read, understand and follow the warnings and instructions in this manual and on the machine.



## SECTION 2: SLOPE GAUGE

Use this page as a guide to determine slopes where you may not operate the lawn mower safely.



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.

## SECTION 3: ASSEMBLING YOUR LAWN MOWER

### To Remove Unit From Carton

- Remove staples, break glue on top flaps, or cut tape at carton end and peel along top flap to open carton.
- Remove loose parts included with your unit (i.e., operator's manual, etc.).
- Cut along corners and lay carton down flat. Remove packing material.
- Roll or slide unit out of carton.

### Hardware Pack

1. Carriage Bolt 1/4-20 x .75" (2)
2. Wing Nut with Bell Washer (2)

### Tools Required

1. Pair of Pliers
2. Funnel

### Disconnect Spark Plug Wire

- Before setting up your lawn mower, disconnect the spark plug wire from the spark plug, and ground it against the engine. See Figure 1.

**NOTE:** On engines with a rubber boot, attach rubber boot to a bolt on the engine to ground.

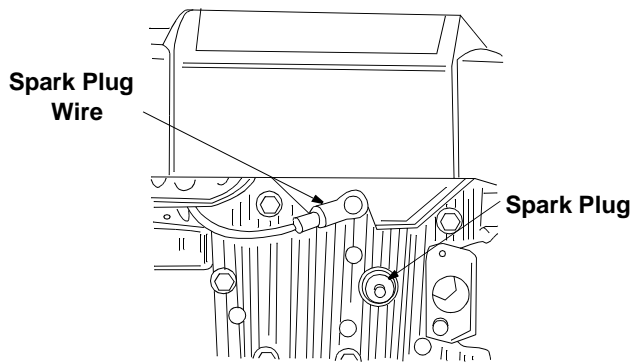


Figure 1

**IMPORTANT:** This unit is shipped without gasoline or oil in the engine. Be certain to service engine with gasoline and oil before operating your mower.

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

### Setting Up Your Lawn Mower

- Remove the grass catcher from the unit and set it out of the way. See Figure 2 (step 1).
- Raise the lower handle in the direction shown in Figure 2 (step 2) till it snaps into place.

- Raise the upper handle in the direction shown in Figure 2 (step 3). Tighten the wing nuts which are already on the handle.

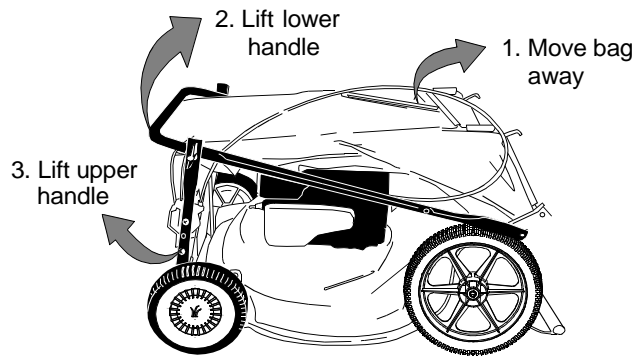


Figure 2

**NOTE:** Your mower is shipped with the handle in the higher height position. If you wish to lower the height of the handle, refer to the Adjustment Section at this time.

- Remove the hairpin clips from the outer hole in the weld pins on the handle mounting brackets. Using a pair of pliers, squeeze one leg of the lower handle against the handle mounting bracket. Insert the hairpin clip into the inner hole on the weld pin. Repeat on the other side. See Figure 3.

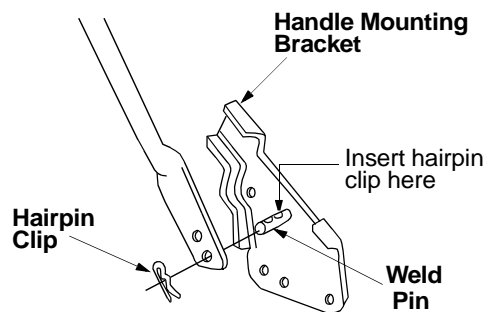


Figure 3

- The rope guide is attached to the right side of upper handle. Loosen the wing nut which secures the rope guide. See Figure 4.
- With spark plug wire disconnected and grounded, hold the blade control handle against the upper handle, and pull the starter rope out of the engine. Release blade control handle. Slip the rope into the rope guide. Tighten the wing nut. See Figure 4.

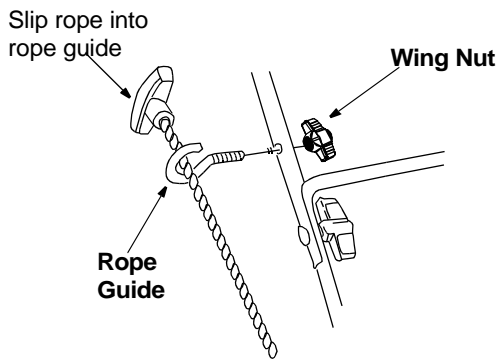


Figure 4

- Tighten **all** nuts and bolts securely.
- Insert post on cable ties into holes provided on the lower handle. Pull the cable tie tight and trim the excess. See Figure 5.

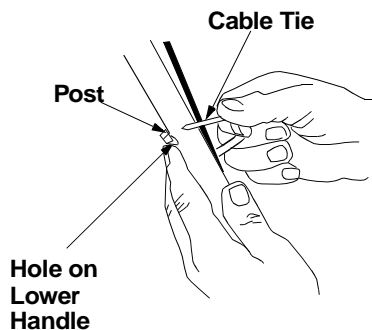


Figure 5

- After you have moved the hairpin clips as shown in Figure 3, place one carriage bolt (found in the hardware pack included with your unit) in the upper hole of the right handle mounting bracket from the inside outward. See Figure 6. Secure with one plastic wing nut. Repeat process on the left side.

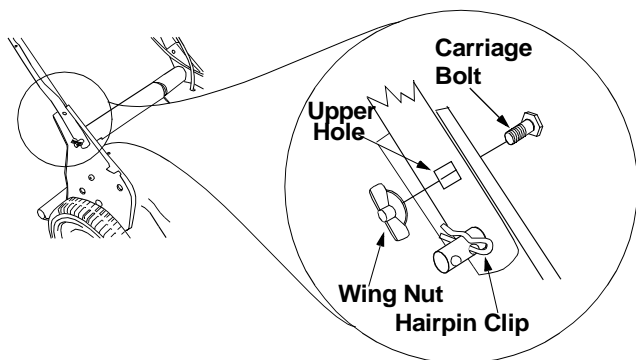


Figure 6

## Attaching Grass Catcher To Mower

**NOTE:** The mulching baffle is already in place on the mower for shipping purposes. Your lawn mower is

equipped with both a mulching baffle and a mulching plug. While the mulching baffle is located at the rear of the mower, the mulching plug is located on the right side of the cutting deck. Do not remove the mulching plug from the mower even when you are not mulching the grass.

- To remove the mulching baffle, lift the rear discharge door on the mower. Remove the mulching baffle. See Figure 7.

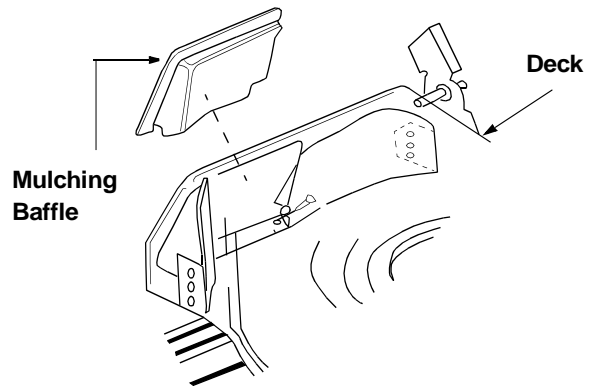


Figure 7

**IMPORTANT:** Make sure cables are routed to the outside of the handle so they are not in the way when attaching the grass catcher.

- Lift the rear discharge door on the mower.
- Place the hooks, found on both sides of the grass catcher frame, over the chute door pivot rod at the rear of the mower. See Figure 8. Release the rear discharge door.
- **To remove the grass catcher,** lift the rear discharge door on the mower. Lift the grass catcher up and off the pivot rod. Reinstall the mulching baffle and release the rear discharge door. See Figure 8.



**WARNING:** Never operate the mower unless the hooks on the grass catcher are firmly seated on the chute pivot rod, and the rear discharge door rests firmly against the top of the grass catcher.

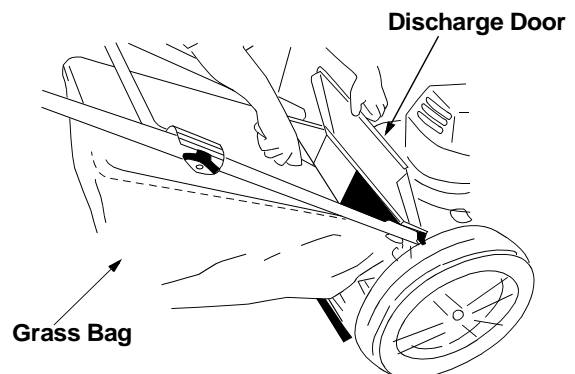


Figure 8



## Converting To Side Discharge

- Lift the rear discharge door and install the mulching baffle. See Figure 7.
- On the side of the mower, lift the mulching plug. See Figure 9.
- Slide the two hooks of the side discharge chute under the hinge pin on the mulching plug assembly as shown in Figure 9. Lower the side mulching plug.
- Do not remove the side mulching plug at any time, even when you are not mulching.

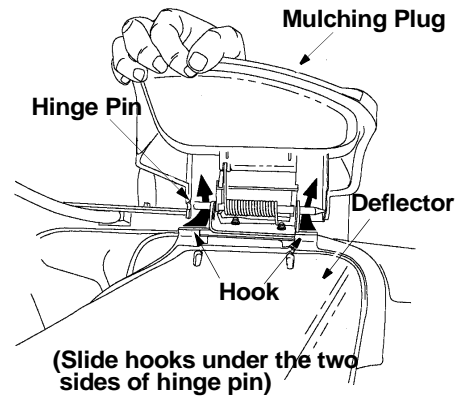


Figure 9

## SECTION 4: KNOW YOUR LAWN MOWER

Compare Figure 10 with your lawn mower to familiarize yourself with the location of controls and adjustments.



**WARNING:** 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.

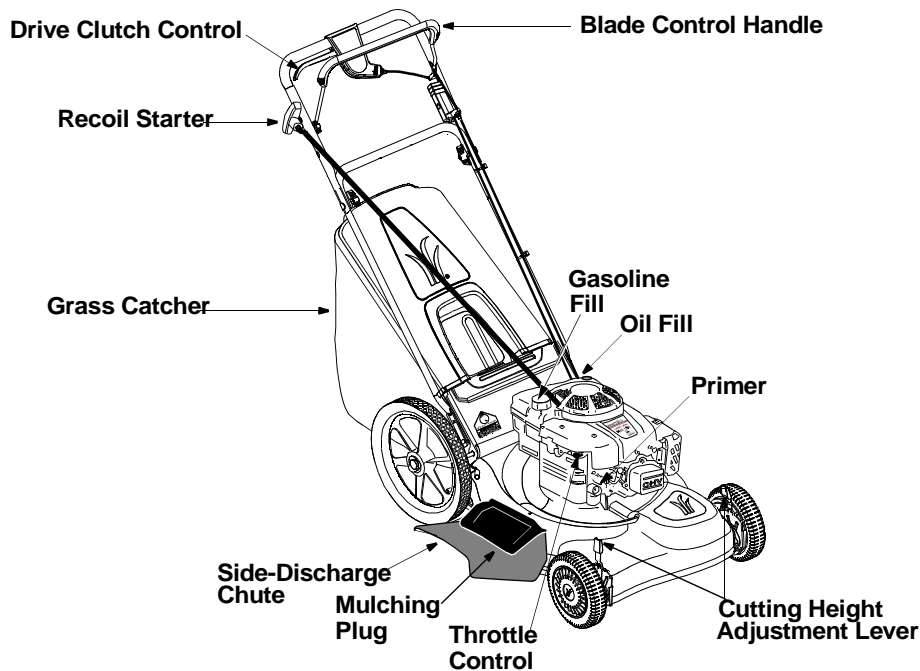


Figure 10

### 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 and must be depressed in order to operate the unit. Release it to stop engine and blade.

### Recoil Starter

The recoil starter handle is attached to the handle and is used to start the engine.

### Grass Catcher

The grass catcher, located at the rear of the mower, is used to bag the grass clippings for disposal at another site. Once the bag is full, it has to be removed from the mower and emptied before any further mowing.

### Cutting Height Adjustment Lever

This lever, located at each wheel, lets you adjust cutting height of the grass. Remember to put all four levers at the same height to avoid uneven cut.

### Mulching Plug

Both the mulching baffle and the mulching plug are used only for mulching purposes. Instead of collecting the grass clippings in a grass catcher, your mower has the option of recirculating the clippings back to the lawn. This is called mulching.

### Throttle Control

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



**WARNING: The throttle control cannot be used to stop the engine. Do not adjust throttle control with the engine running.**

### Drive Clutch Control

The drive clutch control lever is located on the upper handle and is used to engage the drive. Squeeze lever against the upper handle to engage the drive; release drive clutch control to slow down or stop the mower.

---

## SECTION 5: OPERATING YOUR LAWN MOWER



**WARNING: Keep hands and feet away from the chute area on cutting deck. The blade will be rotating whenever the engine is running.**

**Be sure no one other than the operator is standing near the lawn mower while starting engine or operating mower.**

**Never run engine indoors or in enclosed, poorly ventilated areas. Engine exhaust contains carbon monoxide, an odorless and deadly gas.**

**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 while the drive clutch control is still disengaged, shut the engine off immediately.**

### Gas and Oil Fill-Up

- Service the mower engine with gasoline and oil following instructions in the engine manual. If your mower was shipped with oil in the engine, fill up the required amount of gasoline only. Always make sure there is adequate oil in the engine before starting the engine.



**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.**

### Adjusting Cutting Height

- Your mower was shipped at the highest cutting height. For best results in mowing, keep the cutting height position high until it is determined which height is best for your lawn.
- Refer to height adjustments section of this manual on page 12 for instruction on how to adjust the cutting height and the handle height.

### Before Starting Mower

- Attach spark plug wire to spark plug. Make certain the metal cap on the end of the spark plug wire (inside the rubber boot) is fastened securely over the metal tip on the spark plug.
- Check the drive clutch control for proper adjustment. If the mower does not propel itself or the drive wheels hesitate with the drive clutch engaged, perform the drive clutch control adjustment as instructed on page 12 of this manual.

### Starting Engine

- Make sure that the drive clutch control is adjusted so the drive belt is as loose as possible.
- Move throttle control lever all the way back to the "rabbit" position.
- Push primer three times. Wait about two seconds between each push. In cold weather around 55° F or below, prime five times. Do not prime to restart a warm engine after a short shutdown.
- Standing behind the mower, depress the blade control handle and hold it against the upper handle.
- Grasp starter handle and pull rope out slowly until engine reaches the start of compression cycle (rope will pull slightly harder at this point). Let the rope rewind slowly. Pull rope with a rapid, continuous, full arm stroke. Keeping a firm grip on the starter handle, let the rope rewind slowly.

### To Stop Engine and Blade

- Release the blade control handle to stop the engine and blade.



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

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

## Adjusting Throttle Speed



**WARNING:** Never attempt to adjust the engine's throttle speed while the engine is running. Always stop the engine by releasing the blade control handle before adjusting the engine's throttle speed.

The throttle control lever is located on the right side of the engine. Adjust as follows:

- Slide the throttle control lever toward the turtle (front of the engine) to slow the engine's RPM. Slide the throttle control lever toward the rabbit (rear of the engine) to speed up the engine's RPM.
- Always operate your mower with the engine in the full throttle (rabbit) position for the most effective mulching or bagging of the cut grass.

## 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 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 a healthy lawn, never cut more than one-third of the length of the grass at any one cutting. 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 and ground it. Thoroughly inspect the mower for any damage, and repair the damage before restarting and operating the mower again.

## Using the Mulcher

- 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.

---

## SECTION 6: MAKING ADJUSTMENTS



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

### Carburetor



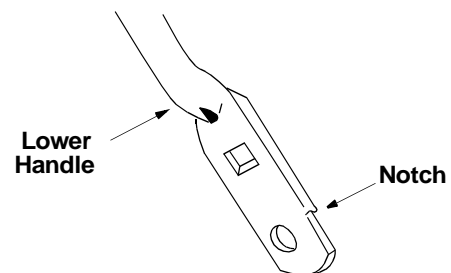
**WARNING:** If any adjustments are made to the engine while the engine is running (e.g. carburetor), keep clear of all moving parts and heated surfaces (e.g. muffler).

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

**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.

### Handle Height

Your mower is shipped with the handle in the higher height position. To lower the handle height for your convenience, proceed as follows.



**Figure 11**

- Remove the starter rope from the rope guide.
- Remove the upper handle by removing the hand knobs and carriage bolts. Lay the upper handle out of the way, being careful not to bend or kink cables.

- Remove the hairpin clips from the weld pins on the handle brackets. Press outward on the legs of the lower handle, and remove it from the mower.
- Turn the lower handle around so the notches on the bottom of the lower handle are facing forward as shown in Figure 11. Reassemble, placing the bottom holes in the handle over the weld pins in the handle mounting bracket.
- Reassemble the upper handle.
- Place the hairpin clips in the inner holes in the weld pins and attach the starter rope as instructed in the assembly instructions.

## Cutting Height

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 12.

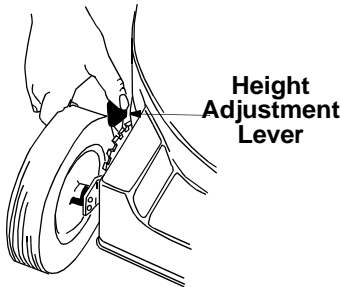


Figure 12

## Adjusting Drive Clutch Control

The drive clutch adjustment wheel is located on the drive clutch control handle housing and is used to tighten or loosen tension on the drive cable. Perform this adjustment if the following exists.

- The mower does not propel itself with the drive clutch engaged.
  - The mower's drive wheels hesitate with the drive clutch engaged.
- To resolve the above problems, rotate the adjustment wheel with your fingers: clockwise to tighten the cable, and counter-clockwise to loosen the cable. See Figure 13.

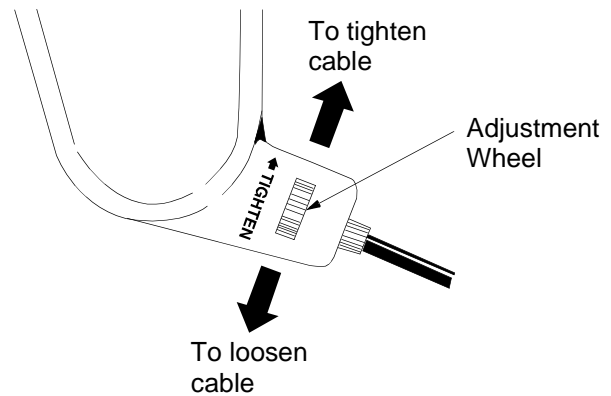


Figure 13

## SECTION 7: MAINTAINING YOUR LAWN MOWER

### Replacing Rear Flap

- To remove rear flap, cut off the flat end of the wire rod which secures it to the deck. See Figure 14.
- Attach the new flap and new rod to deck, bending the ends of the new rod over to secure to deck.

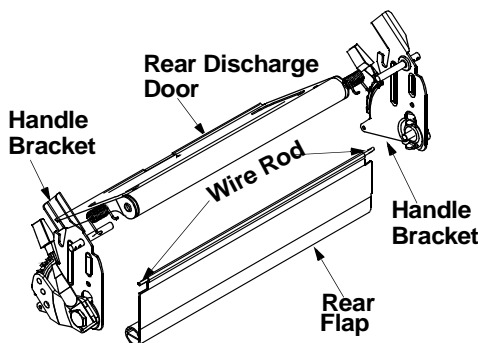


Figure 14

### Deck Care

**NOTE:** We do not recommend the use of pressure washers or garden hose to clean your unit. These may cause damage to electric components, spindles, pulleys, bearings or the engine. The use of water will shorten life of the mower and reduce its serviceability.

- The underside of the mower deck should be cleaned after each use to prevent a build-up 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

A list of key maintenance jobs required for good performance by the mower is given below. Follow the accompanying engine manual for detailed list and instructions.

- Change engine oil after the first two operating hours and every 25 operating hours thereafter. Always check oil level before starting engine.
- Clean the engine periodically. Remove dirt and debris with a cloth or brush. We do not recommend the use of pressure washers or garden hose to clean your unit. These may cause damage to electric components, spindles, pulleys, bearings or the engine. The use of water will shorten life of the mower and reduce its serviceability.
- Clean the spark plug and reset the gap to .030" at least once a season or every 50 hours of operation. Spark plug replacement is recommended at the start of each season. Refer to the engine manual for correct spark plug type.
- Inspect muffler periodically, and replace if necessary. Damaged mufflers or spark arresters can create a fire hazard.



**WARNING:** Make sure to avoid muffler and surrounding areas while the mower engine is hot because temperature of these areas of the engine may exceed 150° F.

## Lubrication

(Refer to Lubrication Chart in Figure 15.)



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

### Rear & Side Discharge Doors

- The torsion springs and pivot points should be lubricated periodically with light oil to prevent any rust or binding. Door must work freely.

### Wheels

- The wheels require no lubrication. However, 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. Engine oil may also be used.

### Transmission

- The transmission is pre-lubricated and sealed at the factory and does not require lubrication on a regular basis as part of maintenance. However, if

you disassemble the transmission for any reason, refill with two ounces of Alvania grease (part # 737-0168) as part of reassembly.

### Engine

- Follow engine manual for instruction and schedule of lubrication.

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

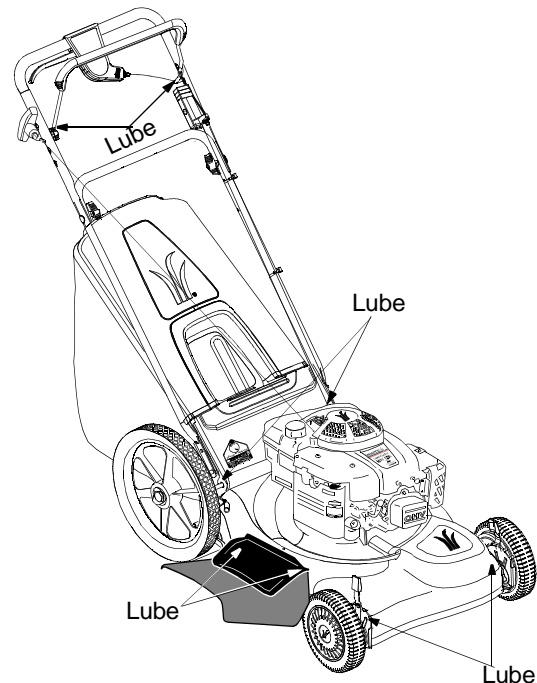


Figure 15: Lubrication Chart

## Blade Care

- Periodically inspect the blade adapter and pulley for cracks, especially if you strike a foreign object. Replace when necessary.



**WARNING:** When removing the cutting blade for sharpening or replacement, protect hands by using heavy gloves or a thick rag to grasp the cutting blade.

- Disconnect spark plug wire from spark plug.

### To Remove Blade

- Remove the bolt and bell washer which hold the blade-pulley assembly to the engine crankshaft. See Figure 16. Remove assembly from crankshaft.
- Remove the two bolts and lock nuts from the blade assembly.
- Remove the blade from the blade adapter and pulley.

### To Replace Blade:

- Before reinstalling the blade-pulley assembly to the unit, lubricate engine crankshaft and inner surface of the blade adapter with light oil or engine oil.

- Turn mower on its side making sure that the air filter and the carburetor are up.

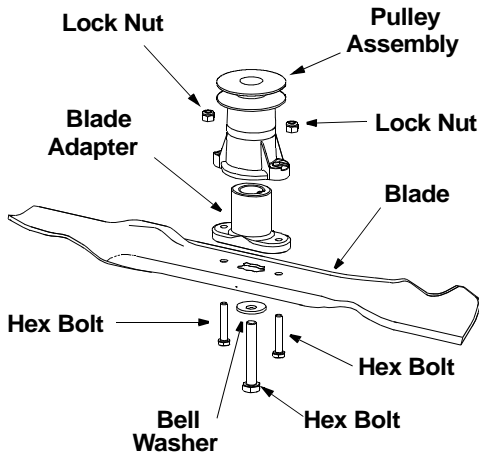


Figure 16

- Also lubricate the bolt holes, bolt and the inner surface of the nuts.
- Install the blade adapter on the pulley with the “star” away from the pulley. See Figure 16.
- Place the new blade on the blade adapter with the side marked bottom (or with part number) facing away from the adapter.
- Secure the blade to the assembly with two hex bolts and lock nuts. Tighten the hex bolts to the recommended torque. Refer to ‘Blade Mounting Torque’ section on this page.
- Install the blade assembly on the crankshaft. See Figure 16. Secure with the hex bolt and bell washer (cupped side of washer to blade) and tighten to the recommended torque. Refer to ‘Blade Mounting Torque’ section on this page.

**IMPORTANT:** The bolt, used to secure the blade to the engine, is specially heat-treated. **Do not substitute.** To order replacement bolt, refer to the parts list in the back of this manual.



**WARNING:** To ensure safe operation of your lawn mower, check all nuts and bolts periodically and tighten if necessary.

**To Sharpen Blade:**

- The blade can be sharpened with a file or on a grinding wheel. Do not attempt to sharpen the blade while it is still on the mower.
- Follow the original angle of grind as a guide. Make sure that each cutting edge receives an equal amount of grinding to prevent an unbalanced blade.

**NOTE:** An unbalanced blade will cause excessive vibration when rotating at high speeds, may cause damage to the mower and could break, causing personal injury.

- The blade can be tested by balancing it on a round shaft screwdriver. See Figure 17. Remove metal from the heavy side until it balances evenly. It is recommended that the blade always be removed from the adapter for the best test of balance.

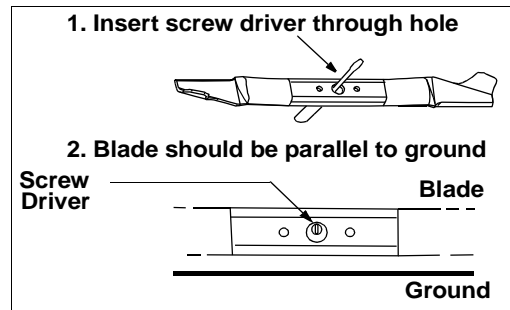


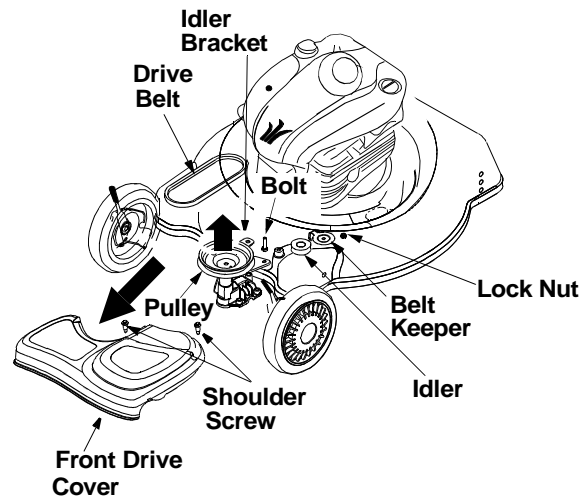
Figure 17

**Blade Mounting Torque:**

Blade adapter bolts: 120 in.lbs. minimum, 150 in.lbs. maximum.

Center bolt: 450 in.lbs. minimum, 600 in.lbs. maximum.

**Replacing Drive Belt**



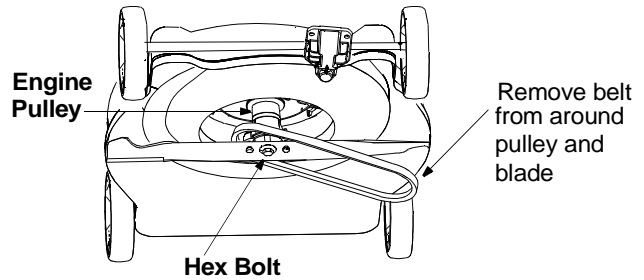
The wheels have been moved forward in this picture for clarity. **Do not remove** the wheels away from the mower housing while performing the job.

Figure 18

- Remove the two shoulder screws which secure the front drive cover to the mower deck. See Figure 18.
- Remove the front drive cover from the unit by lightly pressing inward on the sides of the front drive cover. This will release the tabs that secure the front drive cover to the height adjuster brackets.
- Remove the idler from the idler bracket using 7/16" wrench and socket. See Figure 18.
- Remove the belt from the transmission pulley as shown in Figure 18.
- Lift and stabilize the front of the deck.

- Loosen the center hex bolt and lower the blade and engine pulley until there is adequate clearance to move the belt past the belt keeper.
- Remove the belt from the engine pulley and around the blade. See Figure 19.
- Reassemble in reverse order with new belt (part # 754-0465).

**NOTE:** Begin idler reassembly by inserting bolt up through the idler bracket hole. Adjust the drive clutch following instructions on page .



**Figure 19**

## SECTION 8: OFF-SEASON STORAGE

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

- Clean and lubricate mower thoroughly as described in the lubrication instructions.
- Refer to engine manual for correct engine storage instructions.
- Coat mower's cutting blade with chassis grease to prevent rusting.

- Store mower in a dry, clean area. Do not store next to corrosive materials, such as fertilizer.

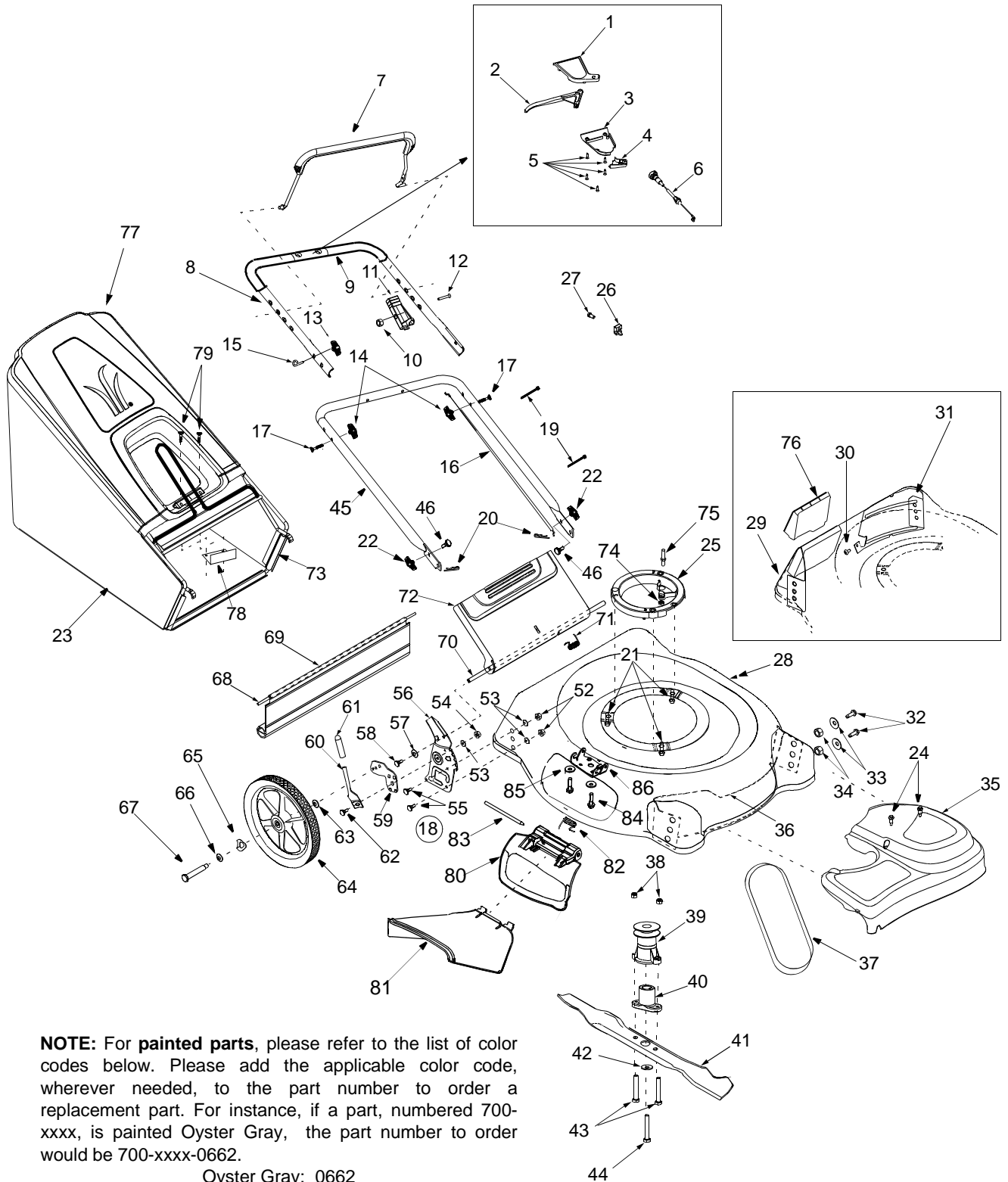
**NOTE:** When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rust-proof the equipment. Using a light oil or silicone, coat the equipment, especially cables and all moving parts.

## SECTION 9: TROUBLE SHOOTING GUIDE

Trouble	Possible Cause(s)	Corrective Actions
Engine fails to start	<ol style="list-style-type: none"> <li>1. Blade control handle disengaged.</li> <li>2. Spark plug wire disconnected.</li> <li>3. Dirty air cleaner.</li> <li>4. Primer button not depressed.</li> <li>5. Throttle control lever not in correct position.</li> <li>6. Fuel tank empty or stale fuel.</li> <li>7. Blocked fuel line .</li> <li>8. Faulty spark plug.</li> <li>9. Engine flooded.</li> </ol>	<ol style="list-style-type: none"> <li>1. Engage blade control handle.</li> <li>2. Connect wire to spark plug.</li> <li>3. Refer to the engine manual.</li> <li>4. Refer to the engine manual.</li> <li>5. Move throttle lever to FAST or START position.</li> <li>6. Clean fuel line.</li> <li>7. Clean, adjust gap or replace.</li> <li>8. Refer to the engine manual.</li> <li>9. Wait for a while and crank the engine.</li> </ol>
Engine runs erratic	<ol style="list-style-type: none"> <li>1. Unit running in START position.</li> <li>2. Spark plug wire loose.</li> <li>3. Blocked fuel line or stale fuel.</li> <li>4. Carburetor out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Move throttle lever to FAST position.</li> <li>2. Connect and tighten spark plug wire. Check for fouling.</li> <li>3. Clean fuel line; fill tank with clean, fresh gasoline.</li> <li>4. Refer to the engine manual.</li> </ol>
Engine overheats	<ol style="list-style-type: none"> <li>1. Engine oil level low.</li> <li>2. Dirty air cleaner.</li> <li>3. Air flow restricted.</li> <li>4. Carburetor not adjusted properly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill crankcase with proper oil.</li> <li>2. Refer to the engine manual.</li> <li>3. Stop engine and disconnect spark plug wire. Remove blower housing and clean.</li> <li>4. Refer to the engine manual.</li> </ol>
Occasional skip at high speed	<ol style="list-style-type: none"> <li>1. Spark plug gap too close.</li> <li>2. Carburetor adjustment improperly set.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust gap to .030".</li> <li>2. Refer to the engine manual.</li> </ol>
Idles poorly	<ol style="list-style-type: none"> <li>1. Spark plug fouled, faulty or gap too wide.</li> <li>2. Carburetor not adjusted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reset gap to .030" or replace spark plug.</li> <li>2. Refer to the engine manual.</li> </ol>
Excessive vibration	<ol style="list-style-type: none"> <li>1. Cutting blade loose or unbalanced.</li> <li>2. Bent cutting blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten blade and adapter. Balance blade.</li> <li>2. See an authorized service dealer.</li> </ol>
Mower will not mulch grass	<ol style="list-style-type: none"> <li>1. Engine speed too low</li> <li>2. Wet grass.</li> <li>3. Excessively high grass.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set throttle between 3/4 and full throttle.</li> <li>2. Wait until later to cut.</li> <li>3. Mow once at a high cutting height, then mow again at desired height.</li> </ol>
Uneven cut	<ol style="list-style-type: none"> <li>1. Wheels positioned incorrectly.</li> <li>2. Dull blade.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place all four wheels in same height position.</li> <li>2. Sharpen or replace blade.</li> </ol>

**NOTE:** For repairs beyond the minor adjustments above, contact your local White Outdoor dealer.

# SECTION 10: PARTS LIST FOR MODEL HW-656



**NOTE:** For **painted parts**, please refer to the list of color codes below. Please add the applicable color code, wherever needed, to the part number to order a replacement part. For instance, if a part, numbered 700-xxxx, is painted Oyster Gray, the part number to order would be 700-xxxx-0662.

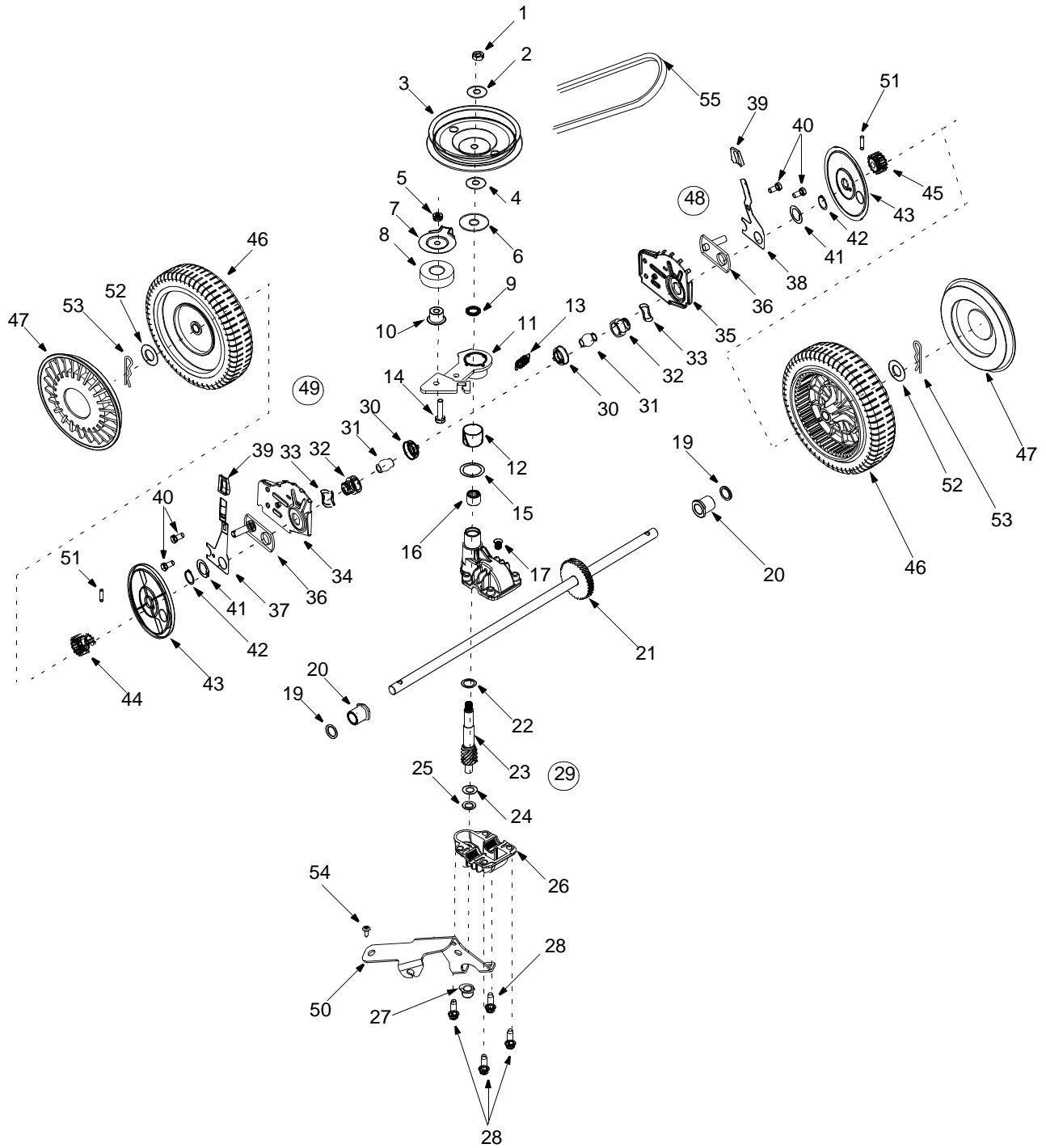
- Oyster Gray: 0662
- Powder Black: 0637
- Red Metallic: 0650



# Model HW-656

Ref. No	Part No.	Description	Ref. No	Part No.	Description
1.	731-1057	Upper Drive Cover	42.	736-0452	Flat Washer .516 x 1.5 x .134
2.	731-0620	Drive Lever	43.	710-0606	Hex Screw 1/4-20 x 1.50
3.	731-1058	Lower Drive Cover	44.	710-1257	Hex Screw 3/8-24 x 2.50
4.	731-1059	Mounting Cap	45.	749-0907A	Lower Handle
5.	710-1667A	Screw # 10-16 x .75	46.	710-0703	Carriage Bolt, 1/4-20 x .75"
6.	746-0960	Drive Cable	52.	712-0798	Hex Nut 3/8-16
7.	647-0004	Deluxe Control Lever	53.	736-0356	Bell Washer .39 I.D. x 1.38 O.D.
8.	749-0439B	Upper Handle (Incl. Ref. No. 9)	54.	712-3005	Hex Flange Lock Nut 3/8-16
9.	720-0294	Foam Grip, 9"	55.	710-0896	Hex Scr. w/Washer 1/4-14 x .625
10.	712-0234	Hex Lock Nut, 1/4-20	56.	682-3056A	RH Handle Bracket
11.	746-0883	Throttle Housing	—	682-3057A	LH Handle Bracket (Not Shown)
12.	710-1270	Oval C-Sunk Screw 1/4-20 x 1.31	57.	736-0270	Bell Washer .265 x .75 x .062
13.	720-0279	Handle Knob	58.	710-0599	Hex Screw TT 1/4-20 x .500
14.	720-0314	Handle Knob	59.	17488A	RH Pivot Bar
15.	710-1205	Eye Bolt	—	17489A	LH Pivot Bar (Not Shown)
16.	746-0550	Control Cable, 39"	60.	732-0866	Height Adj. Lever
17.	710-1174	Carriage Bolt 5/16-18 x 2.0	61.	720-0312	Foam Grip
18.	682-3058	RH Bracket Ass'y (Incl. Ref. 54, 56, 59, 60 & 62)	62.	738-0507B	Shoulder Scr .500 Dia. x .434
—	682-3059	LH Bracket Ass'y (Not Shown)	63.	736-0105	Washer .401 x .870 x .063
19.	726-0240	Cable Tie	64.	734-1861	Wheel, 14 x 2 Gray (Link Trd.)
20.	714-0104	Cotter Pin	65.	736-0182	Spring Washer .50 I.D. x 1.0 O.D.
21.	710-1007	Self-Tapping Screw	66.	736-0456	Flat Washer .510 x 1.373 x .04
22.	712-0397	Wing Knob	67.	738-0481	Shoulder Screw
23.	664-0084	Grass Bag	68.	732-0700	Wire
24.	7510042824	Screw # 12 x .457	69.	731-1236	Rear Trailing Shield
25.	631-0075	Engine Spacer	70.	747-0996	Pivot Rod
26.	751B213146	Clamp Casing	71.	732-0809	Torsion Spring
27.	710-1237	Hex Screw TT #10-32 x .625	72.	782-7599A	Rear Discharge Door
28.	782-0082A	21" Deck	73.	747-0995A	Grasscatcher Frame
29.	782-5004	RH Rear Baffle	74.	712-0271	Hex Nut
30.	710-1017	Screw AB: 1/4-14: .625	75.	711-1293	Screw
31.	782-5003	LH Rear Baffle	76.	782-5007	Plastic Mulching Baffle
32.	710-0216	Hex Screw 3/8-16 x .75	77.	731-0066	Hardtop w/ logo
33.	736-0331	Bell Washer .39 x 1.13 x .062	78.	782-9050	Grassbag Mtg. Bracket
34.	712-0798	Hex Nut 3/8-16	79.	710-1348	Screw, 1/4-20
35.	731-2101A	Transmission Cover (Gray)	—	751B281451	Engine Shroud (Not Shown)
36.	782-5002	Front Baffle	80.	682-7000	Mulching Plug (Hinged)
37.	754-0465	V-Belt, 3/8 x 35.68"	81.	731-1409	Chute Deflector
38.	712-0324	Hex Nut 1/4-20	82.	732-0731	Torsion Spring
39.	756-1146	Drive Pulley	83.	747-0710	Hinge Pin
40.	748-0411	Blade Adapter	84.	710-0599	Tapp Scr. 1/4-20 x .500
41.	742-0741	21" Mulching Blade	85.	736-0270	Bell Washer .265 x .75 x .062
			86.	782-7006	Hinged Mtg. Bracket

# Model HW-656



Ref. No	Part No.	Description	Ref. No	Part No.	Description
1.	712-3025	Hex Jam Nut 5/16-24	29.	618-0298A	Transmission Assembly (Includes Ref. # 1to Ref. #30)
2.	736-0425	Bell Washer .325 x .930 x .045	30.	732-0708	Bearing Retainer
3.	756-1042	Pulley, 3.82 x .313 x .68	31.	741-0604	Bearing Sleeve .50 I.D.
4.	736-0425	Bell Washer .325 x .930 x .045	32.	748-0355	Bearing Support
5.	712-0896	Lock Nut 1/4-28	33.	736-0447	Wave Washer 1.5 x 1.0 x .029
6.	736-0406	Flat Washer .442 x 1.38 x .060	34.	782-0512B	RH Height Adj. Plate
7.	782-7598	Belt Keeper	35.	782-0511A	LH Height Adj. Plate
8.	741-0124	Ball Bearing	36.	682-0509	Pivot Plate Assembly
9.	721-0457	Oil Seal	37.	732-0706	RH Front Lever
10.	750-1050	Flange Spacer	38.	732-0707	LH Front Lever
11.	682-0028	Idler Bracket Assembly	39.	720-0190	Knob
12.	741-0682A	Bearing Sleeve	40.	710-0216	Hex Cap Screw 3/8-16 x .75
13.	732-0849A	Extension Spring	41.	736-0474	Washer DD 1.5" O.D.
14.	710-0299	Hex Cap Screw 1/4-28 x 1.00	42.	716-0102	Snap Ring 1.0 dia.
15.	736-0570	Flat Washer .865 x 1.145 x .030	43.	782-7551	Wheel Dust Cap
16.	741-0699	Needle Bearing .438 x .625 x .500	44.	717-1534	Gear 14T RH FWD
17.	721-0325	Plug 1/4 x .437	45.	717-1533	Gear 14T LH FWD
18.	618-0300A	Upper Housing	46.	734-1983	Wheel, 8x2 Black
19.	721-0329	Oil Seal .500 x .687 x .094	47.	731-0981A	Hubcap: Gray
20.	741-0673	Flange Bearing	48.	682-0512A	RH Height Adj. Complete
21.	611-0105	Output Shaft	49.	682-0511A	LH Height Adj. Complete
22.	736-0520	Flat Washer .504 x .700 x .030	50.	682-0030	Cable Idler Bracket
23.	717-1492	Pinion Shaft 10T	51.	715-0221	Dowel Pin
24.	736-0314	Thrust Washer .375 x .70 x .030	52.	736-3013	Flat Washer 1/2 x 1.00 x .063
25.	736-0569	Thrust Washer .388 x .625 x .062	53.	714-0101	Cotter Pin .08 x 1.42
26.	618-0299A	Lower Housing	54.	738-1002	Screw
27.	741-0672	Flange Bearing .378 x .531 x .370	55.	754-0465	Belt
28.	710-1276	Hex Screw w/Washer 1/4-20 x .750			

# MANUFACTURER'S LIMITED WARRANTY FOR:



The limited warranty set forth below is given by White Outdoor Products Co. with respect to new merchandise purchased and used in the United States, its possessions and territories.

White Outdoor Products Co. warrants this product against defects in material and workmanship for a period of two (2) years commencing on the date of original purchase and will, at its option, repair or replace, free of charge, any part found to be defective in material or workmanship. This limited warranty shall only apply if this product has been operated and maintained in accordance with the Operator's Manual furnished with the product, and has not been subject to misuse, abuse, commercial use, neglect, accident, improper maintenance, alteration, vandalism, theft, fire, water or damage because of other peril or natural disaster. Damage resulting from the installation or use of any accessory or attachment not approved by White Outdoor Products Co. for use with the product(s) covered by this manual will void your warranty as to any resulting damages.

Normal wear parts or components thereof are subject to separate terms as follows: All normal wear part or component failures will be covered on the product for a period of 90 days regardless of cause. After 90 days, but within the two year period, normal wear part failures will be covered ONLY IF caused by defects in material or workmanship of OTHER component parts. Normal wear parts and components include, but are not limited to, belts, blades, blade adapters, grass bags, rider deck wheels, seats, snow thrower skid shoes, shave plates and tires. Batteries are covered by a 90-day limited replacement warranty.

**HOW TO OBTAIN SERVICE:** Warranty service is available, WITH PROOF OF PURCHASE THROUGH YOUR LOCAL WHITE OUTDOOR DEALER. To locate the dealer in your area, please check for a listing in the Yellow Pages or contact the Customer Dealer Referral Line of White Outdoor Co. by calling 1-330-225-8883 or writing to P.O. Box 361131, Cleveland, Ohio 44136-0019.

**This limited warranty does not provide coverage in the following cases:**

- a. The engine or component parts thereof. These items carry a separate manufacturer's warranty. Please refer to the applicable manufacturer's warranty on these items.
- b. Routine maintenance items such as lubricants, filters, blade sharpening and tune-ups, or adjustments such as brake adjustments, clutch adjustments or deck adjustments; and normal deterioration of the exterior finish due to use or exposure.

- c. Log splitter pumps, valves and cylinders have a separate one year warranty.
- d. White Outdoor Co. does not extend any warranty for products sold or exported outside of the United States of America, its possessions and territories, except those sold through White Outdoor Co. authorized channels of export distribution.

**No implied warranty, including any implied warranty of merchantability or fitness for a particular purpose, applies after the applicable period of express written warranty above as to the parts as identified. No other express warranty or guaranty, whether written or oral, except as mentioned above, given by any person or entity, including a dealer or retailer, with respect to any product shall bind White Outdoor Co. During the period of the Warranty, the exclusive remedy is repair or replacement of the product as set forth above.** (Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.)

**The provisions as set forth in this Warranty provide the sole and exclusive remedy arising from the sales. White Outdoor Co. shall not be liable for incidental or consequential loss or damages including, without limitation, expenses incurred for substitute or replacement lawn care services, for transportation or for related expenses, or for rental expenses to temporarily replace a warranted product.** (Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.)

In no event shall recovery of any kind be greater than the amount of the purchase price of the product sold. Alteration of the safety features of the product shall void this Warranty. You assume the risk and liability for loss, damage, or injury to you and your property and/or to others and their property arising out of the use or misuse or inability to use the product.

This limited warranty shall not extend to anyone other than the original purchaser, original lessee or the person for whom it was purchased as a gift.

**How State Law Relates to this Warranty:** This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

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