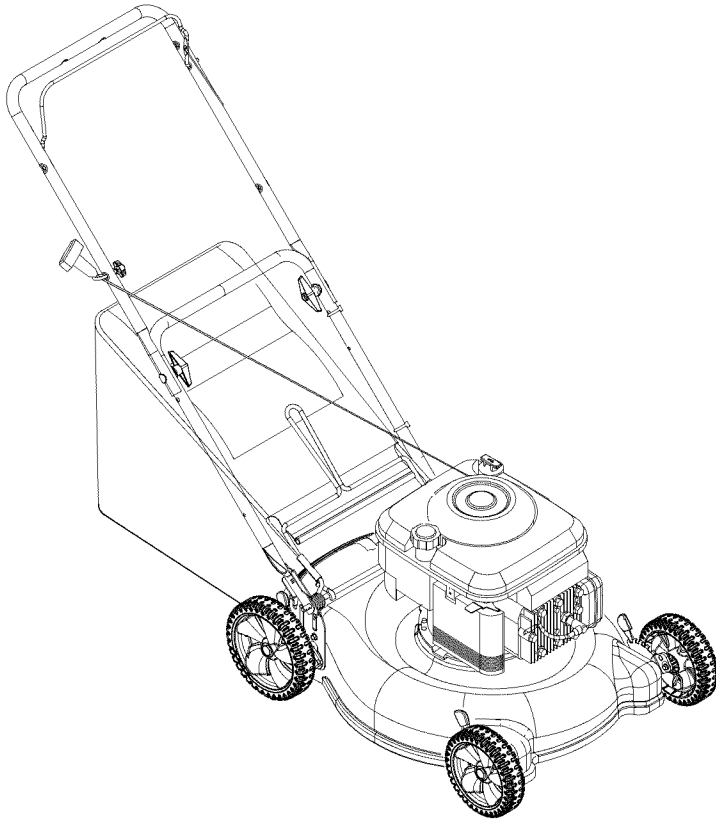


# Operator's Manual



## 21" Rear Discharge Push Mower

Model Series  
410 through 419

**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 44136-0019.

**MTD LLC, P.O. BOX 361131 CLEVELAND, OHIO 44136-0019**

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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. A sample model plate is also given below. You can locate the model plate by standing at the operating position and looking down at the rear of the deck. This information will be necessary to use the manufacturer's web site and/or help from the Customer Support Department or an authorized service dealer.



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

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

## CUSTOMER SUPPORT

**Please do NOT return the unit to the retailer from which it was purchased, without first contacting Customer Support.**

If you have difficulty assembling this product or have any questions regarding the controls, operation or maintenance of this unit, you can seek help from the experts. Choose from the options below:

	<p>Visit <b>mtdproducts.com</b> for many useful suggestions. Click on Customer Support button and you will get the four options reproduced here. Click on the appropriate button and help is immediately available.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px auto; width: 80%;"> <p><b>Find Answers</b> Click here to search our knowledge base. Search by product, keyword, or phrase.</p> <hr/> <p><b>My Stuff</b> Login to check the status of your questions, modify your inquiries, or update your personal profile.</p> <hr/> <p><b>Service Locator</b> Need local assistance? Click here to find authorized service centers in your area.</p> <hr/> <p><b>Manuals Online</b> Need a manual and/or parts list? Download literature from recent model years.</p> </div> <p style="text-align: center; font-style: italic;">The answer you are looking for could be just a mouse click away!</p>	<p style="font-style: italic;">The answer you are looking for could be just a mouse click away!</p>
	<p>If you prefer to reach a Customer Support Representative, please call <b>1(800) 800-7310</b>.</p>	
	<p>The <b>engine</b> manufacturer is responsible for all engine-related issues with regards to performance, power-rating, specifications, warranty and service. Please refer to the engine manufacturer's Owner's/Operator's Manual, packed separately with your unit, for more information.</p>	

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## SECTION 1: IMPORTANT SAFE OPERATION PRACTICES



**WARNING:** 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 this machine. Failure to comply with these instructions may result in personal injury. When you see this symbol—HEED ITS WARNING.

**WARNING:** Engine exhaust, some of its constituents, and certain vehicle components contain or emit chemicals known to State of California to cause cancer and birth defects or other reproductive harm.

**WARNING:** This machine 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 machine is capable of amputating hands and feet and throwing objects. Failure to observe the following safety instructions could result in serious injury or death.

### General Operation

1. 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.
2. This machine is a precision piece of power equipment, not a plaything. Therefore, exercise extreme caution at all times. Your unit has been designed to perform one job: to mow grass. Do not use it for any other purpose.
3. Never allow children under 14 years old to operate this machine. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent. Only responsible individuals who are familiar with these safe operation rules should use this machine.
4. 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 tripped over or picked up and thrown by the blade. Thrown objects can cause serious personal injury. Plan your mowing pattern to avoid discharge of material toward roads, sidewalks, bystanders and the like. Also, avoid discharging material against a wall or obstruction which may cause discharged material to ricochet back toward the operator.
5. To help avoid blade contact or a thrown object injury, stay in the operator zone behind the handles and keep bystanders, helpers, children and pets at least 75 feet from the machine while it is in operation. Stop machine if anyone enters the area.
6. Always wear safety glasses or safety goggles during operation and while performing an adjustment or repair to protect your eyes. Thrown objects which ricochet can cause serious injury to the eyes.
7. 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. Never operate this machine in bare feet, sandals, slippery or light weight (e.g. canvas) shoes.
8. Do not put hands or feet near rotating parts or under the cutting deck. Contact with the blade can amputate hands and feet.
9. A missing or damaged discharge cover can cause blade contact or thrown object injuries.
10. Many injuries occur as a result of the mower being pulled over the foot during a fall caused by slipping or tripping. Do not hold on to the mower if you are falling; release the handle immediately.
11. Never pull the mower back toward you while you are walking. If you must back the mower away from a wall or obstruction, first look down and behind to avoid tripping 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.
5. Do not operate the mower while under the influence of alcohol or drugs.
6. Do not engage the self-propelled mechanism on units so equipped while starting engine.
7. The blade control handle is a safety device. Never attempt to bypass its operation. Doing so makes the safety device inoperative and may result in personal injury through contact with the rotating blade. The blade control handle must operate easily in both directions and automatically return to the disengaged position when released.
8. Never operate the mower in wet grass. Always be sure of your footing. A slip and fall can cause serious personal injury. If you feel you are losing your footing, release the blade control handle immediately and the blade will stop rotating within three seconds.
9. Mow in daylight or good artificial light. Walk, never run.
10. Stop the blade when crossing gravel drives, walkways or roads.
11. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
12. 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.

13. Never operate mower without proper trail shield, discharge cover, grass catcher, blade control handle or other safety protective devices in place and working. Never operate mower with damaged safety devices. Failure to do so, can result in personal injury.
14. Muffler and engine become hot and can cause a burn. Do not touch.
15. Only use parts and accessories made for this machine by the original equipment manufacturer (O.E.M). Failure to do so can result in personal injury.
16. 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

Slopes are a major factor related to slip and fall accidents which can result in severe injury. Operation on slopes requires extra caution. If you feel uneasy on a slope, do not mow it. Before operating this unit on a slope or hilly area, use the slope gauge on page 6 to measure slopes. If the slope is greater than 15 degrees, do not mow it.

### Do:

1. Mow across the face of slopes; never up and down. Exercise extreme caution when changing direction on slopes.
2. Watch for holes, ruts, rocks, hidden objects, or bumps which can cause you to slip or trip. Tall grass can hide obstacles.
3. 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 rotating within 3 seconds.

### Do Not:

1. Do not mow near drop-offs, ditches or embankments, you could lose your footing or balance.
2. Do not mow slopes greater than 15 degrees as shown on the slope gauge.
3. Do not mow on wet grass. Unstable 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. They do not understand the dangers. Never assume that children will remain where you last saw them.

1. Keep children out of the mowing area and under the watchful care of a responsible adult other than the operator.
2. Be alert and turn mower off if a child enters the area.
3. Before and while moving backwards, look behind and down for small children.
4. Use extreme care when approaching blind corners, doorways, shrubs, trees, or other objects that may

obscure your vision of a child or an adult who may run into the lawn mower.

5. Keep children away from hot or running engines. They can suffer burns from a hot muffler.
6. Never allow children under 14 years old to operate a power mower. Children 14 years old and over should read and understand the operation instructions and safety rules in this manual and should be trained and supervised by a parent.

## Service

### Safe Handling Of Gasoline:

1. To avoid personal injury or property damage use extreme care in handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Serious personal injury can occur when gasoline is spilled on yourself or your clothes which can ignite.
2. Wash your skin and change clothes immediately.
3. Use only an approved gasoline container.
4. Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.
5. If possible, remove gas-powered equipment from the truck or trailer and refuel it on the ground. Otherwise refuel such equipment on a trailer with a portable container rather than from a gasoline dispenser nozzle.
6. Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock-open device.
7. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
8. Never fuel machine indoors because flammable vapors will accumulate in the area.
9. Never remove gas cap or add fuel while the engine is hot or running. Allow engine to cool at least two minutes before refueling.
10. Never over fill fuel tank. Fill tank to no more than 1/2 inch below bottom of filler neck to provide space for fuel expansion.
11. Replace gasoline cap and tighten securely.
12. If gasoline is spilled, wipe it off the engine and equipment. Move unit to another area. Wait 5 minutes before starting the engine.
13. Never store the machine or fuel container inside where there is an open flame, spark or pilot light as on a water heater, space heater, furnace or other gas appliances.
14. To reduce fire hazard, keep mower free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and remove any fuel soaked debris.
15. Allow a mower to cool at least 5 minutes before storing.

### General Service:

1. Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.
2. Before cleaning, repairing, or inspecting, make certain the blade and all moving parts have stopped. Disconnect the spark plug wire and ground against the engine to prevent unintended starting.
3. Check the blade and engine mounting bolts at frequent intervals for proper tightness. Also, visually inspect blade

for damage (e.g., bent, cracked, worn) Replace blade with the original equipment manufacture's (O.E.M.) blade only, listed in this manual. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"

4. Mower blades are sharp and can cut. Wrap the blade or wear gloves, and use extra caution when servicing them.
5. Keep all nuts, bolts, and screws tight to be sure the equipment is in safe working condition.
6. Never tamper with safety devices. Check their proper operation regularly.
7. After striking a foreign object, stop the engine, disconnect the spark plug wire and ground against the engine. Thoroughly inspect the mower for any damage. Repair the damage before starting and operating the mower.
8. Never attempt to make a wheel or cutting height adjustment while the engine is running.
9. Grass catcher components, discharge cover, and trail shield are subject to wear and damage which could expose moving parts or allow objects to be thrown. For safety protection, frequently check components and replace immediately with original equipment

manufacturer's (O.E.M.) parts only, listed in this manual. "Use of parts which do not meet the original equipment specifications may lead to improper performance and compromise safety!"

10. Do not change the engine governor setting or overspeed the engine. The governor controls the maximum safe operating speed of the engine.
11. Maintain or replace safety and instruction labels, as necessary.
12. Observe proper disposal laws and regulations. Improper disposal of fluids and materials can harm the environment.

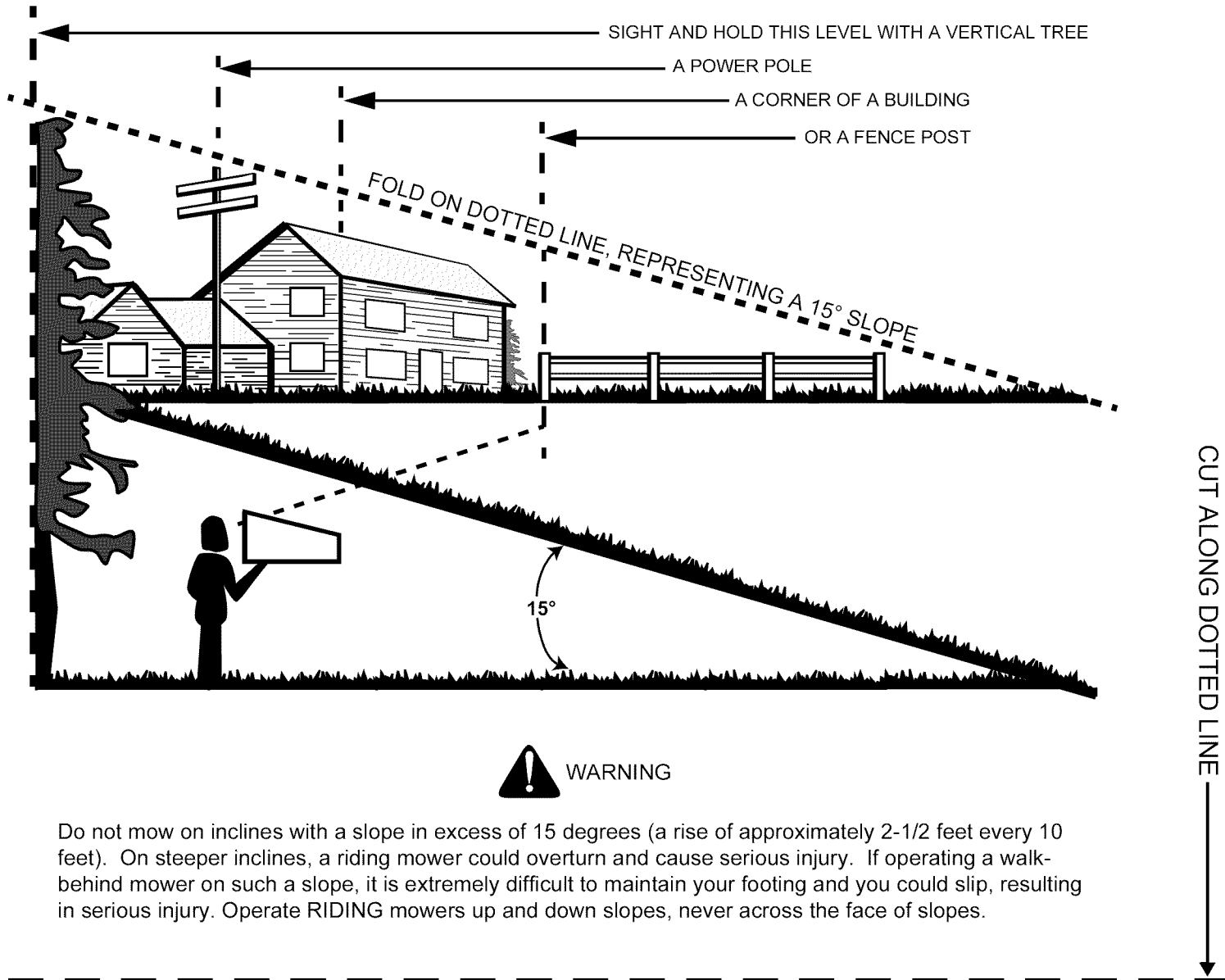
## Your Responsibility

- 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. Some of the safety labels are reproduced below for information purposes. Maintain safety by following these labels.



**SECTION 2: SLOPE GAUGE**

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



 **WARNING**

Do not mow on inclines with a slope in excess of 15 degrees (a rise of approximately 2-1/2 feet every 10 feet). On steeper inclines, 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.

## SECTION 3: ASSEMBLING YOUR LAWN MOWER

### Unpacking

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

### Tools Required

1. Pair of Pliers
2. Funnel

**NOTE:** This operator's manual covers various models of lawn mowers. Follow only those instructions which pertain to your unit.

### Before Assembly

- Disconnect spark plug wire from the spark plug, and ground it against the engine. See Figure 1.
- If engine is equipped with a rubber boot, attach rubber boot to a bolt on the engine to ground.

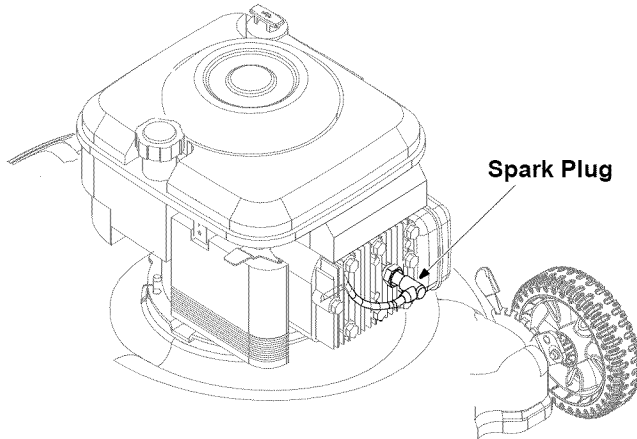
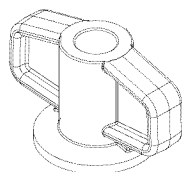


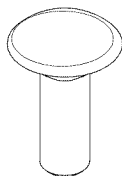
Figure 1

### Hardware Pack

Please identify each piece of the hardware pack as shown in Figure 2 here.



Wing Nut (2)



Carriage Bolt (2)

Figure 2

### Assembling Handle

**NOTE:** Stand behind the mower as if you were going to operate it. Your right hand corresponds to the right side of the mower; your left hand corresponds to the left side of the mower.

- Remove any packing material which may be between the upper and lower handles.
- Pull up and back on the upper handle to raise the handle into the operating position.
- Make certain the lower handle is seated securely into the handle mounting brackets.

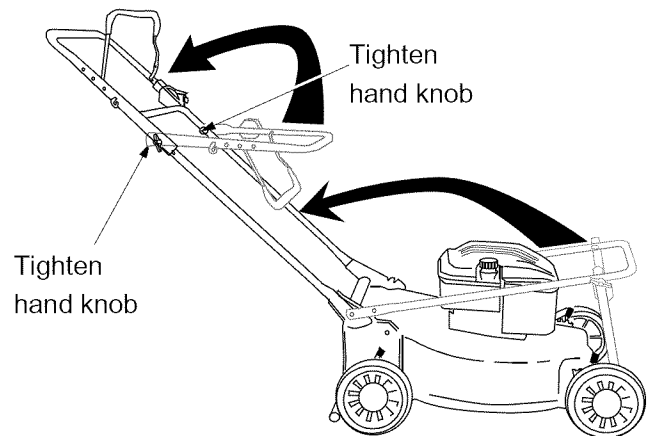


Figure 3

- The upper handle is attached to the lower handle with a handle knob and a carriage bolt on each side. See Figure 3. Tighten these hand knobs. Make sure that each carriage bolt is seated properly on the handle.
- Locate hairpin clip in one hole on the weld pin on each side of the lower handle. See Figure 4.
- Remove hairpin clip from this hole. Using a pair of pliers, insert the hairpin clip into the other hole on the weld pin. See Figure 4. Repeat on other side.

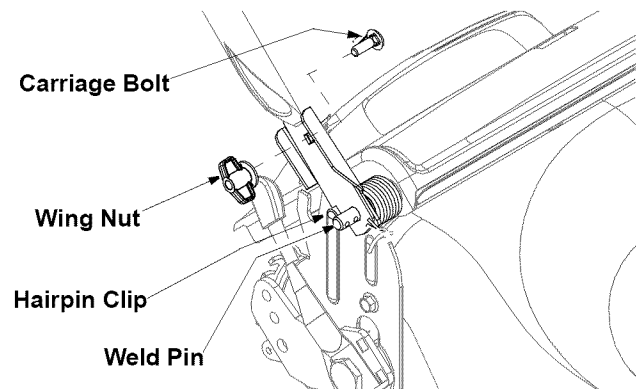


Figure 4

- Refer to the hardware pack in Figure 2. Insert the carriage bolt from the hardware pack into the upper hole on the handle mounting bracket. See Figure 4. Secure with one plastic wing nut, also included in the hardware pack. Repeat on the other side with remaining items from the hardware pack.
- The rope guide is attached to the right side of the upper handle. Loosen the wing nut which secures the rope guide.
- Hold the blade control handle against the upper handle, and pull the starter rope out of the engine. Release the blade control handle. Slip the starter rope into the rope guide. Tighten the wing nut. See Figure 5.
- Tighten **all** nuts and bolts securely.

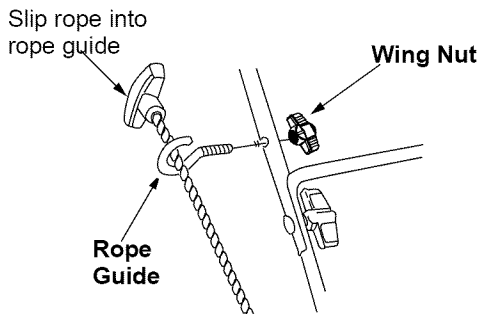


Figure 5

- Insert post on cable ties into holes provided on the lower handle. Pull the cable tie tight and trim the excess. See Figure 6.

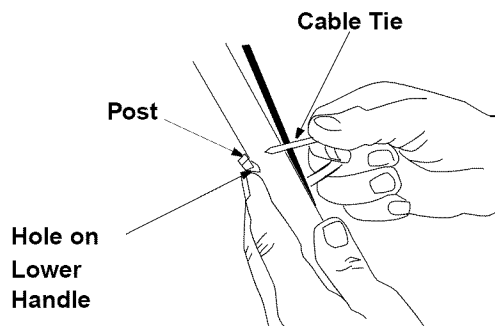


Figure 6

## Attaching Grass Catcher

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

### Assembly

Grass Catcher Assembly consists of the following:

1. Frame Assembly
2. Grass bag

Follow steps below to assemble the grass catcher:

- Place bag over frame so that its black plastic side is at the bottom. See Figure 7.
- Slip the plastic channel of the grass bag over the hooks on the frame. See Figure 7. 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.

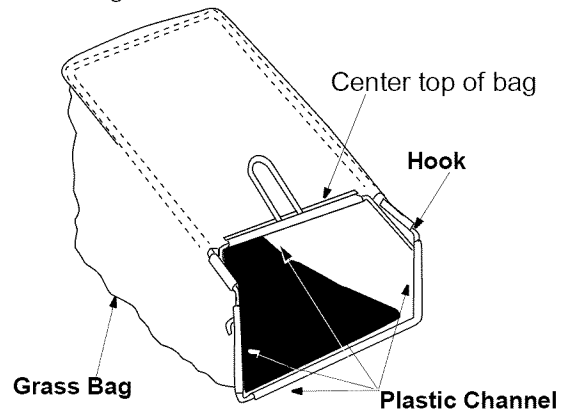


Figure 7

**NOTE:** Once the grass bag has been attached to the frame, the whole assembly is called a Grass Catcher.

### Attaching Grass Catcher To Mower

- Lift the rear discharge door and place the grass catcher on the pivot rod. Let go of discharge door so that it rests on the grass catcher. See Figure 8.

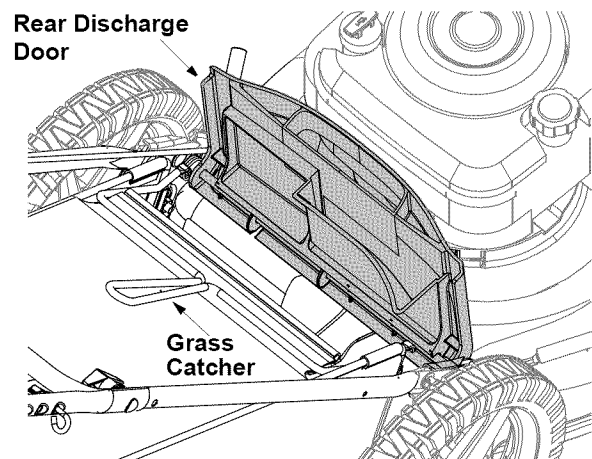


Figure 8

### Removing Grass Catcher From Mower

- Lift the rear discharge door on the mower as shown in Figure 8. Lift grass catcher up and out of the pivot rod. Release rear discharge door.

### Converting To Mulcher

- Lift the rear discharge door on the mower and remove the grass catcher. Release the discharge door to allow it to close the rear opening of the mower. Now it is ready to mulch.



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



## Assembling Chute Deflector (if equipped)

If your mower is equipped with the optional chute deflector, assemble as follows:

- Slide the rod into the upper edge of the chute deflector so the tab on the rod is toward the left side of the chute deflector. When assembled correctly, the rod will extend further to the left side. See Figure 9.

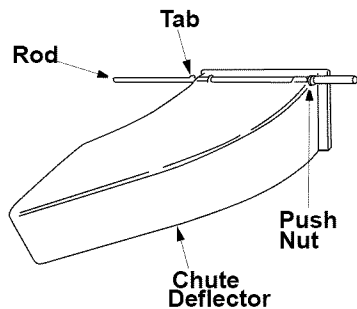


Figure 9

- Slide the push nut onto the right side of the rod to secure.

## Attaching Chute Deflector To Mower

- **To attach chute deflector:** Lift the rear discharge door on the mower. Place the ends of the rod into the slots in the handle bracket assemblies. See Figure 10. Release the rear discharge door.
- **To remove chute deflector:** Lift the rear discharge door on the mower. Lift the chute deflector up and out of the slots in the handle bracket assemblies. Release the rear discharge door. See Figure 10.

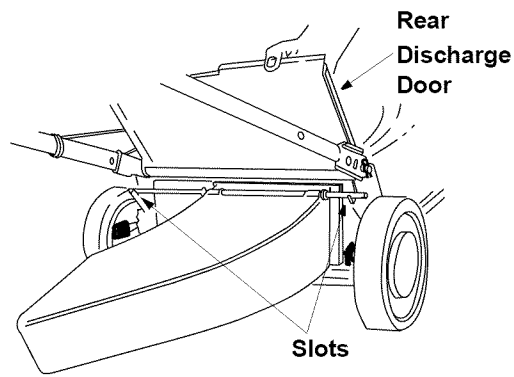


Figure 10

**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.

## SECTION 4: KNOW YOUR LAWN MOWER

Compare the illustrations in Figure 11 with your lawn mower to familiarize yourself with the location of various controls and adjustments.

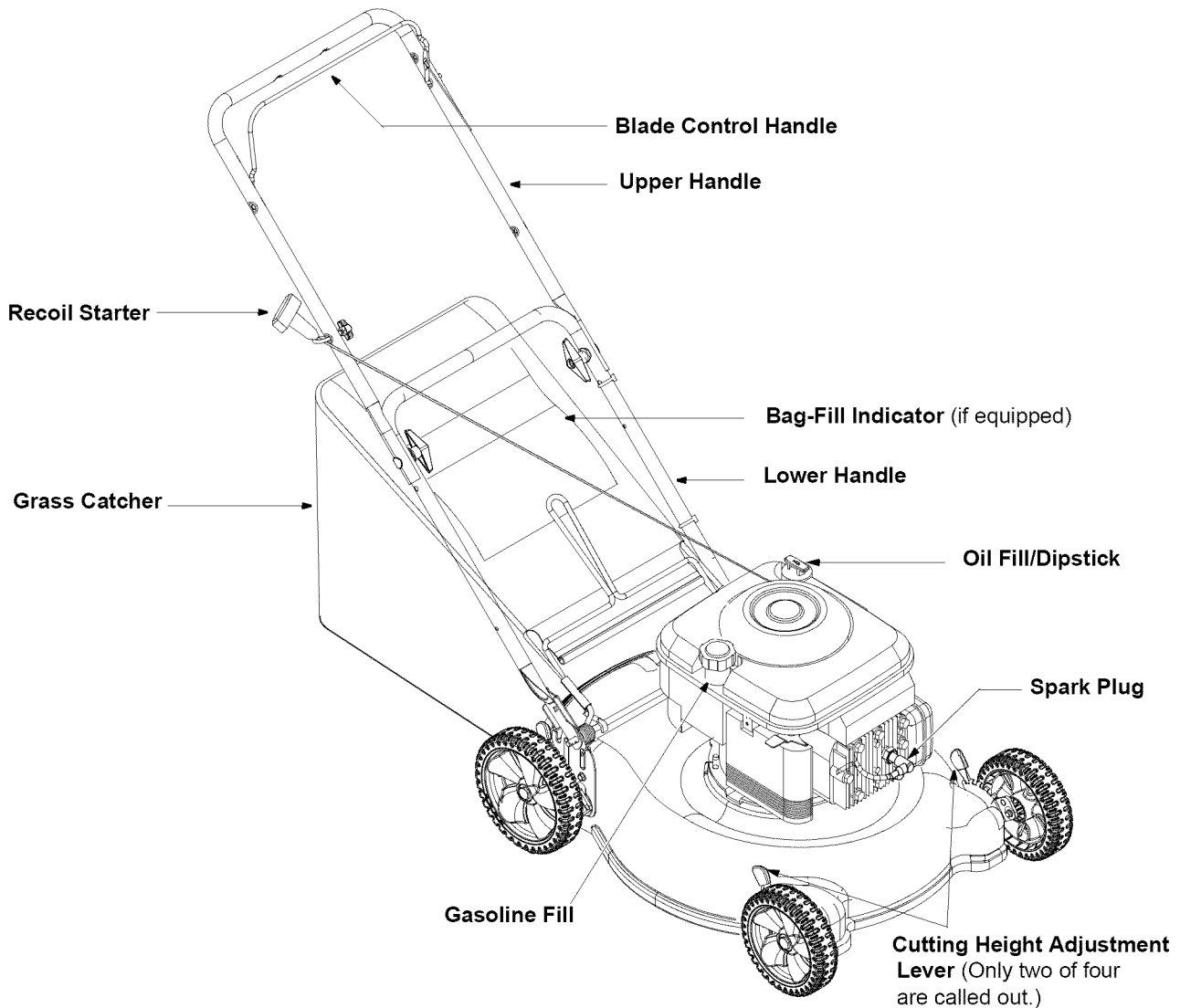


Figure 11

### Blade Control Handle

The blade control handle is located on the upper handle of the mower. Depress it and squeeze against the upper handle to operate the unit. Release the blade control handle to stop the engine and blade.



**WARNING:** The blade control mechanism is a safety device. Never attempt to bypass it.

### Recoil Starter

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

### Cutting Height Adjustment Lever

These levers are located on each wheel and are used to adjust the cutting height. All four levers have to be at the same relative position to ensure uniform cut.

### Bag-Fill Indicator (if equipped)

Some mowers are equipped with a bag-fill indicator on the grass catcher to add convenience to your work. If the grass catcher is **empty**, air flows through the indicator and pushes the “sail” up. If the grass catcher is **full**, air does not flow through it and the “sail” falls. So the position of the “sail” in the bag-fill indicator indicates how full the grass bag is.

## SECTION 5: OPERATING YOUR LAWN MOWER



**WARNING:** Keep hands and feet away from the chute area on cutting deck. Refer to warning label on the unit.

### Gas and Oil Fill-Up

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



**WARNING:** Never fill the fuel tank (i) indoors, (ii) with engine running, or (iii) if engine has not sufficiently cooled down. Wait at least two minutes after stopping the engine.

### Before Starting

- Attach spark plug wire to spark plug. Refer to Figure 1. If the mower is equipped with a rubber boot over the end of the spark plug wire, make sure that metal cap inside the rubber boot is fastened securely over the spark plug's metal tip.

### To Start Engine & Engage Blade

- Firmly push primer three times. See Figure 12A.

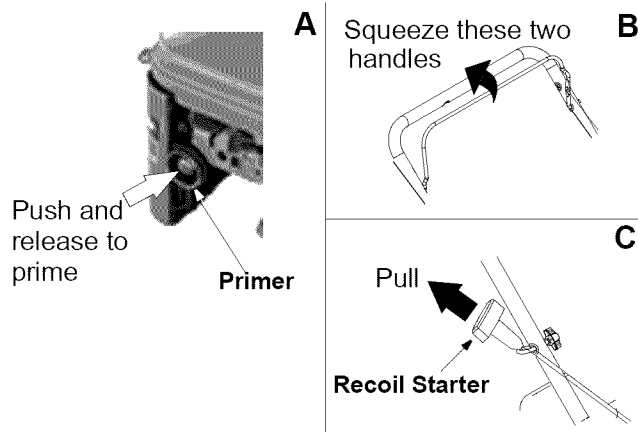


Figure 12

- Standing behind the lawn mower, squeeze the blade control handle against the upper handle. See Figure 12B.
- Holding both handles firmly, pull rope out slowly from the recoil starter. See Figure 12C. Let the rope rewind slowly. Repeat this motion till engine starts.



**WARNING:** The blade will be rotating whenever the engine is running. Keep your hands and feet away from a rotating blade.



**WARNING:** Wait for the blade to stop completely before doing any work on the mower or to remove the grass catcher.

### To Stop Engine & Blade

- Release the blade control handle to stop the engine and the cutting blade.
- Disconnect the spark plug wire and ground it against the engine.

### Using Rotary Mower



**WARNING:** Never operate your mower without either the rear door or the entire grass catcher assembly firmly secured.

- Be sure that lawn is clear of stones, sticks, wire, or other objects before starting to operate the mower.



**WARNING:** If the mower strikes a foreign object and/or vibrates excessively, stop the engine. Remove spark plug wire, thoroughly inspect for any damage, and repair the damage before restarting.

- For best results, do not cut wet grass because it tends to stick to the underside of the mower.
- For a healthy lawn, never cut more than one-third of the total length of the grass at any one cutting.

**NOTE:** For shipping purposes your mower wheels are set in a low cutting height position. Raise the cutting height to a position best suited for your lawn. Refer to page 12 for instructions.

### Using as Mulcher

For mulching grass, remove the grass catcher from the mower. The rear discharge opening should be closed.

- For effective mulching, do not cut wet grass.
- New or thick grass may require a narrower cut. The ground speed should be adjusted to the condition of the lawn.
- Do not mulch if grass is taller than 4 inches. Use the grass catcher to bag clippings instead.

### Bagging Grass Clippings

You can use the grass catcher to collect clippings while you are operating the mower.

- Attach grass catcher following instructions on page 8. Grass clippings will automatically collect in the bag as you run the mower. Operate the mower till the grass bag is full. Refer to page 10 for description of flow indicator, if so equipped.
- Stop engine completely by releasing the blade control handle. Make sure that the unit has come to a complete stop.
- Lift discharge door and pull grass bag up and away from the mower to dispose of the grass clippings.

## SECTION 6: MAKING ADJUSTMENTS



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

### Handle Height

The mower is shipped with the handle at a higher height position. To lower the handle height, proceed as follows.

- Remove the starter rope from the rope guide.
- Remove the hand knobs, washers and carriage bolts securing the upper handle to the lower handle. Lay the upper handle out of the way, being careful not to bend or kink the 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.
- Remove the carriage bolts and wing nuts from the handle brackets. Press out on the legs of the lower handle. Remove lower handle 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 13.
- Place the bottom holes of the handle over the weld pins in the handle mounting bracket. Reattach the hardware.

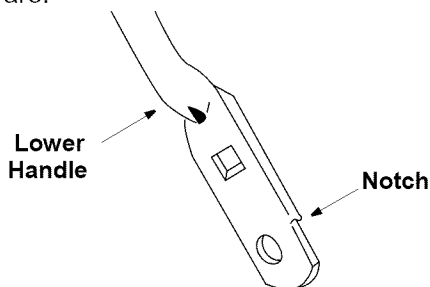


Figure 13

- Reassemble the upper handle.
- Place the hairpin clips in the inner holes of the weld pins and replace the carriage bolts and wing nuts

on the handle brackets. Attach the starter rope as instructed in the Assembly section.

### Cutting Height

An adjusting plate and thumb lever at each wheel position provides cutting height adjustment. Each adjusting plate has nine height positions.

- Simply depress the lever towards wheel and move it to any of the nine positions for the desired cutting height. See Figure 14. All four levers on the four wheels must be placed in the same relative position for uniform cutting height

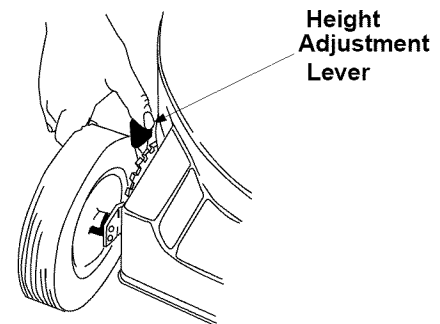


Figure 14

### Carburetor

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.



**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.

## SECTION 7: MAINTAINING YOUR LAWN MOWER



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

### Maintaining the Blade

- Periodically inspect the blade adapter for cracks, especially if the mower strikes a foreign object. Replace blade if crack or any damage is found.



**WARNING:** 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 support which hold the blade and adapter to the engine crankshaft. See Figure 14. Remove the blade and adapter from the crankshaft.

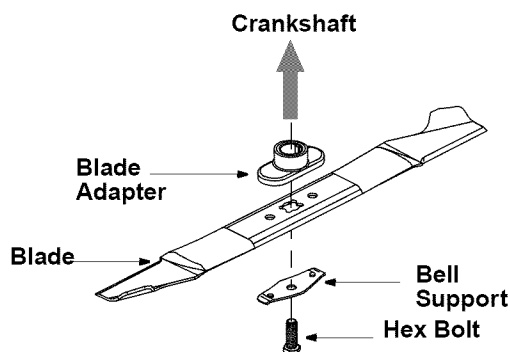


Figure 15

- When sharpening the blade, follow the original angle of grind. Grind each cutting edge equally to keep the blade balanced. An unbalanced blade will cause excessive vibration when rotating at high speed. This may damage the mower and/or cause personal injury.
- The blade can be tested by balancing it on a round shaft screwdriver. Always remove blade from the adapter for testing balance. 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 (or engine oil). Also lubricate the bolt holes, bolts and inner surface of the nuts.
- Install the blade adapter on the crankshaft with the "star" away from the engine. Place the blade with the side marked bottom (or with part number) facing away from the adapter. Align the blade bell support over the blade with tabs in the holes of the blade and insert the hex bolt. Tighten the hex bolt to the torque listed here.

### Blade Mounting Torque:

Center Bolt: 450 in. lbs. min., 600 in. lbs. max.

**IMPORTANT:** To ensure safe operation of your unit, periodically check all nuts and bolts and tighten if necessary.

### 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. Use of water will shorten life of the mower and reduce its serviceability.

- Tilt the mower and scrape underside of the deck after each use to remove grass clippings, leaves or dirt. If this debris is allowed to accumulate, the deck may start to rust.

### Replacing Rear Flap

- To remove rear flap, cut off the flat end of the wire rod which secures it to the deck. See Figure 16.
- Attach the new flap and new rod to deck, bending the ends of the new rod over to secure to deck.

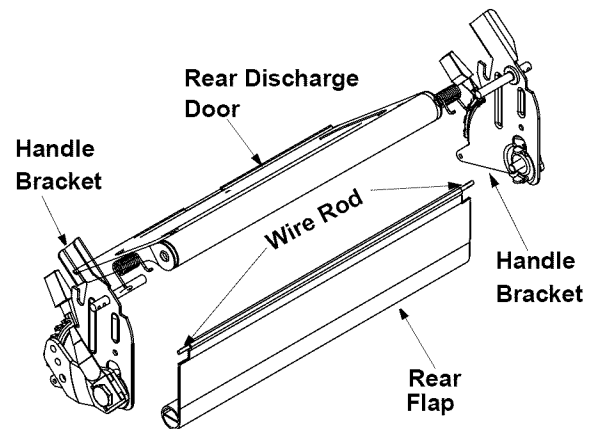


Figure 16

### Engine

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

- Maintain engine oil level as instructed in engine manual.
- 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 engine manual.

- Clean spark plug and reset the gap 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 engine regularly with a cloth or brush. Keep the cooling system (blower housing area) clean to permit proper air circulation. Remove all grass, dirt and combustible debris from muffler area.

## Lubrication

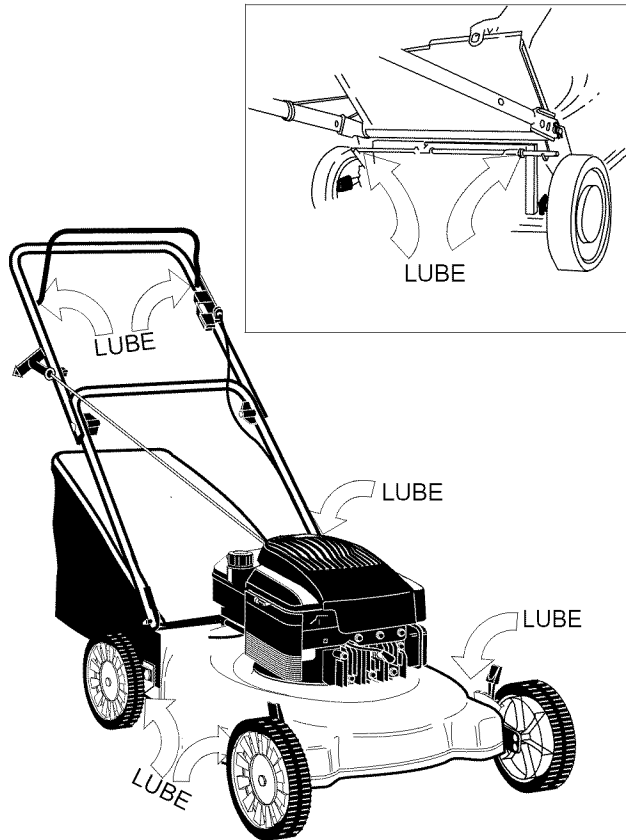


Figure 17: Lubrication Chart

### Blade Control

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

### Rear Discharge Door

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

### Wheels

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.

### Engine

Follow engine manual for lubrication instructions.

## Off-Season Storage

If the lawn mower is not going to be used for 30 days or longer, prepare the unit for storage. Follow the steps below for proper storage of the mower.

- 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.

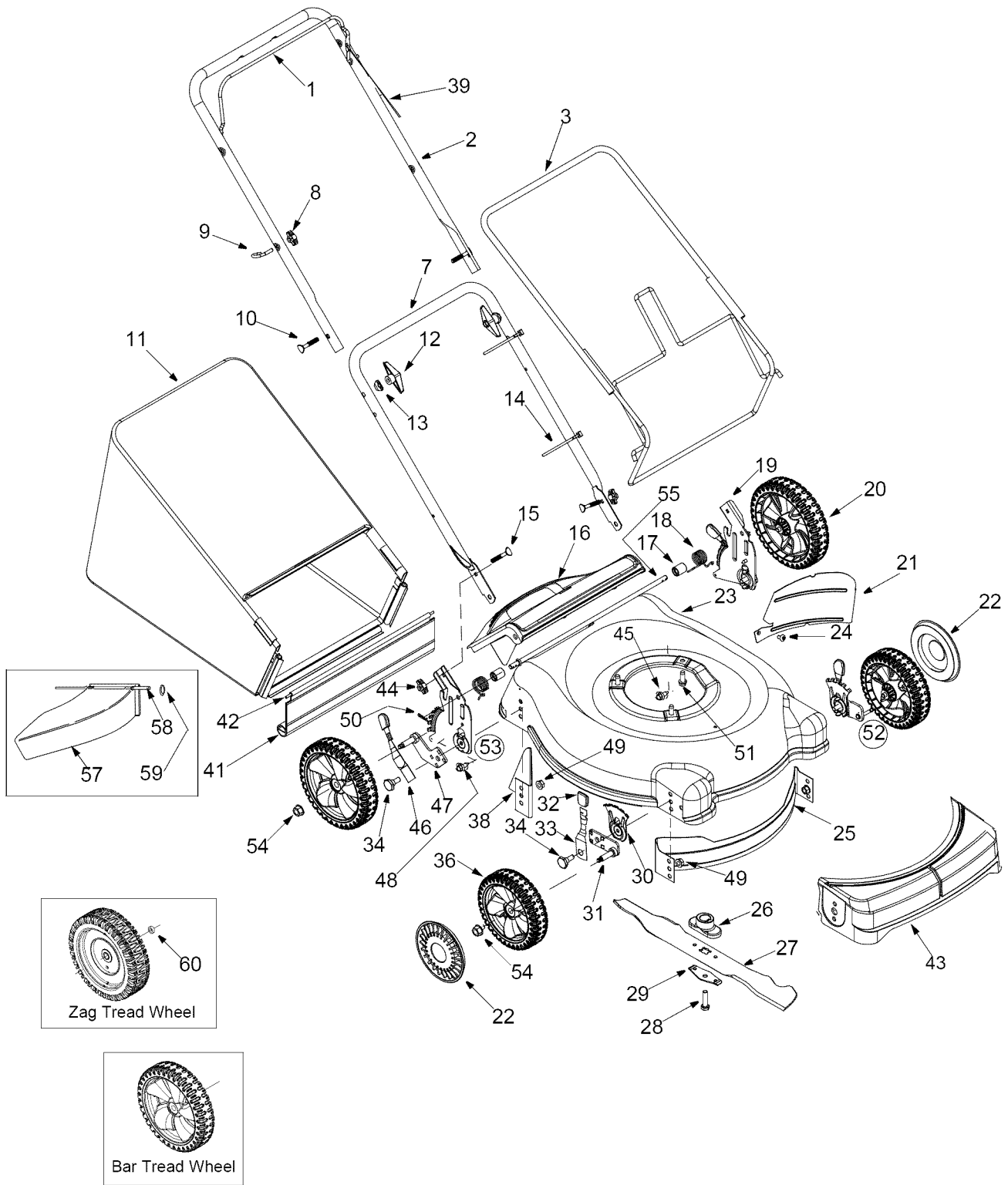
**NOTE:** When storing any type of power equipment in an unventilated or metal storage shed, care should be taken to rust-proof the equipment. Using a light oil or silicone, coat the equipment, especially cables and all moving parts.

## SECTION 8: 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 aircleaner.</li> <li>4. Primer button not depressed.</li> <li>5. Throttle control lever (if so equipped) not in correct starting 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. Fill tank with clean fresh gasoline.</li> <li>7. Clean fuel line.</li> <li>8. Clean, adjust gap or replace.</li> <li>9. Refer to the engine manual.</li> </ol>
Engine runs erratic	<ol style="list-style-type: none"> <li>1. Spark plug wire loose.</li> <li>2. Blocked fuel line, if equipped, or stale fuel.</li> <li>3. Vent in gas cap plugged.</li> <li>4. Water or dirt in fuel system.</li> <li>5. Dirty air cleaner.</li> <li>6. Carburetor out of adjustment.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect and tighten spark plug wire.</li> <li>2. Clean fuel line; fill tank with clean, fresh gasoline.</li> <li>3. Clear vent or threads or replace.</li> <li>4. Drain fuel tank. Refill with fresh fuel.</li> <li>5. Refer to the engine manual.</li> <li>6. 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 aircleaner.</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>
Occasionally skips at high speed	<ol style="list-style-type: none"> <li>1. Spark plug gap too close.</li> <li>2. Carburetor idle mixture 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 packed with your unit.</li> </ol>
Idles poorly	<ol style="list-style-type: none"> <li>1. Spark plug fouled, faulty or gap too wide.</li> <li>2. Carburetor improperly adjusted.</li> <li>3. Dirty air cleaner.</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> <li>3. 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. Wet grass.</li> <li>2. Excessively high grass.</li> </ol>	<ol style="list-style-type: none"> <li>1. Do not mow when grass is wet; wait until later to cut.</li> <li>2. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting swath (1/2 width).</li> </ol>
Uneven cut	<ol style="list-style-type: none"> <li>1. Wheels not positioned correctly.</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 those listed above, contact an authorized service dealer or call 1(800)800-7310.

# SECTION 9: PARTS LIST FOR MODEL SERIES 410 THROUGH 419





## Model Series 410 Through 419

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1.	747-1161A	Blade Control Handle	33.	732-0404	Spring Lever Assembly
2.	749-1092A	Upper Handle	34.	738-0507B	Shoulder Screw
3.	747-04080	Grass Catcher Frame	36.	‡	Front Wheel
7.	749-0928A	Lower Handle	38.	782-5004A	Rear Baffle RH
8.	720-0279	Wing Nut	39.	746-0957	Control Cable 37.25"
9.	710-1205	Rope Guide		746-1130	Control Cable 40"
10.	710-1174	Carriage Bolt 5/16-18 x 2		746-0554	Control Cable 40.5"
11.	664-04005	Grass Bag Assembly		746-1137	Control Cable 53"
	764-0650	Grass Bag Assembly w/ Bag-Fill Ind. †	40.	720-0295	Foam Grip † (not shown)
12.	720-0284	Hand Knob	41.	731-1236	Trailshield
13.	736-0451	Saddle Washer	42.	732-0700	Trailshield Wire
14.	726-0240	Cable Tie	43.	731-1506	Deck: Front Cover †
15.	710-0703	Carriage Bolt 1/4-20	44.	712-0397	Wing Nut 1/4-20
16.	731-04134	Rear Discharge Door	45.	710-0654A	Hex L-Washer Hd. Screw 3/8-16 x 1.0
17.	750-04162	Spacer	46.	687-02071	Lever Assembly: Rear Height Adj. RH
18.	732-04089	Torsion Spring LH		687-02070	Lever Assembly: Rear Height Adj. LH
	732-04090	Torsion Spring RH	47.	787-01132	Pivot Bar: 9 Position RH
19.	787-01144	Handle Bracket RH		787-01131	Pivot Bar: 9 Position LH
	787-01143	Handle Bracket LH	48.	710-1652	AB Screw
20.	‡	Rear Wheel	49.	712-0431	Flange Lock Nut 3/8-16
21.	782-5003	Rear Baffle LH	50.	714-0104	Hairpin Clip
22.	731-0981A	Hubcap †	51.	710-0654A	TT Sems Screw 3/8-16 x 1.0
23.	787-01103	Cutting Deck: Rear Discharge	52.	687-02074	Ht. Adj. Assy. Front RH (8" Wheel)
24.	710-1017	AB Screw 1/4-14 x .625"		687-02100	Ht. Adj. Assy. Front RH (7" Wheel)
25.	782-5002A	Front Baffle		687-02075	Ht. Adj. Assy. Front LH (8" Wheel)
26.	748-0376C	Blade Adapter		687-02099	Ht. Adj. Assy. Front LH (7" Wheel)
27.	742-0741	Mulching Blade	53.	687-02069	Handle Bracket Assy. Rear LH
28.	710-1044	Hex Bolt 3/8-24 x 1.5		687-02068	Handle Bracket Assy. Rear RH
29.	736-0524A	Blade Bell Support	54.	712-0431	Flange Nut 3/8-16 Thd.
30.	15261A	Front Adjustment Plate	55.	747-04035	Pivot Rod: Rear Door
31.	687-02077	Pivot Arm Assembly RH (8" wheel)	56.	736-0504	Wave Washer †
	687-02077	Pivot Arm Assembly LH (7" wheel)	57.	731-1405	Chute Deflector †
	687-02076	Pivot Arm Assembly LH (8" wheel)	58.	711-0996	Rod †
	687-02076	Pivot Arm Assembly RH (7" wheel)	59.	726-0201	Push Speed Nut †
32.	720-0426	Knob: Adjustment Lever	60.	750-0535	Spacer †

† If equipped

‡ Refer to Wheel Chart

### ‡ Wheel Chart

Type	Part No.	Tread
Wheels w/o bearing	734-1781, Slot Hub	Bar
	734-1987, 8 x 1.8	Bar
	734-1988, 7 x 1.8	Bar
	634-0020, Disc Hub	Bar
Wheels w/ BB	734-2004A, Disc Hub	Zag
	734-2005A	Zag

## YOUR NOTES

Date	Comments

## YOUR NOTES

Date	Comments

# MANUFACTURER'S LIMITED WARRANTY FOR:



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

"MTD" 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 materials 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 part, accessory or attachment not approved by MTD for use with the product(s) covered by this manual will void your warranty as to any resulting damage.

Normal wear parts or components thereof are subject to separate terms as follows: All normal wear parts or component failures will be covered on the product for a period of 30 days regardless of cause. After 30 days, but within the two year period, normal wear part failures will be covered ONLY IF caused by defects in materials or workmanship of OTHER component parts. Normal wear parts and components include, but are not limited to: batteries, belts, blades, blade adapters, grass bags, rider deck wheels, seats, snow thrower skid shoes, shave plates, auger spiral rubber, and tires.

**HOW TO OBTAIN SERVICE:** Warranty service is available, WITH PROOF OF PURCHASE, through your local authorized service dealer. To locate the dealer in your area, check your Yellow Pages, or contact MTD LLC at P.O. Box 361131, Cleveland, Ohio 44136-0019, or call 1-800-800-7310 or 1-330-220-4683 or log on to our Web site at [www.mtdproducts.com](http://www.mtdproducts.com).

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

- a. The engine or component parts thereof. These items may carry a separate manufacturer's warranty. Refer to applicable manufacturer's warranty for terms and conditions.
- b. Log splitter pumps, valves, and cylinders have a separate one year warranty.
- c. Routine maintenance items such as lubricants, filters, blade sharpening, tune-ups, brake adjustments, clutch adjustments, deck adjustments, and normal deterioration of the exterior finish due to use or exposure.

- d. MTD does not extend any warranty for products sold or exported outside of the United States, its possessions and territories, except those sold through MTD's authorized channels of export distribution.
- e. Replacement parts that are not genuine MTD parts.
- f. Service completed by someone other than an authorized service dealer.
- g. Transportation charges and service calls.

**No implied warranty, including any implied warranty of merchantability of 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, 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 MTD. During the period of the warranty, the exclusive remedy is repair or replacement of the product as set forth above.**

**The provisions as set forth in this warranty provide the sole and exclusive remedy arising from the sale. MTD shall not be liable for incidental or consequential loss or damage including, without limitation, expenses incurred for substitute or replacement lawn care services or for rental expenses to temporarily replace a warranted product.**

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations 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 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 misuse or inability to use the product.

This limited warranty shall not extend to anyone other than the original purchaser or to 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.

**IMPORTANT:** Owner must present Original Proof of Purchase to obtain warranty coverage.