

OPERATOR'S MANUAL

21-inch Mower

WARNING

**READ AND FOLLOW ALL SAFETY RULES AND INSTRUCTIONS IN THIS MANUAL
BEFORE ATTEMPTING TO OPERATE THIS MACHINE.
FAILURE TO COMPLY WITH THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY.**

MTD PRODUCTS AUSTRALIA PTY LTD,P.O. BOX 4314 DANDENONG SOUTH VICTORIA 3164

Thank You

Thank you for purchasing a Lawn Mower manufactured by MTD products. It was carefully engineered to provide excellent performance when properly operated and maintained.

Please read this entire manual prior to operating the equipment. It instructs you how to safely and easily set up, operate and maintain your machine. Please be sure that you, and any other persons who will operate the machine, carefully follow the recommended safety practices at all times. Failure to do so could result in personal injury or property damage.

All information in this manual is relative to the most recent product information available at the time of printing. Review this manual frequently to familiarize yourself with the machine, its features and operation. Please be aware that this Operator's Manual may cover a range of product specifications for various models. Characteristics and features discussed and/or illustrated in this manual may not be applicable to all models. We reserve

the right to change product specifications, designs and equipment without notice and without incurring obligation.

If you have any problems or questions concerning the machine, phone your local authorized MTD service dealer or contact us directly. MTD's Customer Support telephone numbers, website address and mailing address can be found on this page. We want to ensure your complete satisfaction at all times.

Throughout this manual, all references to *right* and *left* side of the machine are observed from the operating position

The engine 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 machine, for more information.

Table of Contents

Safe Operation Practices	3	Maintenance	13
Assembly & Set-Up	9	Service	14
Controls & Features.....	11	Troubleshooting.....	15
Operation.....	12	Warranty.....	16

Record Product Information

Before setting up and operating your new equipment, please locate the model plate on the equipment and record the information in the provided area to the right. You can locate the model plate by standing at the operator's position and looking down at the rear of the deck. This information will be necessary, should you seek technical support via our web site, Customer Support Department, or with a local authorized service dealer.

MODEL NUMBER

--	--	--	--	--	--	--	--	--	--	--

SERIAL NUMBER

--	--	--	--	--	--	--	--	--	--	--

Customer Support

Please do NOT return the machine to a mass retailer without first contacting the Customer Support Department.

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

- ◇ Visit us on the web at www.rover.com.au
- ◇ Call Customer Service : 1300 951 594
- ◇ Email Address: customerserviceaus@mtdproducts.com
- ◇ Write to us at : P.O. Box 4314 Dandenong South Victoria 3164 Australia



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!**



DANGER: This machine was built to be operated according to the safe operation practices 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 fingers, hands, toes 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. Keep this manual in a safe place for future and regular reference and for ordering replacement parts.
2. Be completely familiar with the controls and the proper use of this machine before operating it.
3. This machine is a precision piece of power equipment, not a plaything. Therefore, exercise extreme caution at all times. This machine has been designed to perform one job: to mow grass. Do not use it for any other purpose.
4. Never allow children under 14 years of age to operate this machine. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the machine and should be trained and supervised by an adult.
5. Only responsible individuals who are familiar with these rules of safe operation should be allowed to use this machine.
6. 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.
7. 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.
8. To help avoid blade contact or a thrown object injury, stay in operator zone behind handles and keep children, bystanders, helpers and pets at least 75 feet (22metres) from mower while it is in operation. Stop machine if anyone enters area.
9. 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.
10. 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.
11. Do not put hands or feet near rotating parts or under the cutting deck. Contact with blade can amputate fingers, hands, toes and feet.
12. A missing or damaged discharge cover can cause blade contact or thrown object injuries.
13. 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.
14. 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 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.
15. Do not operate the mower while under the influence of alcohol or drugs.
16. Do not engage the self-propelled mechanism on machines so equipped while starting engine.

17. The blade control 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 must operate easily in both directions and automatically return to the disengaged position when released.
18. 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 five seconds.
19. Mow only in daylight or good artificial light. Walk, never run.
20. Stop the blade when crossing gravel drives, walks or roads.
21. If the equipment should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
22. 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 blade control is released. Never place any part of the body in the blade area until you are sure the blade has stopped rotating.
23. Never operate mower without proper trail shield, discharge cover, grass catcher, blade control 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.
24. Muffler and engine become hot and can cause a burn. Do not touch.
25. Never attempt to make a wheel or cutting height adjustment while the engine is running.
26. Only use parts and accessories made for this machine by the manufacturer. Failure to do so can result in personal injury.
27. When starting engine, pull cord slowly until resistance is felt, then pull rapidly. Rapid retraction of starter cord (kickback) will pull hand and arm toward engine faster than you can let go. Broken bones, fractures, bruises or sprains could result.
28. If situations occur which are not covered in this manual, use care and good judgement. Contact Customer Support for assistance or the name of the nearest service dealer.
29. Do not smoke while fuelling engine.
30. Start the engine carefully with feet well away from the blades.
31. Stop the engine whenever you leave the mower, even for a moment.
32. Store fuel in a cool place in a container specifically designed for the purpose. In general, plastics containers are unsuitable.
32. Never cut grass while walking backwards.

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. For your safety, use the slope gauge included as part of this manual to measure slopes before operating this machine on a sloped or hilly area. 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 five (5) 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 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 who may run into the 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 of age to operate this machine. Children 14 and over should read and understand the instructions and safe operation practices in this manual and on the machine and be trained and supervised by an adult.

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. Wash your skin and change clothes immediately.
2. Use only an approved gasoline container.
3. 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.
4. Remove gas-powered equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment on a trailer with a portable container, rather than from a gasoline dispenser nozzle.
5. 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-on device.
6. Extinguish all cigarettes, cigars, pipes and other sources of ignition.
7. Never fuel machine indoors because flammable vapors will accumulate in the area.
8. Never remove gas cap or add fuel while engine is hot or running. Allow engine to cool at least two minutes before refueling.
9. Never over fill fuel tank. Fill tank to no more than 1 inch below bottom of filler neck to provide for fuel expansion.
10. Replace gasoline cap and tighten securely.
11. If gasoline is spilled, wipe it off the engine and equipment. Move machine to another area. Wait 5 minutes before starting engine.
12. Never store the machine or fuel container near an open flame, spark or pilot light as on a water heater, space heater, furnace, clothes dryer or other gas appliances.
13. To reduce fire hazard, keep machine free of grass, leaves, or other debris build-up. Clean up oil or fuel spillage and remove any fuel soaked debris.
14. Allow machine to cool at least 5 minutes before storing.
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's governor setting or over-speed the engine. The governor controls the maximum safe operating speed of the engine.
11. Check fuel line, tank, cap, and fittings frequently for cracks or leaks. Replace if necessary.
12. Do not crank engine with spark plug removed.
13. Maintain or replace safety and instruction labels, as necessary.
14. Observe proper disposal laws and regulations. Improper disposal of fluids and materials can harm the environment.

Do not modify engine










To avoid serious injury or death, do not modify engine in any way. Tampering with the governor setting can lead to a runaway engine and cause it to operate at unsafe speeds. Never tamper with factory setting of engine governor.

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.

Safety Symbols

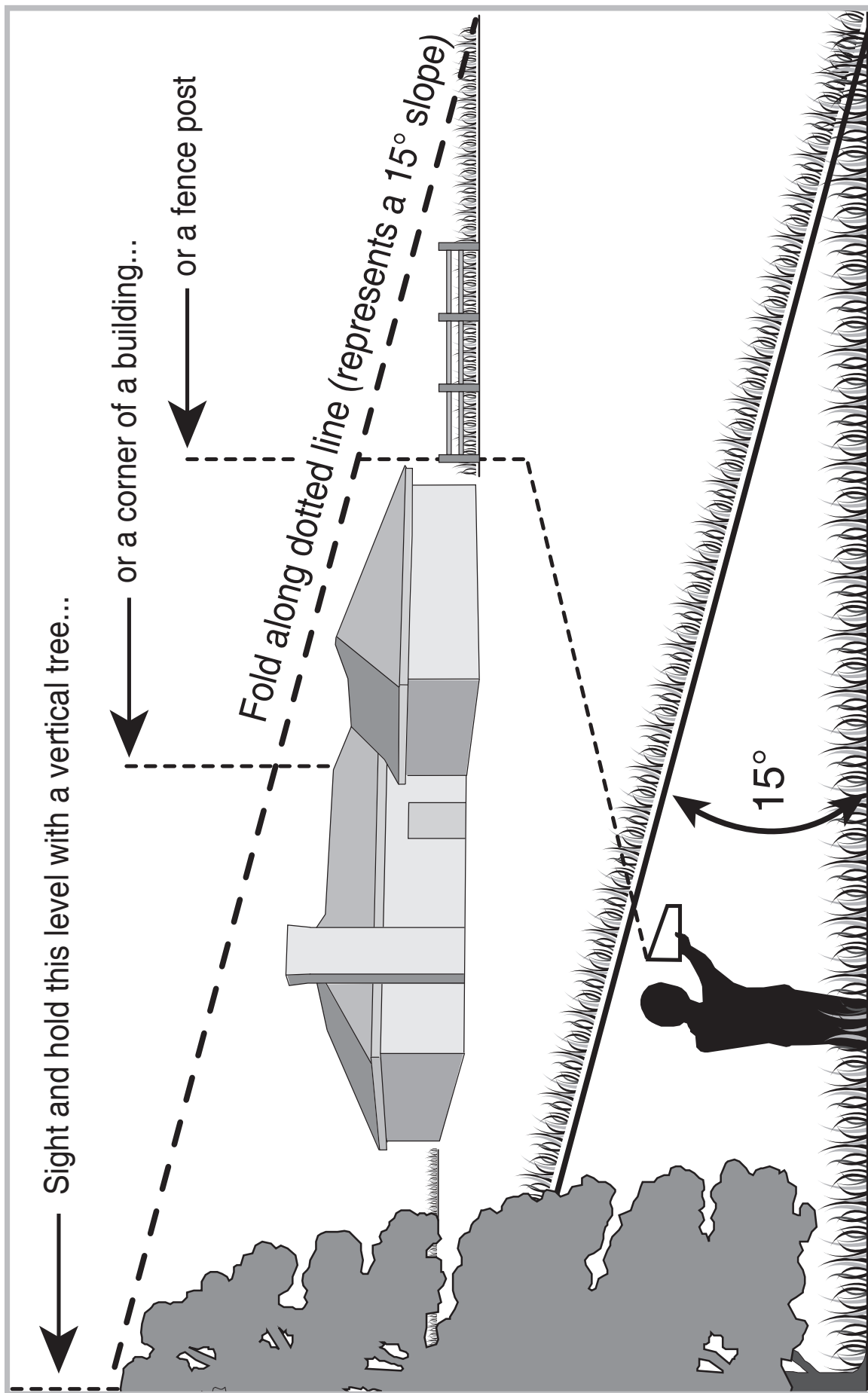
This page depicts and describes safety symbols that may appear on this product. Read, understand, and follow all instructions on the machine before attempting to assemble and operate.

Symbol	Description
	READ THE OPERATOR'S MANUAL(S) Read, understand, and follow all instructions in the manual(s) before attempting to assemble and operate
	DANGER — ROTATING BLADES To reduce the risk of injury, keep hands and feet away. Do not operate unless discharge cover or grass catcher is in its proper place. If damaged, replace immediately.
	DANGER — BYSTANDERS Do not mow when children or others are around.
	DANGER — HAND/ FOOT CUT Keep hands and feet away from rotating parts.
	DANGER — THROWN DEBRIS Remove objects that can be thrown by the blade in any direction. Wear safety glasses.
	DANGER — SLOPES Use extra caution on slopes. Do not mow slopes greater than 15 .
	WARNING—GASOLINE IS FLAMMABLE Allow the engine to cool at least two minutes before refueling.
	WARNING— CARBON MONOXIDE Never run an engine indoors or in a poorly ventilated area. Engine exhaust contains carbon monoxide, an odorless and deadly gas.
	WARNING— HOT SURFACE Engine parts, especially the muffler, become extremely hot during operation. Allow engine and muffler to cool before touching.



WARNING: 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.

SAVE THESE INSTRUCTIONS!



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



WARNING: Do not operate your lawn mower on such slopes. 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. Operate riding mowers up and down slopes, never across the face of slopes. Operate walk-behind mowers across the face of slopes, never up and down slopes.

Contents of Carton

- Lawn Mower (1)
- Lawn Mower Operator's Manual (1)
- Grass Catcher (1)
- Engine Operator's Manual (1)
- Side Discharge Chute (1)
- Parts/Warranty Document (1)

Assembly

NOTE: This unit is shipped without gasoline or oil in the engine. Fill up with gasoline and oil as instructed in the accompanying engine manual **BEFORE** operating your mower.

Handle Assembly

1. Pivot the upper handle into the operating position. Align hole in upper handles with hole in lower handle. See Figure 3-1.
2. Tighten bolts (a) with nuts (b) to attach lower handles with upper handle. See Figure 3-1.

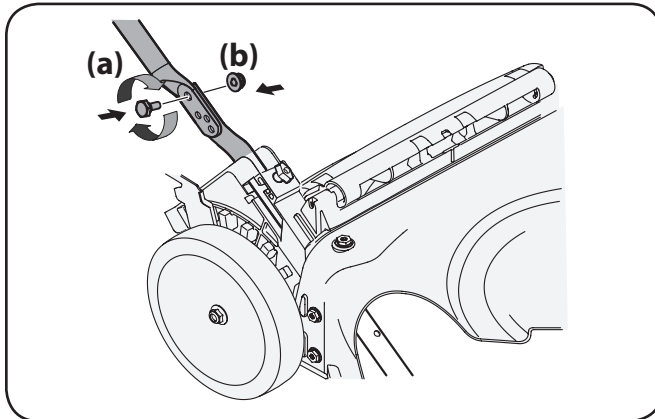


Figure 3-1

3. Move the upper handle into one of three positions by pivoting it forward or rearward. Secure the upper handle to the lower handles using the wing knobs (c) and carriage bolts (d). See Figure 3-2.

NOTE: Make sure to use the corresponding hole on the left side as on the right side of the upper handle.

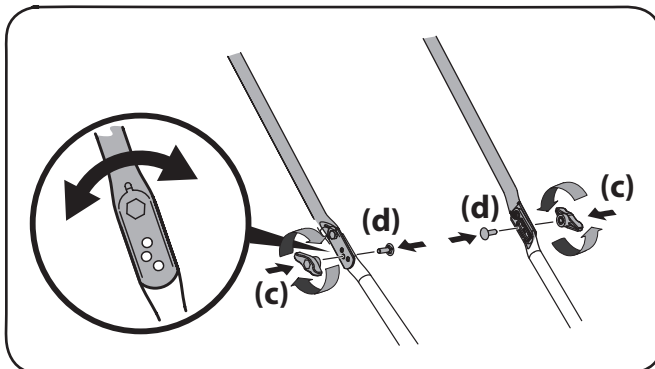


Figure 3-2

4. Remove the T-bolts (e) from the handle brackets as shown in Figure 3-3.

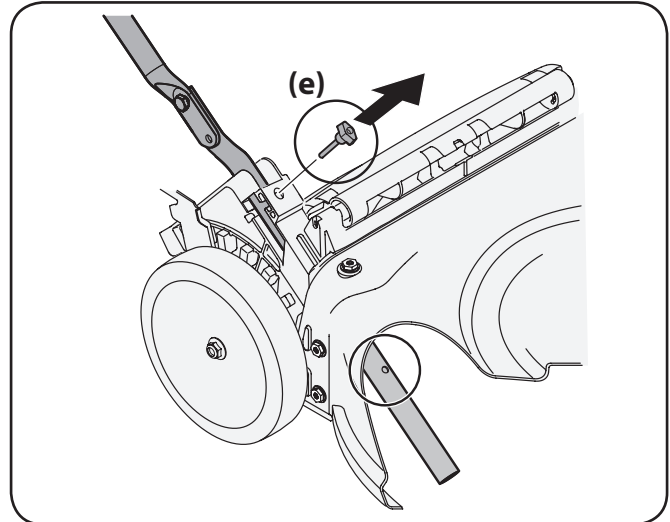


Figure 3-3

5. Follow the steps below to complete handle assembly:
 - a. Pull upward on the handle until holes in lower handle (shown in Figure 3-3 deck cutaway) line up with holes in handle bracket. See Figure 3-4.

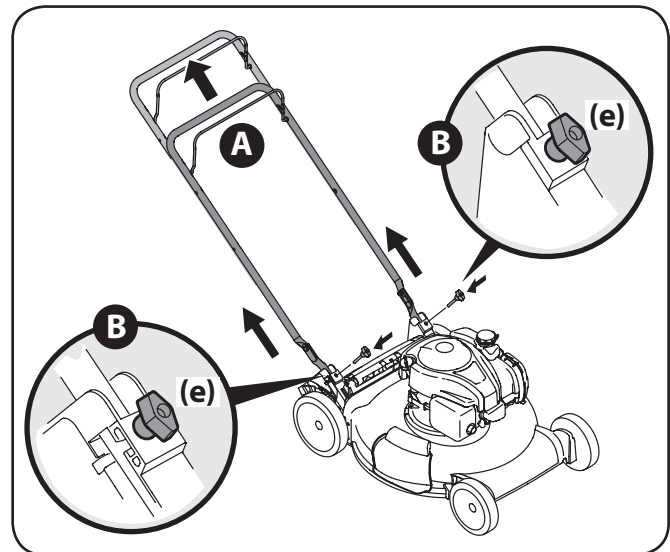


Figure 3-4

NOTE: When pulling upward on handle, make sure to not pull handle all the way out.

- b. Insert the T-bolts (e) removed in Step 4 through the handle brackets and lower handle and tighten securely to secure the handle in place. See Figure 3-4.

- Follow the steps below to attach starter rope to the right side of the upper handle:

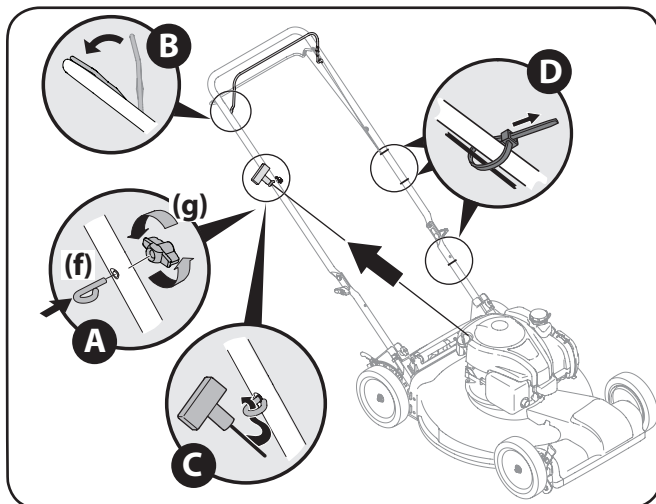


Figure 3-5

- Use the lock nut (g) to tighten the eye bolt (f) to the upper handle. DO NOT overtighten. See Figure 3-5.
- Hold blade control against upper handle.
- Slowly pull starter rope handle from engine and slip starter rope into the eye bolt. Tighten the locknut(g).
- Use cable tie(s) to secure cable(s) to the handle.

Grass Catcher

- Follow steps below to assemble the grass catcher. Make certain bag is turned right side out before assembling (warning label will be on the outside). See Figure 3-6.

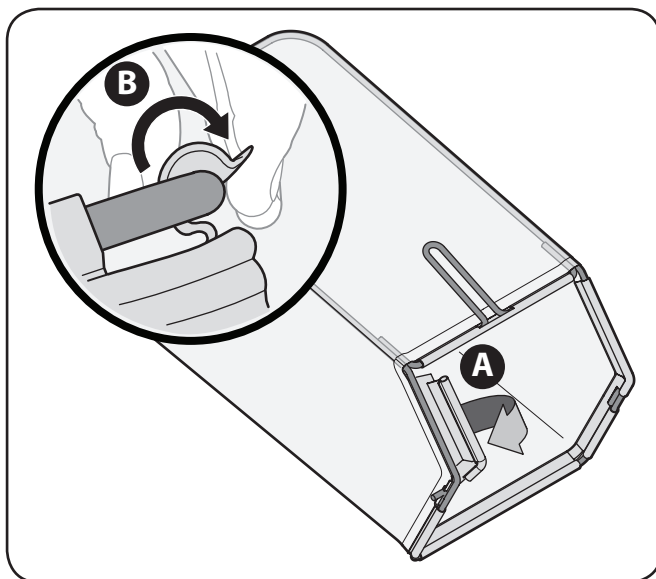


Figure 3-6

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

- Follow steps below to attach grass catcher. See Figure 3-7.

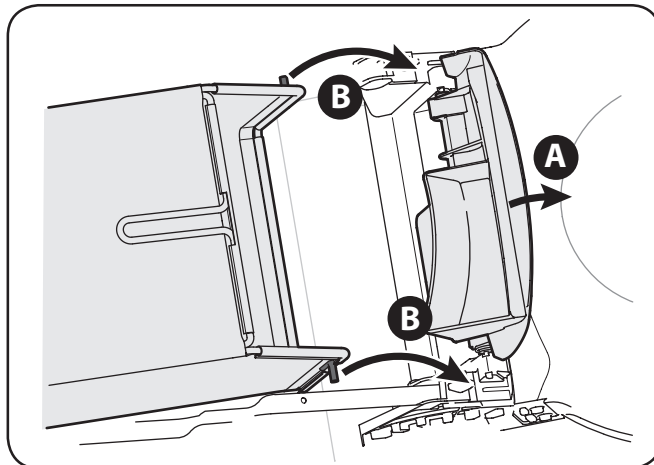


Figure 3-7

- Lift mower rear discharge door.
- Place grass catcher into the slots in the handle brackets. Release discharge door so that it rests on the grass catcher.

To remove grass catcher, lift mower rear discharge door. Lift grass catcher up and off the slots in the handle brackets. Release mower rear discharge door to allow it to close rear opening of mower.

Side Discharge Chute

Your mower may be shipped as a mulcher. To convert to side discharge, make sure grass catcher is off the unit and mower rear discharge door is closed.

- On the side of the mower, lift the mulch plug. See Figure 3-8.

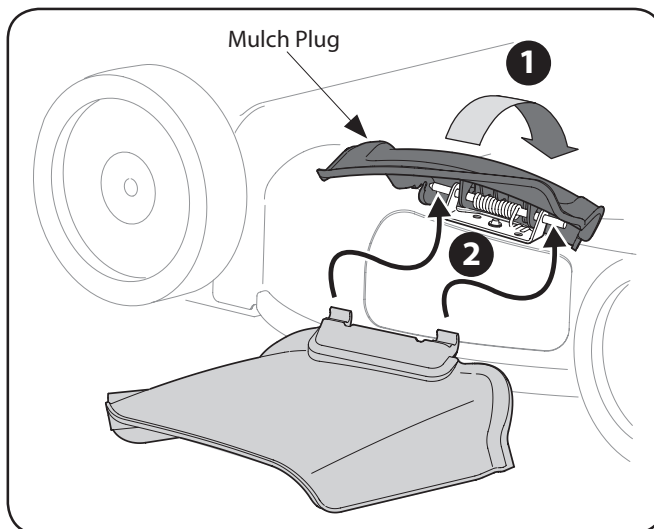


Figure 3-8

- Slide two hooks of side discharge chute under hinge pin on mulch plug assembly. Lower the mulch plug.
NOTE: Do not remove side mulch plug at any time.

Adjustments

Cutting Height

The cutting height adjustment lever is located above the front and rear right wheel.

1. Pull the cutting height adjustment lever towards wheel.
2. Move lever to desired position for a change in cutting height. See Figure 3-9 for low wheel and Figure 3-10 for high wheel.

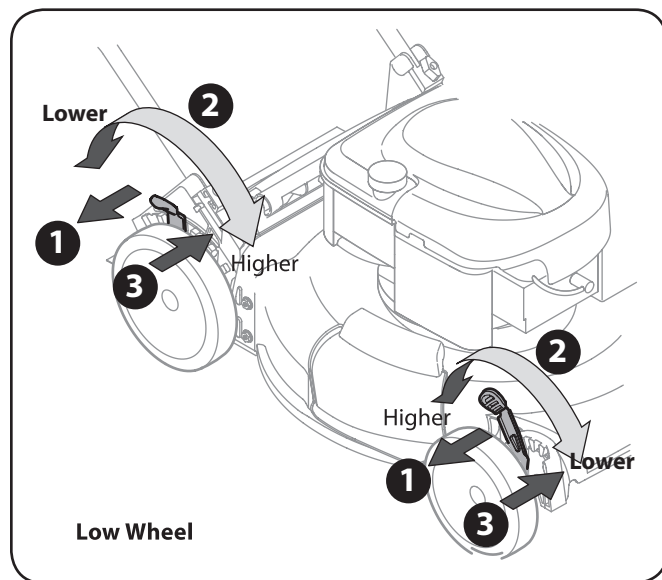


Figure 3-9

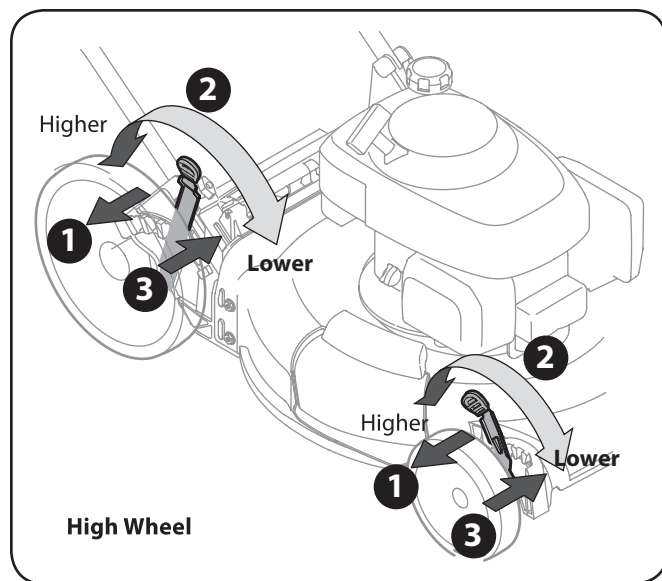


Figure 3-10

NOTE: For mowers with low wheels, the height adjustment levers move in the opposite direction to adjust; for those with high wheels, the levers move in the same direction.

IMPORTANT: Both the front and rear wheels must be placed in the same relative position. For rough or uneven lawns, move the height adjustment levers to a higher position. This will stop scalping of grass.

3. Release lever towards deck. See Figure 3-9 and Figure 3-10

Handle Pitch

If equipped, the pitch of the handle can be adjusted as follows:

1. Remove wing knobs (c) and carriage bolts (d) from handle. See Figure 3-11.

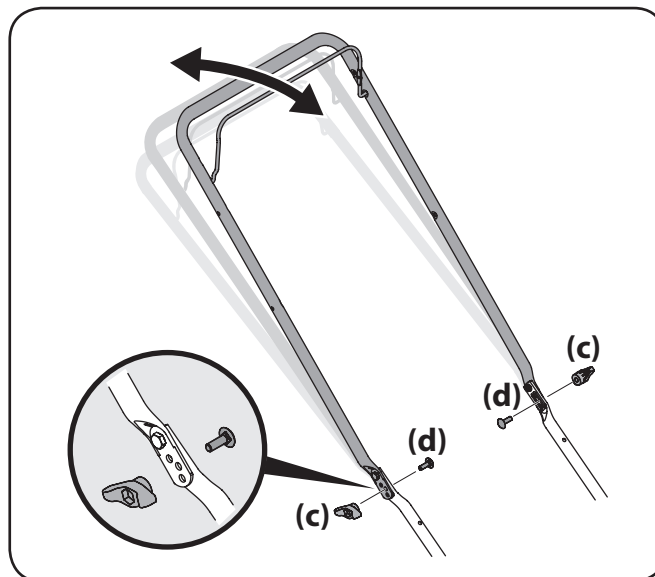


Figure 3-11

2. Position the handle in one of the three positions that is most comfortable. See Figure 3-11 inset.
3. Secure into position with wing knobs (c) and carriage bolts (d) removed in Step 1.

Set-Up

Gas and Oil Fill-Up

Refer to the separate engine owner's manual for additional engine information.

1. Add oil before starting unit for the first time out of the box.
2. Service the engine with gasoline as instructed in the separate engine owner's manual.



WARNING: Use extreme care when handling gasoline. Gasoline is extremely flammable and the vapors are explosive. Never fuel the machine indoors or while the engine is hot or running. Extinguish cigarettes, cigars, pipes and other sources of ignition.

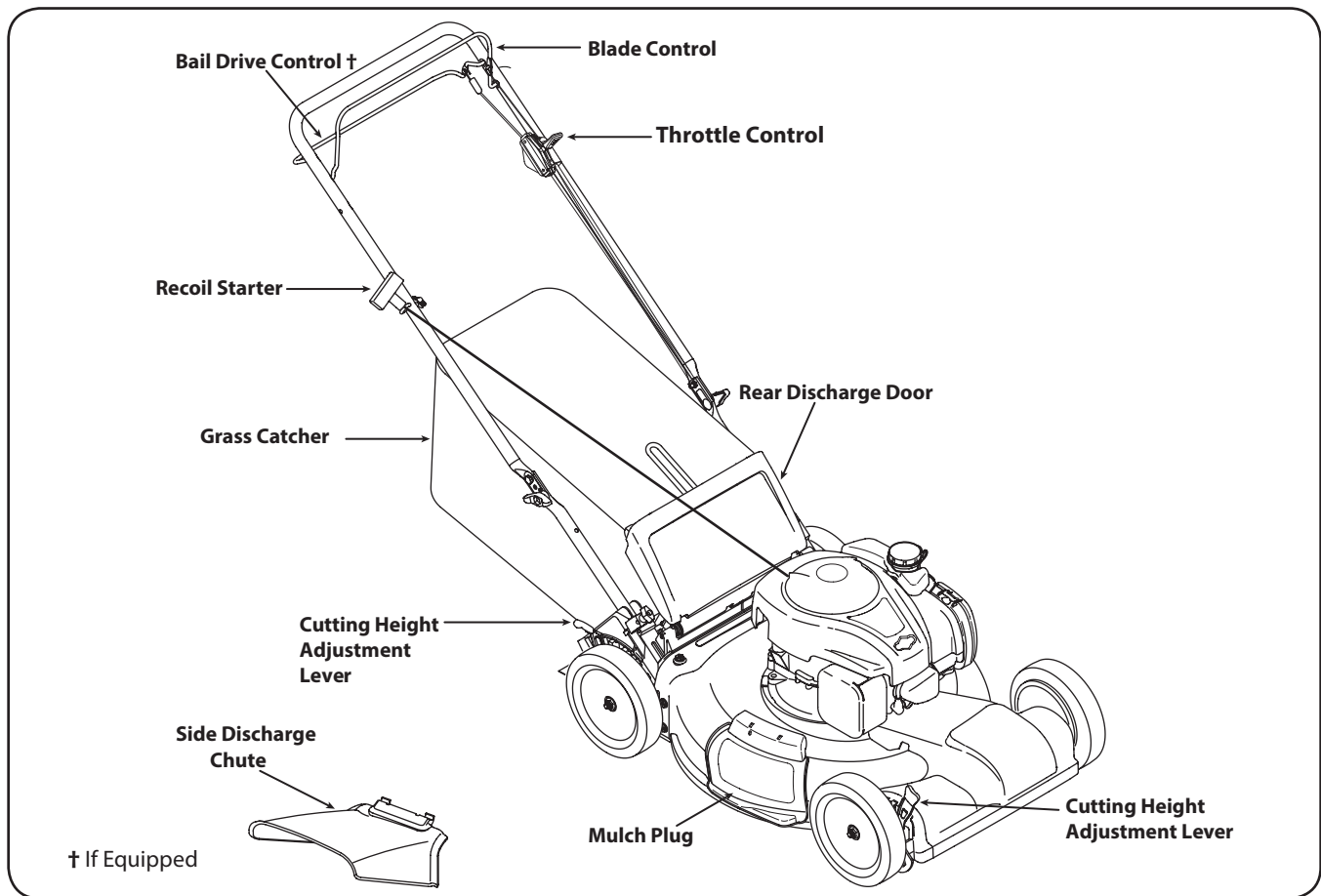


Figure 4-1

Blade Control

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



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

Bail Drive Control (If Equipped)

The bail drive control is located on the underside of the upper handle and is used to engage the drive. Squeeze it against the upper handle to engage the drive; release it to stop mower from propelling.

Cutting Height Adjustment Lever

One adjustment lever is located on the right rear wheel and one is located on the right front wheel. Both levers must be at the same relative position to ensure a uniform cut. To adjust the cutting height, refer to Cutting Height Adjustment on page 7.

Recoil Starter

The recoil starter is attached to the right upper handle. Stand behind the unit and pull the recoil starter rope to start the unit.

Throttle Control

Throttle Control is located on the left upper handle. Throttle Control marked for "Stop", "Start" and "Run" positions. Refer to the "Operation" Section.

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, remove it using the handle provided and empty it before any further mowing.

Mulch Plug

The mulch plug is used for mulching purposes. Instead of collecting the grass clippings in a grass catcher or using the side discharge chute, some mower models have the option of recirculating the clippings back to the lawn. This is called mulching.

Side Discharge Chute

Your mower may be shipped as a mulcher. To discharge the grass clippings to the side, follow the instructions in the Side Discharge Chute section on page 7 to attach the side discharge chute.



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

Starting & Stopping Engine

Refer to the Engine Operator's manual packed with your lawn mower for instructions on starting and stopping the engine.

Using Your Lawn Mower

Be sure 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, or the equipment.

Bail Drive Control

1. Once the engine is running, squeeze the bail drive control against the upper handle to propel mower.
2. Release the bail drive control to stop mower from propelling.



WARNING: The operation of any lawn mower can result in foreign objects being thrown into the eyes, which can damage your eyes severely. Always wear safety glasses while operating the mower, or while performing any adjustments or repairs on it.

Throttle Control adjustment

Throttle control marked for "Stop" , "Start"  and "Run"  positions. Refer Fig. 5-1.

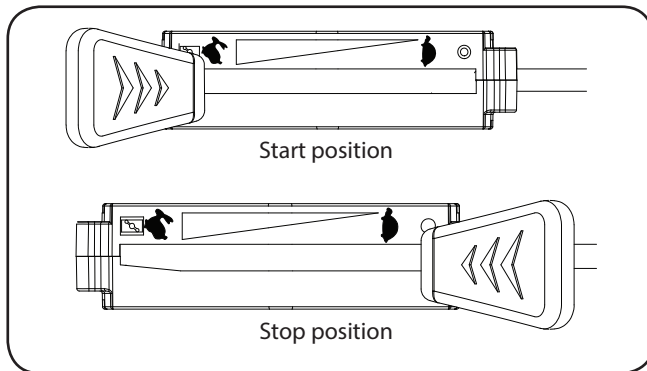


Figure 5-1

1. **To Start the engine**
 - a. Move the blade control lever towards the handle bars before starting engine.
 - b. Refer to the engine owner's manual for detailed starting procedure.
 - c. Ensure that the engine oil is at the correct level and that the fuel tank is unleaded fuel.
2. **To Stop the engine**
 - a. Move the throttle control lever to the "Slow/Stop" position and release the blade control lever.
 - b. Wait till the engine comes to a complete stop before removing or fitting the grass catcher or mulch plug to the mower, or attempting any maintenance work on the mower.

Using as Mulcher

For mulching grass, remove the grass catcher and allow the rear discharge door to close the rear opening of mower. For effective mulching, do not cut wet grass. If the grass has been allowed to grow in excess of four inches, mulching is not recommended. Use the grass catcher to bag clippings instead.

Using Grass Catcher

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

1. Attach grass catcher following instructions in the "Assembly & Set-Up" section. Grass clippings will automatically collect in bag as you run mower. Operate mower till grass bag is full.
2. Stop engine completely by releasing the blade control. Make sure that the unit has come to a complete stop.
3. Lift discharge door and pull grass bag up and away from the mower to remove the bag. Dispose of the grass clippings and reinstall the bag when complete.



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

Maintenance

General Recommendations

- Always observe safety rules when performing any maintenance.
- The warranty on this lawn mower does not cover items that have been subjected to operator abuse or negligence. To receive full value from warranty, operator must maintain the lawn mower as instructed here.
- Changing of engine-governed speed will void engine warranty.
- All adjustments should be checked at least once each season.
- Periodically check all fasteners and make sure these are tight.



WARNING: Always stop engine, disconnect spark plug, and ground against engine before performing any type of maintenance on your machine.

Lubrication

1. Lubricate pivot points on the blade control at least once a season with light oil. The blade control must operate freely in both directions. See Fig. 6-1.
2. The transmission is pre-lubricated and sealed at the factory and does not require lubrication.
3. Follow the accompanying engine manual for lubrication schedule and instruction for engine lubrication.

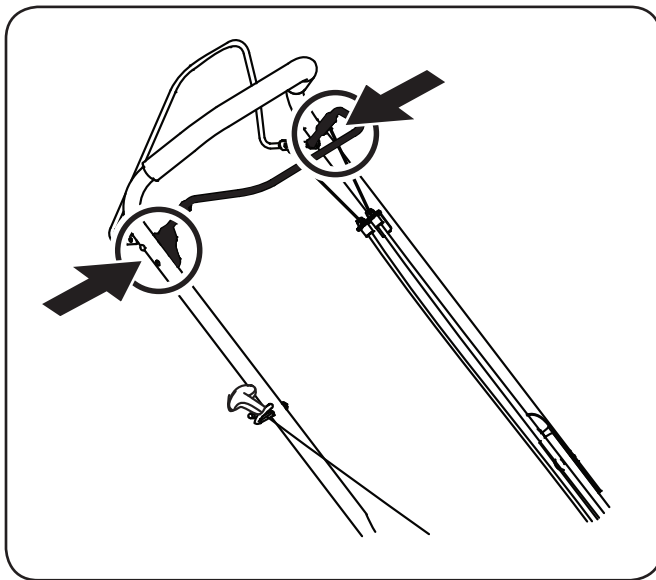


Figure 6-1

Deck Care

Clean underside of the mower deck after each use to prevent build-up of grass clippings or other debris. Follow steps below for this job.

1. Disconnect spark plug wire. Drain gasoline from lawn mower or place a piece of plastic under the gas cap.
2. Tip mower so that it rests on the housing. Keep the side with the air cleaner facing up. Hold mower firmly.



WARNING: Never tip the mower more than 90° in any direction and do not leave the mower tipped for any length of time. Oil can drain into the upper part of the engine causing a starting problem.

3. Scrape and clean the underside of the deck with a suitable tool.
4. Put the mower back on its wheels on the ground. If you had put plastic under the gas cap earlier, make sure to remove it now.

Engine Care

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

- Maintain 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 top of the engine clean to permit proper air circulation. Remove all grass, dirt, and combustible debris from muffler area.

Blade Care



WARNING: When removing the cutting blade for sharpening or replacement, protect your hands during replacement, protect your hands with a pair of heavy gloves or use a heavy rag to hold the blade.

Periodically inspect the blade adapter for cracks, especially if you strike a foreign object. Replace when necessary. Follow the steps below for blade service.

1. Disconnect spark plug boot from spark plug. Turn mower on its side making sure that the air filter and the carburetor are facing up.
2. Remove the bolt and the flat washer which hold the blade assembly and the blade adapter to the engine crankshaft. See Figure 7-1.

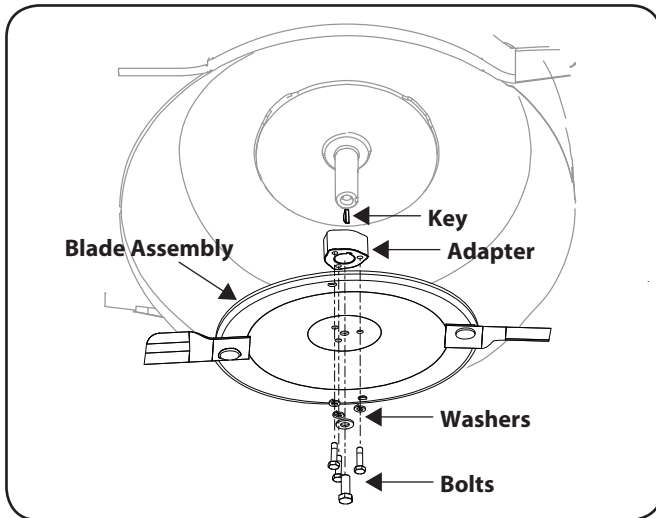


Figure 7-1

3. Remove blade assembly and adapter from the crankshaft.



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

4. It is recommended that the blades be replaced in pairs as per the following steps.
 - a. Remove each swing back blade by removing the locking nut, flat washer, wave washer and hex bolt (hardware kit) which attach it onto the blade disc.
 - b. Discard the worn blades.
 - c. Attach the new swing back blades with a new hardware kit for each, following the assembly instructions shown in Figure 7-2.
5. Lubricate the engine crankshaft and the inner surface of the blade adapter with light oil. Slide the blade adapter onto the engine crankshaft. Place the blade assembly on the adapter such that the side of the blade without a wing faces the ground when the mower is in the operating position. Make sure that the blade assembly is aligned and seated on the blade adapter flanges. See Figure 7-1 inset.
6. Place flat washer on the blade.

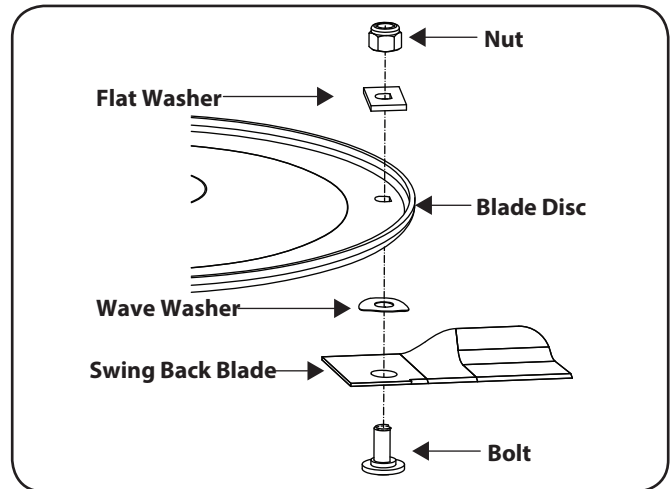


Figure 7-2

7. Replace hex bolt and tighten with a torque of 38 ft/lb (52 Nm). Minimum to 50 ft/lb (68 Nm) Maximum.

To ensure safe operation of your mower, periodically check the blade bolt for correct torque.

Off-Season Storage

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

- Clean and lubricate mower thoroughly as described in Lubrication instruction section on page 13.
- Coat mower's cutting blade with chassis grease to prevent rusting.
- Refer to Engine Operator's Manual for correct engine storage instructions.
- Secure side discharge chute to handle (if applicable) as shown in Figure 7-3.

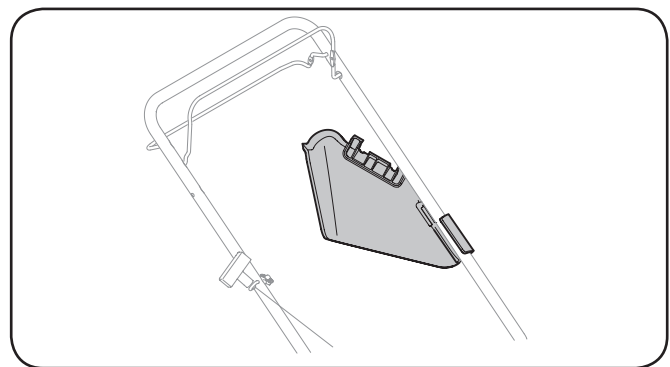


Figure 7-3

- Do not use a pressure washer or garden hose to clean your unit.
- Store mower in a dry, clean area. Do not store next to corrosive materials, such as fertilizer.

When storing any type of power equipment in a poorly ventilated 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 of your lawn mower before storage.

Problem	Cause	Remedy
Engine fails to start	<ol style="list-style-type: none"> 1. Blade control disengaged. 2. Spark plug boot disconnected. 3. Fuel tank empty or stale fuel. 4. Engine not primed (if equipped with primer). 5. Faulty spark plug. 6. Blocked fuel line. 7. Engine flooded. 8. Fuel valve (if equipped) closed. 9. Engine not choked (if equipped with choke). 	<ol style="list-style-type: none"> 1. Engage blade control. 2. Connect wire to spark boot. 3. Fill tank with clean, fresh gasoline. 4. Prime engine as instructed in the Engine Operator's Manual. 5. Clean, adjust gap, or replace. 6. Clean fuel line. 7. Wait a few minutes to restart; do not prime. 8. Open fuel valve. See Engine Operator's Manual. 9. Choke engine. See Engine Operator's Manual.
Engine runs erratic	<ol style="list-style-type: none"> 1. Spark plug boot loose. 2. Blocked fuel line or stale fuel. 3. Vent in gas cap plugged. 4. Water or dirt in fuel system. 5. Dirty air cleaner. 6. Unit running with CHOKE (if equipped) applied. 	<ol style="list-style-type: none"> 1. Connect and tighten spark plug boot. 2. Clean fuel line; fill tank with clean, fresh gasoline. 3. Clear vent. 4. Drain fuel tank. Refill with fresh fuel. 5. Refer to Engine Operator's Manual. 6. Push CHOKE knob in.
Engine overheats	<ol style="list-style-type: none"> 1. Engine oil level low. 2. Air flow restricted. 	<ol style="list-style-type: none"> 1. Fill crankcase with proper oil. 2. Clean area around and on top of engine.
Occasional skips (hesitates) at high speed	<ol style="list-style-type: none"> 1. Spark plug gap too close. 	<ol style="list-style-type: none"> 1. Adjust spark plug gap. Refer to Engine Operator's Manual.
Idles poorly	<ol style="list-style-type: none"> 1. Spark plug fouled, faulty, or gap too wide. 2. Dirty air cleaner. 	<ol style="list-style-type: none"> 1. Reset gap or replace spark plug. 2. Refer to Engine Operator's Manual.
Excessive vibration/noise	<ol style="list-style-type: none"> 1. Cutting blade loose or unbalanced. 2. Bent/damaged blade or blade adapter. 	<ol style="list-style-type: none"> 1. Tighten blade and adapter. Balance blade. 2. See an authorized service dealer.
Mower will not mulch grass (if equipped)	<ol style="list-style-type: none"> 1. Wet grass. 2. Excessively high grass. 3. Dull blade. 	<ol style="list-style-type: none"> 1. Do not mow when grass is wet; wait until dry to cut. 2. Mow once at a high cutting height, then mow again at desired height or make a narrower cutting path. 3. Sharpen or replace blade.
Uneven cut	<ol style="list-style-type: none"> 1. Wheels not positioned correctly. 2. Dull blade. 	<ol style="list-style-type: none"> 1. Place front and rear wheels in same height position. (Dual lever height adjusters only) 2. Sharpen or replace blade.

Problem	Cause	Remedy
Mower will not self propel	<ol style="list-style-type: none"> 1. Belt not installed properly. 2. Debris clogging drive operation. 3. Damaged or worn belt. 4. Drive control out of adjustment. 	<ol style="list-style-type: none"> 1. Check belt for proper pulley installation and movement. 2. Stop engine, disconnect spark plug boot, and clean out debris. 3. Inspect and replace belt. 4. Adjust drive control. Refer to page 8 in Assembly and Set-Up.
High pullback effort	<ol style="list-style-type: none"> 1. Pulling mower backwards before transmission disengages. 2. Drive control adjusted too tight. 	<ol style="list-style-type: none"> 1. Allow the unit to roll forward slightly without the drive lever(s) engaged before pulling backwards. 2. Readjust drive control. Refer to page 8 in the Assembly & Set-Up section.

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