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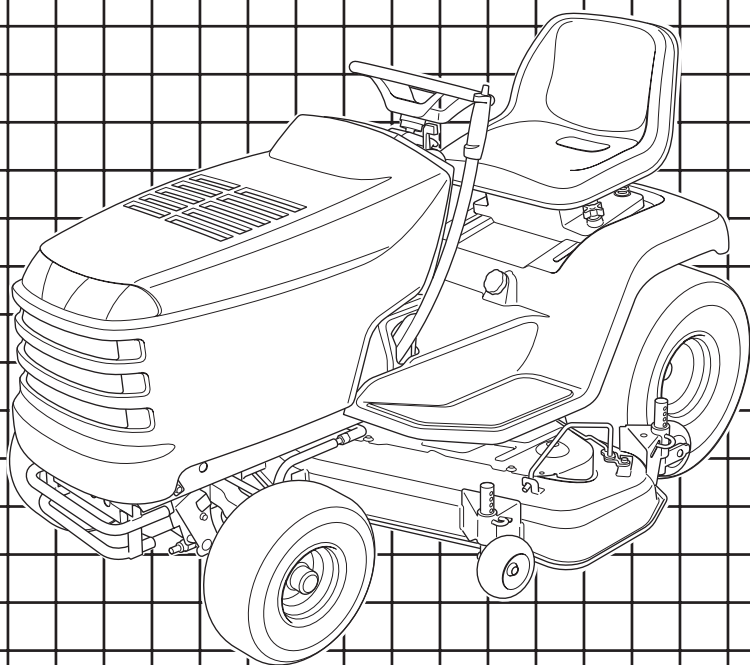
Power

Equipment

Owner's Manual

LAWN TRACTOR

HA4118H38A • HA4120H48A





WARNING:



The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

Keep this owner's manual handy, so you can refer to it any time. This owner's manual is considered a permanent part of the lawn tractor and should remain with the tractor if resold.

The information and specifications included in this publication were in effect at the time of approval for printing. Honda Power Equipment Mfg., Inc. reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatever.

INTRODUCTION

Congratulations on your selection of the Honda HA4118H38A or HA4120H48A lawn tractor. We are certain you will be pleased with your purchase.

We want to help you get the best results from your new lawn tractor and to operate it safely. This manual contains all the information on how to do that; please read it carefully.

As you read this manual, you will find information preceded by a **NOTICE** symbol. That information is intended to help you avoid damage to your lawn tractor, other property, or the environment.

We suggest you read the warranty policy to fully understand its coverage and your responsibilities of ownership. The warranty policy is a separate document that should have been given to you by your dealer.

When your lawn tractor needs scheduled maintenance, keep in mind that your Honda lawn tractor dealer is specially trained in servicing Honda lawn tractors and is supported by the parts and service divisions of American Honda. Your authorized Honda lawn tractor servicing dealer is dedicated to your satisfaction and will be pleased to answer your questions and concerns.

Best Wishes,

Power Equipment Division
American Honda Motor Co., Inc.

INTRODUCTION


A FEW WORDS ABOUT SAFETY

Your safety and the safety of others is very important. And using this lawn tractor safely is an important responsibility.

To help you make informed decisions about safety, we have provided operating procedures and other information on labels and in this manual. This information alerts you to potential hazards that could hurt you or others.

Of course, it is not practical or possible to warn you about all the hazards associated with operating or maintaining a lawn tractor. You must use your own good judgment.

You will find important safety information in a variety of forms including:

- **Safety Labels** — on the lawn tractor.
- **Safety Messages** — preceded by a safety alert symbol  and one of three signal words: DANGER, WARNING, or CAUTION.

These signal words mean:



DANGER

You **WILL** be KILLED or SERIOUSLY HURT if you don't follow instructions.



WARNING

You **CAN** be KILLED or SERIOUSLY HURT if you don't follow instructions.



CAUTION

You **CAN** be HURT if you don't follow instructions.

- **Safety Headings** — such as Important Safety Information.
- **Safety Section** — such as **LAWN TRACTOR SAFETY**.
- **Instructions** — how to use this lawn tractor correctly and safely.

This entire book is filled with important safety information — please read it carefully.

Turn to the beginning of each chapter for a complete list of subjects.

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INTRODUCTION

LAWN TRACTOR SAFETY

This chapter explains what you need to know to operate your lawn tractor safely.

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LAWN TRACTOR SAFETY

IMPORTANT SAFETY INFORMATION

Most accidents with lawn tractors can be prevented if you follow all instructions in this manual and on the lawn tractor. The most common hazards, according to accident statistics, are discussed below, along with the best way to protect yourself and others.

Avoid Rotating Blades

A rotating blade can cause serious cuts and even amputate fingers, hands, toes, or feet. Keep away from the mower deck whenever the engine is running. If you need to work around the deck to clear a grass accumulation or for any other reason, always shut off the engine and remove the key. Disconnect the spark plug cap, and wear heavy gloves when you need to clean the mower deck or handle a blade.

Clear Mowing Area

A lawn tractor blade can throw rocks and other objects with enough force to cause serious injury. Before mowing, carefully inspect the area and remove all stones, sticks, bones, nails, pieces of wire, and other loose objects. Never operate the lawn tractor over gravel or any other loose objects. Be aware if children are in the area; stop the lawn tractor and remove the ignition key to prevent accidental starting.

Keep Shields in Place

Guards and shields are designed to protect you from being hit by thrown objects and to keep you from touching hot engine parts and moving components. For your safety and the safety of others, keep all shields in place when the engine is running.

Refuel with Care

Gasoline is extremely flammable, and gasoline vapor can explode. Allow the engine to cool if the lawn tractor has been in operation. Refuel only outdoors in a well-ventilated area with the engine OFF. Never fill the fuel tank beyond the maximum fill mark. Never smoke near gasoline, and keep other flames and sparks away. Always store gasoline in an approved container.

Wear Protective Clothing

Wearing protective clothing will reduce your risk of injury. Long pants and eye protection reduce the risk of injuries from thrown objects. Sturdy shoes with aggressive soles provide better traction on the lawn tractor's platform and pedals.

Turn Engine Off When Not Operating the Lawn Tractor

If you need to leave the lawn tractor for any reason, even just to inspect the lawn ahead, always turn the engine off. And take the key if you go farther away.

Operation on Slopes

This lawn tractor is intended for use on relatively flat terrain. Operating the lawn tractor on slopes exceeding 10 degrees (17% grade) could cause the lawn tractor to tip over. Always mow up and down slopes, never across. When mowing up and down slopes, empty the optional grass bags when they are half full.

Mowing Conditions

Mow only in daylight or good artificial light. Do not drive the lawn tractor at night or under poor light conditions.

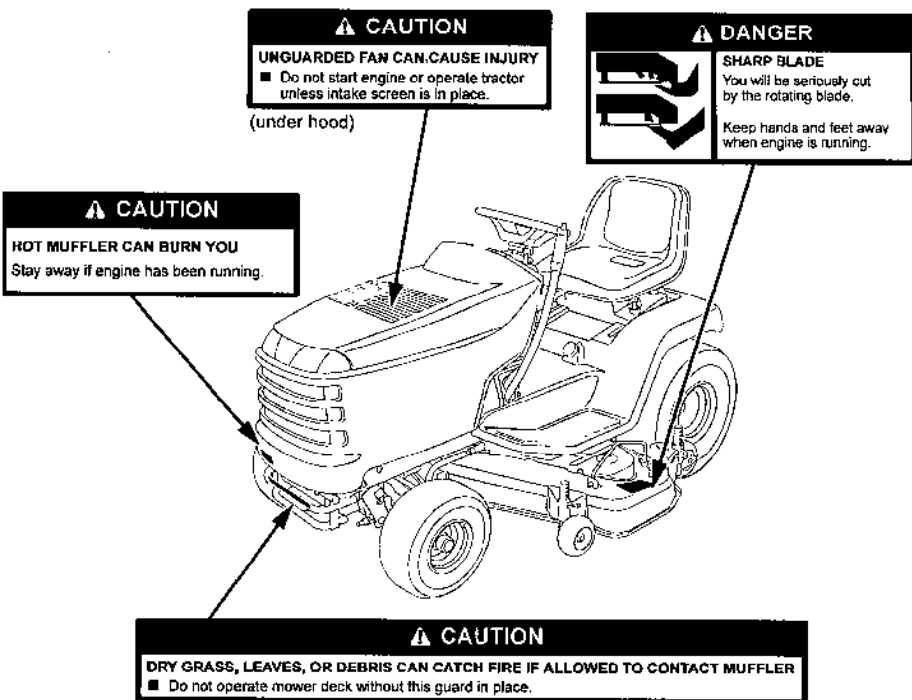
Mowing Near Roads

Always watch for vehicle traffic when operating the lawn tractor near roads and driveways. Never drive the lawn tractor on public roads.

LAWN TRACTOR SAFETY

SAFETY LABEL LOCATIONS

These labels warn you of potential hazards that can cause serious injury. Read them carefully. If a label comes off or becomes hard to read, contact your Honda lawn tractor dealer for a replacement.



LAWN TRACTOR SAFETY

⚠ WARNING

- READ THE OPERATOR'S MANUAL.
- GO UP AND DOWN SLOPES, NOT ACROSS.
- IF MACHINE STOPS GOING UPHILL, STOP BLADE AND BACK MACHINE DOWN SLOWLY.
- AVOID SUDDEN TURNS.
- DO NOT MOW WHEN CHILDREN OR OTHERS ARE AROUND.
- NEVER CARRY CHILDREN.
- LOOK DOWN AND BEHIND BEFORE AND WHILE BACKING.
- KEEP SAFETY DEVICES (GUARDS, SHIELDS, SWITCHES, ETC.) IN PLACE AND WORKING.
- REMOVE OBJECTS THAT COULD BE THROWN BY THE BLADE.

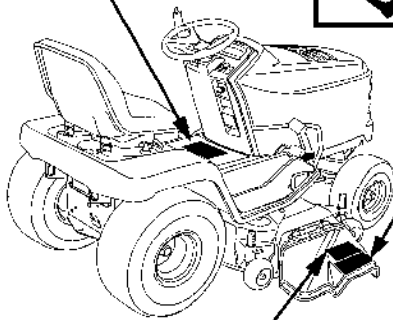
⚠ DANGER



SHARP BLADE

You will be seriously cut by the rotating blade.

Keep hands and feet away when engine is running.



⚠ WARNING



Objects hidden in the lawn can be thrown by the mower blade. Thrown objects can cause serious injury.

- Clean the lawn of all debris before mowing.
- Do not operate the mower without either the discharge guard or the entire grass catcher in place.
- Wear eye protection.
- Keep people away while mowing.

LAWN TRACTOR SAFETY

IMPORTANT MESSAGE TO PARENTS

YOUR CHILD'S SAFETY IS VERY IMPORTANT to Honda. Read this message if you decide to permit your youngster to operate this lawn tractor. Lawn tractors are tools, not toys. As with any equipment, bad judgments can result in serious injuries. You can help prevent accidents by making good decisions about if, when, and how your youngster operates this equipment.

The first question you'll need to ask is whether your youngster is capable of operating this lawn tractor safely. Remember, young people vary widely, and **AGE IS NOT THE ONLY FACTOR**.

Physically, a youngster must be **LARGE ENOUGH AND STRONG ENOUGH** to easily start the lawn tractor and control its direction. The youngster also needs enough size, strength, and coordination to comfortably reach and operate the controls.

Another, tougher question you need to ask is if your youngster has enough **MATURITY AND RESPONSIBILITY** to safely operate this lawn tractor. Does the young person think through problems and come to logical solutions? Be honest! Anyone who takes unnecessary risks and doesn't obey rules should not operate this lawn tractor.

If you decide that your son or daughter can handle the lawn tractor safely, **CAREFULLY READ THE OWNER'S MANUAL** with your youngster. Make sure you both understand all instructions and safety information. Also, be sure your youngster wears sturdy shoes and other protective clothing when operating or handling the lawn tractor.

SUPERVISION is important. Walk behind your youngster during the first few minutes of mowing. Even after the youngster is confident, do not let them use the lawn tractor without supervision. An adult should also be present during refueling and maintenance. Be sure the lawn tractor is properly maintained and kept in safe operating condition.

By always placing safety first, your youngster will acquire useful skills and a sense of accomplishment. And you'll both get the best results from your lawn tractor.

CONTROLS

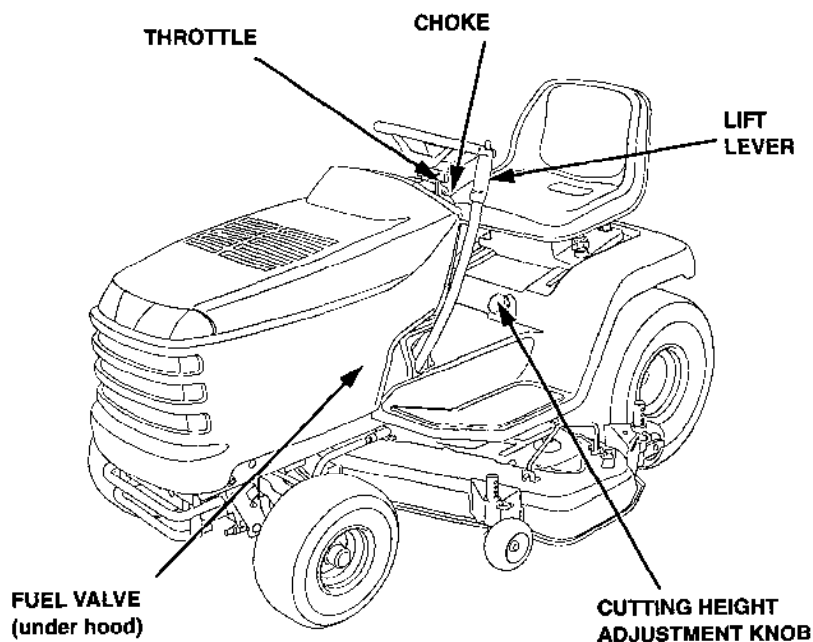
This section helps you to identify the lawn tractor controls, what they do, and how they work.

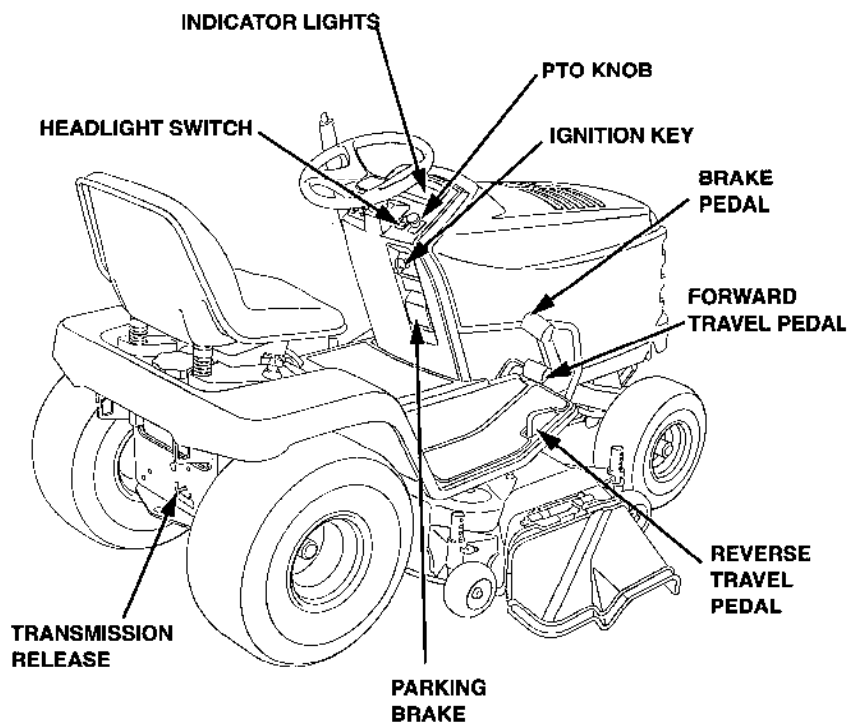
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CONTROLS

CONTROL LOCATIONS

Use the two illustrations on these pages to locate and identify the most frequently used controls.





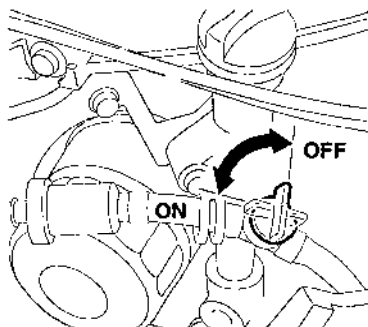
CONTROLS

DESCRIPTION OF CONTROLS

Your lawn tractor uses colors to identify control types. Orange levers and knobs are used to control the movement of the lawn tractor. For example, the parking brake lever and throttle are color coded orange. Yellow controls identify attachment controls, such as the PTO clutch knob, which is used to start and stop the mower deck blades.

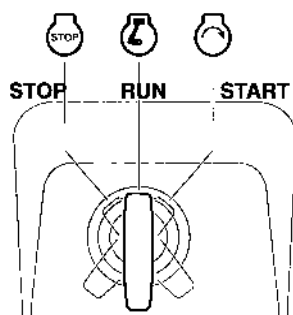
Fuel Valve

The fuel valve is located in the fuel line under the tractor hood on the left side of the engine. The fuel valve must be ON to start the engine and should be OFF when transporting the lawn tractor.



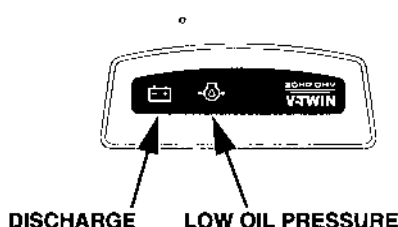
Ignition Switch

The ignition switch is used to start and stop the engine. The key can only be inserted and removed when turned to STOP.



Indicator Lamps

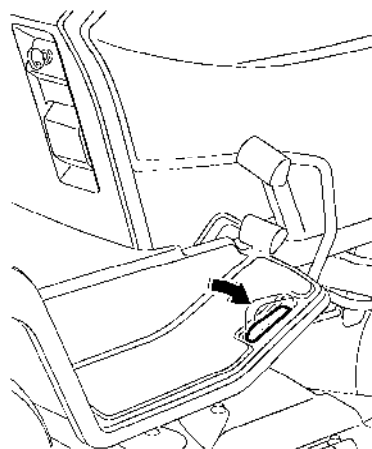
The battery discharge lamp indicates the battery is discharging. The low oil pressure lamp indicates low oil pressure. Both lights will come on briefly when starting the engine, but should go off after the engine starts. See TROUBLESHOOTING (page 90) for more details.



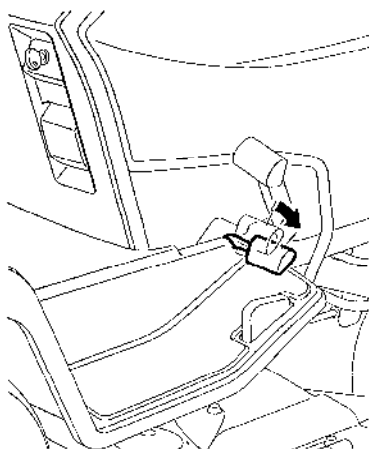
Travel Pedals

The travel pedals are used to control the forward and reverse movement of the lawn tractor.

The farther the pedal is pushed, the greater the speed. The pedals are linked, so only one pedal may be pressed at one time.



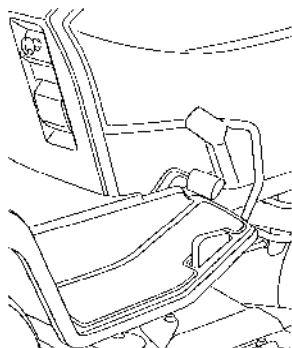
REVERSE



FORWARD

Brake Pedal

The brake pedal is located on the right side of the lawn tractor. When the brake pedal is pressed down, the transmission drive is disengaged and a brake is applied to the rear wheels.



CONTROLS

Parking Brake

This lever, located under the ignition switch, is used to prevent movement of the lawn tractor when parked. The lever can be set or released only when the brake pedal is fully pressed. The parking brake lever should always be set before getting off the lawn tractor. The parking brake lever should be released before pressing the forward or reverse travel pedal.

PARKING BRAKE LEVER

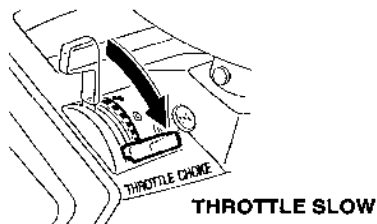
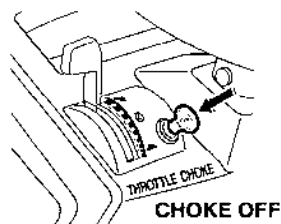
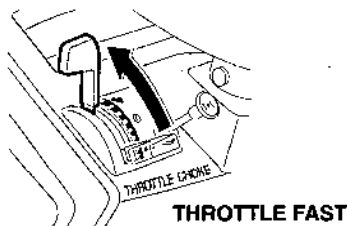
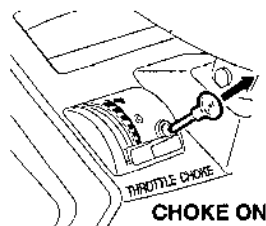


BRAKE PEDAL

Throttle Lever / Choke

Your lawn tractor has separate throttle and choke controls located on the left side of the instrument panel.

The throttle lever controls the engine speed. There is a detent in the throttle at the FAST position. This is the location that will give optimum cutting performance.

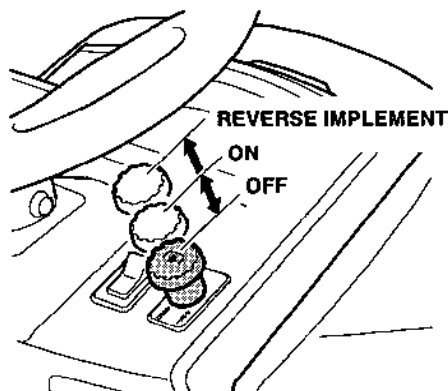


Avoid using the throttle to control ground (travel) speed of the tractor. Instead use the forward or reverse travel pedal.

The choke knob should be pulled out completely when starting a cold engine and gradually pushed in as the engine warms.

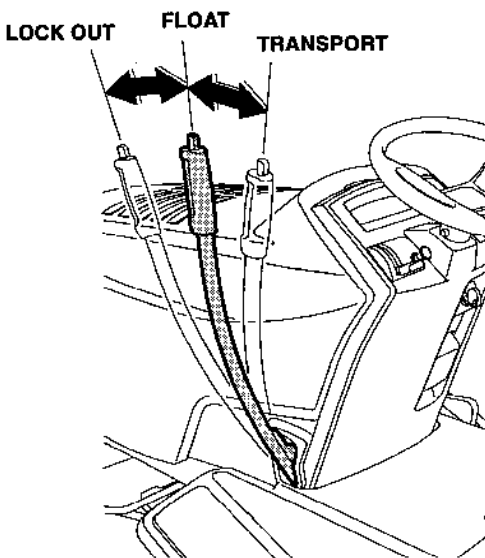
PTO Knob

PTO stands for **Power Takeoff**. The PTO knob is used to apply power to the mower deck (or other attachment). The PTO knob has three positions: OFF, ON and REVERSE IMPLEMENT. ON and OFF are used for normal operation when moving forward. The spring-loaded REVERSE IMPLEMENT position allows the mower deck to work when the lawn tractor is operated with the reverse travel pedal.



Lift Lever

- **TRANSPORT:**
Raises mower for transport.
- **FLOAT:**
Mower should drop to desired cutting height by itself. Under normal conditions, mow with lever in FLOAT position.
- **LOCKOUT:**
This position locks out the lift assist spring. Use when mowing in rough terrain to prevent mower from inadvertently latching into transport position. LOCKOUT is also used when removing and installing the mower deck.



CONTROLS

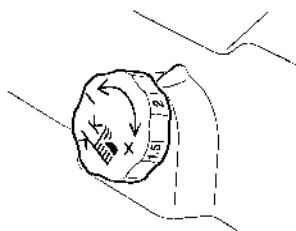
Cutting Height Adjustment Knob

Lift lever must be in the TRANSPORT position before turning cutting height knob.

Cutting height can be adjusted from approximately 1 ~ 4 inches (25 ~ 100 mm).

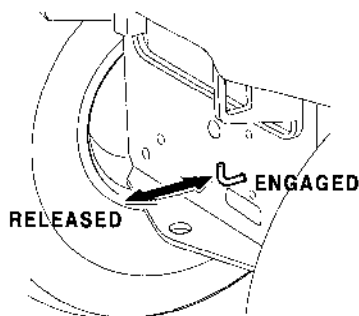
When lift lever is in TRANSPORT position (lift lever all the way back), cutting height is approximately 4 inches (100 mm).

The cutting height adjustment knob has cutting height adjustment numbers embossed in it.



Transmission Release

This control is used to engage or disengage the hydrostatic transmission. When operating the lawn tractor under its own power, leave the control in the engaged position. If you ever need to push the lawn tractor, pull the control out and lock it in the released position.

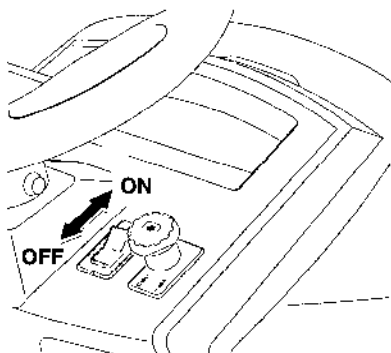


NOTICE

Pushing or towing the lawn tractor with the transmission release control in the engaged position will damage the hydrostatic transmission.

Headlight Switch

This switch is used to turn the headlights on or off. This switch only works when the ignition key is in the ON position.



BEFORE OPERATION

This chapter explains how to fuel and check your lawn tractor to be sure it is ready, and it tells you how to prepare your lawn and yourself before you begin mowing.

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BEFORE OPERATION

There are three areas to be checked before using the lawn tractor:

- Check your lawn
- Check your lawn tractor
- Are you ready to mow?

These are described in the following sections.

CHECK YOUR LAWN

For your safety and the safety of others, always inspect the area before mowing.

Objects

Anything which can be picked up by the blades and thrown is a potential hazard to you and others. Look for things like stones, sticks, bones, nails, and wire, and remove them from the mowing area.

People and Pets

People and animals near the mowing area can move into your mowing path or into a position where they could be struck by thrown objects. Clear the area of people, especially children and pets. Their safety is your responsibility.

Lawn

Check the length and condition of the grass. Adjust your mowing speed and cutting height accordingly.

Avoid mowing wet grass. Not only does mowing wet grass result in poor cut quality, it also affords poor traction, increasing the risk of loss of control of your lawn tractor.

CHECK YOUR LAWN TRACTOR

For your safety and the service life of your equipment, always inspect your lawn tractor before using it. Before beginning your pre-operation checks, be sure:

- The lawn tractor is parked on a level surface.
- The PTO clutch knob is OFF.
- The ignition switch is OFF and the key is removed.
- The parking brake is set.

General Items

Walk around the lawn tractor and check its general condition. Look around and underneath it for signs of fluid leaks.

Remove any excessive dirt and debris, especially around the engine, mower deck, and moving components. Look for signs of damage.

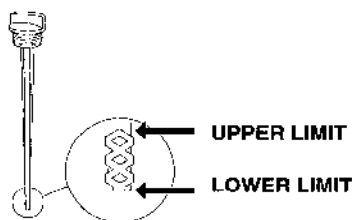
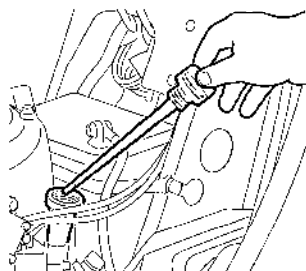
Check nuts, bolts, screws, and pins for tightness.

Keep all shields and covers in place while operating the lawn tractor. If you find any problems, have them repaired before mowing.

BEFORE OPERATION

Engine Oil Level

1. Raise the engine hood. The oil filler cap is located on the left side of the engine.
2. Clean the area around the oil filler cap, unscrew it, and wipe the dipstick with a clean cloth.
3. Insert the dipstick (don't screw it back in) and remove it.
4. If the oil level is low (near the bottom), add enough of the recommended oil to bring the level to the upper limit. Recheck the oil level after adding any new oil.
5. If the oil level is close to the upper limit mark, no additional oil is needed. Replace the dipstick and screw it back in securely. Do not overfill.



NOTICE

Running the engine at a low oil level or with no oil causes engine damage.

Tire Pressure

Make sure all tires are properly inflated:

Front: 10 psi (69 kPa)

Rear: 8 psi (55 kPa)

Grass Bag (optional kit)

If your lawn tractor has the optional grass bag kit installed, check the kit for proper installation and verify the grass bags are in good condition.

Parking Brake

Make sure the brake pedal remains locked down when the parking brake is set.

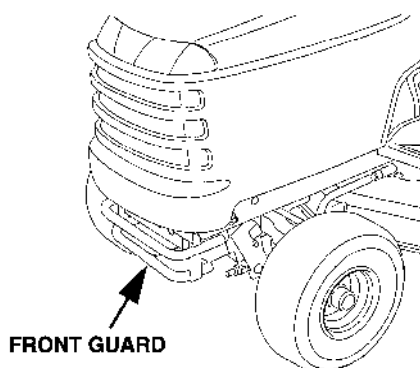
Hydrostatic Transmission Oil Level

The hydrostatic fluid level should be between the 2 marks on the reservoir. If the fluid is below the bottom line, add 10W30 API SE, CC, or CD oil to bring the level to the upper line. **Do not use Honda Hydrostatic Fluid in this lawn tractor.** See page 88.

Muffler and Exhaust Area

Inspect the muffler and exhaust area around the front guard (bumper). Make sure the entire area is free of grass, leaves, debris, or any other obstructions.

The front guard must remain on the lawn tractor when the mower deck is used.



Drive Belt

Verify that the drive belt is in good condition.

BEFORE OPERATION

Fuel

Capacity: 2.5 US gal (9.5 liters)

Minimum pump octane rating: 86

Refuel in a well-ventilated area before starting the engine. If the engine has been running, allow it to cool before refueling. Avoid overfilling or spilling fuel. Fuel the lawn tractor with pump octane 86 or higher unleaded fuel. Make sure the fuel cap is secure.

1. Remove the cap and strainer; empty any debris from the strainer. Replace the strainer when clean.
2. Avoid overfilling or spilling fuel. Fuel to the maximum fill mark.

WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured when refueling.

- Stop the engine and keep heat, sparks, and flame away.
- Refuel only outdoors.
- Wipe up spills immediately.

3. Never refuel the lawn tractor inside a building where fumes may reach a flame or spark. Keep gasoline away from appliance pilot lights, electric motors, etc.
4. Spilled fuel not only creates a fire hazard, it can cause environmental damage. Wipe up spills immediately. Dispose of gasoline properly.

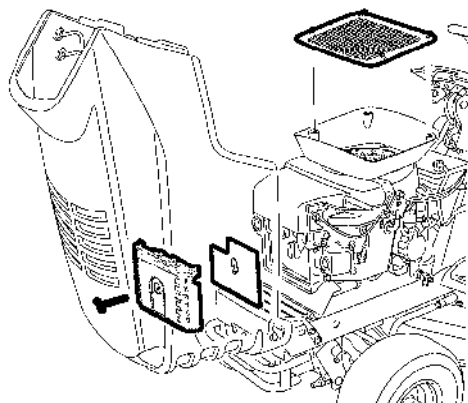
NOTICE

Fuel can damage paint and plastic. Do not spill fuel when filling the fuel tank. Damage caused by spilled fuel is not covered under the *Distributor's Limited Warranty*.

Cooling Air Intake Path and Air Filters

Raise the engine hood, then make sure the cooling air intake screen on the top of the engine is clear of grass and debris and is securely installed. Never operate the lawn tractor without the screen installed.

Inspect the engine air cleaner filter elements for damage or excessive dirt and dust.



Mower Deck

Clear the top and bottom of the mower deck of any grass, debris, etc. Make sure the discharge guard is properly installed.

Mulching, Side-discharge, or Bagging?

The mower deck on your lawn tractor was manufactured with high-lift blades for side-discharge mowing. Optional kits are available for mulching and bagging. Refer to the operator's manual supplied with the kit for specific installation and operation instructions.

Blades

Make sure the mower deck blades are in good condition and the blade bolts are properly tightened. The blades are subject to wear during operation and should be inspected each time the lawn tractor is used. Dull blades can be sharpened, but a blade that is worn out, bent, cracked, or otherwise damaged must be replaced.

Height Adjustment Knob

Set this knob to the appropriate position for mowing conditions.

BEFORE OPERATION

ARE YOU READY TO MOW?

Your safety is your responsibility. A little time spent in preparation will significantly reduce your risk.

Knowledge

Read and understand this manual. Know what the controls do and how to operate them.

Familiarize yourself with the lawn tractor and its operation before you begin mowing. Know what to do in case of emergencies.

Clothing

Wearing protective clothing will reduce your risk of injury.

Long pants and eye protection reduce the risk of injuries from thrown objects.

Sturdy shoes with aggressive soles will help protect your feet and give you better traction on the pedals and platform of the lawn tractor.

While the sound level of the lawn tractor is well within safe limits, hearing protection will further protect your hearing.

This chapter tells you how to operate the lawn tractor safely and effectively.

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MOWING PRECAUTIONS

Before operating the lawn tractor for the first time, please review both the **LAWN TRACTOR SAFETY** section and the **BEFORE OPERATION** section.

Even if you have operated other lawn tractors, take time to become familiar with how this lawn tractor works, and practice in a safe area until you build up your skills.

Never tamper with, or alter any of the controls or safety devices on the lawn tractor.

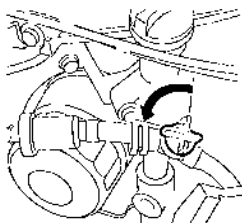
For your safety, avoid starting or operating the engine in an enclosed area such as a garage. Your lawn tractor's exhaust contains poisonous carbon monoxide gas which can collect rapidly in an enclosed area and cause illness or death.

OPERATION

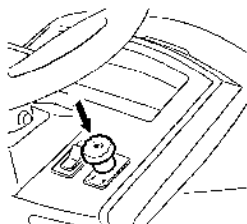
STARTING THE ENGINE

Start the engine outside in an open area with good ventilation.

1. Locate the fuel valve on the left side of the engine, under the engine hood. Move the fuel valve to ON. Lower the engine hood and sit in the operator's seat.



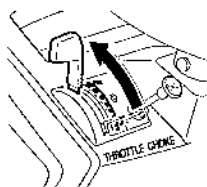
2. Make sure the PTO is OFF (disengaged).



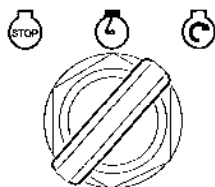
3. Engage the parking brake.



4. To start a cold engine, move the throttle lever to FAST. Pull the choke out all the way. To restart a warm engine, do not pull out the choke.



5. Insert the ignition key into the ignition switch. Turn the key clockwise to START and hold it there briefly until the engine starts. When it does, let the key return to the ON position.



NOTICE

Holding the ignition key in the start position for more than five seconds may damage the starter.

If the engine fails to start, wait at least ten seconds before trying again. If you can't get the engine to start after multiple tries, refer to the **TROUBLESHOOTING** section on page 99.

After the engine has started, gradually push the choke knob in to the OFF position. Allow the engine to continue warming for several minutes before operating the tractor.

Once the engine has warmed, you should keep the throttle in the FAST position while mowing. This keeps the blades spinning at the proper speed and provides the best cut quality.

Do not use the throttle lever to adjust the lawn tractor ground speed while mowing. Use the forward travel pedal and the reverse travel pedal to adjust ground speed. Slowing the ground speed with the throttle lever will adversely affect cut quality.

Checking Indicator Lamps

After the engine has started:

- Battery discharge light should go out within 10 seconds.
- Oil pressure light should go out within 5 seconds.

If lights stay on longer than indicated time, stop engine and refer to the **TROUBLESHOOTING** section on page 99.

OPERATION

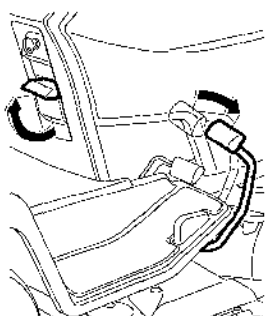
DRIVING THE LAWN TRACTOR

Once your lawn tractor is started, you will need to know how to set and release the parking brake, steer correctly, change the direction of travel, adjust ground speed, begin mowing (including raising and lowering the mower deck and adjusting the cutting height and mower wheels), and you will need to know how to stop your lawn tractor.

Setting and Releasing the Parking Brake

Setting the Parking Brake

1. Push and hold the brake pedal down.
2. Pull up on the parking brake lever.
3. Remove foot from brake pedal. The parking brake lever should remain up and the brake pedal should remain down.



Releasing the Parking Brake

1. Push and hold the brake pedal down.
2. Push the parking brake lever down.
3. Release the brake pedal.

Steering

To make it easier to cut various lawns, your lawn tractor is very maneuverable and can turn quickly.

⚠ WARNING

Turning sharply at high ground speeds can cause the lawn tractor to lose traction.

The lawn tractor can tip over, and you can be injured or killed.

Avoid sharp turns when traveling at high ground speeds.

After using the lawn tractor for a while, you'll get a better feel for how much effort to use on the steering wheel for a particular turn.

The speed of the lawn tractor greatly affects how the steering responds. For this reason, you should use a lower ground speed before entering turns.

Avoid turning the lawn tractor when operating on a sloped surface. See the **Operation on Slopes** (page 38) section for more details.

Direction of Travel and Ground Speed

The hydrostatic transmission in your lawn tractor offers you a widely variable range of speeds in both the forward and reverse directions.

- To travel forward, push down on the forward travel pedal.
- To travel in reverse, push down on the reverse travel pedal.

Your ground speed is controlled by the amount of pressure you use to push down on the travel pedals.

- To increase speed in either direction, increase pressure (push down further) on the appropriate travel pedal.
- To decrease speed in either direction, decrease pressure (let up) on the appropriate travel pedal.

On slopes and hills, maintain a slow, steady speed. Also use slower ground speeds under the following conditions:

- Sharp turns
- Mowing in narrow areas or near trees
- Trimming near obstructions
- Cutting tall or very thick grass

For best cutting performance, mowing speed should be determined based on grass conditions.

OPERATION

MOWING

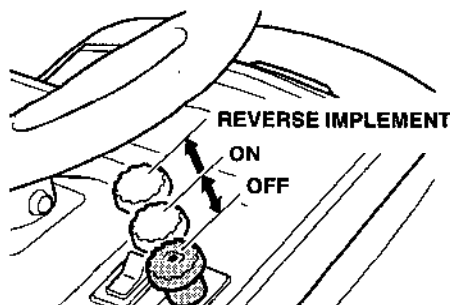
When you are ready to begin mowing, approach the mowing area at a reduced ground speed. Bring the lawn tractor to a full stop, and adjust the cutting height of the mower (see **Adjusting Cutting Height**).

To begin mowing, make sure the throttle is set to FAST, then engage the blades by pulling up on the PTO knob. To stop the blades, push down on the PTO knob.

Mowing In Reverse

Use the REVERSE IMPLEMENT position of the PTO knob to mow in reverse.

1. Check behind you to be sure the area is clear of any people, pets or objects.
2. Pull up and hold the PTO knob in the REVERSE IMPLEMENT position.
3. Press the reverse travel pedal. You can release the PTO knob once the reverse pedal is pressed.

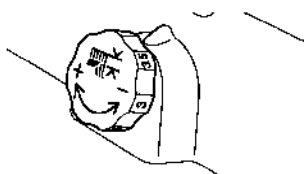


You'll need to pull the PTO knob to the REVERSE IMPLEMENT position before you press the reverse travel pedal. Otherwise, the mower blades will stop moving.

If this happens, release the reverse travel pedal, then push the PTO knob to OFF to reset the system.

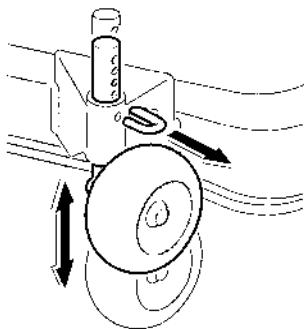
Adjusting Cutting Height

1. Pull the lift lever all the way back to the TRANSPORT position.
2. Turn the cutting height knob to the desired cutting height position. The mower will now be at this cutting height each time you lower it.
3. Adjust anti-scalp rollers (page 35)



48 Inch Mower Deck

1. Check tractor tire pressure (page 82).
2. Pull out on the J-pin to move the anti-scalp rollers up or down until the wheels are approximately 1/4 ~ 1/2 inch (6 ~ 13 mm) above the mowing surface.
3. Adjust the anti-scalp rollers to match in height or, if desired, adjust the anti-scalp rollers to roll on the ground.



To adjust the anti-scalp roller in 1/2 inch (13 mm) increments, set the roller one hole lower.

1. To adjust the anti-scalp roller by less than 1/2 inch (13 mm):
2. Remove the plastic cap on the outside of the wheel bolt.
3. Loosen the nut. Move the wheel down in the slot.
4. Tighten nut and replace plastic cap.
5. Release the J-pin to lock the anti-scalp rollers in position.

To adjust the anti-scalp rollers to correspond to narrow and wide positions of rear wheels and to optimize trimming:

1. Loosen the nuts.
2. Move the roller in slots to desired position.
3. Tighten the nuts.

OPERATION

STOPPING THE LAWN TRACTOR

Emergency Stop

1. Press the brake pedal all the way down and hold it there.
2. Turn the ignition switch off. Push the PTO clutch knob to OFF.
3. Set the parking brake.

Normal Stop

1. Remove foot from the forward or reverse travel pedal to bring the lawn tractor to a full stop.
2. Push the PTO clutch knob to OFF.
3. Press the brake pedal down and set the parking brake.
4. Move the throttle lever to SLOW.
5. Turn the ignition switch OFF.
6. Remove the ignition key.

Try to park on level ground. If you must park the lawn tractor on a slope, set the parking brake and block the wheels to prevent the lawn tractor from rolling. Always remove the key when leaving the lawn tractor unattended to prevent unauthorized use.

SAFE MOWING PRACTICES

For your safety, keep all four wheels on the ground, and be careful to avoid losing control of the lawn tractor.

Keep a firm grip on the steering wheel. Be very careful when mowing uneven or rough ground.

Do not operate the lawn tractor near embankments, dropoffs or ditches. The lawn tractor could suddenly turn over if a wheel is near the edge and it caves in or gives way.

Do not attempt to stabilize the lawn tractor by putting your foot on the ground. Keep your feet on the platform and near the pedals.

Take extra care when mowing near blind corners, shrubs, trees or any other objects that may obscure your vision. If you do strike an object: stop, set the parking brake, remove the ignition key and inspect the lawn tractor for damage. Repair any damage.

WARNING

The blades are sharp and spin at high speed.

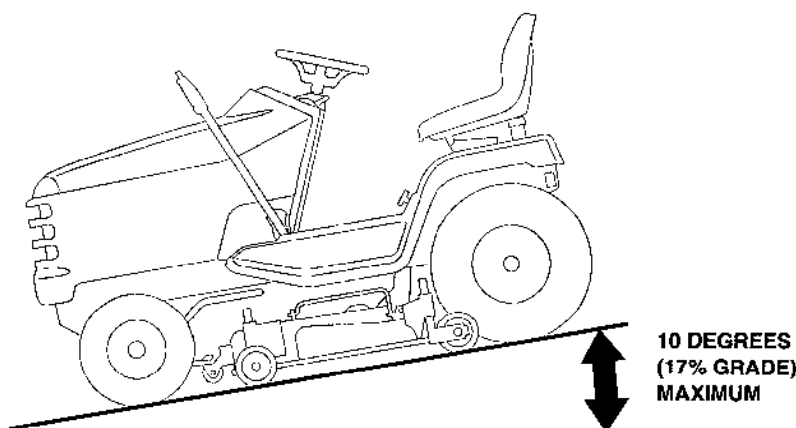
A spinning blade can cut you severely and can amputate fingers and toes.

- Wear protective footwear.
- Keep your hands and feet away from the mower deck while the engine is running.
- Stop the engine before performing any adjustment, inspection, or maintenance.

OPERATION

Operation on Slopes

Never mow on a sloped surface greater than 10 degrees (17% grade), since this can cause the lawn tractor to tip over. Use a slower speed for better control, and avoid sudden stops or starts when on a sloped surface. If you are unsure of the grade, obtain an inclinometer from a hardware store to measure the area in question.



Always mow up and down a sloped surface, never across. Avoid sharp turns when operating the lawn tractor on a sloped surface. When mowing on slopes, empty the optional grass bags when they are half full.

Never operate the shift lever when mowing on a sloped surface.

Never mow a sloped surface when the grass is wet.

Avoid stopping on a sloped surface. If it becomes necessary to stop on a sloped surface, use the following special procedure when restarting the lawn tractor.

Starting on a Sloped Surface

WARNING

Improper starting on sloped surfaces can cause the lawn tractor to lose traction and tip over.

The lawn tractor can fall on you and cause serious injury or death.

Use the following procedure if you must start the lawn tractor on a sloped surface.

1. Press the brake pedal all the way down and hold it there.
2. Release the parking brake.
3. Quickly let up on the brake pedal and move your right foot to either the forward or reverse travel pedal.
4. Gradually depress the forward or reverse travel pedal as required for a safe ground speed.

Obstacles

Use the side of the mower deck to cut close to large obstacles, such as fences or walls.

Be careful when mowing over obstacles embedded in the lawn, such as sprinkler heads, paving, edging, etc. Avoid anything that sticks up above the surface of the lawn.

If a blade hits something, or if any part of the lawn tractor starts to vibrate, stop the engine immediately and check for damage. Striking objects may damage a blade, belt, and/or break the mower deck or other components. Vibration usually indicates serious trouble.

WARNING

A worn, cracked, or damaged blade can break, and pieces of the damaged blade can become dangerous projectiles.

Thrown objects can cause serious injury.

Inspect the blade regularly, and do not operate the lawn tractor with a worn or damaged blade.

The *Distributor's Limited Warranty* does not cover parts damaged by accident or collision.

Gravel and Loose Objects

Gravel, loose stones, and landscaping material can be picked up by the lawn tractor and thrown many feet with enough force to cause serious personal injury and/or property damage. The best way to prevent potential injury from thrown objects is to push the PTO clutch knob to the OFF position prior to reaching areas with gravel, loose stones, or landscaping material.

MOWING TIPS

Here are some tips for getting a quality cut with your lawn tractor.

When to Mow

A well-groomed lawn requires mowing at short, regular intervals. During the growing season, a lawn may require mowing twice a week.

Cutting Height

To prevent possible damage to the mower deck, always raise it to the TRANSPORT position when driving the lawn tractor to and from the mowing area; this provides maximum ground clearance.

To avoid damaging or disabling the mower deck height adjustment lever, never attempt to move the lever when the lawn tractor is moving.

A higher cut may be needed to protect the lawn during the summer months. Consult a local nursery or lawn and garden center for advice about specific types of grasses and growing conditions in your area.

Most grasses should be cut when they have grown 1/2 to 1 inch above the recommended height. If your grass grows too tall, cut it back a little at a time, allowing a few days for the grass to recover between mowings. Avoid cutting more than one third of the total grass height in any one mowing.

Ground Speed

Slow the ground speed of the lawn tractor when mowing taller grass. Always use the foot pedals to control the ground speed, never the throttle.

OPERATION

Cutting Width

Allow an adequate amount of overlap in the cutting path when mowing. Four to six inches is recommended; this is roughly the same width as a front tire.

When overlapping in a curve, use a lower speed, and overlap the previous cut by 50%, or about half the width of the mower deck. In extremely tall or thick grass, you may have to cut a larger overlap.

Blade Speed

The blades must spin very fast to cut properly. When mowing, always keep the throttle set to FAST.

If engine speed drops, it could mean the engine is being overloaded by the blades trying to cut too much grass. Mow a narrower swath, operate the lawn tractor at a slower ground speed, or raise the cutting height of the mower deck.

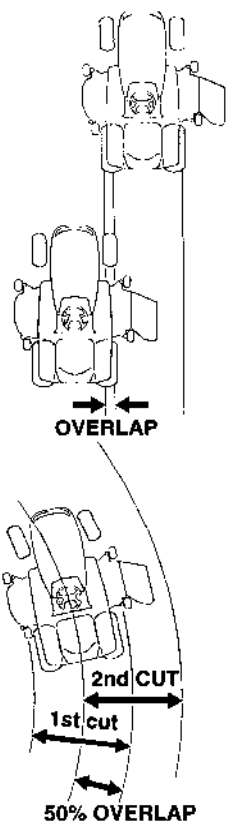
Blade Sharpness

Sharp blades cut cleanly. Dull blades tear grass, leaving shredded ends that turn brown. When the blades don't cut cleanly anymore, have them sharpened or replaced.

Grass and Moisture

Mow when the grass is dry. Mowing wet grass does not produce a neat finish. The inside of the mowing deck or bagging chute may clog when mowing wet grass. Clumps of wet grass will collect on the lawn and can create harmful thatch.

A wet lawn reduces traction and braking performance of your lawn tractor. Further, the tires may leave marks on wet soil softened by moisture. This can detract from the overall appearance.



Fallen Leaves

When equipped with an optional grass bag kit, your lawn tractor can be used to pick up fallen leaves for disposal. Adjust the height of the mower deck as needed to get the best results.

When equipped with an optional mulching kit, you can mulch fallen leaves into your lawn. Don't let the leaf cover get too deep before you begin. For best results, start mulching while grass still shows through the leaf cover. In places where fallen leaves completely cover the grass or leaves begin piling up in front of the mower deck, remove the leaves by raking, or install the optional grass bag kit, so your lawn tractor can pick them up for disposal.

Clogged Mower Deck

Before clearing a clogged mower deck, turn the ignition switch to OFF. Disconnect the spark plug cap. On mowers equipped with the optional mulch kit, see the operator's manual supplied with the kit for removal instructions. Clear a clogged deck with a stick, not your hands.

Mowing Patterns

Your Honda lawn tractor will work most efficiently if you use the following mowing patterns as much as possible. Mower deck and equipment design, and the direction in which the blade rotates, cause these mowing patterns to give the best results.

Mulching (optional kit)

Use a counterclockwise mowing pattern. If the lawn has an irregular shape, or many obstacles, divide it into sections where you can use counterclockwise mowing patterns.

Bagging (optional kit)

Use a clockwise mowing pattern. This will give the best bagging performance, leaving the least amount of clippings on the lawn.

Side-discharge Mowing

Start mowing at the outer edges of the lawn, and work toward the center in a circular pattern, always discharging clippings to the outside. This will prevent clippings from piling up in the path of the lawn tractor.

OPERATION

Trimming Tips

- Turn to the left around trees, bushes, etc.
- Drive slowly. Avoid hitting trees, bushes, etc.
- If ground slopes up to a tree or bush, you may have to approach the tree or bush straight-on to avoid scalping.

To Avoid Scalping

- Pay attention to the way you drive. You can eliminate scalping.
- If mower scalps easily, cutting height may be too low for ground conditions, especially on lawns with many small mounds and ridges.
- Anti-scalp rollers must be adjusted correctly.
- Drive over ridges and through shallow ditches straight-on, not at an angle.
- Keep blades sharp. Dull blades will tear grass. If grass is torn, tips will turn brown.
- Check lawn regularly for uneven cut. If cut is uneven:
 - Check mower to make sure it is level.
 - Slow down before you make turns.
 - Check blades to make sure they are sharp.

AFTER MOWING

Under most conditions, the lawn tractor accumulates clippings, mud, dirt and other debris on the mower deck and other areas. Frequently, such debris contains moisture, which if allowed to remain on the mower frame, mower deck or other metal parts, can form rust. Regular cleaning not only helps prevent such rusting, but also makes the lawn tractor operate better. Also, it is much easier to clean these parts when the debris or clippings are fresh rather than stuck on the lawn tractor for days or weeks at a time.

Mower Deck Cleaning

Wash the mower deck only when the lawn tractor is cool. The bearings on the blade pulley shafts expand as they heat up. Cooling rapidly with water can allow moisture to be trapped inside the bearings. This can cause rust to form on the bearing surfaces and shorten bearing life.

Cleaning Other Areas

Certain parts other than the mower deck can accumulate clippings and other debris. When the lawn tractor is cool, you should inspect these areas and brush or wipe off any debris with a soft brush or damp rag. Look around the top of the engine, exhaust area and muffler and by the rear axle near the frame. Do not spray water directly on the engine.

OPERATION

TOWING

An optional rear hitch kit is specifically designed for your lawn tractor. Do not use any other type of hitch on the lawn tractor.

Towing Safety

When the optional hitch is installed and you use a trailer or other attachment, pay attention to these important points for safe operation.

- Avoid sudden starts and stops while towing. The additional weight of a trailer or attachment could cause loss of control resulting in an accident.
- Never allow anyone to ride in or on a trailer or other attachment.
- Failure to use the proper type of trailer or attachment could cause the tractor to overturn resulting in severe personal injury.
- The weight of a trailer or attachment increases stopping distances; use extra care, especially when operating on a slope.
- To avoid loss of control, use extra care when towing a trailer or attachment on a wet or rough surface.
- This lawn tractor is intended for use on relatively flat terrain.
- Towing a trailer or attachment on a slope exceeding 10 degrees (17% grade) could cause the lawn tractor and/or trailer to tip over.
- Reduce speed when towing on slopes.
- Avoid sharp turns when towing a trailer or attachment on a slope. If the load in a trailer or attachment is unbalanced, they and/or the lawn tractor may overturn.
- Secure the load in the trailer or attachment before driving. If the load shifts while driving, steering and/or braking can be affected, and in some cases the trailer or attachment and lawn tractor may jackknife.

Towing Weight Limits

Always adhere to the weight limits when towing a trailer or attachment with the lawn tractor.

Maximum Allowable Weight

Maximum allowable weight for the trailer or attachment and any items carried by the trailer or attachment:

On a flat surface: 500 lb (227 kg)

On a grade (10 degrees or less): 200 lb (90 kg)

Maximum Tongue Weight

Maximum allowable weight exerted by the trailer or attachment tongue onto the optional rear hitch:

Maximum tongue weight: 44 lb (20 kg)

TRANSPORTING

This section explains how to load and transport your lawn tractor safely.

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TRANSPORTING

BEFORE LOADING

1. If your lawn tractor is equipped with an optional grass bag kit, remove the bags, hopper cover, lower and upper chute.
2. If the engine has been running, allow it to cool for at least 15 minutes before loading the lawn tractor. Make sure to turn the fuel valve OFF.
3. Move the lift lever all the way back to TRANSPORT
4. If you need to push the lawn tractor into position, make sure the transmission release control is in the RELEASED position. See page 18.

LOADING AND UNLOADING

1. Transport the lawn tractor on a flat, level trailer or truck bed. The tiedown points should be near or on the floor.
2. Securely tie the lawn tractor down, front and rear, with ropes or straps. Use front and rear axles when attaching the tiedowns. Do not attach tiedowns to the steering rods.
3. When the lawn tractor is in position, turn the fuel valve OFF to reduce the possibility of fuel leaking.
4. The lawn tractor may spill fuel if tilted during loading or transporting. Wipe up spilled fuel immediately.

MAINTENANCE

This chapter explains when and how to perform routine inspection, service, and adjustments for do-it-yourself maintenance. More difficult maintenance tasks should be done by a servicing Honda lawn tractor dealer. This dealer is best equipped and staffed to provide the level of service and safety you and your lawn tractor deserve.

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MAINTENANCE

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THE IMPORTANCE OF MAINTENANCE

Good maintenance is essential for safe, economical, and trouble-free operation. It will also help reduce air pollution.

WARNING

Improper maintenance, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed.

Always follow the inspection and maintenance recommendations and schedules in this owner's manual.

To help you properly care for your lawn tractor, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a Honda technician or other qualified mechanic.

The maintenance schedule applies to normal operating conditions. If you operate your lawn tractor under unusual conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

Remember that your servicing dealer knows your lawn tractor best and is fully equipped to maintain and repair it.

To ensure the best quality and reliability, use only new, genuine Honda parts or their equivalents for repair and replacement.

Maintenance, replacement, or repair of the emission control devices and systems may be performed by any engine repair establishment or individual, using parts that are "certified" to EPA standards.

MAINTENANCE

MAINTENANCE SAFETY

Some of the most important safety precautions follow. However, we cannot warn you of every conceivable hazard that can arise in performing maintenance. Only you can decide whether or not you should perform a given task.

WARNING

Failure to properly follow maintenance instructions and precautions can cause you to be seriously hurt or killed.

Always follow the procedures and precautions in the owner's manual.

Safety Precautions

- Make sure the engine is off before you begin any maintenance or repairs. This will eliminate several potential hazards:

- **Carbon monoxide poisoning from engine exhaust.**

Be sure there is adequate ventilation whenever you operate the engine.

- **Burns from hot parts.**

Let the engine and exhaust system cool before touching.

- **Injury from moving parts.**

Do not run the engine unless instructed to do so.

- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks, and flames away from all fuel-related parts.
- For certain operations, the lawn tractor must be raised off the ground. Be sure the lawn tractor is solidly supported before you put any part of your body under the lawn tractor.
- Disconnect the spark plug cap and wear heavy gloves when working near the mower deck, belts, or blades.
- Never support or stand the lawn tractor on either side or end. Fuel, oil, or battery electrolyte can leak out.

EMISSION CONTROL SYSTEM

Source of Emissions

The combustion process produces carbon monoxide, oxides of nitrogen, and hydrocarbons. Control of hydrocarbons and oxides of nitrogen is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda uses lean carburetor settings and other systems to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons.

The U.S. and California Clean Air Act

EPA and California regulations require all manufacturers to furnish written instruction describing the operation and maintenance of emission control systems.

The following instructions and procedures must be followed in order to keep the Honda engine emissions within the emission standards.

Tampering and Altering

Tampering with or altering the emission control system may increase emissions beyond the legal limit. Among those acts that constitute tampering are:

- Removal or alteration of any part of intake, fuel, or exhaust system.
- Altering or defeating the governor linkage or speed-adjusting mechanism to cause the engine to operate outside its design parameters.

Problems That May Affect Emissions

If you are aware of any of the following symptoms, have your engine inspected and repaired by your authorized Honda servicing dealer.

- Hard starting or stalling after starting.
- Rough idle.
- Misfiring or backfiring under load.
- Afterburning (backfiring).
- Black exhaust smoke or high fuel consumption.

Replacement Parts

The emission control systems on your new Honda engine were designed, built, and certified to conform with EPA and California emission regulations. We recommend the use of genuine Honda parts whenever you have maintenance done. These original-design replacement parts are manufactured to the same standards as the original parts, so you can be confident of their performance. The use of replacement parts that are not of the original design and quality may impair the effectiveness of your emission control system.

A manufacturer of an aftermarket part assumes the responsibility that the part will not adversely affect emission performance. The manufacturer or rebuilder of the part must certify that use of the part will not result in a failure of the engine to comply with emission regulations.

Maintenance

Follow the Maintenance Schedule in this section. Remember that this schedule is based on the assumption that your machine will be used for its designed purpose. Sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, will require more frequent service.

MAINTENANCE

MAINTENANCE SCHEDULE

Item	Action	Service Interval hours (months) (whichever comes first)					Page
		each use	first 20 (3)	50 (6)	100 (12)	300 (36)	
Engine oil and filter	check	O					22
	change		O		O		64
Air filter elements	check	O					61
	change			O ¹			
	replace					O ²	
Cooling air intake & muffler	check	O					23
Hydrostatic fluid	check level	O					66
Cooling fan screen	check	O					Shop manual
Battery electrolyte	check level						69
Tires & air pressure	check	O					82
Mower deck belt	check	O					73
Brake pedal	check	O					23
Blade condition	check	O					75
Blade bolts	inspect	O					77
Blade bolts	check tightness		O ³	O ³			77
Blade spindle & J-pins grease (all mowers) Anti-scalp rollers (48" mower only)	4 to 6 pumps		O				87
Front & rear axle grease	one pump			O			87
Parking brake	check	O					23
Spark plug	check & clean				O		66
	replace					O	
Optional spark arrester	clean				O		118
PTO knob	check					O ³	17
Idle speed	check & adjust					O	Shop manual
Throttle cable	check & adjust			O			Shop manual
Fuel filter	check				O ³		67
Fuel line	replace					O ³	Shop manual
Valve clearance	check & adjust					O ³	Shop manual
Engine cooling fins & shroud	clean					O ³	Shop manual

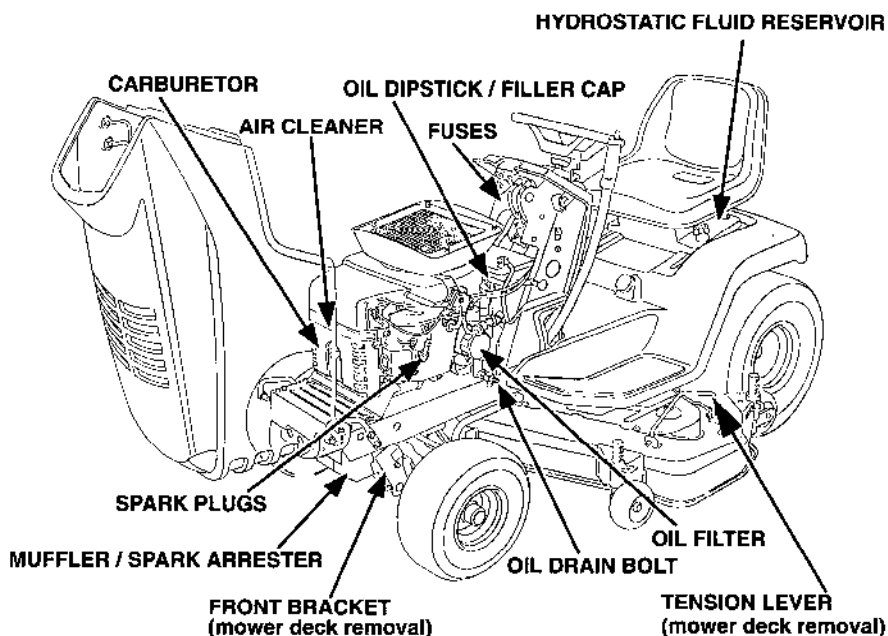
¹ Service every 10 hours or daily when used in dusty areas

² Replace paper filter element only

³ These items should only be serviced by an authorized Honda servicing lawn tractor dealer unless you are mechanically proficient and have the proper tools.

MAINTENANCE ACCESS POINTS

Refer to the illustrations on this page for the locations of specific maintenance items and service points.

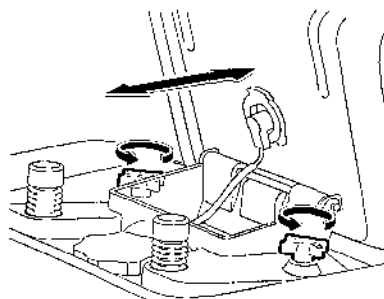


MAINTENANCE

SEAT

Adjusting the Seat

1. Tip seat forward and loosen two knobs to slide seat assembly forward or back to the most comfortable position.
2. Tighten knobs after adjustment to keep seat in place.

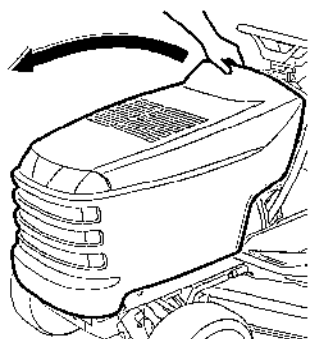


ENGINE

Engine Hood

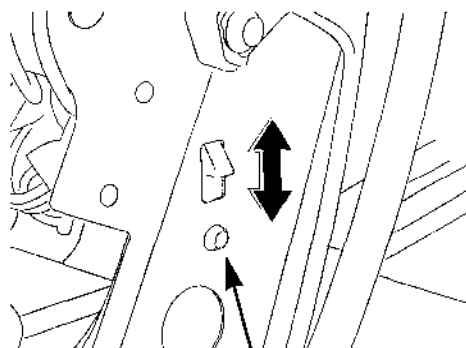
The engine hood must be raised to perform some maintenance procedures on the lawn tractor.

The engine hood does not lock in the open position, so be careful not to bump or knock it when it is open.



Adjusting Hood Latch

1. Open hood and loosen cap screw to adjust hood latch on both sides of tractor.
2. Move latch up or down and tighten cap screw. Verify hood closes properly and readjust cap screws as needed.

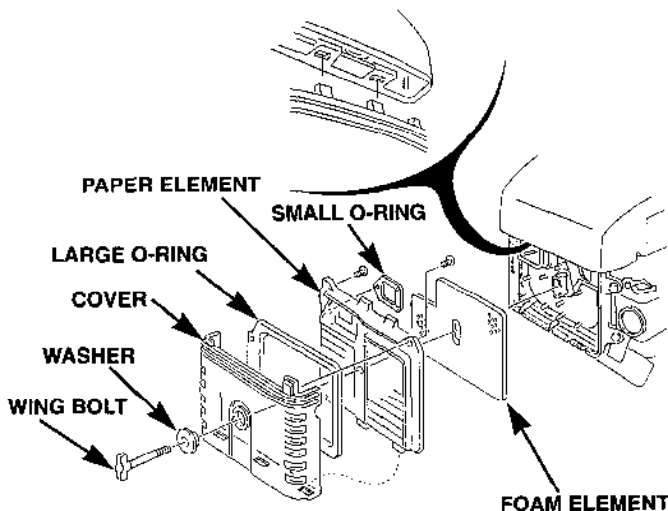


CAP SCREW

Air Cleaner Service

Check that the air cleaner elements are clean and in good condition. A dirty air cleaner will restrict air flow to the engine, reducing performance. A damaged air cleaner will allow dirt to enter the engine, causing rapid engine wear.

1. Remove the wing bolt, air cleaner cover, and the foam element. If the foam element appears clean over more than half its surface, it does not need cleaning. Reinstall the cover.



If the foam element appears dirty, go to step 2.

2. Remove the two 5 mm screws from the air cleaner cover and remove the paper element from the cover.
3. Carefully check both elements for holes or tears. Replace any element that is damaged or excessively dirty. Always use new o-rings when you replace the elements. See page 114 for replacement part numbers.
4. Clean the foam element by squeezing it in warm soapy water, rinsing it, and allowing it to dry. You may also use a nonflammable solvent and then allow it to dry.

WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured.

Never use gasoline to clean engine parts. Use a nonflammable solvent.

5. Oil the foam element by dipping it in clean engine oil and squeezing out all excess oil. If too much oil is left in the foam, the engine will smoke when you first start it.
6. Clean the paper element by lightly tapping it on a hard surface to knock off dirt or by blowing compressed air (at less than 30 psi) through the filter from the cover side. Never try to brush off the dirt — that will just force it into the filter fibers.
7. Use a damp cloth to wipe any dirt from the inside of the air cleaner housing and cover. Be careful not to allow dirt into the duct leading to the carburetor. Be sure the rubber gaskets are in place and in good condition.
8. Install the paper element in the cover and the foam element in the body.
9. Install the cover with its wing bolt.

NOTICE

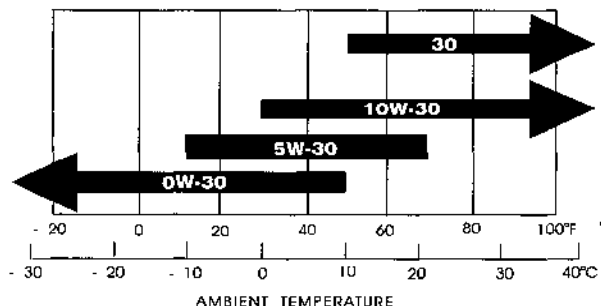
Operating the engine with no air cleaner or with damaged elements can cause rapid engine wear.

Engine Oil

Engine oil capacity: 2.2 US quarts (2.1 liters) with filter change

Recommended Oil

Oil is a major factor affecting performance and service life. Use a 4-stroke motor oil that meets or exceeds the requirements for API service classification SH, SJ, or equivalent. Always check the API service label on the oil container to be sure it includes the letters SH, SJ, or equivalent.



SAE 10W-30 is recommended for general use. Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

NOTICE

Using nondetergent oil can shorten the engine's service life, and using 2-stroke oil can damage the engine.

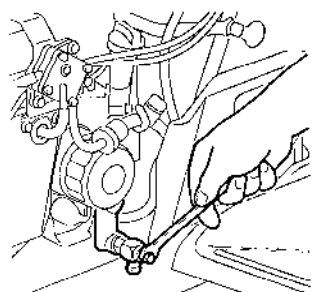
MAINTENANCE

Changing the Oil

Change the oil at the recommended interval or more frequently under extreme operating conditions.

Drain the oil while the engine is warm to assure rapid and complete draining.

1. Raise the engine hood.
2. Clean the area around the oil filler cap and unscrew it.
3. Near the bottom of the oil filler tube is the oil drain valve. Position a suitable oil collection container that can hold at least 3 US quarts (3.3 liters) below the oil drain valve.
4. Loosen the drain valve and allow the engine oil to drain out.
5. Once the used oil has drained, close the oil drain valve and tighten securely.
6. Fill the engine with the correct amount of the recommended oil through the oil filler tube.



Oil drain only: 1.9 US quarts (1.8 liters)

Oil drain and filter change: 2.2 US quarts (2.1 liters)

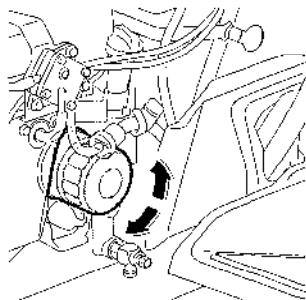
Do not overfill; measure the oil level as shown in the **BEFORE OPERATION** section (page 22). Replace the oil filler cap.

7. Verify that there is no oil leaking from the drain valve.
8. Please dispose of used motor oil and the oil containers in a manner that is compatible with the environment. We suggest you take it in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash or pour it on the ground or down a drain.

Oil Filter Change

See page 114 for replacement part numbers.

1. Drain the engine oil.
2. Remove the oil filter with a filter wrench and let the remaining oil drain out. Discard the oil filter.
3. Clean the filter base.
4. Coat the O-ring on the new filter with clean engine oil.
5. Retighten the drain valve securely and hand tighten the new oil filter until the O-ring seats against the filter base.
6. Tighten the oil filter to specified torque
22.0 N•m (16 lb-ft, 2.20 kg-m).



NOTICE

Use only a Honda genuine oil filter or a filter of equivalent quality specified for your model. Using the wrong filter may cause engine damage.

7. Pour the specified amount of recommended oil into the engine. Start the engine and check the filter for leaks.
8. Stop the engine and recheck the oil level. If necessary, add oil to bring it up to the proper level.

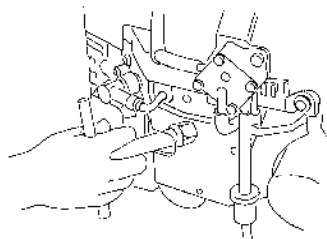
MAINTENANCE

Spark Plugs

Removal, Inspection and Replacement

For good performance, the spark plugs should have the correct gap and be free of deposits. Follow these steps for each spark plug.

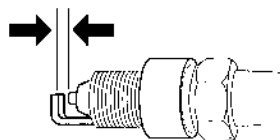
1. Remove the spark plug cap. Clean any dirt from around the spark plug base. Use the wrench supplied to remove the spark plug.
2. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
3. New plugs should be **NGK: BPR5ES** or **ND: W16EPR-U**.



NOTICE

Spark plugs of the wrong size or incorrect heat range can cause engine damage

4. Measure the plug gap with a feeler gauge. Correct as necessary by carefully bending the side electrode. The gap should be:
0.028 to 0.031 inch (0.70 to 0.80 mm)
5. Check that the spark plug washer is in good condition and thread the spark plug in by hand to prevent cross threading.
6. After the spark plug is seated, tighten with the spark plug wrench to compress the washer.
 - If installing a new spark plug, tighten 1/2 turn after the plug seats to compress the washer.
 - If reinstalling a used spark plug, tighten 1/8 to 1/4 turn after plug seats to compress the washer.



NOTICE

The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may cause engine damage.

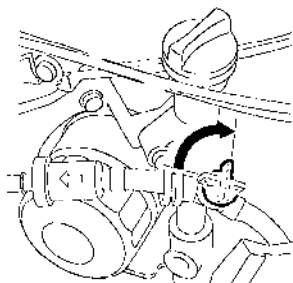
Use only the recommended spark plug or equivalent. A spark plug which has an improper heat range may cause engine damage.

FUEL SYSTEM

Changing the Fuel Filter

We suggest you perform this procedure when the fuel tank is nearly empty. Change the fuel filter at the recommended interval. See page 114 for replacement part numbers.

1. Start the lawn tractor, and engage the parking brake.
2. Turn the fuel valve to the OFF position.
3. Place a container under the filter to catch any spilled fuel.
4. Squeeze the hose clamps and remove the lines from the filter.
5. Install the new filter with the arrow pointing toward the engine.
6. Be sure the clamps securely hold the fuel lines to the new filter. Open fuel valve, start the engine and check for leaks.
7. Dispose of the old filter and any spilled fuel properly.



Carburetor Modification for High Altitude Operation

At high altitude, the standard carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. A very rich mixture will also foul the spark plug and cause hard starting.

High altitude performance can be improved by a specific modification to the carburetor. If you always operate your lawn tractor at altitudes above 5,000 feet (1,500 meters) have an authorized Honda lawn tractor dealer perform this carburetor modification.

MAINTENANCE

Even with carburetor modification, engine horsepower will decrease about 3.5% for each 1,000-foot (300-meter) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

NOTICE

When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 5,000 feet (1,500 meters) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have an authorized Honda lawn tractor dealer return the carburetor to original factory specification.

Fuel Recommendations

Use unleaded gasoline with a pump octane rating of 86 or higher.

This engine is certified to operate on unleaded gasoline. Unleaded gasoline produces fewer engine and spark plug deposits and extends exhaust system life.

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

Occasionally you may hear light "spark knock" or "pinging" (metallic rapping noise) while operating under heavy loads. This is no cause for concern.

If spark knock or pinging occurs at a steady engine speed, under normal load, change brands of gasoline. If spark knock or pinging persists, see an authorized Honda lawn tractor dealer.

NOTICE

Running the engine with persistent spark knock or pinging can cause engine damage.

Running the engine with persistent spark knock or pinging is misuse, and the *Distributor's Limited Warranty* does not cover parts damaged by misuse.

ELECTRICAL

Battery Service

Your lawn tractor charging system charges the battery while the engine is running. However, if the lawn tractor is only used periodically, the battery must be charged monthly to maintain the battery service life.

WARNING

The battery contains sulfuric acid (electrolyte) which is highly corrosive and poisonous.

Getting electrolyte in your eyes or on your skin can cause serious burns.

Wear protective clothing and eye protection when working near the battery

KEEP CHILDREN AWAY FROM THE BATTERY.

Emergency Procedures

Eyes—Flush with water from a cup or other container for at least fifteen minutes. (Water under pressure can damage the eye.) Immediately call 911 (USA only) or a physician.

Skin—Remove contaminated clothing. Flush the skin with large quantities of water. Call a physician immediately.

Swallowing—Drink water or milk. Call your local Poison Control Center (USA only) or a physician immediately.

MAINTENANCE

Inspection

1. Raise the hood. Remove the battery cell caps.
2. Inspect the electrolyte level of each cell. The electrolyte liquid should cover all the plates.
3. If any plates are not covered, add distilled water as necessary.

Removal

To charge the battery, follow the procedures below.

1. Raise the hood. Remove the negative (-) cable from the battery negative (-) terminal, then remove the positive (+) cable from the battery positive (+) terminal.
2. Remove rubber strap securing battery.
3. Remove the battery from the battery compartment.

Charging

WARNING

A battery can explode if you do not follow the correct procedure, seriously injuring anyone nearby.

Keep all sparks, open flames, and smoking material away from the battery.

1. Remove the battery cell caps.
2. Connect the battery charger following the manufacturer's instructions. After charging, check the electrolyte level in each of the cells. Add distilled water if needed, then install the battery caps.
3. Clean the outside of the battery and the battery compartment with a solution of baking soda and water. Don't allow any of the solution to drip down the vent caps into the battery cells.

Battery Installation

1. With the hood raised, install battery in the battery tray with positive terminal to right side of lawn tractor.
2. Install rubber retaining strap.
3. Install positive (+) cable on battery positive (+) terminal, then install negative (-) cable on battery negative (-) terminal. Tighten clamping bolt securely and lower hood.

Fuse Replacement

1. Lift hood.
2. Pull defective fuse out of socket.
3. Check metal clip in fuse window. Discard fuse if clip is broken.
Make sure to replace fuse of proper amperage. See your Honda dealer or an automotive parts store for fuse replacement.
4. Push new fuse into proper socket.
5. Lower hood.

Headlight Bulb Replacement

See page 114 for replacement bulb part number.

1. Open the engine hood.
2. Push and twist the bulb connector counterclockwise, then remove the connector and bulb.
3. Push the bulb into the connector slightly and turn counterclockwise. Remove bulb.
4. Install the new bulb, then align the tab on the bulb connector with the cutout in the headlight case. Turn the bulb connector clockwise while pushing it in.

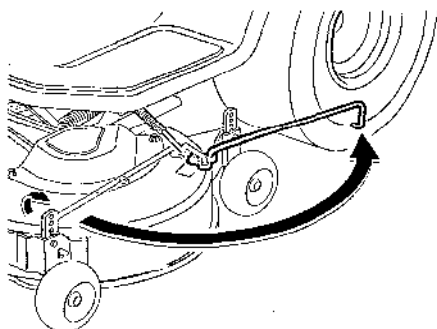
MAINTENANCE

MOWER DECK

Replacing Mower Drive (primary) Belt

The primary belt runs from the crankshaft pulley on the engine back to the main pulley on the mower deck. Cleaning and replacing drive belt steps are similar for both 38 inch and 48 inch mowers. See page 114 for replacement part numbers.

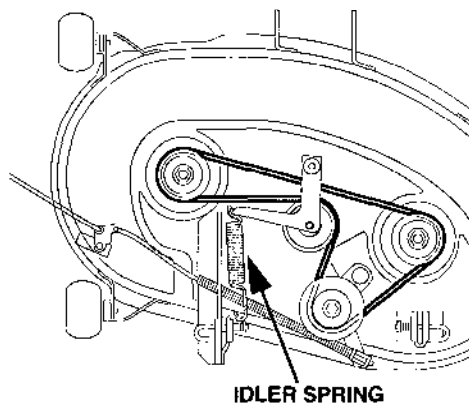
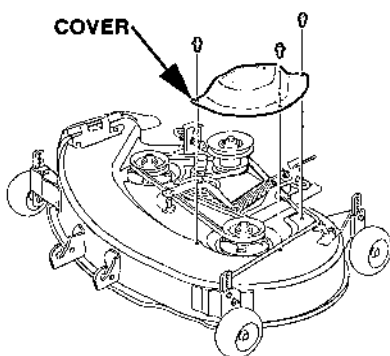
1. Stop the engine, disconnect both spark plug caps, engage the parking brake, and remove the key from the ignition.
2. Move the lift lever to the LOCKOUT position.
3. Disconnect the belt tension lever from the hook bracket and move lever all the way out toward you as far as it will go.
4. Remove the drive belt from the engine drive pulley and mower pulley.
5. Installation is the reverse of removal.



Replacing Mower Deck (secondary) Belt (38 inch mower deck)

The secondary belt is the belt on the mower deck only. See page 114 for replacement part numbers.

1. Remove mower deck (page 83).
2. Remove belt guard cover.
3. Disconnect idler spring with a spring removal tool or self-locking pliers.
4. Remove mower belt.
5. Installation is the reverse of removal.

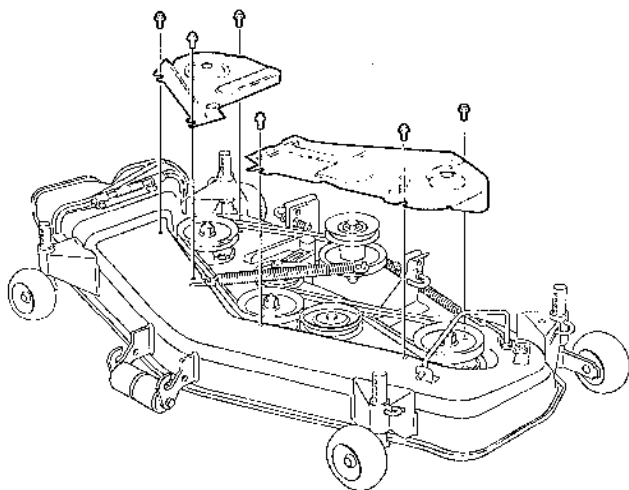


MAINTENANCE

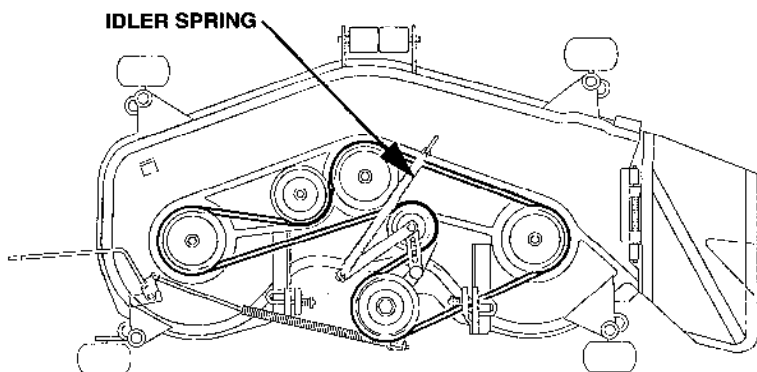
Cleaning or Replacing Mower Deck (secondary) Belt (48 inch mower deck)

See page 114 for replacement part numbers.

1. Remove mower deck. (See the **Removing Mower** section.)
2. Remove cover (right-hand side) by loosening the cap screws.



3. Remove belt guard cover (left-hand side) by loosening the cap screws. Disconnect idler spring with a spring removal tool or self-locking pliers.



5. Remove mower belt. Installation is the reverse of removal.

BLADES

Inspect, check bolt tightness, remove, sharpen, and replace the blades as described in this section. Always complete these steps before working around the mower blades:

1. Move the PTO clutch knob to OFF. Engage the parking brake.
2. Turn the ignition switch to OFF and remove the key.
3. Disconnect the spark plug caps.

Blade Inspection

When the blades need resharpening or replacement, take the lawn tractor to an authorized servicing Honda lawn tractor dealer. Or, if you have a torque wrench, you can remove and install the blades yourself.

WARNING

A worn, cracked, or damaged blade can break and pieces of the blade can become dangerous projectiles.

Thrown objects can cause serious injury.

Inspect the blades regularly and do not operate the lawn tractor with a worn or damaged blade.



NORMAL



WORN



BENT



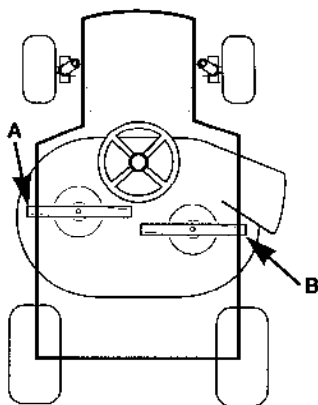
CRACKED

MAINTENANCE

Inspecting For A Bent Blade

Perform this inspection prior to attempting any mower deck leveling adjustments.

1. Wearing heavy gloves, then position the right (discharge) side blade so it is parallel to the front axle.
2. Measure the height of the right side blade at point B and record this measurement.
3. Rotate the right side blade 180 degrees and measure the other tip at point B.
4. The two measurements should be the same; if they are not, the blade or blade spindle may be bent.
5. Repeat steps 1 - 4 for the left side blade but measure at point A.



Blade Bolt Tightness

Blade bolt tightness should be checked as specified in the **MAINTENANCE SCHEDULE** section.

WARNING

The blades are sharp, and spin at high speed.

A spinning blade can cut you severely and can amputate fingers and toes.

- Wear protective footwear.
- Keep your hands and feet away from the mower deck while the engine is running.
- Stop the engine before performing any adjustment, inspection, or maintenance.

Removing and Installing Mower Blades

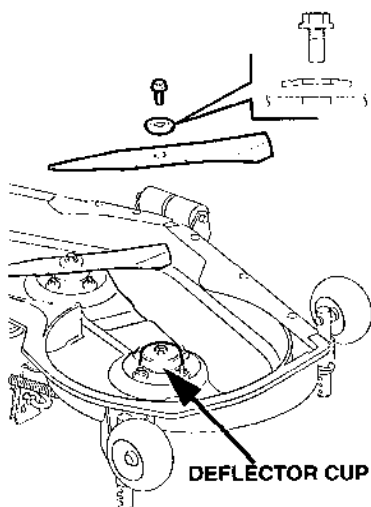
48" Mower: Remove the mower (page 83). Skip ahead to step 3.

38" Mower: Start with step 1 below.

1. Pull lift lever all the way back to the **TRANSPORT** (upper) position.
2. Put a block of wood under each side of the mower.
3. Place a block of wood between the blade and the deck to prevent the blade from turning when removing bolt.

MAINTENANCE

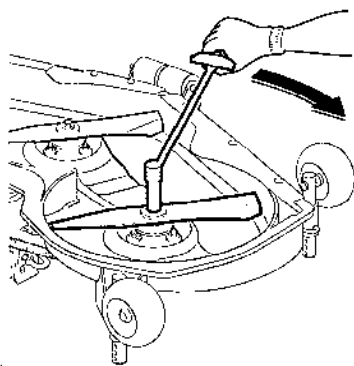
4. Remove bolt, washer, and blade.
5. If a blade is dull, have it sharpened and balanced.
6. If a blade is damaged, install a new blade. See page 114 for replacement part numbers.
7. **48 inch mower only:** Make sure deflector cups are in place between spindle and blade.



8. Install blade. Fasten with washer and bolt. Make sure cupped side of washer is next to blade.
9. Use a torque wrench to tighten bolt to:

38" mower: 55 ft-lb (75 N•m)

48" mower: 50 ft-lb (68 N•m)

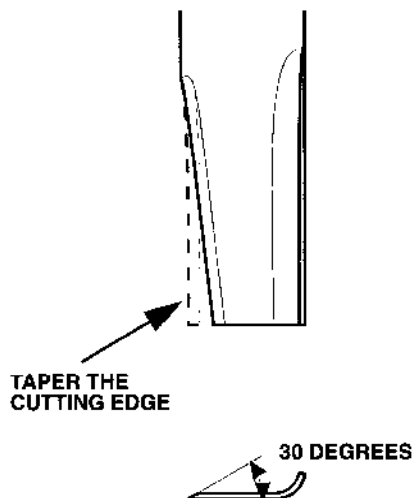


Blade Sharpening

A dull blade may be sharpened, but a blade that is worn out, bent, cracked, or otherwise damaged must be replaced. Always use a genuine Honda replacement blade or high-quality equivalent. See page 114 for replacement part numbers.

Sharpening Guidelines

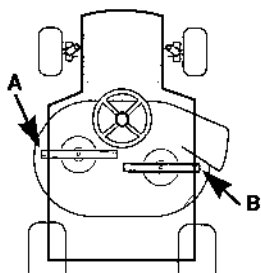
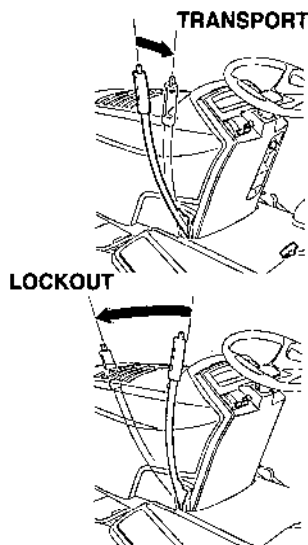
- Maintain the original angle of the blade (about 30°).
- Sharpen the blades to a knife edge.
- Remove an equal amount of material from each end of the blade to maintain balance.
- Do not remove material from the inner area of the cutting edge. If you need to remove material to restore the cutting edge, taper the edge toward the tip. Do not taper beyond 1/3 of the blade width.
- Do not grind the back side of the blade.
- Check the balance of the blade by placing a dowel through the center hole. Should one end of the blade drop, remove additional material from that end of the blade to achieve balance.



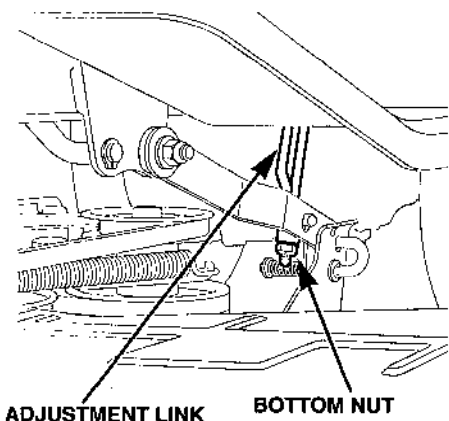
MAINTENANCE

Left-to-Right Inspection Adjustment

1. Move the lift lever to **TRANSPORT**.
2. Set the height adjustment knob to the 2" (two inch) position.
3. Set the anti-scalp rollers to their highest position (page 34)
4. Move the lift lever to the **LOCKOUT** position.
5. Rotate the left and right side blades so they are parallel to the front axle. It is easier if you move one blade into position, then hold the blade belt steady while you move the other.
6. Use a blade height measuring gauge and measure the blade height at outer tips (points A and B). Heights **must be** within 1/8 inch (3 mm) of each other. For best results, both heights should be about 2" (51 mm).

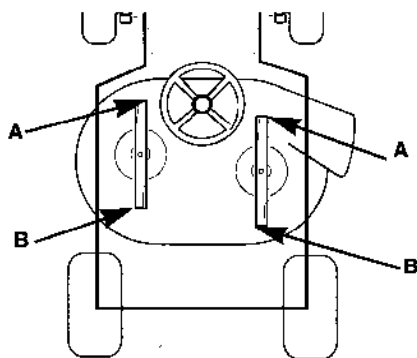


7. Both the left and right sides of the mower deck can be adjusted. Locate the adjustment links near the back of the mower deck.
8. Loosen the top or bottom nut as required to raise or lower a side of mower deck. Clockwise turns raise, while counter-clockwise turns lowers the side height of the mower deck.

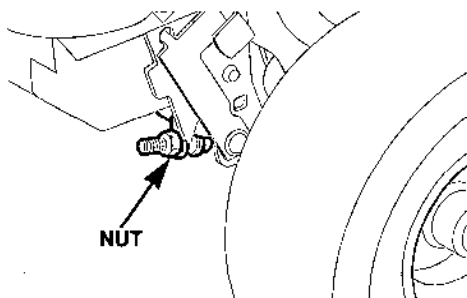


Front-to-Rear Inspection and Adjustment

1. Pull the mower deck lift lever all the way back to the TRANSPORT position.
2. Turn the mower deck height adjustment knob to the 2" position. Move the mower deck lift lever forward to the LOCKOUT position.
3. Move the left and right side blades so they are perpendicular to the front axle. Move one blade into position, then hold the blade belt steady while you move the other.



4. Use a blade height measuring tool and measure the blade height at both points A and B.
5. A **must be** 1/2~3/8" (6~9 mm) lower than B. For best results, A should be about 2".
6. Both A heights can be adjusted. Locate the adjustment link near the front of the mower deck.
7. Loosen both the top or bottom nuts as required to raise or lower the front of the mower deck.



Clockwise turns raise, while counter-clockwise turns lowers the front of the mower deck.

MAINTENANCE

TIRES AND WHEELS

Tires should be kept at the proper inflation pressure and periodically inspected for tread wear or damage. Keeping the tire treads clean and free of mud and other debris improves traction and steering control.

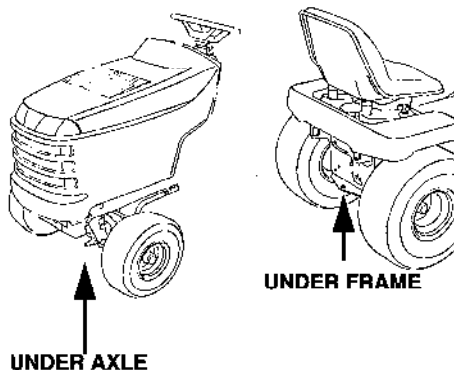
Tire pressure: Front: 10 psi (69 kPa)

Rear: 8 psi (55 kPa)

Lifting Points

Use the following points for jack pad placement. When lifting the rear section of the lawn tractor, don't place the jack pad on the transmission, or any other parts except the frame.

When lifting the front of the lawn tractor, be sure the jack pad is positioned on the axle housing only, and not any other part of the frame or steering linkage.

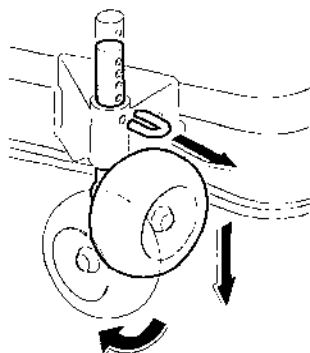


Removing Mower Deck

The procedure for removing the mower deck is similar for both the 38 inch mower deck and the 48 inch mower deck, except for the positioning of the anti-scalp rollers on the 48 inch mower deck.

1. Park the lawn tractor on a level surface. Stop the engine. Engage the parking brake. Remove the ignition key. Allow the engine to fully cool. Disconnect both spark plug caps.
2. If tire chains are installed, remove them to prevent damage to the mower deck.
3. Put the lift lever all the way back to TRANSPORT (upper) position.
4. Turn the height adjustment knob to the blank mark on knob.

On 48 inch mowers only: Pull out on J-pins and turn anti-scalp rollers 90 degrees on both sides of mower. This position makes it easy to move the mower out from under the tractor. Release J pins in shaft holes to lock rollers in position.



CAUTION

The lift assist spring is under tension when the lift lever is not in the LOCKOUT position.

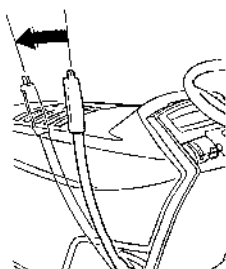
You can be injured by the lift spring.

Always move the lift lever to the LOCKOUT position before removing the mower deck.

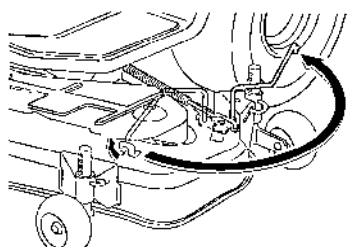
MAINTENANCE

5. Push lift lever all the way forward to **LOCKOUT** (lower) position.

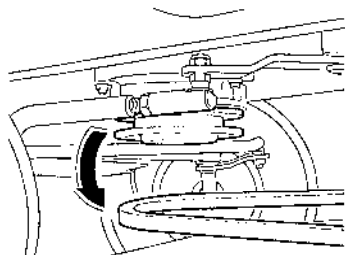
LOCKOUT



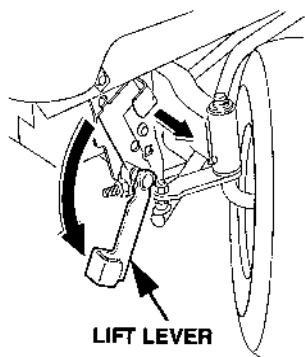
6. Disconnect drive belt tension lever from hook bracket by pulling lever out of hole on bracket, then up and toward you to relieve belt tension.



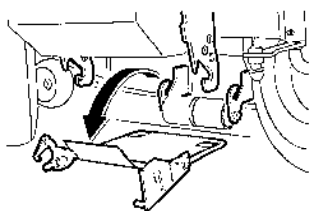
7. Remove drive belt from tractor and mower pulleys.



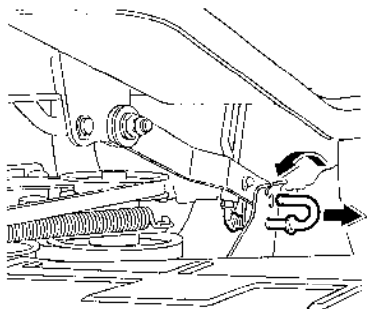
8. Pull out and down on front lift lever to disconnect front lift rod assembly from mower.



9. Remove the lift rod attaching assembly from tractor and mower.



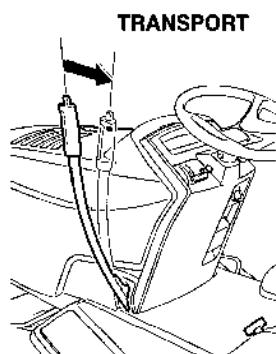
10. Pull out on rear attaching J-pins on each side of mower and turn pins to unlocked position to disconnect mower from tractor. It may be necessary to manually lift up on the rear of the mower deck to pull out the J-pins.



11. To prevent tension lever from catching on tractor, make sure tension lever is latched back into its bracket.

12. Grip the lift lever firmly (it is now under spring tension) and move it to the **TRANSPORT** (upper) position.

13. Slide mower deck out from under right side of tractor.



MAINTENANCE

Installing Mower

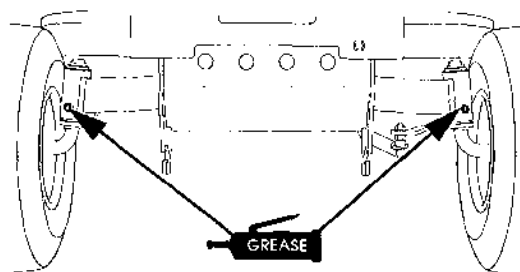
Refer to the removal steps and illustrations.

1. Put the lift lever in the TRANSPORT position.
2. Push mower under tractor.
3. Turn the height adjustment knob to blank mark on knob.
4. Move the lift lever in the LOCKOUT position.
5. Install the rear mower deck lift brackets to lift arms with the J-pins.
6. Attach front lift rod assembly to hooked end of tractor mounting frame brackets and hooked end of mower attaching brackets.
7. Rotate the front lift lever up so pin on lever is locked in hole on left-hand side of tractor frame.
8. Install mower drive belt on tractor drive pulley and mower drive pulley.
9. Push drive belt tension lever in and over hook bracket and put in hole in bracket on the mower deck.
10. Level mower (pages 80 - 81).
11. Adjust anti-scalp rollers (page 34).

Lubrication Points

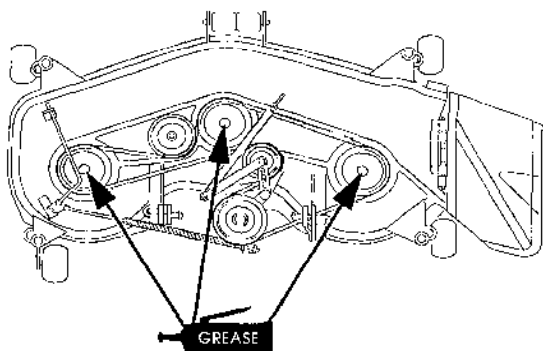
Lubricate the following points. Use NGLI #2 Lithium Base EP grease

- Front wheel spindles (turn steering wheel to distribute grease)

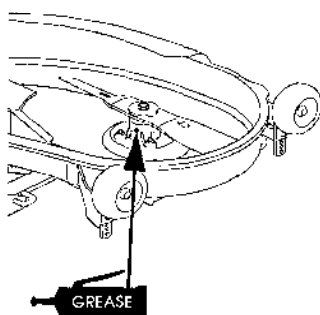


- Blade spindles

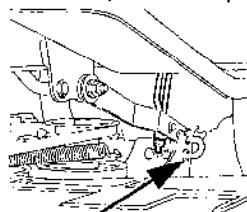
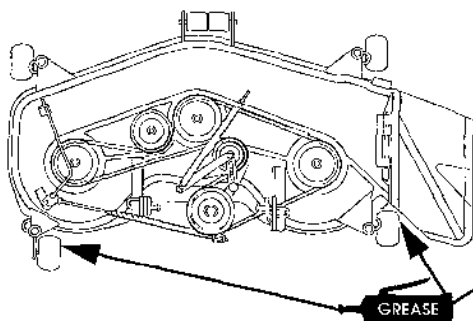
48" DECK (belt covers removed for clarity)



38" DECK (left side shown)



- Rear anti-scalp rollers (48" deck only) and J-Pins (all decks)



MAINTENANCE

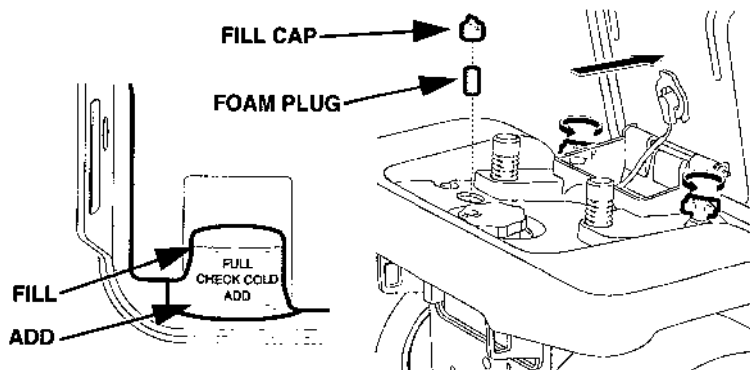
TRANSMISSION

To prevent contamination in hydraulic system, **Do not** drain or change hydrostatic transmission fluid.

SAE 10W30 engine oil with API classifications of SE, CC, or CD is recommended in the transmission. **Do not use Honda Hydrostatic fluid.**

Checking Hydrostatic Transmission Oil Level

1. Check transmission oil only when the tractor is cold.
2. Park tractor on level surface.
3. Oil must be between **FILL** and **ADD** marks on reservoir.



4. If oil level is low, tip seat up and loosen two seat adjusting knobs under seat.
5. Slide seat forward for access to fill cap. Clean the area near the reservoir filler neck. Remove fill cap and foam plug, then add enough oil to bring oil level to top mark.
6. Install foam plug and tighten fill cap.
7. Start engine and operate tractor forward and in reverse several times.
8. Park the tractor on level surface. Stop the engine and check oil level again.

TROUBLESHOOTING



This section helps you to identify the problems, their causes and some corrective actions.

ENGINE PROBLEMS	90
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TROUBLESHOOTING

ENGINE PROBLEMS

Starter does not operate	Possible cause	Correction
Check that brake is applied.	Safety interlock system.	Push down brake pedal.
Check PTO knob position.	PTO knob is ON.	Move PTO knob to OFF.
Safety interlock system operating.	Interlock switch on seat or parking brake not set	Sit on seat or set the parking brake lever.
No electric current to starter.	Blown fuse, dead (or partially discharged) battery or defective starter relay.	Check fuse / relay; replace if necessary. Check battery; charge or replace.

Indicator lamps	Possible cause	Correction
BATTERY DISCHARGE lamp stays on when engine is running. 	Excessive load on charging system, charging system not working or disconnected, voltage regulator broken	See your authorized servicing Honda lawn tractor dealer.
LOW OIL PRESSURE lamp stays on when engine is running 	Low oil level Defective oil pump	Check oil level and add as necessary See your authorized servicing Honda lawn tractor dealer

Starter operates, but engine will not start	Possible cause	Correction
Check throttle position and choke.	Throttle not in proper position.	Throttle must be in FAST position, choke ON for a hot start, choke OFF for a cold start.
Check fuel delivery to engine.	Fuel valve is OFF. Fuel filter clogged.	Turn fuel valve to ON . Check for clogged fuel filter or obstructions in fuel tank.
Check fuel condition.	Stale or old fuel.	Be sure tank has fresh fuel.
Check for spark.	Spark plug cap(s) off. Improper electrode gap or deposits in the spark plug(s) gap.	Make sure caps are connected. Verify that spark plugs are free of deposits, and have proper gap.

TROUBLESHOOTING

Engine has low power	Possible cause	Correction
Check ground speed.	Fast ground speed when mowing tall grass puts excessive load on engine.	Mow at slower ground speed.
Check mower deck height.	Too low mower deck height for grass puts excessive load on engine.	Raise height of mower deck.
Check mower deck.	Mower deck clogged with grass.	Clear mower deck of clogs.
Check air cleaner.	Dirty or clogged air filter(s) make engine run poorly.	Clean and replace air filter(s) as needed.
Check spark plugs.	Spark plug caps not secure. Improper electrode gap or deposits on gap.	Make sure spark plug caps are securely connected. Verify the spark plugs are free of deposits and have proper gap.
Check engine cooling.	Cooling air intake path and engine fan obstructed.	Inspect the cooling air intake path and engine fan; clear away any grass or obstructions.

TROUBLESHOOTING

Engine has low power	Possible cause	Correction
Check spark arrester (optional part).	Optional spark arrester clogged or dirty.	Examine spark arrester, and make sure it is clean and free of any deposits or obstructions.
Check choke position.	Choke in wrong position or choke plate sticking.	Check choke plate movement.

DRIVE PROBLEMS

Engine runs, but lawn tractor doesn't move	Possible cause	Correction
Check speed/direction control.	Travel pedal not pressed.	Press either travel pedal down.
Check parking brake.	Parking brake lever is engaged.	Release parking brake lever.
Check pedal position.	Brake pedal not fully released.	Make sure brake pedal is fully released.
Check drive belt.	Drive belt worn, broken or not on pulleys.	See servicing Honda lawn tractor dealer.
Check transmission release	Lever is in the RELEASED position	Move lever to the ENGAGED position.

TROUBLESHOOTING

VIBRATION

Lawn tractor vibrates	Possible cause	Correction
Check blades.	Blades not in good condition.	Inspect blades, and replace if necessary.
Check mower deck.	Blades obstructed by grass, mud, etc.	Clear mower deck of any obstructions.
Check blade belt.	Blade belt worn or not properly installed.	Inspect blade belt, and make sure it is properly installed.

MOWER DECK PROBLEMS

Won't cut grass	Possible cause	Correction
Check PTO knob position.	PTO knob not ON.	Move PTO knob to ON.
Check deck height adjustment lever.	Deck height not properly set.	Adjust deck height to grass conditions.
Check blade belt and primary belt.	Blade belt worn, not on pulleys or not properly installed.	Inspect blade belt and make sure it is properly installed.

TROUBLESHOOTING

Poor cut quality	Possible cause	Correction
Check throttle position.	Blades spinning too slowly.	Keep throttle in FAST when mowing.
Check mower deck.	Blades obstructed by grass, mud, etc.	Clear mower deck of any obstructions.
Check travel speed.	Lawn tractor moving too fast for mowing conditions.	Reduce travel speed.
Check mower deck height.	Mower deck height set too low for grass conditions.	Adjust mower deck height to obtain suitable cut quality.
Check grass conditions.	Wet grass is difficult to mow.	Mow only when grass is dry.
Check mower deck level.	Mower deck not properly level.	Adjust mower deck level.
Check blades.	Blade bent, cracked or dull.	Inspect, sharpen, or replace blade as.
Check blade belt.	Belt worn or not properly installed.	Make sure belt is properly installed.
Check tire pressure.	Incorrect tire pressure causing deck misalignment.	Inflate tires to correct pressure.
Check anti-scalp rollers	Rollers misadjusted.	Adjust rollers.
High effort required to lift and latch deck lift handle.	Front draft arm on mower adjusted too short, causing lift system to bind.	Adjust front draft arm.

TROUBLESHOOTING

Grass not discharging properly	Possible cause	Correction
Check throttle position.	Blades spinning too slowly.	Keep throttle in FAST when mowing.
Check deck height adjustment lever.	Deck set too high up.	Adjust deck height to grass conditions.
Check blade belt and primary belt.	Blade belt worn, not on pulleys or not properly installed.	Inspect blade belt and make sure it is properly installed.
Check grass conditions.	Wet grass is difficult to mow.	Mow only when grass is dry.
Check mowing overlap.	Too little overlap.	Adjust overlap as required for mowing conditions.
Check ground speed.	Lawn tractor moving too fast for mowing conditions.	Use shift lever to reduce ground speed.
Check blades.	Blades installed incorrectly.	Make sure both blades are correctly installed.

TROUBLESHOOTING

Engine stalls when PTO clutch lever is set to ON	Possible cause	Correction
Check throttle position.	Engine running too slow.	Keep throttle in FAST when mowing.
Check mower deck.	Blades obstructed by grass, mud, etc.	Clear mower deck of any obstructions.
Check optional grass bag chute.	Blades obstructed by clog in grass bag chute.	Clear grass bag chute of any clogs or obstructions.
Operator not in operator position.	Safety interlock system.	Operator must be in seated position.

STORAGE

This section explains how to protect your lawn tractor from rust and corrosion, and ensure that it will start easily when you want to use it again.

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STORAGE

STORAGE PREPARATION

Proper storage preparation is essential for keeping your lawn tractor trouble free and looking good. The following steps will help to keep rust and corrosion from impairing your lawn tractor's function and appearance, and will make the engine easier to start when you use the lawn tractor again.

Cleaning

1. Wash the lawn tractor, including the underside of the mower deck.

Engine

Wash the engine by hand, and be careful to prevent water from entering the air cleaner.

NOTICE

- Using a garden hose or pressure washing equipment can force water into the air cleaner. Water in the air cleaner will soak the filter elements and can enter the carburetor or engine cylinder, causing damage.
- Water contacting a hot engine can cause damage. If the engine has been running, allow it to cool for at least half an hour before washing.

Mower Deck

If using a garden hose or pressure washing equipment to clean the mower deck, be careful to avoid getting water on the belts.

NOTICE

Spraying water on hot mower deck bearings can cause them to be damaged from cooling too quickly.

Before washing the underside of the mower deck, be sure the parking brake is set and the height adjustment lever is all the way up.

Grass Bag (optional kit)

Remove the grass bags from the hopper frame, and wash them with a garden hose or pressure washing equipment. Allow the bags to completely dry before storage.

2. After washing the lawn tractor, wipe dry all accessible surfaces.
3. Start the engine outdoors, and let it run until it reaches normal operating temperature to evaporate any water remaining on the engine.
4. While the engine is running, sit on the operator's seat and operate the PTO clutch knob to expel water from the blade pulleys, spindles, and other mower deck items. Allow the blades to spin for several minutes to ensure that no water remains.
5. Stop the engine and allow it to cool.
6. After the lawn tractor is clean and dry, touch up any damaged paint and coat other areas with a light film oil. Lubricate the throttle cable core with a silicone spray lubricant.

STORAGE

Fuel

Gasoline will oxidize and deteriorate in storage. Old gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in your lawn tractor deteriorates during storage, you may need to have the carburetor and other fuel system components serviced or replaced.

The length of time that gasoline can be left in your fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, your storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Fuel deterioration problems may occur within a few months, or even less if the gasoline was not fresh when you filled the fuel tank.

Fuel system damage or engine performance problems resulting from neglected storage preparation are not covered under warranty.

You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose.

Adding a Gasoline Stabilizer to Extend Fuel Storage Life

When adding a gasoline stabilizer, fill the fuel tank with fresh gasoline. If only partially filled, air in the tank will promote fuel deterioration during storage. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline.

1. Add gasoline stabilizer following manufacturer's instructions.
2. After adding a gasoline stabilizer, run the engine outdoors for 10 minutes to be sure that treated gasoline has replaced the untreated gasoline in the carburetor.
3. Stop the engine, and turn the fuel valve to the off position.

Engine Oil

1. Change the engine oil and filter (page 64).
2. Remove the spark plugs (page 66).
3. Pour a tablespoon (5 ~ 10 cc) of clean engine oil into each cylinder.
4. Operate the electric starter for a few seconds to distribute the oil in the cylinder.
5. Reinstall the spark plugs.

Grease

Lubricate all grease points (page 87).

Tires

Check tire air pressure (page 82).

Battery

Remove battery (page 70) and store in a cool dry place to preserve battery life.

STORAGE

PLACING IN STORAGE

If your lawn tractor will be stored with gasoline in the fuel tank and carburetor, it is important to reduce the hazard of gasoline vapor ignition. Select a well-ventilated storage area away from any appliance that operates with a flame, such as a furnace, water heater, or clothes dryer. Also avoid any area with a spark-producing electric motor, or where power tools are operated.

If possible, avoid storage areas with high humidity, because that promotes rust and corrosion.

Unless all fuel has been drained from the fuel tank, leave the fuel valve in the off position to reduce the possibility of fuel leakage.

Park the lawn tractor on a level surface. Tilting can cause fuel or oil leakage.

With the engine and exhaust system cool, cover the lawn tractor to keep out dust. A hot engine and exhaust system can ignite or melt some materials. Do not use sheet plastic as a dust cover. A nonporous cover will trap moisture around the lawn tractor, promoting rust and corrosion.

REMOVAL FROM STORAGE

Check your lawn tractor as described in the **BEFORE OPERATION** section.

If the fuel was drained during storage preparation, fill the tank with fresh gasoline. If you keep a container of gasoline for refueling, be sure that it contains only fresh gasoline. Gasoline oxidizes and deteriorates over time, causing hard starting.

If the cylinder was coated with oil during storage preparation, the engine may smoke briefly at start-up. This is normal.

SPECIFICATIONS

This chapter gives dimensions, capacities, and other technical information.

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SPECIFICATIONS

LAWN TRACTOR MODEL

HA4118H38A	Hydrostatic transmission, side-discharge, American model, 18 HP engine, 38 inch deck
HA4120H48A	Hydrostatic transmission, side-discharge, American model, 20 HP engine, 48 inch deck

DIMENSIONS, WEIGHTS, AND CAPACITIES

Length	68.4 inches (1724 mm)
Width	49.7 inches (1262 mm) (38" deck) 59.2 inches (1504 mm) (48" deck)
Height	40.7 inches (1042 mm)
Wheel Base	45.9 inches (1165 mm)
Weight	538 lb (244.0 kg) (HA4118 w/38" deck) 559 lb (253.6 kg) (HA4120 w/48" deck)
Front Tires	15 x 6.00-6 10 psi (69 kPa)
Rear Tires	20 x 10.00-8 8 psi (55 kPa)

ENGINE

Model	HA4118H38A	HA4120H48A
Engine	GXV610	GXV620
Horsepower/rpm	18 hp/3600 rpm	20 hp/3600 rpm
Maximum No-Load Governed Speed	3,200 \pm 150 rpm	
Idle Speed	1400 \pm 150 rpm	
Ignition System	Transistorized magneto	
Valve Clearance (cold): Intake Exhaust	0.13 - 0.17 mm	
	0.18 - 0.22 mm	
Spark Plugs	ND—BPR5ES NGK—W16EPR-U	
Spark Plug Gap	0.028 - 0.031 inch (0.7 - 0.8 mm)	
Fuel	Minimum 86 pump octane, unleaded	
Fuel Tank Capacity	2.5 gallons (9.5 l)	
Engine Oil	10W-30 SJ	
Engine Oil Capacity	2.2 quarts (2.1 l)	

SPECIFICATIONS

TRANSMISSION DESIGN AND PERFORMANCE

Type	Hydrostatic, fluid drive
Speeds	Infinitely variable
Ground Speeds	Forward: 0 ~ 5 mph (0 ~ 8.0 km/h) Reverse: 0 ~ 2.4 mph (0 ~ 3.8 km/h)
Lube	3.6 quarts (3.4 liters) SAE 10W-30 API classification SH only

MOWER DECK DESIGN AND PERFORMANCE

	38 inch	48 inch
Type	Twin blade, belt drive, four-point link, three anti-scalp rollers, side discharge model	Tri-blade, belt drive, four-point link, four anti-scalp rollers (4 adjustable, 1 fixed), side discharge model
Cutting Width	38 inches (974 mm)	48 inches (1230 mm)
Height Range	1 ~ 4 inches (25mm ~ 101 mm)	
Blade Brake	Mechanical arms	
Adjustments	Left & right and front & rear height adjustments plus anti-scalp roller height adjustments	

MAINTENANCE

Fuel	Unleaded gasoline with a pump octane rating of 86 or higher
Engine Oil	SAE 10W-30; API SH, or SJ for general use
Spark Plug Type	NGK: BPR5ES or ND: W16EPRU
Maximum Governed Engine Speed	3,200 rpm \pm 150
Blade Bolt Torque	38" deck: 55 ft-lb (75 N·m) 48" deck: 50 ft-lb (68 N·m)

TUNEUP

Spark Plug Gap	0.028 ~ 0.031 inch (0.7 ~ 0.8 mm)
Engine Idle (PTO OFF)	1400 \pm 150 rpm
Valve Clearance (cold)	Intake: 0.13-0.17 mm Exhaust: 0.18-0.22 mm
Other Specifications	No adjustments needed

MISCELLANEOUS SPECIFICATIONS

Minimum Uncut Grass Diameter (left turn)	29.5 inches (750 mm) (38" deck) 20.5 inches (520 mm) (48" deck)
Minimum turning radius	20 inches (508 mm)
Brakes	Cam disc
Battery	U1-L (12V/RC 38 min, CCA, 340A)
Fuse	5 amps, blade type

SPECIFICATIONS

ADDITIONAL INFORMATION

This chapter contains additional information, including replacement part number, serial number locations, Honda publications available to you, and tells you how to contact us if you have a question or warranty repair problem.

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ADDITIONAL INFORMATION

REPLACEMENT PARTS

Replacement parts may be purchased from an authorized servicing Honda lawn tractor dealer.

Mower Deck Parts		
Description	38" Mower Deck	48" Mower Deck
Belt, blade	76181-V09-A01	76181-V09-D01
Belt, PTO to mower deck	76182-V09-A01	76182-V09-D01
High lift blade, left side	72531-V09-A01	not applicable
High lift blade, right side	72511-V09-A01	not applicable
High lift blade (left, right or center)	not applicable	72531-V09-D01
Blade bolt	90119-V09-A01	90104-V09-D01
Blade bolt washer	90527-V09-A01	90501-V09-D01

Filter, Spark Plugs, Etc.	
Air filter, paper element with large and small o-ring gaskets	17010-ZJ1-000
Air filter, foam (pre-cleaner) element	17218-ZJ1-000
Oil filter, engine	15410-ZJ4-999AH
Spark plug (NGK-BPR6ES)	98079-56846
Fuel filter	16910-ZE8-015
Headlight bulb	33115-V09-A01
Ignition key	35110-772-003

Part numbers are subject to change.

SERIAL NUMBER LOCATIONS

Your lawn tractor has both a frame and engine serial number.

The frame serial number is on the back frame, between the rear wheels.

The engine serial number is next to the starter motor, on the right rear side of the engine.

HONDA PUBLICATIONS

These publications will give you additional information for maintaining and repairing your lawn tractor. You may order them from your Honda lawn tractor dealer.

Shop Manual

This manual covers complete maintenance and overhaul procedures. It is intended to be used by a skilled technician.

Parts Catalog

This manual provides complete, illustrated parts lists.

ADDITIONAL INFORMATION

WARRANTY SERVICE INFORMATION

Honda Power Equipment dealership personnel are trained professionals. They should be able to answer any question you may have. If you encounter a problem that your dealer does not solve to your satisfaction, please discuss it with the dealership's management. The Service Manager or General Manager can help. Almost all problems are solved in this way.

If you are dissatisfied with the decision made by the dealership's management, contact the Honda Power Equipment Customer Relations Office. You can write:

American Honda Motor Co., Inc.

Power Equipment Division

Customer Relations Office

4475 River Green Parkway

Duluth, GA 30096-25650

Or telephone: (770) 497-6400

When you write or call, please give us this information:

- Model and serial numbers (see page 124)
- Name of the dealer who sold the lawn tractor to you
- Name and address of the dealer who services your lawn tractor
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

OXYGENATED FUELS

Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the United States and Canada use oxygenated fuels to help reduce emissions.

If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement.

Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/provinces require this information to be posted on the pump.

The following are the EPA approved percentages of oxygenates:

ETHANOL - - (ethyl or grain alcohol) 10% by volume

You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name "Gasohol".

MTBE - - - - (Methyl Tertiary Butyl Ether) 15% by volume

You may use gasoline containing up to 15% MTBE by volume.

METHANOL - (methyl or wood alcohol) 5% by volume

You may use gasoline containing up to 5% methanol by volume, as long as it also contains cosolvents and corrosion inhibitors to protect the fuel system. Gasoline containing more than 5% methanol by volume may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of your fuel system.

If you notice any undesirable operating symptoms, try another service station, or switch to another brand of gasoline.

Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under warranty.

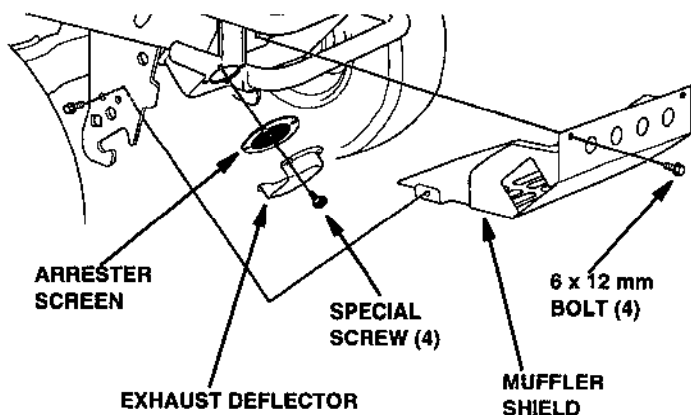
ADDITIONAL INFORMATION

SPARK ARRESTER SERVICE (optional part)

The spark arrester is not standard on your lawn tractor, but may be required for legal operation in some areas. A spark arrester must be inspected, cleaned every 100 hours of operation.

Park the lawn tractor on a flat, level surface. Set the parking brake ON and remove the ignition key. If the engine has been running, the muffler will be very hot. Allow the muffler to cool before servicing the spark arrester.

1. Remove the front lift link (page 84).



2. Remove the four bolts from the muffler shield, then remove the four special screws from the muffler. Remove the exhaust deflector and arrester screen.
3. Inspect the screen and use a wire brush to clean any debris or deposits. Replace the screen if it is bent, damaged or if the screen has any holes.
4. Installation is the reverse of removal.

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Quick Reference Information

Fuel	Type	Unleaded gasoline with a pump octane rating of 86 or higher
	Capacity	2.5 U.S. gallons (9.5 liters)
Engine Oil	Type	SAE 10W-30 API SH or SJ for general use
	Capacity	2.2 U.S. quarts (2.1 liters)
Spark Plug	Type	NGK: BPR5ES ND: W16EPRU
	Electrode Gap	0.028 ~ 0.031 inch (0.7 ~ 0.8 mm)
Blade Bolt	Torque	38" deck: 55 ft-lb (75 N·m) 48" deck: 50 ft-lb (68 N·m)
Carburetor	Idle Speed (PTO clutch lever OFF)	1400 ± 150 rpm
Tires	Front	10 psi (69 kPa)
	Rear	8 psi (55 kPa)
Maintenance	Before Each Use	Check blades and tightness Check grass bag Check engine oil level Check air cleaner Check cooling air intake path Check tire air pressure Check mower deck belt Check drive belt Check brake pedal operation Check parking brake operation
	First 20 Hours	Change engine oil Check blade bolt tightness
	Subsequent	See Maintenance Schedule (page 58)
Part Number	High lift blade, 38" High lift blade, 48" Oil filter Fuel filter Spark plug, NGK Spark Plug, ND Air filter Air filter o-ring	

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