

HONDA

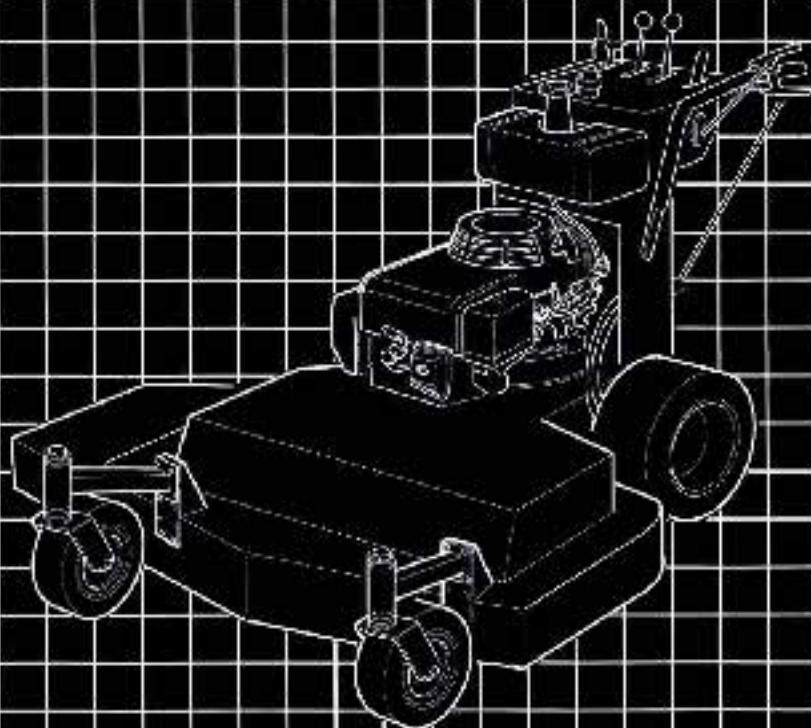
Power

Equipment

Owner's Manual

Mid-Size Commercial Mower

HRC 7013



This owner's manual is considered a permanent part of the lawn mower. It must be available to all operators of the mower and should remain with the mower if resold.

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

Your mower is not equipped with a spark arrestor and it may be illegal to operate the mower in some areas. Check local laws and regulations. An optional spark arrestor is available from authorized Honda Commercial Mower dealers.

Congratulations on your selection of the Honda Commercial Mower. We are certain you will be pleased with your purchase.

You can enhance the performance of your new mower by taking time to study this manual. In it you'll learn how to use it safely and efficiently. The service interval and maintenance recommendations in this manual were developed to give you the optimum performance and service life of your mower. We suggest you follow them.

Please take time to read the warranty policy so that you fully understand the coverages and the responsibilities of ownership. The warranty policy is a separate document that should have been given to you by your dealer.

Your Honda Commercial Mower dealer and his staff are specially trained in the service and maintenance of your mower and are supported by the parts and service divisions of American Honda. Your Honda dealer is dedicated to your satisfaction and will be pleased to answer your questions and concerns.

When you contact your Honda dealer about your mower, he'll need to know the serial numbers of the engine, power unit, and mower deck. Write those numbers in the space below for future reference.

Best wishes,
Power Equipment Division
American Honda Motor Co., Inc.


Engine number _____

Power Unit number _____

Mower Deck number _____

Safety Messages

Your safety and the safety of others is very important. We have provided important safety messages in this manual and on the lawn mower. Please read these messages carefully.

A safety message alerts you to potential hazards that can hurt you and others. Each safety message is preceded by a safety alert symbol  and one of three words: DANGER, WARNING, or CAUTION.

These 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.

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

Damage Prevention Messages

You will also see other important messages that are preceded by the word NOTICE.

This word means:

NOTICE

Your lawn mower or other property can be damaged if you don't follow instructions.

The purpose of these messages is to help prevent damage to your lawn mower, other property, or the environment.

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MOWER SAFETY

This section explains what you need to know to operate your mower safely.

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Safety Information

Most accidents with walk-behind mowers can be prevented if you follow all instructions in this manual and on the mower. 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, adjust the cutting height, or for any other reason, always shut off the engine and remove the key. Wear heavy gloves when you need to clean the mower deck or handle a blade.

Clear Mowing Area

Mower blades can throw rocks and other objects with enough force to cause serious injury. Before mowing, carefully inspect the area and remove all sticks, stones, pieces of wire, and other loose objects. Never operate the blades over gravel.

Keep Shields in Place

Guards and shields are designed to protect you from being hit by thrown objects and 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. Refuel only outdoors in a well-ventilated area with the engine OFF. 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 will help protect your feet and give you better traction on slopes or uneven ground. Ear protection and a helmet may be required by local ordinances or insurance policies.

Turn Engine Off When Not Mowing

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

Important Message to Employers

As an employer, you have special responsibilities to the people who work for you.

Before you ask anyone to operate this mower, you need to determine whether the person is old enough, large enough, and strong enough to safely handle and control the mower.

If you decide they are, make sure the employee reads and understands all instructions and warnings in this manual and on the labels before operating the mower.

Allow adequate time for hands-on training by a qualified instructor, and personally supervise practice sessions until you feel sure the employee is ready to operate the machine.

Also be sure employees wear proper clothing and have eye protection and any other gear that may be required by local ordinances or your insurance company.

Remember, too, that you are responsible for keeping the mower properly maintained and in safe operating condition.

Your commitment to safety on the job can help prevent accidents and result in longer and more productive years of service.

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 Commercial Mower dealer for a replacement.

▲ WARNING

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

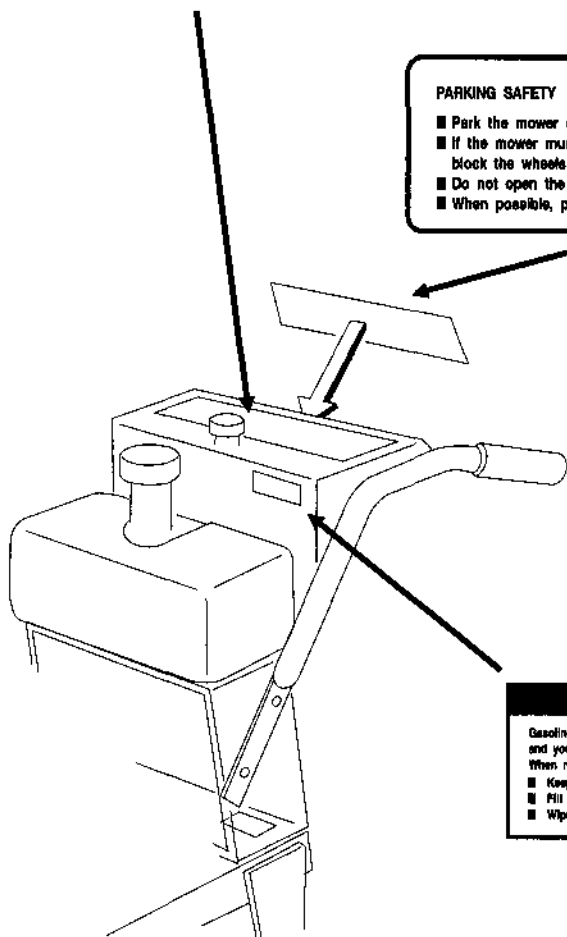
- Clean lawn of all debris before mowing
- Do not operate the mower without either the discharge guard or the entire grass catcher in place
- Wear eye protection.
- Keep people away while mowing

SPECIAL TRAINING IS NECESSARY

- Do not operate this mower without adequate training.
- Read Owner's Manual carefully.
- Learn the location and function of all controls.
- Do not allow children to operate this machine.
- Stop engine before performing maintenance.

PARKING SAFETY

- Park the mower on a firm, level surface when possible.
- If the mower must be parked on a slope, block the wheels so the mower can not roll.
- Do not open the bypass valves when parked on a slope.
- When possible, park machine on level surface.



▲ WARNING

Gasoline is highly flammable and explosive and you can be burned or seriously injured when refueling.

- Keep heat, sparks, and open flames away
- Fill fuel tank only outdoors
- Wipe up spills before starting engine

⚠ WARNING

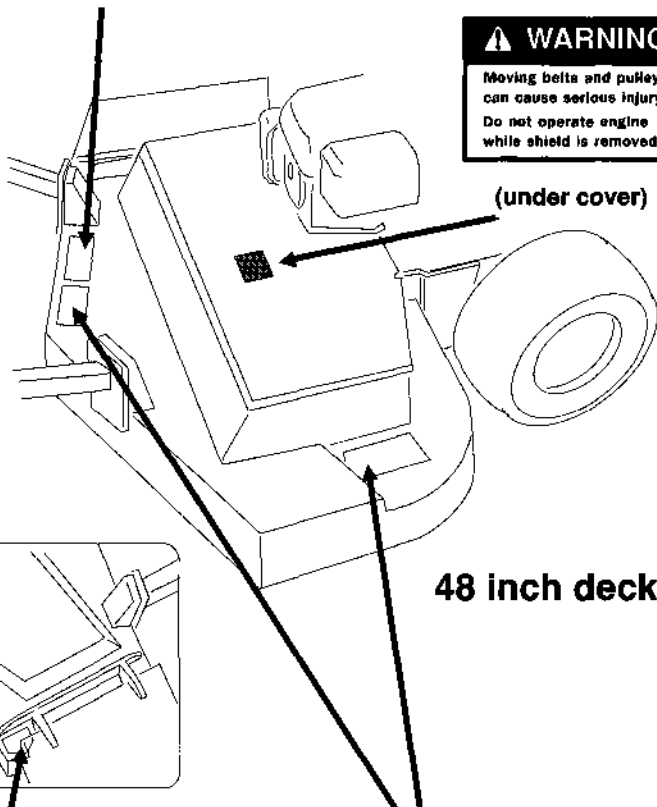
Objects hidden in the lawn can be thrown by the mower blade.

Thrown objects can cause serious injury.

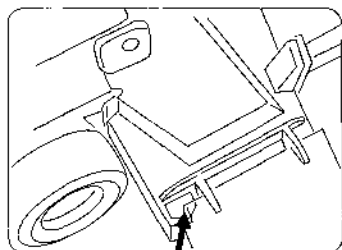
- Clear lawn of all debris before mowing.
- Do not operate the mower without either the discharge guard or entire grass catcher in place.
- Wear eye protection.
- Keep people and pets away.

⚠ WARNING

Moving belts and pulleys can cause serious injury. Do not operate engine while shield is removed




48 inch deck

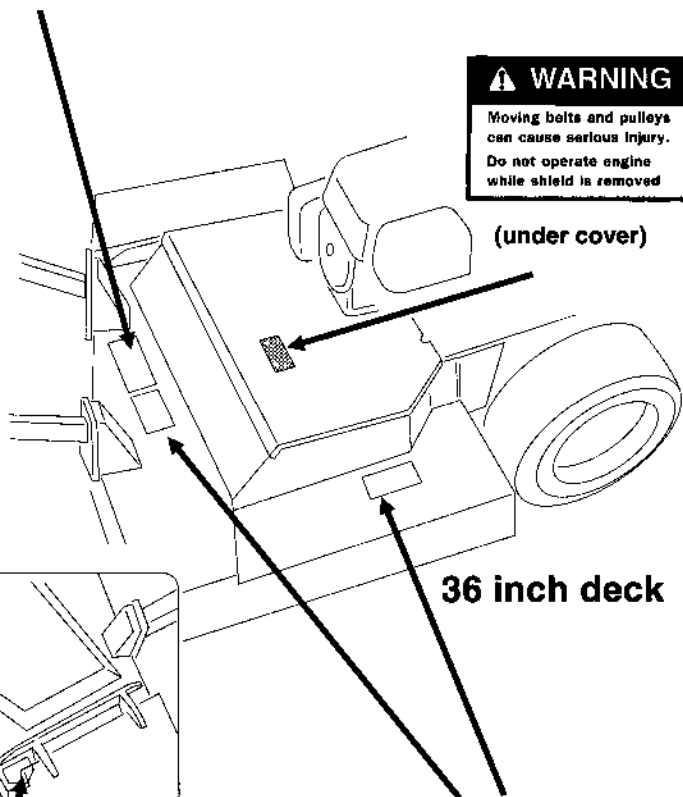
**⚠ DANGER****SHARP BLADE**

You will be seriously cut by the rotating blade

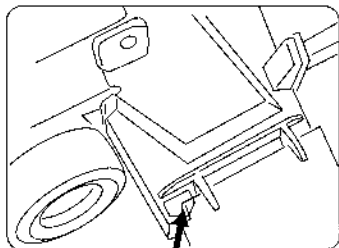
Keep hands and feet away when engine is running.




| | |
|---|--|
| ⚠ WARNING | |
|  | <p>Objects hidden in the lawn can be thrown by the mower blade. Thrown objects can cause serious injury.</p> <ul style="list-style-type: none">■ Clear lawn of all debris before mowing.■ Do not operate the mower without either the discharge guard or entire grass catcher in place.■ Wear eye protection.■ Keep people and pets away. |



| |
|---|
| ⚠ WARNING |
| <p>Moving belts and pulleys can cause serious injury. Do not operate engine while shield is removed</p> |



| | |
|---|---|
| ⚠ DANGER | |
|  | <p>SHARP BLADE</p> <p>You will be seriously cut by the rotating blade</p> <p>Keep hands and feet away when engine is running</p> |

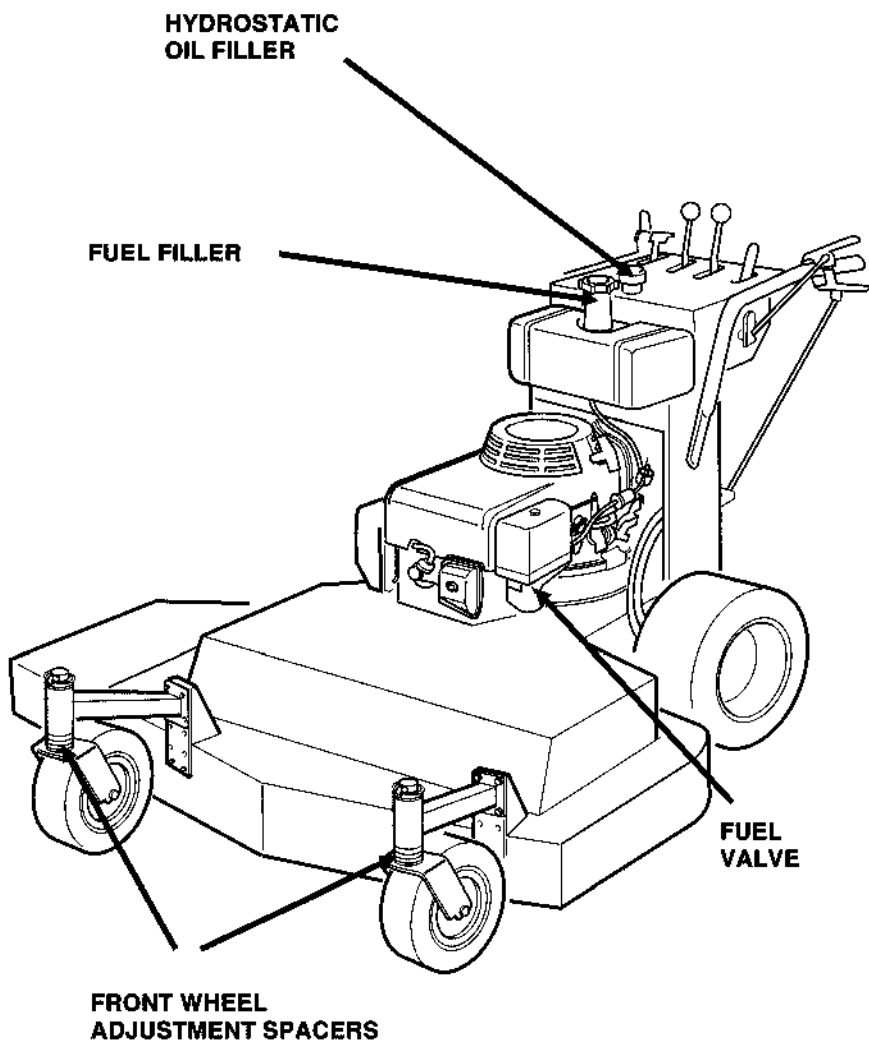
CONTROLS & INDICATORS

This section shows you where controls are located and tells you what they do and how they work.

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Locations

This shows where to find the most frequently used controls.

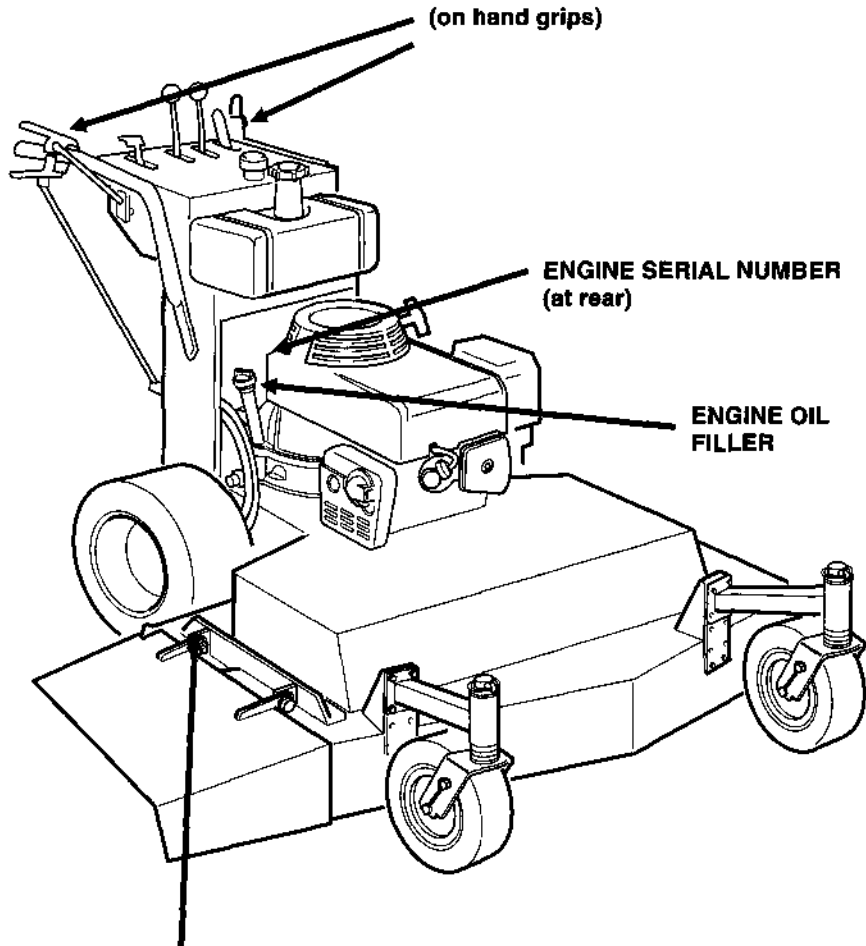


DIRECTION CONTROL LEVERS

OPERATOR PRESENCE LEVERS

NEUTRAL LOCKS

(on hand grips)

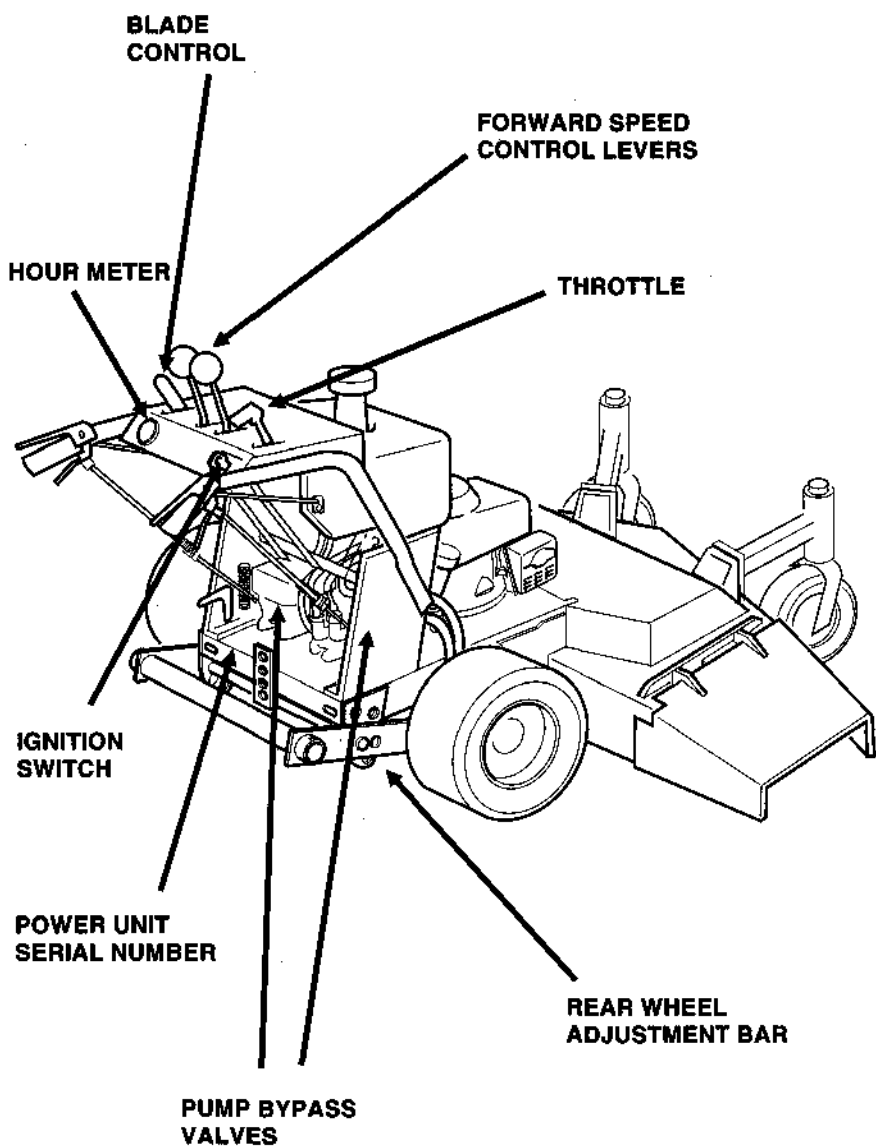


**ENGINE SERIAL NUMBER
(at rear)**

**ENGINE OIL
FILLER**

**MOWER DECK SERIAL
NUMBER**

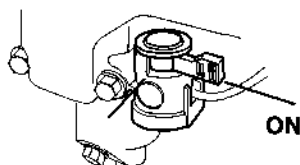
CONTROLS & INDICATORS



Controls

You will use these controls every time you operate the mower

Fuel Valve



This valve is located on the carburetor and allows fuel to flow to the engine. Push it toward the engine to ON to allow fuel to flow, or pull it outward for OFF.

Ignition Switch

The ignition switch controls the engine ignition system. Turn the key clockwise to the ON position, or turn the key counter clockwise to the OFF position.

Throttle

The throttle lever controls engine speed. Pull it rearward to the SLOW position for idle. Push it forward to the FAST position for mowing. Pushing it forward past a detent for the CHOKE position applies the choke for starting a cold engine.

Forward Speed Control

The forward speed control levers set the maximum forward speed of the mower. The rear position is NEUTRAL. As the levers are pushed forward, the maximum speed of the mower progressively increases. See page 29 for details.

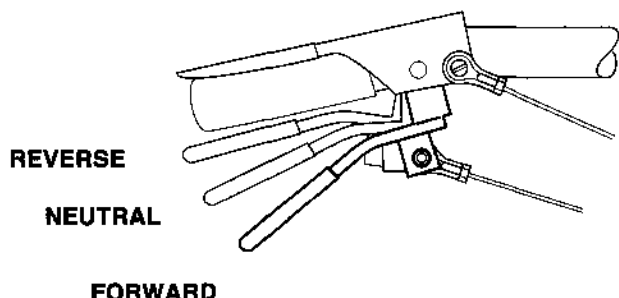
Blade Control

The blade control lever engages engine power to the mower deck. The forward position is ON, The rear position is OFF.

Operator Presence Levers

The operator presence levers above the hand grips are part of the safety interlock system. When the blade control is ON or the forward speed controls are forward of NEUTRAL, you must hold at least one lever down on the hand grips. If you don't, the engine will shut off.

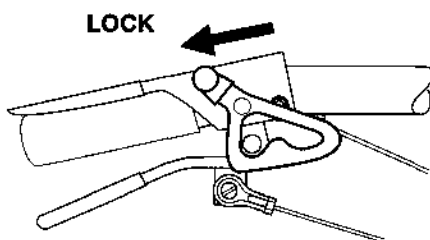
Direction Controls



The direction control levers independently control each drive wheel for steering, slowing, and reversing. Squeezing the levers toward the hand grips slows the mower from the maximum forward speed. Squeezing the levers further to their neutral position stops forward motion. Squeezing the levers past neutral reverses direction.

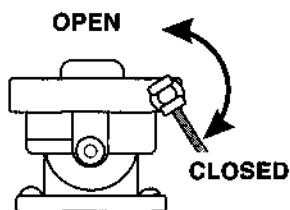
The use of the direction control levers is explained on page 25.

Neutral Lock



The neutral locks hold the direction control levers in their neutral position. Pulling the locks rearward prevents the direction control levers from going into their forward position. The levers can still be squeezed for reverse, however. When the neutral locks are engaged and you release the levers after reversing, they will return to neutral.

Pump Bypass Valves



The bypass valves on each drive pump allow you to move the mower when the engine is not running. Open the valves by turning them one turn counterclockwise. See pages 16,24 .

Front-Wheel Adjustment Spacers

The front-wheel adjustment spacers allow adjustment of the cutting height in either of two ranges: 1 1/2 to 3 1/2 inches, and 3 1/2 to 5 1/2 inches. Their use is explained on page 51.

Rear-Wheel Adjustment Bar

The rear-wheel adjustment bar allows adjustment of the cutting height in either of two ranges: 1 1/2 to 3 1/2 inches, and 3 1/2 to 5 1/2 inches. Its use is explained on page 51.

Indicators

These indicators help you monitor the condition of the mower.

Hour meter

The hour meter indicates the total operating time of the mower in hours and tenths of an hour. It operates whenever the engine is running.

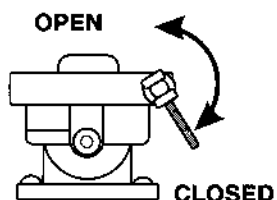
OIL ALERT™ Buzzer

The Honda OIL ALERT buzzer will sound whenever the engine oil level is below a safe operating level. Whenever you hear the buzzer, stop the engine and check the oil level (page 39).

TRANSPORTING and STORING

This section tells you how to safely transport and store your mower.

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There is one very important thing to remember when transporting your mower: when you open the pump bypass valves to move the mower without the running engine, you disable all braking action. For this reason:

- Always close both pump bypass valves after moving the mower by hand.
- Always drive the mower under its own power on any incline.
- If you must move the mower on an incline without running the engine, use a suitable device (winch, block & tackle, come-a-long). Remember that the mower weighs close to 600 pounds.
- When moving the mower without running the engine, do not move it at more than a walking speed or more than 100 yards. Be sure the bypass valves are open at least one turn but not more than two turns.

See page 24 for more information on operating the bypass valves.

Transporting your Mower

Use a loading ramp to get the mower on and off the vehicle. Be sure both the ramps and vehicle are able to support the weight of the mower and operator.

When the mower is in position, turn the fuel valve OFF to prevent the possibility of fuel leaking.

Tie the mower down, front and rear, with ropes or straps. You may use the front caster brackets and the rear cross member to tie the mower down. Be careful not to damage hoses or linkages when tightening the ropes or straps.

Remember that the engine and exhaust system become hot during operation. Avoid touching them.

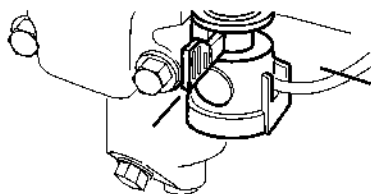
Storing your Mower

Whether you're leaving your mower unattended for an hour or a month, always:

- Turn the key off and remove it from the ignition switch.
- Turn the fuel valve off.
- If you opened the pump bypass valves, close both of them.
- If you're leaving the mower on a slope — even a slight one — block both drive wheels front and rear.

For Over 30 Days. . .

1. Wash any accumulated grass clippings from the mower deck — top and bottom.
2. If the storage period is to be less than 6 months, you may add a commercially available fuel stabilizer to the fuel rather than draining the tank. Follow the instructions on the container of the stabilizer.
3. Loosen the carburetor drain screw and drain the fuel into an approved container. Tighten the screw securely after draining.
4. Change the engine oil (page 39).
5. Lubricate all grease fittings
6. Check the hydrostatic oil and top off if necessary (page 45).
7. Check tire pressures (see page 50).
8. Touch up any paint chips to prevent rust.
9. Cover to keep off dust and moisture. Don't use a plastic tarp; it will trap moisture underneath it, promoting corrosion and rust.



DRAIN SCREW

For Over 60 Days. . .

1. Remove the spark plug (page 41).
2. Squirt about an ounce of clean engine oil into the cylinder.

- 3. Pull the starter rope twice to spread the oil.**
- 4. Reinstall the spark plug.**

Removing From Storage

- 1. Remove the spark plug and clean off any oil with a suitable solvent.**
- 2. Pull the starter rope twice with the spark plug removed.**
- 3. Install the spark plug (page 41).**
- 4. If the cylinder was coated with oil during storage preparation, the engine will smoke briefly after starting. This is normal.**
- 5. Follow normal pre-operation procedures (page 20).**

BEFORE MOWING

This section shows you how to prepare your mower, the lawn, and yourself.

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Check the Mower

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

- The mower is parked on a level surface.
- The blade control lever is disengaged and the ground speed control levers are in NEUTRAL.
- The ignition switch is off and the key is removed.

Walk around the mower and check its general condition. Look around and underneath it for signs of fluid leaks. Remove any excessive dirt and debris, especially around moving components. Look for signs of damage. Check nuts, bolts, screws, and pins for tightness.

Never operate the mower with the safety interlock system inoperative. Do not attempt to bypass or defeat the system.

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

Blades

Before each use, check each mower blade for damage or abnormal wear. See page 54 for details.

Belts

Check the blade, deck, and pump belts for wear and correct tension. See page 58 for details.

Engine Oil

Check the level on the dipstick. Running the engine with a low oil level will cause engine damage. See page 39 for details.

Hydrostatic Oil

Check the oil level in the reservoir. See page 45 for details.

Fuel

Remove the cap on the tank and check the fuel level. See page 36 for refueling details.

Air Filter

Check that the air cleaner elements are clean and in good condition. See page 35 for information on servicing the air cleaner.

Cutting Height

The cutting height of your mower should be set for the mowing conditions and should be in the same position, front and rear. See page 50 to adjust cutting height.

Tire Pressure

Check the tires for proper inflation (page 50).

Check the 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, and wire, and remove them from the mowing area.

People

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 your risk of losing your footing.

Prepare Yourself

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 mower 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 slopes or uneven ground.

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

OPERATING THE MOWER

This section tells you how to operate the mower for safe and effective mowing.

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The Honda HRC7013 is a powerful, highly maneuverable mower designed to enhance the productivity of a lawn-care professional. You will need a complete understanding of its operation and a certain amount of practice with its controls to safely realize the full potential of this mower.

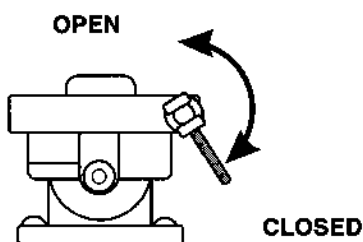
Read this section completely before operating the mower. Take time to familiarize yourself with the controls and how they operate. Get used to the feel of the forward speed controls and direction control levers by running the engine at about half-throttle.

The small amount of time spent in familiarization will reward you with greater efficiency and reduced risk.

Starting the Engine

Because of the risk of carbon monoxide poisoning, it makes good sense to start the mower outside; or at least in an open area with good ventilation.

Pump Bypass Valves



In order to move the mower from its storage area to a safe place to start it, you must open the pump bypass valves on each pump. Open each valve by turning it one turn counter clockwise. When you've moved the mower to its desired position, close each valve by turning it clockwise.

To avoid damaging the valves and their seals, do not open the valves more than two turns and do not over tighten the valves when closing them.

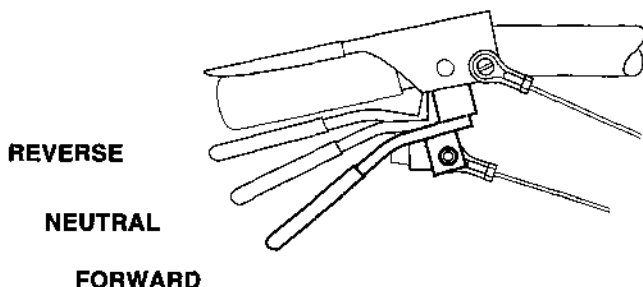
When the bypass valves are open, the normal braking action of the hydraulic system is bypassed. Never move the mower on slopes when the bypass valves are open. Always close both bypass valves when you are finished moving the mower.

The mower will not move under its own power unless both bypass valves are closed.

1. Pull the blade control lever to OFF. (The mower should not be started without either the entire grass catcher or the guard in place.)
2. Pull both forward speed control levers to NEUTRAL.
The safety interlock system will prevent the engine from starting if the blade control is ON or if the forward speed controls are not in neutral. (Do not attempt to disconnect or modify the safety interlock system.)
3. Squeeze both direction control levers to their neutral position and apply the neutral locks by pulling them back with your thumbs.
4. Be sure both pump bypass valves are closed.
5. Open the fuel valve.
6. Turn the key ON.
7. To start a cold engine, move the throttle lever to the CHOKE position.
To restart a warm engine, move the throttle lever to the FAST position.
8. When the engine warms up, move the throttle lever back to the FAST position for mowing, or the SLOW position to idle. For best engine performance, move the throttle lever out of CHOKE position as soon as the engine will run smoothly.

Using the Direction Controls

The direction control levers allow you to control the speed and direction of the mower.



The mower will quickly respond to the position of the levers. To avoid abrupt changes of direction, squeeze the levers slowly rather than treating them like a switch. Operate the mower with the ground speed selector levers in their SLOW position until you are completely familiar with the sensitivity of the direction control levers.

The direction control levers are spring-loaded to their forward, or engaged, position. In this position the maximum speed of the mower is controlled by the forward speed control levers.

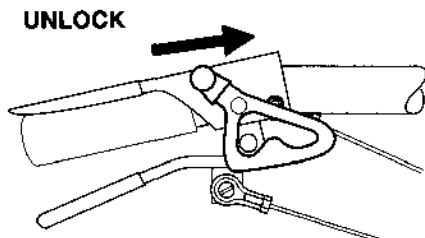
Moving Forward

1. Hold down one operator presence lever.

The safety interlock system will shut off the engine if you move the forward speed controls out of neutral unless one of the operator presence levers is held against the hand grip.

2. Move both forward speed control levers to the desired speed.

3. Slightly squeeze both direction control levers just enough to release the neutral locks by pushing them forward with your thumbs. If you squeeze the direction control levers too far, you will engage reverse. Squeeze them just far enough to release the neutral locks.



4. Slowly release pressure evenly on both direction control levers and the mower will move forward.

Steering the Mower

To steer the mower to the right, gradually squeeze the right-hand direction control lever. To steer the mower to the left, gradually squeeze the left-hand direction control lever.

The more you squeeze a direction control lever, the slower that wheel will turn and the sharper the turn will be.

Zero-radius turns (turns in which the mower has no forward or reverse motion — it just turns in place) are accomplished by squeezing one direction control lever into reverse while the other is in forward. Practice this maneuver at slow speeds until you become accustomed to the mower's responsiveness.

Stopping the Mower

To slow the mower, slowly squeeze both levers the same amount; the more you squeeze, the slower the mower will travel.

When you squeeze to the neutral position, the mower will stop. You may hold the mower stopped by engaging the neutral locks, pulling them rearward with your thumbs.

Remember that if you release the operator presence levers and the forward speed control levers are not in neutral, the safety interlock system will shut off the engine.

Reversing the Mower

To reverse the direction of the mower, squeeze the direction control levers toward the handgrips from the neutral position. The more you squeeze, the faster the mower will travel in reverse.

If the neutral locks are applied, when you release the direction control levers they will return to neutral. If the neutral locks are not applied, releasing the levers will result in the machine moving forward when the forward speed controls are not in neutral.

You may reverse the mower even when the forward speed controls are in neutral; their operation is independent of one another.

Be careful when operating the mower in reverse. Be aware of what is behind you. Be sure of your footing.

To steer to the right in reverse, squeeze the left direction control lever more. To steer to the left in reverse, squeeze the right direction control lever more.

Making an Emergency Stop

To make an emergency stop, release the hand grips. When you let go of the operator presence levers, the safety interlock system will stop the engine and the mower will come to a stop within 3 to 6 feet.

Starting to Mow

WARNING

Objects hidden in the lawn can be thrown by the mower blades.

Thrown objects can cause serious injury.

- **Clear lawn of all debris before mowing.**
- **Do not operate the mower without either the discharge chute or the entire grass catcher in place.**
- **Wear eye protection.**
- **Keep people and pets away.**

For best cutting performance, always mow with the throttle lever in FAST position. To begin mowing:

1. Be sure the direction controls are locked in neutral.
2. Hold down one operator presence lever.
3. Move both ground speed control levers to the desired mowing speed. Always begin mowing with a slow ground speed. Increase the ground speed to match mowing conditions and your experience.
4. Slowly move the blade control lever to ON to start the blades rotating.
5. Slightly squeeze both direction control levers and release the neutral locks by pushing them forward with your thumbs.
6. Slowly release pressure on both direction control levers and begin mowing.

Adjusting your Speed

Adjust the forward speed controls to set your best mowing speed. If the mower does not travel in a straight path, you may move one of the ground speed control levers ahead of the other to make the mower track straight.

If the mower's path is drifting off to the right, move the right lever slightly ahead of the left lever. If the mower's path is drifting off to the left, move the left lever slightly ahead of the right lever.

You may also use this method to control your path when mowing on the side of a slope.

If the forward speed control knobs are separated by more than one inch, the safety interlock system will shut off the engine.

If the mower will not track in a straight path on level ground within this range, the tracking must be adjusted following the procedures on page 47.

Mowing Tips

Your mower is designed to trim closely on the left hand side and discharge clippings evenly on the right hand side.

For best cut quality, run the engine with the throttle lever in FAST.

Always mow in daylight, or under good artificial light.

Mowing on Slopes

There are two ways you can keep a straight path when mowing across slopes:

- Squeeze the traction control lever on the uphill side.
- Adjust the ground speed control levers as described in *Adjusting your Speed* (above).

Mow across slopes, not up and down. Avoid steep slopes (more than 20°), and be careful when changing direction.

When changing direction, always turn the mower up-slope. This will give you better control and help you maintain your balance.

Avoid abrupt changes of direction or speed when operating on slopes.

Avoid stopping on a slope. If you must stop on a slope, block the wheels securely if you leave the machine unattended. To start on a slope, keep the throttle at SLOW to help you avoid abrupt changes of direction.

Mowing on a slope when the grass is damp or wet could cause you to slip, fall, or lose control of the mower.

Parking the Mower

To stop the mower:

1. Squeeze both direction control levers to their neutral positions.
2. Engage the neutral locks by pulling rearward with your thumbs.
3. Pull both forward speed control levers to NEUTRAL.
4. Pull the blade control to OFF.
5. Move the throttle to SLOW and let the engine idle for about 30 seconds.
6. Turn the key off and remove it.
7. Turn the fuel valve OFF.

Try to park the mower on level ground. If you must park it on a slope, block the wheels to prevent it from rolling. Always remove the key when leaving the mower unattended to prevent children or unauthorized persons from operating it.

MAINTENANCE SCHEDULE

This table shows you what you need to service and when to do it.

| Item | Interval | Before | Every | Every | Every | Every | Every |
|--------------------|-------------------|---------------|-------------|----------------|--------------|--------------|---------------|
| | | Every Use | 25 Hours | 50 Hours | 100 Hours | 300 Hours | 1000 Hours |
| Blades | Check | • | | | | | |
| | Check bolt torque | | | • | | | |
| Engine Oil | Check | • | | | | | |
| | Change | | Q | | • | | |
| Air Cleaner | Check | • | | | | | |
| | Service | | | • ¹ | | | |
| Spark Plug | Check | | | | • | | |
| Valve Clearance | Adjust | | | | | • | |
| Fuel Filter | Replace | | | | | • | |
| Fuel Line | Check | | | | • | | |
| | Replace | Every 3 years | | | | | |
| Hydrostatic Oil | Check | • | | | | | |
| | Change | | | Q | | | • |
| Hydrostatic Filter | Replace | | | Q | | | • |
| Mower Deck | Lubricate | | • | | | | |
| Belts | Check | • | | | | | |
| | Adjust | | | • | | | |
| Blade brake | Check | • | | | | | |
| | Adjust | | | • | | | |
| Tires | Check | • | | | | | |

Q Perform initial service at this time.

¹ Service more frequently when used in dusty conditions.

MAINTENANCE & ADJUSTMENTS

This section tells you how to perform normal maintenance and adjustments.

| | |
|--|----|
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Maintenance Precautions

Periodic maintenance and adjustment are necessary to keep your mower in good operating condition. Service and inspect the mower according to the Maintenance Schedule.

Use genuine Honda parts or their exact equivalent for maintenance and repair. Lower quality parts may damage the mower or reduce its performance.

These procedures should be performed by a person with appropriate mechanical skills and using the correct hand tools. Refer to the shop manual for procedures not covered here.

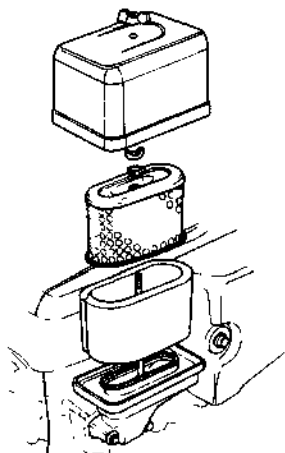
WARNING

**If you do not follow these safety precautions, you can be seriously hurt or killed.
Carefully read and follow all safety instructions.**

- Wear appropriate clothing to avoid being caught on parts of the mower. Wear sturdy work shoes and appropriate protection for your eyes, hands, and hearing.
- During operation, parts of the engine and hydrostatic-drive system become hot enough to burn you. Allow the engine to cool for at least 15 minutes before maintenance, washing, or indoor storage.
- Gasoline is highly flammable, explosive, and toxic. Never smoke or allow flames or sparks near the fuel tank or carburetor. Follow all instructions carefully.
- The mower uses pressurized oil to run the hydrostatic drive system. Make sure all connections are tight and all hoses and lines are in good condition before applying pressure to the system.
- The engine produces poisonous carbon monoxide gas. If the engine must be run, be sure you provide adequate ventilation.
- For certain operations, the mower must be raised off the ground. Be sure it is solidly supported before you place any part of your body under it.

- Wear heavy gloves when working on the mower, especially when you work on or near the blades

Air Cleaner



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 nut to remove the air cleaner cover. 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 other wing nut and remove the elements.
3. Separate the foam element from the paper element and carefully check each one for holes or tears. Replace any damaged element.
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 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 inside. Never try to brush off the dirt — that will just force it into the filter fibers.
7. Use a damp rag 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 seal in the base is in place and in good condition.
8. Place the foam element over the paper element and install them with the wing nut.
9. Install the cover with its wing nut.

NOTICE

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

Fuel

Fuel tank capacity: 4.4 gallons, 16.7 liters

Pump octane rating: 86 or higher.

Refueling

Remove the cap on the tank and check the fuel level. Refuel carefully to avoid overfilling or spilling fuel. There should be no fuel in the filler neck.

WARNING

Gasoline is highly flammable and explosive.

You can be burned or seriously injured.

When refueling:

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

Never refuel the mower inside a building where fumes may reach an open flame or spark. Keep gasoline away from appliance pilot lights, electric motors, etc.

Refuel in a well ventilated area before starting the engine. If the engine has been running, allow it to cool. Avoid overfilling the tank or spilling fuel.

Spilled fuel not only creates a fire hazard, it can cause environmental damage. Wipe up spills immediately. Dispose of gasoline properly.

Fuel Recommendation

We recommend unleaded fuel because it produces fewer engine and spark plug deposits and extends exhaust system life.

Be sure the gasoline you use is as fresh as possible. Stale or contaminated gasoline or an oil/gasoline mixture can damage the engine or its fuel system. Avoid getting dirt or water in the fuel tank.

When the engine RPM drops under heavy loads, you may hear light "spark knock" or "pinging" (a metallic rapping noise). This is no cause for concern.

If spark knock or pinging occurs at a steady engine speed, under normal load, the engine can be damaged. Try using fresh gasoline in the tank or change brands of gasoline. If spark knock or pinging persists, contact your authorized Honda Commercial Mower dealer.

Running the engine with persistent spark knock or pinging can cause engine damage. This type of damage is not covered by the Distributor's Limited Warranty.

Oxygenated Fuels

Some gasolines are blended with alcohol or an ether compound to increase octane and to meet clean-air standards in some areas.

If you use an oxygenated fuel, be sure its pump octane rating is 86 or higher and follow these precautions:

- **Ethanol (ethyl or grain alcohol)**
You may use gasoline containing up to 10% ethanol by volume. Higher concentrations may cause starting and other performance problems. You may see gasoline containing ethanol marketed as "Gasohol".
- **Methanol (methyl or wood alcohol)**
You may use gasoline containing up to 5% methanol by volume, but only if that fuel also contains cosolvents and corrosion inhibitors to protect the fuel system. Higher concentrations may cause performance problems and may also damage parts of the fuel system.
- **MTBE (methyl tertiary butyl ether)**
You may use gasoline containing up to 15% MTBE by volume.

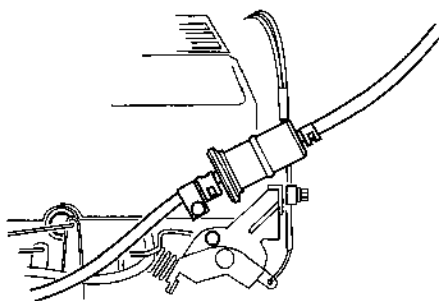
Before using an oxygenated fuel, try to find out what the fuel contains. Some areas require the posting of this information on the pump. If you notice any undesirable operating symptoms, switch to a conventional unleaded gasoline.

Oxygenated fuels can damage paint and plastic. Fuel system damage and engine performance problems resulting from the use of oxygenated fuels, and cosmetic damage caused by spilled fuel are not covered under the warranty.

Changing the Fuel Filter

Change the fuel filter at the recommended interval.

1. Clamp off the fuel line between the fuel tank and the filter to prevent fuel flow. Use a small locking pliers, hemostat, or other device.
2. Place a container under the filter to catch any spilled fuel.
3. Squeeze the hose clamps and remove the lines from the filter.
4. Install the new filter with the arrow pointing toward the engine.
5. Be sure the clamps securely hold the fuel lines to the new filter.



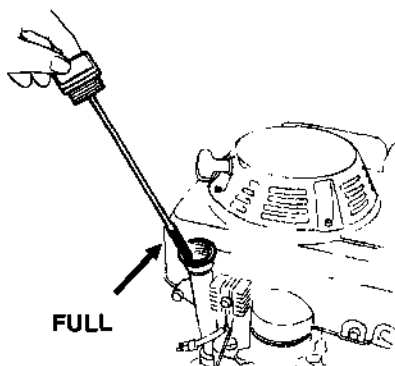
- Dispose of the old filter and any spilled fuel properly and remove the clamping device from the fuel line.

Engine Oil

Engine Oil Capacity: 1.2 US quarts, 1.1 liters

Checking the Level

- Clean the area around the oil filler cap, remove it, and wipe the dipstick with a clean cloth.
- Insert the dipstick without screwing it into the filler neck. Remove the dipstick and check the oil level on it.
- If the oil level is low (near the bottom of the dipstick), add enough oil to bring the level to the upper mark on the dipstick.

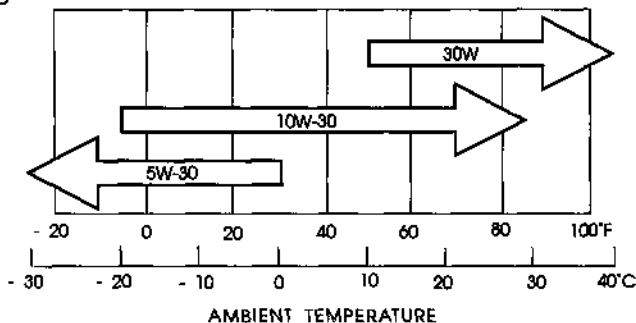


Running the engine with a low oil level will cause engine damage.

Recommend Oil

Use a high-detergent, premium quality 4-stroke engine oil certified to meet or exceed U.S. automobile manufacturers' requirements for API Service Classification SG.

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

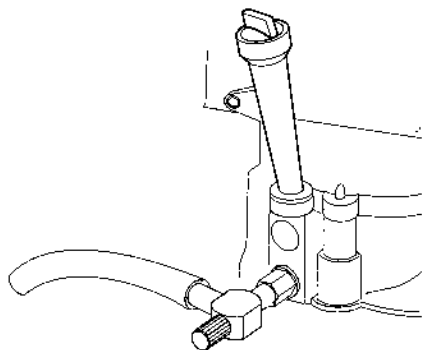


Changing the Oil

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. Install one end of a section of 1/2" hose over the drain outlet and place the other end in a suitable container to catch the used oil.
2. Clean the area around the oil filler cap and remove it.
3. Turn the drain valve counterclockwise about 4 turns to open it. Do not open the valve more than 6 turns to avoid damaging the seals.
4. When the oil has drained, turn the valve clockwise to close it and remove the section of hose. To avoid damaging the valve, do not over tighten it.
5. Refill the engine with the correct amount of the recommended oil.
6. After running the engine, recheck the oil level and adjust if necessary.



Used engine oil contains substances that have been identified as carcinogenic. If repeatedly left in contact with the skin for prolonged periods, it may cause skin cancer. Wash your hands thoroughly with soap and water as soon as possible after contact with used oil.

Please dispose of used engine oil in a manner that doesn't harm the environment. Do not throw it in the trash, or pour it on the ground or down a drain.

Spark Plug

Recommended Types

NGK BPR5ES

ND W16EPR-U

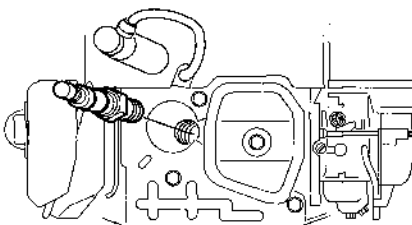
NOTICE

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

Checking the Spark Plug

For good performance, the spark plug should have the correct gap and be free of deposits.

1. Disconnect the spark plug cap and remove any dirt from around the spark plug area.
2. Remove the spark plug with a 13/16 inch spark plug wrench.
3. Inspect the spark plug for excessively worn electrodes, chips or cracks in the insulator, or excessive deposits. Replace the spark plug if you have any doubts about its condition.
4. Measure the electrode gap with a wire gap gauge. Adjust the gap to 0.028 - 0.031 in (0.7 - 0.8 mm) by bending the ground electrode.
5. Install the plug carefully, by hand, to avoid cross threading.
6. Use a spark plug wrench to tighten the plug enough to compress the washer. For a used plug, tighten 1/8 to 1/4 of a turn after the spark plug seats. For a new plug, tighten 1/2 turn after the spark plug seats.



A loose spark plug can become hot enough to damage the engine. Over tightening a spark plug can damage the threads in the engine.

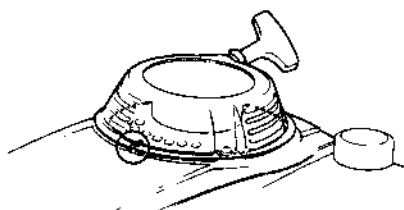
7. Install the spark plug cap on the plug.

Valve Clearance

Adjust the valves at the recommended interval.

Valve clearance inspection and adjustment must be done with the engine cold.

1. Remove the valve cover.
2. Set the piston at top dead center of the compression stroke (both valves will be fully closed). The cutout mark in the starter pulley will align with the index mark on the fan cover when the piston is at top dead center of either the compression or exhaust stroke.

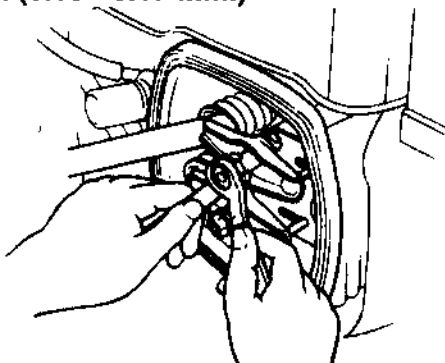


3. Measure the clearance between the rocker arm and the valve with a feeler gauge.

INTAKE 0.003 - 0.005 in. (0.08 - 0.12 mm.)

EXHAUST 0.005 - 0.007 in. (0.13 - 0.17 mm.)

4. To adjust valve clearance, hold the rocker arm pivot and loosen the pivot lock nut.



5. Turn the rocker arm pivot to obtain the specified clearance.

6. Hold the rocker arm pivot and tighten the pivot lock nut.

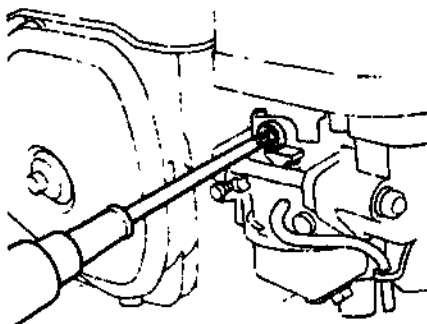
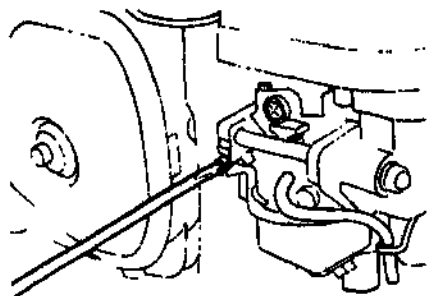
7. Recheck the clearance and readjust if necessary.

8. Install the valve cover.

Carburetor

Perform this adjustment if the idle is slow or rough and you're sure the air cleaner and spark plug are in good condition.

1. Start the engine in an area with adequate ventilation to avoid carbon monoxide poisoning. Allow the engine to warm to normal operating temperature.
2. With the throttle lever at SLOW, turn the pilot screw in or out to obtain the highest idle speed. A good starting point for the adjustment is to back out the screw about 2 1/2 turns from its closed (lightly seated) position.
3. After the pilot screw is adjusted, turn the throttle stop screw to set the idle speed.



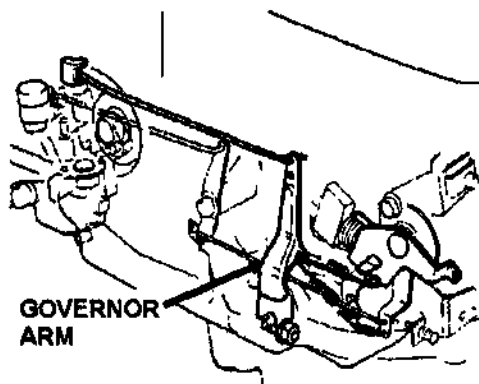
IDLE SPEED
1750 ⁺²⁰⁰ rpm

Governor Linkage

It's not likely that this adjustment will change by itself. Perform this procedure only when the engine doesn't reach its maximum no-load speed and you are sure that the engine is correctly tuned (good spark plug, clean air cleaner, etc.).

1. Loosen, but do not remove, the nut on the governor arm pinch bolt.
2. Move the governor arm rearward to fully open the throttle and hold it in this position.
3. Rotate the governor arm shaft fully clockwise and hold it there with a pair of pliers.

4. Tighten the nut on the governor arm pinch bolt to 8.0 ft-lb (11 Nm) to secure the arm to the shaft.
5. Start the engine and allow it to warm to normal operating temperature.
6. With the throttle in FAST, the engine should be at its maximum governed speed.

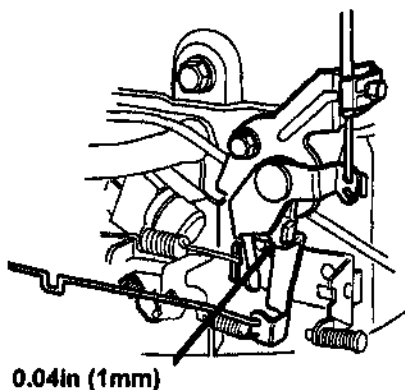


MAXIMUM NO-LOAD SPEED 3550 ±50 rpm

Throttle Cable

In normal use, cables will lose their adjustment. Perform this procedure if the engine does not seem to respond correctly to throttle lever movements.

1. Set the throttle lever to FAST.
2. On the engine, check the clearance between the control lever and the choke lever. It should be 0.04 inch (1 mm) or less. In other words, just touching. The choke should be fully open.
3. If you need to adjust the clearance, loosen the cable holder and adjust the position of the cable housing.
4. Next, set the throttle lever to CHOKE.
5. Check that the choke valve on the carburetor is fully closed. If it isn't, bend the "U" section of the choke rod.
6. Check maximum engine speed.

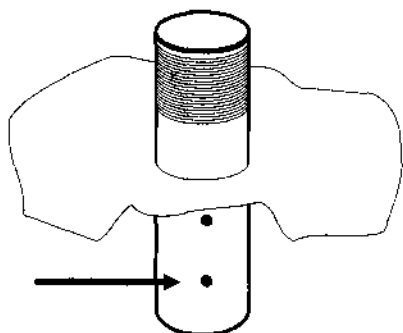


Hydrostatic Oil

Hydrostatic Oil Capacity: 10.4 quarts, 9.8 liters

Checking the Level

1. Remove the cap on the reservoir.
2. The oil level should be even with the lower hole. Add oil to bring it to the correct level.



Oil Recommendation

**SAE 10W-40 engine oil
meeting API Service
Classification SG.**

Changing the Oil

1. Place a suitable container below the reservoir oil filter.
2. Remove the filter and allow the oil to completely drain from the reservoir.
3. Install a new oil filter. Hand tighten only.
4. Refill the reservoir with the recommended oil.
5. Start the engine and allow it to idle for 3 to 5 minutes to circulate the oil and allow any trapped air to escape.
6. Stop the engine and recheck the oil level.

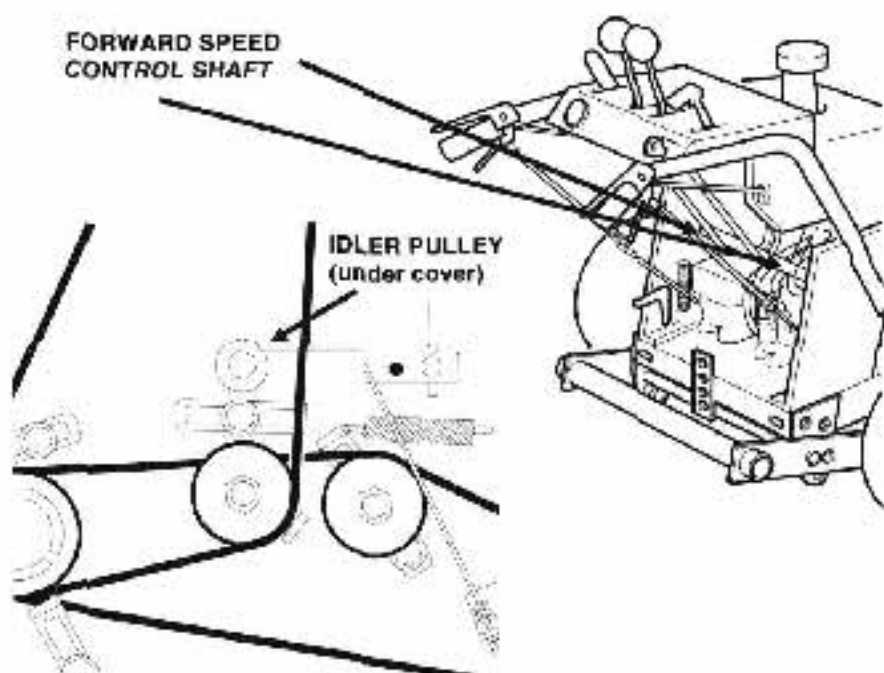
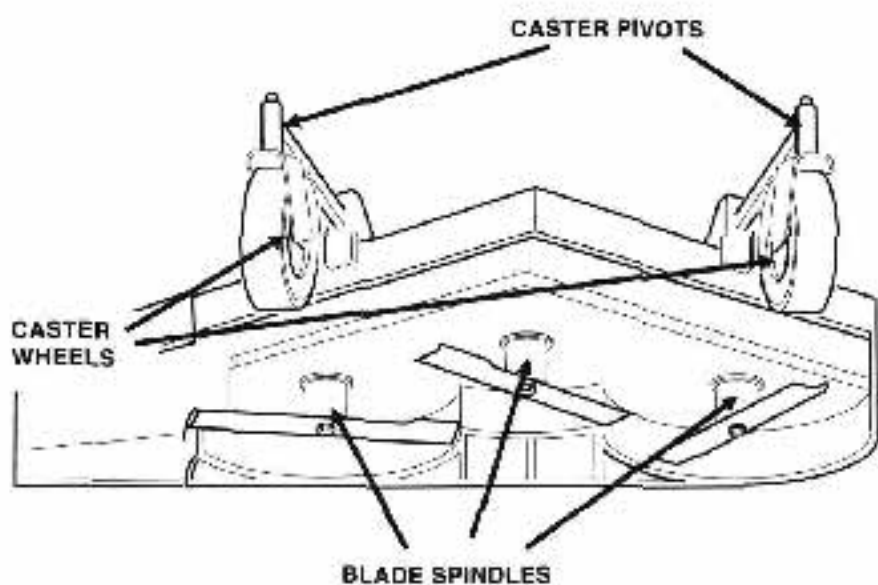
Later models have a reservoir drain valve similar to the one on the engine. See page 40 for valve operation.

Lubrication Points

Grease: NGLI #2 Lithium Base EP

Follow the diagrams on the next page to lubricate these fittings.

- Caster wheels (2)
- Caster pivots (2)
- Blade spindles (2 or 3)
- Idler pulley pivot (1)
- Forward speed control shaft (2)

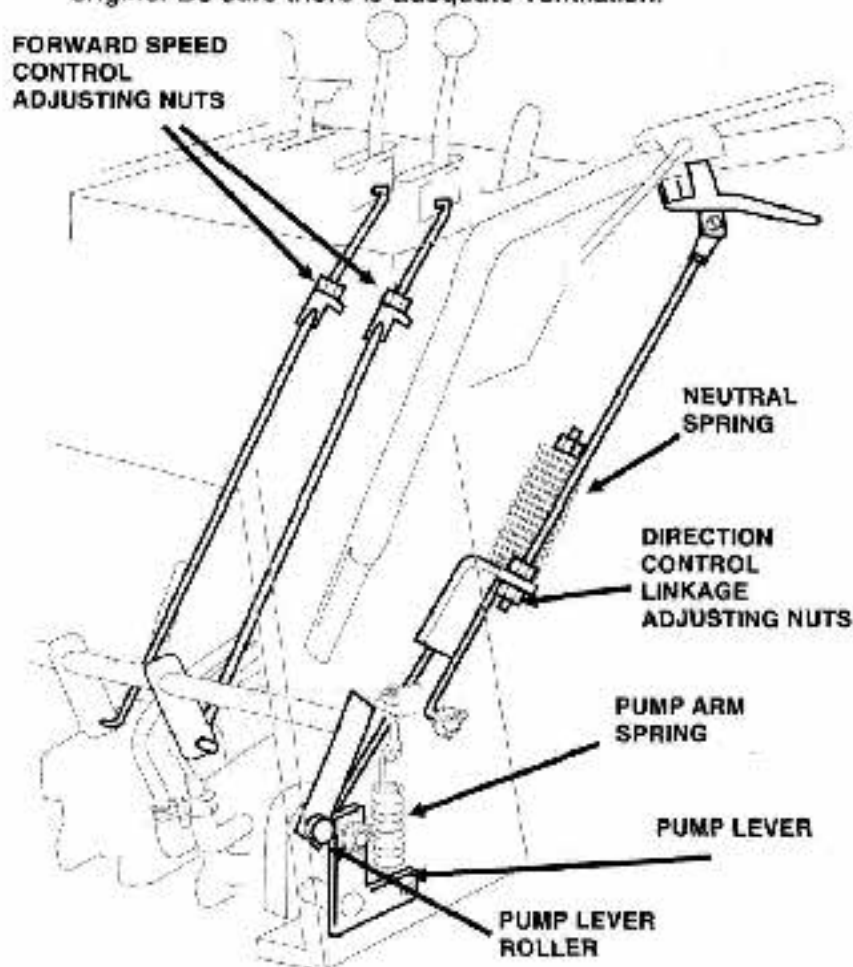


Control Linkage Adjustment

If the mower creeps forward or backward when both direction control levers are held in their neutral position by the neutral locks or if the mower will not track in a straight line on level ground, the control linkage must be adjusted.

Before beginning the adjustment procedure, check the tires for correct inflation and even wear (see page 50). Worn or incorrectly inflated tires can cause tracking problems. Also check the hydrostatic oil level (page 45).

At times during this adjustment procedure, you must run the engine. Be sure there is adequate ventilation.

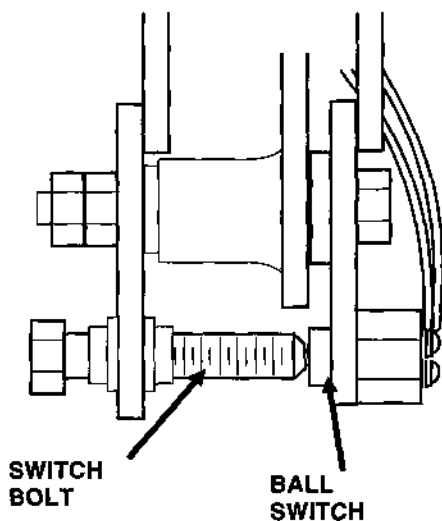


MAINTENANCE & ADJUSTMENTS

- 1. Raise and support the rear of the mower so that the rear wheels are clear of the ground.**
- 2. Hold the direction control levers in neutral with the neutral locks.**
- 3. Move the forward speed control levers full forward so that the rollers do not contact the pump levers.**
- 4. Adjust the direction control linkage on each side so that the pump levers are vertical.**
- 5. Hold an operator presence lever down on the hand grip for the length of this procedure.**
- 6. Start the engine and move the throttle lever to FAST.**
- 7. Loosen the locknuts and adjust the direction control linkage on each side so that the wheels do not rotate. Lengthening the rod causes forward wheel rotation; shortening the rod causes rearward wheel rotation. Then:**
 - Turn the adjusting nut to lengthen the rod until forward rotation just starts.**
 - Turn the adjusting nut, counting the number of turns, to shorten the rod until rear rotation just starts.**
 - Turn the adjusting nut to lengthen the rod one-half the number of turns you counted.**
- 8. Tighten the locknut. Adjust the linkage on the other side in the same manner.**
- 9. Disengage the neutral locks and cycle the direction control levers from full forward to full reverse a number of times. Engage the neutral locks and verify that the wheels don't turn. Readjust the linkage if necessary.**
- 10. Shut off the engine.**
- 11. Pull the forward speed control levers into neutral and engage the neutral locks on the direction control levers.**
- 12. Loosen the locknuts on the forward speed linkage.**
- 13. Adjust the length of the rod until the roller just contacts the pump lever with no slack in the linkage. Adjust the other side the same way.**
- 14. Start the engine, move the throttle lever to FAST, and release the neutral locks of the direction control levers.**

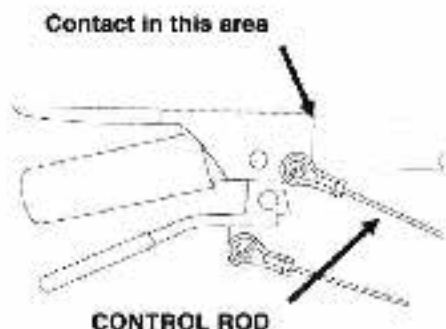
15. Adjust each forward speed linkage rod:
 - Turn the adjusting nut to lengthen the rod until forward rotation just starts.
 - Turn the adjusting nut, counting the number of turns, to shorten the rod until rear rotation just starts.
 - Turn the adjusting nut to lengthen the rod one-half the number of turns you counted.
16. Tighten the locknut. Adjust the linkage on the other side in the same manner.
17. Cycle the forward speed control levers from neutral to full forward a number of times. Readjust the linkage to stop any wheel rotation in neutral.
18. Shut off the engine
19. Engage the neutral locks and put the forward speed control levers in neutral.
20. Adjust both pump arm springs to a length of 4.5 - 4.9 in (115 - 125 mm)
21. Adjust both neutral springs to a length of 2.3 - 2.4 in (58 - 62 mm).

22. Adjust the switch bolt on the left forward speed control lever so that there is 0.02 - 0.04 in (0.5 - 1.0 mm) clearance between the end of the switch bolt and the housing of the ball switch on the right forward speed control lever. When the knobs of the forward speed control levers are even, the ball in the switch should be depressed and the bolt should be centered on the ball.



23. In their released position, the front edge of each operator presence lever should just rest on the handle bar. Adjust the length of the control rods if necessary (see next page).

24. Start the engine and move the forward speed control levers forward out of neutral.
25. Slowly release the operator presence lever. It should stop the engine when the lever is 1 — 1.5 in (24 — 40 mm) above the hand grip. Adjust the switch if necessary.
26. Lower the mower to the ground and check its operation.



Tires

Front Tire Pressure: 28 psi

Rear Tire Pressure: 15 psi

Because of their small volume, the pressure in the tires will increase rapidly when filled from a high-pressure air line. Over inflation can cause damage to the tire and may result in injury.

Incorrect tire inflation can cause the mower not to track in a straight path.

Replace the tires when the tread is worn. Worn-out tires will not provide good traction, especially on slopes and uneven ground.

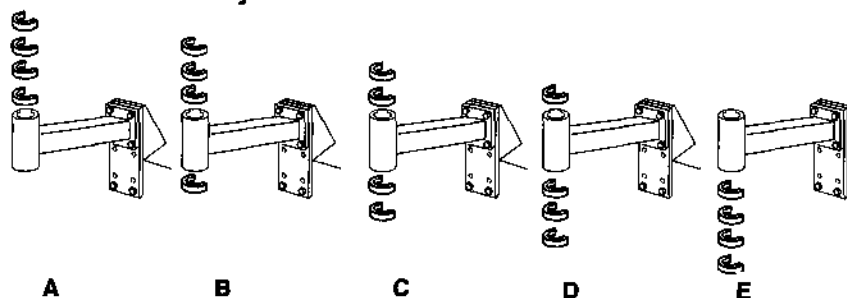
Cutting Height

The cutting height of your mower can be easily adjusted within two ranges: a low range of 1 1/2 to 3 1/2 inches, and a high range of 3 1/2 to 5 1/2 inches. Your Honda dealer assembled your mower with the wheels in the most common range for your area. If you need to change the range, follow the procedures in Cutting Range on page 52.

Always shut off the engine and remove the key before adjusting cutting height.

Be sure to adjust both the front and rear wheels to the same cutting height to get the best performance and cut quality.

Front Wheel Adjustment

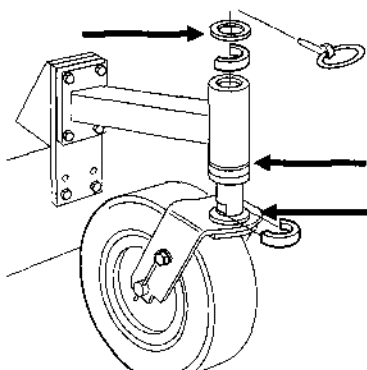


The front castor wheels are adjustable within their range in increments of 1/2 inch by changing the position of the four spacers on each castor post. The following table shows the position of the spacers for the various cutting heights.

| Shim Location | Low Range Cutting Height | High Range Cutting Height |
|---------------|--------------------------|---------------------------|
| A | 1 1/2 | 3 1/2 |
| B | 2 | 4 |
| C | 2 1/2 | 4 1/2 |
| D | 3 | 5 |
| E | 3 1/2 | 5 1/2 |

To change the spacers:

1. Raise and support the front of the mower deck.
2. Remove the pin and lower the castor post about 1/4 inch until the spacer can be removed over the flats in the castor post.
3. Position the spacers in the desired locations.
4. Raise the castor post and insert and lock the pin.
5. Repeat the procedure on the other castor wheel.



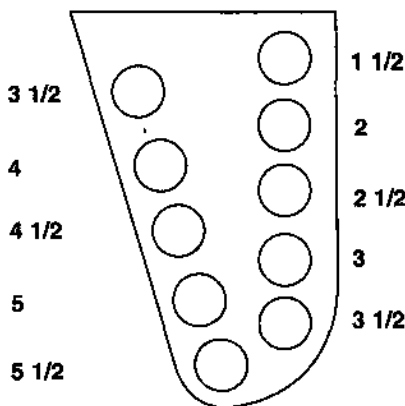
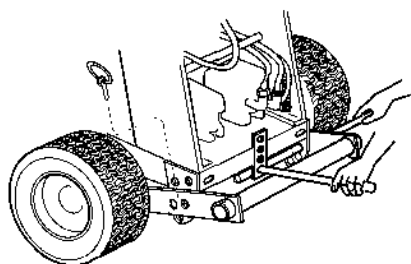
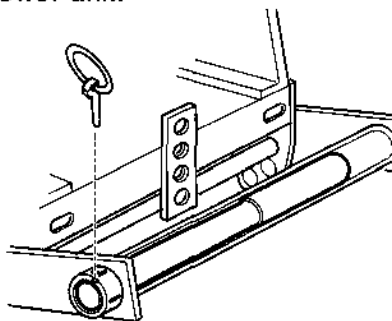
WASHER LOCATIONS

Do not change the location of the washers on the castor post.

Rear Wheel Adjustment

The rear wheels are adjustable within their range in 1/2 inch increments by placing the adjusting bar in the drive axle in one of the 5 holes on the power unit. The adjusting lever helps you raise and lower the power unit.

1. Remove the linchpin to remove the adjusting lever from its storage position.
2. Remove the linchpin from one or the other ends of the adjusting bar.
3. Place the adjusting lever in one of the holes on the power unit to raise the power unit until the adjusting bar can be removed.
4. Use the adjusting lever to align the holes in the desired position and install the adjusting bar.
(If you are adjusting from one end of the range to the other, you may have to install the adjusting bar in an intermediate position to relocate the adjusting lever for better leverage.)
5. Install the linchpin(s) in the adjusting bar. Place the adjusting lever in its storage position and secure it with its spring pin.



Cutting Range

To change the cutting range of your mower you will reposition the front caster wheels on the mower deck and change the drive axle pivot position on the power unit.

Always shut off the engine and remove the key before changing the cutting range.

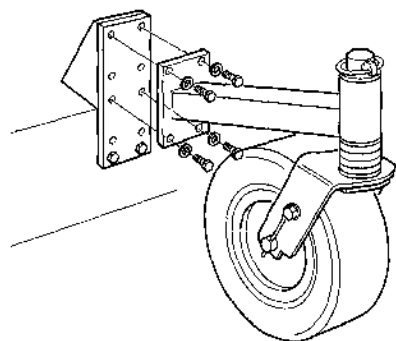
Front Cutting Range Adjustment

1. Raise and support the front of the mower deck.
2. Remove the 4 bolts holding the caster wheel assembly to the mower deck.
3. Reinstall the caster wheel assembly in the alternate set of holes.

Upper 4 holes = Low Range.

Lower 4 holes = High Range

4. Repeat the procedure for the other caster wheel and lower the deck to the ground.
5. Tighten the 4 bolts on each caster wheel assembly to 31 ft-lb (42 Nm).
6. Follow the procedures for Front Wheel Adjustment (page 51) to set the desired cutting height.
7. Lower the mower deck to the ground.

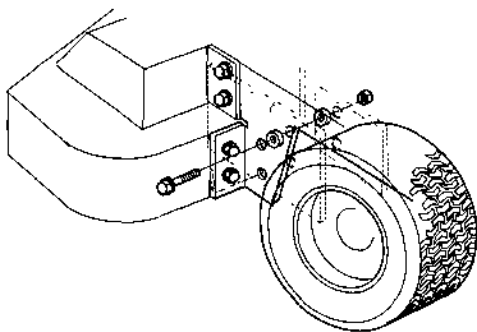


(LOW RANGE SHOWN)

Rear Cutting Range Adjustment

1. Open the pump bypass valves on both pumps.
2. Raise and support the rear of the power unit so that the rear wheels clear the ground by about 3 inches.
3. Follow the procedures for Rear Wheel Adjustment to remove the adjusting bar and lower the wheels to the ground.
4. Loosen all the wheel nuts on both wheels until each wheel nut is even with the end of its stud. This will give enough clearance to remove the pivot bolt.

5. Remove the nut from the pivot bolt on each side of the axle assembly and remove the pivot bolts.
6. Roll the wheels to align the pivot hole on the axle assembly with the alternate pivot holes in the power head.
7. Install the pivot bolts and tighten the nuts on the pivot bolts to 76 ft-lb (103 Nm).
8. Follow the procedures for Rear Wheel Adjustment (page 51) to set the desired cutting height.
9. Tighten the wheel nuts to 35 ft-lb (47 Nm).
10. Lower the power head to the ground.
11. Close both pump bypass valves.



(LOW RANGE POSITION SHOWN)

Be sure to adjust both the front and rear wheels to the same cutting height to get the best performance and cut quality.

Blades

It is important for your safety and the safety of others that you inspect the blades for condition and correct installation before operating the mower.

WARNING

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

Thrown objects can cause serious injury.

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

The blades are subject to wear during normal operation and should be inspected regularly.

If a blade strikes an object, it may be damaged. Immediately stop the mower and inspect the blades.

Before working on or around the blades, disconnect the spark plug connector from the spark plug. This will prevent the engine from starting inadvertently

Always wear heavy gloves to protect your hands when working with or near the mower blades.

Inspecting the Blades



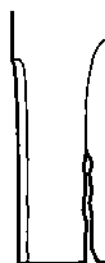
NEW



WORN



BENT



CRACKED

1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control lever OFF.
3. Raise and support the front of the mower deck.
4. Inspect each of the blades for cracking, bending, deep nicking, and wear.

If any of the blades show signs of damage or excessive wear, remove the blades for a more thorough inspection.

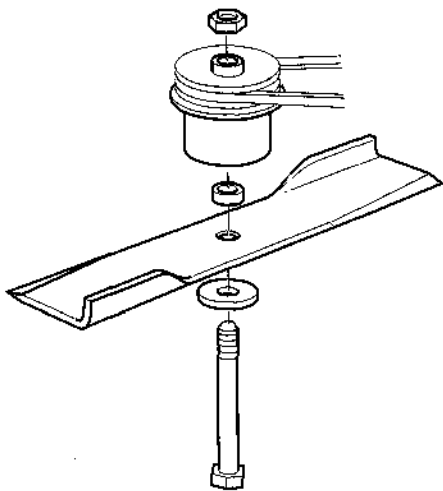
Removing the Blades

1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control lever OFF
3. Remove the belt cover by removing the wing nut(s).
4. Raise and support the front of the mower deck
5. Remove the nut from the spindle bolt.

6. Remove the spindle bolt, washer, blade, and spacer.
7. Repeat the procedure for the other blade(s).

Installing the Blades

1. Reinstall the blades by placing a washer, blade, and spacer on the spindle bolt.
2. Insert the spindle bolt up through the spindle.
3. Install the nut on the spindle bolt. Tighten to 65 - 75 ft-lb (88 - 102 Nm) torque.
4. Repeat the procedure for the other blade(s).
5. Lower the mower deck to the ground.
6. Install the belt cover with the wing nut(s).



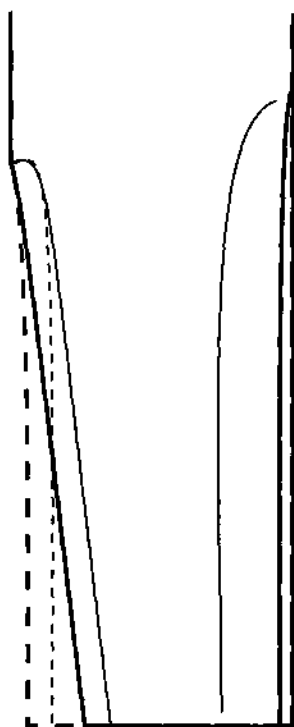
Servicing the Blades

A dull blade may be sharpened, but a blade that is worn out, bent, cracked, or otherwise damaged must be replaced. Always use genuine Honda replacement blades. Substitute blades may not meet Honda specifications and may be dangerous.

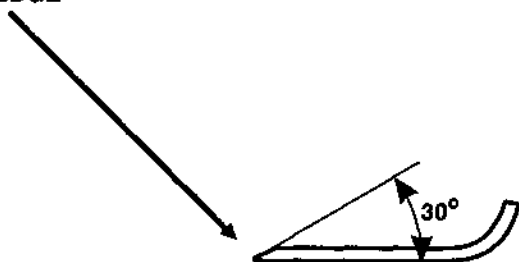
To sharpen a blade:

- Maintain the original angle of the blade (about 30°).
- Leave a blunt edge of 1/16 to 1/32 in. Do not sharpen 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 screw driver through the mounting hole. The blade should remain horizontal. If one end drops, remove additional material from it to make it lighter and recheck the balance.

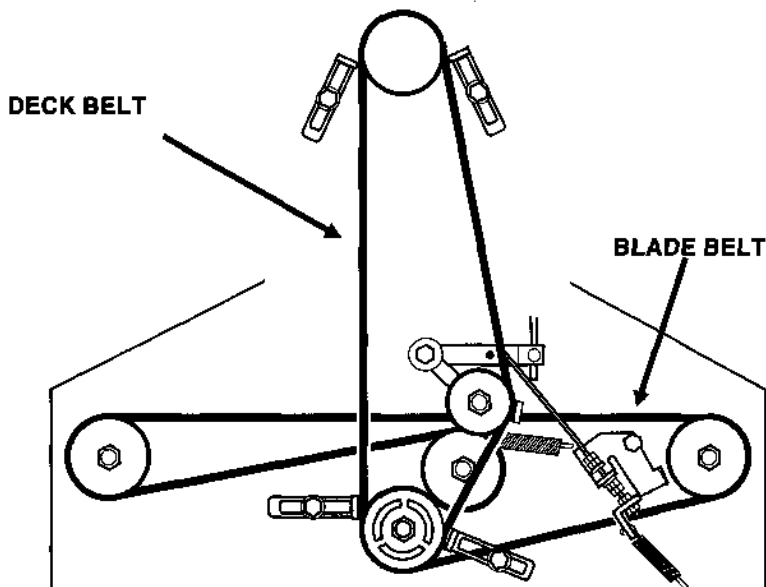


BLUNT EDGE



Deck Belt Replacement and Adjustment 48 inch deck through S/N CCD1-1000965

Replace the deck belt if it is worn, frayed, or glazed. You will need to remove the deck belt to replace either the pump belt or the blade belt. Whenever you remove and replace the deck belt, adjust the belt guides, blade control linkage, and the blade brake. You may need to adjust the blade control linkage and the blade brake to compensate for belt wear.

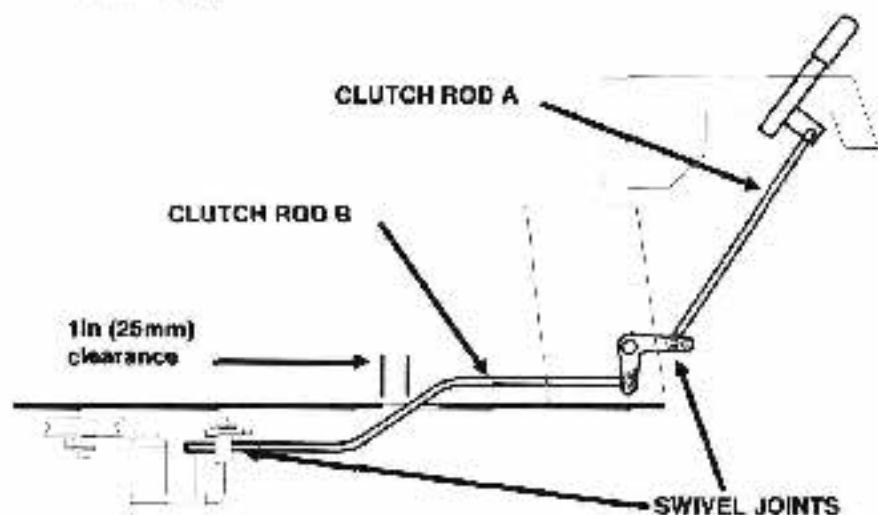


Remove

1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control OFF.
3. Remove the spark plug lead from the spark plug.
4. Remove the belt cover.
5. Loosen the bolts on the 4 belt guides at the deck pulley and engine pulley and move them back from the belt.
6. Loosen the axle bolt of the tensioner pulley and move its belt guide away from the belt.
7. Remove the belt.

Install and Adjust

1. Install the belt over the pulleys.
2. Position the belt guide on the tensioner pulley at the mid point of the belt in the sheaves of the pulley and about 1/8 in (3 mm) away from the belt. Tighten the tensioner pulley axle bolt.
3. There should be about 1 in (25 mm) clearance between clutch rod B and the forward end of the slot in the deck. If necessary, adjust clutch rod A by screwing its swivel joint up or down. Be sure to reinstall the swivel joint in the inside bell crank hole.



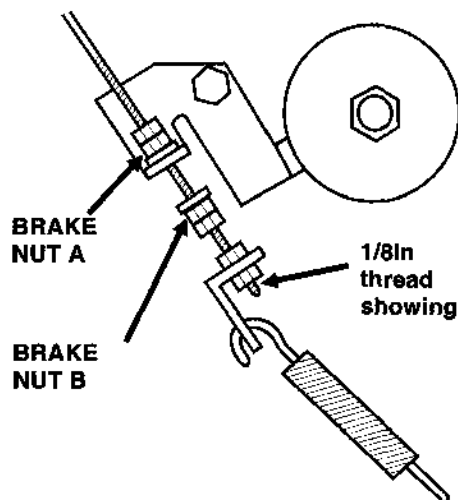
4. Move the blade control ON.
5. Check the tension of the belt half-way between the engine pulley and the blade pulley. It should deflect about 1 in (25 mm) when pushed with an 11 lb (5 kg) force.
6. To adjust the tension, move the blade control OFF and screw the swivel joint on clutch rod B in to increase tension or out to decrease tension. Recheck the tension. **DO NOT OVER TIGHTEN THE BELT.**
7. With the blade control ON, adjust the belt guides to about 1/8 in (3 mm) from the belt. Be sure the belt guides are positioned at the point where the belt enters or leaves the pulley.

8. To adjust the blade brake, move the blade control OFF. At this time:
- There should be 1/2 in (12 mm) between the blade control lever and the rear of the slot in the control panel.
 - The brake shoe on the brake arm should rest in the groove of the blade pulley.
 - The brake nut A should be against the ear of the brake arm.

If necessary, loosen the lock nut and adjust brake nut A.

9. Next, be sure there is about 1/2 in (12 mm) between brake nut A and brake nut B. If not, adjust brake nut B and then tightening its jam nut.

10. Be sure there is about 1/8 in (3 mm) of the threaded end of clutch rod B extending past the nut that holds the spring bracket onto the rod. Adjust if necessary. Be sure the spring bracket is in the position shown to keep it clear of the blade belt.

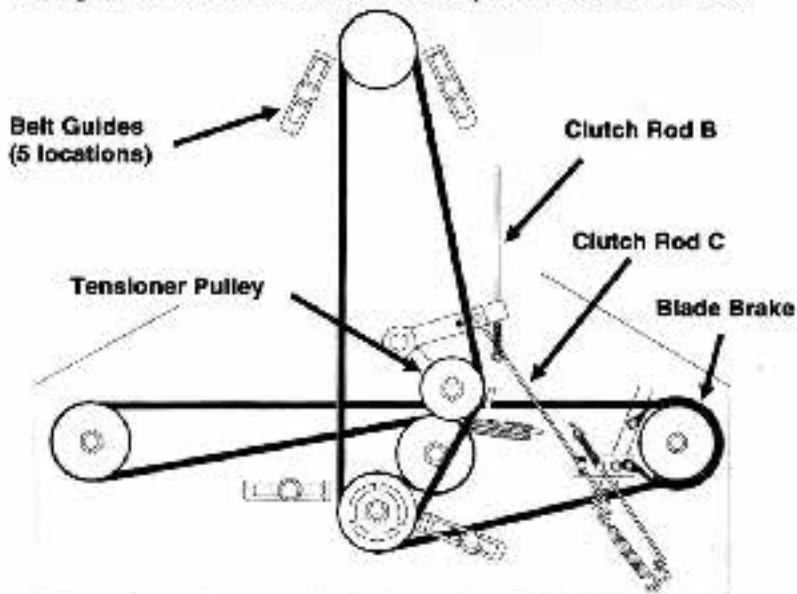


11. Move the blade control OFF, connect the spark plug and start the engine.
12. Move the blade control ON and OFF while checking for:
- Positive disengagement of the deck belt.
 - Correct operation of the blade brake.
 - No slipping of the belt when engaged.
13. Leave the blade control ON and turn the key off and remove it. Disconnect the spark plug.
14. Recheck the belt tension and the adjustment of the belt guides.
15. Install the belt cover and connect the spark plug.

Deck Belt Replacement and Adjustment

48 inch deck from S/N CCD1-1000966 and above

Replace the deck belt if it is worn, frayed, or glazed. You will need to remove the deck belt to replace either the pump belt or the blade belt. Whenever you remove and replace the deck belt, adjust the belt guides, blade control linkage, and the blade brake. You may need to adjust the blade control linkage and the blade brake to compensate for belt wear.

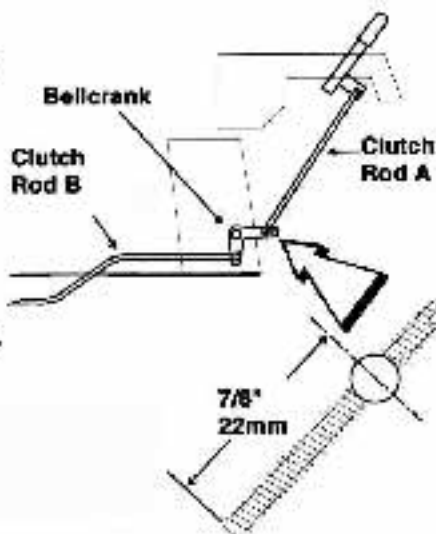


Remove

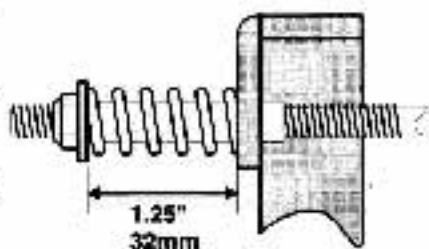
1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control OFF.
3. Remove the spark plug lead from the spark plug.
4. Remove the belt cover.
5. Loosen the bolts on the 4 belt guides at the deck pulley and engine pulley and move them back from the belt.
6. Loosen the axle bolt of the tensioner pulley and move its belt guide away from the belt.
7. Remove the belt.

Install and Adjust

1. Install the belt over the pulleys.
2. Position the belt guide on the tensioner pulley to give about 1/8 in (3 mm) clearance to the belt and tighten the tensioner pulley axle bolt.
3. Adjust clutch rod A by screwing its swivel joint up or down so that there is about 7/8 inch (22 mm) from the center of the swivel joint to the end of clutch rod A. Be sure to reinstall the swivel joint in the inside bell crank hole.
4. Move the blade control ON.



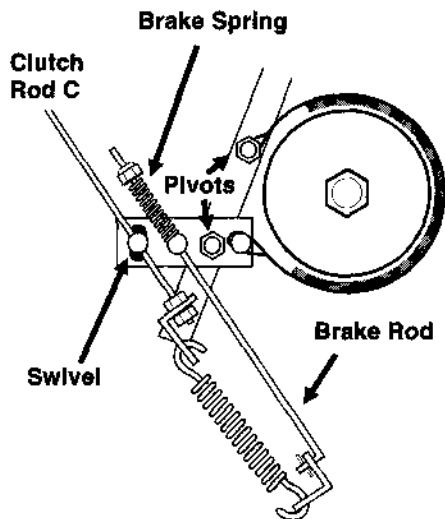
5. Adjust the length of the tension arm spring to 1.25 inches (32 mm). Turn the self-locking nut in to shorten the spring or out to lengthen the spring. This setting compensates for initial stretching of the belt. After a belt has been in service, the spring length should be maintained at 1.5 inches (38 mm).



6. With the blade control ON, adjust all 5 belt guides to about 1/8 in (3 mm) from the belt. Be sure the belt guides are positioned at the point where the belt enters or leaves the pulley. The belt guide on the tensioner pulley should be positioned at the mid point of the belt in the sheaves of the pulley

7. To check the adjustment of the blade brake, move the blade control OFF. At this time:

- The swivel on clutch rod C should be in the center of the slot in the brake arm.
- The brake spring should measure 2 inches (51 mm) long.
- The brake arm and the fixed pivot of the brake band should both pivot freely.



To adjust the swivel:

- Remove the spring pin and washer at the swivel and lift the swivel out of the slot.
- Screw the swivel on clutch rod C to place it in the center of the slot in the brake arm.
- Place the swivel in the slot on the brake arm and install the washer and spring pin on the swivel.

To adjust the brake spring length:

- Turn the self-locking nut on the brake rod to adjust the spring a length of 2 inches (51 mm).

To adjust the brake arm and brake band pivots:

- Hand-tighten the self-locking nuts on each of the pivots.
- Loosen both self-locking nuts until the washer is just free to rotate.

8. Move the blade control OFF, connect the spark plug and start the engine.

9. Move the throttle to FAST and squeeze an operator presence lever to the hand grip.

10. Move the blade control ON and allow the blades to come up to speed. Check that the deck belt does not slip and that the brake band does not drag on the brake drum.

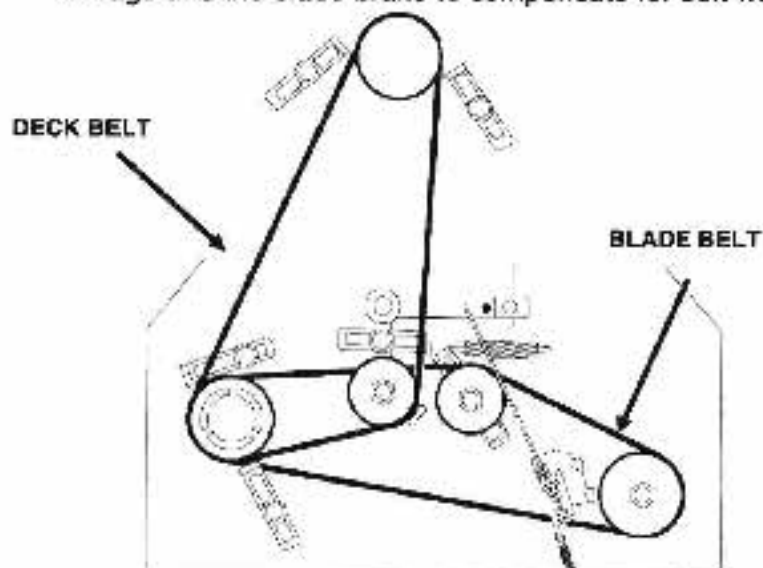
MAINTENANCE & ADJUSTMENTS

- 11.** Move the blade control OFF and check that the deck belt does not drag.
- 12.** Repeat the on-and-off cycle ten times.
- 13.** Leave the blade control ON, bring the throttle to SLOW, and turn the key off and remove it. Disconnect the spark plug.
- 14.** Recheck the length of the tension arm spring and the adjustment of the belt guides. Check that there is a small clearance between the brake band and the brake drum.
- 15.** Move the blade control off and check that the swivel on clutch rod C is in the center of the slot on the brake arm.
Check the position of the swivel on clutch rod C in its slot whenever you adjust any of the blade control linkage or springs.
- 16.** If adjustments were necessary, repeat steps 8 through 15.
- 17.** Install the belt cover and connect the spark plug.

Deck Belt Replacement and Adjustment

36 inch deck through S/N CCD2-1000677

Replace the deck belt if it is worn, frayed, or glazed. You will need to remove the deck belt to replace either the pump belt or the blade belt. Whenever you remove and replace the deck belt, adjust the belt guides, blade control linkage, and the blade brake. You may need to adjust the blade control linkage and the blade brake to compensate for belt wear.

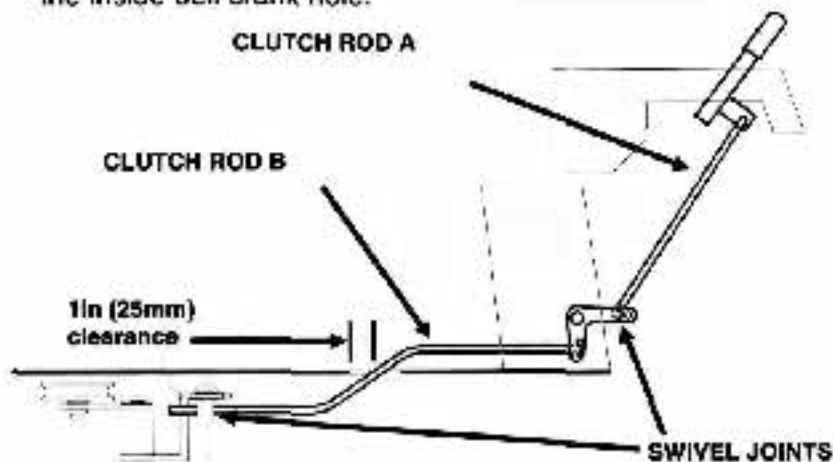


Remove

1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control OFF.
3. Remove the spark plug lead from the spark plug.
4. Remove the belt cover.
5. Loosen the bolts on the 5 belt guides at the deck pulley, engine pulley, and tensioner pulley arm and move them back from the belt.
6. Loosen the axle bolt of the tensioner pulley and move its belt guide away from the belt.
7. Remove the belt.

Install and Adjust

1. Install the belt over the pulleys.
2. Position the belt guide on the tensioner pulley as shown to give 1/8 inch (3 mm) clearance to the belt and tighten the tensioner pulley axle bolt. The belt guide on the tensioner pulley arm should be positioned 90° to the belt and 1/8 inch (3 mm) away.
3. There should be about 1 in (25 mm) clearance between clutch rod B and the forward end of the slot in the deck. To adjust the clearance, adjust clutch rod A by screwing its swivel joint up or down. Be sure to reinstall the swivel joint in the inside bell crank hole.

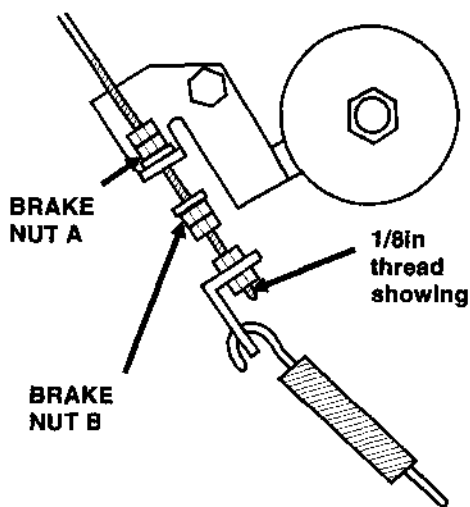


4. Move the blade control ON. Check the tension of the belt half-way between the engine pulley and the blade pulley. It should deflect about 1 in (25 mm) when pushed with an 11 lb (5 kg) force.
5. To adjust the tension, move the blade control OFF and screw the swivel joint on clutch rod B in to increase tension or out to decrease tension. Recheck the tension. **DO NOT OVER TIGHTEN THE BELT.**
6. With the blade control ON, adjust the belt guides to within 1/8 inch (3 mm) from the belt. Be sure the belt guides are positioned at the point where the belt enters or leaves the pulley as shown in the first illustration.
7. To adjust the blade brake, move the blade control OFF. At this time:

- There should be 1/2 inch (12 mm) between the blade control lever and the rear of the slot in the control panel.
- The brake shoe on the brake arm should rest in the groove of the blade pulley.
- The brake nut A should be against the ear of the brake arm.

If necessary, loosen the lock nut and adjust brake nut A.

- 8.** Next, be sure there is about 1/2 inch (12 mm) between brake nut A and brake nut B. If not, adjust brake nut B and then tightening its jam nut.

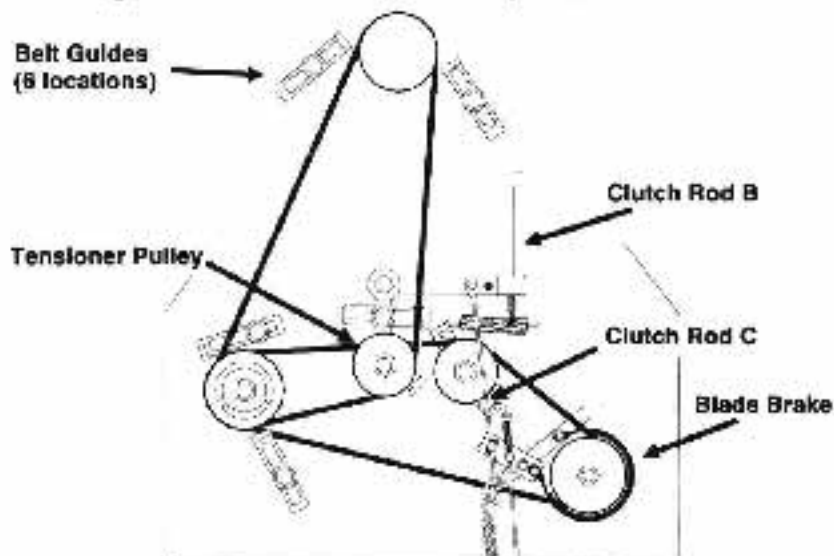


- 9.** Be sure there is about 1/8 inch (3 mm) of the threaded end of clutch rod B extending past the nut that holds the spring bracket onto the rod. Adjust if necessary. Be sure the spring bracket is in the position shown to keep it clear of the blade belt.

- 10.** Move the blade control OFF, connect the spark plug and start the engine.
- 11.** Move the blade control ON and OFF while checking for:
- Positive disengagement of the deck belt.
 - Correct operation of the blade brake.
 - No slipping of the belt when engaged.
- 12.** Leave the blade control ON and turn the key off and remove it. Disconnect the spark plug.
- 13.** Recheck the belt tension and the adjustment of the belt guides.
- 14.** Install the belt cover and connect the spark plug.

Deck Belt Replacement and Adjustment 36 inch deck from S/N CCD2-1000678 and above

Replace the deck belt if it is worn, frayed, or glazed. You will need to remove the deck belt to replace either the pump belt or the blade belt. Whenever you remove and replace the deck belt, adjust the belt guides, blade control linkage, and the blade brake. You may need to adjust the blade control linkage and the blade brake to compensate for belt wear.

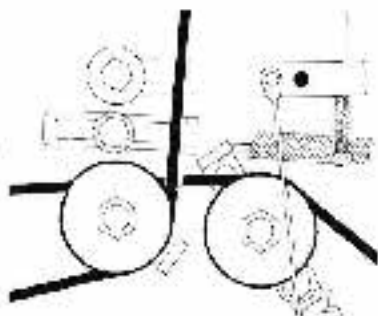


Remove

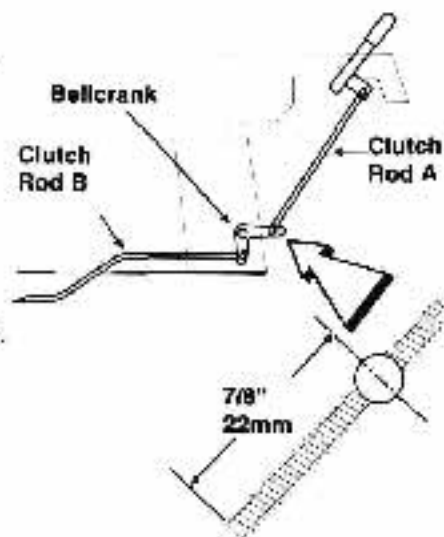
1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control OFF.
3. Remove the spark plug lead from the spark plug.
4. Remove the belt cover.
5. Loosen the bolts on the 5 belt guides at the deck pulley, engine pulley, and tensioner pulley arm and move them back from the belt.
6. Loosen the axle bolt of the tensioner pulley and move its belt guide away from the belt.
7. Remove the belt.

Install and Adjust

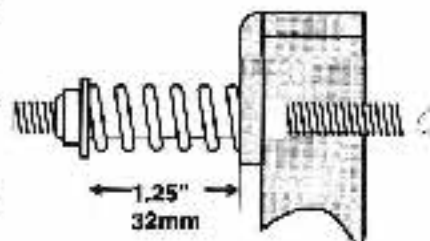
1. Install the belt over the pulleys.
2. Position the belt guide on the tensioner pulley as shown to give about 1/8 inch (3 mm) clearance to the belt and tighten the tensioner pulley axle bolt. The belt guide on the tensioner pulley arm should be positioned 90° to the belt and 1/8 inch (3 mm) away (as shown).



3. Adjust clutch rod A by screwing its swivel joint up or down so that there is about 7/8 inch (22 mm) from the center of the swivel joint to the end of clutch rod A. Be sure to reinstall the swivel joint in the inside bell crank hole.
4. Move the blade control ON.

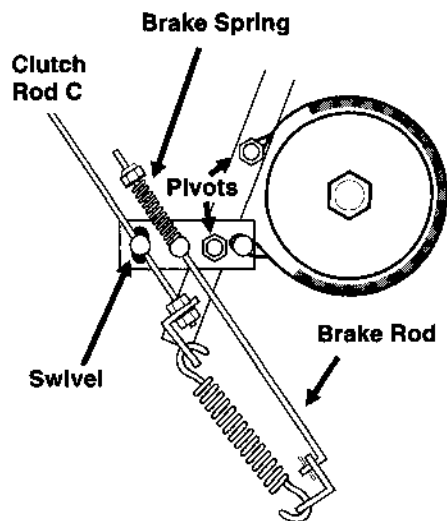


5. Adjust the length of the tension arm spring to 1.25 inches (32 mm). Turn the self-locking nut in to shorten the spring or out to lengthen the spring. This setting compensates for initial stretching of the belt. After a belt has been in service, the spring length should be maintained at 1.5 inches (39 mm).



MAINTENANCE & ADJUSTMENTS

6. With the blade control ON, adjust all 5 belt guides to about 1/8 in (3 mm) from the belt. Be sure the belt guides are positioned at the point where the belt enters or leaves the pulley. The belt guide on the tensioner pulley should be positioned at the mid point of the belt in the sheaves of the pulley
7. To check the adjustment of the blade brake, move the blade control OFF. At this time:
 - The swivel on clutch rod C should be in the center of the slot in the brake arm.
 - The brake spring should measure 2 inches (51 mm) long.
 - The brake arm and the fixed pivot of the brake band should both pivot freely.



To adjust the swivel:

- Remove the spring pin and washer at the swivel and lift the swivel out of the slot.
- Screw the swivel on clutch rod C to place it in the center of the slot in the brake arm.
- Place the swivel in the slot on the brake arm and install the washer and spring pin on the swivel.

To adjust the brake spring length:

- Turn the self-locking nut on the brake rod to adjust the spring a length of 2 inches (51 mm).

To adjust the brake arm and brake band pivots:

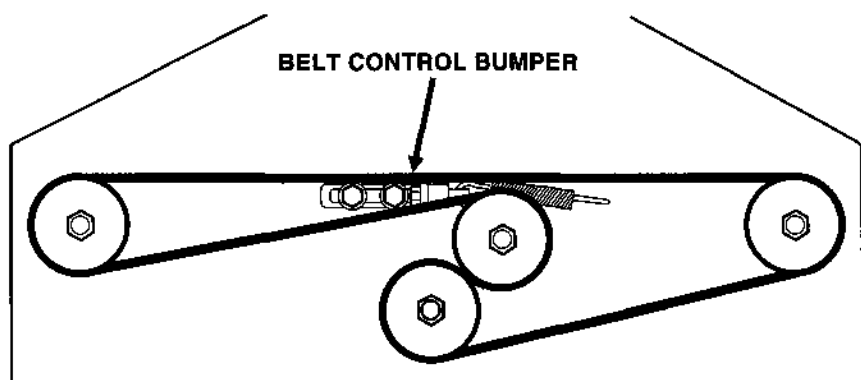
- Hand-tighten the self-locking nuts on each of the pivots.
- Loosen both self-locking nuts until the washer is just free to rotate.

- 8.** Move the blade control OFF, connect the spark plug and start the engine.
- 9.** Move the throttle to FAST and squeeze an operator presence lever to the hand grip.
- 10.** Move the blade control ON and allow the blades to come up to speed. Check that the deck belt does not slip and that the brake band does not drag on the brake drum.
- 11.** Move the blade control OFF and check that the deck belt does not drag.
- 12.** Repeat the on-and-off cycle ten times.
- 13.** Leave the blade control ON, bring the throttle to SLOW, and turn the key off and remove it. Disconnect the spark plug.
- 14.** Recheck the length of the tension arm spring and the adjustment of the belt guides. Check that there is a small clearance between the brake band and the brake drum.
- 15.** Move the blade control off and check that the swivel on clutch rod C is in the center of the slot on the brake arm.

Check the position of the swivel on clutch rod C in its slot whenever you adjust any of the blade control linkage or springs.
- 16.** If adjustments were necessary, repeat steps 8 through 15.
- 17.** Install the belt cover and connect the spark plug.

Blade Belt Replacement and Adjustment 48 inch deck

Replace the blade belt if it is worn, frayed, or glazed. You will need to remove the deck belt first (page 58). Whenever you remove and replace the blade belt, adjust the belt control bumper. You may need to adjust the belt control bumper to compensate for belt wear.



Remove

1. Remove the belt control bumper by removing the two bolts.
2. Remove the belt by pulling against the tensioner spring.

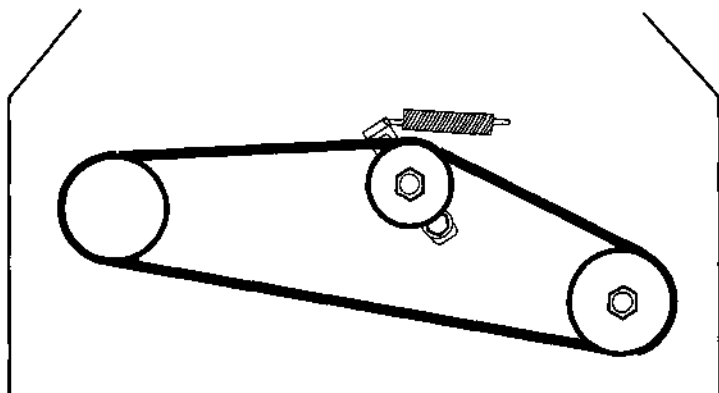
Install and Adjust

1. Place the belt over the left side and center blade pulleys and the tensioner pulley.
2. Pull against the tensioner spring to place the belt over the right side (discharge side) pulley.
3. Rotate the center blade pulley clockwise 2 or 3 times to seat the belt.
4. Install the blade control bumper so that it rests against the tensioner pulley arm and tighten the two bolts.
5. Install the deck belt.

Blade Belt Replacement and Adjustment

36 inch deck

Replace the blade belt if it is worn, frayed, or glazed. You will need to remove the deck belt first (page 61). Whenever you remove and replace the blade belt, adjust the belt control bumper. You may need to adjust the belt control bumper to compensate for belt wear.



Remove

1. Remove the belt by pulling against the tensioner spring.

Install and Adjust

1. Place the belt over the left side blade pulley and the tensioner pulley.
2. Pull against the tensioner spring to place the belt over the right side (discharge side) pulley.
3. Rotate the center blade pulley clockwise 2 or 3 times to seat the belt.
4. Install the deck belt.

Pump Belt Replacement and Adjustment

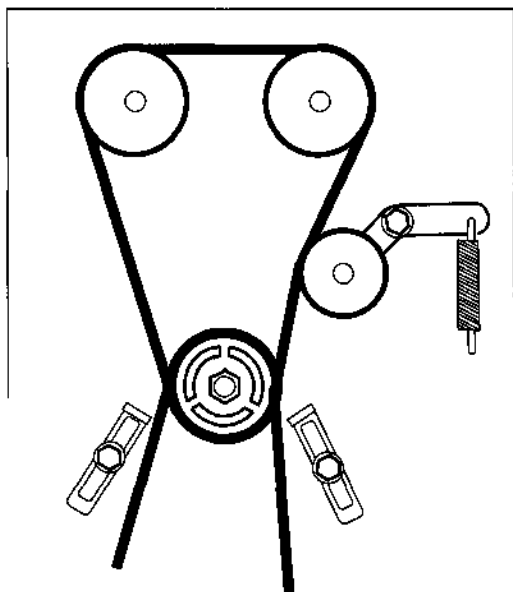
Replace the pump belt if it is worn, frayed, or glazed. You will need to remove the deck belt first (48", page 58; 36", page 61).

Remove

1. Remove the belt by pulling against the tensioner spring.

Install and Adjust

1. Place the belt over the pump pulleys and the tensioner pulley.
2. Pull against the tensioner spring to place the belt over the engine pulley. There are three holes in the deck of the power unit for the spring holder. Connect the spring to the center hole.
3. Install the deck belt.



TROUBLESHOOTING

This section tells you what to look for if you encounter problems.

Engine _____ 76

Mower _____ 76

Engine

Doesn't start

The key must be ON.

Forward speed controls must be in NEUTRAL.

Fuel tank should be full of fresh fuel (page 36).

Fuel filter should be clean and free of obstructions (page 38).

Fuel valve should be on (page 11).

Throttle should be in CHOKE for cold engine, FAST for warm engine.

Spark plug connector should be firmly attached to the spark plug.

Spark plug should be correctly gapped and be free of deposits (page 41).

Blade control must be OFF.

Low power

Air cleaner elements should be clean (page 35).

Spark plug should be correctly gapped and be free of deposits (page 41).

Mower deck should be free of grass accumulation.

Tall grass should be cut at lower speeds and/or higher cutting heights.

Incorrect carburetor or governor linkage adjustment (page 43).

Mower

Doesn't move

Forward speed controls must be out of NEUTRAL.

Neutral locks must be released

Both pump bypass valves must be closed (page 24).

The pump drive belt must be in good condition (page 74).

The hydrostatic oil should be at the correct level (page 45).

Pulls to one side

Tires should be correctly inflated (page 50).

The control linkages must be correctly adjusted (page 47).

Both pump bypass valves must be closed (page 24).

Vibrates

Blades should be in good condition (page 54).

The deck must be free of any accumulation of clippings.

Deck and blade belts should be in good condition and at correct tension (page 58).

Cuts poorly

Throttle should be in FAST.

Cutting height must be at the same setting at front and rear (page 50).

Blades should be in good condition (page 54).

Mower deck should be free of grass accumulation.

Deck and blade belts should be in good condition and at correct tension (page 58).

Tall grass should be cut at lower speeds and/or higher cutting heights.

SPECIFICATIONS

This section provides you with important dimensions and capacities.

Mower _____ **80**

Engine _____ **81**

SPECIFICATIONS**Mower**

| Mower deck | 36 inch | 48 inch |
|--------------------------|-----------------------------------|--------------------|
| Length | 80 inches (2.03m) | 76 inches (1.93m) |
| Width: Chute up | 36 inches (0.91m) | 49 inches (1.24m) |
| Chute down | 47 inches (1.19m) | 59 inches (1.50m) |
| Height | 47 1/4 inches (1.20m) | |
| Operating weight | 533 pounds (241kg) | 590 pounds (267kg) |
| Maximum speed: | | |
| Forward | 5 mph (8km/h) | |
| Reverse | 2 mph (3km/h) | |
| Drive system | Zero-turn hydrostatic drive | |
| Hydrostatic oil | 10W-40 SG | |
| Hydrostatic oil capacity | 10.4 quarts (9.8) | |
| Tire size: | | |
| Drive wheel | 4-ply 16 x 6.50 x 8 | |
| Caster wheel | 2-ply 4.10 x 3.50 x 5 | |
| Tire pressure: | | |
| Drive wheel | 15 psi (103kPa) | |
| Caster wheel | 28 psi (193kPa) | |
| Cutting height: | | |
| Low range | 1 1/2 - 3 1/2 inches (38 - 89mm) | |
| High range | 3 1/2 - 5 1/2 inches (89 - 140mm) | |

Engine

| | |
|--------------------------------|------------------------------------|
| Model | GXV390DA2 |
| Horsepower/rpm | 13 hp/3600 rpm |
| Maximum no-load governed speed | 3550±50 rpm |
| Idle speed | 1750 ⁺²⁰⁰ rpm |
| Ignition system | Transistorized magneto |
| Valve clearance: | |
| Intake | 0.003 - 0.005 inch (0.08 - 0.12mm) |
| Exhaust | 0.005 - 0.007 inch (0.13 - 0.17mm) |
| Spark plug | ND—BPR5ES NGK—W16EPR-U |
| Spark plug gap | 0.028 - 0.031 inch (0.7 - 0.8mm) |
| Fuel | Minimum 86 pump octane, unleaded |
| Fuel tank capacity | 4.4 gallons (16.6ℓ) |
| Engine oil | 10W-30 SG |
| Engine oil capacity | 1.2 quarts (1.1ℓ) |

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ADDITIONAL INFORMATION

This section gives you sources for more information about your mower.

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Honda Publications

These publications will give you additional information about maintaining your mower. You may order them from your Honda Commercial Mower dealer.

Shop Manual

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

Parts Catalog

This provides a complete pictorial parts listing.

Customer Service Information

Honda Power Equipment dealerships are staffed by 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. Almost all problems are solved in this way.

If you are not satisfied with the decision made by the dealership's management, contact Honda Power Equipment Customer Service Office.

You can write to:

Honda Power Equipment Division
Customer Service Office
4475 River Green Parkway
Duluth, GA 30136-9420

Or telephone:

(404) 497-6400

When you write or call, please give us this information

- Identification number (power unit and mower deck).
- Name of the dealer who sold the mower to you.
- Name and address of the dealer who services your mower.
- Date of purchase.
- Your name, address, and telephone number.
- A detailed description of the problem.

Current customer service contact information:

United States, Puerto Rico, and U.S. Virgin Islands:

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
4900 Marconi Drive
Alpharetta, GA 30005-8847

Or telephone: (770) 497-6400 M-F, 8:30 am - 5:00 pm EST

When you write or call, please provide the following information:

- Model and serial numbers
- Name of the dealer who sold the Honda power equipment to you
- Name and address of the dealer who services your equipment
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

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