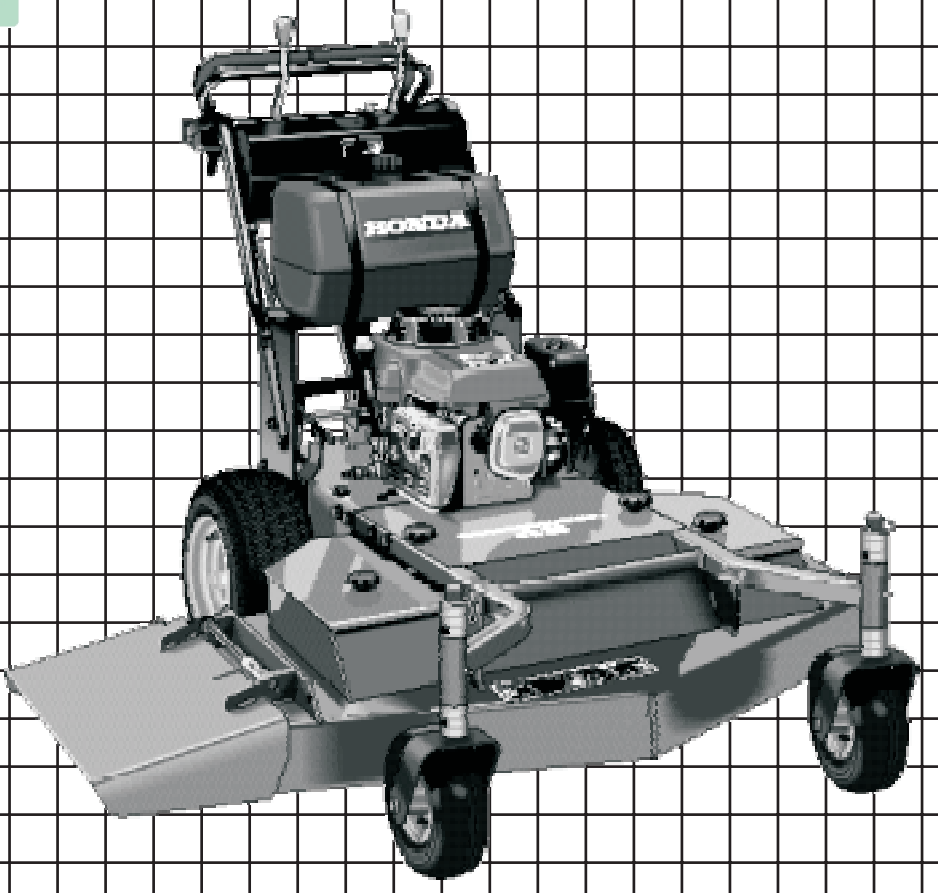
HONDA
Power
Equipment

OWNER'S MANUAL

HRC7113 TruGear®
Mid-size Commercial Mower

Click here to save this manual to your computer.



⚠ WARNING: ⚠

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

Keep this owner's manual handy, so you can refer to it at any time, and make sure the manual stays with the commercial mower if you sell it.

This owner's manual is considered a permanent part of the commercial mower and should remain with the mower if resold.

The information and specifications included 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 at any time without notice and without incurring any obligation whatever.

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

Congratulations on your selection of a Honda commercial mower! We are certain you will be pleased with your purchase of one of the finest lawn mowers on the market.

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

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

We suggest you read the Distributor's Limited Warranty and Emission Control System Warranty to fully understand coverage and your responsibilities of ownership.

When your mower needs scheduled maintenance, keep in mind that an authorized Honda servicing dealer is specially trained in servicing Honda mowers and is 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 _____

A FEW WORDS ABOUT SAFETY

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

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

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

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

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

These signal words mean:

⚠ DANGER — You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠ WARNING — You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠ CAUTION — You CAN be HURT if you don't follow instructions.

- **Safety Headings** — such as Important Safety Information.
- **Safety Section** — such as **MOWER SAFETY.**
- **Instructions** — how to use this mower correctly and safely.

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

Contents

Mower Safety

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 the 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.

Then be 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.

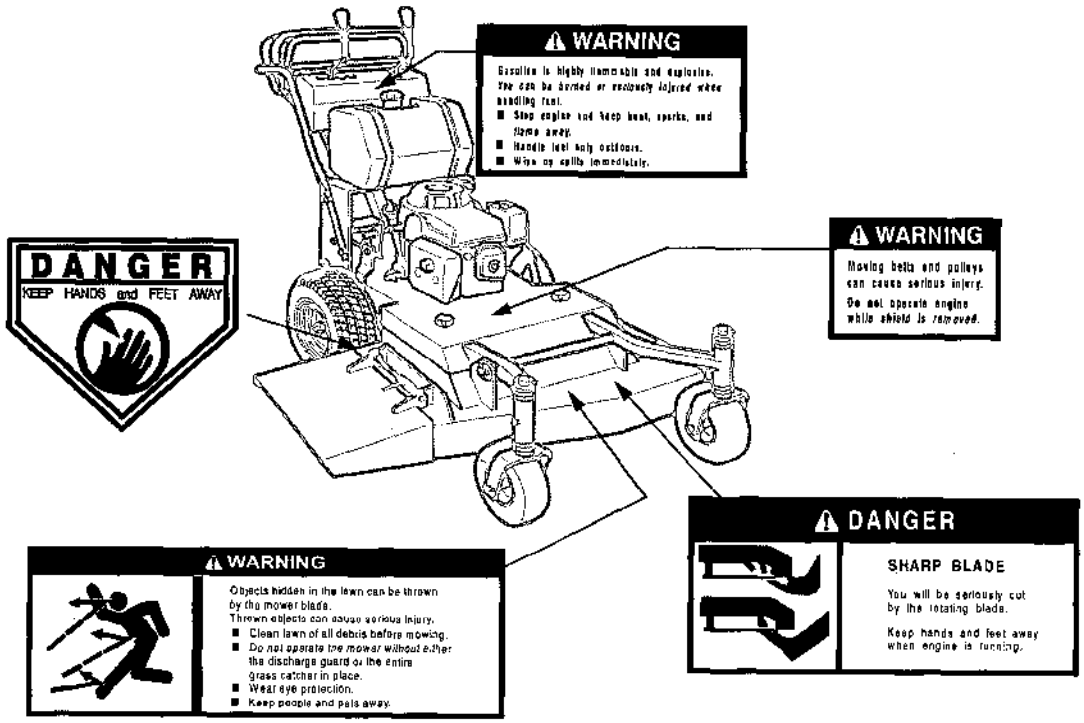
Also be sure employees wear proper clothing and have eye protection and any other gear that may be required by local ordinances or your insurance company.

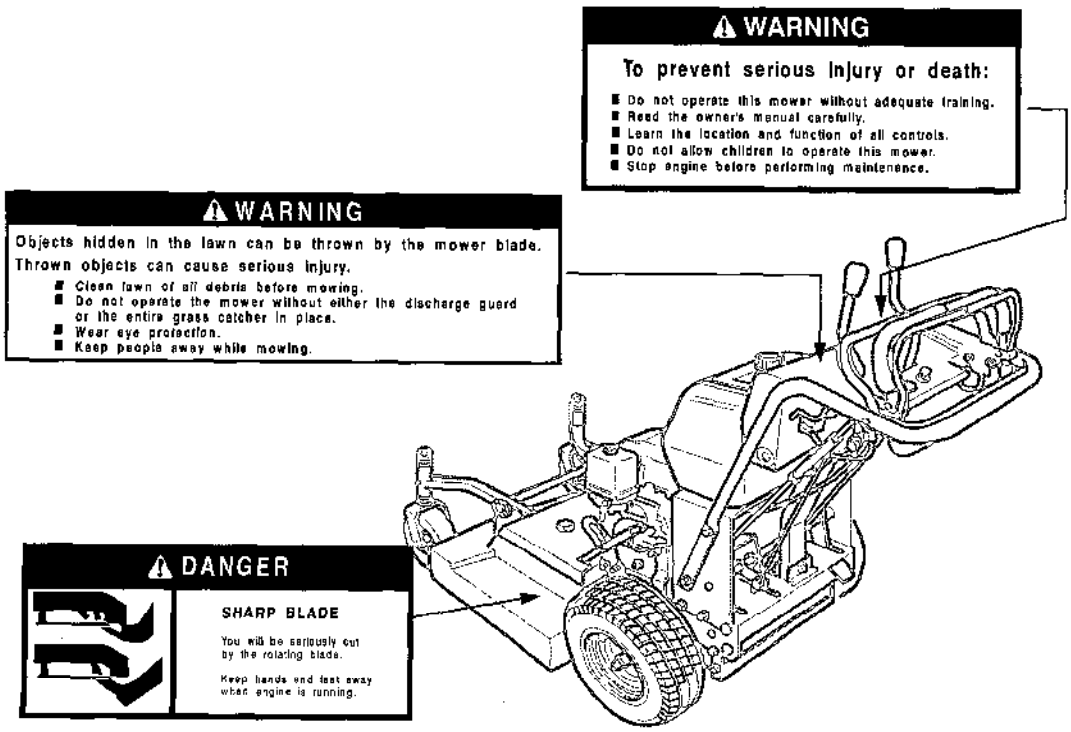
Remember, too, that you are responsible for keeping the mower properly maintained and in safe operating condition.

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

SAFETY LABEL LOCATIONS

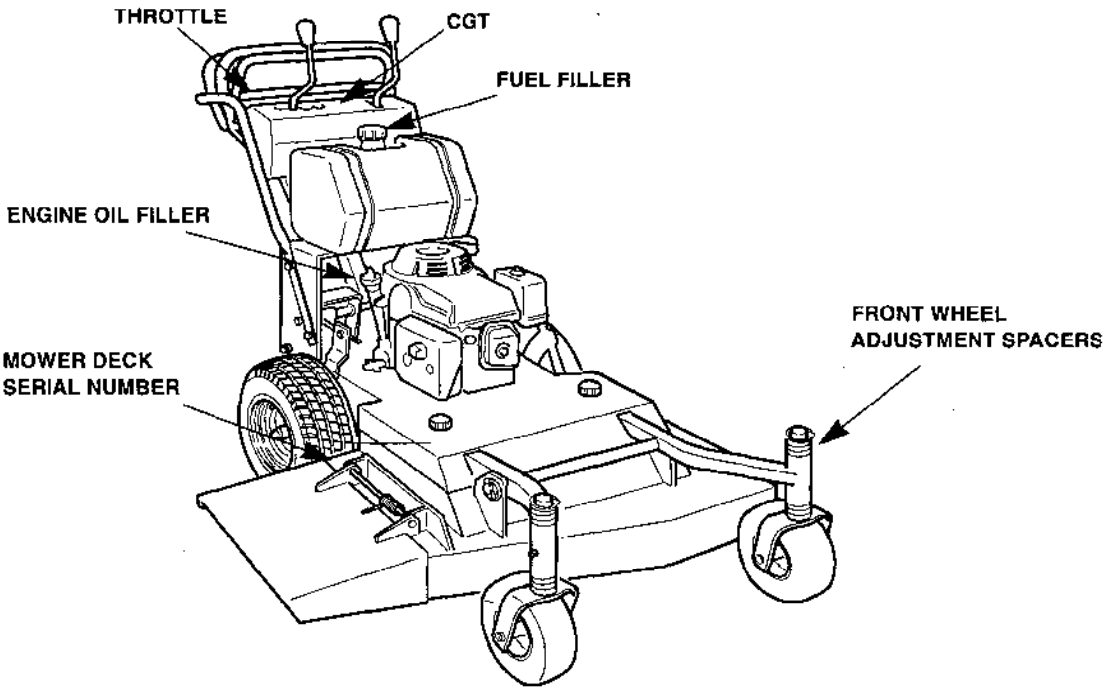
These labels warn you of potential hazards that can cause serious injury. Read them carefully. If a label comes off or becomes hard to read, contact your Honda Commercial Mower dealer for a replacement.

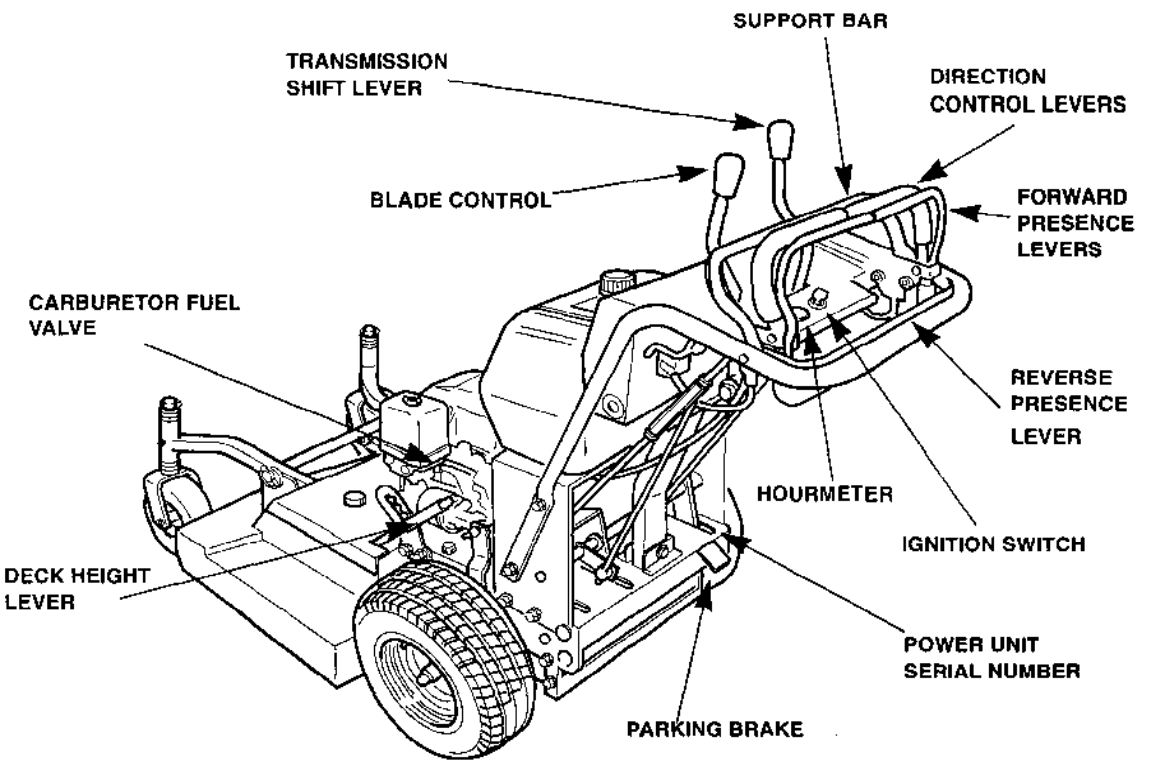




Controls & Indicators

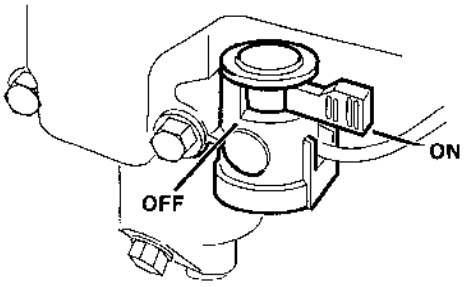
LOCATIONS





CONTROLS

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.

The fuel valve located at the fuel tank should be used to shut off the fuel only when changing the fuel filter.

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.

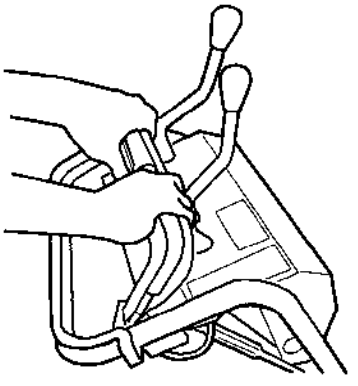
Transmission Shift Lever

Use the shift lever to select among four forward speeds, neutral, or reverse. To select reverse, the reverse operator presence lever must be pushed down or the engine will stop.

Blade Control

The blade control lever engages engine power to the mower deck, and causes the blades to turn. The forward position is ON, The rear position is OFF. Any one of the operator presence levers must be held down when you engage the blade control, or the engine will stop.

Direction Controls



There are two sets of direction control levers, one set for forward travel, and the other for reverse. The direction control levers independently control each drive wheel for steering, slowing, and stopping. Pushing a forward direction control lever, gradually supplies power to the respective wheel. Pulling a lever applies the brake to that wheel.

Pulling up on the reverse direction control levers gradually supplies power to the respective wheels.

The use of the direction control levers is explained on page 19.

Operator Presence Levers

The three operator presence levers are part of the safety interlock system. There is a lever at each forward direction control lever and one above the reverse support bar. When the blade control is ON, you must hold at least one lever down. Before shifting into reverse, you must hold the reverse presence lever down. In either case if you don't hold the appropriate lever, the engine will stop.

Parking Brake

The parking brake locks the brakes ON. Pull the forward direction control levers to apply the brakes, and then press on the parking brake pedal. Release the brake by pulling harder on both forward direction control levers.

Front-Wheel Adjustment Spacers

The front-wheel adjustment spacers allow adjustment of the cutting height in 0.5-inch increments, from 1.5 to 4.5 inches (38–114 mm). Their use is explained on page 37.

Deck Height Lever

The deck height lever allows adjustment of the cutting height in 0.5-inch increments, from 1.5 to 4.5 inches (38–114 mm). Its use is explained on page 37.

CGT (Center of Gravity Transfer) System

The center of gravity may be shifted toward the rear of the mower for specific mowing situations. Remove the plastic plug at the front of the control panel and add a quantity of sand to produce the desired weight distribution. Use only "play sand" to reduce the chance of corrosion. The sand may be removed by removing plugs on the sides of the tank.

Be aware that the center of gravity is moved not only rearward, but also upward. This higher center of gravity may decrease stability when operating on slopes.

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 29).

Transporting and Storing

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 holes in the rear of the engine bed to tie the mower down. Be careful not to damage linkages when tightening the ropes or straps.

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

STORAGE PREPARATION

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

Cleaning the Engine

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

NOTICE

Using a garden hose or pressure washing equipment can force water into the air cleaner. Water in the air cleaner will soak the filters and can enter the carburetor or engine cylinder, causing damage.

Water contacting a hot engine can cause damage. If the engine has been running, allow it to cool for at least half an hour before washing.

Cleaning the Mower Deck

If using a garden hose or pressure washing equipment to clean the mower deck, be careful to avoid getting water into controls and cables, or anywhere near the engine air cleaner or muffler opening.

NOTICE

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

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

Remove the grass bag (optional kit) from its frame, and wash it with a garden hose or pressure washing equipment. Allow the bag to completely dry before storage.

After washing the mower, wipe dry all accessible surfaces.

Start the engine outdoors, and let it run until it reaches normal operating temperature to evaporate any water remaining on the engine.

While the engine is running, hold an operator presence lever and operate the blade control lever to expel water from the blade pulleys, spindles, and other mower deck areas. Allow the blades to spin for several minutes to ensure that no water remains.

Stop the engine and allow it to cool.

After the mower is clean and dry, touch up any damaged paint and coat other areas with a light film or oil. Do not apply oil to the pulleys, brake drums, or to the blade brake drum. Lubricate the throttle cable core with a silicone spray lubricant.

Fuel

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

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

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

You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

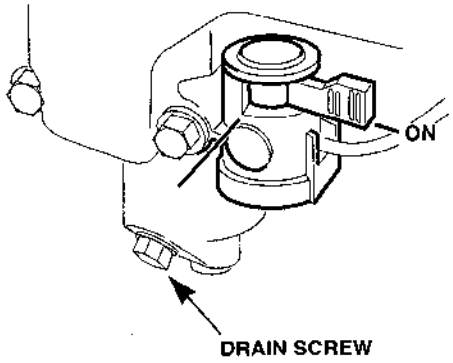
Adding a Gasoline Stabilizer to Extend Fuel Storage Life

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

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

Draining the Fuel Tank and Carburetor

1. Loosen the carburetor drain screw and turn the fuel valve ON.



⚠ WARNING

Gasoline is highly flammable and explosive.
You can be burned or seriously injured when handling fuel.
- Keep heat, sparks, and flame away.
- Handle fuel only outdoors.
- Wipe up spills immediately.

2. Drain the fuel into an approved gasoline container. Reinstall the drain screw.

Engine Oil

1. Change the engine oil (page 30).
2. Remove the spark plug (page 32).
3. Pour a tablespoon (5 ~ 10 cc) of clean engine oil into the cylinder.
4. Pull the starter rope a few times to distribute the oil in the cylinder.
5. Reinstall the spark plug.

Grease

Lubricate all grease points (page 35).

Tires

Check tire air pressure (page 36).

STORAGE PRECAUTIONS

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

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

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

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

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

REMOVAL FROM STORAGE

Check your mower as described in the *Before Mowing* chapter of this manual (page 17).

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

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

Before Mowing

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 transmission shift lever is 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 38 for details.

Belts

Check the blade, deck, and transmission belts for wear and correct tension. See page 40 for details.

Engine Oil

Check the level on the dipstick. Running the engine with a low oil level will cause engine damage. See page 29 for details.

Fuel

Remove the cap on the tank and check the fuel level. See page 28 for refueling details.

Air Filter

Check that the air cleaner elements are clean and in good condition. See page 27 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 37 to adjust cutting height.

Tire Pressure

Check the tires for proper inflation (page 36).

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 provides 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

The Honda Mid-Size Commercial Mower 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 transmission shift lever 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.

1. Pull the blade control lever to OFF. (The mower should not be started without the entire grass catcher or the discharge guard in place.)
2. Place the transmission shift lever in NEUTRAL.
3. The safety interlock system will prevent the engine from starting if the blade control is ON or if the transmission is in REVERSE. (Do not attempt to disconnect or modify the safety interlock system.)
4. Open the fuel valve. Check the fuel valve at the tank to be sure it is open.
5. Turn the key ON.
   - 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.
6. 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.

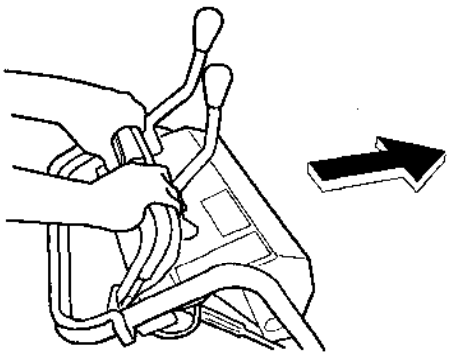
USING THE DIRECTION CONTROLS

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 toward the support bar rather than treating them like a switch. Operate the mower with the transmission in first gear until you are familiar with the sensitivity of the direction control levers.

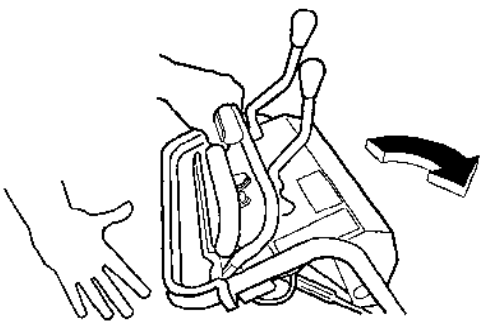
Moving Forward

Rest your finger tips on the support bar while you squeeze the direction control levers forward. As the levers move forward, they apply tension to the drive belts and power to the wheels. When the levers are fully forward, the belts are fully engaged. The maximum speed of the mower is controlled by the gear you select with the transmission shift lever.



Steering the Mower

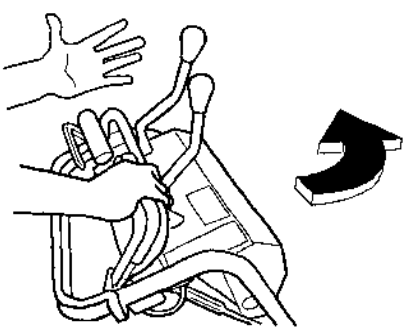
To steer the mower to the right, gradually release pressure on the right-hand direction control lever.



To steer the mower to the left, gradually release pressure on the left-hand direction control lever.

As you release pressure on a direction control lever, that respective wheel will turn slower and the mower will turn in that direction

Tighter turns can be made by pulling rearward on a direction control lever to apply the brake on that wheel



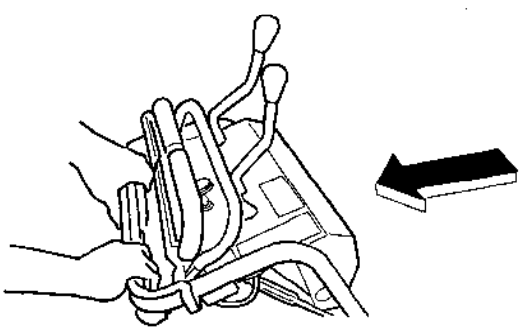
Stopping the Mower

Pull the direction control levers rearward to apply brakes

Reversing the Mower

With the mower stopped, press on the reverse presence lever, then shift the transmission lever into reverse. If you do not hold the presence lever, the engine will shut off.

Squeeze the reverse direction control levers. To steer to your right, gradually release pressure on the right reverse direction control lever. Steer to the left by releasing pressure on the left lever.



Making an Emergency Stop

Grab the forward direction control levers and pull.

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, mulching plug, 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. Select your desired ground speed with the transmission shift lever
2. Depress the operator presence lever on one of the forward direction control levers.
3. Slowly move the blade control lever to ON to start the blades rotating.
4. Rest your finger tips on the support bar and squeeze the direction control levers forward.

ADJUSTING YOUR SPEED

Your mowing speed should be controlled by the transmission gear you have selected — the direction control levers should be in their full forward position for normal mowing. If you find that mowing conditions cause you to operate with the forward direction control levers pulled slightly back, shift to a lower gear. You may shift gears while the mower is in motion.

NOTICE

Operating the mower for a long period of time with the direction control levers partially engaged will cause damage to the belts.

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

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, apply the parking brake 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. Pull both forward direction control levers to the rear to apply the brakes.
2. Press the parking brake pedal to lock the brakes on.
3. Pull the blade control to OFF.
4. Move the throttle to SLOW and let the engine idle.
5. Turn the key off and remove it.
6. Turn the carburetor fuel valve OFF.

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

Maintenance & Adjustments

THE IMPORTANCE OF MAINTENANCE

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

⚠WARNING

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

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

To help you properly care for your mower, the following pages include a maintenance schedule, routine inspection procedures, and simple maintenance procedures using basic hand tools. Other service tasks that are more difficult, or require special tools, are best handled by professionals and are normally performed by a Honda technician or other qualified mechanic.The maintenance schedule applies to normal operating conditions. If you operate your mower under severe conditions, such as sustained high-load or high-temperature operation, or use in unusually wet or dusty conditions, consult your servicing dealer for recommendations applicable to your individual needs and use.

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

MAINTENANCE SAFETY

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

⚠WARNING

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

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

Safety Precautions

- Make sure the engine is off before you begin any maintenance or repairs. This will eliminate several potential hazards:
  - **Carbon monoxide poisoning from engine exhaust.** Be sure there is adequate ventilation whenever you operate the engine.
  - **Burns from hot parts**. Let the engine and exhaust system cool before touching.
  - **Injury from moving parts**. Do not run the engine unless instructed to do so.
- Read the instructions before you begin, and make sure you have the tools and skills required.
- To reduce the possibility of fire or explosion, be careful when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks, and flames away from all fuel-related parts.
- For certain operations, the mower must be raised off the ground. Be sure the mower is solidly supported before you put any part of your body under it.
- Wear heavy gloves when near the mower deck, belts, or blades.

Remember that your authorized Honda servicing dealer knows your mower best and is fully equipped to maintain and repair it.

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

EMISSION CONTROL SYSTEM INFORMATION

Source of Emissions

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

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

The U.S and California Clean Air Acts

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

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

Tampering and Altering

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

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

Problems that may Affect Emissions

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

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

Replacement Parts

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

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

Maintenance

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

MAINTENANCE SCHEDULE

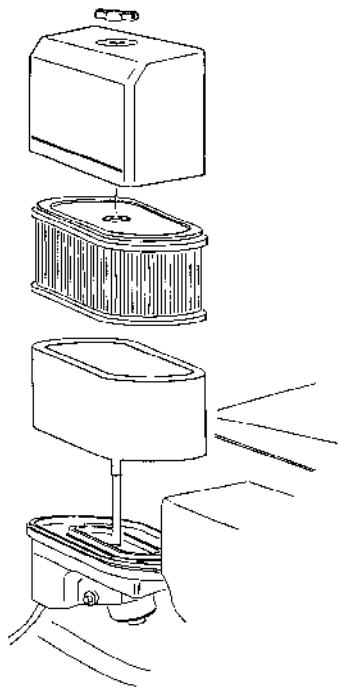
Item	Action	Service Interval hours (months) whichever comes first					Page
		daily	25 (3)	50 (6)	100 (12)	300 (36)	
Engine oil	check	O					29
	change		‡		O		30
Engine oil filter	replace					O[1]	31
Air filter elements	check	O					27
	service			O[1]			
	replace					O[2]	
Spark plug	check				O		32
	replace					O	
Idle speed	check & adjust					O	34
Throttle cable	check & adjust			O			34
Fuel filter	replace				O		29
Fuel line	check				O		
	replace	Every 3 years					
Valve clearance	adjust					O	33
Optional spark arrester	clean				O		51
Engine cooling fins & shroud	clean					O	
Tires & air pressure	check	O					36
Belts	check			O			40, 42
	adjust				O		
Blade brake	check			O			41
	adjust				O		
Blades	inspect	O					38
Blade bolts tightness	check		‡	O			38
Lubrication points	lubricate			O			35
Brake linings	check				O		36

[1]Service more frequently when used in dusty areas

[2]Replace paper filter element only

‡First oil change only

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 elements. Do not allow dirt to fall into the carburetor.
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 207 kPa {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. Remove 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.
8. Place the foam element over the paper element and install them. 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: 24.6 liters, 6.5 gallons

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

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

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

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

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

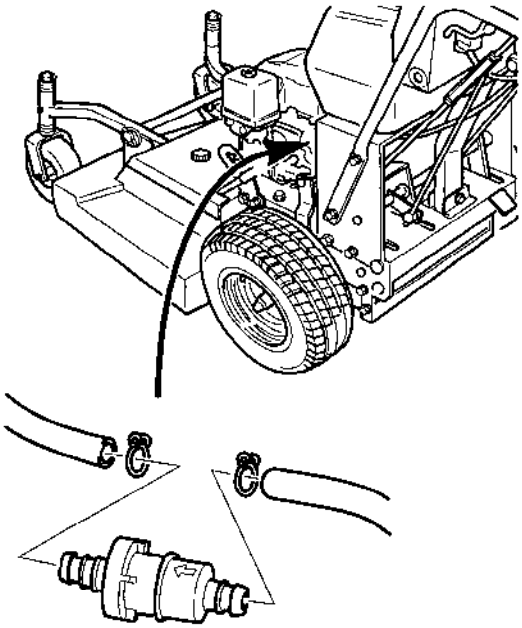
If spark knock or pinging occurs at a steady engine speed, under normal load, the engine can be damaged. Try using fresh gasoline in the tank or change brands of gasoline. If spark knock or pinging persists, contact your authorized Honda Commercial Mower dealer.

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.

Changing the Fuel Filter

Change the fuel filter at the recommended interval.

1. Close the fuel shut-off valve at the fuel tank.
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.
6. Dispose of the old filter and any spilled fuel properly and open the fuel shut-off valve at the fuel tank.
7. Check for leaks.



ENGINE OIL

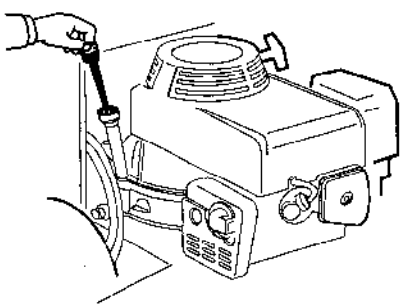
Engine Oil Capacity: 1.1 liters, 1.2 US quarts

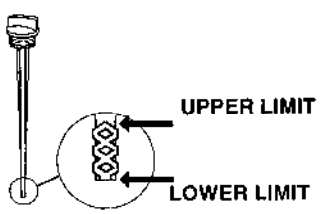
Checking the Level

1. Clean the area around the oil filler cap, remove it, and wipe the dipstick with a clean cloth.
2. Insert the dipstick without screwing it into the filler neck. Remove the dipstick and check the oil level on it.
3. 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. Do not overfill.

NOTICE

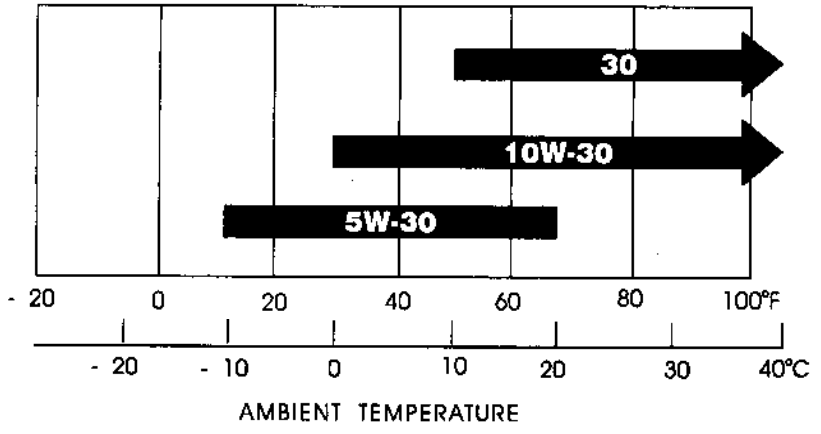
Running the engine with a low oil level will cause engine damage.





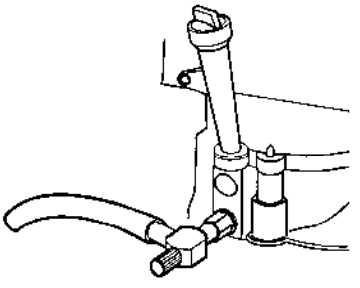
Recommended Oil

Use a high-detergent, premium quality 4-stroke engine oil certified to meet API Service Classification SJ or equivalent.



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 Engine Oil



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

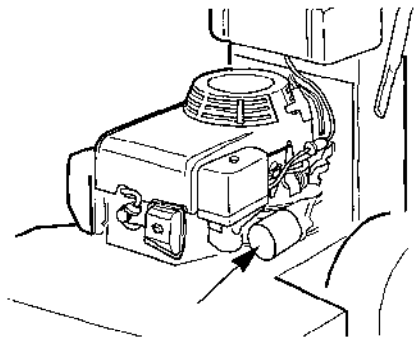
Drain the oil while the engine is warm to assure rapid and complete draining.

1. Install one end of a section of ½"-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 overtighten 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.

NOTICE

Improper disposal of engine oil can be harmful to the environment. If you change your own oil, please dispose of it properly. Put it in a sealed container, and take it to a recycling center. Do not discard it in a trash bin or dump it on the ground.

Changing the Engine Oil Filter



1. Drain the engine oil.
2. Remove the oil filter and let the remaining oil drain out.
3. Correctly dispose of the old oil filter.
4. Clean the filter base with a clean cloth.
5. Coat the O-ring of the new filter with clean engine oil.
6. Hand tighten the oil filter until the O-ring seats against the filter base.
7. Tighten the filter by hand an additional ¾ - 1 turn.
8. Pour the specified amount of oil into the engine. Run the engine for a few minutes and check for leaks in the area of the filter base.
9. Stop the engine and check the oil level. Adjust if necessary.

A Honda oil filter wrench will simplify the removal and installation of the filter. The wrench, P/N 07912-6110001, is available from your authorized Honda servicing dealer.

SPARK PLUG

Recommended Types

NGKBPR5ES

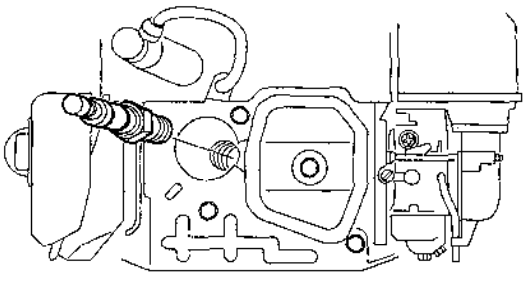
NDW16EPR-U

NOTICE

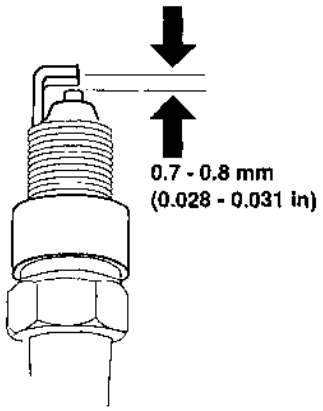
Spark plugs of the wrong size or incorrect heat range can cause engine damage.

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 0.7 - 0.8 mm (0.028 - 0.031 in) by bending the side 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.



NOTICE

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

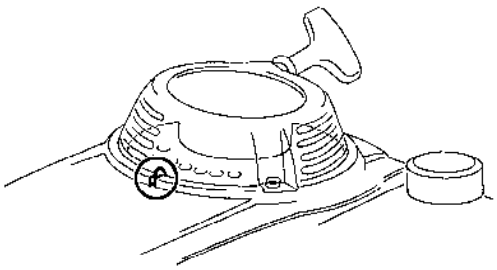
7. Install the spark plug cap on the plug.

VALVE CLEARANCE

Adjust the valves at the recommended interval.

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

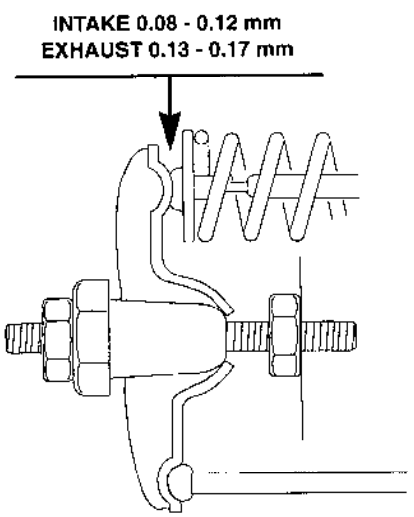
1. Remove the valve cover.
2. Set the piston at top dead center of the compression stroke (both valves will be fully closed). The cutout mark in the starter pulley will align with the index mark on the fan cover when the piston is at top dead center of either the compression or exhaust stroke.



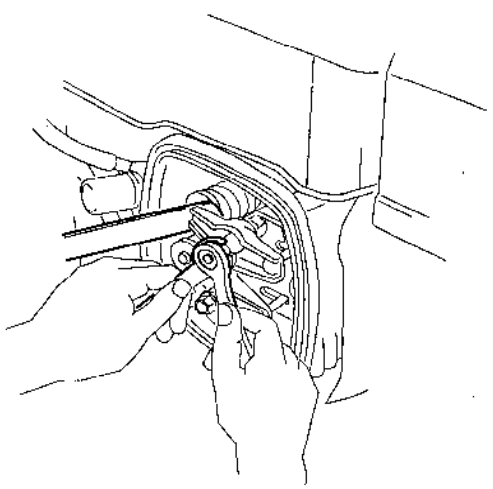
3. Measure the clearance between the rocker arm and the valve with a feeler gauge.

INTAKE 0.08 - 0.12 mm
EXHAUST 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.



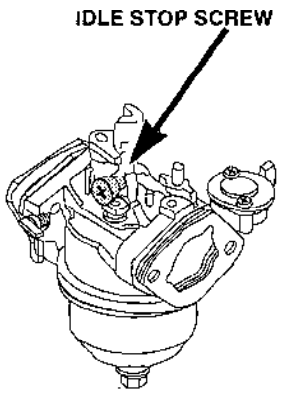
6. Hold the rocker arm pivot and tighten the pivot lock nut.
7. Recheck the clearance and readjust if necessary.
8. Install the valve cover.



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 throttle stop screw to set the idle speed.

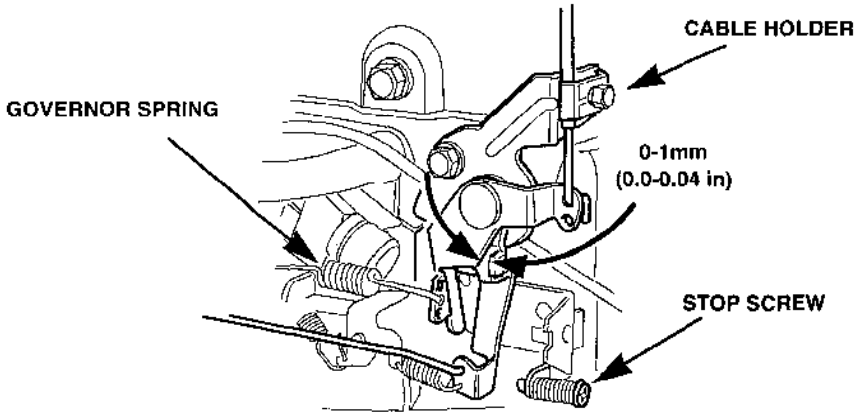


IDLE SPEED 1750–1950 rpm

The pilot screw is fitted with a limiter cap to prevent excessive enrichment of the fuel-air mixture. Do not attempt to remove the limiter cap. It cannot be removed without breaking the pilot screw.

THROTTLE CABLE

In normal use, cables will lose their adjustment. Perform this procedure if the no-load speed is not within limits or the engine does not seem to respond correctly to throttle lever movements, or if the choke doesn't fully close.



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 1 mm (0.04 in) 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. Adjust the stopper screw so that it just contacts the choke lever when the choke is fully closed.
6. Check maximum engine speed with a tachometer. Adjust the cable slightly to obtain the rated speed.

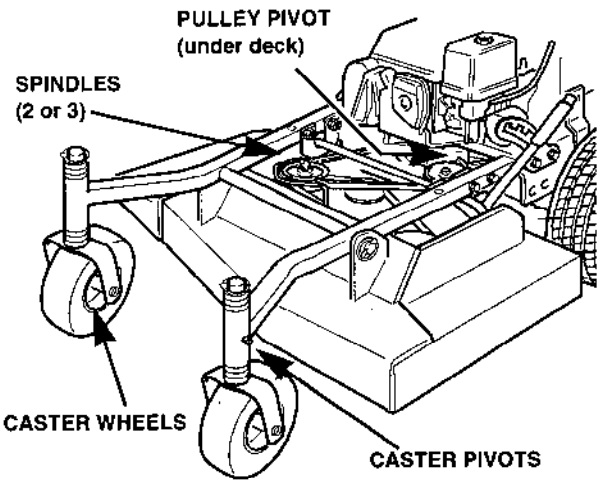
MAXIMUM NO-LOAD SPEED 3550 ±50 rpm

LUBRICATION POINTS

Grease: NGLI #2 Lithium Base EP

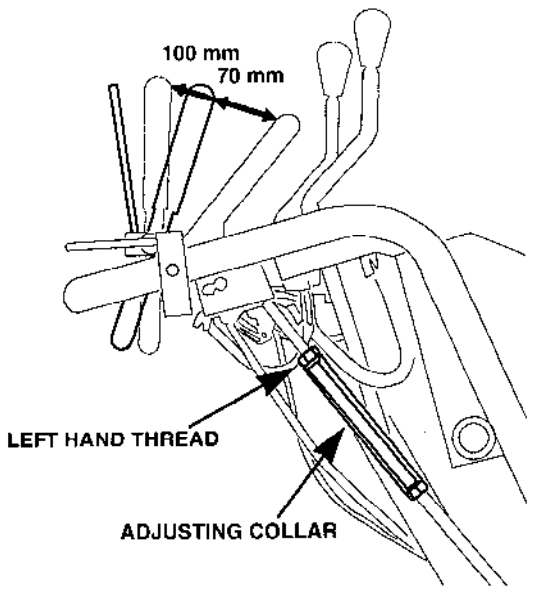
Follow the diagram to lubricate these fittings.

- Caster wheels (2)
- Caster pivots (2)
- Pulley pivots (1)
- Spindles (2 or 3) Do not over grease the spindle. Use a long narrow screwdriver to check for grease between the pulley and the deck. If you find grease there, you have enough.

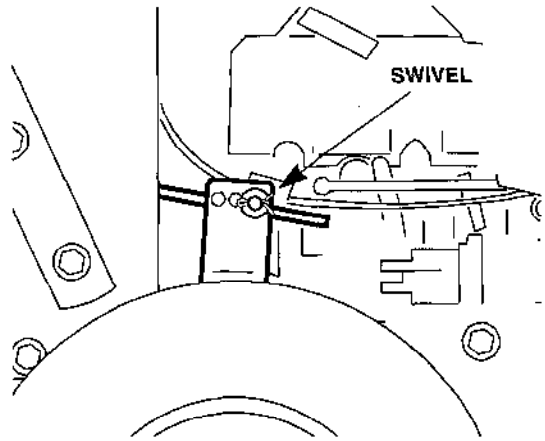


CONTROL LINKAGE ADJUSTMENT

1. Push the right-hand forward direction control lever as far forward as you can with finger pressure
2. There should be a gap of 70 mm (2¾") between the direction control lever and the support bar.
3. To adjust the gap, loosen the two locknuts on the linkage (the top nut has left-hand threads) and turn the collar to set the desired gap. Hold the collar and tighten the lock nuts.
4. Now, pull the direction control lever rearward with finger pressure
5. There should be a gap of 100 mm (4") between the direction control lever and the support bar.



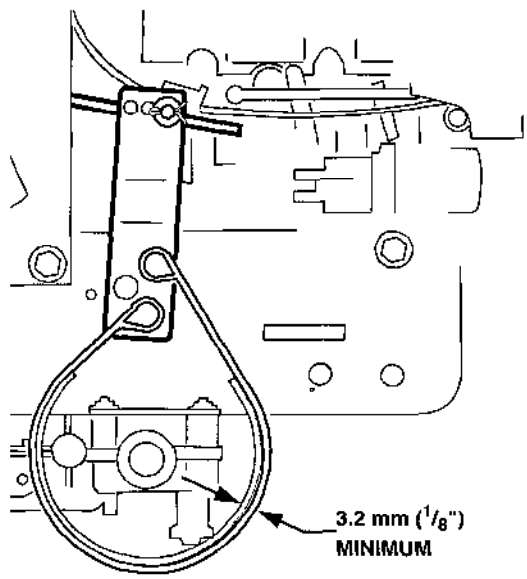
6. To adjust the gap, remove the cotter pin and washer from the brake rod swivel. Screw the swivel in or out on the rod to set the desired gap. (The swivel always goes into the forward hole.) Install the washer and a new cotterpin.
7. Repeat the process with the left-hand direction control lever, so that the left lever travel matches that of the right lever.



BRAKE LINING THICKNESS

Check the thickness of the brake lining on both wheels as called out in the maintenance schedule.

The total thickness of the friction material and the band cannot be less than 3.2 mm ($^1/_8$") at any point.



TIRES

FRONT TIRE PRESSURE: 193 KPA (28 PSI)

REAR TIRE PRESSURE: 103 KPA (15 PSI)

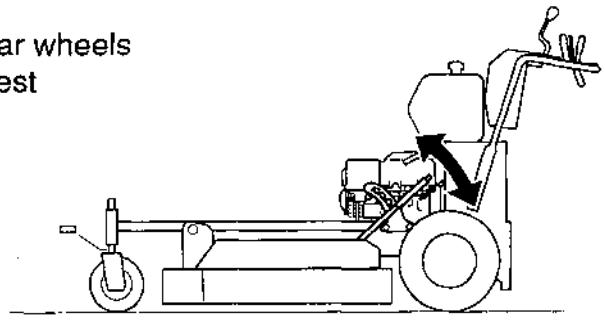
Incorrect tire inflation can cause the mower not to track in a straight path.

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 from 38 mm to 115 mm (1½ to 4½ inches). 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

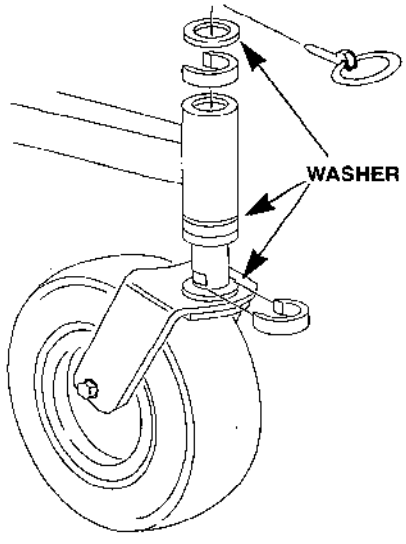
The front caster wheels are adjustable in increments of 13 mm (½") by changing the position of the six spacers on each caster post. The following table shows the position of the spacers for the various cutting heights.

NUMBER OF LOWER SPACERS						
0	1	2	3	4	5	6
1.5"	2.0"	2.5"	3.0"	3.5"	4.0"	4.5"

To change the spacers:

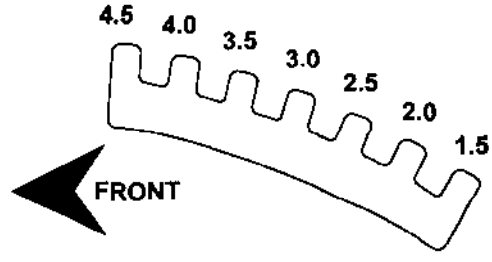
1. Raise and support the front of the mower deck.
2. Remove the pin and lower the caster post about 6 mm (¼") until the spacer can be removed over the flats in the caster post.
3. Position the spacers in the desired locations.
4. Raise the caster post and insert and lock the pin.
5. Repeat the procedure on the other caster wheel.

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



Rear Deck Adjustment

The rear wheels are adjustable in 13 mm (½") increments by moving the deck height lever. Be sure that the setting for the deck matches the setting for the caster wheels.



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.

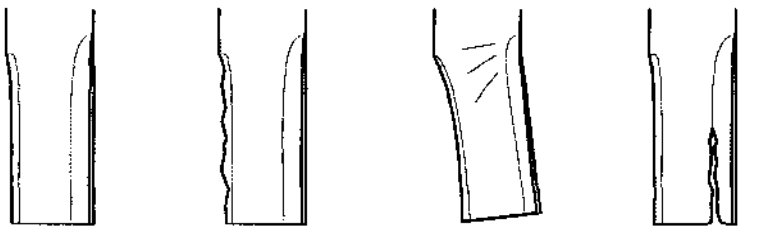
The blades are subject to wear during normal operation and should be inspected regularly.

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 plugs connectors from the spark plugs. 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



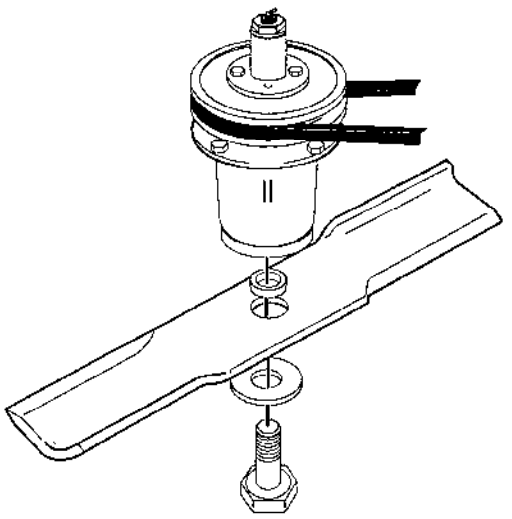
1. Turn the ignition switch key OFF and remove the key from the switch.
2. Move the blade control lever OFF.
3. Raise and support the front of the mower deck.
4. Inspect each of the blades for cracking, bending, deep nicking, and wear.

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(s) by removing the knobs.
4. Raise and support the front of the mower deck

5. Use a block of wood to prevent the blade from turning and remove the bolt washer, blade, and spacer.



NOTICE

Do not hold the nut on the top of the spindle. Loosening the nut will affect the spindle bearing preload.

6. Repeat the process for the other blade(s).

Installing the Blades

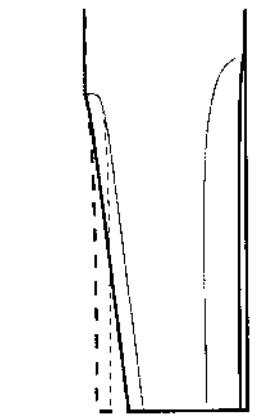
1. Reinstall the blades by placing the washer, blade, and spacer over the bolt.
2. Insert the bolt into the spindle and tighten it by hand.
3. Hold the nut on top of the spindle with a wrench and tighten the blade bolt to 88 - 102 N·m (65 - 75 ft-lb) torque.
4. Repeat the procedure for the other blade(s).
5. Lower the mower deck to the ground.
6. Install the belt cover(s) with the knobs.

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 mm ($^1/_{16}$ - $^1/_{32}$ 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 dowel 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.

DECK BELT ADJUSTMENT AND REPLACEMENT

Replace the deck belt if it is worn, frayed, or glazed. You will need to remove the deck belt to replace the transmission belts and disconnect it to replace the blade belt. Whenever you remove and replace the deck belt, check the adjustment of the belt guides, belt tension, and the blade brake.

⚠WARNING

Moving belts and pulleys can cause serious injuries.

Do not operate engine with the belt cover(s) removed.

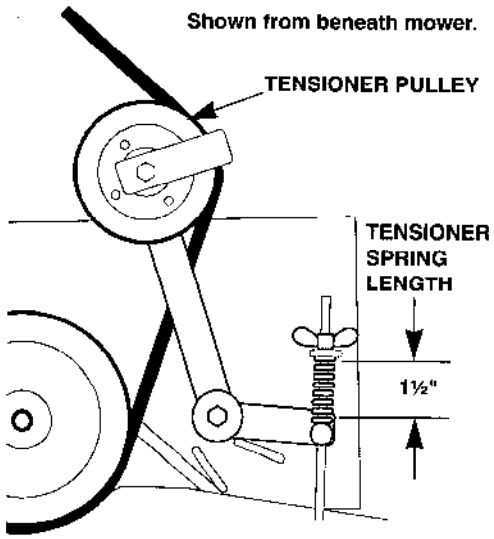
Before removing belt cover(s) for maintenance, remove key from ignition switch and disconnect the spark plug lead.

Adjust Belt Tension

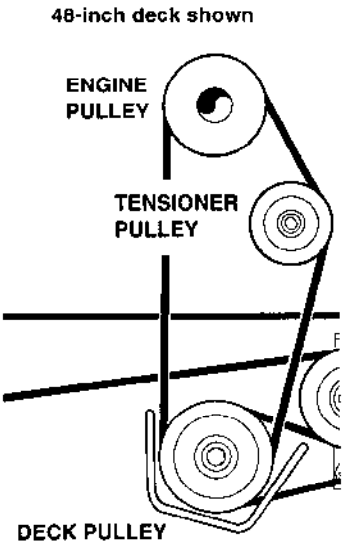
1. Remove the belt cover.
2. Fully lower the rear of the deck and move the blade control ON.
3. Measure the length of the tensioner spring.

TENSIONER SPRING LENGTH: 1½ in

4. Move the blade control OFF to turn the adjusting butterfly nut.
5. Check the blade brake adjustment if you change the belt tension (page 41).
6. Install the belt cover.



Replace Belt



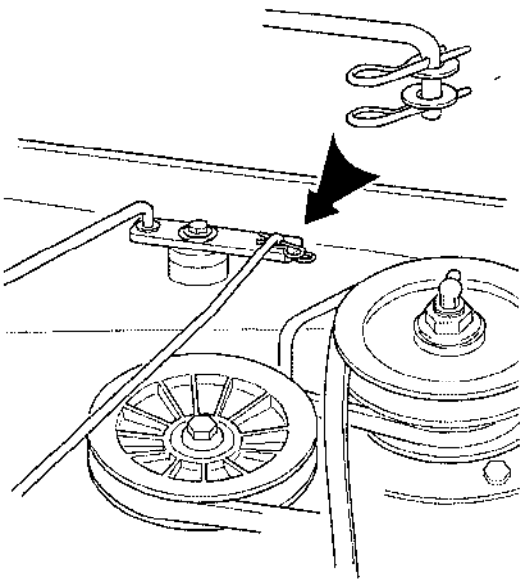
1. Move the blade control OFF and remove the belt cover.
2. Loosen the two nuts on the belt guide at the deck pulley.
3. Starting at the engine pulley, lift the belt out of the pulley grooves.
4. Install the new belt by first setting it in the deck pulley, then the tensioner pulley, and finally the engine pulley.
5. Tighten the two nuts on the belt guide at the deck pulley.
6. Adjust the belt tension and blade brake.

BLADE BRAKE ADJUSTMENT

Check the blade brake adjustments after the deck belt is adjusted or replaced.

⚠WARNING

Moving belts and pulleys can cause serious injuries.
Do not operate engine with the belt cover(s) removed.
Before removing belt cover(s) for maintenance, remove key from ignition switch and disconnect the spark plug lead.



1. Fully lower the rear of the deck, move the blade control OFF, and remove the belt cover(s).
2. Remove the hairpin clip and lower washer from the brake rod at the pivot plate. The rod should slip freely in and out of the hole in the arm. If not, screw the rod in or out of the pivot at the tensioner arm until it's a slip fit.
3. Install the rod in the pivot plate with two washers and two hairpin clips as shown.
4. Start the engine and engage and release the blade control several times. Confirm that the brake operates correctly.
5. Install the belt cover.

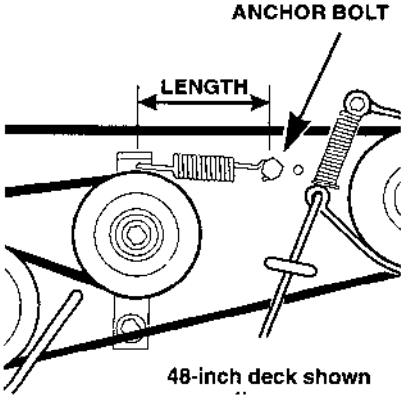
BLADE BELT ADJUSTMENT AND REPLACEMENT

Replace the blade belt if it is worn, frayed, or glazed.

⚠ WARNING

Moving belts and pulleys can cause serious injuries.
Do not operate engine with the belt cover(s) removed.
Before removing belt cover(s) for maintenance, remove key from ignition switch and disconnect the spark plug lead.

Inspect and Adjust



1. Move the blade control OFF. Remove the belt cover(s).
2. Check the tensioner spring length.

MINIMUM SPRING LENGTH (hook-to-hook): 120 - 140 mm (4¾ - 5½ in)

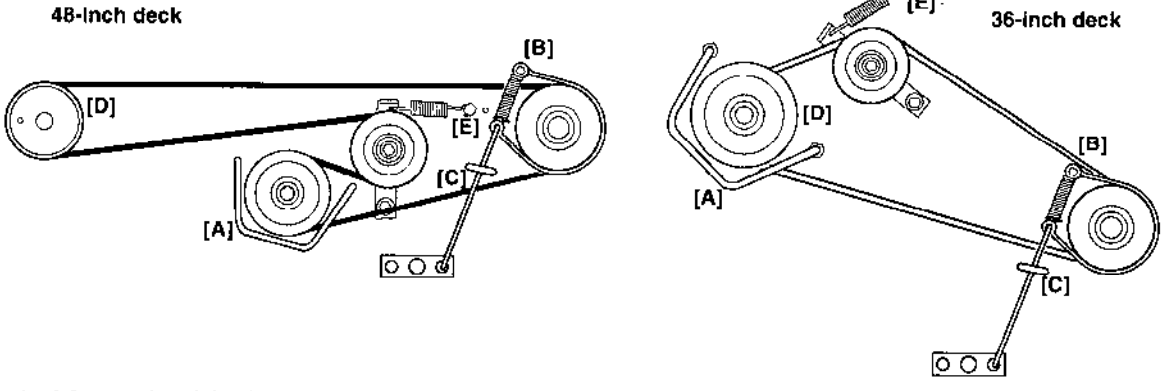
If the spring is too short, adjust the tensioner:

3. Remove the blade belt from the right (discharge side) pulley.
4. Remove the spring from the anchor bolt and install the bolt in an alternate hole. Install the spring over the bolt.
5. Install the belt over the pulleys

If the spring is still too short with the anchor bolt in the last position, replace the belt.

6. Install the belt cover.

Replace



1. Move the blade control OFF and remove the belt cover.
2. From under the deck, remove the two nuts from the deck belt guide [A].

3. From under the deck, remove the nuts from the blade brake pivot [B] and the brake rod stay [C].
4. Remove the deck belt from the pulley.
5. Remove the blade belt from the right (discharge side) pulley [D], and then from the remaining pulley(s).
6. The tensioner spring anchor bolt [E] should be in the shortest position.
7. Install the new belt over the pulleys.
8. Install the deck belt on its pulley.
9. Install the blade brake pivot and brake rod stay. Install the deck belt guide.
10. Check the adjustment of the blade brake.

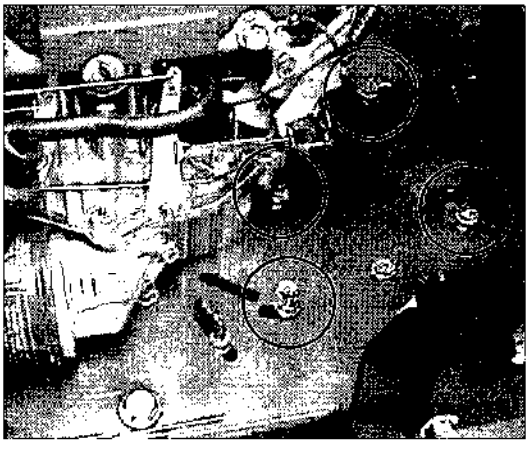
DRIVE BELT REPLACEMENT

Replace the transmission belts if they are worn, frayed, or glazed. You will need to remove the deck belt from the engine pulley first.

⚠ WARNING

Moving belts and pulleys can cause serious injuries.
Do not operate engine with the belt cover(s) removed.
Before removing belt cover(s) for maintenance, remove key from ignition switch and disconnect the spark plug lead.

Remove

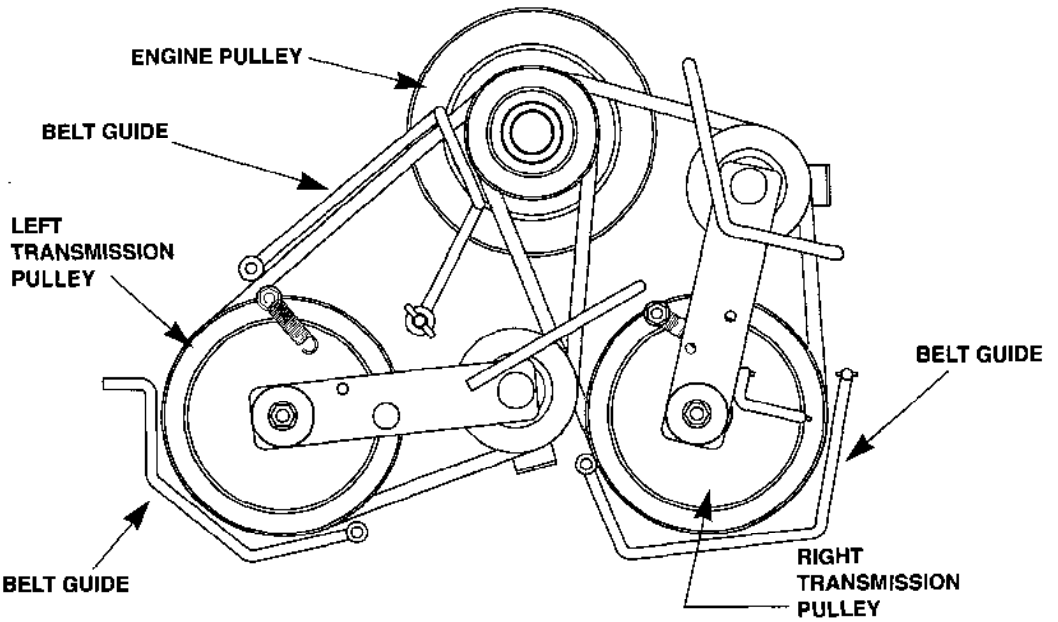


1. Loosen but do not remove the four belt-guide nuts on the top of the deck.
2. Remove the right-side transmission belt first by sliding the belt off the transmission pulley, then off the tensioner, and the engine pulley.
3. Remove the left-side belt in a similar manner.

Do not change the positions of the belt guides on the tensioner pulleys. The belts may be removed without loosening the tensioner pulley bolt.

Install

Viewed from above the mower



The left-side belt is longer than the right-side.

1. Slip the left-side belt over the engine pulley, then the tensioner pulley, and finally the transmission pulley. Do not change the positions of the belt guides on the tensioner pulleys.
2. Install the right-side belt in a similar manner.
3. Move all belt guides so that they are close to but not touching the belts when tension is applied.
4. Install the deck belt (page 40).
5. Adjust the control linkages (page 35).

Troubleshooting

ENGINE

Doesn't Start

- The key must be ON.
- Blade control must be OFF.
- Transmission must NOT be in REVERSE.
- Fuel tank should be full of fresh fuel (page 28).
- Fuel filter should be clean and free of obstructions (page 29).
- Both fuel valves should be on (page 10).
- 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 32).

Low Power

- Air cleaner elements should be clean (page 27).
- Spark plug should be correctly gapped and be free of deposits (page 32).
- Mower deck should be free of grass accumulation.
- Tall grass should be cut at lower speeds and/or higher cutting heights.
- Incorrect carburetor or linkage adjustment (page 34).

MOWER

Doesn't Move

- Forward speed controls must be out of NEUTRAL.
- Parking brake must be released
- The drive belts must be in good condition (page 43).

Pulls To One Side

- Tires should be correctly inflated (page 36).
- The control linkages must be correctly adjusted (page 35).
- The drive belts must be in good condition (page 43).

Vibrates

- Blades should be in good condition (page 38).
- The deck must be free of any accumulation of clippings.
- Deck and blade belts should be in good condition and at correct tension (page 40 & page 42).

Cuts Poorly

- Throttle should be in FAST.
- Cutting height must be at the same setting at front and rear (page 37).
- Blades should be in good condition (page 38).
- Mower deck should be free of grass accumulation.
- Deck and blade belts should be in good condition and at correct tension (page 40 & page 42).
- Tall grass should be cut at lower speeds and/or higher cutting heights.

Specifications

MOWER

Mower Deck	36 inch	48 inch
Length	1930mm (76")	1784 mm (71")
Width (chute folded)	921 (36.0")	1257mm (49.5")
Height	1245 mm (49.0")	
Dry weight	222 kg (489 lb)	237 kg (522 lb)
Maximum speed: 1st 2nd 3rd 4th	2.1 m/s (1.3 mph) 4.4 m/s (2.7 mph) 6.4 m/s (4.0 mph) 8.2 m/s (5.1 mph)	
Rev	3.2 m/s (2.0 mph)	
Tire Size: Drive wheel	4-ply 16x6.5-8	
Caster wheel	2-ply 9x3.5-4	
Tire Pressure: Drive wheel	103 kPa (15 psi)	
Caster wheel	193 kPa (28 psi)	
Mowing Height	38 mm — 114 mm (1½ — 4½ in)	

ENGINE

Model	GXV390
Horsepower @ rpm	13 @ 3600
Maximum no-load governed speed	3550±50 rpm
Idle speed	1750 $^{+200}/_{-0}$ rpm
Ignition system	Transistorized magneto
Valve clearance: Intake	0.08 — 0.12 mm
Exhaust	0.13 — 0.17 mm
Spark plug	ND BPR5ES NGK W16EPR-U
Fuel	Unleaded gasoline, 86 pump octane min.
Fuel tank capacity	24.6l (6.5 gal)
Engine oil	10W-30 SJ
Engine oil capacity	1.1l (1.2 qt)

Additional Information

MANUAL EN ESPAÑOL

Una versión de este manual en Español esta disponible. Favor de ponerse en contacto con el departamento de relaciónes al cliente a la dirección o teléfono listado abajo.

HONDA PUBLICATIONS

These publications will give you additional information about maintaining your mower. You may order them from an authorized Honda servicing 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 30096

Or telephone: (770) 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

OXYGENATED FUELS

Some conventional gasolines are being blended with alcohol or an ether compound. These gasolines are collectively referred to as oxygenated fuels. To meet clean air standards, some areas of the USA and Canada use oxygenated fuels to help reduce emissions. If you use an oxygenated fuel, be sure it is unleaded and meets the minimum octane rating requirement. Before using an oxygenated fuel, try to confirm the fuel's contents. Some states/provinces require this information to be posted on the pump.

The following are the EPA approved percentages of oxygenates:

ETHANOL ——— (ethyl or grain alcohol) 10% by volume
You may use gasoline containing up to 10% ethanol by volume. Gasoline containing ethanol may be marketed under the name "Gasohol".

MTBE ——— (Methyl Tertiary Butyl Ether) 15% by volume
You may use gasoline containing up to 15% MTBE by volume.

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

If you notice any undesirable operating symptoms, try another service station, or switch to another brand of gasoline. Fuel system damage or performance problems resulting from the use of an oxygenated fuel containing more than the percentages of oxygenates mentioned above are not covered under warranty.

MODIFICATION FOR HIGH ALTITUDE OPERATION

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

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

Even with the modification, engine horsepower will decrease about 3.5% for each 300 meter (1000 foot) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

NOTICE

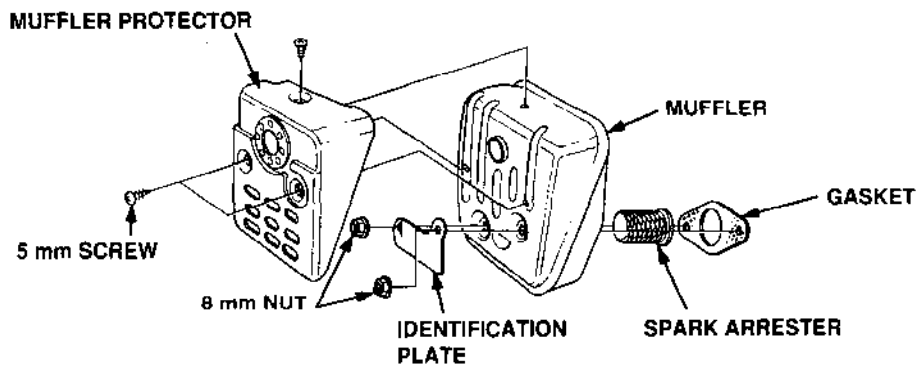
When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 1,500 meters (5,000 feet) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes,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

SPARK ARRESTER SERVICE (OPTIONAL EQUIPMENT)

Your lawn mower engine is not factory-equipped with a spark arrester. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. An optional USDA approved spark arrester is available from an authorized Honda servicing dealer.

The spark arrester must be serviced every 100 hours to keep it functioning as designed.

If the engine has been running, the muffler will be hot enough to burn you. Allow the muffler to cool before proceeding.



1. Remove the three 5 mm screws and the muffler protector.
2. Remove the 8 mm nuts, then remove the identification plate, muffler, and gasket. Remove the spark arrester.
3. Check for carbon deposits on the spark arrester and clean if necessary. Be careful to avoid damaging the spark arrester screen. The screen must be free of breaks and holes. Replace it if necessary.
4. Install the spark arrester and muffler in the reverse order of removal.

Index

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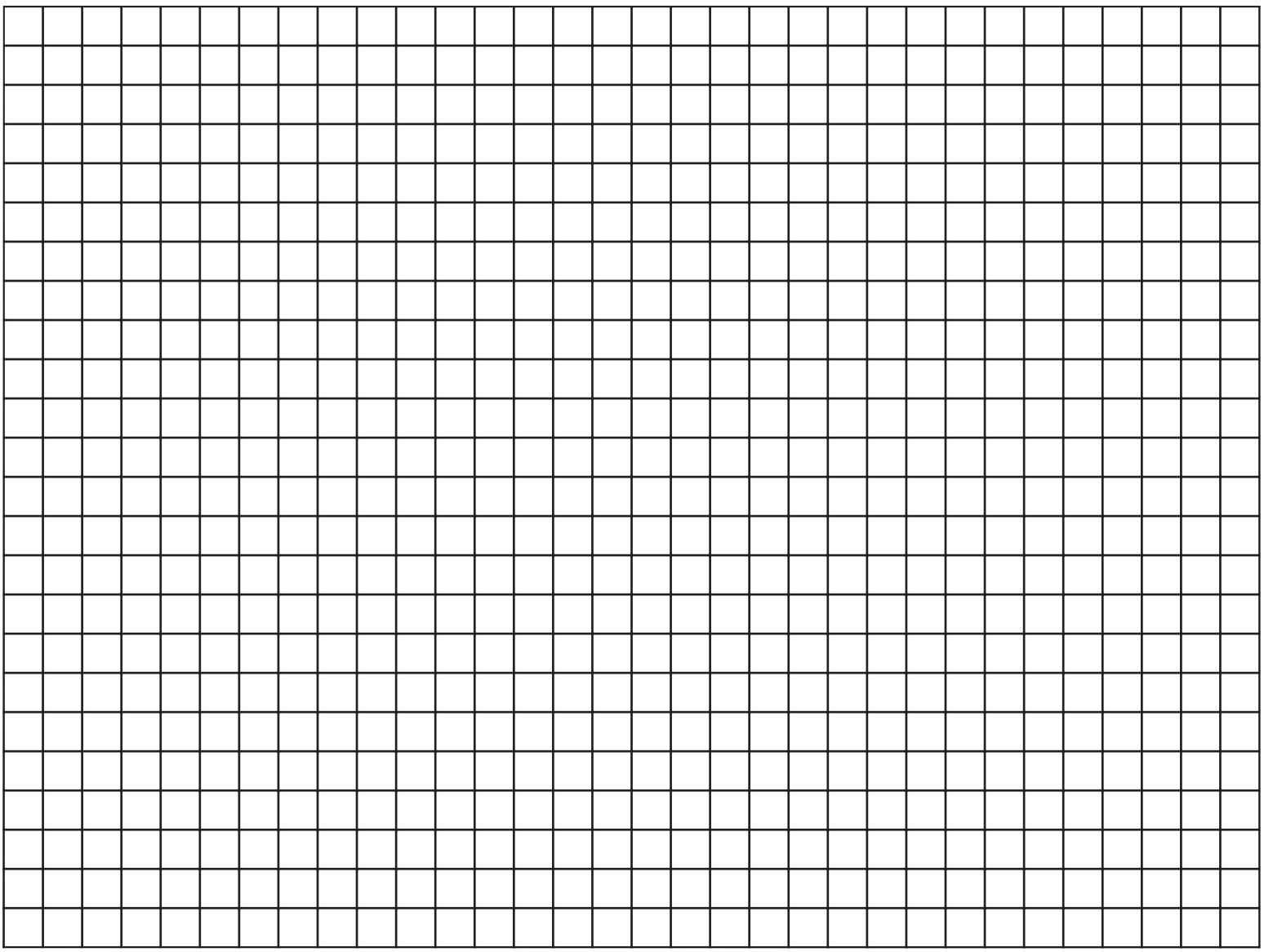
HONDA



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