HONDA

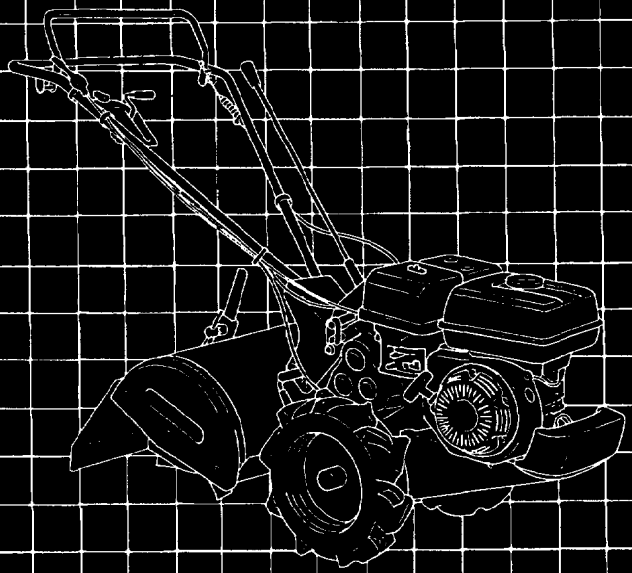
Power

Equipment

Owner's Manual

TILLER

FR650/FR750



⚠ WARNING: ⚠

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

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

This owner's manual describes the operation and maintenance of HONDA tillers: FR650 and FR750
The illustrations in this manual are based on: FR750

All information in this publication is based on the latest product information available at the time of printing.
Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation.

This manual should be considered a permanent part of the tiller and should remain with it if it is resold.

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

A safety message alerts you to potential hazards that could hurt you or 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 tiller or other property could be damaged if you don't follow instructions.

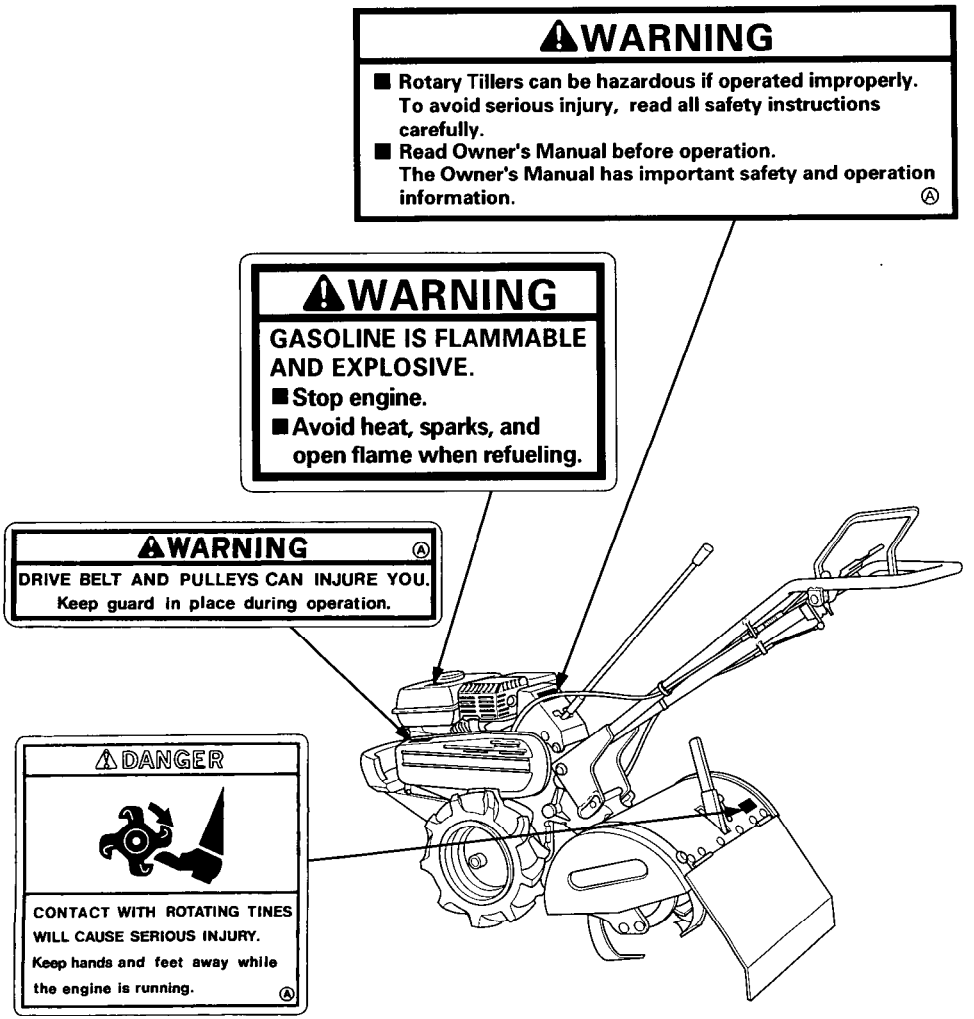
The purpose of these messages is to help prevent damage to your tiller, other property, or the environment.

CONTENTS

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 tiller dealer for a replacement.



SAFETY INFORMATION

Most accidents with tillers can be prevented if you follow all instructions in this manual and on the tiller. The most common hazards are discussed below and on the following pages, along with the best ways to protect yourself and others.

Operator Responsibility

- Keep the tiller in good operating condition. Operating a tiller in poor or questionable condition could result in serious injury.
- Be sure all safety devices are in working order and warning labels are in place. These items are installed for your safety.
- Be sure the safety covers (V-belt cover and recoil starter cover) are in place.
- Know how to stop the engine and tines quickly in case of emergency. Understand the use of all controls.
- Be very cautious when operating the tiller in REVERSE, especially if attachments are being used.
- Keep a firm hold on the handlebars. They may tend to lift during clutch engagement.
- Allowing anyone to operate this tiller without proper instruction may result in injury.
- Wear sturdy, full-coverage footwear. Operating this tiller barefoot or with open toe shoes or sandals increases your risk of injury.
- Dress sensibly. Loose clothing may get caught in moving parts, increasing your risk of injury.
- Be alert. Operating this tiller when you are tired, ill or under the influence of alcohol or drugs may result in serious injury.
- Keep all persons and pets away from the tilling area.
- Be sure the drag bar is in place and properly adjusted.

Child Safety

- Keep children indoors and supervised at all times when any outdoor power equipment is being used nearby. Young children move quickly and are attracted especially to the tiller and tilling activity.

- Never assume children will remain where you last saw them. Be alert and turn the tiller off if children enter the area.

- Children should never be allowed to operate the tiller, even under adult supervision.

Rotating Tines Hazard

The rotating tines are sharp and they turn at high speed. Accidental contact can cause serious injury.

- Keep your hands and feet away from the tines while the engine is running.

- Stop the engine and disengage the tine clutch before inspection or maintenance of tines.

- Disconnect the spark plug cap to prevent any possibility of accidental starting. Wear heavy gloves to protect your hands when cleaning the tines or when inspecting or replacing the tines.

Thrown Object Hazard

Objects hit by the rotating tines can be thrown from the tiller with great force, and may cause serious injury.

- Before tilling, clear the tilling area of sticks, large stones, wire, glass, etc. Till only in daylight.

- Always inspect the tiller for damage after striking a foreign object. Repair or replace any damaged parts before continuing use.

- Pieces thrown from worn or damaged tines can cause serious injury. Always inspect the tines before using the tiller.

Fire and Burn Hazard

Gasoline is extremely flammable, and gasoline vapor can explode. Use extreme care when handling gasoline. Keep gasoline out of reach of children.

- Refuel in a well-ventilated area with the engine stopped.
- Allow the engine to cool before refueling. Fuel vapor or spilled fuel may ignite.
- The engine and the exhaust system become very hot during operation and remain hot for a while after stopping. Contact with hot engine components can cause burn injuries and can ignite some materials.
- Avoid touching a hot engine or exhaust system.
- Allow the engine to cool before performing maintenance or storing the tiller indoors.

Carbon Monoxide Poisoning Hazard

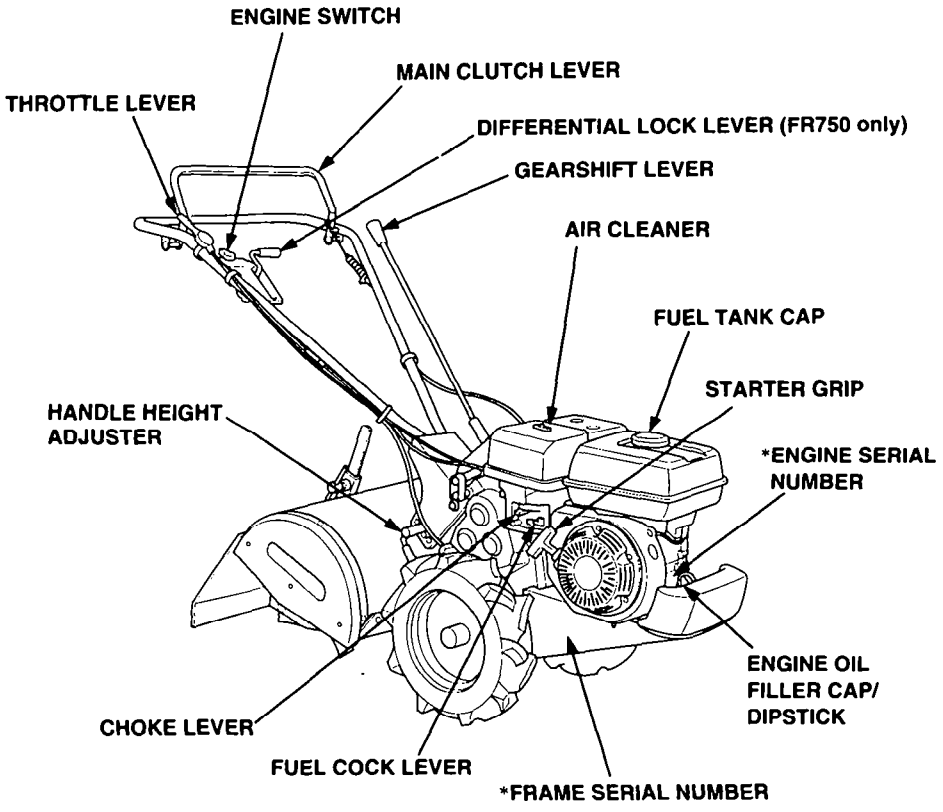
Exhaust contains poisonous carbon monoxide, a colorless and odorless gas. Breathing exhaust can cause loss of consciousness and may lead to death.

- If you run the engine in an area that is confined or even partially enclosed, the air you breathe could contain a dangerous amount of exhaust gas. To keep exhaust gas from building up, provide adequate ventilation.

Operation on a Slope

- When tilling on slopes, keep the fuel tank less than half full to minimize fuel spillage.
- Till across the slope (At equally spaced intervals) rather than up and down it.
- Be very careful when changing the direction of the tiller on a slope.
- Do not use the tiller on a slope of more than 10°.
  The maximum safe grade angle shown is for reference purpose only and should be determined according to the type of the soil. Before starting the engine, check that the tiller is not damaged and in good condition. For your safety and safety of others, exercise extreme care when using the tiller on up or down hill.

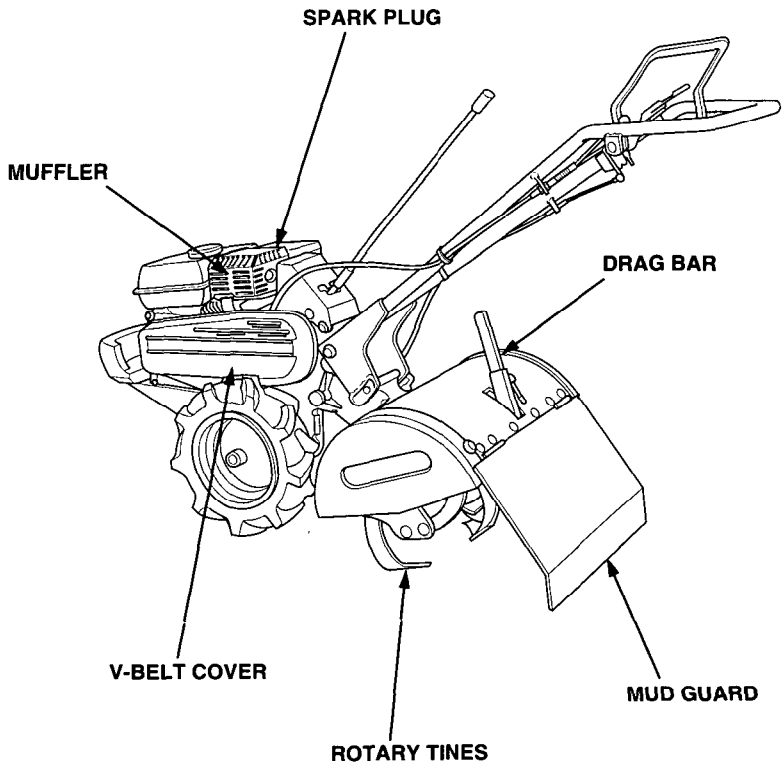
2. COMPONENT IDENTIFICATION



* Record the frame and engine serial numbers for your reference. Refer to the serial numbers when ordering parts, and when making technical or warranty inquiries (see page 62).

Frame serial number: _____

Engine serial number: _____


SPARK PLUG
MUFFLER
DRAG BAR
V-BELT COVER
ROTARY TINES
MUD GUARD

3. PRE-OPERATION CHECK

ENGINE OIL

1. Place the tiller on a level surface.
2. Remove the oil filler cap and wipe the dipstick clean.
3. Insert the dipstick into the oil filler neck, but do not screw it in.
4. If the level is low, fill to the top of the oil filler neck with the recommended oil.

NOTICE

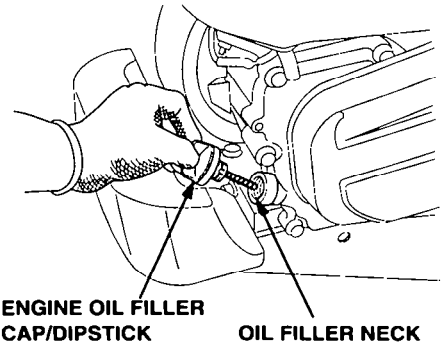
Running the engine with a low oil level will cause serious engine damage.

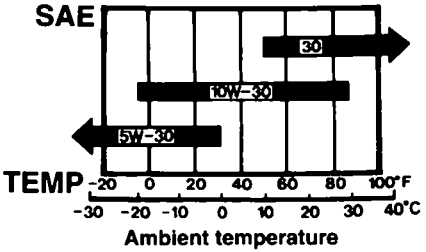
Use 4-stroke motor oil that meets or exceeds the requirements for API service classification SF or SG. Always check the API SERVICE label on the container to be sure it includes the letters SF or SG.

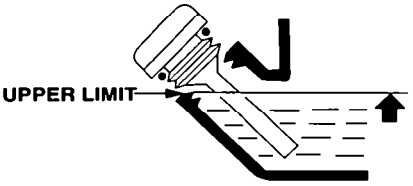
NOTICE

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

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

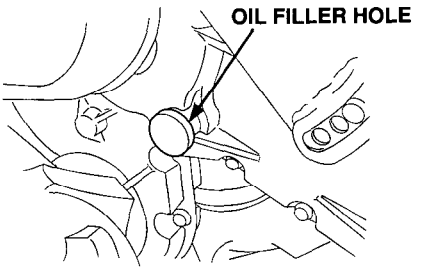


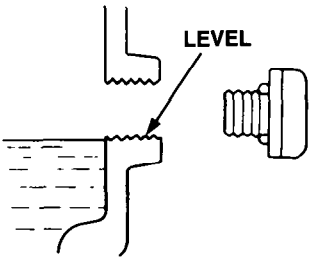




TRANSMISSION OIL

Place the tiller on a level surface and remove the oil filler cap.
The oil should be level with the lower edge of the oil filler hole.
If the oil level is low, add the same motor oil that is recommended for the engine (see page 10).



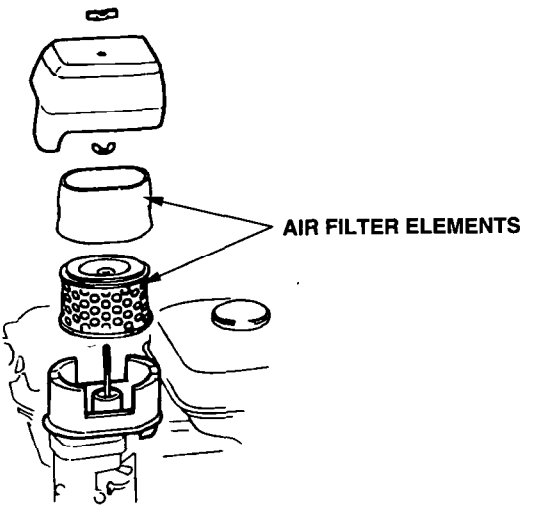


AIR CLEANER

Remove the cover and inspect the air filter elements. Clean them if necessary (see page 37).

NOTICE

Operating the engine with no air filter, or a damaged air filter, will cause rapid engine wear.



FUEL

Refueling

Remove the fuel tank filler cap, and check if the fuel is up to the level mark. If the fuel level is low, refill with regular gasoline up to the level mark.

Fuel tank capacity: 2.6 ℓ (0.69 US gal, 0.57 Imp gal)

⚠WARNING

Gasoline is highly flammable and explosive.

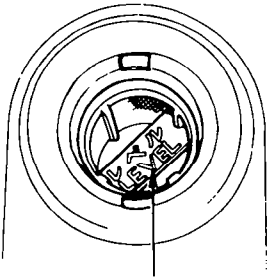
You can be burned or seriously injured when handling fuel.

- **Stop the engine and keep heat, sparks, and flames away.**
- **Handle fuel only outdoors.**
- **Wipe up spills immediately.**

Refuel in a well-ventilated area before starting the engine. If the engine has been running, allow it to cool. Refuel carefully to avoid spilling fuel. Do not fill above the "LEVEL" mark in fuel strainer. After refueling, tighten the fuel tank cap.

Never refuel the tiller inside a building where gasoline fumes may reach flames or sparks. Keep gasoline away from appliance pilot lights, barbecues, electric appliances, power tools, etc.

Spilled fuel is not only a fire hazard, it causes environmental damage. Wipe up spills immediately.



LEVEL MARK

Fuel Recommendations

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

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

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

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

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

NOTICE

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

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

Oxygenated Fuels

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

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

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

The following are the EPA-approved percentages of oxygenates:

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

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

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

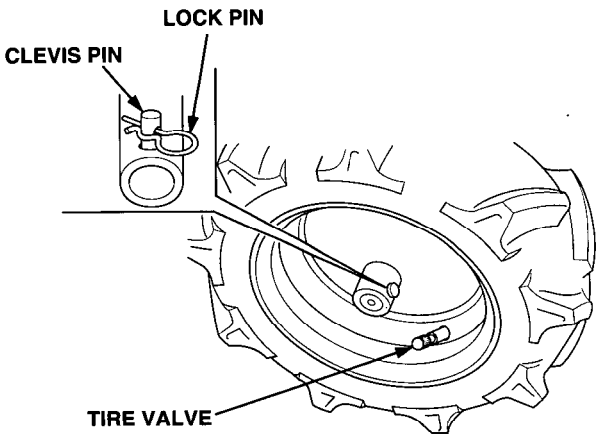
If you notice any undesirable operating symptoms, try another service station, or switch to another brand of gasoline.

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

TIRE PRESSURE

Check tire pressure. Improper inflation can reduce both tire life and load carrying capacity.

TIRE SIZE: 3.50-7
TIRE PRESSURE: 120 kPa (1.2 kg/cm^2, 17.1 psi)



WHEEL CLEVIS PIN

Make sure the clevis pin and lock pin are securely installed.

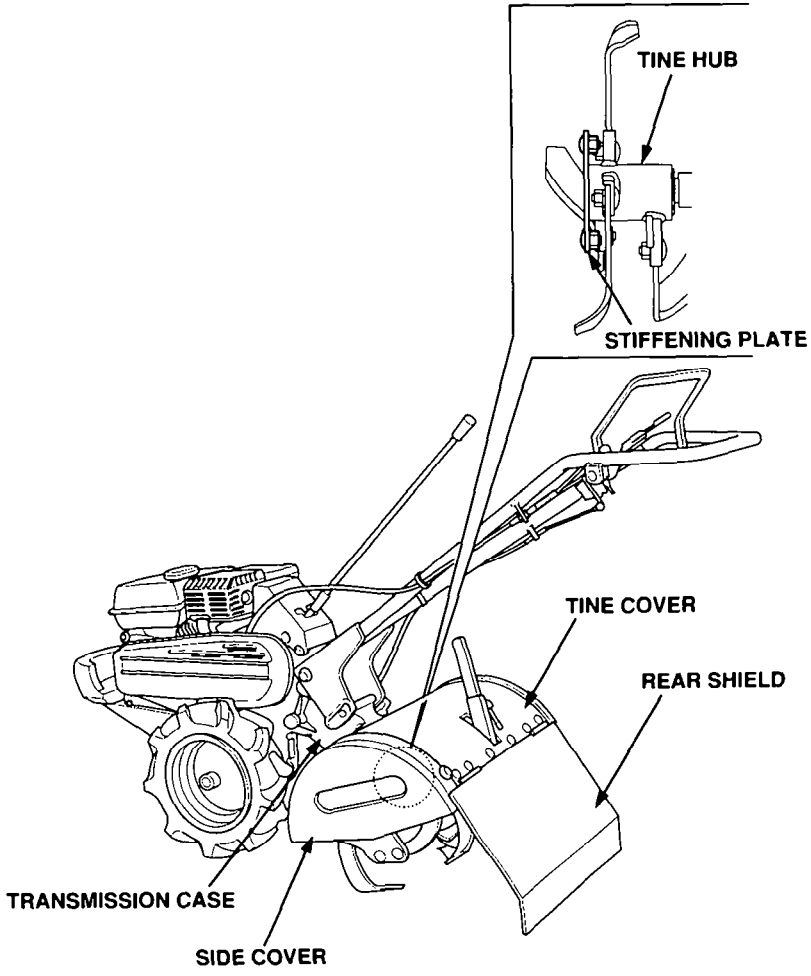
TINES AND FASTENERS

With the engine stopped, and the tiller on level ground, inspect the tines and check for loose nuts and bolts. Wear heavy gloves to protect your hands.

Replace worn, bent, or damaged tines. Securely tighten loose nuts and bolts.

Be sure to check the tightness of fasteners at the following places:

- Tine cover and transmission case
- Tine cover and side cover
- Tine cover and rear shield
- Stiffening plate and tine hub

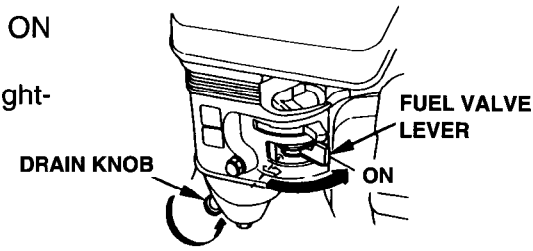


Start the engine outdoors. If you run the engine in an area that is confined, or even partially enclosed, the air can become contaminated with a dangerous amount of exhaust gas.

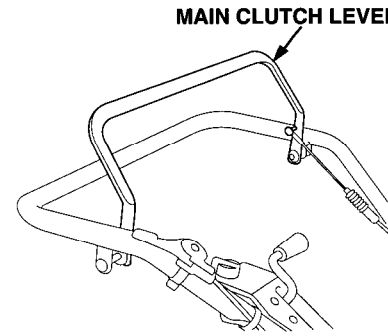
⚠WARNING

Exhaust contains poisonous carbon monoxide, a colorless and odorless gas. Breathing exhaust can cause loss of consciousness and may lead to death. To keep exhaust gas from building up, provide adequate ventilation.

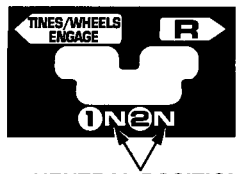
1. Turn the fuel valve lever to the ON position.
   Be sure that the drain knob is tightened securely.

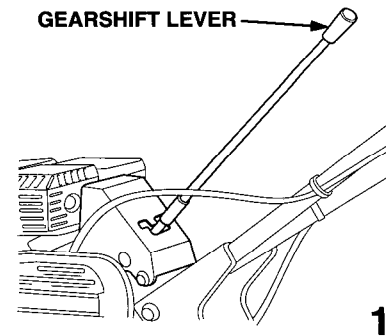


2. Make sure the main clutch lever is in the OFF position.

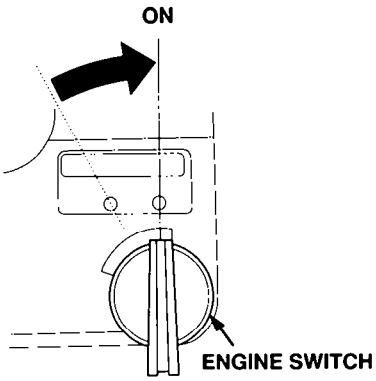


3. Make sure the gearshift lever is in the NEUTRAL position.



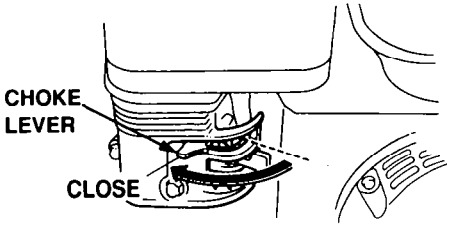


4. Turn the engine switch to the ON position.

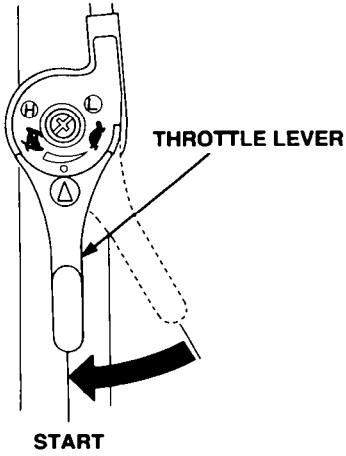


5. In cold weather and when the engine is cold, move the choke lever to the CLOSE position.

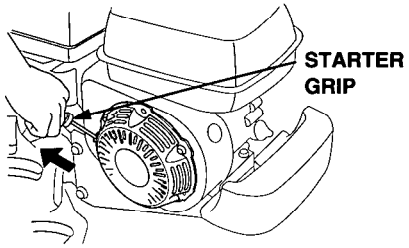
   NOTE:
   Do not use the choke if the engine is warm or the air temperature is high.



6. Move the throttle lever about 30 degrees from the extreme right (idle position).



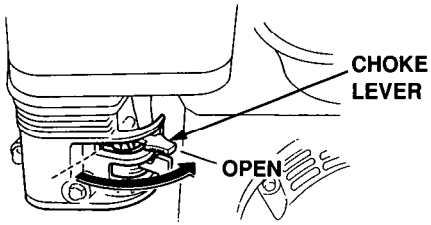
7. Pull the starter grip lightly until resistance is felt, then pull briskly.



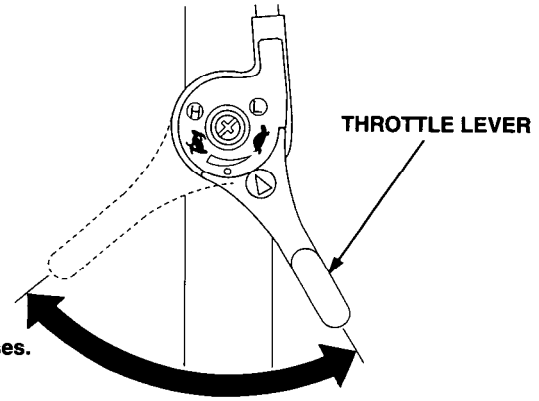
NOTICE

Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.

8. Let the engine warm up for several minutes. If the choke lever has been moved to the CLOSE position, return it gradually to the OPEN position as the engine warms up.



9. Adjust the throttle lever so that the engine speed is suitable.



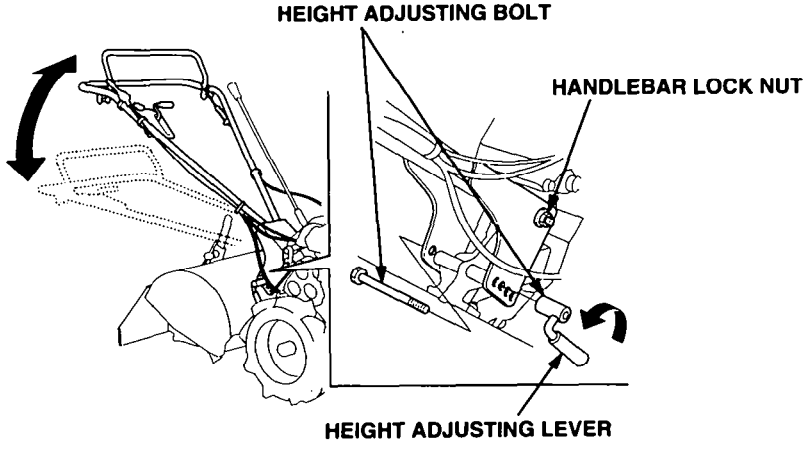
5. TILLER OPERATION

HANDLEBAR HEIGHT ADJUSTMENT

Handlebar height can be adjusted to four positions to suit operator height and working conditions. Select the height that provides the most comfortable operating position.

Before adjusting the handlebar, place the tiller on firm, level ground and stop the engine.

1. Unscrew the height adjusting lever, and remove the height adjusting bolt.
2. Adjust the handlebar to the desired height.
3. Reinstall the height adjusting bolt, and thread the lever onto the bolt. Tighten the height adjusting lever securely.



TILLING DEPTH ADJUSTMENT

To adjust the tilling depth, loosen the locking bolt and move the drag bar up or down.

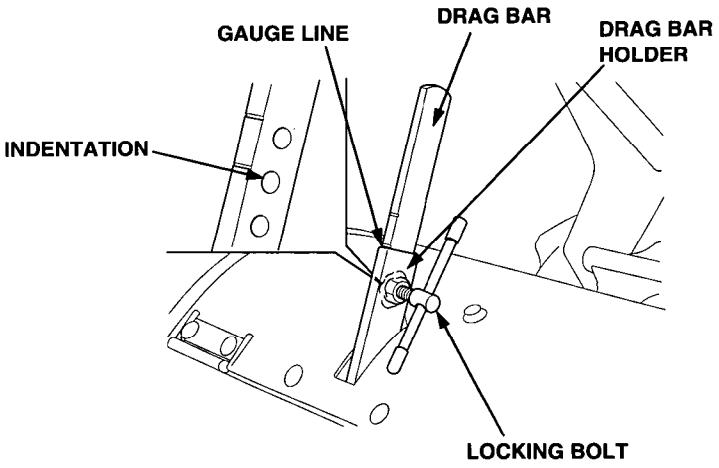
Before adjusting the drag bar, place the tiller on firm, level ground and stop the engine.

Use the gauge lines and indentations on the drag bar to adjust the tilling depth. Line up the top of the bar holder with a gauge line, and tighten the locking bolt.

The drag bar should always be used when tilling. It enables you to compensate for the hardness of the soil. The ideal height of the drag bar will depend on the type of soil and soil conditions at the time of tilling.

If breaking ground for the first time, lower the drag bar. As the soil becomes softer, the drag bar can be raised. If not sure about soil conditions, start with the drag bar in the lowest position.

If the machine jerks forward while tilling, press down on the handlebars. This will cause the drag bar to dig more deeply into the soil.



GEAR SELECTION

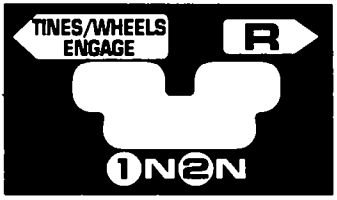
Return the throttle lever to the idle position and disengage the main clutch before moving the gearshift lever. Avoid using excessive force on the gearshift lever.

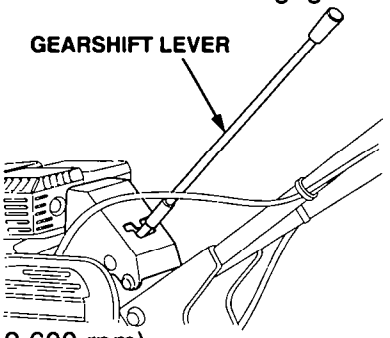
Gearshift lever

Select a gear position in accordance with the contents of the Gear Selection Table.

Gear Selection

- Always operate the gearshift lever after the main clutch has been disengaged.
- If the gearshift lever is difficult to operate, squeeze the main clutch once and then disengage the main clutch and operate the gearshift lever again.
- In reverse operation, be especially careful of your feet and observe the following precautions:
  — Make sure there are no people or obstacles behind you.
  — Lower the engine speed.
  — Hold the handlebar with both hands and support it firmly.
  — Gently engage the clutch and make sure that it can be disengaged at any time.





Gear Selection Table (When engine speed is 3,600 rpm)

Gear position	Tiller speed	Tine speed	Suitable work
1	0.35 m/s	–	Moving tiller, loading tiller onto a truck, taking tiller on or off field
2	1.22 m/s	–	Moving tiller
TINES/WHEELS ENGAGE	0.35 m/s	238 rpm	Tilling, ground breaking, weeding
R	0.36 m/s	–	Moving tiller, loading/unloading tiller from a truck, taking tiller on or off field

* Tiller speed applies when standard tires are used.

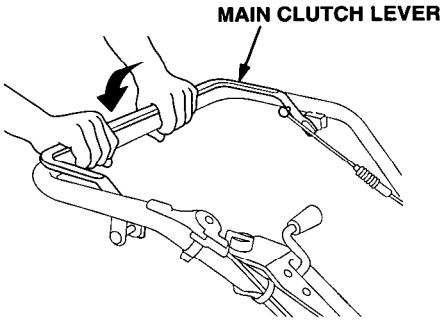
MAIN CLUTCH OPERATION

The tiller can be run or stopped by operating the main clutch lever.

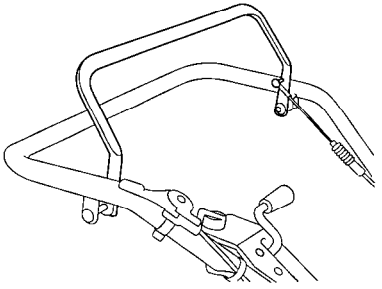
⚠CAUTION

When operating the tiller, always walk behind and in the center of the tiller and hold the handlebar with both hands. If the tiller becomes unbalanced, an unforeseen accident may occur.

Squeeze main clutch lever ➡ clutch engages and tiller runs



Release main clutch lever ➡ clutch disengages and tiller stops



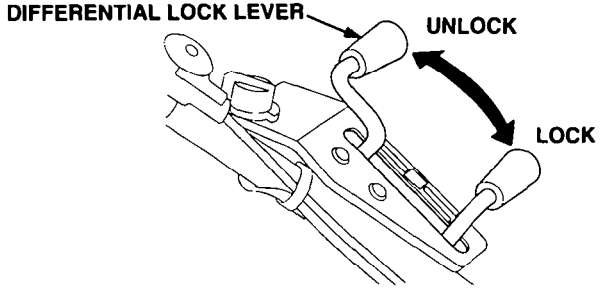
NOTE:

- Operate the main clutch lever smoothly.
- If the main clutch lever is operated erratically, the tiller may jump away or the engine may stop.

DIFFERENTIAL LOCK OPERATION (FR750 only)

For normal operation set the differential lock lever in the UNLOCK position. This improves the tiller's turning ability. When the ground is soft and one wheel tends to slip or when only one side is to be tilled, set the differential lock lever in the LOCK position. This improves the tiller's forward movement ability.

Move the differential lock lever after the clutch lever has been disengaged and the tiller has stopped.



NOTE:

- When moving the tiller, set the differential lock lever in the UNLOCK position.
- If the differential lock lever is operated with the main clutch lever squeezed, the differential lock mechanism may be damaged. Operate the differential lock lever with the main clutch lever disengaged.
- When the tiller is running on a slope or uneven ground, set the differential lock lever in the LOCK position.

TURNING (when moving)

Turn the tiller with the engine speed lowered. (FR650)

Turn the tiller with the differential lock lever in the UNLOCK position and the engine speed lowered. (FR750)

⚠CAUTION

- **Turning the tiller during high-speed operation causes the tiller to turn abruptly and become unstable, resulting in injury or accident.**

- **Do not turn the tiller when it is moving uphill or downhill. When the tiller is turned on a slope, it may abruptly move in an unforeseen direction, resulting in an accident, injury, or damage to the tiller.**

TILLING WORK

⚠ CAUTION

- **Tilling deeply at first may cause the tiller to lurch forward suddenly.**

- **If a stone or hard object hits against the tines while tilling, the handlebar may lift up and the tiller may lurch forward suddenly; caution must therefore be exercised.**

- **When operating the tiller, always walk behind and in the center of the tiller and hold the handlebar with both hands. If the tiller becomes unbalanced, an unforeseen accident may occur.**

NOTE:

- When tilling hard ground, do not till deeply at first; instead, till the field 2 or 3 times. Do not push against the handlebar excessively.

- When turning the tiller:
  Disengage the main clutch and lower the engine speed. If the differential lock is used, set it in the UNLOCK position (FR750 only). Set the gearshift lever in 1st gear, squeeze the clutch lever, and turn slowly. When the turn has been completed, set the gearshift lever in the TINES/WHEELS ENGAGE position and resume tilling.

HIGH ALTITUDE OPERATION

At high altitude, the standard 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 tiller at altitudes above 6,000 feet (1,800 meters), have your servicing dealer perform this carburetor modification.

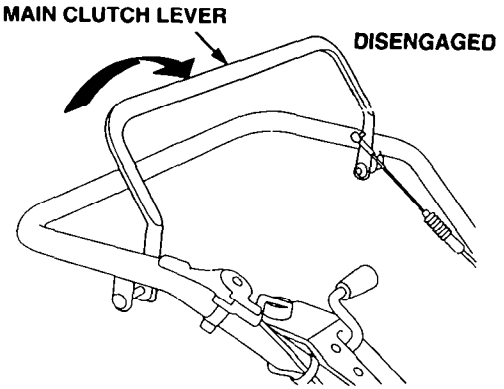
Even with carburetor modification, engine horsepower will decrease about 3.5% for each 1,000 foot (300 meter) increase in altitude. The effect of altitude on horsepower will be greater than this if no carburetor modification is made.

NOTICE

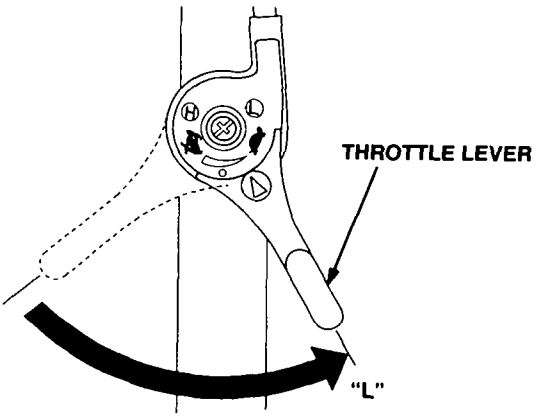
When the carburetor has been modified for high altitude operation, the air-fuel mixture will be too lean for low altitude use. Operation at altitudes below 6,000 feet (1,800 meters) with a modified carburetor may cause the engine to overheat and result in serious engine damage. For use at low altitudes, have your servicing dealer return the carburetor to original factory specifications.

6. STOPPING THE ENGINE

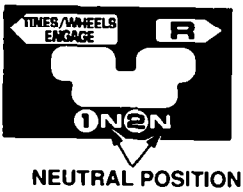
1. Release the main clutch lever to disengage the clutch.

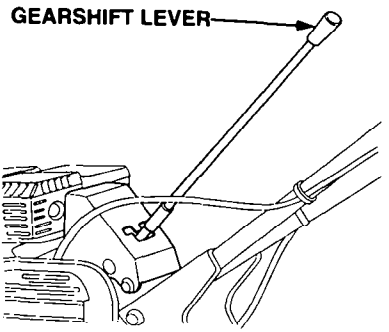


2. Move the throttle lever toward the "L" position to reduce the engine speed.

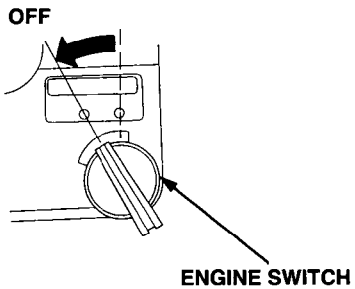


3. Set the gearshift lever in the NEUTRAL position.

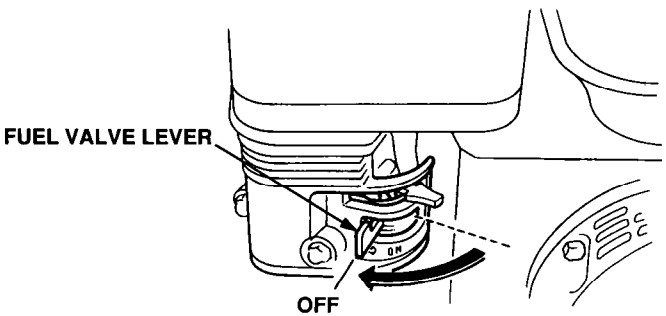




4. Turn the engine switch to the OFF position to stop engine.



5. Turn the fuel valve lever OFF.



NOTE:
To stop the engine in an emergency, release the clutch lever and turn the engine switch OFF.

7. TRANSPORTING

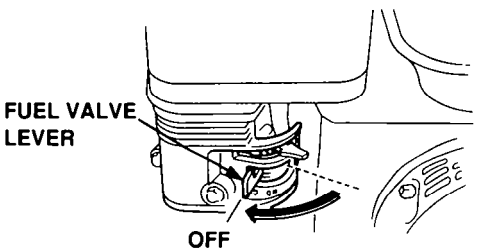
⚠ CAUTION

The engine and exhaust system become hot during operation and remain hot for a while after stopping. Contact with hot engine components can cause burns and can ignite some materials.

Avoid touching the engine or exhaust system for at least 15 minutes after the engine has stopped. Allow the engine to cool before transporting the tiller.

Before Loading

Turn the fuel valve lever to the OFF position. This will prevent the possibility of carburetor flooding and will reduce the possibility of fuel leakage.



Loading/Unloading

To reduce the possibility of fuel leakage, keep the tiller level while transporting, and avoid tilting the tiller excessively when loading and unloading.

- If a suitable loading ramp is not available, two people should lift the tiller on and off the vehicle, while holding the tiller level.

- Position the tiller so the tines and wheels are on the bed of the vehicle. Tie the tiller down with rope or straps, and block the wheels. Keep the tie-down rope or straps away from controls, cables, governor linkage, carburetor, and the fuel line.

THE IMPORTANCE OF MAINTENANCE

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

⚠WARNING

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

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

To help you properly care for your tiller, 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 tiller 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.

Remember that your servicing dealer knows your tiller 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 or replacement.

EMISSION CONTROL SYSTEM

Source of Emissions

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

Honda 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 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 page 35. 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	Perform at every indicated month or operating interval, whichever comes first.	REGULAR SERVICE PERIOD (3)	EACH USE	FIRST MONTH OR 20 HRS	EVERY 3 MONTHS OR 50 HRS	EVERY 6 MONTHS OR 100 HRS	EVERY YEAR OR 300 HRS
•	Engine oil	Check level	○				
		Change		○		○	
	Transmission oil	Check level	○				
•	Air cleaner	Check	○				
		Clean			○ (1)		
		Replace					○ (4)
	Belt tension	Adjust		○		○	
	Clutch cable	Adjust		○		○	
•	Spark plug	Check-Clean				○	
		Replace					○
	Spark arrester (Optional)	Clean				○	
•	Sediment cup	Clean				○	
	Throttle cable	Adjust					○
•	Valve clearance	Check-Adjust					○ (2)
•	Fuel tank, Fuel filter	Clean					○ (2)
	Differential lock cable (5)	Adjust		○		○	
•	Fuel line	Check (Replace if necessary)	Every 2 years (2)				

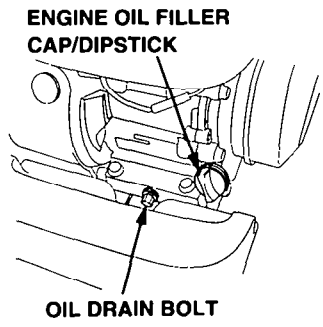
NOTE: • Emission related items.
(1) Service more frequently when used in dusty areas.
(2) These items should be serviced by an authorized Honda tiller dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda Shop Manual.
(3) For professional commercial use, log hours of operation to determine proper maintenance intervals.
(4): Replace paper element only.
(5): FR750 only.

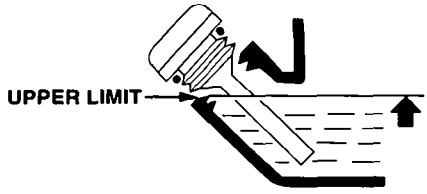
ENGINE OIL CHANGE

OIL CAPACITY: 0.6 ℓ (0.6 US qt, 0.5 Imp qt)

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

1. Place a suitable container in front of the tiller to catch the used oil.
2. Remove the oil filler cap/dipstick and drain bolt.
3. Tilt the tiller forward and allow all of the oil to drain.
4. Reinstall and tighten the oil drain bolt. Refill with the recommended oil (page 10) to the top of the oil filler neck.
5. Reinstall the oil filler cap/dipstick.





Wash your hands with soap and water after handling used oil.

NOTE:
Please dispose of used motor 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.

AIR CLEANER SERVICE

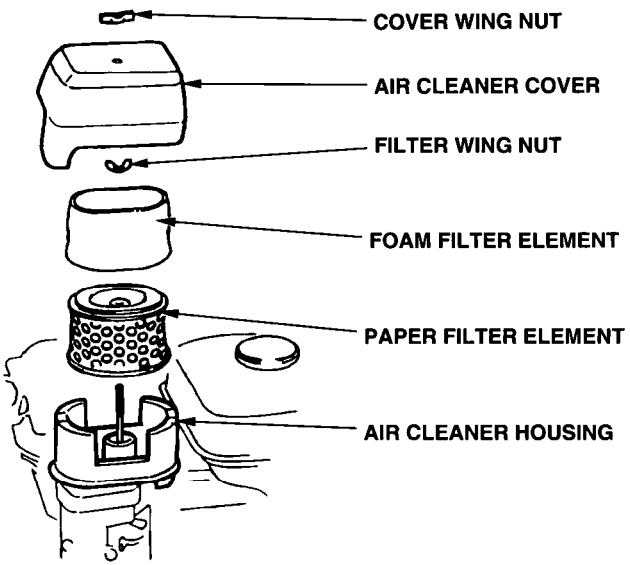
A dirty air filter will restrict air flow to the carburetor, reducing engine performance. If you operate the tiller in very dusty areas, clean the air filter more often than specified in the MAINTENANCE SCHEDULE.

NOTICE

Operating the engine with no air filter, or a damaged air filter, will cause rapid engine wear.

1. Remove the cover wing nut, then remove the air cleaner cover.

2. Remove the filter wing nut, then remove and separate the air filter elements. Carefully check both elements for holes or tears, and replace the filter if damaged.



3. Foam element: Clean in warm soapy water, rinse and allow to dry thoroughly. Or clean in nonflammable solvent and allow to dry. Dip the element in clean engine oil and squeeze out all excess oil. The engine will smoke during initial running if too much oil is left in the foam.

4. Paper element: Tap the element several times on a hard surface to remove excess dirt, or blow compressed air [not exceeding 207 kPa (30 psi)] through the filter from the inside. Never try to brush off dirt; brushing will force dirt into the fibers.

5. Wipe dirt from the inside of the air cleaner housing and cover, using a moist rag. Be careful to avoid dropping dirt into the air cleaner duct that leads to the carburetor.

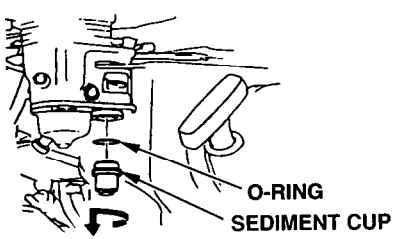
6. Reinstall the air filter and cover.

SEDIMENT CUP CLEANING

1. Turn the fuel valve to the OFF position.
2. Remove the sediment cup with a 10 mm wrench.
3. Empty the sediment cup, and wash it in nonflammable solvent.
4. Inspect and reinstall the O-ring. Replace the O-ring if it is damaged.
5. Install the sediment cup, and tighten it securely.
6. Turn the fuel valve to the ON position, and check for leaks.

⚠ WARNING

Gasoline is extremely flammable, and gasoline vapor can explode. Turn the fuel valve to the OFF position after servicing the sediment cup. Wipe up any spilled fuel.



SPARK PLUG SERVICE

Recommended spark plug: BPR5ES (NGK), W16EPR-U (DENSO)

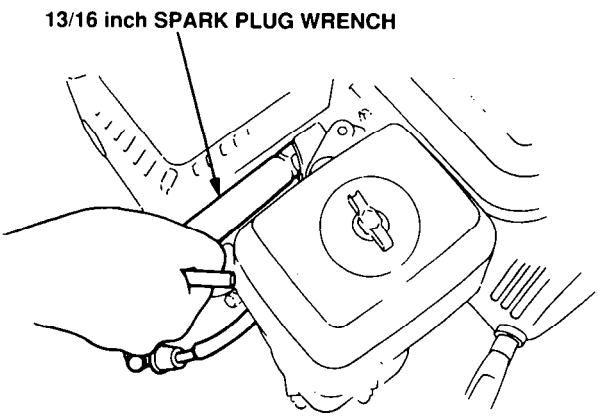
NOTICE

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

For good performance, the spark plug must be properly gapped and free of deposits.
If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.

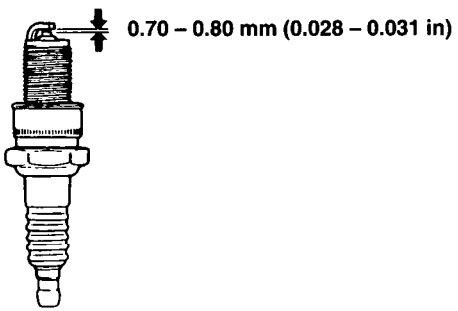
1. Clean any dirt from around the spark plug base.

2. Remove the spark plug cap.
   Use a 13/16 inch spark plug wrench to remove the spark plug.



3. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.

4. Measure the spark plug electrode gap with a feeler gauge. Correct the gap as necessary by carefully bending the side electrode.
   The gap should be: 0.70 – 0.80 mm (0.028 – 0.031 in)



5. Install the spark plug carefully, by hand, to avoid cross-threading.

6. After the spark plug is seated, tighten with a 13/16 inch spark plug wrench to compress the washer.

   NOTICE

   A loose spark plug can get hot enough to damage the engine. Overtightening can damage the threads.

   NOTE:
   If installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. If reinstalling a used spark plug, tighten 1/8 – 1/4 turn after the spark plug seats.

7. Install the spark plug cap on the spark plug.

SPARK ARRESTER MAINTENANCE (optional equipment)

The engine in your tiller 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. A spark arrester is available from authorized Honda servicing dealers.

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

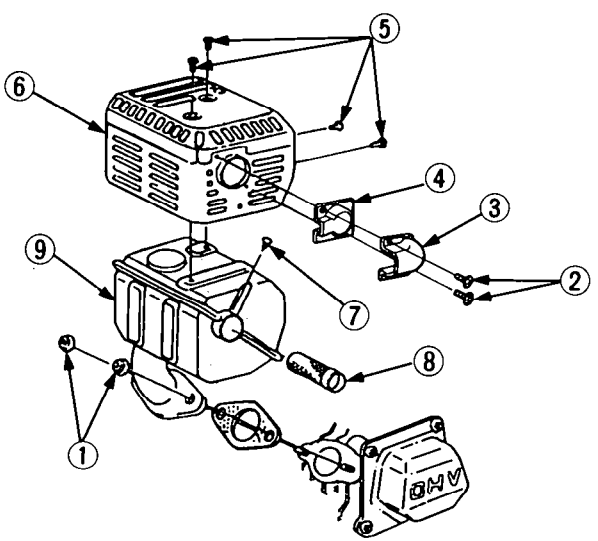
If the engine has been running, the muffler will be very hot. Allow the muffler to cool before servicing the spark arrester.

1. Remove the two 8 mm nuts ① and remove the muffler from the cylinder.

2. Remove the two 4 mm screws ② from the muffler deflector ③, and remove the muffler deflector and muffler guide ④.

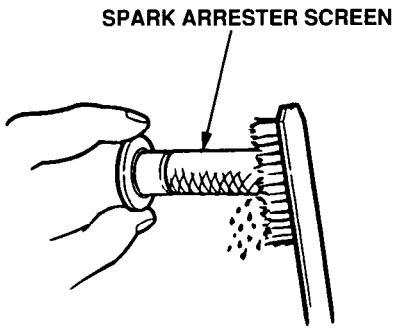
3. Remove the four 5 mm screws ⑤ from the muffler protector ⑥, and remove the muffler protector.

4. Remove the 4 mm screw ⑦ from the spark arrester ⑧, and remove the spark arrester from the muffler ⑨.



5. Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the spark arrester screen.

   The spark arrester must be free of breaks and holes. Replace if necessary.



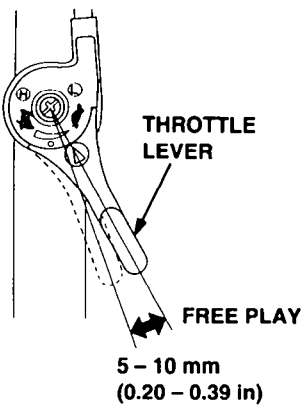
6. Install the spark arrester and the muffler in the reverse order of disassembly.

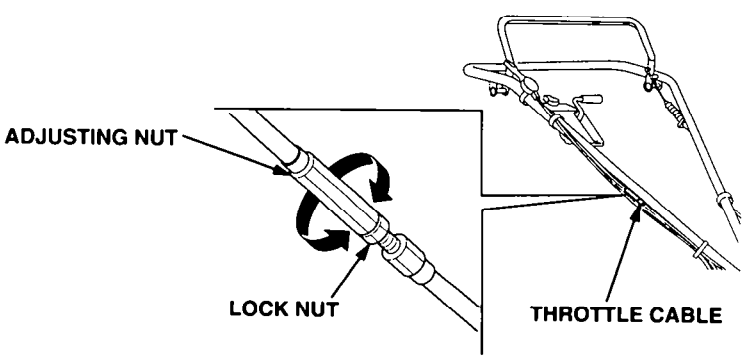
THROTTLE CABLE ADJUSTMENT

Check and adjustment should be made with the handlebar in the 2nd position from the bottom.

1. Loosen the lock nut and turn the adjuster until the free play in the throttle lever at the end of the lever is 5.0 – 10.0 mm (0.20 – 0.39 in).

2. After adjusting the free play, tighten the lock nut securely.





MAIN CLUTCH CABLE ADJUSTMENT

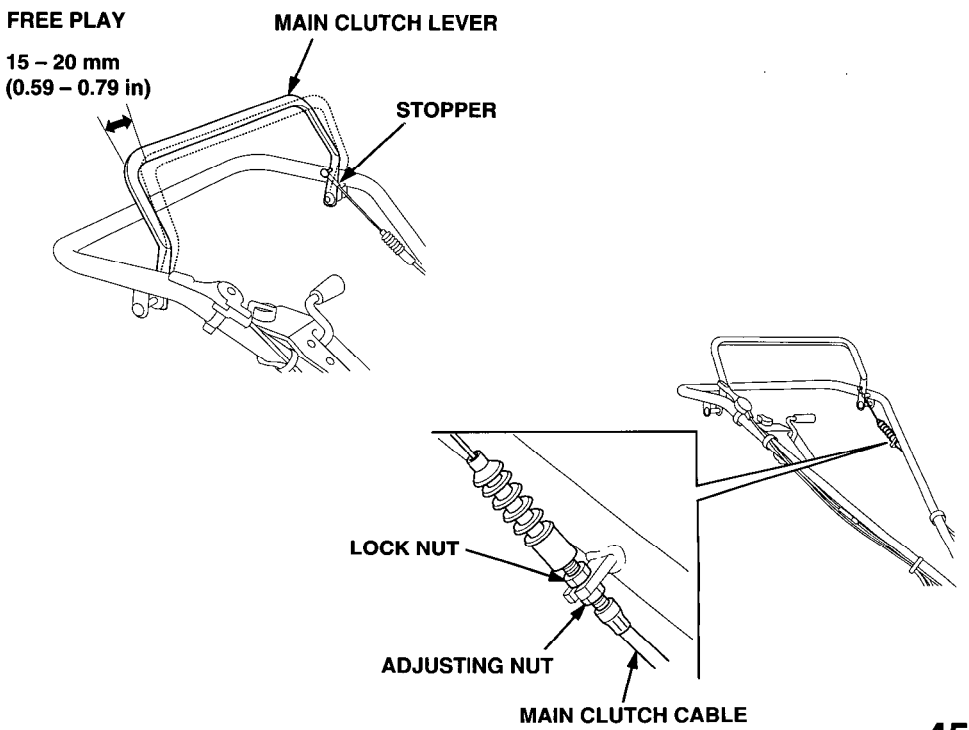
The main clutch cable must be adjusted properly before adjusting the drive belt. An improperly adjusted main clutch cable may cause the drive belt to slip on its pulleys, resulting in loss of power or premature wear or damage to the drive belt.

Check and adjustment should be made with the handlebar in the 2nd position from the bottom.

1. Check the free play of the main clutch lever at the tip of the lever when the lever is released.
   Free play should be: 15.0 – 20.0 mm (0.59 – 0.79 in)

2. If adjustment is necessary, loosen the lock nut and turn the cable adjusting nut in or out until the correct free play is obtained.

3. After adjusting the cable free play, tighten the lock nut securely.



DIFFERENTIAL LOCK CABLE ADJUSTMENT (FR750 only)

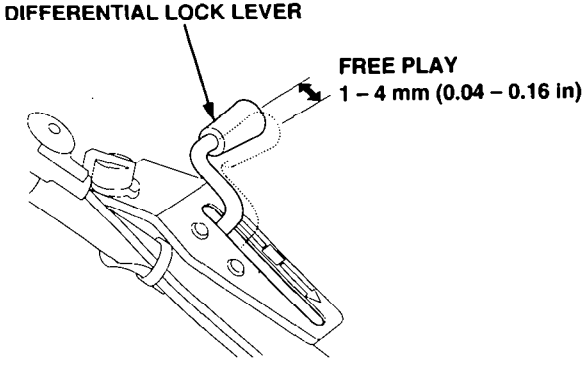
If the differential lock cable is not correctly adjusted, it may become impossible to operate the differential lock.

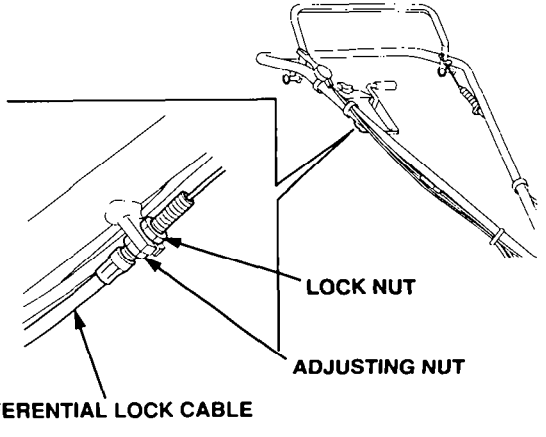
Check and adjustment should be made with the handlebar in the 2nd position from the bottom.

1. With the differential lock in the UNLOCK position, adjust so that the end has the free play dimensions shown below.
   Free play: 1 – 4 mm (0.04 – 0.16 in)

2. Adjust by loosening the lock nut and turning the adjusting nut.

3. After the lever has been adjusted, tighten the lock nut securely.





DRIVE BELT ADJUSTMENT

The drive belt must be inspected regularly for correct tension. If the drive belt slips on its pulleys, that will result in loss of power and premature wear or damage to the drive belt.

Inspection

1. Adjust the clutch cable (refer to page 45).

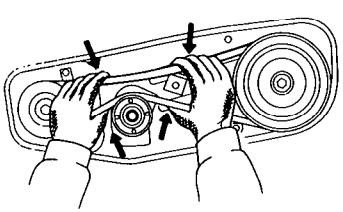
2. Remove the belt cover.

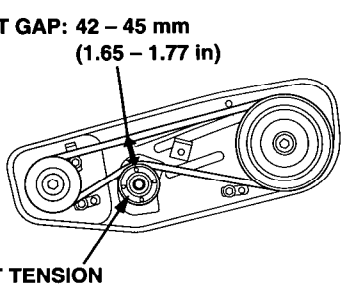
3. Stop the engine, remove the spark plug cap, and set the clutch lever in the LOCK position. Pinch the upper and lower parts of the belt together with both hands 5 or 6 times as shown in the figure, and check to see if the belt gap and stopper gap are within the prescribed dimensions.

   Belt gap: 42 – 45 mm (1.65 – 1.77 in)

   Specified belt: FR650 V-belt red -SII (SB38)
   FR750 V-belt W600 (SB38)

4. Adjust if the gap is not within the prescribed dimensions.

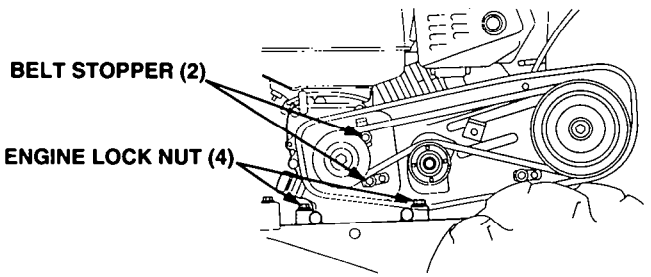




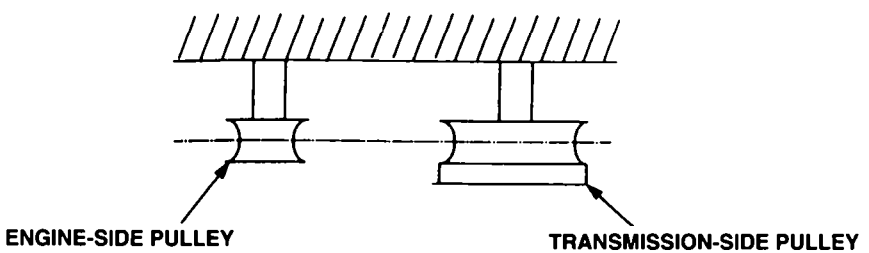
Adjustment

1. Adjust by loosening the engine lock nuts and belt stopper lock nuts (2 nuts on front side) and moving the engine back and forth.

   If gap is smaller than the specified dimension: Move engine forward.
   If gap is larger than the specified dimension: Move engine rearward.

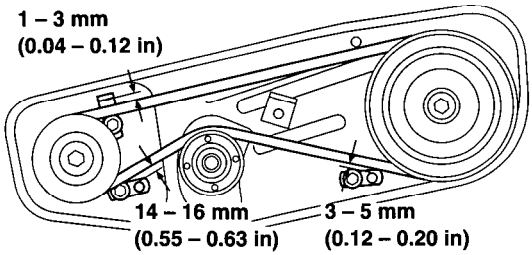


NOTE:
During adjustment, line up the groove of the engine-side pulley and that of the transmission-side pulley. If they are not aligned, the belt may come off or will wear prematurely.



2. After adjustment has been completed, fasten the nuts securely.

3. Confirm that the gap between the belt and belt stopper (3 points) is within the dimensions shown in the figure, while the main clutch lever is squeezed.



4. Adjust if the gap is not within the dimensions shown.

5. Adjust by loosening the stopper lock nut and moving the stopper up or down.

6. After adjustment has been completed, fasten the nut securely.

7. Install the belt cover.

⚠WARNING

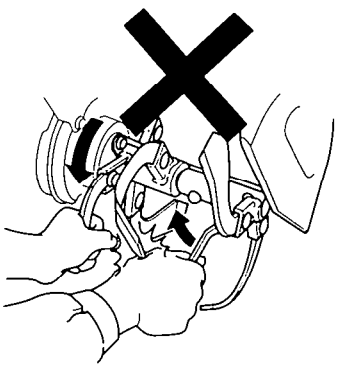
After adjustment, be sure to reinstall the belt cover. Failure to follow this instruction may cause your clothing to be caught in moving parts, resulting in serious accident or injury.

TINE INSPECTION AND REPLACEMENT

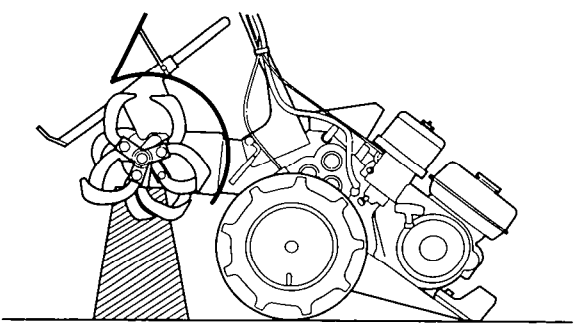
Use genuine Honda replacement tines or their equivalent. Wear heavy gloves to protect your hands.

⚠ CAUTION

- **Perform the check or replacement work with the tiller on a level spot and the engine stopped.**
- **Place a wooden block under the rotary tine shaft to prevent tines from dropping.**
- **The inside and outside tines rotate in opposite directions. Be careful of the movement of the tines when checking or replacing the rotary part. The rotary tines may turn in an unexpected direction, resulting in injury.**



Before starting the check or replacement work, secure the tiller by tilting it until the front weight touches the ground and placing a block under the middle of the speed changer case.

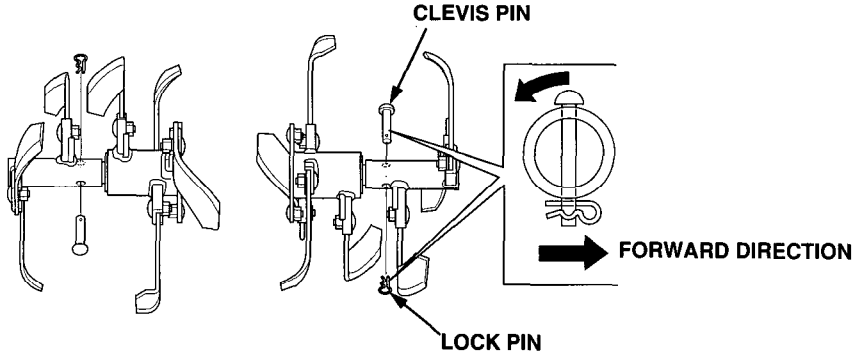


Inspection

1. Check for damaged, bent, or loose tines. If looseness or damage is found, tighten or replace the damaged tines.

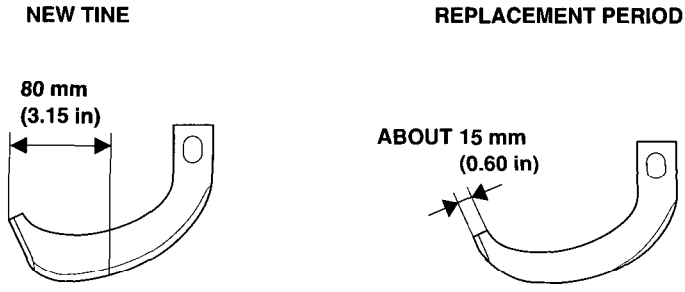
2. Check that the rotary tine shaft's clevis pin is not missing or damaged. If necessary, replace with a new clevis pin and lock pin.

   NOTE:
   To prevent the clevis pin from falling out, insert the lock pin in the direction opposite to the direction of rotation of the tines.



3. Replace a tine when the tine width has worn to less than 15 mm (0.60 in) in the area 80 mm (3.15 in) from the end of the tine.

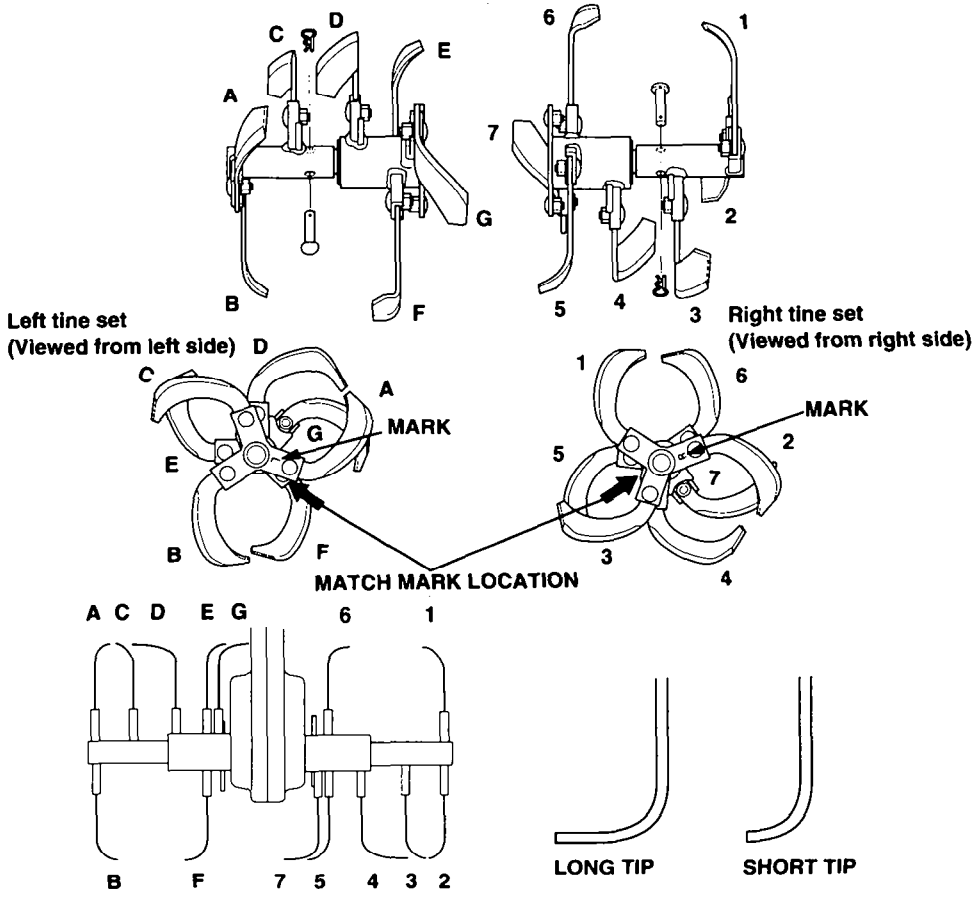
   For efficient tilling work, do not delay in replacing a worn tine.



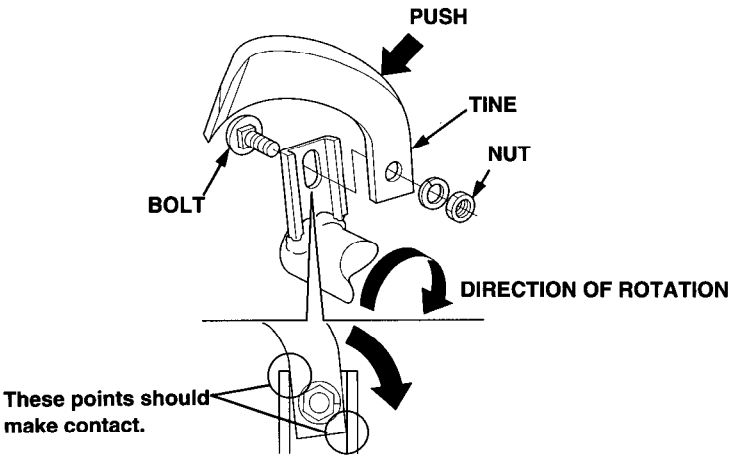
Installation

Arrange the rotary tines as shown in the figure. If the arrangement or orientation is changed, vibration may be produced, and normal tilling operation may become impossible.

Facing the forward direction, install right-side tines 1, 2, 5, and 7 and left-side tines A, B, E, and G so that they are facing inside, and install right-side tines 3, 4, and 6 and left-side tines C, D, and F so that they are facing outside. Right-side tines 4 and 7 and left-side tines D and G have longer tips.

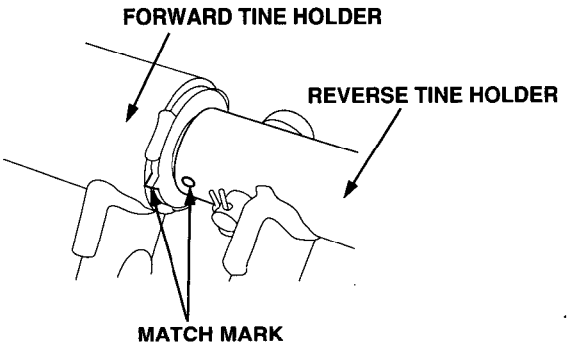


While pushing the rotary tines in the direction of rotation and the opposite direction, fasten the nut securely.



When assembling the rotary tines and holders, the match marks have to be aligned. If they are incorrectly assembled, vibration will be produced. Assemble them according to the following procedure.

Line up the match marks on the forward tine holder and the reverse tine holder and assemble. Assemble tine R on the right side, facing the forward direction, and tine L on the left side. Marks 2, 4, A, and D are located at the base of the tines. Refer to page 52.



9. STORAGE

PREPARATION FOR STORAGE

When the tiller will not be used for one month or longer, proper storage preparation will help to prevent rust and corrosion, and will make it easier to start the engine when the tiller is removed from storage.

1. Clean all surfaces of the tiller, including the area underneath the tine cover. Wear heavy gloves to protect your hands.

   If you use a garden hose to wash the tiller, observe the following precautions:

   - If the tiller has been running, allow the engine to cool for at least half an hour before spraying water on it. Never spray water on a hot engine.

   - Wash the tiller using low water pressure, and keep water away from controls, cable ends, and all other places that are difficult to dry if water enters.

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

   - Stop the engine, turn the fuel valve OFF, and allow the engine to cool before placing the tiller in storage.

2. Coat areas that may rust with a light film of oil. Lubricate all control cable cores with a silicone spray lubricant.

For storage of a month or longer, perform these additional steps:

3. Fill the fuel tank with fresh gasoline, and add a gasoline conditioner, such as HONDA FUEL STABILIZER, which is formulated to extend fuel storage life.

   Be sure the fuel tank is completely filled. If partially filled, air in the tank will promote fuel oxidation and deterioration, resulting in bad fuel that may cause hard starting. Deteriorated fuel may also clog carburetor passages, requiring carburetor repair or replacement.

   Fuel oxidation problems can also be prevented by completely draining the fuel tank and carburetor. Carburetor draining is recommended if storage time will exceed two months. However, a drained fuel tank may rust from the effects of moisture condensation. It is best to leave the fuel tank completely filled, unless you are preparing the tiller for shipment or other special circumstances.

   NOTE:
   The Distributor's Limited Warranty does not cover fuel system damage of engine performance problems resulting from neglected storage preparation.

   If storage time will not exceed two months, it is not necessary to drain the carburetor. Add gasoline conditioner before starting the engine (page 54, step 1) ; that will ensure that treated gasoline replaces the untreated gasoline in the carburetor.

For storage of two months or longer, perform these additional steps:

Before storing the unit for an extended period:

4. Drain the fuel...

   a. With the fuel valve turned OFF, remove and empty the sediment cup.

   b. Turn the fuel valve ON and drain the gasoline in the fuel tank into a suitable container.

   c. Replace the sediment cup and tighten securely.

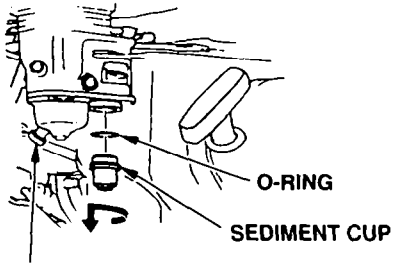
   d. Drain the carburetor by removing the drain knob. Drain the gasoline into a suitable container. Replace the drain knob.

⚠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.**



5. Change the engine oil (page 36).

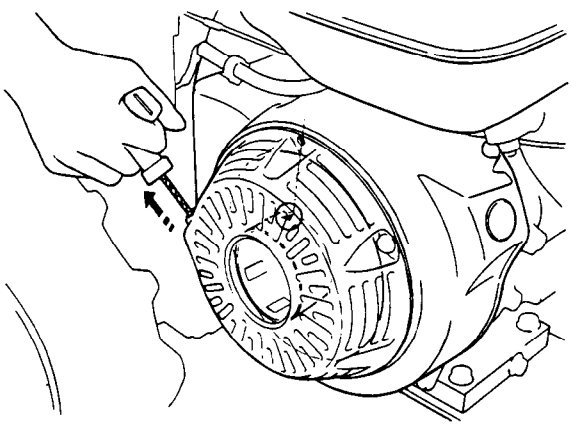
6. Lubricate the piston and cylinder.

   a. Remove the spark plug (page 40)

   b. Pour a tablespoon of clean engine oil into the cylinder. Pull the starter rope several times to distribute the oil in the cylinder.
   Reinstall the spark plug.

      NOTE:
      While the spark plug is removed, inspect the plug, and clean, gap, or replace it if necessary.

   c. Pull the starter rope unitl you feel resistance. This closes the valves, which helps to protect the cylinder from corrosion.



STORAGE

Select a storage area away from appliances (water heater or clothes dryer) that use an open flame as a heat source. Power tools, and some battery operated toys, have electric motors that produce sparks that can ignite gasoline vapors.

⚠ WARNING

Gasoline is extremely flammable, and gasoline vapor can explode. Be careful to avoid open flames or sparks.

Avoid storing the tiller where it will be exposed to high humidity and dust.

Place the tiller with its tines and wheels on a level surface. Tilting the tiller may result in fuel leakage.

Cover the tiller to keep out dust.

NOTE:
Plastic sheets should not be used as dust covers; they trap moisture under the covers, promoting rust and corrosion.

REMOVAL FROM STORAGE

Check all items described in the PRE-OPERATION CHECK section of this manual (pages 10 – 16).

Fill the fuel 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, resulting in bad fuel that may cause hard starting.

⚠ WARNING

Gasoline is extremely flammable, and gasoline vapor can explode. Use extreme care when handling gasoline.

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

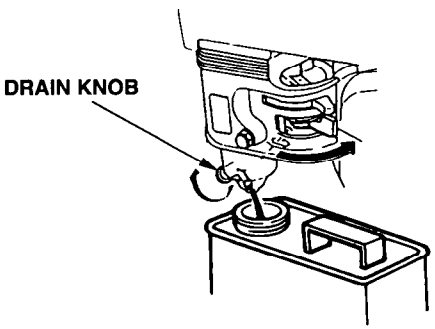
When the engine will not start;

1. Is there enough fuel?
2. Is the fuel valve ON?
3. Is the engine switch ON?
4. Is gasoline reaching the carburetor?

   To check, loosen the drain knob with the fuel valve on. Fuel should flow out freely. Retighten drain knob.

⚠WARNING

If any fuel is spilled, make sure the area is dry before testing the spark plug or starting the engine. Spilled fuel or fuel vapor may ignite.



5. Is there a spark at the spark plug?

   a. Remove the spark plug cap. Clean any dirt from around the spark plug base, then remove the spark plug.

   b. Install the spark plug in the plug cap.

   c. Turn the engine switch on.

   d. Grounding the side electrode to any engine ground, pull the recoil starter to see if sparks jump across the gap.

      ⚠ WARNING

      - **Never hold the spark plug lead with wet hands while performing this test.**

      - **Make sure that no fuel has been spilled on the engine and that the plug is not wet with fuel.**

      - **To avoid fire hazards, do not allow sparks near the plug hole.**

   e. If there is no speak, replace the plug.
      If OK, try to start the engine according to the instructions.

6. If the engine still does not start, take the tiller to an authorized Honda dealer.

DIMENSIONS AND WEIGHT

Model	FR650	FR750
Power product description code	FZBV	FZCG
Dimensions, (Length) (Height) (Width)	 1,450 mm (57.1 in) 1,100 mm (43.3 in) 570 mm (22.4 in)	 1,450 mm (57.1 in) 1,100 mm (43.3 in) 570 mm (22.4 in)
Dry weight	83 kg (183 lbs)	88 kg (194 lbs)
Tire size	3.50 – 7	
Maximum handle height	1,200 mm (47.2 in)	

ENGINE

Model	FR650 GX160K1	FR750 GX200
Type	Single cylinder, 4-stroke forced air cooled, overhead valve	
Displacement/ Bore and stroke	163 cm^3 (9.9 cu-in) 68 × 45 mm (2.7 × 1.8 in)	196 cm^3 (12.0 cu-in) 68 × 54 mm (2.7 × 2.1 in)
Ignition system	Transistorized magneto	
Engine oil capacity	0.6 ℓ (0.6 US qt, 0.5 Imp qt)	
Fuel tank capacity	2.6 ℓ (0.69 US gal, 0.57 Imp gal)	
Spark plug	BPR5ES (NGK), W16EPR-U (DENSO)	
Main clutch	Belt tension	
Transmission	Two speeds forward and one reverse speed	
Transmission oil capacity	2.6 ℓ (2.7 US qt, 2.3 Imp qt)	2.4 ℓ (2.5 US qt, 2.1 Imp qt)

TINES

Tilling depth control	Adjustable drag bar
Tine shaft speed	238 rpm

TUNEUP

ITEM	SPECIFICATION	MAINTENANCE
Spark plug gap	0.70 – 0.80 mm (0.028 – 0.031 in)	Refer to page: 35
Valve clearance	IN: 0.15 ± 0.02 mm cold EX: 0.20 ± 0.02 mm cold	See your authorized Honda dealer
Other specification	No other adjustments needed.	

NOTE: Specifications are subject to change without notice due to improvements.

12. WARRANTY SERVICE INFORMATION

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

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

American Honda Motor Co., Inc.
Power Equipment Division
Customer Relations Office
4475 River Green Parkway
Duluth, Georgia 30136-2565

Or telephone: (770) 497-6400

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

- Model and serial number (see page 8)
- Name of dealer who sold the tiller to you
- Name and address of dealer who services your tiller
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

13. INDEX

MEMO

HONDA

HONDA MOTOR CO., LTD. TOKYO, JAPAN

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