INTRODUCTION

Thank you for purchasing a Honda engine. We want to help you to get the best results from your new engine and to operate it safely. This manual contains information on how to do that; please read it carefully before operating the engine. If a problem should arise, or if you have any questions about your engine, consult an authorized Honda servicing dealer.

All information in this publication is based on the latest product information available at the time of printing. American Honda Motor Co., Inc. reserves the right to make changes at any time without notice and without incurring any obligation. No part of this publication may be reproduced without written permission.

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

Review the instructions provided with the equipment powered by this engine for any additional information regarding engine startup, shutdown, operation, adjustments or any special maintenance instructions.

SAFETY MESSAGES

Your safety and the safety of others is very important. We have provided important safety messages in this manual and on the engine. 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 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.

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 engine or other property can be damaged if you don't follow instructions.

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

SAFETY INFORMATION

- Understand the operation of all controls and learn how to stop the engine quickly in case of emergency. Make sure the operator receives adequate instruction before operating the equipment.
- Your engine's exhaust contains poisonous carbon monoxide. Do not run the engine without adequate ventilation, and never run the engine indoors.
- The engine and exhaust become very hot during operation. Keep the engine at least 3 feet (1 meter) away from buildings and other equipment during operation. Keep flammable materials away, and do not place anything on the engine while it is running.

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HONDA

OWNER'S MANUAL
MANUEL DE L'UTILISATEUR
MANUAL DEL PROPIETARIO

GC160 • GC190

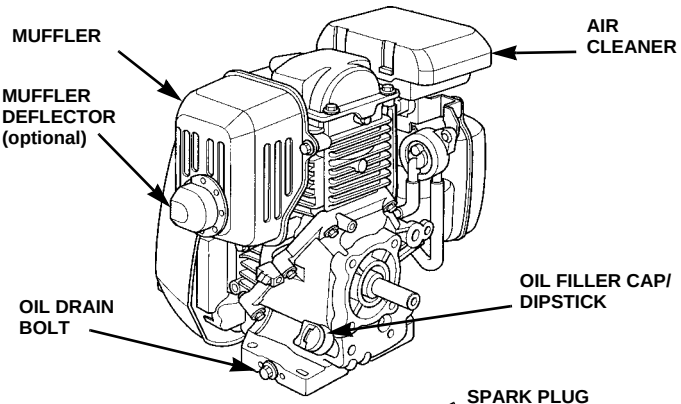
ENGLISH

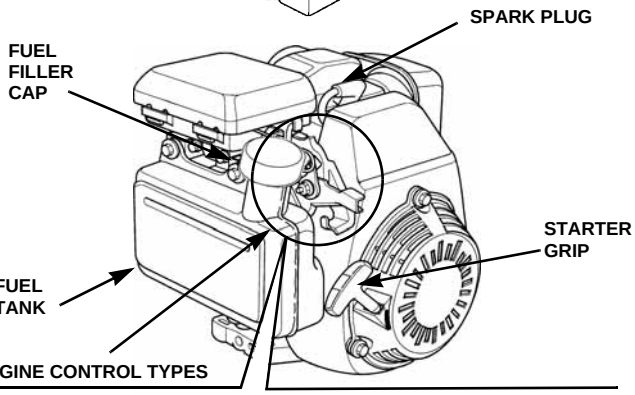
⚠ WARNING: ⚠

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

CONTENTS

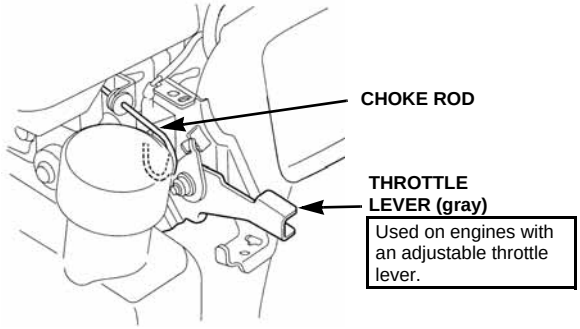
COMPONENT & CONTROL LOCATION



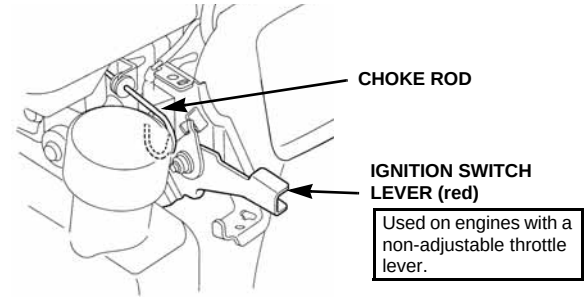


ENGINE CONTROL TYPES

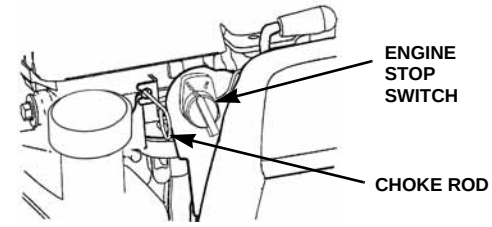
TYPE 1: MANUAL THROTTLE / MANUAL CHOKE



TYPE 2: FIXED THROTTLE / IGNITION SWITCH LEVER / MANUAL CHOKE



TYPE 3: FIXED THROTTLE / ENGINE STOP SWITCH / MANUAL CHOKE



BEFORE OPERATION CHECKS

IS YOUR ENGINE READY TO GO?

For your safety, and to maximize the service life of your equipment, it is very important to take a few moments before you operate the engine to check its condition. Be sure to take care of any problem you find, or have your servicing dealer correct it, before you operate the engine.

⚠ WARNING

Improperly maintaining this engine, or failure to correct a problem before operation, can cause a malfunction in which you can be seriously hurt or killed.

Always perform a preoperation inspection before each operation, and correct any problem.

Before beginning your preoperation checks, be sure the engine is level and the throttle lever (ignition switch lever or engine stop switch) is in the STOP position.

Always check the following items before you start the engine:

1. Fuel level (see page 5).
2. Oil level (see page 6).

   The Oil Alert® system (applicable engine types) will automatically stop the engine before the oil level falls below safe limits. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.
3. Air cleaner (see page 6).
4. General inspection: Check for fluid leaks and loose or damaged parts.
5. Check the equipment powered by this engine.

   Review the instructions provided with the equipment powered by this engine for any precautions and procedures that should be followed before engine startup.

OPERATION

SAFE OPERATING PRECAUTIONS

Before operating the engine for the first time, please review the *SAFETY INFORMATION* section on page 1 and the *BEFORE OPERATION CHECKS* above.

For your safety, do not operate the engine in an enclosed area such as a garage. Your engine's exhaust contains poisonous carbon monoxide gas that can collect rapidly in an enclosed area and cause illness or death.

⚠ WARNING

Exhaust contains poisonous carbon monoxide gas that can build up to dangerous levels in closed areas. Breathing carbon monoxide can cause unconsciousness or death.

Never run the engine in a closed or even partially closed area where people may be present.

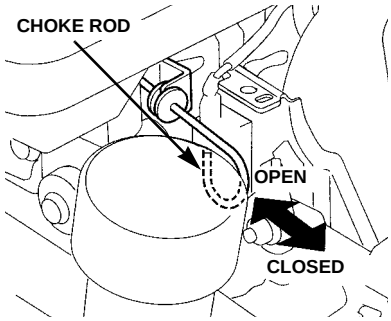
Review the instructions provided with the equipment powered by this engine for any safety precautions that should be observed with engine startup, shutdown or operation.

Do not operate the engine on slopes greater than 20°.

TYPE 1: MANUAL THROTTLE / MANUAL CHOKE

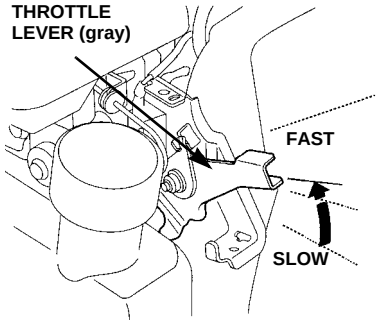
Starting The Engine

1. Pull the choke rod to the CLOSED position (cold engine).



2. Move the throttle lever (gray) away from the SLOW position, about 1/3 of the way toward the FAST position.

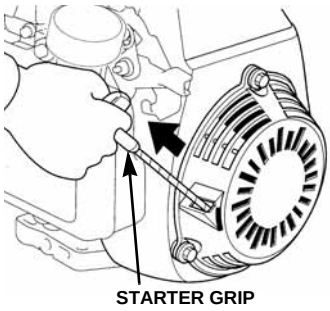
   Some engine applications use a remotely-mounted throttle control rather than the engine-mounted throttle lever shown here.



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

   NOTICE

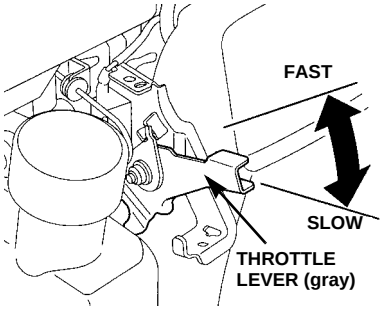
   Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.



4. If the choke rod was pulled to the CLOSED position to start the engine, push it to the OPEN position as soon as the engine warms up enough to run smoothly.

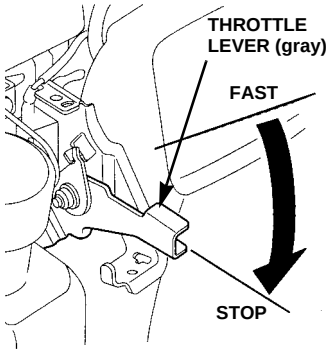
Throttle Setting

Position the throttle control lever (gray) for the desired engine speed. For best engine performance, it is recommended the engine be operated with the throttle in the FAST (or high) position.



Stopping The Engine

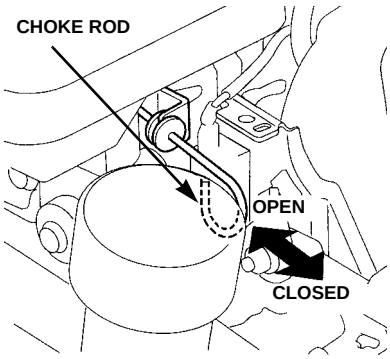
1. Move the throttle lever (gray) to the SLOW position.
2. Allow the engine to idle for a few seconds, then move the throttle lever to the STOP position.



TYPE 2: FIXED THROTTLE / IGNITION SWITCH LEVER / MANUAL CHOKE

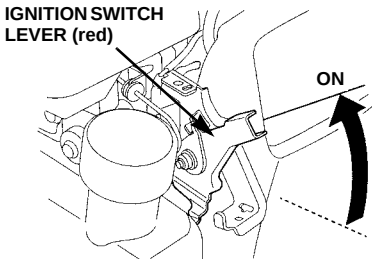
Starting The Engine

1. Pull the choke rod to the CLOSED position (cold engine).



2. Move the ignition switch lever (red) to the ON position.

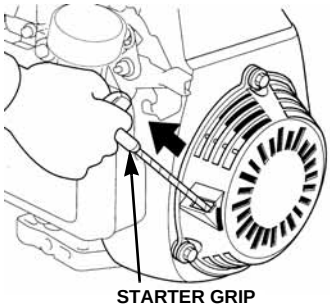
   Some engine applications use a remote-mounted ignition switch rather than the engine-mounted ignition switch lever shown here.



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

   NOTICE

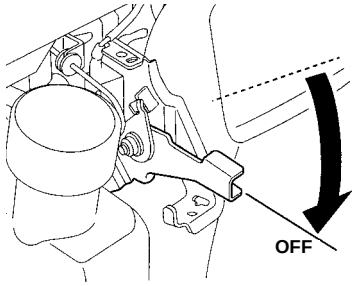
   Do not allow the starter grip to snap back against the engine. Return it gently to prevent damage to the starter.



4. If the choke rod was pulled to the CLOSED position to start the engine, push it to the OPEN position as soon as the engine warms up enough to run smoothly.
5. The engine speed is preset on this type.

Stopping The Engine

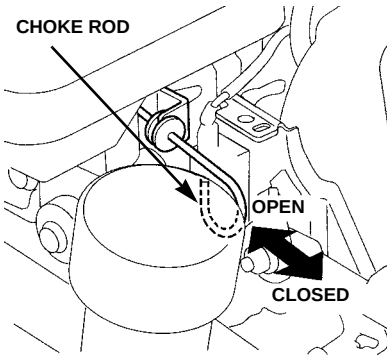
Move the ignition switch lever (red) to the OFF position.



TYPE 3: FIXED THROTTLE / ENGINE STOP SWITCH / MANUAL CHOKE

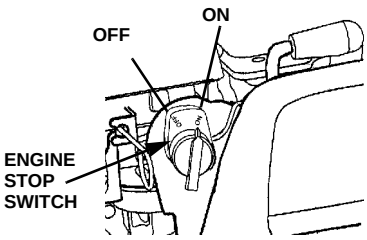
Starting The Engine

1. Pull the choke rod to the CLOSED position (cold engine).



2. Move the engine stop switch to the ON position.

   Some engine applications use a remote-mounted ignition switch rather than the engine-mounted engine stop switch shown here.



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

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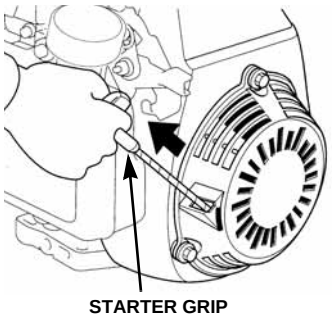


4. If the choke rod was pulled to the CLOSED position to start the engine, push it to the OPEN position as soon as the engine warms up enough to run smoothly.
5. The engine speed is preset on this type.

Stopping The Engine

Move the engine stop switch to the OFF position.

OIL ALERT® SYSTEM

The Oil Alert system is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert system will automatically stop the engine [the throttle lever (ignition switch lever) will remain in a run position].

If the engine stops and will not restart, check the engine oil level (page 6) before troubleshooting in other areas.

SERVICING YOUR ENGINE

THE IMPORTANCE OF MAINTENANCE

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

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

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

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

MAINTENANCE 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 this 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.

MAINTENANCE SCHEDULE

ITEM	Perform at every indicated month or operating hour interval, whichever comes first.	REGULAR SERVICE PERIOD (4)						Page
		Before Each Use	First Month or 5 Hrs	Every 3 Months or 25 Hrs	Every 6 Months or 50 Hrs	Every Year or 100 Hrs	Every Two Years or 250 Hrs	
Engine oil	Check	O						6
	Change		O		O (2)			6
Air filter	Check	O						6
	Clean			O (1)				
	Replace						O	
Spark plug	Check-adjust					O		6
	Replace						O	
Spark arrester	Clean					O		7
Idle speed	Check-adjust					O(3)		Shop manual
Fuel tank and filter	Clean					O(3)		Shop manual
Valve clearance	Check-adjust					O(3)		Shop manual
Fuel tube	Check	Every 2 years (Replace if necessary) (3)						Shop manual
Combustion chamber	Clean	After every 250 hours (3)						Shop manual

(1) Service more frequently when used in dusty areas.

(2) Change engine oil every 25 hours when used under heavy load or in high ambient temperatures.

(3) These items should be serviced by an authorized Honda servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.

(4) For commercial use, log hours of operation to determine proper maintenance intervals.

Failure to follow this maintenance schedule could result in non-warrantable failures.

REFUELING

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher.

Refuel in a well-ventilated area with the engine stopped. If the engine has been running, allow it to cool first. Never refuel the engine inside a building where gasoline fumes can reach flames or sparks.

You may use regular unleaded gasoline containing no more than 10% ethanol (E10) or 5% methanol by volume. In addition, methanol must contain cosolvents and corrosion inhibitors. Use of fuels with content of ethanol or methanol greater than shown above may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of the fuel system. Engine damage or performance problems that result from using a fuel with percentages of ethanol or methanol greater than shown above are not covered by warranty.

If your equipment will be used on an infrequent or intermittent basis, please refer to the fuel section of the *STORAGE* chapter (page 7) for additional information regarding fuel deterioration.

⚠ WARNING

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

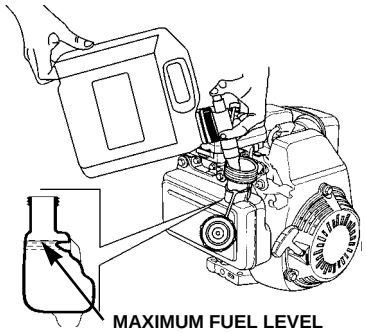
- Stop engine and keep heat, sparks, and flame away.
- Refuel only outdoors.
- Wipe up spills immediately.

NOTICE

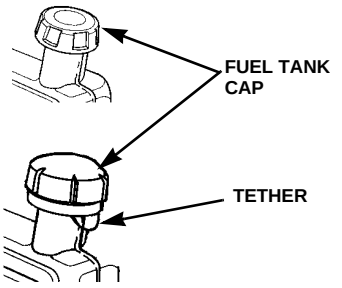
Fuel can damage paint and some types of plastic. Be careful not to spill fuel when filling your fuel tank. Damage caused by spilled fuel is not covered under the DISTRIBUTOR'S LIMITED WARRANTY *(see page 11).*

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

1. Remove the fuel tank cap.
2. Add fuel to the bottom of the fuel level limit in the neck of the fuel tank. Do not overfill. Wipe up spilled fuel before starting the engine.



3. After refueling, tighten the fuel tank cap.
   a. Non-tether type: Tighten the cap securely.
   b. Tether type: Tighten the cap until it clicks.

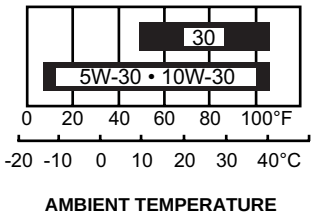


Move at least 10 feet (3 meters) away from the fueling source and site before starting the engine

ENGINE OIL

Recommended Oil

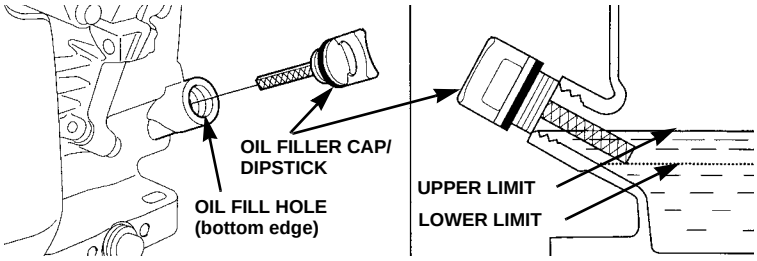
Use 4-stroke motor oil that meets or exceeds the requirements for API service category SJ or later (or equivalent). Always check the API service label on the oil container to be sure it includes the letters SJ or later (or equivalent).



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

Oil Level Check

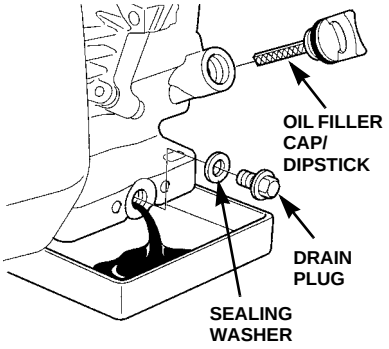
1. Check the oil with the engine stopped and level.
2. Remove the oil filler cap/dipstick and wipe it clean.
3. Insert the oil filler cap/dipstick into the oil filler neck as shown, but do not screw it in, then remove it to check the oil level.
4. If the oil level is near or below the lower limit mark on the dipstick, fill with the recommended oil to the upper limit mark (bottom edge of the oil fill hole). Do not overfill.
5. Reinstall the oil filler cap/dipstick.



Oil Change

Drain the engine oil when the engine is warm. Warm oil drains quickly and completely.

1. Place a suitable container next to the engine to catch the used oil.
2. Remove the oil filler cap/dipstick, the oil drain plug and washer.
3. Allow the used oil to drain completely, then reinstall the drain plug and new washer. Tighten the drain plug securely.



Please dispose of used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation. Do not throw it in the trash or pour it on the ground or down a drain.

4. With the engine in a level position, fill to the upper limit mark (bottom edge of the oil fill hole) on the dipstick with the recommended oil (see page 6) Do not overfill.

NOTICE

Running the engine with a low oil level can cause engine damage. This type of damage is not covered by the DISTRIBUTOR'S LIMITED WARRANTY.

5. Reinstall the oil filler cap/dipstick securely.

AIR CLEANER

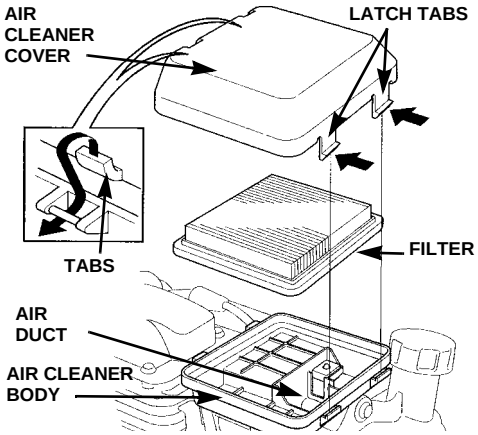
A dirty air cleaner will restrict air flow to the carburetor and cause poor engine performance. Inspect the filter each time the engine is operated. You will need to clean the filter more frequently if you operate the engine in very dusty areas.

NOTICE

Operating the engine without an air filter, or with a damaged filter, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered under the DISTRIBUTOR'S LIMITED WARRANTY *(see page 11).*

Inspection

1. Press the latch tabs on the top of the air cleaner cover, and remove the cover. Check the filter to be sure it is clean and in good condition.
2. Reinstall the filter and air cleaner cover.



Cleaning

1. Tap the filter several times on a hard surface to remove dirt, or blow compressed air [not exceeding [30 psi (207 kPa, 2.1 kg/cm²)] through the filter from the clean side that faces the engine. Never try to brush off dirt. Brushing will force dirt into the fibers.
2. Wipe dirt from the air cleaner body and cover using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.

SPARK PLUG

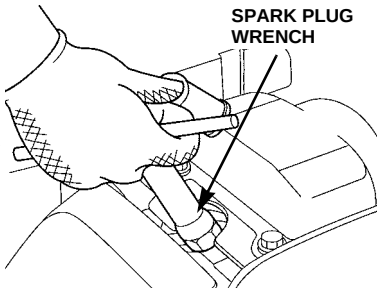
Recommended Spark Plug: NGK BPR6ES

The recommended spark plug is the correct heat range for normal engine operating temperatures.

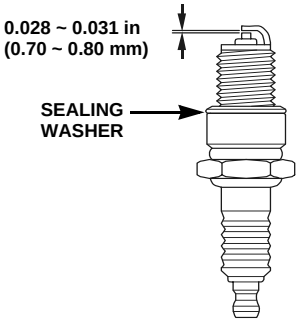
NOTICE

Incorrect spark plugs can cause engine damage.

For good performance, the spark plug must be properly gapped and free of deposits.



1. Disconnect the cap from the spark plug, and remove any dirt from the spark plug area.
2. Use the proper size spark plug wrench to remove the spark plug.
3. Inspect the spark plug. Replace it if damaged, badly fouled, if the sealing washer is in poor condition, or if the electrode is worn.
4. Measure the electrode gap with a suitable gauge. The correct gap is 0.028 ~ 0.031 in (0.70 ~ 0.80 mm). If adjustment is needed, correct the gap by carefully bending the side electrode.



5. Install the spark plug carefully, by hand, to avoid cross-threading.
6. After the spark plug is seated, tighten with the proper size spark plug wrench to compress the washer.
7. When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer.
8. When reinstalling the original spark plug, tighten 1/8 - 1/4 turn after the spark plug seats to compress the washer.

NOTICE

A loose spark plug can become very hot and can damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.

9. Attach the spark plug cap to the spark plug.

SPARK ARRESTER (optional equipment)

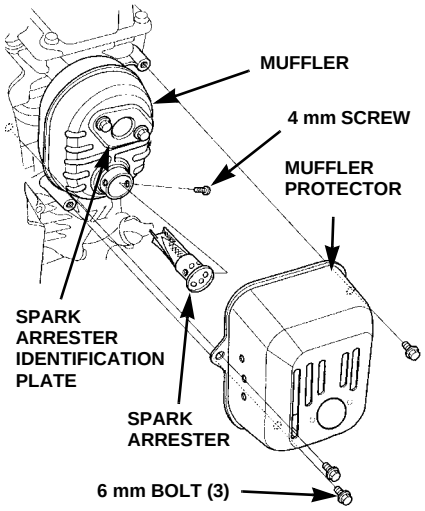
The spark arrester my be standard or an optional part, depending on the engine type. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. A spark arrester is available from authorized Honda servicing dealers.

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 hot. Allow it to cool before servicing the spark arrester.

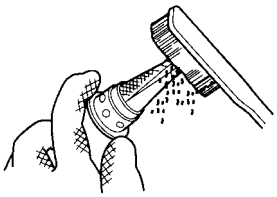
Removal

1. Remove the three 6 mm bolts from the muffler protector, and remove the muffler protector.
2. Remove the 4 mm screw from the spark arrester, and remove the spark arrester from the muffler.



Cleaning and Inspection

1. Use a brush to remove carbon deposits from the spark arrester screen. Be careful not to damage the screen. Replace the spark arrester if it has breaks or holes.
2. Install the spark arrester in the reverse order of removal.



STORING YOUR ENGINE

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

CLEANING

If the engine has been running, allow it to cool for at least half an hour before cleaning. Clean all exterior surfaces, touch up any damaged paint, and coat other areas that may rust with a light film of oil.

NOTICE

Using a garden hose or pressure washing equipment can force water into the air cleaner or muffler opening. Water in the air cleaner will soak the air filter, and water that passes through the air filter or muffler can enter the cylinder, causing damage.

FUEL

NOTICE

Depending on the region where you operate your equipment, fuel formulations may deteriorate and oxidize rapidly. Fuel deterioration and oxidation can occur in as little as 30 days and may cause damage to the carburetor and/or fuel system. Please check with your servicing dealer for local storage recommendations.

Gasoline will oxidize and deteriorate in storage. Deteriorated gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in your engine 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 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 *the DISTRIBUTOR'S LIMITED WARRANTY* (see page 11*)*.

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

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 the 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.

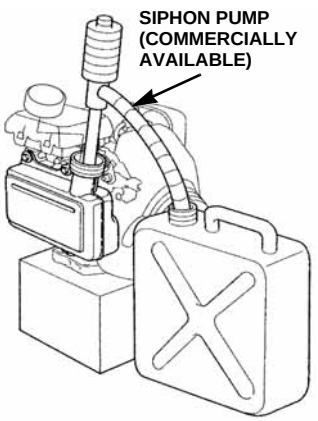
Draining The Fuel Tank And Carburetor

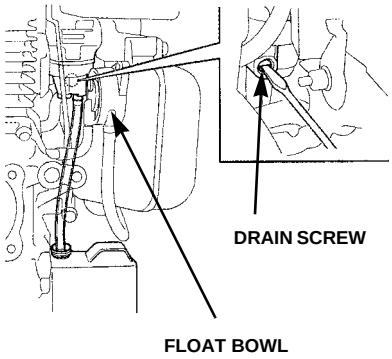
⚠ WARNING

Gasoline is highly flammable and explosive, and you can be burned or seriously injured when handling fuel.

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

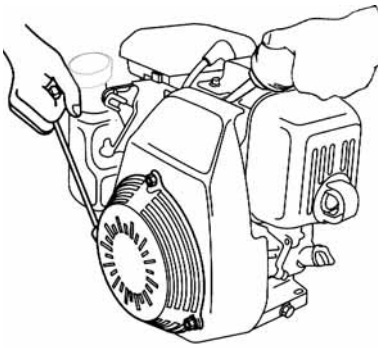
1. Use a siphon pump (commercially available) and siphon the fuel out of the fuel tank into an approved gasoline container.
2. Place an approved gasoline container below the carburetor, and use a funnel to avoid spilling fuel.
3. Loosen the carburetor drain screw. and drain the carburetor into an approved gasoline container. After draining is completed, tighten the carburetor drain screw.





ENGINE OIL

1. Change the engine oil (see page 6).
2. Remove the spark plug (see page 6).
3. Pour 1 - 2 teaspoons (5 - 10 cc) of clean engine oil into the cylinder.
4. Pull the recoil starter several times to distribute the oil.
5. Reinstall the spark plug.



STORAGE PRECAUTIONS

If your engine 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.

Keep the engine level in storage. Tilting can cause fuel or oil leakage.

With the engine and exhaust system cool, cover the engine 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 engine, promoting rust and corrosion.

REMOVAL FROM STORAGE

Check your engine as described in the *BEFORE OPERATION CHECKS* section of this manual (see page 2).

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 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 will smoke briefly at startup. This is normal.

TRANSPORTING

Keep the engine level when transporting to reduce the possibility of fuel leakage.

Review the instructions provided with the equipment powered by this engine for any procedures that should be followed for transporting

TAKING CARE OF UNEXPECTED PROBLEMS

ENGINE WILL NOT START

Possible Cause	Correction
Choke open.	Pull the choke to the CLOSED position unless the engine is warm.
Ignition switch OFF.	• Move the throttle lever to the SLOW or FAST position (page 3). • Move the ignition switch lever to the ON position (page 3). • Move the engine stop switch to the ON position (page 4).
Engine oil level low (Oil Alert models).	Fill with the recommended oil to the proper level (page 6).
Out of fuel.	Refuel.
Bad fuel; engine stored without treating or draining gasoline, of refueled with bad gasoline.	Drain the fuel tank and carburetor (page 8). Refuel with fresh gasoline.
Spark plug faulty, fouled, or improperly gapped.	Replace the spark plug (page 6).
Spark plug wet with fuel (flooded engine).	Dry and reinstall spark plug. Start engine with throttle lever in FAST position (choke in OPEN position).
Fuel filter clogged, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to an authorized Honda servicing dealer, or refer to shop manual.

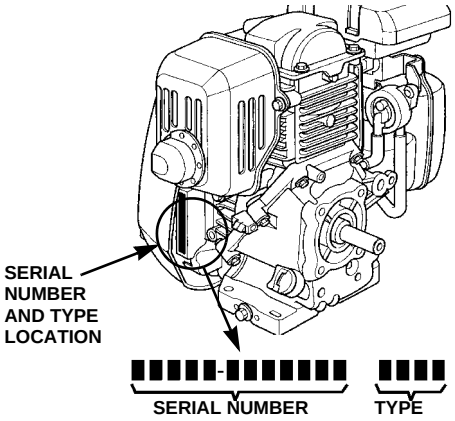
ENGINE LACKS POWER

Possible Cause	Correction
Filter clogged.	Clean or replace the filter (page 6).
Bad fuel; engine stored without treating or draining gasoline, of refueled with bad gasoline.	Drain the fuel tank and carburetor (page 8). Refuel with fresh gasoline.
Fuel filter clogged, carburetor malfunction, ignition malfunction, valves stuck, etc.	Take engine to an authorized Honda servicing dealer, or refer to shop manual.

TECHNICAL INFORMATION

SERIAL NUMBER LOCATION

Record the engine serial number in the space below. You will need this information when ordering parts and when making technical or warranty inquiries.



Engine serial number: __ __ __ __ __ – __ __ __ __ __ __ __

Engine type: ___ ___ ___ ___

Date Purchased: ___ / ___ / ___

Radio Frequency Interference Label (Canada)

This engine complies with Canadian radio frequency interference regulations, ICES-002.

THIS SPARK IGNITION SYSTEM COMPLIES WITH CANADIAN ICES-002.

CE SYSTÈME D'ALLUMAGE PAR ÉTINCELLE EST CONFORME À LA NORME NMB-002 DU CANADA.

CARBURETOR MODIFICATIONS 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. Operation at an altitude that differs from that at which this engine was certified, for extended periods of time, may increase emissions.

High altitude performance can be improved by specific modifications to the carburetor. If you always operate your engine at altitudes above 5,000 feet (1,500 meters), have your servicing dealer perform this carburetor modification. This engine, when operated at high altitude with the carburetor modifications for high altitude use, will meet each emission standard throughout its useful life.

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

NOTICE

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

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 appropriate air/fuel ratios and other emissions control systems to reduce the emissions of carbon monoxide, oxides of nitrogen, and hydrocarbons. Additionally, Honda fuel systems utilize components and control technologies to reduce evaporative emissions.

The U.S., California Clean Air Act, and Environment Canada

EPA, California, and Canadian 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, California, and Canadian emission regulations. We recommend the use of Honda Genuine 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 5. 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.

Air Index

An Air Index Information hang tag/label is applied to engines certified to an emission durability time period in accordance with the requirements of the California Air Resources Board.

The bar graph is intended to provide you, our customer, the ability to compare the emissions performance of available engines. The lower the Air Index, the less pollution.

The durability description is intended to provide you with information relating the engine's emission durability period. The descriptive term indicates the useful life period for the engine's emission control system. See your *EMISSION CONTROL SYSTEM WARRANTY* (page 13) for additional information.

Descriptive Term	Applicable to Emissions Durability Period
Moderate	50 hours (0–80 cc inclusive) 125 hours (greater than 80 cc)
Intermediate	125 hours (0–80 cc inclusive) 250 hours (greater than 80 cc)
Extended	300 hours (0–80 cc inclusive) 500 hours (greater than 80 cc) 1000 hours (225 cc and greater)

SPECIFICATIONS

GC160

Length x Width x Height	13.3 x 14.5 x 13.0 in (337 x 369 x 331 mm)
Dry weight	25 lb (11.5 kg)
Engine type	4-stroke, overhead cam, single cylinder
Displacement [Bore x Stroke]	9.8 cu-in (160 cm^3) [2.5 x 2.0 in (64 x 50 mm)]
Net power * (in accordance with SAE J1349)	4.6 hp (3.4 kW) at 3,600 rpm
Max. Net torque * (in accordance with SAE J1349)	6.9 ft-lb (9.4 N•m) at 2,500 rpm
Oil capacity	20 oz (0.58 ℓ)
Fuel tank capacity	0.48 gal (1.8 ℓ)
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft rotation	Counterclockwise

GC190

Length x Width x Height	13.6 x 14.5 x 13.0 in (345 x 369 x 331 mm)
Dry weight	29 lb (13.2 kg)
Engine type	4-stroke, overhead cam, single cylinder
Displacement [Bore x Stroke]	11.4 cu-in (187 cm^3) [2.7 x 2.0 in (69 x 50 mm)]
Net power * (in accordance with SAE J1349)	5.2 hp (3.9 kW) at 3,600 rpm
Max. Net torque * (in accordance with SAE J1349)	8.3 ft-lb (11.2 N•m) at 2,500 rpm
Oil capacity	20 oz (0.58 ℓ)
Fuel tank capacity	0.48 gal (1.8 ℓ)
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft rotation	Counterclockwise

* The power rating of the engine indicated in this document is the net power output tested on a production engine for the engine model and measured in accordance with SAE J1349 at 3600 rpm (net power) and 2500 rpm (max. net torque). Mass production engines may vary from this value. Actual power output for the engine installed in the final machine will vary depending on numerous factors, including the operating speed off the engine in application, environmental conditions, maintenance, and other variables.

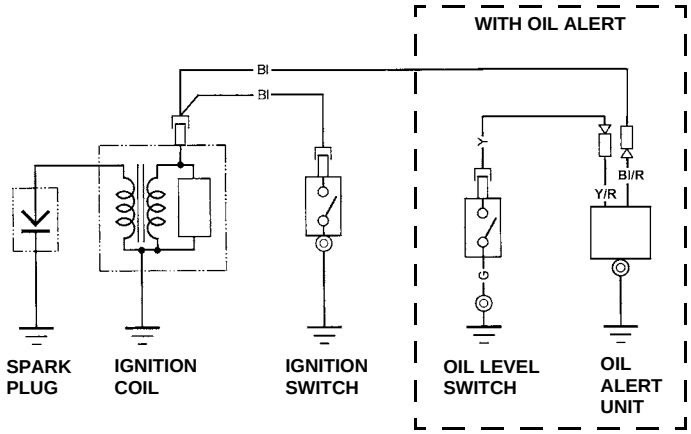
Tuneup Specifications

ITEM	SPECIFICATION	MAINTENANCE
Spark plug gap	0.028 ~ 0.031 in (0.7 ~ 0.8 mm)	Refer to page 6.
Valve clearance (cold)	IN: 0.15 ± 0.04 mm EX: 0.20 ± 0.04 mm	See your authorized Honda dealer
Other specifications	No other adjustments needed.	

Quick Reference Information

Fuel	Type	Unleaded gasoline with a pump octane rating of 86 or higher (page 5).
Engine Oil	Type	SAE 10W-30, API SJ or later, for general use. Refer to page 6.
Carburetor	Idle Speed	1,400 ± 150 rpm
Spark plug	Type	BPR6ES (NGK)
Maintenance	Before each use	Check engine oil level. Refer to page 6. Check air filter. Refer to page 6.
	First 5 hours	Change engine oil. Refer to page 6.
	Subsequent	Refer to the maintenance schedule on page 5.

Wiring Diagrams



Bl	Black	Br	Brown
Y	Yellow	O	Orange
Bu	Blue	Lb	Light blue
G	Green	Lg	Light green
R	Red	P	Pink
W	White	Gr	Gray

ENGINE	SWITCH POSITION
RUN	OPEN
STOP	CLOSED

OIL LEVEL	SWITCH POSITION	ENGINE
NORMAL	OPEN	RUN
LOW LEVEL	CLOSED	STOP

CONSUMER INFORMATION

DISTRIBUTOR/DEALER LOCATOR INFORMATION

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

Visit our website: www.honda-engines.com

Canada:

Call (888) 9Honda9

or visit our website: www.honda.ca

Honda PUBLICATIONS

Shop Manual	This manual covers complete maintenance and overhaul procedures. It is intended to be used by a skilled technician. Available through your Honda dealer or through Helm Inc. at 1 888-292-5395 or visit www.Honda-engines.com > product manuals.
Parts Catalog	This manual provides complete, illustrated parts lists. Available through your Honda dealer.

CUSTOMER SERVICE INFORMATION

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

Servicing 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, General Manager, or Owner 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 Regional Engine Distributor for your area. You can find their name, address, and phone number using the dealer/distributor locator on our website at www.honda-engines.com

If you are still dissatisfied after speaking with the Regional Engine Distributor, you may contact the Honda Power Equipment Customer Relations Office for your area. You can write to:

American Honda Motor Co., Inc.
Power Equipment Division
Customer Relations Office
4900 Marconi Drive
Alpharetta, GA 30005-8847
Or telephone: (770) 497-6400, 8:30 am - 7:00 pm ET

Canada:

Honda Canada, Inc
Customer Relations Office

Visit www.honda.ca for contact information

Telephone:	(888) 9Honda9	Toll free
Facsimile:	(877) 939-0909	Toll free

When you write or call, please provide this information:

- Equipment manufacturer’s name and model number that the engine is mounted on
- Engine model, serial number, and type (see page 9)
- Name of dealer who sold the engine to you
- Name, address, and contact person of the dealer who services your engine
- Date of purchase
- Your name, address and telephone number
- A detailed description of the problem

DISTRIBUTOR’S LIMITED WARRANTIES

The applicable warranty is the warranty policy in effect in the country where the warranty service is provided.

Distributor’s Limited Warranty
United States, Puerto Rico, or the U.S. Virgin Islands

PRODUCTS COVERED BY THIS WARRANTY:	LENGTH OF WARRANTY: (FROM DATE OF ORIGINAL PURCHASE)	
	PRIVATE/ RESIDENTIAL (1)	COMMERCIAL/RENTAL/ INSTITUTIONAL (2)
GC Series Engines	24 months	3 months

(1) Private Residential: Used in maintaining owner’s primary and/or secondary residence. Any other use, including but not limited to informal “for hire” use, is considered commercial/rental/institutional.

(2) Honda GC general purpose engines are not covered by this warranty when installed on concession type vehicles.

To Qualify for this Warranty:

The Honda general purpose engine must be purchased from a Honda general purpose engine dealer or distributor authorized to sell that product in the United States, Puerto Rico, or the U.S. Virgin Islands. This limited warranty applies to first retail purchaser and each subsequent owner during the applicable warranty time period.

What American Honda Will Repair or Replace Under Warranty:

American Honda will repair or replace, at its option, any part that is proven to be defective in material or workmanship under normal use during the applicable warranty time period. Warranty repairs and replacements will be made without charge for parts or labor. Anything replaced under warranty becomes the property of American Honda Motor Company, Inc. All parts replaced under warranty will be considered as part of the original product and any warranty on those parts will expire coincident with the original product warranty.

To Obtain Warranty Service:

You must take your Honda general purpose engine, or the equipment in which it is installed, together with proof of original retail purchase date, at your expense, to a Honda engine dealer or distributor authorized to sell that product in the United States, Puerto Rico, or the U.S. Virgin Islands, during their normal business hours. Many Honda engine dealers and distributors are listed in the yellow pages of the telephone directory under gasoline engines, lawn & garden equipment & supplies, etc.

If you are unable to obtain warranty service, or are dissatisfied with the warranty service you receive, take the following steps: First contact the owner of the dealership or distributor involved. Normally this should resolve the problem. However, if you should require further assistance, write or call the Power Equipment Customer Relations Department of American Honda Motor Co., Inc. listed in the adjacent column.

Exclusions:

This warranty does not extend to parts affected or damaged by the product in which the engine is installed, or by collision, misuse, neglect, parts worn beyond service limits due to normal wear/normal service life, parts affected or damaged by the conversion to or use of fuel other than the fuel(s) which the engine is originally manufactured to use, poor operation related to fuel contamination or fuel quality, parts damaged by fuel contamination, the incorporation of, or use of, unsuitable attachments or parts, the unauthorized alteration of any part or any causes other than defects in material or workmanship of the engine. Use of the Honda general purpose engine for racing or competition will void this warranty. Any engine that is part of a product that has ever been declared a total loss or sold for salvage by a financial institution or insurer.

Disclaimer of Consequential Damage and Limitation of Implied Warranties:

American Honda disclaims any responsibility for loss of time or use of the engine, or the equipment in which the engine is installed, transportation, commercial loss, or any other incidental or consequential damage. Any implied warranties are limited to the duration of this written limited warranty. Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions and limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

International Warranty

See last pages.

Distributor’s Warranty Canada

Honda Canada Inc., for and on behalf of Honda Motor Co. Ltd., Tokyo, Japan, gives the following written warranty on each new General Purpose Engine manufactured by Honda Motor Co. Ltd., Japan, distributed in Canada by Honda Canada Inc. and sold as part of the original equipment of machinery or equipment when such machinery or equipment is manufactured in Canada. Whenever used herein, the word “Honda” refers to Honda Canada Inc. and/or Honda Motor Co. Ltd. as appropriate from the context.

Honda warrants that each new Honda General Purpose Engine will be free, under normal use and maintenance, from any defects in material or workmanship for the relevant warranty period set forth below. If any defects should be found in a Honda General Purpose Engine within the relevant warranty period, necessary repairs and replacements with a new part or the Honda equivalent shall be made at no cost to the consumer for parts and labour (except for labour charges due to the presence of an attachment), when Honda acknowledges that such defects are attributable to faulty material or workmanship at the time of manufacture.

Warranty period

Warranty coverage commences from the original date of sale or when the unit is first put into use as a demonstrator.

MODEL	NON-COMMERCIAL	COMMERCIAL	RENTAL	CONCESSION
GC	24 months	3 months	3 months	NONE

NOTE: Concession use refers to go karts etc.

This Warranty covers:

a) Any Honda General Purpose Engine purchased from a Honda general purpose engine dealer or distributor authorized to sell that product in Canada.

b) Any factory installed part (except normal maintenance parts referred to in “*This warranty does not cover*”); and

c) Any General Purpose Engine on which required maintenance services have been performed as prescribed in the Owner's Manual.

This warranty does not cover:

a) Any repairs required as a result of collision, accident, striking any object, racing, misuse, or lack of required maintenance.

b) Any repairs required as a result of any attachments, parts, or devices installed by or repairs done by a party other than the Original Equipment Manufacturer or an authorized Honda Power Products dealer.

c) Any Honda General Purpose Engine modified, altered, disassembled or remodeled.

d) Normal maintenance services, including tightening of nuts, bolts and fittings and engine tune-up and the replacement of parts made in connection with normal maintenance services including filters, spark plugs and wires, fuses, belts, lubricants, and other expendables susceptible to natural wear.

The owner’s obligation

In order to maintain the validity of this DISTRIBUTOR'S WARRANTY, the required maintenance services as set forth in the Owner's Manual must be performed at the proper intervals and detailed receipts and records retained as proof.

To obtain warranty service

You must take your Honda General Purpose Engine, at your expense, during normal service hours, to the authorized Honda Power Products dealer or the dealer designated by the manufacturer of the machinery or equipment powered by the Honda engine. If you are unable to obtain or are dissatisfied with the warranty service you receive, first contact the owner of the dealership involved; this should resolve the problem. If you require further assistance, contact Honda Canada Inc., noted on page 11.

Replacement parts warranty

New Honda Genuine replacement parts sold to a consumer or installed by an authorized Honda power equipment dealer which are not covered by the DISTRIBUTOR'S WARRANTY are warranted for a period of one year from date of purchase for normal use, or 3 months for rental or concession use provided, however, that this Replacement Parts Warranty does not apply to any replacement parts modified, used with, or installed on a power product for which the replacement parts were not intended. Electrical components that are not installed by the dealer (sold over the counter) are not covered by warranty.

Entire written warranty

This DISTRIBUTOR'S WARRANTY is the only and the entire written warranty given by Honda for Honda General Purpose Engines. No dealer or his agent or employee is authorized to extend or enlarge on these warranties on behalf of Honda by any written or verbal statement or advertisement.

Disclaimer

To the extent the law permits, Honda disclaims any responsibility for loss of time or use of the General Purpose Engine, transportation or towing costs or any other indirect, incidental or consequential damage, inconvenience or commercial loss.

Notice to consumer

The provisions contained in these written warranties are not intended to limit, modify, take away from, disclaim or exclude any warranties set forth in or the operation of The Consumer Products Warranties Act, 1977 (Saskatchewan), The Consumer Product Warranty and Liability Act (New Brunswick), The Consumer Protection Act (Quebec), or any other similar provincial or federal legislation.

Privacy statement

The owner information submitted may be used by Honda and its related companies, their dealers and service providers to communicate marketing, product and service information to you. If you prefer not to receive marketing information, please contact us at 1-888-946-6329.

EMISSION CONTROL SYSTEM WARRANTY

Your new Honda Power Equipment engine complies with the U.S. EPA, Environment Canada, and State of California emission regulations (models certified for sale in California only). American Honda Motor Co., Inc. provides the emission warranty coverage for engines in the United States, and its territories. Honda Canada Inc. provides the emission warranty for engines in the 13 provinces and territories of Canada. In the remainder of this Emission Control System Warranty, American Honda Motor Company Inc. and Honda Canada Inc. will be referred to as Honda.

YOUR WARRANTY RIGHTS AND OBLIGATIONS:

CALIFORNIA

The California Air Resources Board and Honda are pleased to explain the emission control system warranty on your Honda Power Equipment engine. In California, new spark-ignited small off-road equipment engines must be designed, built, and equipped to meet the State's stringent anti-smog standards.

OTHER STATES, U.S. TERRITORIES, AND CANADA

In other areas of the United States and in Canada, your engine must be designed, built, and equipped to meet the U.S. EPA and Environment Canada emission standards for spark-ignited engines at or below 19 kilowatts. Specific Honda products that do not meet the California emissions regulations can be identified by a “Not for sale in California” decal.

ALL OF THE UNITED STATES AND CANADA

Honda must warrant the emission control system on your power equipment engine for the period of time listed below, provided there has been no abuse, neglect, or improper maintenance of your power equipment engine. Where a warrantable condition exists, Honda will repair your power equipment engine at no cost to you including diagnosis, parts, and labor.

Your emission control system may include such parts as the carburetor or fuel injection system, the ignition system, and catalytic converter. Also included may be hoses, connectors, and other emission-related assemblies.

MANUFACTURER'S WARRANTY COVERAGE:

The 1995 and later power equipment engines are warranted for two years or the length of the Honda Distributor’s Warranty, whichever is longer. If any emission-related part on your engine is defective, the part will be repaired or replaced by Honda.

OWNER'S WARRANTY RESPONSIBILITY:

As the power equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Honda recommends that you retain all receipts covering maintenance on your power equipment engine, but Honda cannot deny warranty coverage solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the power equipment engine owner, you should however be aware Honda may deny you warranty coverage if your power equipment engine or a part has failed due to abuse, neglect, improper maintenance, or unapproved modifications.

You are responsible for presenting your power equipment engine to a Honda Power Equipment dealer as soon as a problem exists. The warranty repairs should be completed in a reasonable amount of time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Honda Office in your region:

American Honda Motor Co., Inc.
Power Equipment Customer Relations
4900 Marconi Drive
Alpharetta, Georgia 30005-8847
Telephone: (770) 497-6400

or

Honda Canada Inc.
Power Equipment Customer Relations
VIsit www.honda.ca for
contact information.
Telephone: (888) 946-6329

WARRANTY COVERAGE:

Honda power equipment engines manufactured after January 1, 1995 and sold in the State of California, U.S. EPA certified engines manufactured on or after September 1, 1996 and sold in all of the United States, and Canadian certified engines manufactured on or after January 1, 2005 are covered by this warranty for a period of two years from the date of delivery to the original retail purchaser or the length of the Honda Distributor’s Warranty, whichever is longer. This warranty is transferable to each subsequent purchaser for the duration of the warranty period.

Warranty repairs will be made without charge for diagnosis, parts, or labor. All defective parts replaced under this warranty become the property of Honda.

A list of warranted parts is in the table below. Normal maintenance items, such as spark plugs and filters, that are on the warranted parts list are warranted up to their required replacement interval only.

Honda will also replace other engine components damaged by a failure of any warranted part during the warranty period.

Only Honda approved replacement parts may be used in the performance of any warranty repairs and must be provided without charge to the owner. The use of replacement parts not equivalent to the original parts may impair the effectiveness of your engine emission control system. If such a replacement part is used in the repair or maintenance of your engine, and an authorized Honda dealer determines it is defective or causes a failure of a warranted part, your claim for repair of your engine may be denied. If the part in question is not related to the reason your engine requires repair, your claim will not be denied.

TO OBTAIN WARRANTY SERVICE:

You must take your Honda Power Equipment engine or the product on which it is installed, along with your sales registration card or other proof of original purchase date, at your expense, to any Honda Power Equipment dealer who is authorized by Honda to sell and service that Honda product during his normal business hours. Claims for repair or adjustment found to be caused solely by defects in material or workmanship will not be denied because the engine was not properly maintained and used.

If you are unable to obtain warranty service, or are dissatisfied with the warranty service you received, contact the owner of the dealership involved. Normally this should resolve your problem. However, if you require further assistance, write or call the Honda Power Equipment Customer Relations Department in your region.

EXCLUSIONS:

Failures other than those resulting from defects in material or workmanship are not covered by this warranty. This warranty does not extend to emission control systems or parts which are affected or damaged by owner abuse, neglect, improper maintenance, misuse, misfueling, improper storage, collision, the incorporation of, or any use of, any add-on or modified parts, unsuitable attachments, or the unauthorized alteration of any part.

This warranty does not cover replacement of expendable maintenance items made in connection with required maintenance services after the item's first scheduled replacement as listed in the maintenance section of the product owner's manual, such as: spark plugs and filters.

DISCLAIMER OF CONSEQUENTIAL DAMAGE AND LIMITATION OF IMPLIED WARRANTIES:

American Honda Motor Co., Inc. and Honda Canada Inc. disclaim any responsibility for incidental or consequential damages such as loss of time or the use of the power equipment, or any commercial loss due to the failure of the equipment; and any implied warranties are limited to the duration of this written warranty. This warranty is applicable only where the California, U.S. EPA, or Environment Canada emission control system warranty regulation is in effect.

EMISSION CONTROL SYSTEM WARRANTY PARTS:

SYSTEMS COVERED BY THIS WARRANTY:	PARTS DESCRIPTION:
Fuel Metering	Carburetor assembly, (includes starting enrichment system), Engine temperature sensor, Engine control module, Fuel regulator, Intake manifold
Evaporative	Fuel tank, Fuel cap, Fuel hoses, Vapor hoses, Carbon canister, Canister mounting brackets, Fuel strainer, Fuel cock, Fuel pump, Fuel hose joint, Canister purge hose joint
Exhaust	Catalyst, Exhaust manifold
Air Induction	Air filter housing, Air filter element*
Ignition	Flywheel magneto, Ignition pulse generator, Crankshaft position sensor, Power coil, Ignition coil assembly, Ignition control module, Spark plug cap, Spark plug*
Crankcase Emission Control	Crankcase breather tube, Oil filler cap
Miscellaneous Parts	Tubing, fittings, seals, gaskets, and clamps associated with these listed systems.

Note: This list applies to parts supplied by Honda and does not cover parts supplied by the equipment manufacturer. Please see the original equipment manufacturer’s emissions warranty for non-Honda parts.

* Covered up to the first required replacement only. See the *MAINTENANCE SCHEDULE* on page 5.

HONDA

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