

# **HONDA**

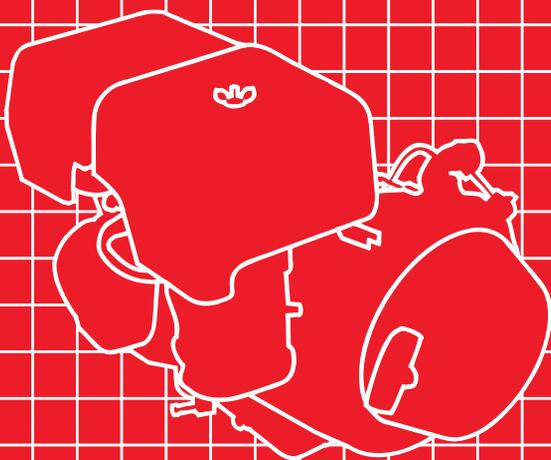
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# **ENGINES**

## **Owner's Manual**

### **GX270 · GX390**

**LPG-Fueled Engine**





## **WARNING:**



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

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

The information and specifications included in this publication were in effect at the time of approval for printing. Illustrations are based on the GX270 LPG. Honda Motor Co., Ltd. reserves the right, however, to discontinue or change specifications or design at any time without notice and without incurring any obligation whatever. No part of this publication may be reproduced without written permission.

# INTRODUCTION

Congratulations on your selection of a Honda engine. We are certain you will be pleased with your purchase of one of the finest engines on the market.

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

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

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

When your engine needs scheduled maintenance, keep in mind that your Honda servicing dealer is specially trained in servicing Honda engines. Your Honda servicing dealer is dedicated to your satisfaction and will be pleased to answer your questions and concerns.

Best Wishes,  
Honda Motor Co., Ltd.

# INTRODUCTION

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## A FEW WORDS ABOUT SAFETY

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

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

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

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

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

These signal words mean:



**DANGER**

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



**WARNING**

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



**CAUTION**

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

- **Safety Headings** —such as *IMPORTANT SAFETY INFORMATION*.
- **Safety Section** —such as *ENGINE SAFETY*.
- **Instructions** —how to use this engine correctly and safely.

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

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# ENGINE SAFETY

## IMPORTANT SAFETY INFORMATION

Most accidents with engines can be prevented if you follow all instructions in this manual and on the engine. Some of the most common hazards are discussed below, along with the best way to protect yourself and others.

### Owner Responsibilities

- Honda engines are designed to give safe and dependable service if operated according to instructions. Read and understand this owner's manual before operating the engine. Failure to do so could result in personal injury or equipment damage.
- Know how to stop the engine quickly, and understand the operation of all controls. Never permit anyone to operate the engine without proper instructions.
- Do not allow children to operate the engine. Keep children and pets away from the area of operation.

### Refuel With Care

LPG is extremely flammable, and LPG can explode. Refuel outdoors, in a well-ventilated area, with the engine stopped. Never smoke near LPG, and keep other flames and sparks away.

### Hot Exhaust

- The muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot. Let the engine cool before storing it indoors.
- To prevent fire hazards and to provide adequate ventilation for stationary equipment applications, keep the engine at least 3 feet (1 meter) away from building walls and other equipment during operation. Do not place flammable objects close to the engine.

# ENGINE SAFETY

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## **Carbon Monoxide Hazard**

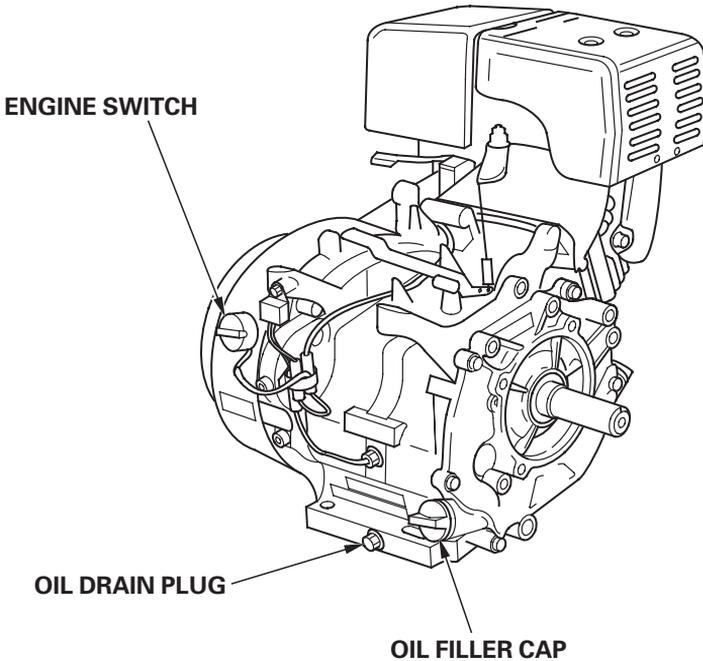
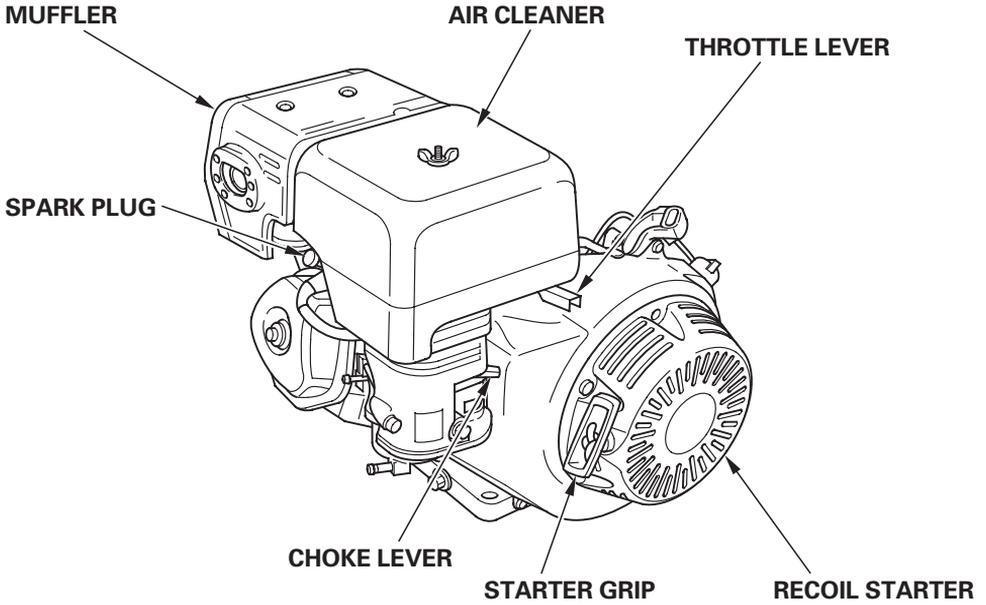
Exhaust gas contains poisonous carbon monoxide. Avoid inhalation of exhaust gas. Never run the engine in a closed garage or confined area.

## **Other Equipment**

Review the instructions provided with the equipment powered by this engine for any additional safety precautions that should be observed in conjunction with engine startup, shutdown, or operation, or protective apparel that may be needed to operate the equipment.

# CONTROLS & FEATURES

## COMPONENT & CONTROL LOCATIONS



# CONTROLS & FEATURES

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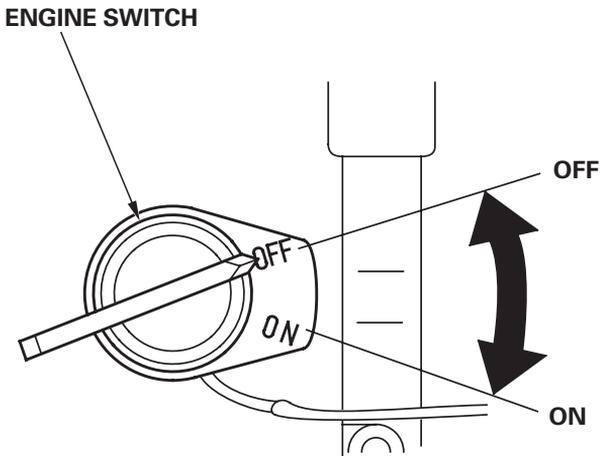
## CONTROLS

### Engine Switch

The engine switch enables and disables the ignition system.

The engine switch must be in the ON position for the engine to run.

Turning the engine switch to the OFF position stops the engine.



# CONTROLS & FEATURES

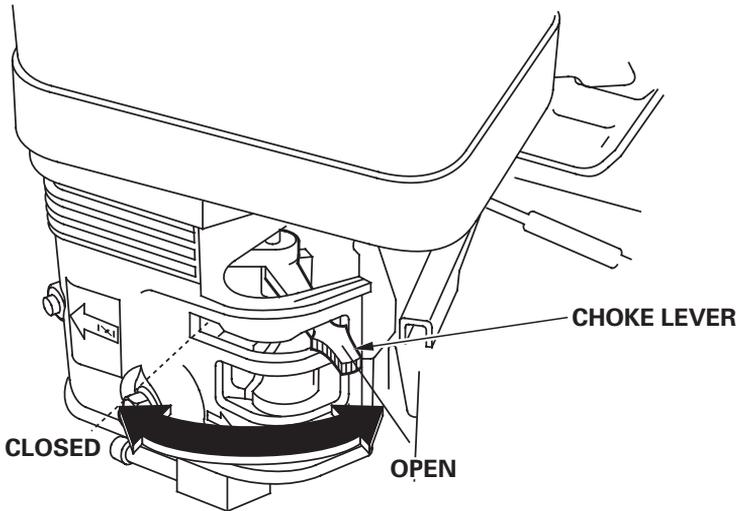
## Choke Lever

The choke lever opens and closes the choke valve in the carburetor.

The CLOSED position creates a vacuum to help the LPG to flow into the engine during starting.

The OPEN position removes the vacuum after the engine has started and can produce its own vacuum.

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



# CONTROLS & FEATURES

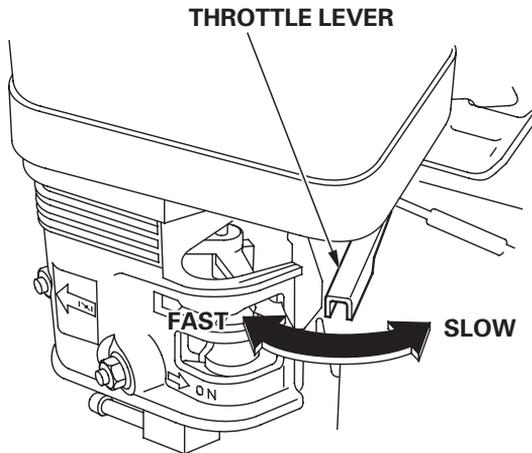
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## Throttle Lever

The throttle lever controls engine speed.

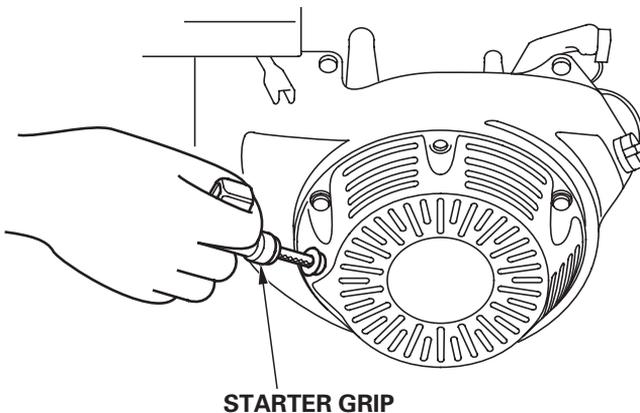
Moving the throttle lever in the directions shown makes the engine run faster or slower.

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



## Recoil Starter Grip

Pulling the starter grip operates the recoil starter to crank the engine.



## FEATURES

### **Oil Alert® System (applicable engine types)**

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 ignition switch will remain in the ON position).

If the engine stops and will not restart, check the engine oil level (page 24) before troubleshooting in other areas.

# BEFORE OPERATION

## 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 failing to correct a problem before operation, could cause a malfunction in which you could be seriously injured.

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 engine switch is in the OFF position.

### **Check the General Condition of the Engine**

- Look and smell around and underneath the engine for signs of oil or LPG leaks.
- Remove any excessive dirt or debris, especially around the muffler and recoil starter.
- Look for signs of damage.
- Check that all shields and covers are in place, and all nuts, bolts, and screws are tightened.

## Check the Engine

- Check the engine oil level (see page 24). Running the engine with a low oil level can cause engine damage.

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.

- Check the air filter (see page 27 ). A dirty air filter will restrict air flow to the carburetor, reducing engine performance.

## 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 *IMPORTANT SAFETY INFORMATION* on page 5 and the chapter titled *BEFORE OPERATION*.

### **WARNING**

Carbon monoxide gas is toxic.  
Breathing it can cause  
unconsciousness and even kill you.

Avoid any areas or actions that  
expose you to carbon monoxide.

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

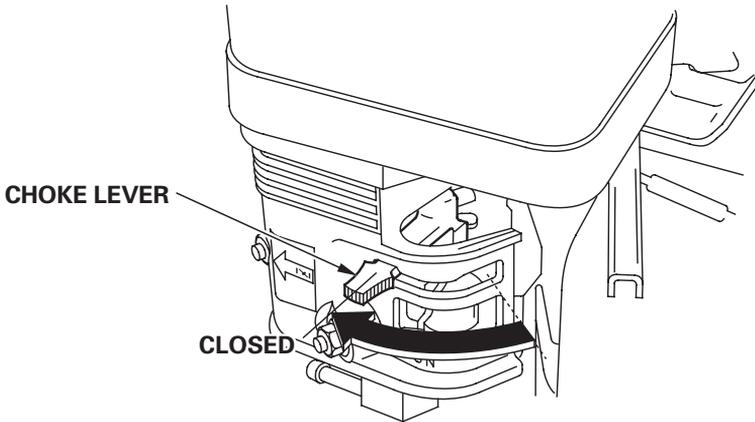
## STARTING THE ENGINE

1. Turn the fuel valve to the OPEN or ON position at the source before attempting to start the engine.

2. Move the choke lever to the CLOSED position.

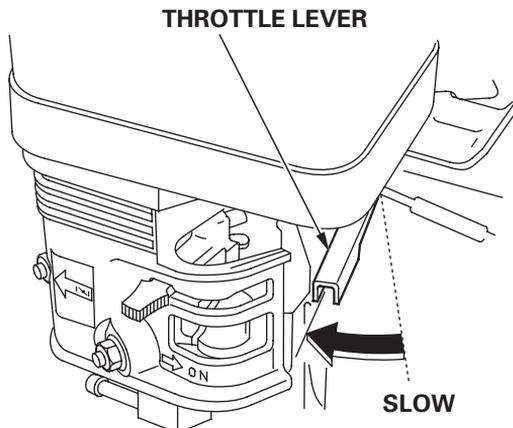
Always use the choke when starting the engine.

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



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

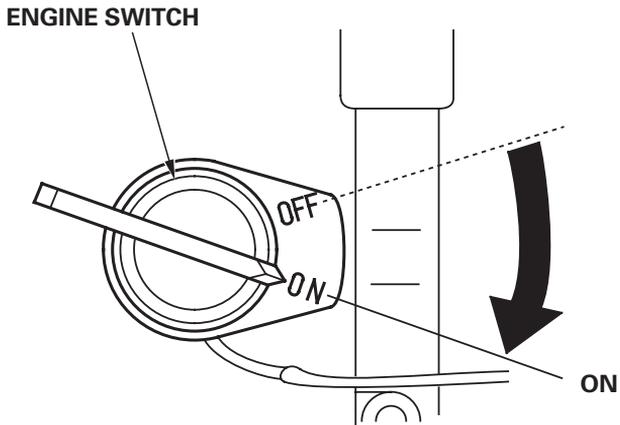
Some engine applications use a remotely-mounted throttle control rather than the engine-mounted throttle lever shown here.



# OPERATION

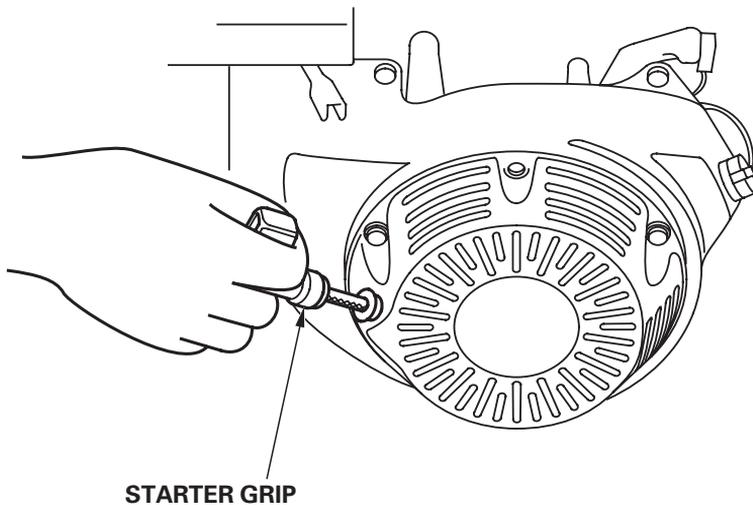
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4. Turn the engine switch to the ON position.

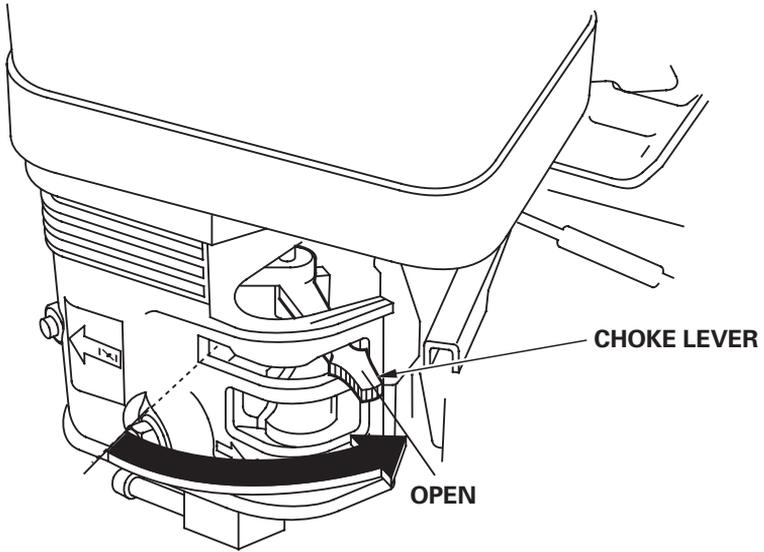


5. Operate the starter.

Pull the starter grip lightly until you feel resistance, then pull briskly. Return the starter grip gently.



6. Move the choke lever to the OPEN position after the engine has started.



# OPERATION

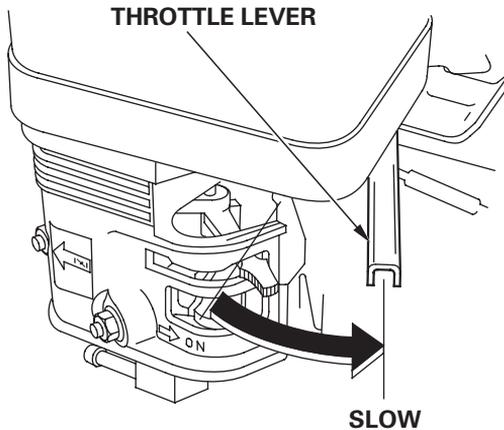
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## STOPPING THE ENGINE

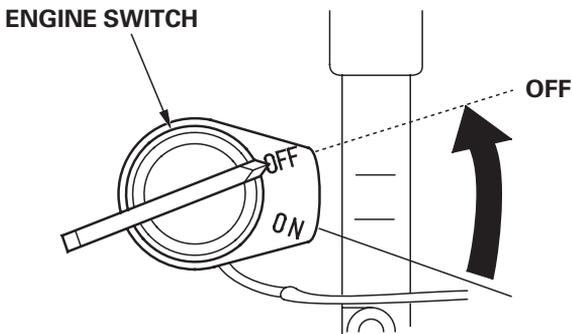
To stop the engine in an emergency, simply turn the engine switch to the OFF position. Under normal conditions, use the following procedure.

1. Move the throttle lever to the SLOW position.

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



2. Turn the engine switch to the OFF position.



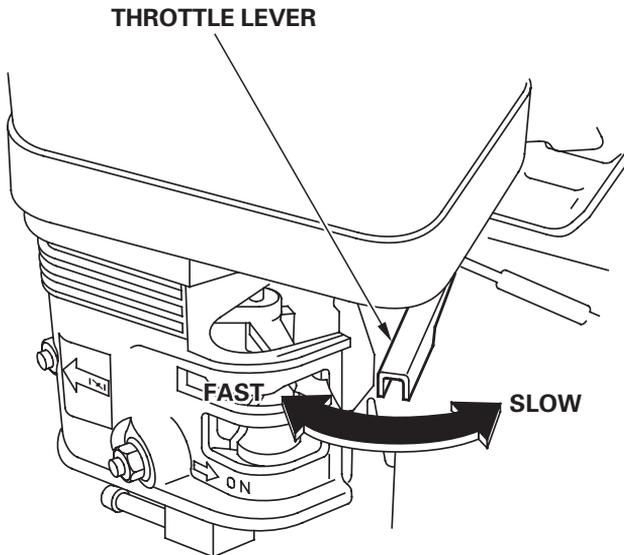
3. Turn the fuel valve to the CLOSED or OFF position at the source.

## SETTING ENGINE SPEED

Position the throttle lever for the desired engine speed.

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

For engine speed recommendations, refer to the instructions provided with the equipment powered by this engine.



# SERVICING YOUR ENGINE

## THE IMPORTANCE OF MAINTENANCE

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

### **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 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 unusual 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 emission control devices and systems may be done 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 LPG. Keep cigarettes, sparks and flames away from all fuel-related parts.

Remember that your 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, genuine Honda parts or their equivalents for repair and replacement.

# SERVICING YOUR ENGINE

## MAINTENANCE SCHEDULE

REGULAR SERVICE PERIOD (3) ITEM Perform at every indicated month or operating hour interval, whichever comes first.		Each use	First month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 6 months or 100 Hrs.	Every year or 200 Hrs.	Refer to page
•	Engine oil (LPG model)	Check level	○				24
		Change		○	○		25
	Reduction gear oil (Equipped model)	Check level	○				—
		Change		○		○	—
•	Air filter	Check	○				27
		Clean			○ (1)		28
		Replace				○ (* )	
•	Sediment cup	Clean			○		—
•	Spark plug	Check-adjust			○		30
		Replace				○	
	Spark arrester (optional parts)	Clean			○		32
•	Idle speed	Check-adjust				○ (2)	31
•	Valve clearance	Check-adjust				○ (2)	—
•	Combustion chamber	Clean	After every 250 Hrs (2)				—
•	Fuel tube (LPG model)	Check	○				—
•	Fuel tube	Check	Every 2 years (Replace if necessary) (2)				—

• Emission-related items.

(\*) Replace the paper element type only.

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

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

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

## FUEL RECOMMENDATIONS

**Use LPG with a propane content of 95% or higher.**

This engine is certified to operate on LPG only.

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 LPG. If spark knock or pinging persists, see an authorized Honda servicing dealer.

<b>NOTICE</b>
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*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.*

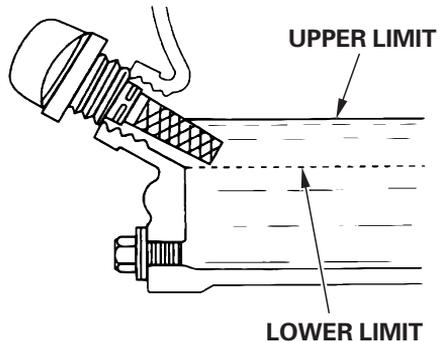
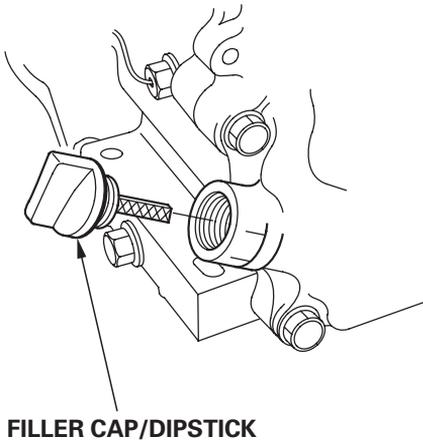
# SERVICING YOUR ENGINE

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## ENGINE OIL LEVEL CHECK

Check the engine oil level with the engine stopped and in a level position.

1. Remove the filler cap/dipstick and wipe it clean.
2. Insert and remove the dipstick without screwing it into the filler neck. Check the oil level shown on the dipstick.
3. If the oil level is low, fill to the edge of the oil filler hole with the recommended oil (see page 26).
4. Screw in the filler cap/dipstick securely.



### NOTICE

*Running the engine with a low oil level can cause engine damage.*

The Oil Alert® system (applicable engine types) will automatically stop the engine before the oil level falls below safe limit. However, to avoid the inconvenience of an unexpected shutdown, always check the engine oil level before startup.

# SERVICING YOUR ENGINE

## ENGINE OIL CHANGE

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

1. Place a suitable container below the engine to catch the used oil, then remove the filler cap/dipstick and the drain plug.
2. Allow the used oil to drain completely, then reinstall the drain plug, and tighten it 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, pour it on the ground, or down a drain.

3. With the engine in a level position, fill to the outer edge of the oil filler hole with the recommended oil (see page 26).

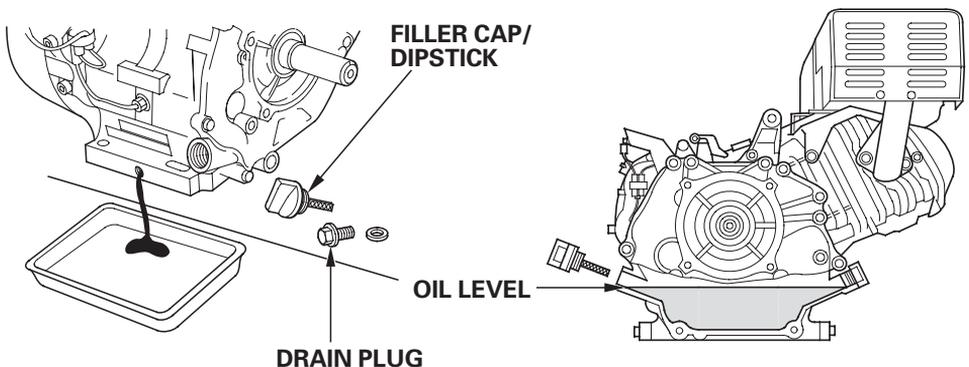
Engine oil capacity: 1.16 US qt (1.10 ℓ)

### NOTICE

*Running the engine with a low oil level can cause engine damage.*

The Oil Alert® system (applicable engine types) will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, fill to the upper limit, and check the oil level regularly.

4. Screw in the filler cap/dipstick securely.



# SERVICING YOUR ENGINE

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## ENGINE OIL RECOMMENDATIONS

Oil is a major factor affecting performance and service life. Use 4-stroke automotive detergent oil that is designed for engines operating on LPG.

SAE 30 (API service classification SJ) is recommended for general use. The following are examples of oils that meet Honda's requirements for LPG-fueled engines:

- Pennzoil HD 30
- Valvoline HPO 30
- Castrol HD 30

For operation in temperatures below 32°F (0°C), 5W-30 synthetic oil may be used for easier starting. Do not use 5W-30 synthetic oil when the air temperature is above 32°F (0°C).

### NOTICE

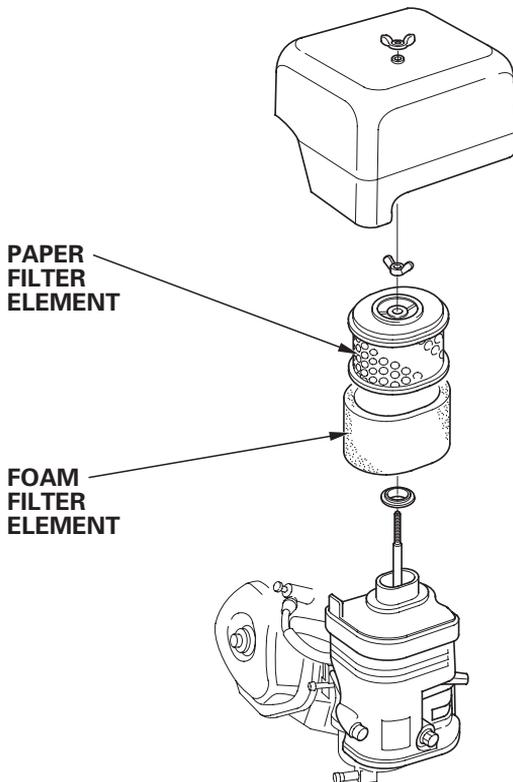
*Do not use multigrade mineral-based oils. The use of multigrade mineral-based oils may result in premature engine wear and/or damage.*

# SERVICING YOUR ENGINE

## AIR FILTER INSPECTION

Remove the air cleaner cover and inspect the filter elements. Clean or replace dirty filter elements. Always replace damaged filter elements.

Refer to page 28 for instructions that apply to the air cleaner and filter service.



# SERVICING YOUR ENGINE

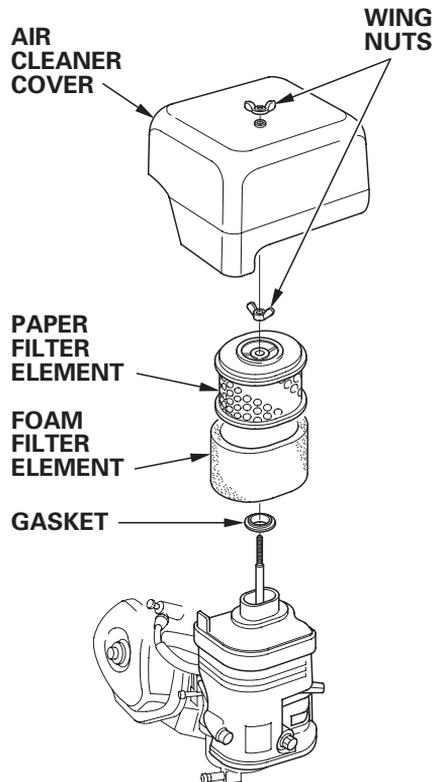
## AIR CLEANER SERVICE

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

### NOTICE

*Operating the engine without an air filter, or with a damaged air filter, will allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by the Distributor's Limited Warranty.*

1. Remove the wing nut from the air cleaner cover, and remove the cover.
2. Remove the wing nut from the air filter, and remove the filter.
3. Remove the foam filter from the paper filter.
4. Inspect both air filter elements, and replace them if they are damaged. Always replace the paper air filter element at the scheduled interval (see page 22).
5. Clean the air filter elements if they are to be reused.



## SERVICING YOUR ENGINE

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Paper air filter element: Tap the filter element several times on a hard surface to remove dirt, or blow compressed air [not exceeding 30 psi (207 kPa, 2.1 kgf/cm<sup>2</sup>)] through the filter element from the inside. Never try to brush off dirt; brushing will force dirt into the fibers.

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

6. Wipe dirt from the inside of the air cleaner base and cover, using a moist rag. Be careful to prevent dirt from entering the air duct that leads to the carburetor.
7. Place the foam air filter element over the paper element, and reinstall the assembled air filter. Be sure the gasket is in place beneath the air filter. Tighten the air filter wing nut securely.
8. Install the air cleaner cover, and tighten the cover wing nut securely.

# SERVICING YOUR ENGINE

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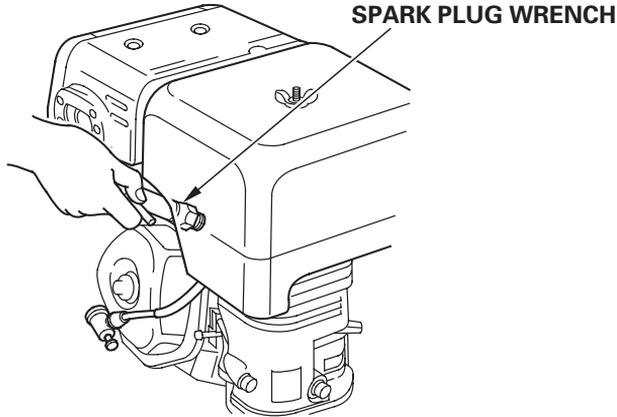
## SPARK PLUG SERVICE

Recommended spark plugs: BPR6ES (NGK)  
W20EPR-U (DENSO)

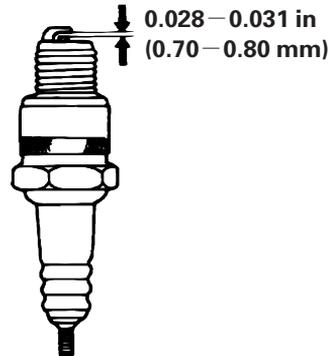
### NOTICE

*An incorrect spark plug can cause engine damage.*

1. Disconnect the spark plug cap, and remove any dirt from around the spark plug area.
2. Remove the spark plug with a 13/16-inch spark plug wrench.



3. Inspect the spark plug. Replace it if the electrodes are worn, or if the insulator is cracked or chipped. Clean the spark plug with a wire brush if you are going to reuse it.
4. Measure the spark plug electrode gap with a suitable gauge. The gap should be 0.028 – 0.031 in (0.70 – 0.80 mm). Correct the gap, if necessary, by carefully bending the side electrode.
5. Install the spark plug carefully, by hand, to avoid cross-threading.



# SERVICING YOUR ENGINE

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

If reinstalling the used spark plug, tighten 1/8–1/4 turn after the spark plug seats.

If installing a new spark plug, tighten 1/2 turn after the spark plug seats.

## NOTICE

*A loose spark plug can overheat and damage the engine. Overtightening the spark plug can damage the threads in the cylinder head.*

7. Attach the spark plug cap.

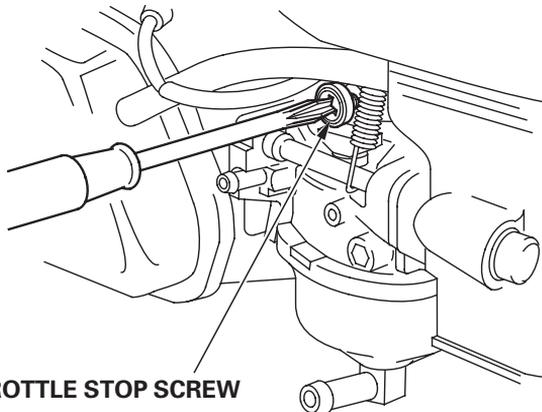
## IDLE SPEED ADJUSTMENT

1. Start the engine outdoors, and allow it to warm up to operating temperature.

2. Move the throttle lever to its slowest position.

3. Turn the throttle stop screw to obtain the standard idle speed.

Standard idle speed: 1,400  $\begin{smallmatrix} +200 \\ -150 \end{smallmatrix}$  rpm



# SERVICING YOUR ENGINE

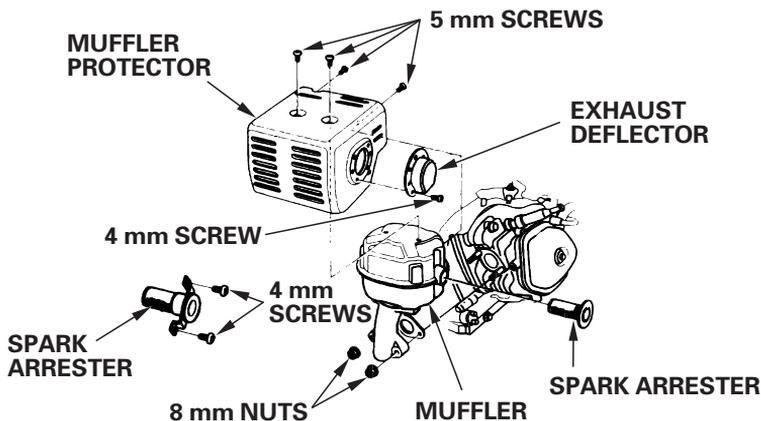
## SPARK ARRESTER SERVICE (optional equipment)

Your engine is not factory-equipped with a spark arrester. In some areas, it is illegal to operate an engine without a spark arrester. Check local laws and regulations. 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 and remove the muffler from the cylinder.
2. Remove the three 4 mm screws from the exhaust deflector, and remove the deflector.
3. Remove the four 5 mm screws from the muffler protector and remove the muffler protector.
4. Remove the 4 mm screws from the spark arrester, and remove the spark arrester from the muffler.



5. Use a brush to remove carbon deposits from the spark arrester screen. Be careful to avoid damaging the screen. The spark arrester must be free of breaks and holes. Replace the spark arrester if it is damaged.



6. Install the spark arrester, muffler protector, exhaust deflector, and muffler in the reverse order of disassembly.

# HELPFUL TIPS & SUGGESTIONS

## STORING YOUR ENGINE

### Storage Preparation

Proper storage preparation is essential for keeping your engine troublefree 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.*
- *Water contacting a hot engine can cause damage. If the engine has been running, allow it to cool for at least half an hour before washing.*

# HELPFUL TIPS & SUGGESTIONS

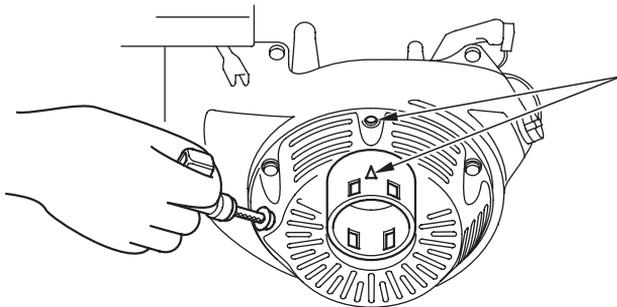
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## ***Engine Oil***

1. Change the engine oil (see page 25).

## ***Engine Cylinder***

1. Remove the spark plug (see page 30).
2. Pour a tablespoon (5– 10 cc) of clean engine oil into the cylinder.
3. Pull the starter rope several times to distribute the oil in the cylinder.
4. Reinstall the spark plug.
5. Pull the starter rope slowly until resistance is felt and the notch on the starter pulley aligns with the hole at the top of the recoil starter cover. This will close the valves so moisture cannot enter the engine cylinder. Return the starter rope gently.



**Align notch on pulley  
with hole at top of cover.**

## **Storage Precautions**

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.

Leave the fuel valve lever in the OFF position at the source to reduce the possibility of fuel leakage.

## HELPFUL TIPS & SUGGESTIONS

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Position the equipment so the engine is level. Tilting can cause 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* chapter of this manual.

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

# HELPFUL TIPS & SUGGESTIONS

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## TRANSPORTING

If the engine has been running, allow it to cool for at least 15 minutes before loading the engine-powered equipment on the transport vehicle. A hot engine and exhaust system can burn you and can ignite some materials.

Keep the engine level when transporting to reduce the possibility of fuel leakage. Turn the fuel valve OFF at the source.

# TAKING CARE OF UNEXPECTED PROBLEMS

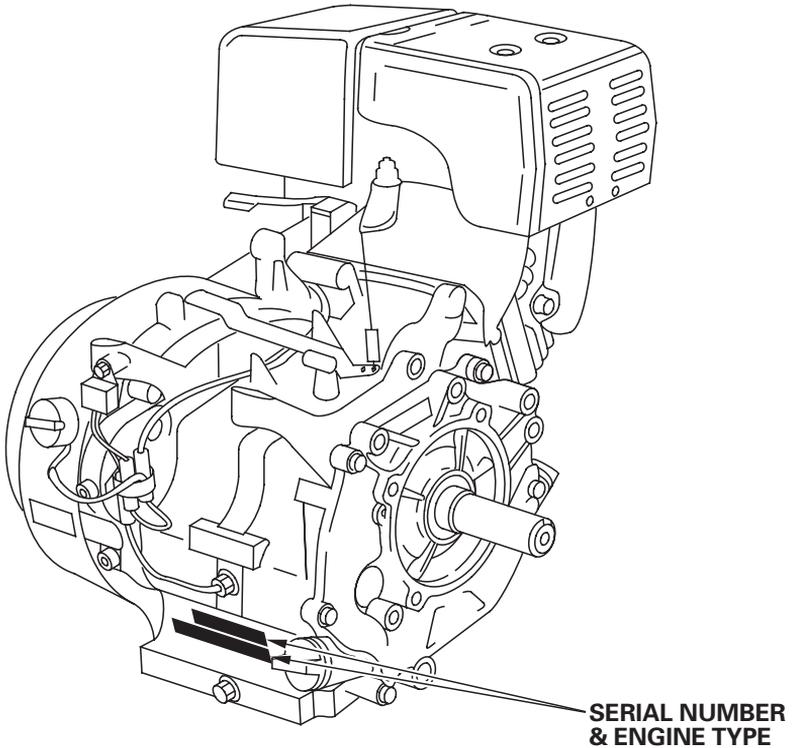
<b>ENGINE WILL NOT START</b>	<b>Possible Cause</b>	<b>Correction</b>
1. Check control positions.	Fuel valve OFF.	OPEN valve.
	Choke OPEN.	Move lever to CLOSED.
	Engine switch OFF.	Turn engine switch to ON.
2. Check fuel.	Out of fuel.	Refuel.
3. Remove and inspect spark plug.	Spark plug faulty, fouled, or improperly gapped.	Clean, gap, or replace spark plug (p. 30).
	Spark plug wet with fuel (flooded engine).	Dry and reinstall spark plug. Start engine with throttle lever in FAST position.
4. Take engine to an authorized Honda servicing dealer, or refer to shop manual.	Carburetor malfunction, ignition malfunction, valves stuck, etc.	Replace or repair faulty components as necessary.

<b>ENGINE LACKS POWER</b>	<b>Possible Cause</b>	<b>Correction</b>
1. Check air filter.	Filter element(s) clogged.	Clean or replace filter element(s) (p. 28).
2. Take engine to an authorized Honda servicing dealer, or refer to shop manual.	Carburetor malfunction, ignition malfunction, valves stuck, etc.	Replace or repair faulty components as necessary.

# TECHNICAL & CONSUMER INFORMATION

## TECHNICAL INFORMATION

### Serial Number Location



Record the engine serial number in the space below. You will need this serial number when ordering parts, and when making technical or warranty inquiries (see page 47 ).

Engine serial number: \_\_\_\_\_

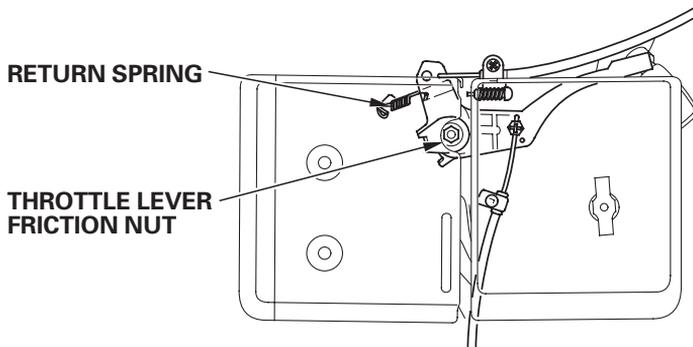
# TECHNICAL & CONSUMER INFORMATION

## Remote Control Linkage

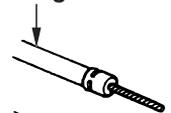
The throttle and choke control levers are provided with holes for optional cable attachment. The following illustrations show installation examples for a solid wire cable and for a flexible, braided wire cable. If using a flexible, braided wire cable, add a return spring as shown.

It is necessary to loosen the throttle lever friction nut when operating the throttle with a remotely-mounted control.

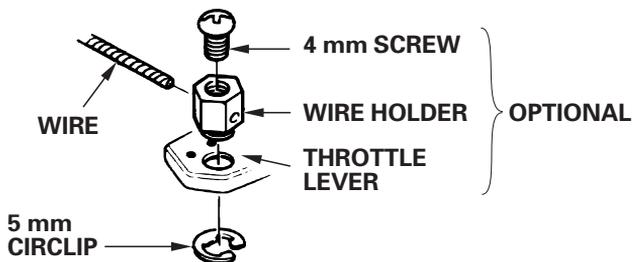
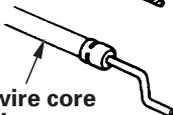
### REMOTE THROTTLE LINKAGE



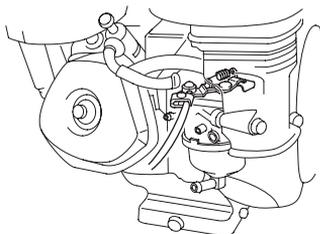
Flexible wire core mounting



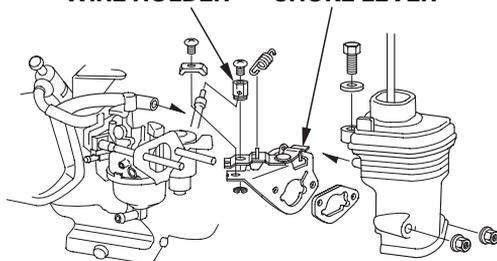
Solid wire core mounting



### REMOTE CHOKE LINKAGE



### WIRE HOLDER CHOKE LEVER



# TECHNICAL & CONSUMER INFORMATION

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## **Carburetor Modification for High Altitude Operation**

The GX270 and GX390 LPG-fueled engine do not require any modifications for high-altitude operation. However, performance will decrease at high altitudes.

## **Fuel Regulator Information**

This engine is certified to comply with U.S. EPA and California ARB emission regulations using the Impco Beam regulator specified in the installation instructions (see below).

Honda used this regulator and other specific parts and adjustments to demonstrate compliance with the emission regulations. Adjustable fuel system parts must have U.S. EPA and California ARB approved tamper resistant features to limit the available adjustment after the fuel system is correctly installed.

If an equipment manufacturer did not install your engine in a product, you will need the installation instructions for the Honda certified system (see below).

If you choose not to use the Honda fuel system, you must use a system that has been certified by the fuel system manufacturer to be used on this Honda engine.

Or, if you use a fuel system that is not already certified, you must have certification test data satisfactory to the U.S. EPA or California ARB.

The test data must prove the system will meet the emission standard both when the engine is new and at the end of its emission durability period (hours).

To obtain a copy of the installation instructions for this engine, contact an independent Honda engine distributor, or our Customer Service Department (page 47 ).

# TECHNICAL & CONSUMER INFORMATION

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## Emission Control System Information

### *Source of Emissions*

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

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

### *The U.S. and California Clean Air Acts*

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

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

### *Tampering and Altering*

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

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

# TECHNICAL & CONSUMER INFORMATION

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## ***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 22. 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.

# TECHNICAL & CONSUMER INFORMATION

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## 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 to 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 Warranty* for additional information.

Descriptive Term	Applicable to Emissions Durability Period
Moderate	50 hours (0 – 65 cc) 125 hours (greater than 65 cc)
Intermediate	125 hours (0 – 65 cc) 250 hours (greater than 65 cc)
Extended	300 hours (0 – 65 cc) 500 hours (greater than 65 cc)

The Air Index Information hang tag must remain on the engine until it is sold. Remove the hang tag before operating the engine.

# TECHNICAL & CONSUMER INFORMATION

## Specifications

### GX270

Length × Width × Height	15.7 × 16.9 × 16.0 in (400 × 430 × 407 mm)
Dry weight	50.7 lbs (23.0 kg)
Engine type	4-stroke, overhead valve, single cylinder
Displacement [Bore × Stroke]	16.5 cu-in (270 cm <sup>3</sup> ) [ 3.0 × 2.3 in (77 × 58 mm) ]
Max. output	8.9 bhp (6.6 kW, 9.0 PS) at 3,600 rpm
Max. torque	14.1 lbf-ft (19.1 N·m, 1.95 kgf·m) at 2,500 rpm
Fuel consumption	0.42 lb/hph (258 g/kWh, 190 g/PSh)
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft rotation	Counterclockwise

### GX390

Length × Width × Height	16.7 × 17.7 × 17.4 in (425 × 450 × 443 mm)
Dry weight	63.9 lbs (29.0 kg)
Engine type	4-stroke, overhead valve, single cylinder
Displacement [Bore × Stroke]	23.7 cu-in (389 cm <sup>3</sup> ) [ 3.5 × 2.5 in (88 × 64 mm) ]
Max. output	12.9 bhp (9.6 kW, 13.0 PS) at 3,600 rpm
Max. torque	19.5 lbf-ft (26.5 N·m, 2.7 kgf·m) at 2,500 rpm
Fuel consumption	0.42 lb/hph (258 g/kWh, 190 g/PSh)
Cooling system	Forced air
Ignition system	Transistorized magneto
PTO shaft rotation	Counterclockwise

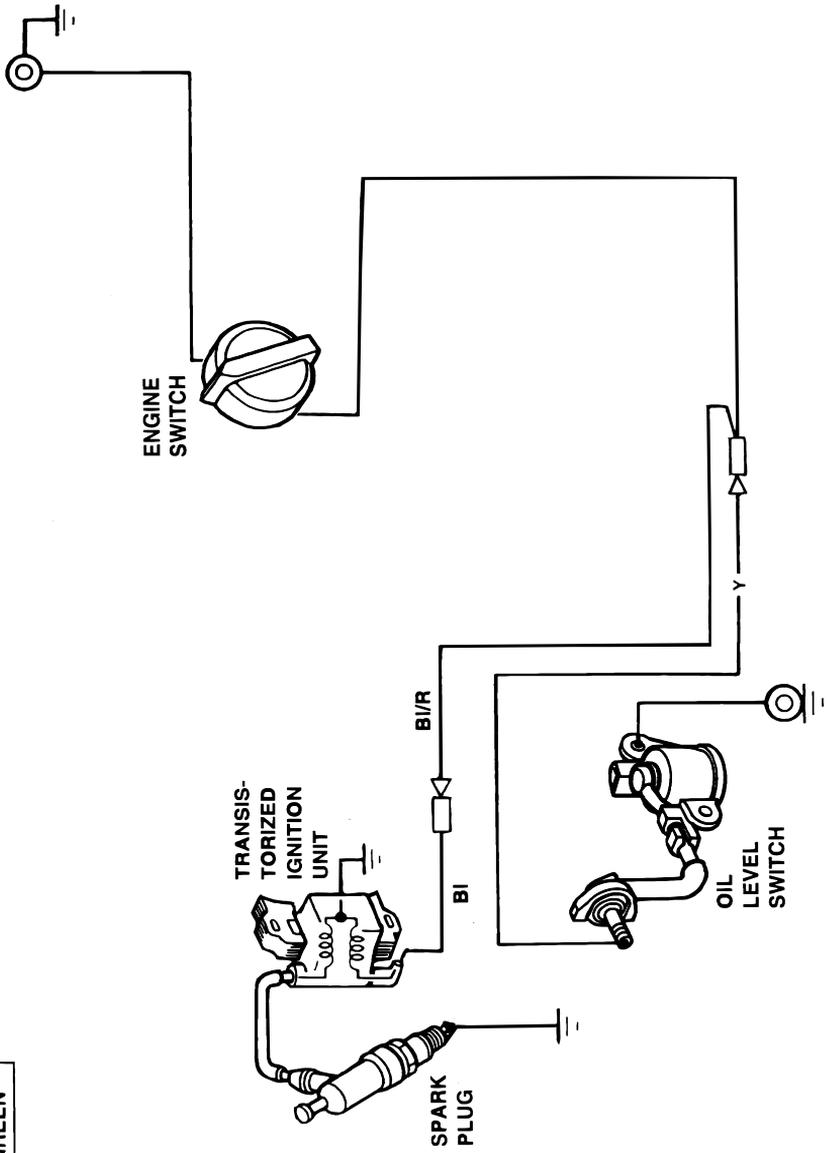
### GX270/GX390 Tuneup

ITEM	SPECIFICATION	MAINTENANCE
Spark plug gap	0.028–0.031 in (0.70–0.80 mm)	Refer to page: 30
Valve clearance	IN: 0.15 ± 0.02 mm (cold) EX: 0.20 ± 0.02 mm (cold)	See your authorized Honda dealer
Other specifications	No other adjustments needed.	

# TECHNICAL & CONSUMER INFORMATION

## Wiring Diagram

### Engine Types With Oil Alert



BI	BLACK
Y	YELLOW
G	GREEN

# TECHNICAL & CONSUMER INFORMATION

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## CONSUMER INFORMATION

### **Honda Publications**

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

#### ***Shop Manual***

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

#### ***Parts Catalog***

This manual provides complete, illustrated parts lists.

## Warranty Service Information

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 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  
4900 Marconi Drive  
Alpharetta, Georgia 30005-8847

Or telephone: (770) 497-6400

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

- Model and serial number (see page 38)
- Name of dealer who sold the engine to you
- Name and address of dealer who services your engine
- Date of purchase
- Your name, address and telephone number
- A detailed description of the problem

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**MEMO**

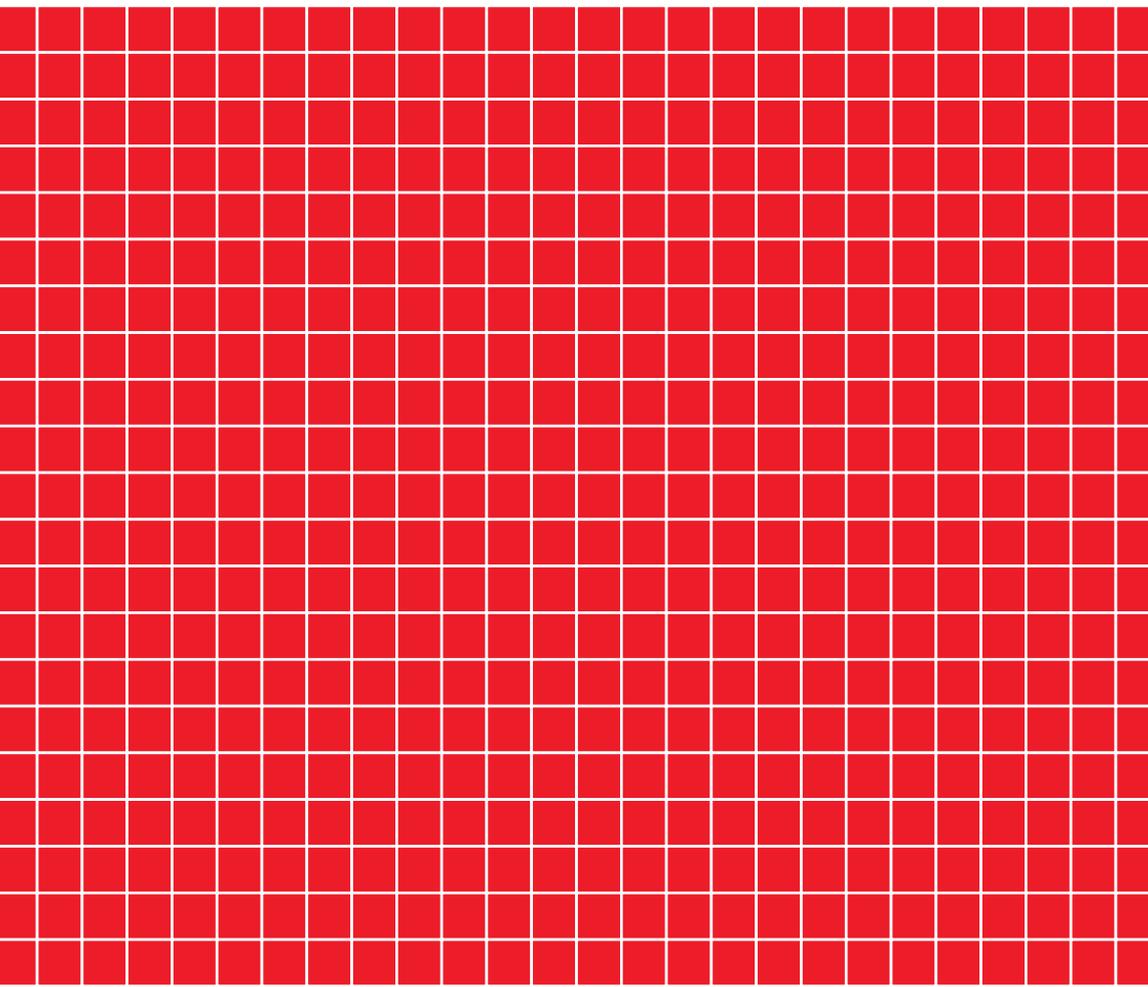
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## QUICK REFERENCE INFORMATION

Fuel	Type	LPG with a propane content of 95 % or higher (page 23)
Engine Oil	Type	SAE 30, API SJ, for general use (page 26)
	Capacity	1.16 US qt (1.10 ℓ)
Spark Plug	Type	NGK: BPR6ES , DENSO: W20EPR-U
	Gap	0.028 – 0.031 in (0.70 – 0.80 mm) (page 30)
Carburetor	Idle speed	1,400 $\begin{smallmatrix} +200 \\ -150 \end{smallmatrix}$ rpm (page 31)
Maintenance	Before each use	Check engine oil level. Check air filter.
	First 20 hours	Change engine oil.
	Subsequent	Refer to the maintenance schedule on page 22.

# HONDA

The Power of Dreams



31ZK6601  
00X31-ZK6-6010



K1:GX390  
300.2003.10  
Printed in Japan