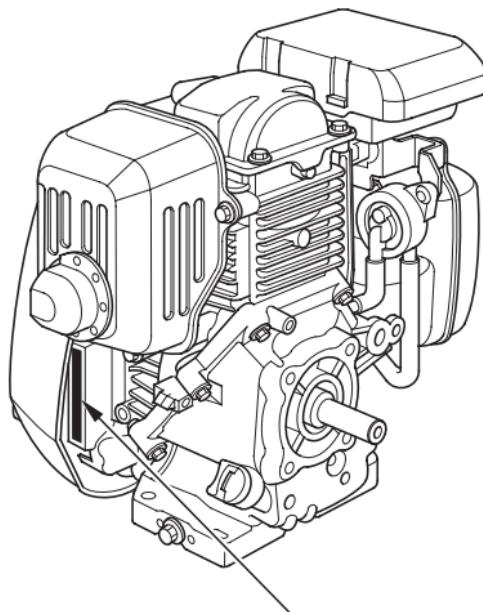


HONDA
POWER PRODUCTS

GC135E • GC160E



ECOLOGY CONSCIOUS TECHNOLOGY

SERIAL NUMBER AND ENGINE TYPE

OWNER'S MANUAL



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Thank you for purchasing a Honda engine.

This manual covers the operation and maintenance of your engine:
GC135E•GC160E

All information in this publication is based on the latest product information available at the time of printing.

Honda Motor Co., Ltd. reserves the right to make changes at any time without notice and without incurring any obligation.

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

Pay special attention to statements preceded by the following words:

⚠WARNING Indicates a strong possibility of severe personal injury or death if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTICE Indicates that equipment or property damage can result if instructions are not followed.

NOTE: Gives helpful information.

If a problem should arise, or if you have any questions about your engine, consult an authorized Honda dealer.

⚠WARNING
The Honda engine is designed to give safe and dependable service if operated according to instructions. Read and understand the Owner's Manual before operating the engine. Failure to do so could result in personal injury or equipment damage.

1 SAFETY INSTRUCTIONS

WARNING

To ensure safe operation -



- Honda engine is designed to give safe and dependable service if operated according to instructions. Read and understand the Owner's Manual before operating the engine. Failure to do so could result in personal injury or equipment damage.

- Always make a pre-operation check (see page 6) before you start the engine. You may prevent an accident or equipment damage.
- To prevent fire hazards and to provide adequate ventilation, keep the engine at least 1 meter (3 feet) away from buildings and other equipment during operation. Do not place flammable objects close to the engine.
- Children and pets must be kept away from the area of operation due to a possibility of burns from hot engine components or injury from any equipment the engine may be used to operate.
- 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 place flammable objects such as gasoline, matches, etc., close to the engine while it is running.
- Refuel in a well-ventilated area with the engine stopped. Gasoline is highly flammable and explosive under certain conditions.
- Do not overfill the fuel tank. There should be no fuel in the filler neck.

Make sure that the filler cap is closed securely.

Safety Instruction

WARNING

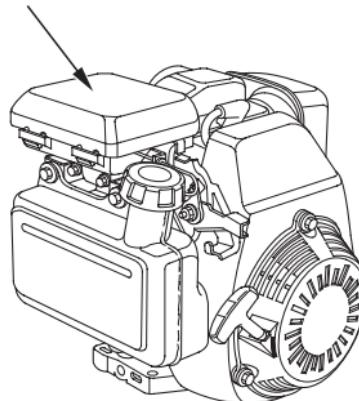
To ensure safe operation -

- If any fuel is spilled, clean it up completely and allow petroleum vapours to dissipate before starting the engine.
- Do not smoke or allow flames or sparks where the engine is refueled or where gasoline is stored.
- Exhaust gas contains poisonous carbon monoxide. Avoid inhalation of exhaust gases. Never run the engine in a closed garage or confined area.
- Place the engine on a stable surface. Do not tilt the engine more than 20° from horizontal. Operating at excessive angles may result in fuel spillage.
- Do not place anything on the engine, as it may create a fire hazard.
- A spark arrester is available as an optional part for this engine. It is illegal in some areas to operate an engine without a spark arrester. Check local laws and regulations before operating.
- 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. To avoid severe burns or fire hazards, let the engine cool before transporting it or storing it indoors.

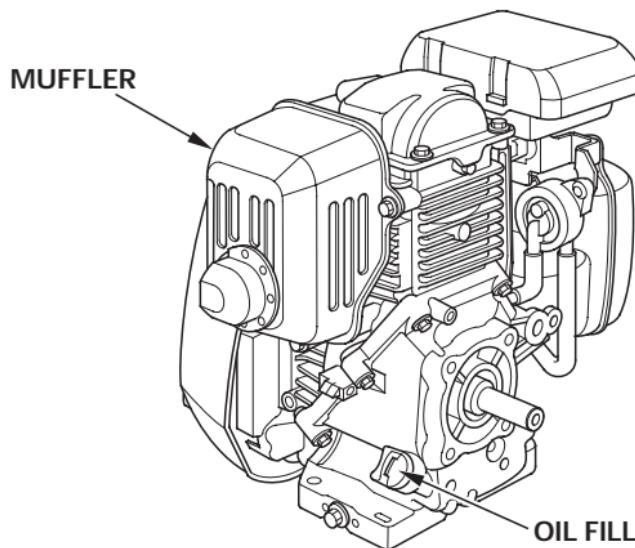
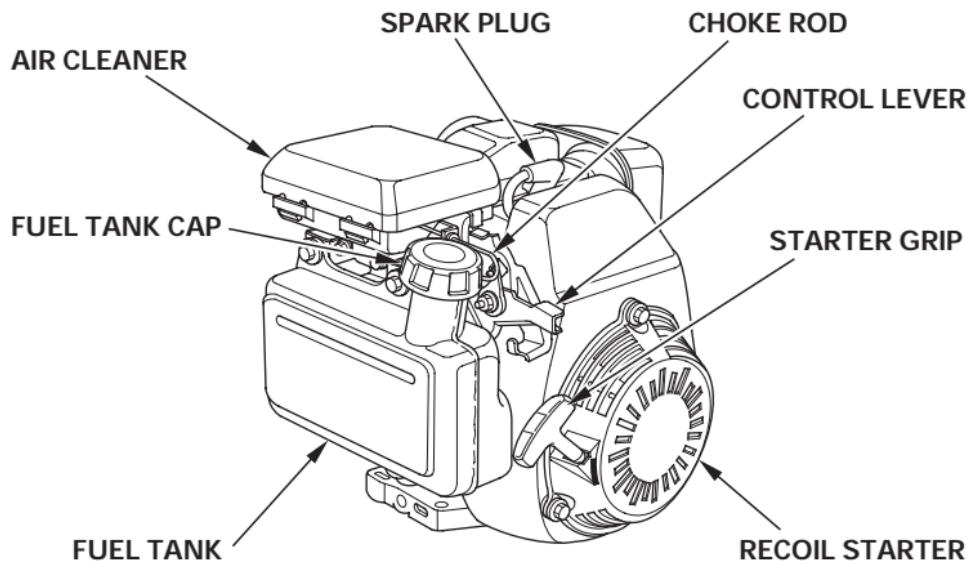
SAFETY INDICATION LOCATION

This indication warns you of potential hazards that can cause serious injury. Read it carefully.

READ OWNER'S MANUAL BEFORE OPERATION.



2 COMPONENT IDENTIFICATION



3 PRE-OPERATION CHECK

1. Engine oil level

CAUTION:

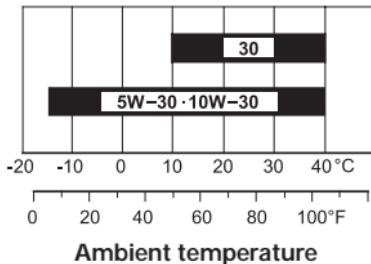
- Running the engine with insufficient oil can cause serious engine damage.
- Be sure to check the engine on a level surface with the engine stopped.

1. Remove the oil filler cap and check the oil level.

2. If the level is low, add the recommended oil to the edge of the oil filler hole.

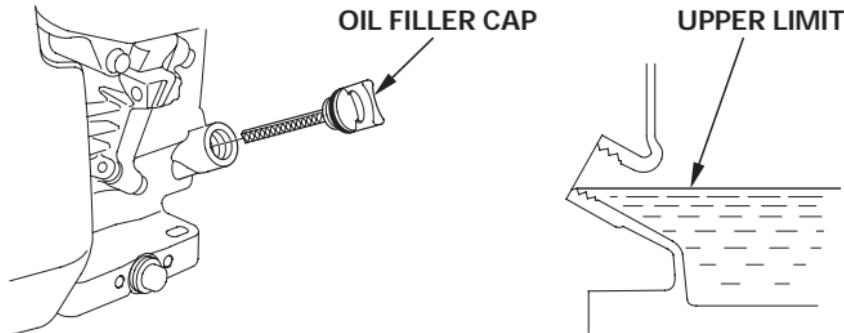
Use 4-stroke motor oil that meets or exceeds the requirements for API service classification SE or later (or equivalent). Always check the API service label on the oil container to be sure it includes the letters SE or later (or equivalent).

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.



CAUTION:

Using nondetergent oil or 2-stroke engine oil could shorten the engine's service life.

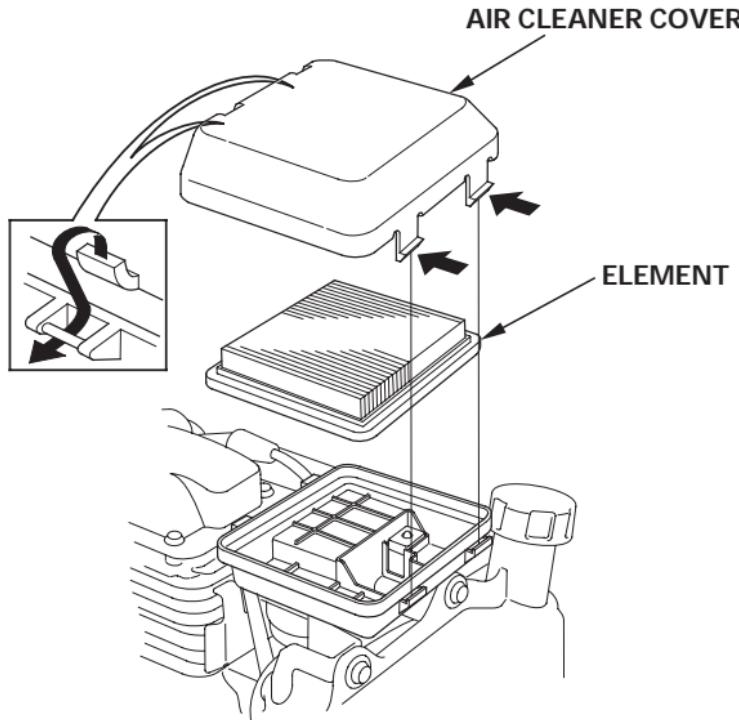


2. Air cleaner

CAUTION:

Never run the engine without the air cleaner. Rapid engine wear will result.

Remove the air cleaner cover and check the cleaner for dirt or obstruction of the element (page 19).



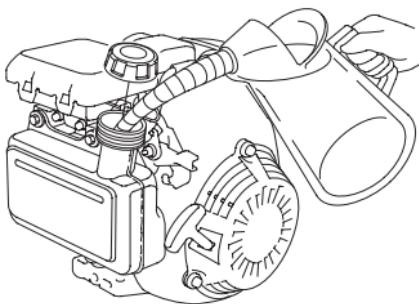
3. Fuel

Use automotive unleaded gasoline with a Research Octane Number of 91 or higher (a Pump Octane Number of 86 or higher). Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

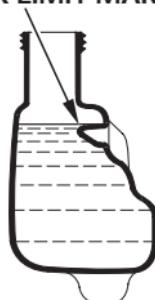
⚠WARNING

- Gasoline is extremely flammable and is explosive under certain conditions.
- Refuel in a well-ventilated area with the engine stopped. Do not smoke or allow flames or sparks in the area where the engine is refueled or where gasoline is stored.
- Do not overfill the fuel tank (there should be no fuel above the upper limit mark). After refueling, make sure the fuel tank cap is closed properly and securely.
- Be careful not to spill fuel when refueling. Spilled fuel or fuel vapor may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.
- Avoid repeated or prolonged contact with skin or breathing of vapor.

KEEP OUT OF REACH OF CHILDREN.



UPPER LIMIT MARK



NOTE:

Gasoline spoils very quickly depending on factors such as light exposure, temperature and time.

In worst cases, gasoline can be contaminated within 30 days.

Using contaminated gasoline can seriously damage the engine (carburetor clogged, valve stuck).

Such damage due to spoiled fuel is disallowed from coverage by the warranty.

To avoid this please strictly follow these recommendations:

- Only use specified gasoline (see page 8).
- Use fresh and clean gasoline.
- To slow deterioration, keep gasoline in a certified fuel container.
- If long storage (more than 30 days) is foreseen, drain fuel tank and carburetor (see page 26).

GASOLINES CONTAINING ALCOHOL

If you decide to use a gasoline containing alcohol (gasohol), be sure it's octane rating is at least as high as that recommended by Honda. There are two types of "gasohol": one containing ethanol, and the other containing methanol. Do not use gasohol that contains more than 10% ethanol. Do not use gasoline containing methanol (methyl or wood alcohol) that does not also contain cosolvents and corrosion inhibitors for methanol. Never use gasoline containing more than 5% methanol, even if it has cosolvents and corrosion inhibitors.

NOTE:

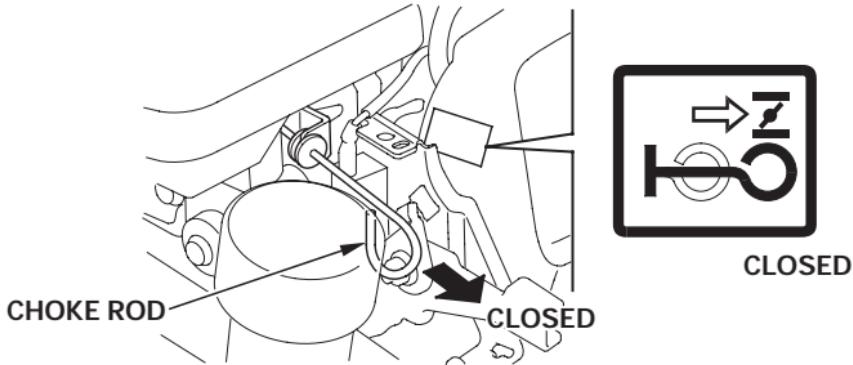
- Fuel system damage or engine performance problems resulting from the use of fuels that contain alcohol is not covered under the warranty. Honda can not endorse the use of fuels containing methanol since evidence of their suitability is as yet incomplete.
- Before buying fuel from an unfamiliar station, try to find out if the fuel contains alcohol, if it does, confirm the type and percentage of alcohol used. If you notice any undesirable operating symptoms while using a gasoline that contains alcohol, or one that you think contains alcohol, switch to a gasoline that you know does not contain alcohol.

4 STARTING THE ENGINE

- Pull the choke rod to the CLOSED position.

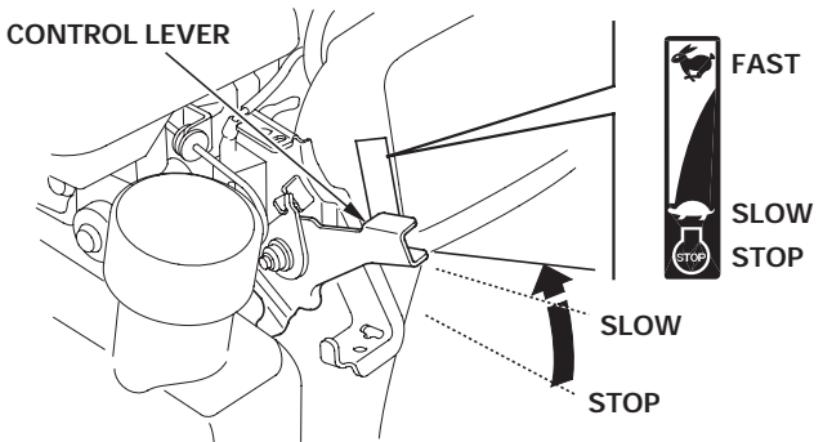
NOTE:

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

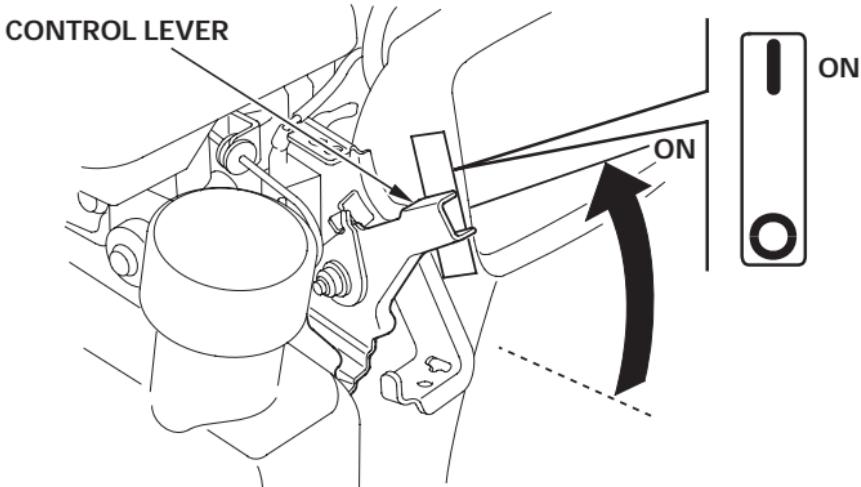


- Control lever with engine stop function:

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



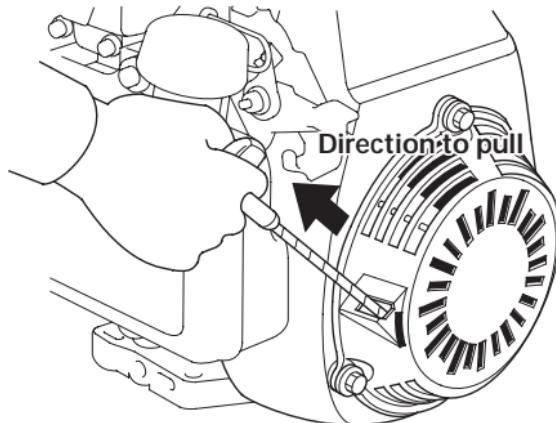
- Control lever with only engine stop function:
Move the control lever to the ON position.



3. Pull the starter grip lightly until you feel resistance, then pull briskly in the direction of the arrow as shown below. Return the starter grip gently.

CAUTION:

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



- **High altitude operation**

At high altitude, the standard carburetor air-fuel mixture will be excessively rich. Performance will decrease, and fuel consumption will increase.

High altitude performance can be improved by installing a smaller diameter main fuel jet in the carburetor and readjusting the pilot screw. If you always operate the engine at altitudes higher than 1,830 m (6,000 feet) above sea level, have your authorized Honda dealer perform these carburetor modifications.

Even with suitable carburetor jetting, engine horsepower will decrease approximately 3.5% for each 300 m (1,000 feet) increase in altitude. The effect of altitude on the horsepower will be greater than this if no carburetor modification is made.

CAUTION:

Operation of the engine at an altitude lower than the carburetor is jetted for may result in reduced performance, overheating, and serious engine damage caused by an excessively lean air/fuel mixture.

Oil alert system (where equipped)

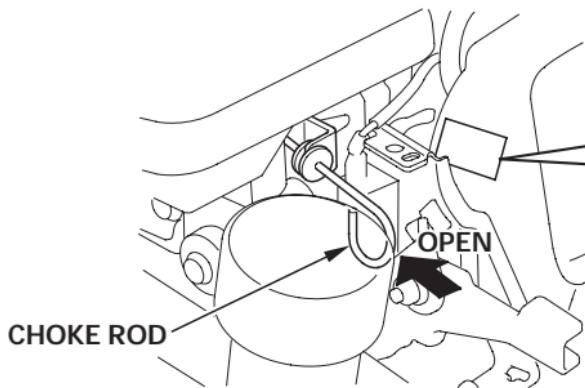
The Oil Alert System is designed to prevent engine damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase can fall below a safe limit, the Oil Alert System will automatically stop the engine (the engine switch will remain in the ON position).

NOTICE

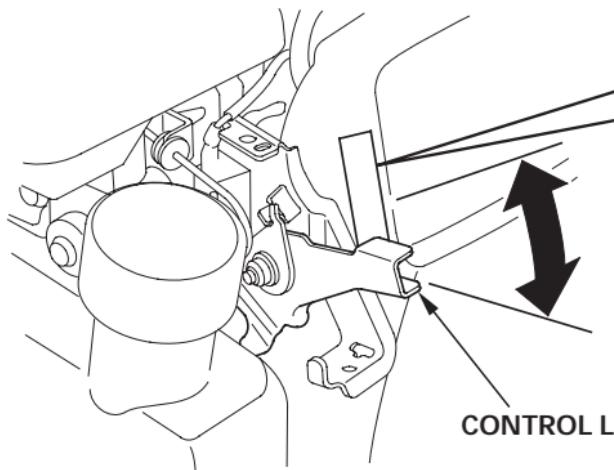
If the engine stops and will not restart, check the engine oil level (see page 6) before troubleshooting in other areas.

5 OPERATION

1. If the choke rod has been 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.

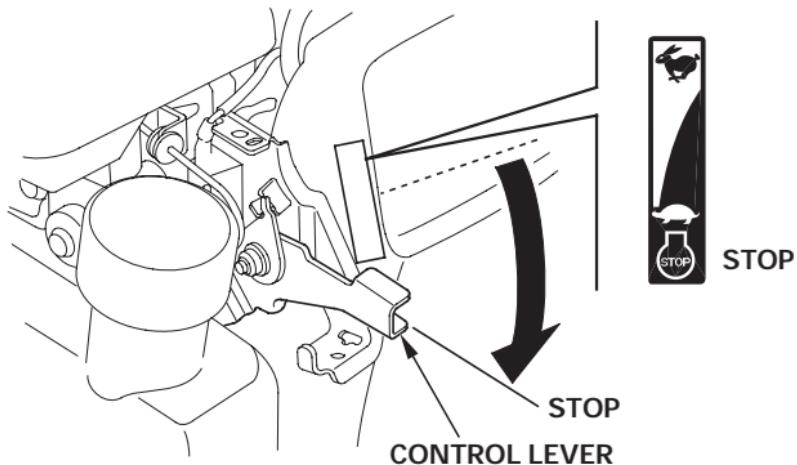


2. Control lever with engine stop function:
Position the control lever for the desired engine speed.

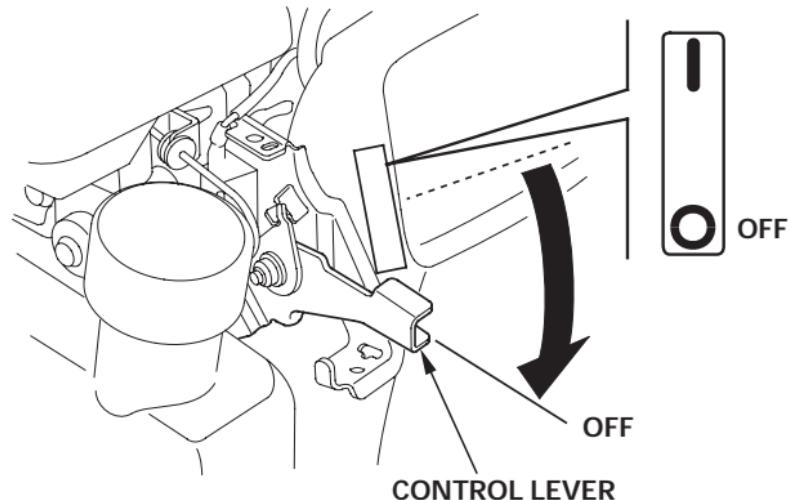


6 STOPPING THE ENGINE

- Control lever with engine stop function:
Move the control lever to the STOP position.



- Control lever with only engine stop function:
Move the control lever to the OFF position.



7 MAINTENANCE

⚠WARNING

- Shut off the engine before performing any maintenance.
- To prevent accidental start-up, disconnect the spark plug cap.
- The engine should be serviced by an authorized Honda dealer unless the owner has proper tools and service data and feels he is mechanically qualified.

CAUTION:

Use only genuine Honda parts or their equivalent. The use of replacement parts which are not of equivalent quality may damage the engine.

Periodic inspection and adjustment of the Honda engine is essential if high level performance is to be maintained. Regular maintenance will also ensure a long service life. The required service intervals and the kind of maintenance to be performed are described on the following table.

Maintenance Schedule

REGULAR SERVICE PERIOD (4)		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 2 years or 250 hrs.
ITEM	Perform at every indicated month or operating hours interval, whichever comes first.						
Engine oil	Check	<input type="radio"/>					
	Change		<input type="radio"/>		<input type="radio"/> (2)		
Air cleaner	Check	<input type="radio"/>					
	Clean			<input type="radio"/> (1)			
	Replace						<input type="radio"/>
Timing belt	Check				After every 250 hrs. (3) (5)		
Spark plug	Check - Clean					<input type="radio"/>	
	Replace						<input type="radio"/>
Spark arrester (optional part)	Clean					<input type="radio"/>	
Idle speed	Check - Adjust					<input type="radio"/> (3)	
Valve clearance	Check - Adjust					<input type="radio"/> (3)	
Combustion chamber	Clean				After every 250 hrs. (3)		
Fuel tank and strainer	Clean					<input type="radio"/> (3)	
Fuel line	Check				Every 2 years (Replace if necessary) (3)		

NOTE:

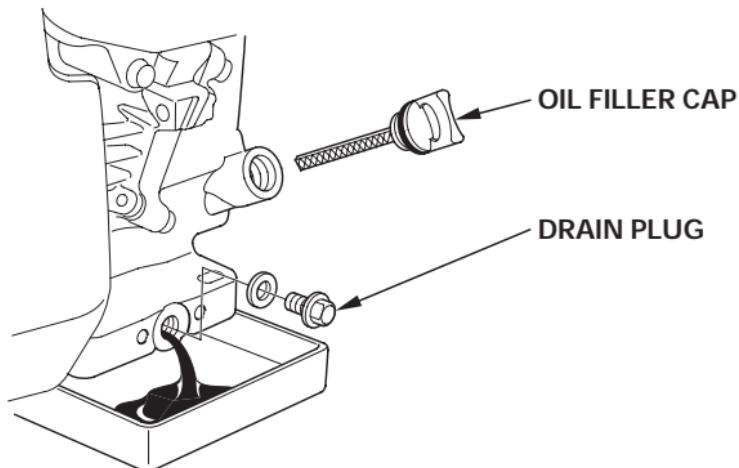
- (1):Service more frequently when used in dusty areas.
- (2):Change engine oil every 25 hours when used under heavy load or in high ambient temperature.
- (3):These items should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda Shop Manual.
- (4):For commercial use, log hours of operation to determine proper maintenance intervals.
- (5):Check that there is no crack and abnormal wear-out in the belt, and replace if it is abnormal.

1. Oil change

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

1. Remove the oil filler cap and drain plug to drain the oil.
2. Install the drain plug, and tighten it securely.
3. Refill with the recommended oil (see page 6) and check the oil level.
4. Install the oil filler cap.

ENGINE OIL CAPACITY: 0.58 l (0.61 US qt , 0.51 Imp qt)



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

NOTE:

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

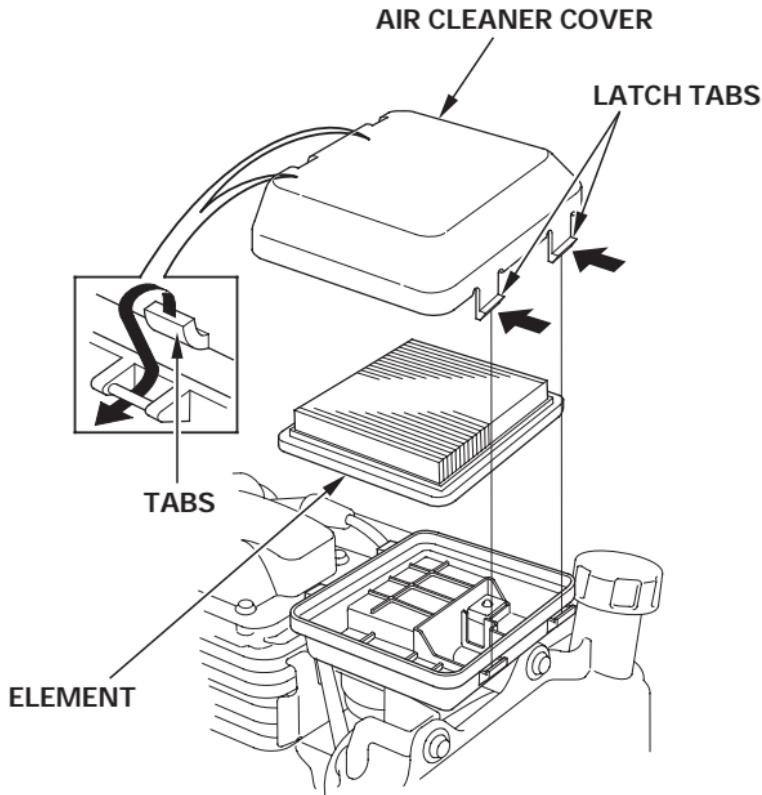
2. Air cleaner service

A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly. Service more frequently when operating the engine in extremely dusty areas.

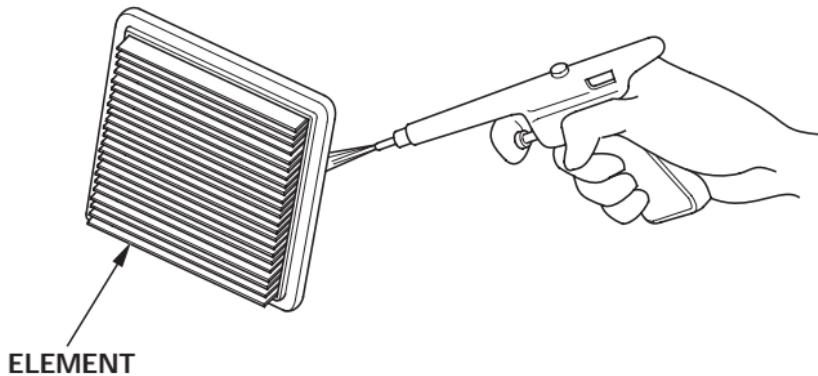
CAUTION:

Never run the engine without the air cleaner. Rapid engine wear will result.

1. Press the latch tabs on the fuel tank side of the air cleaner cover, and remove the air cleaner cover.



2. Remove the element. Carefully check the element for holes or tears and replace if damaged.
3. Tap the element lightly several times on a hard surface to remove excess dirt, or blow compressed air through the filter from the inside out. Never try to brush the dirt off; brushing will force dirt into the fibers. Replace the element if it is excessively dirty.
4. Install the element and air cleaner cover.



3. Spark plug service

Recommended spark plug:

BPR6ES (NGK)

CAUTION:

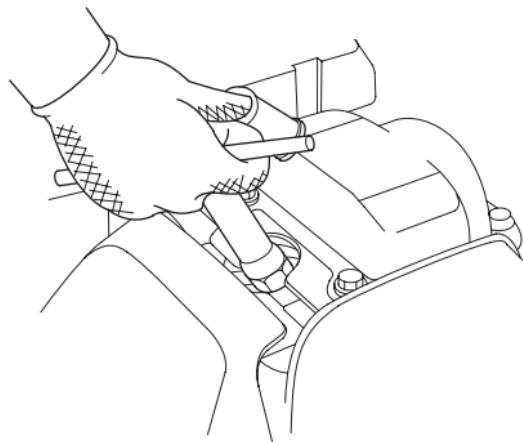
Never use a spark plug of incorrect heat range.

To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

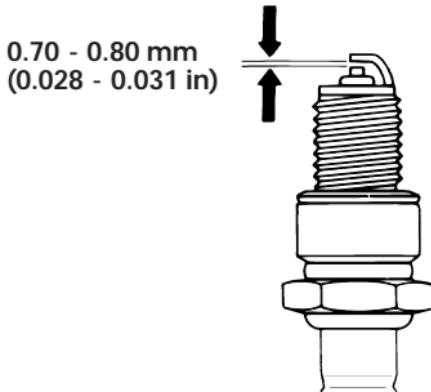
1. Remove the spark plug cap and use a spark plug wrench to remove each spark plug.

⚠WARNING

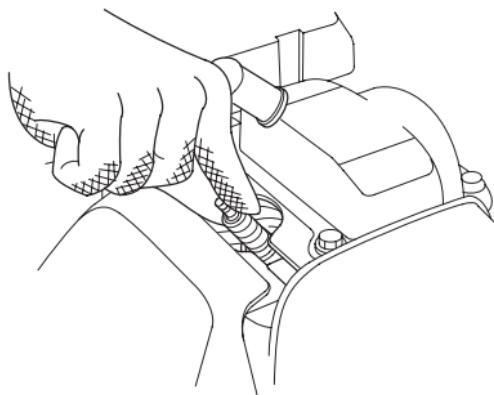
If the engine has been running, the muffler will be very hot. Be careful not to touch the muffler.



2. Visually inspect the spark plug. Discard the spark plug if there is apparent wear, or if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
3. Measure the plug gap with a feeler gauge. Correct as necessary by bending the side electrode.
The gap should be:
 $0.70 - 0.80 \text{ mm}$ ($0.028 - 0.031 \text{ in}$)



4. Check that the spark plug washer is in good condition and thread the spark plug in by hand to prevent cross-threading.



5. After the spark plug is seated, tighten with a spark plug wrench to compress the washer.

NOTE:

When installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer. When reinstalling a used spark plug, tighten 1/8 - 1/4 turn after the spark plug seats to compress the washer.

CAUTION:

The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may damage the engine.

4. Spark arrester maintenance (optional part)

⚠WARNING

If the engine has been running, the muffler will be very hot. Allow it to cool before proceeding.

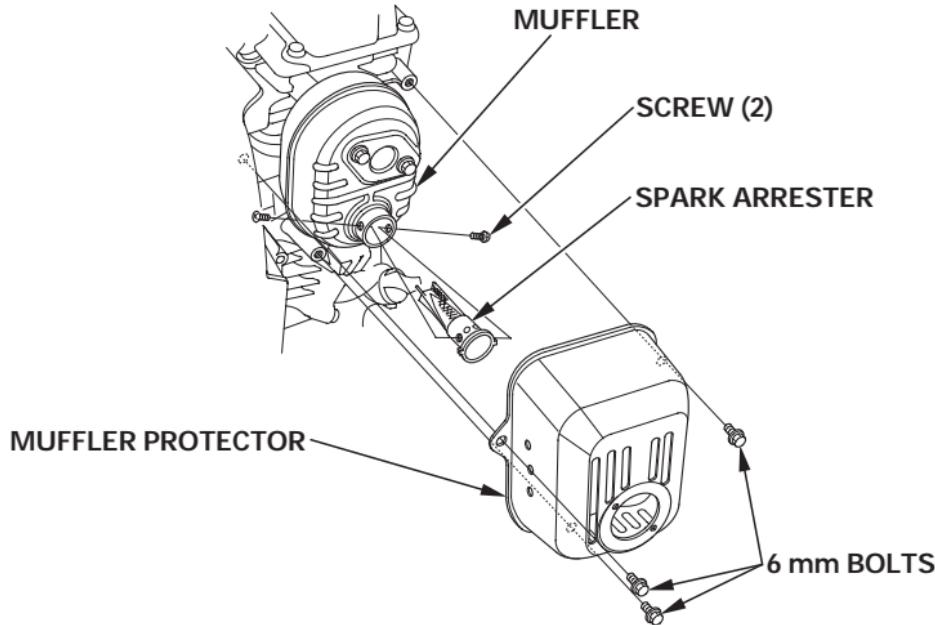
CAUTION:

The spark arrester must be serviced every 100 hours to maintain its efficiency.

1. Remove the muffler protector by removing the three 6 mm bolts.
2. Remove the spark arrester from the muffler by removing the two screws. (Taking care not to damage the wire mesh.)

NOTE:

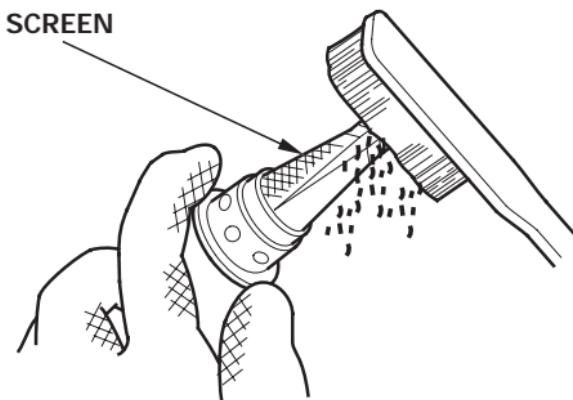
Check for carbon deposits around the exhaust port and the spark arrester, and clean if necessary.



3. Use a brush to remove carbon deposits from the spark arrester screen.

CAUTION:

Be careful not to damage the spark arrester screen.



NOTE:

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

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

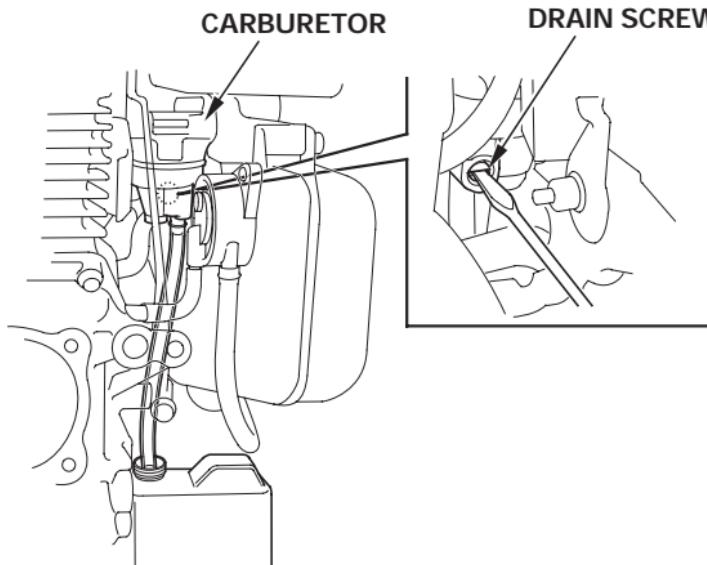
8 TRANSPORTING/STORAGE

⚠WARNING

When transporting the engine, keep the engine level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.

Before storing the unit for an extended period;

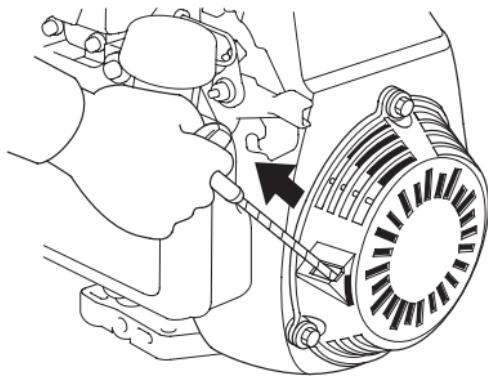
1. Be sure the storage area is free of excessive humidity and dust.
2. Drain the fuel tank and carburetor into a suitable gasoline container:
 - A. Empty the fuel tank into an approved gasoline container using a commercially available hand siphon.
 - B. Loosen the carburetor drain screw to drain the carburetor.
 - C. Retighten the drain screw.



⚠WARNING

Gasoline is extremely flammable and is explosive under certain conditions. Do not smoke or allow flames or sparks in the area.

3. Change the engine oil (page 18).
4. Pull the starter rope slowly until resistance is felt. This closes the valves, and protects them from dust and corrosion.



5. Coat areas that may rust with a light film of oil. Cover the engine and store it on a level surface in a dry, dust free area.

9 TROUBLESHOOTING

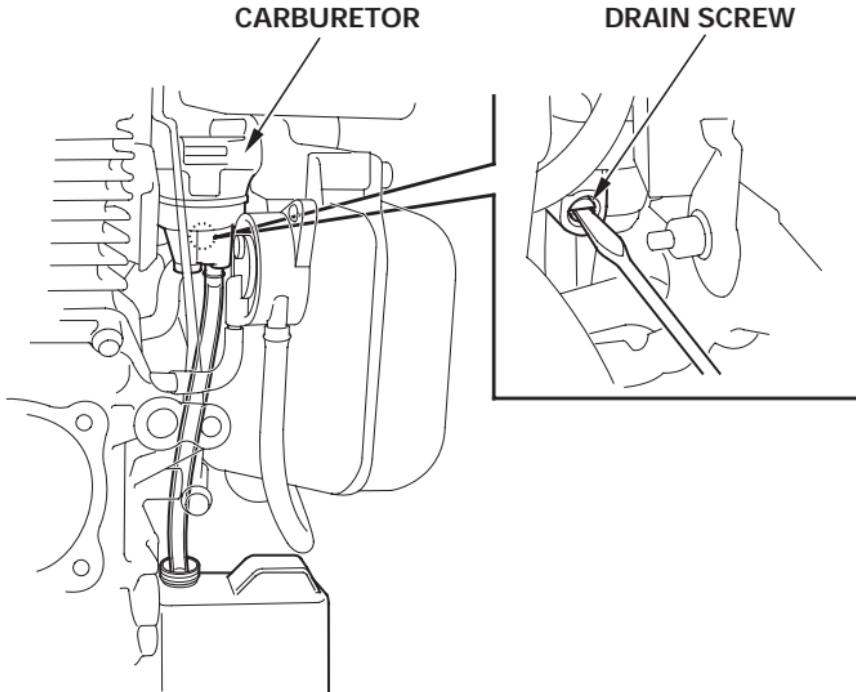
When the engine will not start:

1. Is there fuel in the fuel tank?
2. Is gasoline reaching the carburetor?

To check, loosen the drain screw.

⚠WARNING

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



3. Is the control lever positioned properly (page 10, 11)?
4. Is the spark plug in good condition? (page 21)
5. If the engine still does not start, take the engine to an authorized Honda dealer.

10 SPECIFICATIONS

Dimensions

Model	GC135E
Description code	GCAAE
Length × Width × Height	330 × 369 × 315 mm (13.0 × 14.5 × 12.4 in)
Dry mass [weight]	11.2 kg (24.7 lbs)

Engine

Engine type	4-stroke, overhead cam, 1 cylinder
Displacement	135 cm ³ (8.2 cu-in)
Bore × Stroke	64.0 × 42.0 mm (2.5 × 1.7 in)
Net power (in accordance with SAE J1349*)	2.7 kW (3.7 PS)/3,600 rpm
Max. Net torque (in accordance with SAE J1349*)	7.4 N·m (0.75 kgf-m)/2,500 rpm
Fuel tank capacity	1.3 ℥ (0.34 US gal , 0.29 Imp gal)
Engine oil capacity	0.58 ℥ (0.61 US qt , 0.51 Imp qt)
Cooling system	Forced air
Ignition system	Transistor 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 3,600 rpm (Net Power) and at 2,500 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 of the engine in application, environmental conditions, maintenance, and other variables.

NOTE:

Specifications may vary according to the types, and are subject to change without notice.

Dimensions

Model	GC160E
Description code	GCABE
Length x Width x Height	337 x 369 x 331 mm (13.3 x 14.5 x 13.0 in)
Dry mass [weight]	11.5 kg (25.4 lbs)

Engine

Engine type	4-stroke, overhead cam, 1 cylinder
Displacement	160 cm ³ (9.8 cu-in)
Bore x Stroke	64.0 x 50.0 mm (2.5 x 2.0 in)
Net power (in accordance with SAE J1349*)	3.4 kW (4.6 PS)/3,600 rpm
Max. Net torque (in accordance with SAE J1349*)	9.4 N·m (0.96 kgf-m)/2,500 rpm
Fuel tank capacity	1.8 l (0.48 US gal , 0.40 Imp gal)
Engine oil capacity	0.58 l (0.61 US qt , 0.51 Imp qt)
Cooling system	Forced air
Ignition system	Transistor 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 3,600 rpm (Net Power) and at 2,500 rpm (Max. Net Torque). Mass production engines may vary from this value.

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