HONDA

PORTABLE GENERATOR

EM400

OWNER'S MANUAL

Thank you for purchasing a HONDA generator

PREFACE

The HONDA EM 400 Portable Generator Model is a compact, light, low noise AC-DC generator.

This manual contains important and helpful information for the proper operation and servicing of your HONDA EM 400 generator.

The manual should be read thoroghly to obtain the fullest satisfaction and the best performance from the generator. Careful handling, proper operation, and performance of the scheduled maintemance will keep the generator in the best operating condition, assuring long, trouble-free service.

In this manual statements preceded by the following words are of special significance: **"WARNING"** means that there is the possibility of personal injury to yourself and others.
"CAUTION" means that there is the possibility of damage to the vehicle.
"NOTE" indicates points of particular interest for more efficient and convenient operation.

We recommend that your take particular notice of these items when reading this manual.

If difficulties should develop, consult your nearest authorized HONDA Generator Dealer for assistance.

CONTENTS

SAFE OPERATION

Observe the following for safe operation:

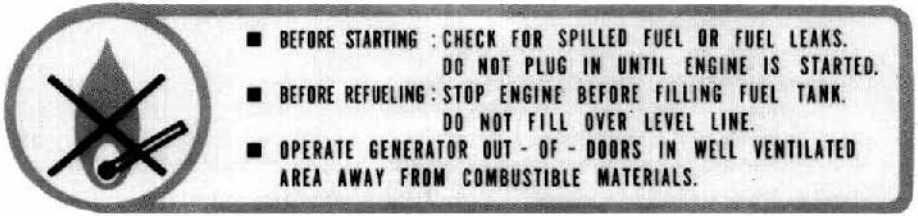
1. Do not use the generator inside a room, tunnel, well, or any other confined area.
2. Do not cover the generator with a box.
   The generator will overheat.
3. Point the exhaust outlet in the direction of an open space with good ventilation.
4. Be careful of people and animals in the vicinity of the generator.

WARNING:
Exhaust gases contain poisonous carbon monoxide. Do not operate the generator in an enclosed area.

5. Keep all combustible materials away from the exhaust.
6. Ensure that the generator is at least three feet away from walls, buildings, or adjoining equipment during operation.
   If it is necessary to install the generator in a confined area such as a basement, motor home or boat, proper mounting and ventilation of the unit are essential.

WARNING:
Gasoline is flammable and explosive under certain conditions. Always stop the engine and do not smoke or allow open flames or sparks near the generator when refueling. Use gasoline only, as a fuel, never as a cleaner.

7. Be careful when operating the generator on loose sand or gravel.
8. Operate the generator on a level surface.
9. Do not move or tilt the generator while it is in use.
10. Do not refuel while the engine is running.
11. Do not fill the fuel tank over the level line.
12. Do not attempt to service the generator while the engine is running.
13. Stop the engine and wait until all moving parts come to a complete stop before leaving the operating position.
14. Keep all shields and safety devices in place as instructed in the owner's manual.
15. Never allow small children to operate or be in the operating area of power equipment.
16. Do not operate the generator in rain or snow.
17. Do not operate the generator with wet hands.
18. Do not connect the generator to household wiring.
19. Operate the generator where cooling air is adequate and the ambient temperature is between 5°F (−15°C) and 104°F (40°C).
20. Never attempt to modify your HONDA generator.
21. Know your controls by reading the owner's manual carefully. Learn how to stop the engine quickly in an emergency.



MAIN FEATURES

The EM 400 is a gasoline, air-cooled generator with a manual recoil starter, automatic choke and solid state voltage regulator.
The combination of the recoil starter and automatic choke facilitates engine starting regardless of ambient temperatures.
The solid state voltage regulator supplies alternating and direct current at a stabilized voltage.

Item	Alternating Current	Direct Current
Rated Engine Speed	3,840 rpm	3,900 rpm
Rated Cycles/sec.	64 Hz	
Rated Voltage	115V	13 V
Rated Wattage-continuous	300W	
Rated Amperage		8.3 A

- A maximum wattage of 400W (3.5 amperes) may be drawn for 15 minutes after the engine has been started.

SUITABLE APPLIANCES

Alternating Current

The EM 400 generator is designed to operate several types of alternating current electrical appliances such as:

- Lighting equipment, radios, and other small appliances.
- Television:
  Some television sets will show signs of vertical oscillation.
- Single-phase motorized appliances:
  Some electrical appliances, such as televisions, tape recorders, electric clocks and others with synchronous motors cannot be operated properly with the EM 400. These appliances will operate at a slightly faster rate of speed due to the generator's slightly higher than normal operating frequency. Most motors require more than the rated amperage for starting. If this current surge exceeds four amperes, the appliance cannot be operated by the EM 400.

Direct Current

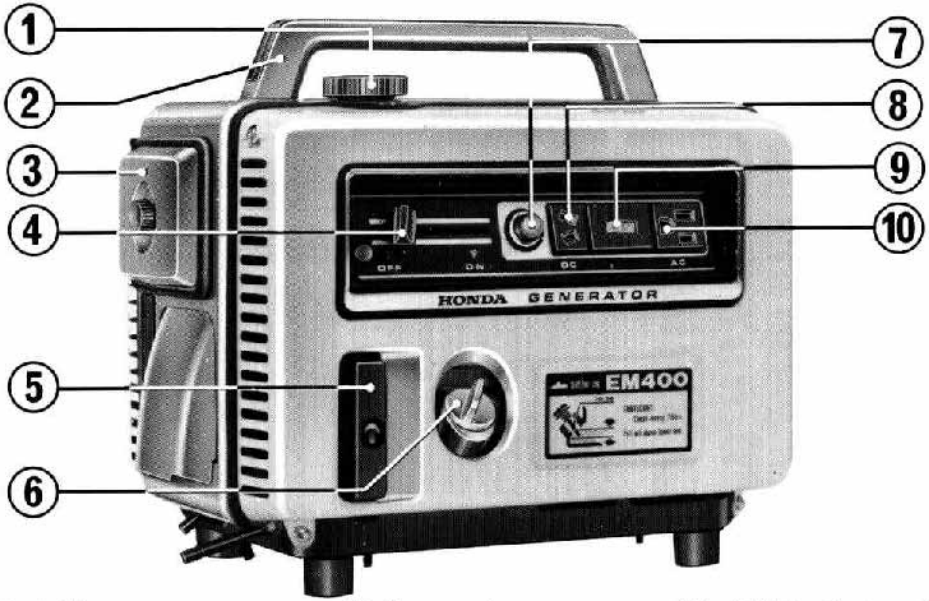
The EM 400 generator DC should not be used for any purpose other than charging a 12 volt automobile battery.

NOTE:

- **Alternating and direct current cannot be used simultaneously.**
- **If there is any question regarding appliance-generator compatibility, consult your nearest authorized HONDA Generator Dealer.**

MAIN COMPONENT LOCATION

EM 400- Front View



(1) Fuel filler cap
(2) Carrying handle
(3) Air cleaner cover
(4) Control lever
(5) Starter grip
(6) Oil filler cap
(7) DC pilot light
(8) DC output receptacle
(9) AC-DC selector switch
(10) AC output receptacle

EM 400- Rear View

(1) Rear cover (2) Exhaust outlet (3) Cover securing knob

PRE-OPERATING INSPECTION

Before starting the engine, observe the following procedure:

NOTE: Stabilize the generator on level ground.

Fuel

Fill the tank up to the "LEVEL" indicator in the fuel filler.

Fuel tank capacity: 2.0 lit. (0.5 U.S. gal.)

Total operating time with a full tank of fuel is approximately 4 hours.

WARNING:

- **Always stop the engine before refueling.**
- **Never overfill the fuel tank.**
- **Be sure to tighten the fuel filler cap.**

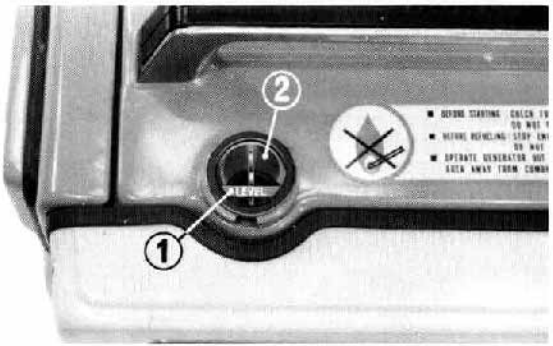
CAUTION:

- **Do not use a gasoline-oil mixture as fuel in this engine.**
- **Exercise care to keep dirt, water or other foreign substances from contaminating the fuel.**
- **Use low-lead or regular gasoline with a Research Octane number of 91 or higher or Pump Octane number of 86 or higher.**

  NOTE:

  Pump Octane is the octane formula specified by the Cost of Living Council.

- **Always use an approved container.**
- **Place the gasoline container out of the reach of children.**
- **Never store gasoline near open flames.**



(1) Level indicator
(2) Fuel filler

Engine Oil

Remove the oil filler cap and fill the engine with oil to the upper level mark on the dipstick.

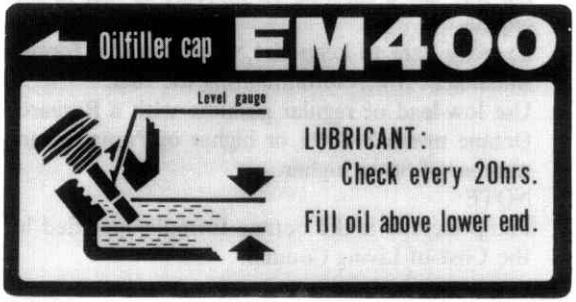
For a proper oil level reading, place the dipstick on the lip of the threaded hole, remove and check the level.

NOTE:

- **Do not screw in the dipstick when checking the oil level.**
- **Check the oil level only when the generator is on level ground.**

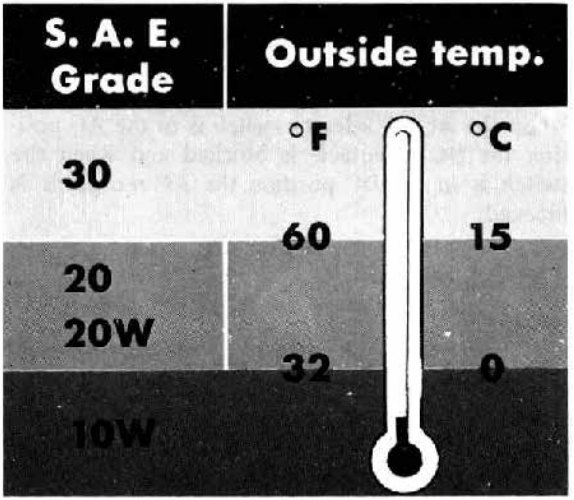
Oil capacity: 0.3 lit. (0.3 U.S. qt.)

(1) Oil level gauge



Type of Oil

Use high quality automotive engine oil rated SD or SE. Select the proper viscosity oil for the operating temperature. 10W-30 or 10W-40 multigrade oil is recommended for all temperature use.



STARTING THE GENERATOR

1. If a load is connected to the generator before it is running, the generator engine will be difficult to start.

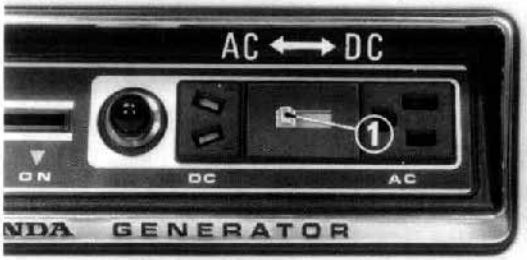
CAUTION:

Always plug the appliance into the receptacle after the engine is running.

2. Place the AC-DC selector switch in the left-hand AC position when operating AC appliances and in the right-hand DC position when charging an automobile battery.

NOTE:

When the AC-DC selector switch is in the AC position the DC receptacle is blocked and when the switch is in the DC position the AC receptacle is blocked.



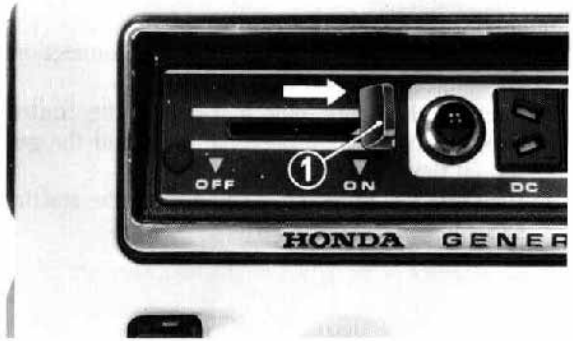
(1) AC-DC selector switch

Starting Procedure

1. Move the control lever to the "ON" position.
2. Pull the starter grip lightly until compression is felt. Then pull the grip swiftly.

CAUTION:

Do not let go after pulling the starter grip. Let it return gently to prevent damage to the mechanism.



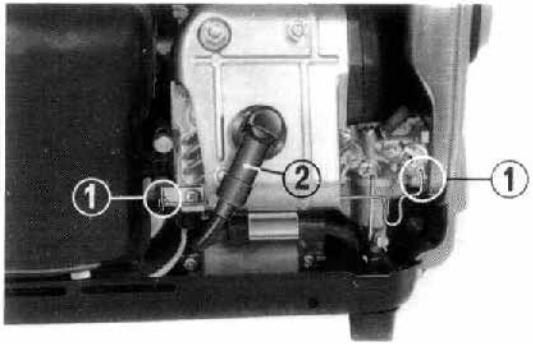
(1) Control lever

(2) Control lever (3) Starter grip

NOTE:

If the engine does not start after about ten attempts:

1. Remove the cover to ensure the link connections are connected properly.
2. Remove the spark plug and return the control lever to the "OFF" position, then pull the grip several times.
3. Reinstall the spark plug and follow the starting procedure.



(1) Link connection (2) Spark plug cap

CONNECTING ELECTRICAL APPLIANCES

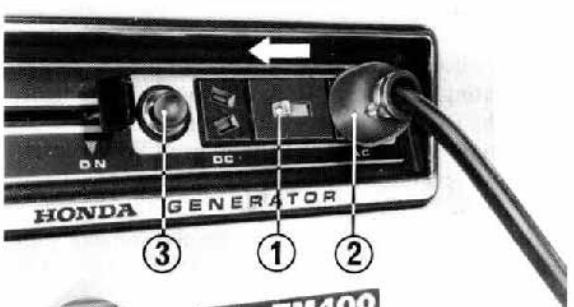
The EM 400 provides both alternating and direct currents but they cannot be used simultaneously. The AC-DC selector switch is of the interlock type to prevent simultaneous use.

AC OPERATION

1. Ensure that the engine is running smoothly.
2. Ensure that the AC-DC selector switch is set in the AC position.
3. Insert the plug of the AC appliance into the AC output receptacle.

WARNING:

A three pronged plug should be used to prevent accidental electrical shocks.



(1) AC-DC selector switch
(2) AC output plug
(3) DC pilot light

DC Operation

The DC circuitry is designed to charge **a 12 Volt automobile battery**. Before connecting the generator to the battery, make sure all electrical items on the automobile are "off".

1. Disconnect the battery ground calbe.
2. Ensure that the generator runs smoothly.
3. Ensure that the AC-DC selector switch is in the DC position.
4. Insert the DC charging lead plug into the DC output receptacle.
5. Clamp the positive (+) charging lead to the positive (+) terminal of the battery and the negative (–) charging lead to the negative (–) terminal.

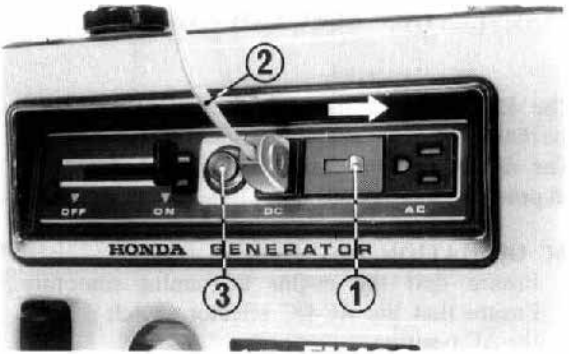
NOTE:

The DC pilot lamp will be "on" when the DC power is operating normally. If the lamp does not light, check the DC fuse and the pilot lamp bulb.

If the lamp still does not light, consult your nearest HONDA Generator Dealer.

CAUTION:

Do not attempt to start the automobile engine with the generator still connected to the battery. The generator may be damaged.

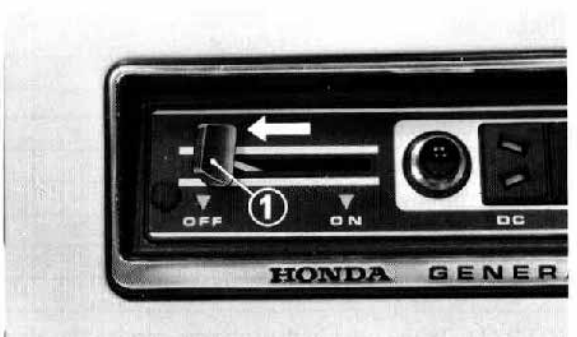


(1) AC-DC selector switch
(2) DC charging leads
(3) DC pilot light

(4) Charging leads

SHUTTING OFF THE GENERATOR

1. Turn off the electrical appliance.
2. Move the control lever to the "OFF" position.



(1) Control lever

MAINTENANCE

The purpose of the maintenance schedule and adjustment is to keep the generator in the best operating condition.

Perform inspection as scheduled in the table below.

WARNING: ***Shut off the engine before performing any maintenance. If the engine must be run, make sure the area is well ventilated. The exhaust contains poisonous carbon monoxide gas.***

CAUTION: *Use only genuine HONDA parts or their equivalent. The use of replacement part which are not of equivalent quality may damage the generator.*

Maintenance Schedule

REGULAR SERVICE PERIOD Perform at every indicated month or operating hour intervals, whichever occurs first. ITEM		Daily	First 1 month or 20 Hrs. operating	Every 3 months or 50 Hrs. operating	Every 6 months or 150 Hrs. operating	Every one year or 300 Hrs. operating
Engine oil	Inspection	○				
	Change		○		○	
Air cleaner element	Inspection	○				
	Cleaning			○(1)		
Fuel filter cleaning					○	
Spark plug maintenance					○	
Ignition timing adjustment						○(2)
Valve clearance adjustment						○(2)
Combustion chamber and valve cleaning						○(2)
Fuel tube inspection (Replace if necessary)						○

NOTE (1): When used in dusty areas, service the air cleaner more frequently.

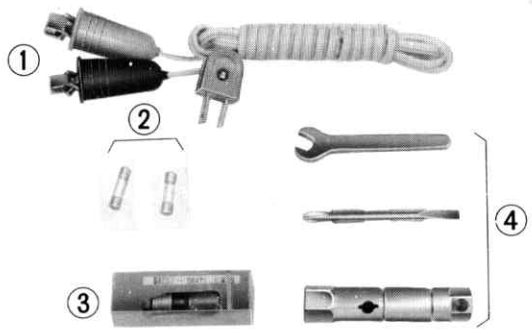
(2): These items should be serviced by an authorized Honda dealer, unless the owner has the proper tools and is mechanically proficient. See the Honda Shop Manual.

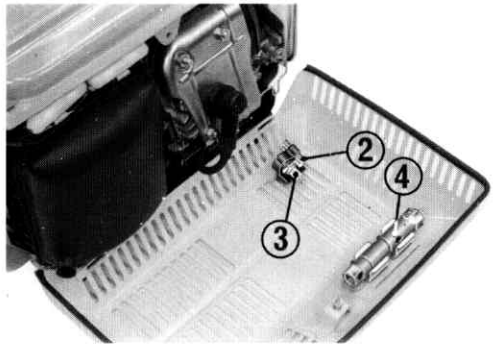
Tool Kit and Accessories

The following tool kit and accessories are included with the generator and packed in the same shipping case.

(1) DC charging leads
(2) Spare fuses
    3.5 Amp. for AC
    10 Amp. for DC
(3) Spark plug
(4) Tool kit

The spare fuses, spark plug and tool kit are stored inside the rear cover as shown below.





Changing Engine Oil

Draining

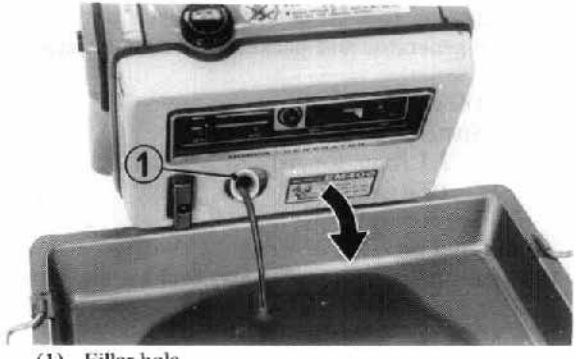
Remove the oil filler cap and drain the oil from the filler hole by tilting the generator.

Filling

Fill oil through the filler hole and check the level. (See page 10).

Oil capacity: 0.3 lit. (0.3 U.S. qt.)

Recommended oil is described on page 11.



(1) Filler hole

(2) Oil level gauge

Air Cleaner Service

A dirty air cleaner will cause a loss of power output.

Cleaning

1. Remove the air cleaner cover and the air cleaner element.
2. Wash the air cleaner element in a non-toxic, high flash-point solvent.
3. Soak the air cleaner element in oil. Squeeze out the excess oil and install the air cleaner case.

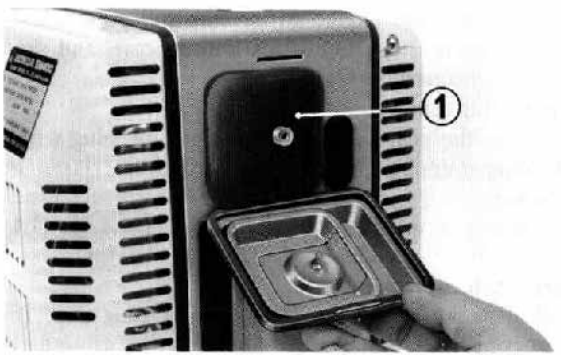
The air cleaner must be serviced at more frequent intervals when operating the generator in extremely dusty areas.

WARNING:

Do not smoke or allow open flames or sparks near any flammable solvent.

CAUTION:

Do not run the generator without the air cleaner. Engine wear may result rapidly.



(1) Air cleaner element

Spark Plug Cleaning And Adjustment

In order for the engine to develop full power, the spark plug must be free of carbon deposits and the plug gap properly set.

Spark plug removal

Remove the rear cover and unscrew the plug with the plug wrench provided in the tool kit.

Cleaning

Use a wire brush to remove carbon deposits. Do not damage the electrodes or scratch the insulator.

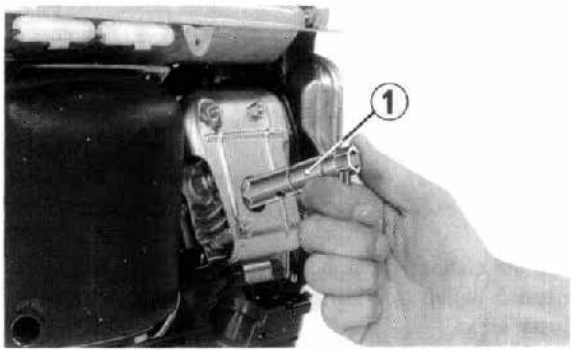
Spark gap adjustment

Use a feeler gauge to measure the plug gap. If neccessary adjust the gap by bending the grounded side electrode.

Standard spark gap: **0.4 mm. (0.016 in.)**

SPECIFIED SPARK PLUG:

NGK CM–6



(1) Spark plug wrench

Checking Breaker Points

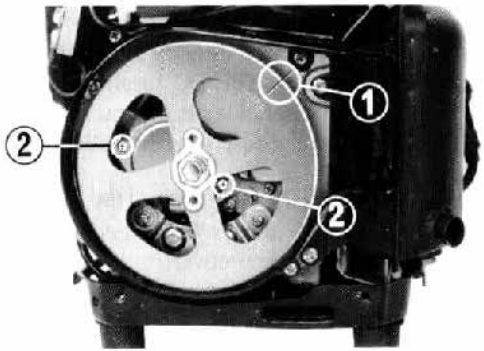
If the contact points become pitted or dirty, they should be cleaned with a point file.

Ignition Timing

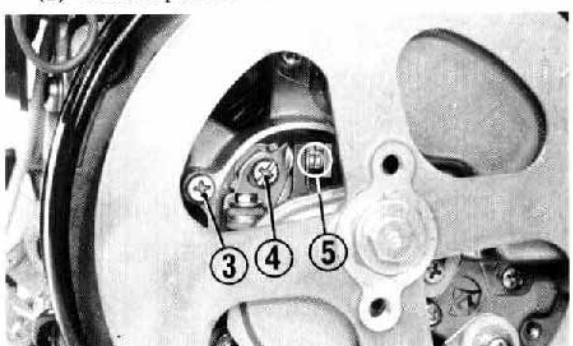
Incorrect ignition timing will cause a drop in power output and starting may be difficult.

Adjustment procedure

1. Remove the front and rear covers, the right end cover and the contact breaker cover.
2. Proper ignition timing is determined by observing when the contact points begin to open. The points should start to open when the red timing mark on the cooling fin aligns with the red timing index mark on the generator case.
3. If the ignition timing requires adjustment, loosen the contact point cover screws and make the adjustment with the adjusting screw.
4. After completing the adjustment, replace the contact points cover, right end cover, and the front and rear covers.



(1) Red mark
(2) Contact point cover screws



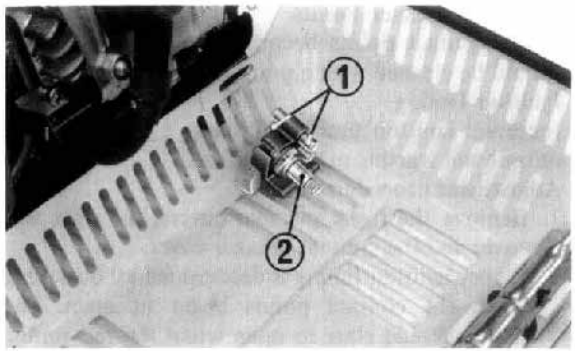
(3) Contact point cover screw
(4) Adjusting screw
(5) Contact points

Fuse Replacement

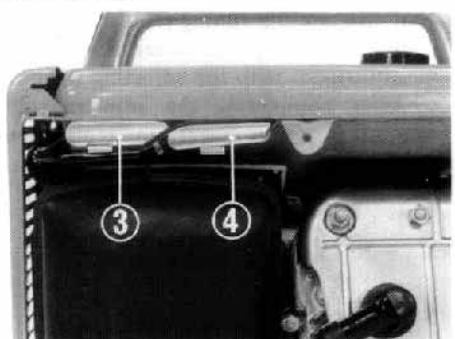
The fuseholder is located directly above the muffler, inside the rear cover. The DC fuseholder is on the left and the AC fuseholder is on the right. Always use the recommended fuse to prevent damage to the generator.

Fuse size AC: 3.5A, DC: 10A

Spare fuses should always be carried in the spare fuseholder under the rear cover.



(1) Spare fuses
(2) Spare spark plug

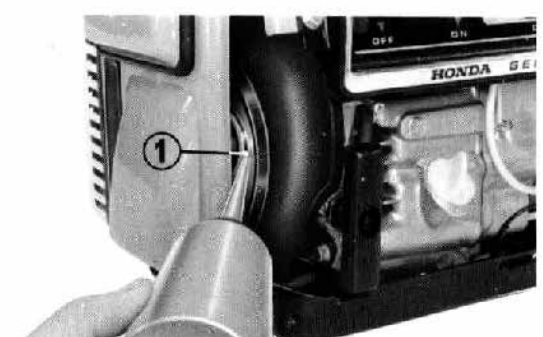


(3) DC fuseholder
(4) AC fuseholder

Lubricating the Recoil Starter

If there is a clatter in the recoil starter, the recoil starter pawls should be lubricated.

For lubrication, remove the front cover and apply two or three drops of oil to the recoil starter through the oil hole in the fan located behind the side cover. Do not over-oil the starter.



(1) Oil hole

Spark Arrestor Cleaning

The exhaust system spark arrestor must be cleaned of accumulated carbon periodically.

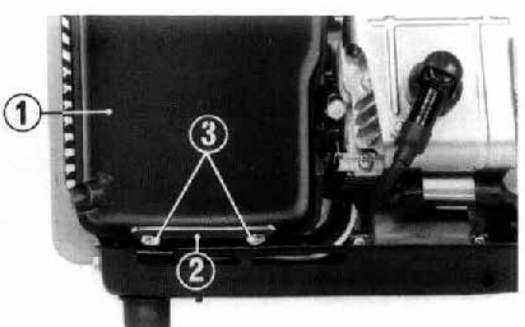
WARNING:

Ensure that the exhaust system is not hot when performing this operation.

1. Remove the rear cover.
2. Remove the spark arrestor cover by loosening and removing the two spark arrestor cover bolts.
3. Remove accumulated carbon with a small brush.
4. Reinstall the spark arrestor cover and rear cover.

NOTE:

When installing the rear cover, ensure that the tabs on the bottom of the cover are inserted into the slots.

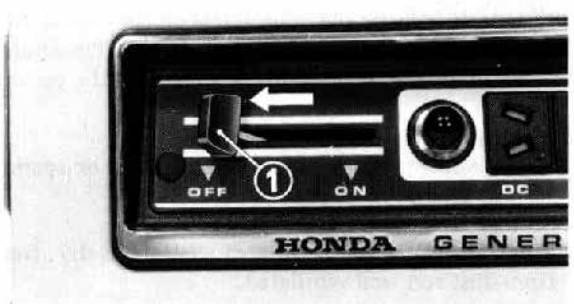


(1) Muffler
(2) Spark arrestor cover
(3) Spark arrestor cover bolts

TRANSPORTING

Observe the following precautions when preparing the generator for transportation.

- Set the control lever to the "OFF" position.
- Ensure that the fuel tank cap is secured.
- Prevent the generator from being bumped or dropped.
- Maintain the generator in an upright position when transporting.



(1) Control lever

EXTENDED STORAGE

When the generator is not to be used for a long period of time, observe the following:

- Set the control lever to the "OFF" position.
- Close the breaker points and valves by pulling the starter rope slowly until compression is felt and the timing mark on the cooling fan just comes up to top position. (the piston is coming up on the compression stroke).

  In this position, both the intake and exhaust valves as well as the breaker points are closed, preventing the breaker points surfaces and the valve face seat from corroding.
- Draining gasoline

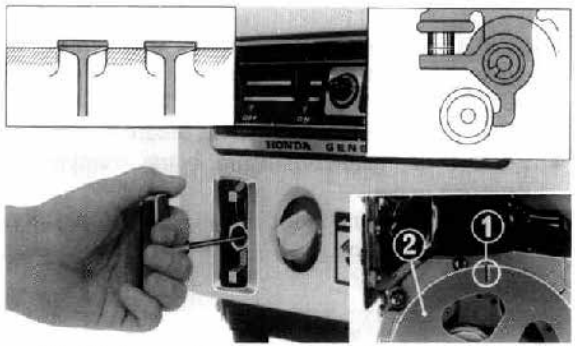
  If the generator is not to be used for over a month, remove the drain screw on the carburetor and move the control lever to the "ON" position to drain the fuel from the tank and the carburetor.

  WARNING:

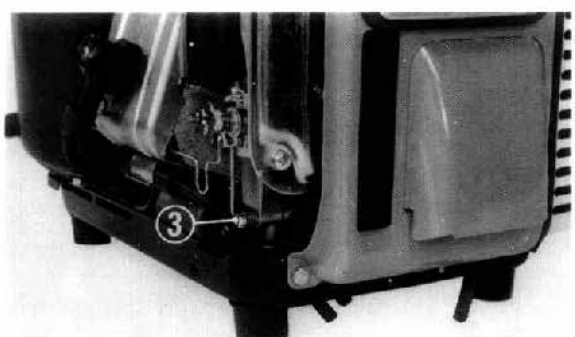
  Do not smoke or allow open flames or sparks near generator when draining.

Storage area

Store the generator in an area where it is dry, free from dust and well ventilated.



(1) Timing mark (2) Cooling fan



(3) Drain screw

SPECIFICATIONS

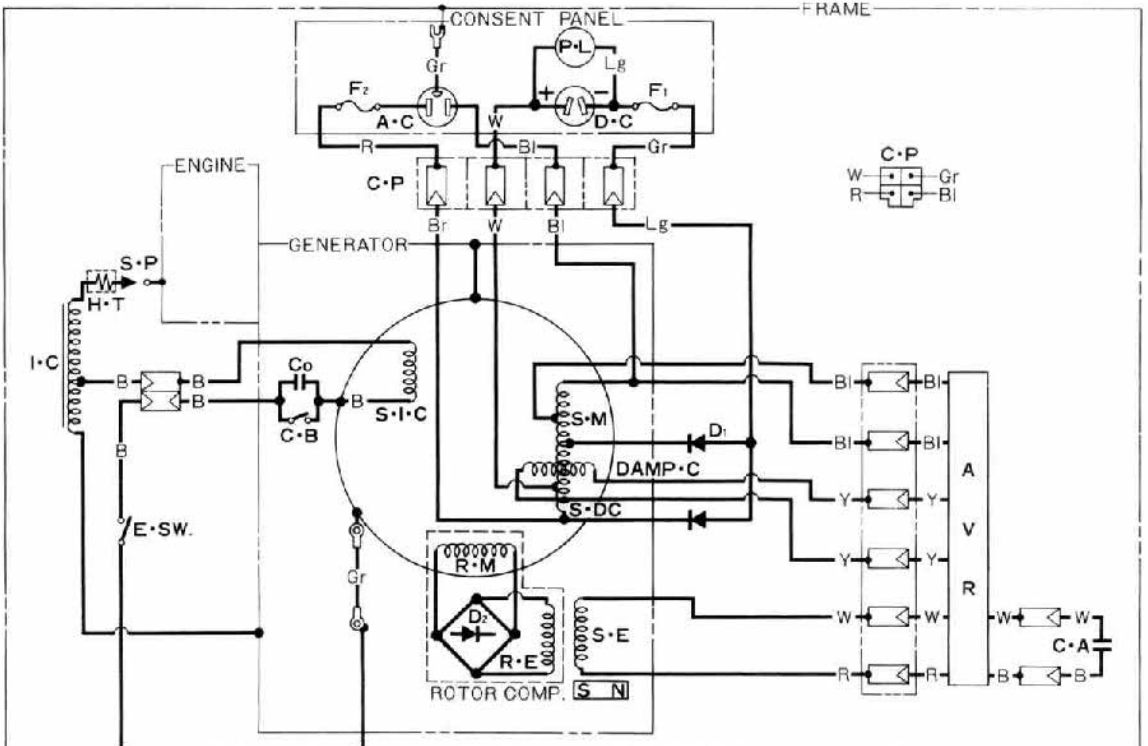
Dimensions & Weight

Length	335 mm (14.0 in.)
Width	260 mm (10.2 in.)
Height	310 mm (12.2 in.)
Dry weight	18.0 kg (39.7 lbs.)
Curb weight	20.0 kg (44.1 lbs.)

Engine

Engine Type	4 cycle side valve, 1 cylinder
Displacement	55.4 cc (3.38 cu. in.)
Bore x Stroke	42 x 40 mm (1.65 x 1.57 in.)
Rated output	0.75 HP/3,840 rpm
Maximum output	1.2 HP/4,000 rpm
Cooling	Forced air cooled
Ignition	Magneto ignition
Spark plug	CM-6 (NGK)
Engine oil capacity	0.3 lit. (0.3 U.S. qt.)
Fuel	Gasoline
Fuel tank capacity	2.0 lit. (0.5 U.S. gal.)
Compression ratio	5.5 : 1

WIRING DIAGRAM



Code	Parts Name	Code	Parts Name
I·C	Ignition Coil	D · C	DC receptacle
H · T	High Tension Terminal	D_2	Diode for Rotor Exciter
S · P	Spark Plug	D_1	Diode for DC output
E · SW	Engine Switch	C · A	Condenser Assy
Co	Condenser	AVR	Automatic Voltage Regulator
C · B	Contact Breaker	DAMP·C	Damper Coil
A · C	AC receptacle	S · DC	Stator, DC Coil
C · P	4 pole Coupler	Gr	Green
S · I · C	Stator (for Ignition Coil)	Br	Brown
F_2	Fuse for AC	Lg	Light green
F_1	Fuse for DC	Bl	Blue
R · M	Rotor Main Coil	Y	Yellow
R · E	Rotor Exciter Coil	W	White
S · E	Stator Exciter Coil	R	Red
S · M	Stator Main Coil	B	Black
P · L	Pilot Lamp		

Current customer service contact information:

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

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

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

American Honda Motor Co., Inc.
Power Equipment Division
Customer Relations Office
4900 Marconi Drive
Alpharetta, GA 30005-8847

Or telephone: (770) 497-6400 M-F, 8:30 am - 5:00 pm EST

When you write or call, please provide the following information:

- Model and serial numbers
- Name of the dealer who sold the Honda power equipment to you
- Name and address of the dealer who services your equipment
- Date of purchase
- Your name, address, and telephone number
- A detailed description of the problem

MEMO

K1
(AH) (SM) A 30007806
PRINTED IN JAPAN

3188421