

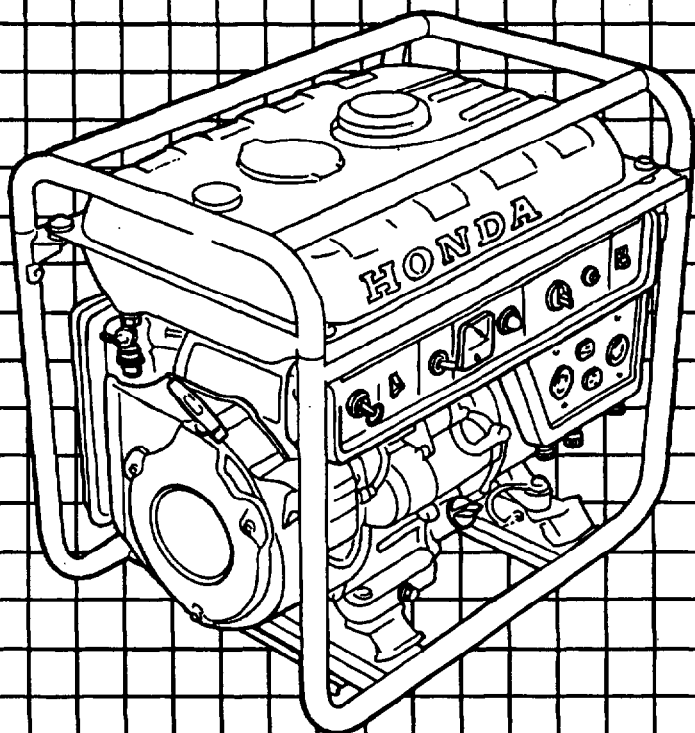
HONDA

Power

Equipment

Owner's Manual

EMS4000 • EMS4500



Thank you for purchasing a Honda generator.

This manual covers operation and maintenance of EMS4000 and EMS4500 generators. All information in this publication is based on the latest product information available at the time of approval for 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 generator and remain with the generator if it is sold.

Pay special attention to statements preceded by the following words:

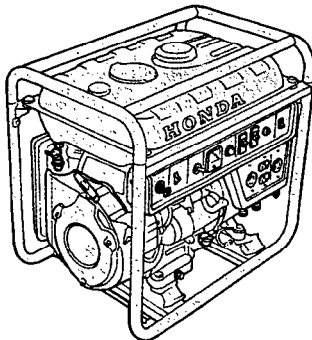
WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

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

NOTE: Gives helpful information.

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

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



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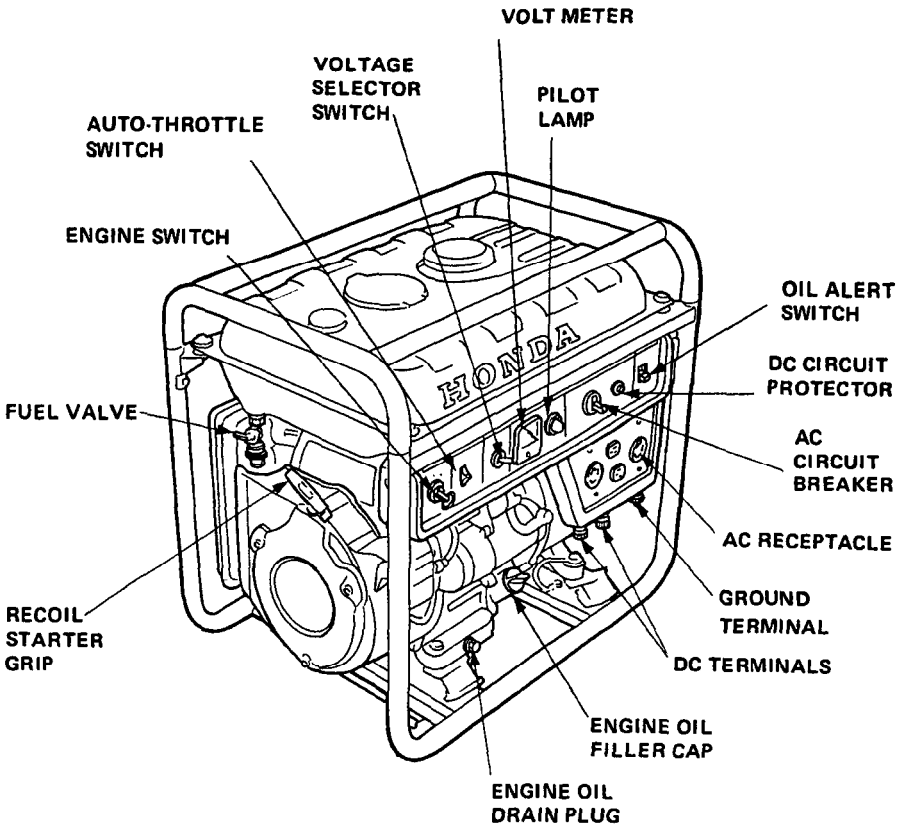
1. GENERATOR SAFETY

WARNING

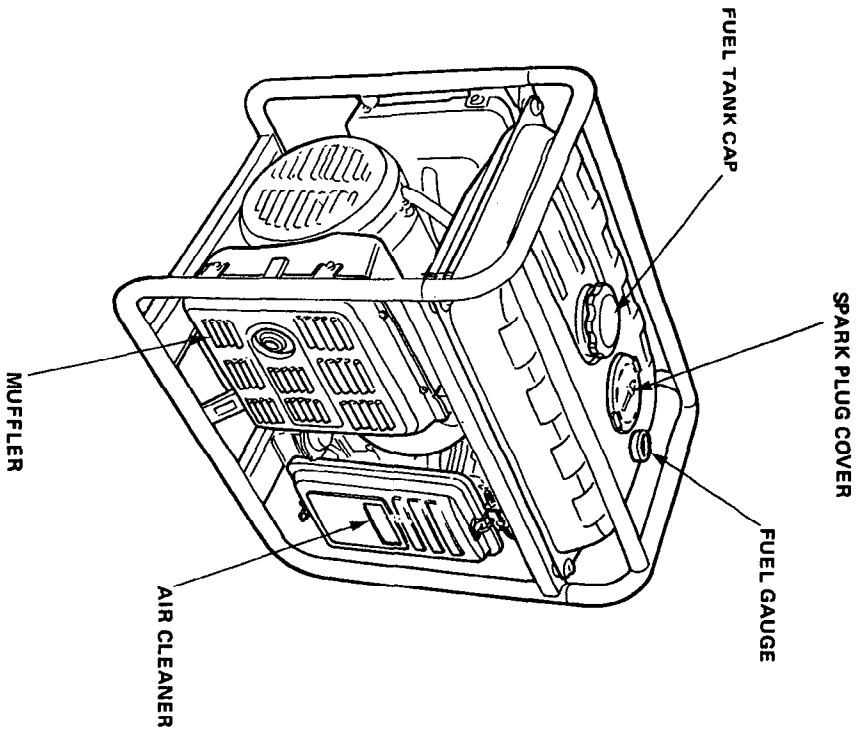
To ensure safe operation –

- Place the generator at least 1 m (3 ft) away from buildings or other equipment while operating.
- Operate the generator on a level surface.
If the generator is tilted, fuel spillage may result.
- Exhaust gas contains poisonous carbon monoxide.
Never run the generator in an enclosed area.
Be sure to provide adequate ventilation.
- Know how to stop the generator quickly and understand operation of all the controls. Never permit anyone to operate the generator without proper instructions.
- Keep children and pets away from the generator when it is in operation.
- Keep away from rotating parts while the generator is running.
- The generator is a potential source of electrical shocks when misused; do not operate with wet hands.
Do not operate the generator in rain or snow and do not let it get wet.

2. COMPONENT IDENTIFICATION



(EMS4500)



3. PRE-OPERATION CHECK

CAUTION: Be sure to check the generator on a level surface with the engine stopped.

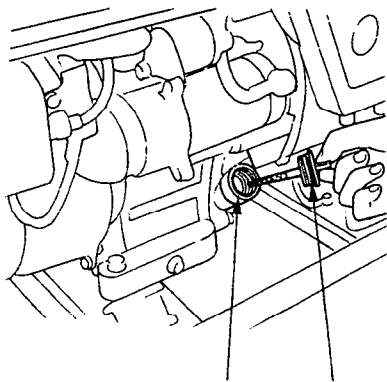
1. Check the engine oil level.

CAUTION: Engine oil is a major factor affecting engine performance and service life. Non-detergent and 2-stroke engine oils are not recommended.

Use Honda 4-stroke oil, or an equivalent high detergent, premium quality motor oil certified to meet or exceed U.S. automobile manufacturer's requirements for Service Classification SE or SF. (Motor oils classified SE or SF will show this designation on the container.)

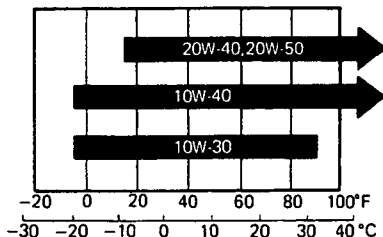
SAE 10W-40 is recommended for general, all-temperature use.

Remove the oil filler cap, and wipe the dipstick with a clean rag. Check the oil level by inserting the dipstick in the filler hole without screwing it in. If the oil level is below the end of the dipstick, add oil to the top of the oil filler neck.



FILLER HOLE

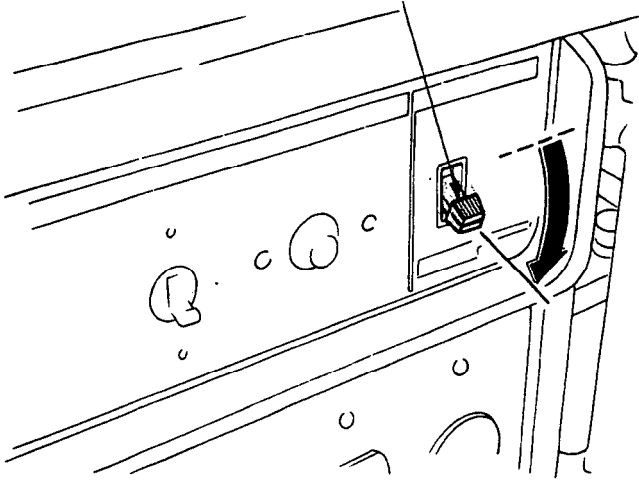
OIL FILLER CAP



NOTE: The Oil Alert System will automatically stop the engine before the oil level falls below the safe limit. However, to avoid the inconvenience of an unexpected shutdown, it is still advisable to visually inspect the oil level regularly.

If the Oil Alert Switch is tripped, add oil to the top of the oil filler neck, re-set the Oil Alert Switch, and restart the engine according to instructions (P.9).

OIL ALERT SWITCH



2. Check the fuel level.

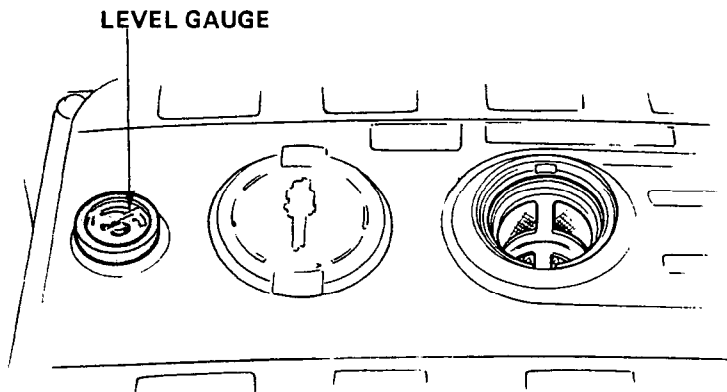
Use any brand of regular grade automotive gasoline (unleaded gasoline is preferred) with an antiknock index of 86 or higher as calculated using the Cost of Living Council formula (equal to 91 Research Octane Number or higher.)

Never use an oil/gasoline mixture or dirty gasoline. Avoid getting dirt, dust or water in the fuel tank.

CAUTION: Gasoline substitutes are not recommended; they may be harmful to fuel system components.

WARNING

- Gasoline is extremely flammable and 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 generator is refueled or where gasoline is stored.
- Do not overfill the tank and make sure the filler cap is securely closed after refueling.
- Be careful not to spill fuel when refueling. Fuel vapor or spilled fuel may ignite. If any fuel is spilled, make sure the area is dry before starting the engine.



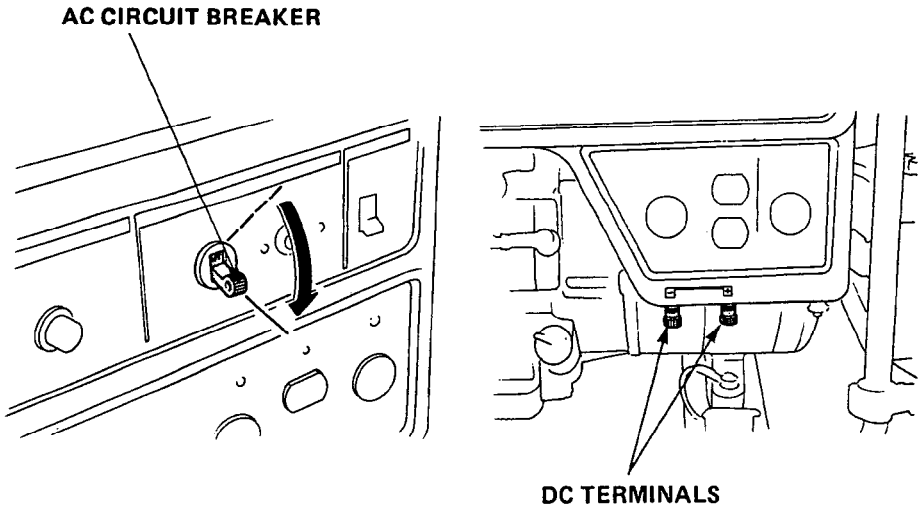
If a battery is used —

- ## 3. Check that the battery electrolyte level is between the marks on the case.
- Be sure that the cable connections are secure. (See pages 38 and 39.)

4. STARTING THE ENGINE

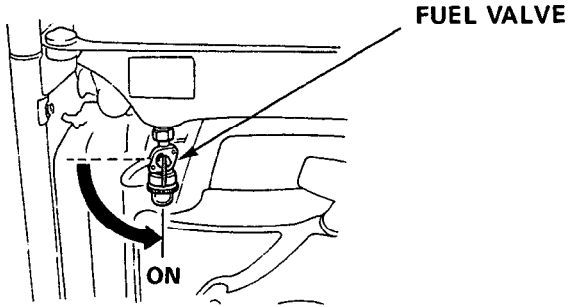
NOTE: Make sure that the AC circuit breaker is OFF and that nothing connected to the DC terminals.

The generator may be hard to start if a load is connected.

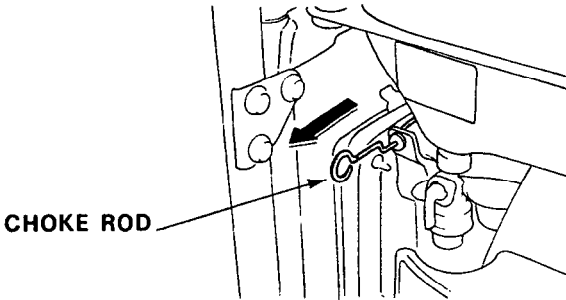


[MANUAL STARTING]

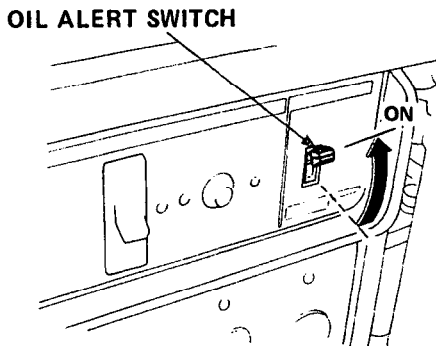
1. Turn the fuel valve on.



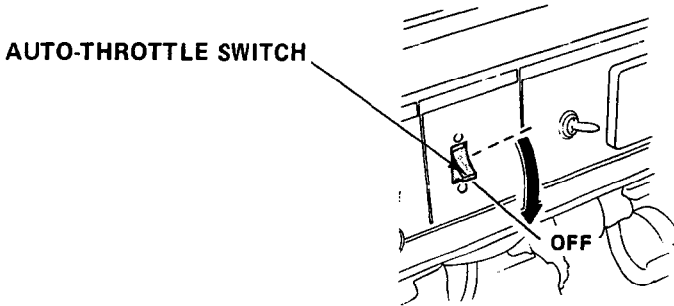
2. Pull the choke rod out to CLOSE.



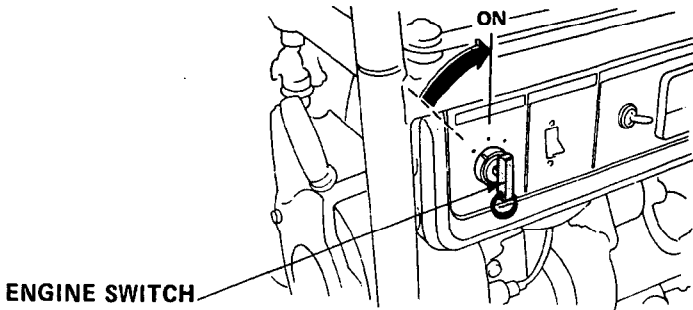
3. Make sure the Oil Alert switch is on.



-
4. Make sure the auto-throttle switch is off, or more time will be required for warm up.

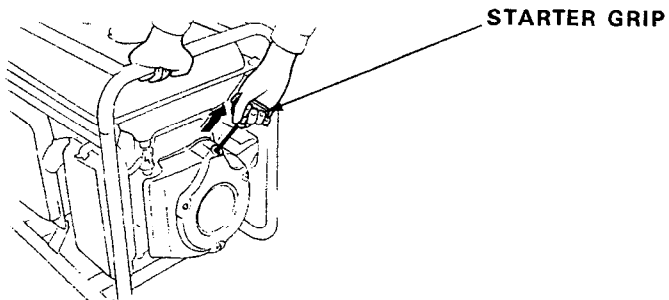


5. Turn the engine switch on.

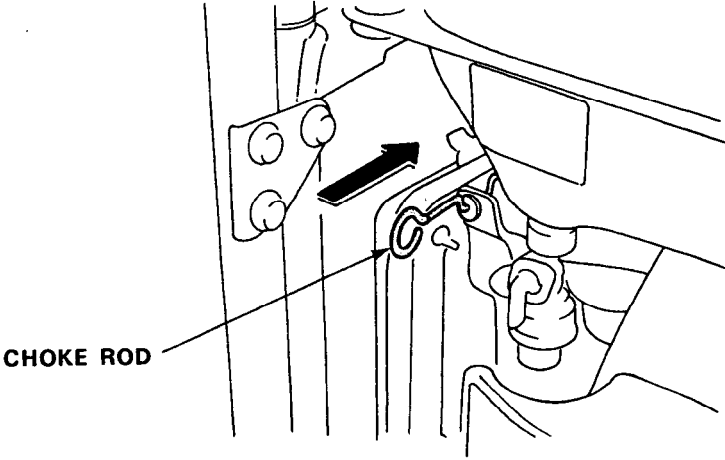


6. Pull the starter grip until compression is felt, then pull briskly.

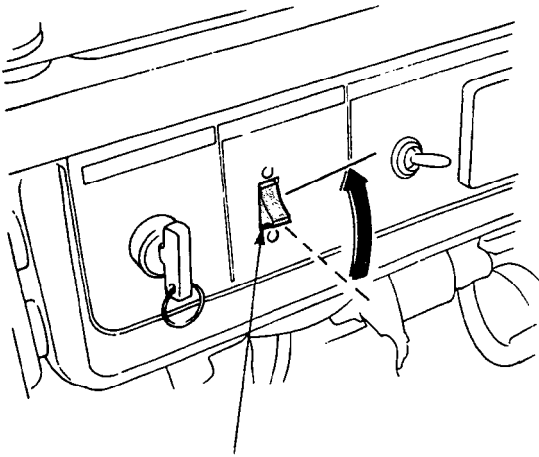
NOTE: Do not allow the starter grip to snap back. Return it slowly by hand.



7. Push the choke rod to OPEN as the engine warms up.



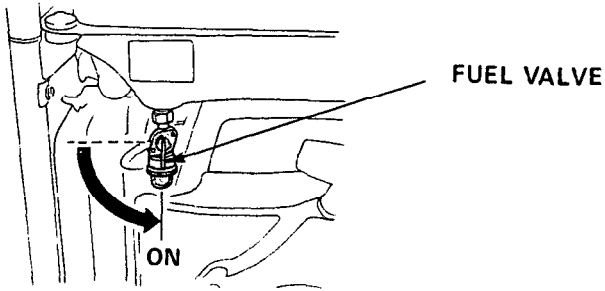
8. If auto-throttle will be used, turn the switch to "AUTO" after the engine has warmed up.



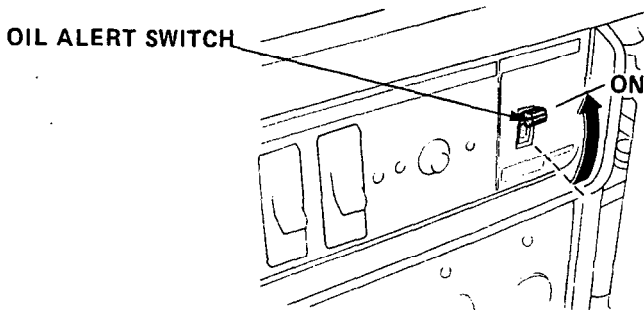
AUTO-THROTTLE SWITCH

[ELECTRIC STARTING]

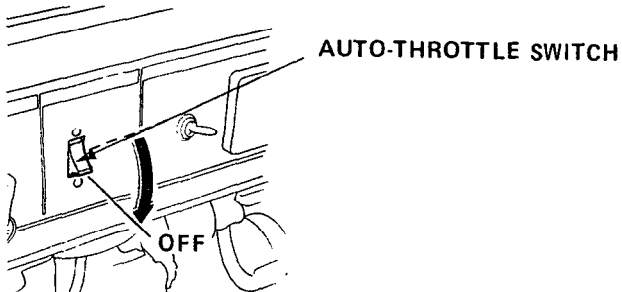
1. Turn the fuel valve on.



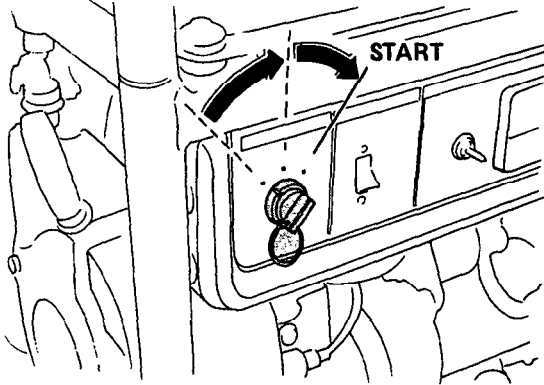
2. Make sure the oil alert switch is on.



3. Make sure the auto-throttle switch is off, or more time will be required for warm up.



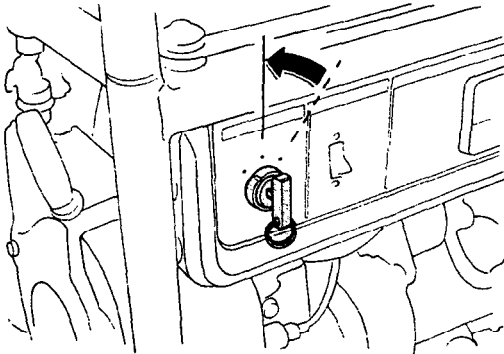
4. Turn the engine switch to **START** and hold it there until the engine starts.



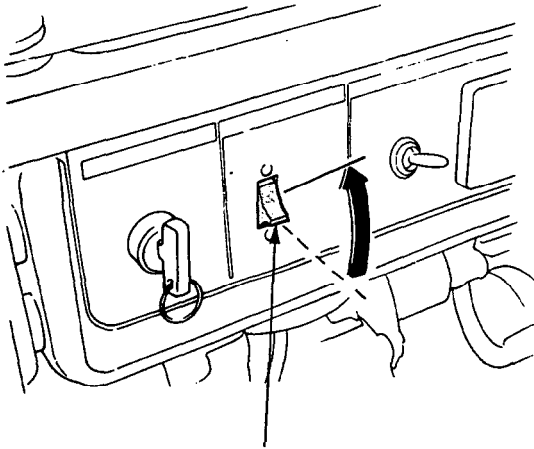
NOTE:

- If a relay box is attached for remote control operation, make sure the switch on the relay box is turned off, or the engine will not start.
- When the speed of the starter motor drops after a period of time, it is an indication that the battery should be recharged.

5. After the engine starts, let the engine switch return to **ON**.



6. Turn the auto-throttle switch to AUTO after the engine has warmed up.



AUTO-THROTTLE SWITCH

NOTE: The choke is operated automatically whenever a battery is connected to the generator's starting circuit.

5. GENERATOR USE

WARNING To prevent electrical shock from faulty appliances, the generator should be grounded. Connect a length of heavy wire between the ground terminal and the ground source.

CAUTION:

- Limit operation requiring maximum power (EMS4000 : 4.0 kW, EMS4500 : 4.5 kW) to 30 minutes.
For continuous operation, do not exceed the rated power (EMS4000 : 3.8 kW, EMS4500 : 4.0 kW).
In either case, the total wattage of all appliances connected must be considered.
- Do not exceed the current limit specified for any one receptacle.
- Connections for standby power to household circuits must be made by a qualified electrician and must comply with all applicable laws and electrical codes. Improper installation may result in personal injury or damage to equipment or property.

Auto-throttle system

With the switch in the AUTO position, engine speed is automatically reduced to an idle when all loads are turned off or disconnected. When appliances are turned on or reconnected, the engine resumes the rated speed. At OFF, the auto-throttle system does not operate.

NOTE:

- AUTO is recommended to minimize fuel consumption.
- The auto-throttle system will not respond to electrical loads of less than 1 ampere.
- The system is not effective for use with appliances that require only momentary power. To avoid extended warm-up periods, keep the switch OFF until the engine reaches operating temperature.

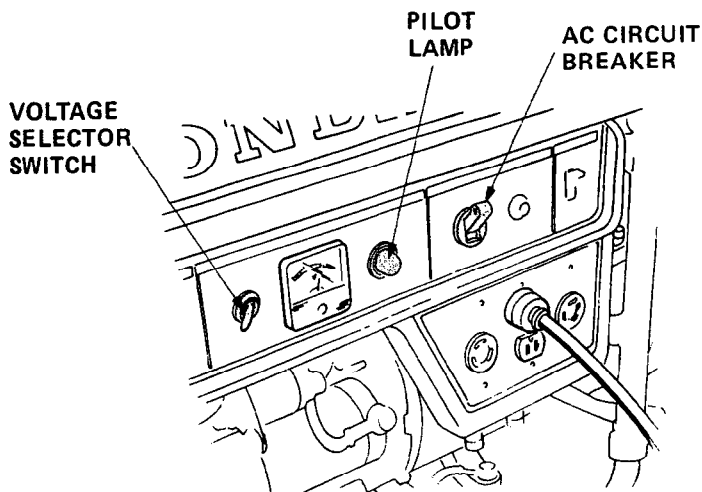
AC applications

1. Start the engine and make sure the pilot lamp comes on. If not, the filament may be burnt out.
2. Turn the voltage selector switch to either position as required. When the switch is turned to "120V ONLY" position, you can use only 120V AC. At "120V/240V" position, you can use both 120V and 240V receptacles.
3. Switch on the AC Circuit Breaker.
4. Plug in the appliance.

CAUTION: Be sure that appliances do not exceed the rated load for more than 30 minutes, and never exceed the maximum load. Substantial overloading will switch off the circuit breaker. Marginal overloading may not switch off the circuit breaker, but it will shorten the service life of the generator.

Be sure that all appliances are in good working order before connecting them to the generator. If an appliance begins to operate abnormally, becomes sluggish, or stops suddenly, turn off the circuit breaker and the generator engine switch immediately. Then disconnect the appliance and examine it for signs of malfunction.

NOTE: This generator is equipped with an AVR (Automatic Voltage Regulator) for stable voltage supply.



DC application

The DC terminals may be used for charging 12 volt automotive-type batteries only.

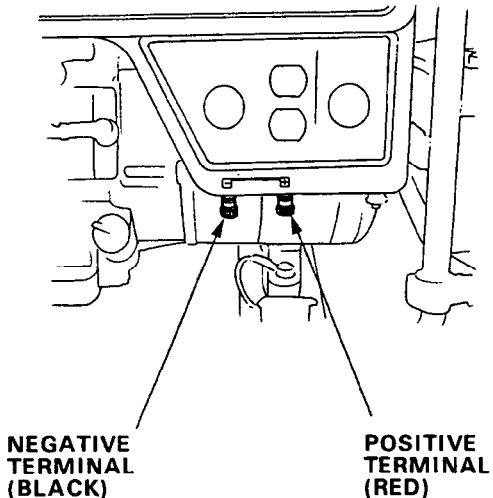
WARNING Batteries produce explosive gases. Keep sparks, flames, and cigarettes away. To prevent the possibility of creating a spark near the battery, connect charging cables first to the battery, then to the generator, and disconnect cables first at the generator.

CAUTION:

- Do not attempt to start an automobile engine while the generator is still connected to the battery. The generator may be damaged.
- Connect the positive battery terminal to the positive generator terminal. Do not reverse the charging cables, or serious damage to the generator and/or battery may occur.

NOTE:

- The DC terminals may be used while the AC power is in use.
- An overloaded DC circuit will trip the DC circuit protector (push button comes out). If this happens, wait a few minutes before pushing the circuit protector to resume operation.

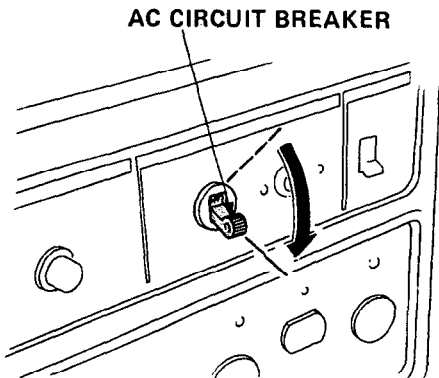


6. STOPPING THE ENGINE

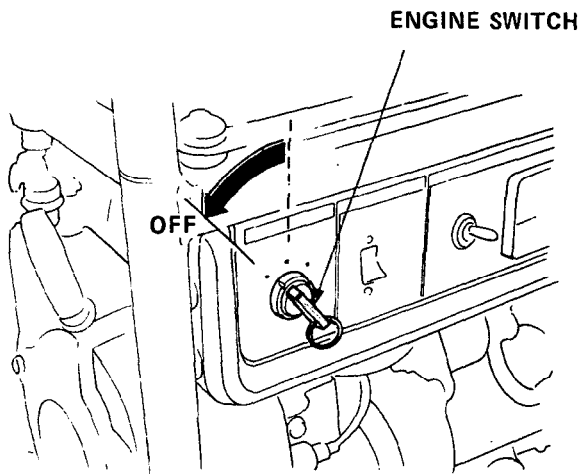
NOTE: To stop the engine in an emergency, turn the engine switch **OFF**.

In normal use:

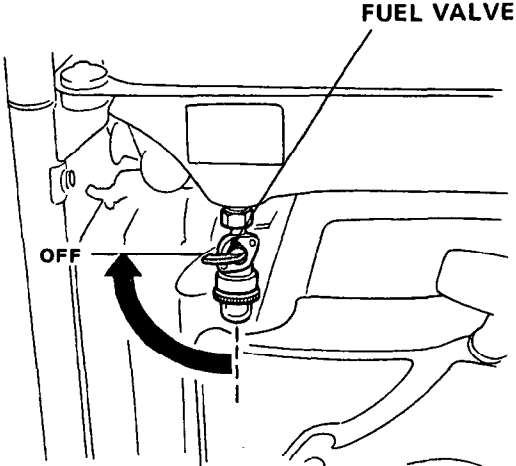
1. Turn the AC circuit breaker off and/or disconnect the charging leads at the DC terminals.



2. Turn the engine switch **OFF**.




3. Turn the fuel valve OFF.



7. MAINTENANCE

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

Inspect or service as scheduled in the table on the next page.

 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 parts which are not of equivalent quality may damage the generator.

Maintenance Schedule

REGULAR SERVICE PERIOD Perform at every indicated month or operating hour interval, whichever occurs first.		Daily	First month or 20 Hrs.	Every 3 months or 50 Hrs.	Every 6 months or 100 Hrs.	Every year or 300 Hrs.
ITEM						
Engine oil	Inspection	●				
	Change		●		●	
Air cleaner element	Inspection	●				
	Cleaning			● (1)		
Fuel filter cleaning					●	
Spark plug maintenance					●	
Valve clearance adjustment						● (2)
Combustion chamber and valve cleaning						● (2)
Fuel line inspection (Replace if necessary)						●
Spark arrester		Clean every 100 operating hours.				

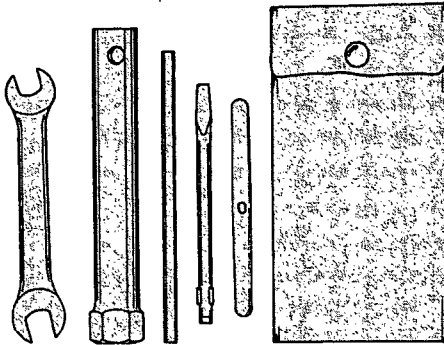
NOTE (1) : Service more frequently when used in dusty areas.

(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

The tools supplied are necessary for performing some periodic maintenance, simple adjustments and repairs.

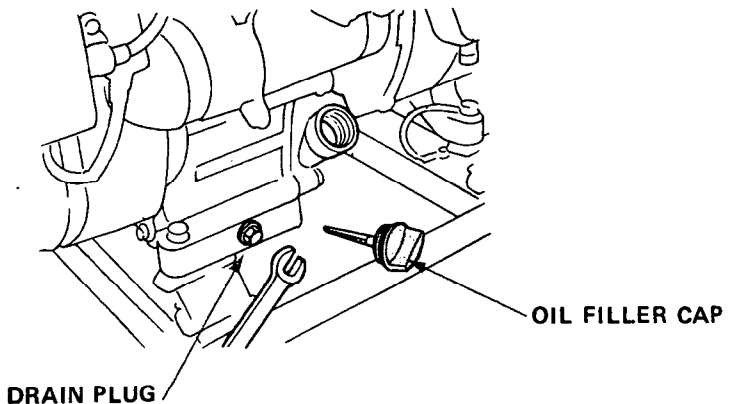
Always keep the kit with the generator.



Changing oil

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

1. Remove the drain plug and filler cap, and drain the oil. Retighten the plug securely.
2. Refill with the recommended oil (see page 6) and check the level.



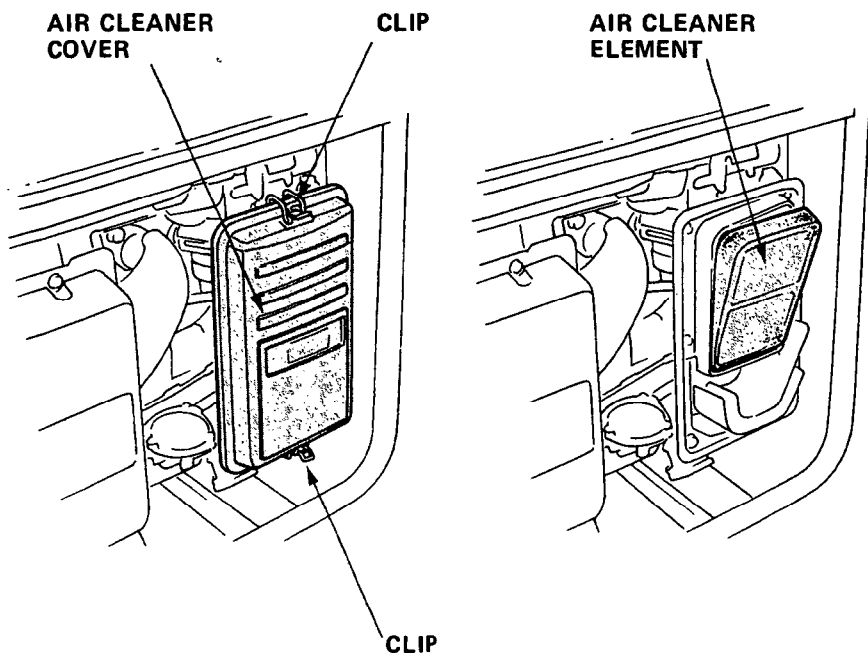
Air cleaner service

A dirty air cleaner will restrict air flow to the carburetor. To prevent carburetor malfunction, service the air cleaner regularly (page 22). Service more frequently when operating the generator in extremely dusty areas.

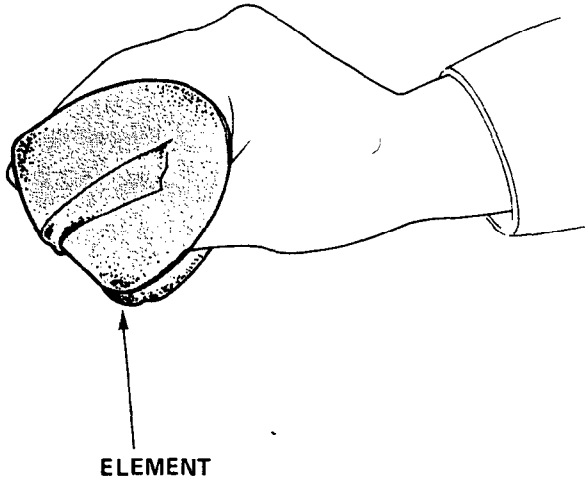
WARNING Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.

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

1. Unsnap the clips, remove the air cleaner cover and remove the element.



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2. Wash the element in a non-flammable or high flash point solvent and dry it thoroughly.
 3. Soak the element in clean engine oil and squeeze out the excess oil.
 4. Reinstall the air cleaner element and the cover.

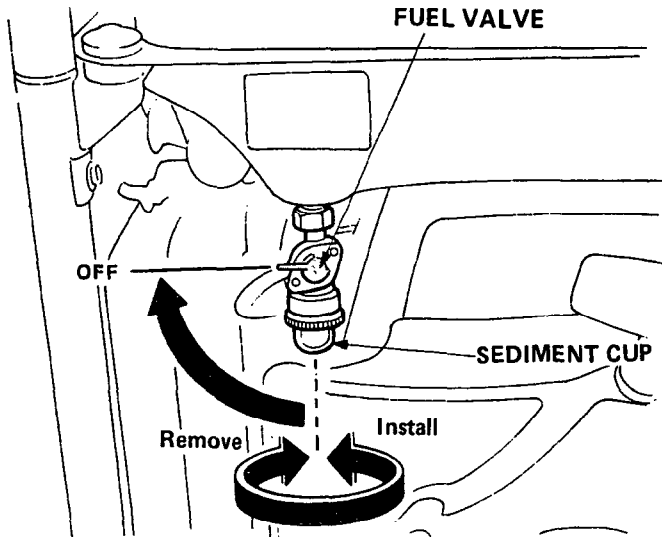


Sediment cup service

The sediment cup prevents dirt or water which may be in the fuel tank from entering the carburetor. If the engine has not been run for a long time, the cup should be cleaned.

1. Turn the fuel valve OFF. Remove the sediment cup.
2. Clean the cup thoroughly.
3. Reassemble. Do not damage the rubber gasket.

WARNING After installing the sediment cup, check for fuel leaks and make sure the area is dry before starting the engine.

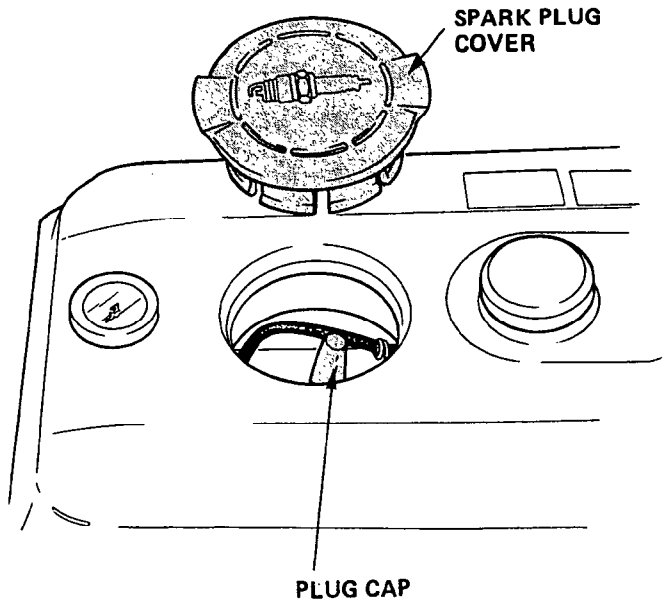


Spark plug service

Recommended spark plug: BPR4HS-10 (NGK)
W14FPR-UL10 (ND)

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

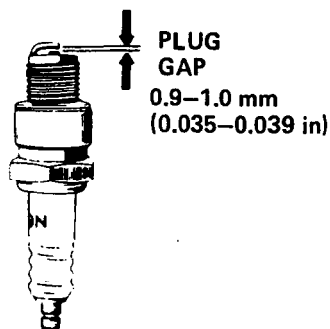
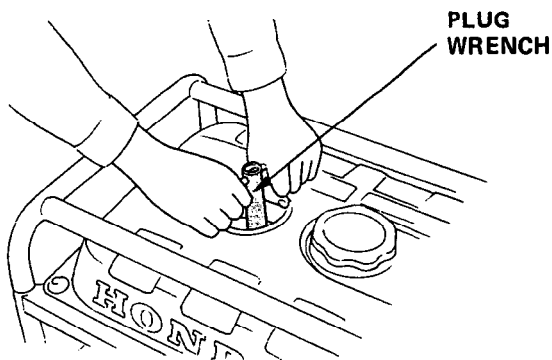
1. Remove the spark plug cover.
2. Clean any dirt from around the spark plug base.
3. Remove the spark plug cap.



-
4. Use the wrench supplied in the tool kit to remove the spark plug.
 5. Visually inspect the spark plug. Discard it if the insulator is cracked or chipped.
 6. Measure the plug gap with a feeler gauge.
The gap should be 0.9–1.0 mm (0.035–0.039 in). Correct as necessary by bending the side electrode.
 7. Attach the plug washer. Thread the plug in by hand to prevent cross-threading.
 8. Tighten a new spark plug 1/2 turn with the wrench to compress the washer. If you are reusing a plug, it should only take 1/8–1/4 turn after the plug seats.

CAUTION:

- The spark plug must be securely tightened. An improperly tightened plug can become very hot and possibly damage the engine.
- Never use a spark plug with an improper heat range.

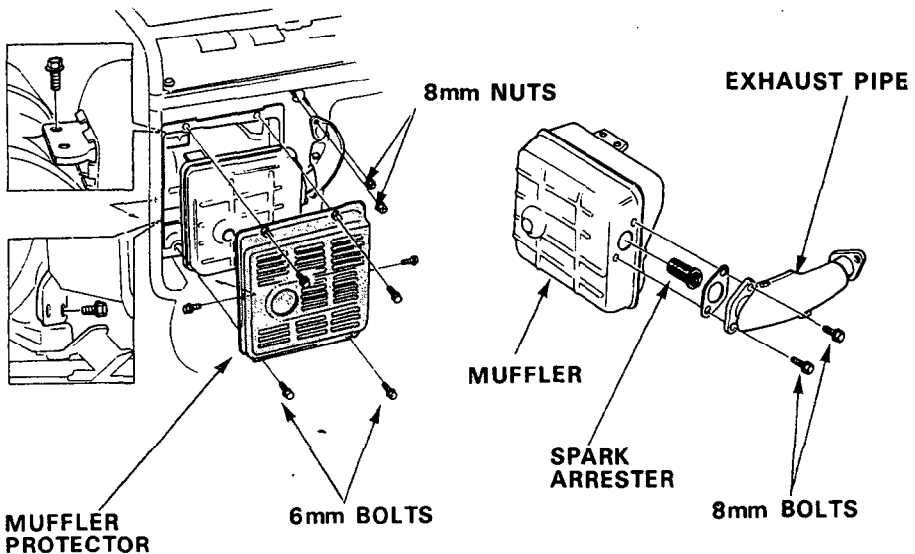


Spark arrester maintenance

WARNING If the generator 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. Loosen the bolts and nuts and remove the muffler.
2. Loosen two 8mm bolts to remove the exhaust pipe.
3. Check the muffler exhaust port for carbon deposits; clean if necessary.
4. Remove the spark arrester from the muffler.
Clean the screen with a stainless steel wire brush and inspect the mesh for damage.
Replace the spark arrester if there are any holes or breaks in the screen.
5. Install the spark arrester in the muffler.
6. Install the muffler and gasket and tighten the bolts and nuts securely.

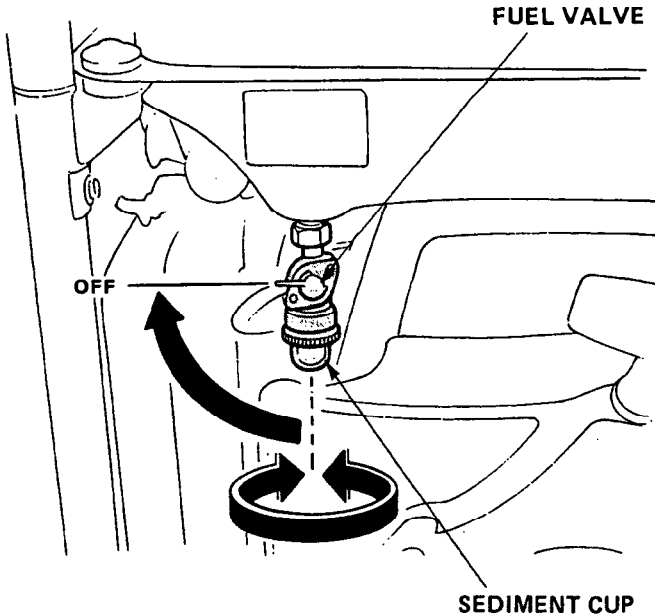


8. TRANSPORTING/STORAGE

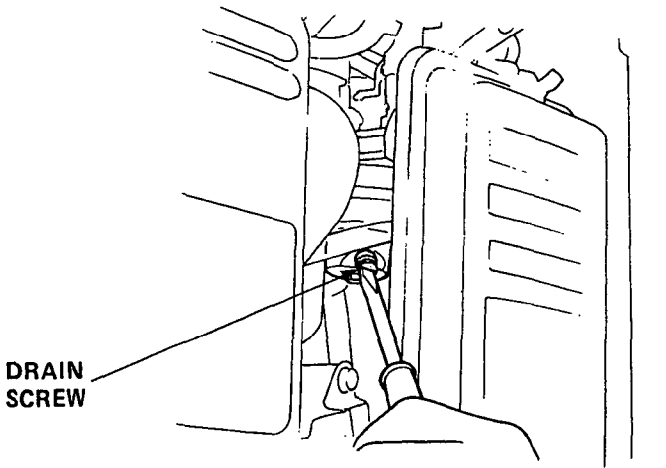
WARNING When transporting the generator, turn the engine switch OFF and keep the generator level to prevent fuel spillage. Fuel vapor or spilled fuel may ignite.

Before storing the unit for an extended period:

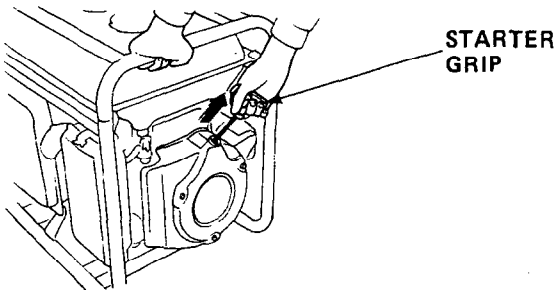
1. Be sure the storage area is free of excessive humidity and dust.
2. Drain the fuel –
 - a. With the fuel valve OFF, remove and empty the sediment cup.
 - b. Turn the fuel valve ON and drain the gasoline in the fuel tank into a suitable container.
 - c. Replace the sediment cup and tighten securely.



-
- d. Drain the carburetor by loosening the drain screw. Drain the gasoline into a suitable container.



- e. Slowly pull the starter grip until resistance is felt. At this point, the piston is coming up on its compression stroke and both the intake and exhaust valves are closed. Storing the engine in this position will help to protect it from internal corrosion.



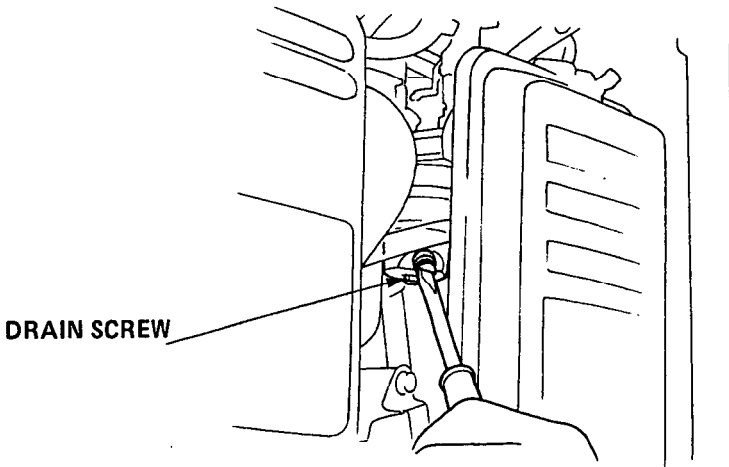
9. TROUBLESHOOTING

A. When the engine will not start:

1. Is there enough fuel?
2. Is the fuel valve on?
3. Is gasoline reaching the carburetor?

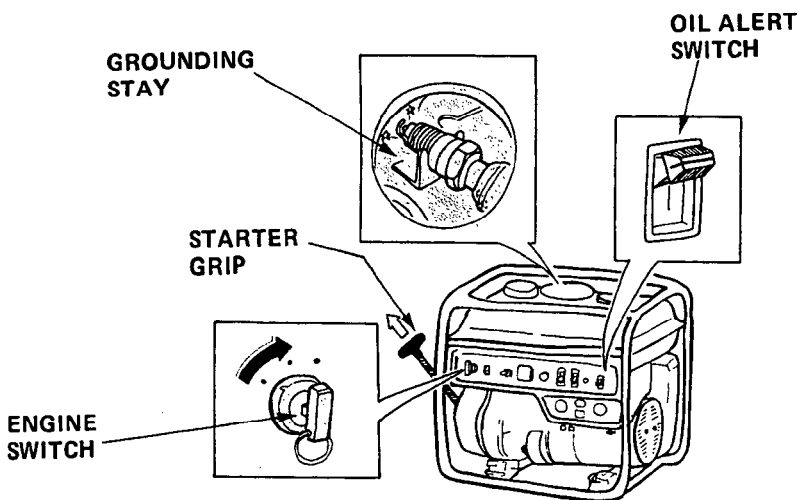
To check, loosen the drain screw with the fuel valve on.

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.



4. Is there enough oil in the crankcase? Is the oil alert switch on?
5. Is the AC circuit breaker off and nothing connected to the DC terminals?
6. Is the engine switch on?
7. Is there a spark at the spark plug (page 27)?

-
- a. Remove the spark plug cover and cap. Clean any dirt from around the spark plug base, then remove the spark plug.
 - b. Install the spark plug in the plug cap.
 - c. Turn the engine switch on.
 - d. Be sure the oil alert switch is on.
 - e. Grounding the side electrode to the stay, pull the recoil starter to see if sparks jump across the gap.



- f. If there are no sparks, replace the plug and check again.
If OK, try to start the engine according to the instructions.
8. If there is still no spark or if the engine still does not start, take the generator to an authorized Honda dealer.

-
- B. When the engine starts but stops immediately:**
Is there enough oil in the crankcase?
If not, the oil alert switch will turn off after starting.
- C. No electricity at the AC receptacles:**
- 1. Are the AC circuit breakers on?**
 - 2. Check the electrical appliance or equipment for any defects.**
- D. No electricity at the DC terminals:**
- 1. Is the DC circuit protector on?**
 - 2. Check the condition of the battery cables and the battery itself.**

10. SPECIFICATIONS

Dimensions

Length x Width x Height	650 x 425 x 575 mm (25.6 x 16.7 x 22.6 in)
Dry weight	85.0kg(187.4lb)

Engine

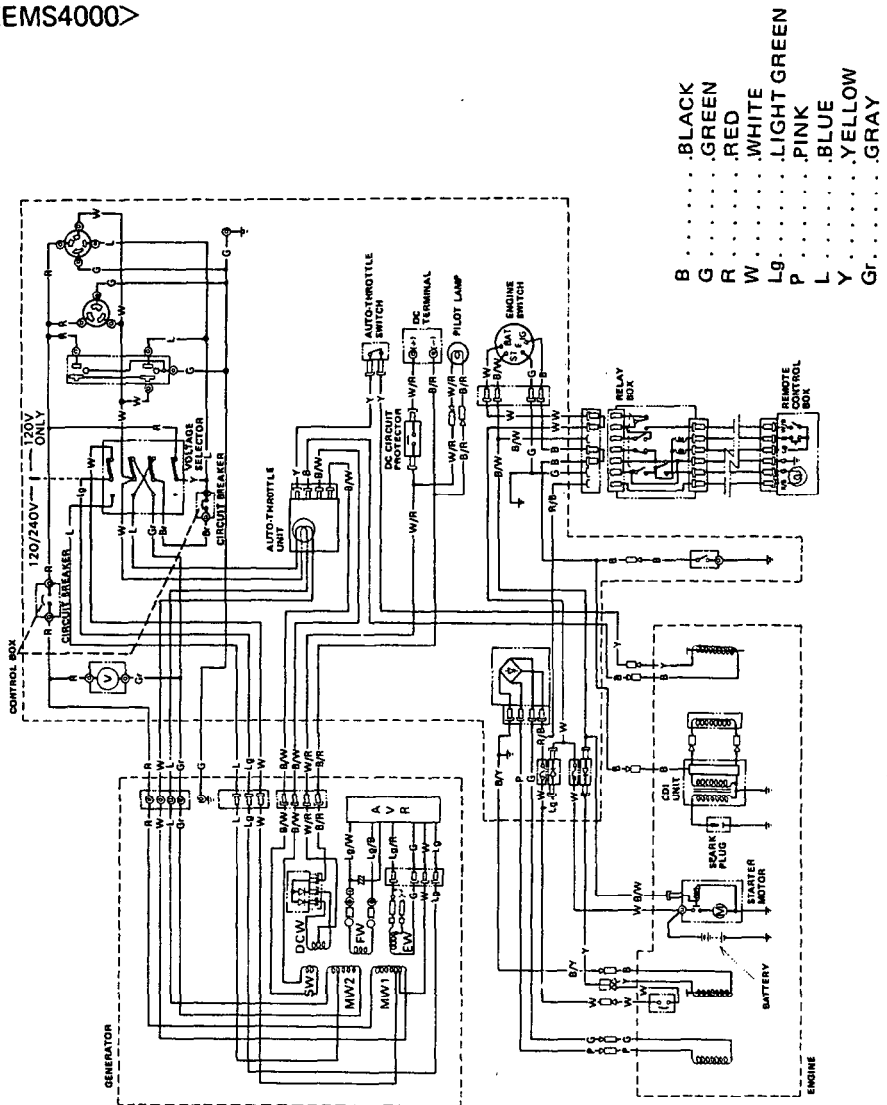
Model	Honda GE400
Engine Type	4-Stroke, side valve, 1 cylinder
Displacement (Bore x Stroke)	406 cc (24.8 cu in) [86 x 70 mm (3.4 x 2.8 in)]
Compression Ratio	6.8 : 1
Engine Speed	3,600 rpm
Cooling System	Forced air cooling
Ignition System	CDI (Capacitor Discharge Ignition)
Oil Capacity	1.2 ℓ (5.1 US qt)
Fuel Tank Capacity	16.5 ℓ (4.4 US gal)
Spark Plug	BPR4HS-10 (NGK) W14FPR-UL10 (ND)

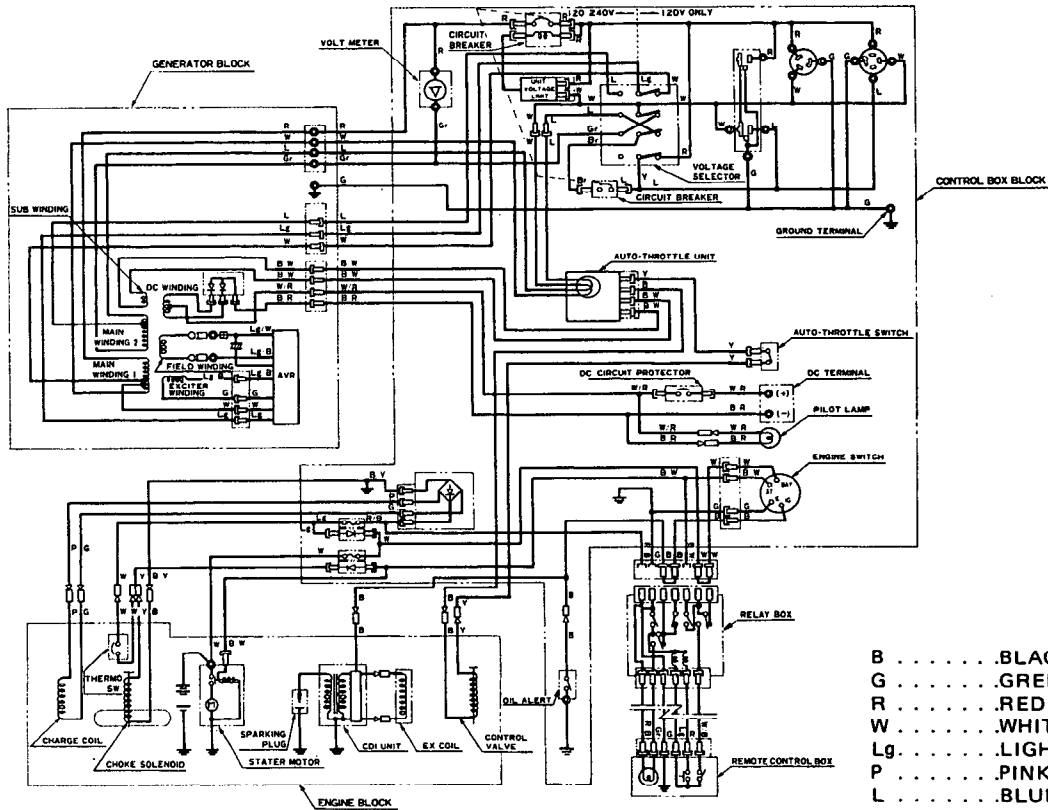
Generator

MODEL		EMS4000	EMS4500
AC output	Rated voltage	120V/240V	
	Rated frequency	60Hz	
	Rated ampere	32.0A/16.0A	33.5A/16.5A
	Rated output	3.8kW(3.8kVA)	4.0kW(4.0kVA)
	Maximum output	4.0kW(4.0kVA)	4.5kW(4.5kVA)
DC output	Only for charging 12 V automotive batteries. Maximum charging output=8.3A		

11. WIRING DIAGRAM

<EMS4000>





- BBLACK
- GGREEN
- RRED
- WWHITE
- LgLIGHT GREEN
- PPINK
- LBLUE
- YYELLOW
- GrGRAY

12. INSTALLATION OF OPTIONAL PARTS

Battery mount kit

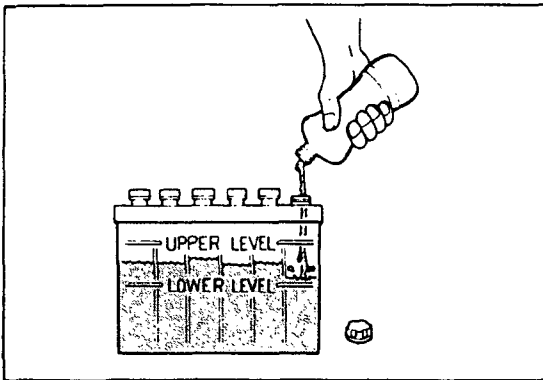
1. Remove and retain the two bolts attaching the upper frame to the lower frame on the generator side. Position the battery guards on the lower frame and install using the bolts retained. (See page 39)
2. Position the battery tray on the battery guards and install with the attaching hardware shown.
3. Pass the starter cable between the control box and generator and connect to the outer terminal of the starter magnetic relay.
4. Attach the ground cable to the frame at the upper left of the generator as shown. Tighten securely.
5. Install the battery in the battery tray and connect the battery cables to the battery.

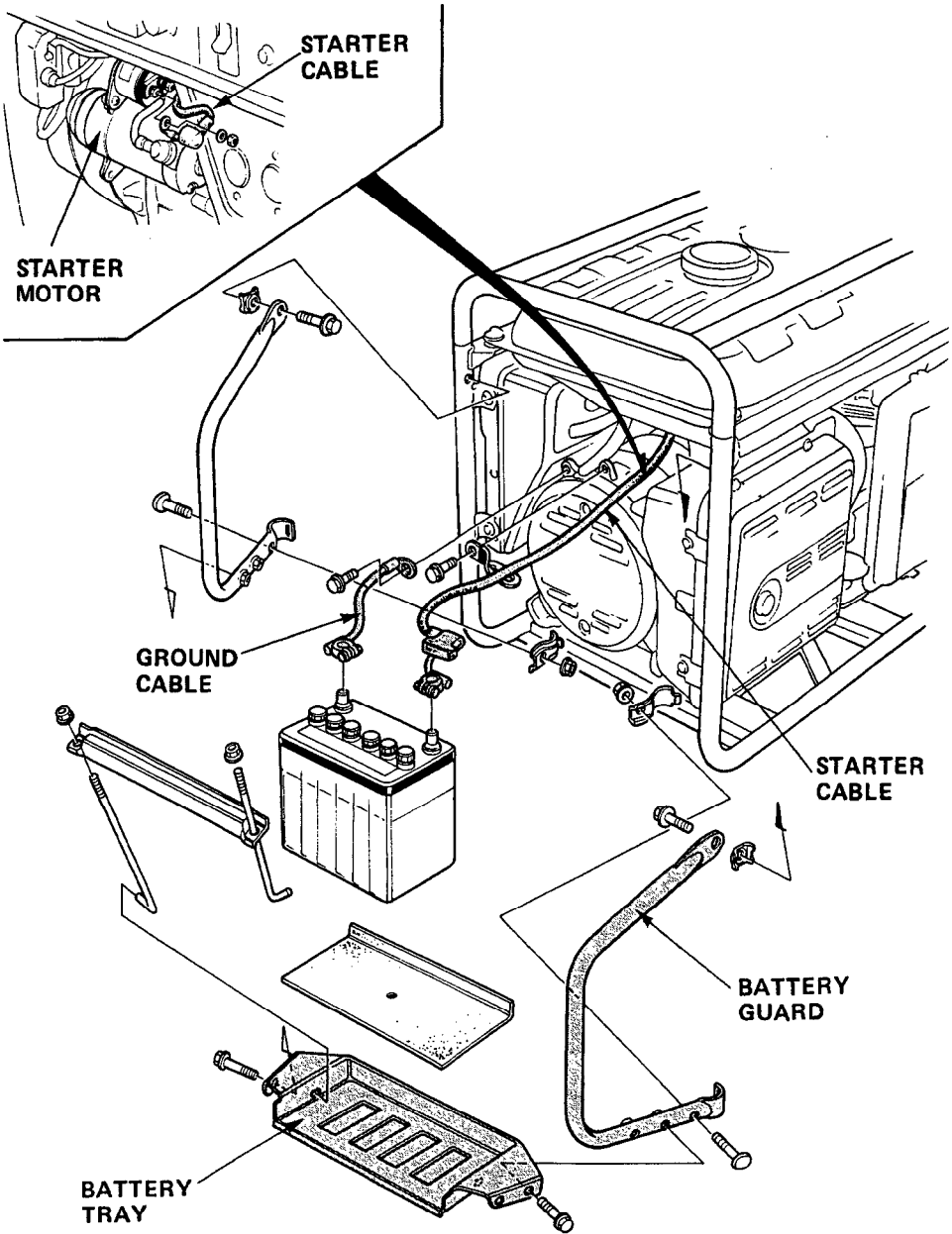
NOTE: Use a battery rated at 12V-32AH or more.

CAUTION: Do not reverse polarity. Serious damage to the generator and/or battery may occur.

Battery

NOTE: Check the electrolyte level to be sure that it is between the marks on the case. If the level is below the lower mark, remove the caps and add distilled water to bring the electrolyte level to the upper mark. The cells should be equally full.

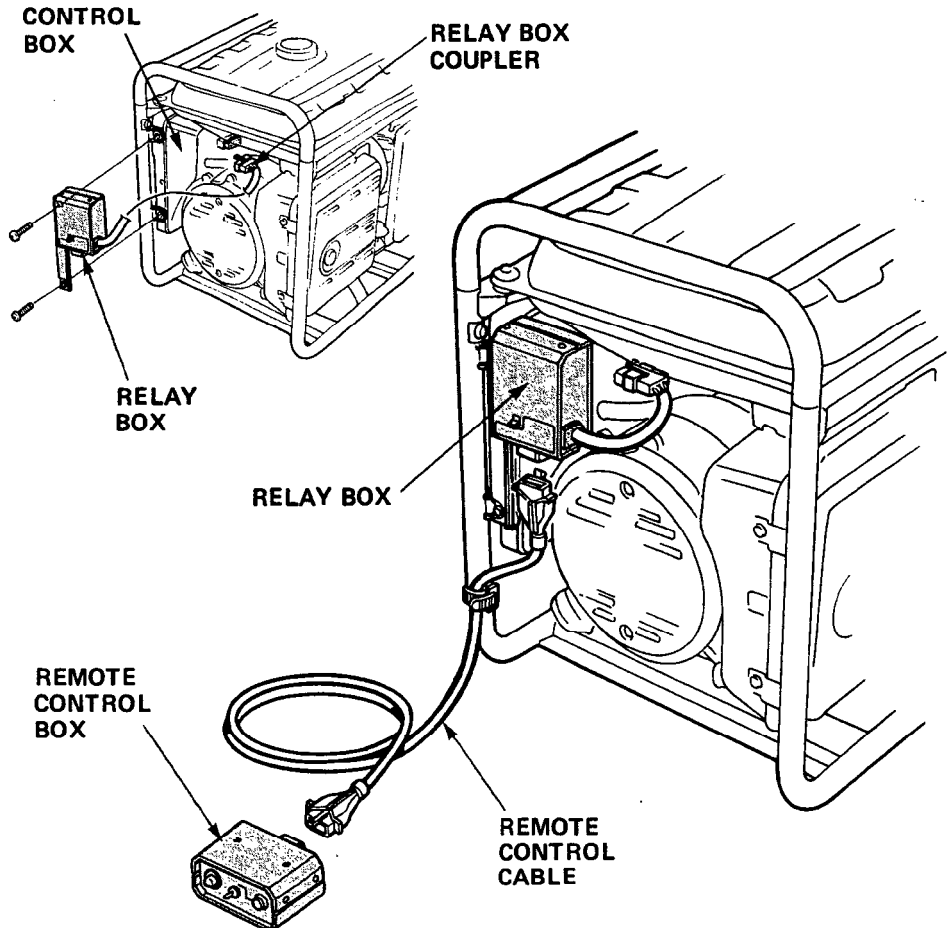




Remote control kit

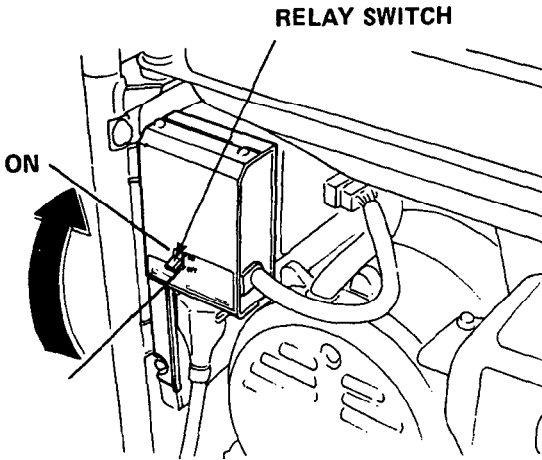
The generator may be adapted for remote control operation with an optional kit.

1. Position the relay box on the tabs of the pipe frame on the right (generator) side and attach it with the two 6 mm screws.
2. Disconnect the 8-pin coupler from the back of the control box and connect the relay box coupler in its place.
3. Connect the remote control cable to the remote control box and the relay box.

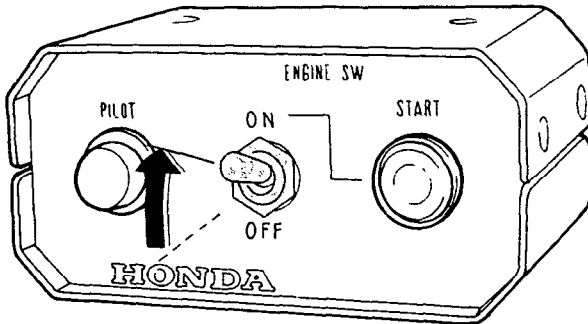


Remote control operation
(STARTING)

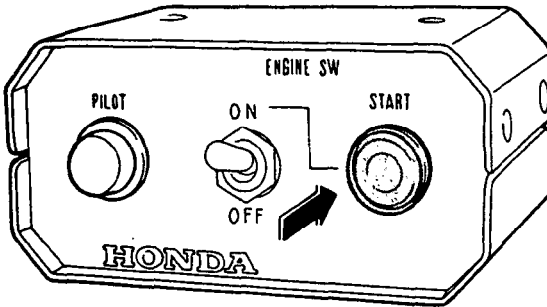
1. Turn the fuel valve on.
2. Turn the oil alert switch on.
3. Turn the auto-throttle switch off.
4. Turn the ignition switch key off or remove it from the generator.
5. Turn the relay switch on.



6. Flip the remote control engine switch knob up to ON.



-
7. Depress the starter button until the engine starts.
Be sure that pilot lamp comes on when the engine starts.



NOTE: Do not hold the starter button on for more than 15 seconds at a time.

If the engine has not started by then, check through the starting procedure above to be sure that all switches, valves, etc are in the correct position.

Warranty Service

Owner Satisfaction

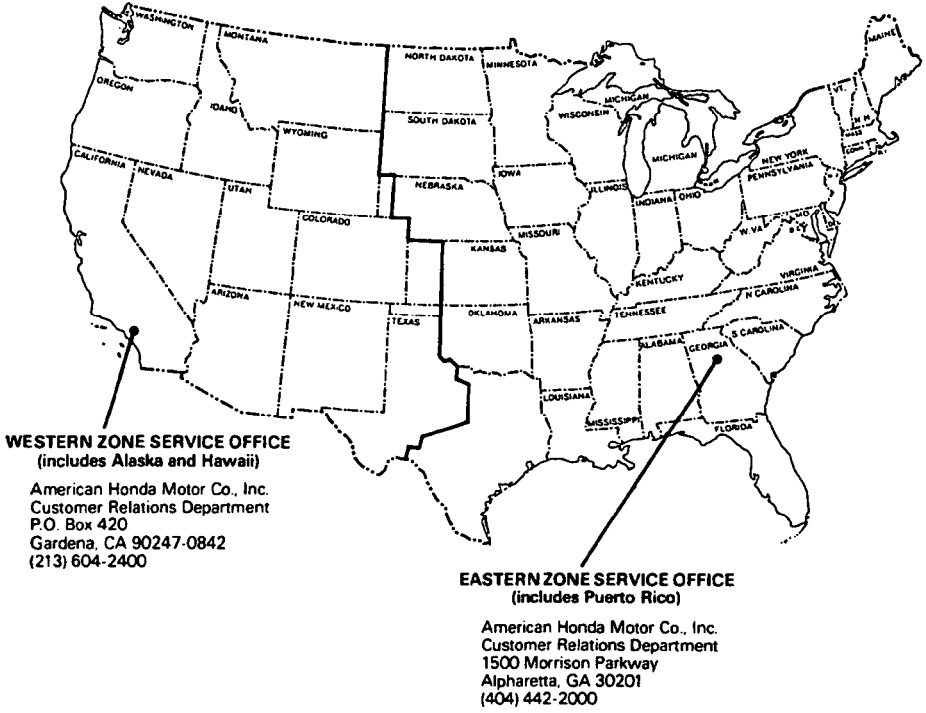
Your satisfaction and goodwill are important to your dealer and to us. All Honda warranty details are explained in the Distributor's Limited Warranty. Normally, any problems concerning the product will be handled by your dealer's service department. If you have a warranty problem that has not been handled to your satisfaction, we suggest you take the following action:

- Discuss your problem with a member of dealership management. Often complaints can be quickly resolved at that level. If the problem has already been reviewed with the Service Manager, contact the owner of the dealership or the General Manager.
- If your problem still has not been resolved to your satisfaction, contact the Customer Relations Department at the zone service office of American Honda Motor Co., Inc. in your area. Zone service office locations are shown on the following page. We will need the following information in order to assist you:
 - Your name, address, and telephone number
 - Engine model and serial number
 - Date of purchase
 - Dealer name and address
 - Nature of the problem

After reviewing all the facts involved, you will be advised of what action can be taken. Please bear in mind that your problem will likely be resolved at the dealership, using the dealer's facilities, equipment, and personnel, so it is very important that your initial contact be with the dealer.

Your purchase of a Honda engine is greatly appreciated by both the dealer and American Honda Motor Co., Inc. We want to assist you in every way possible to assure your complete satisfaction with your purchase.

Zone Service Office Locations



HONDA

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00X31-ZA1-6110



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