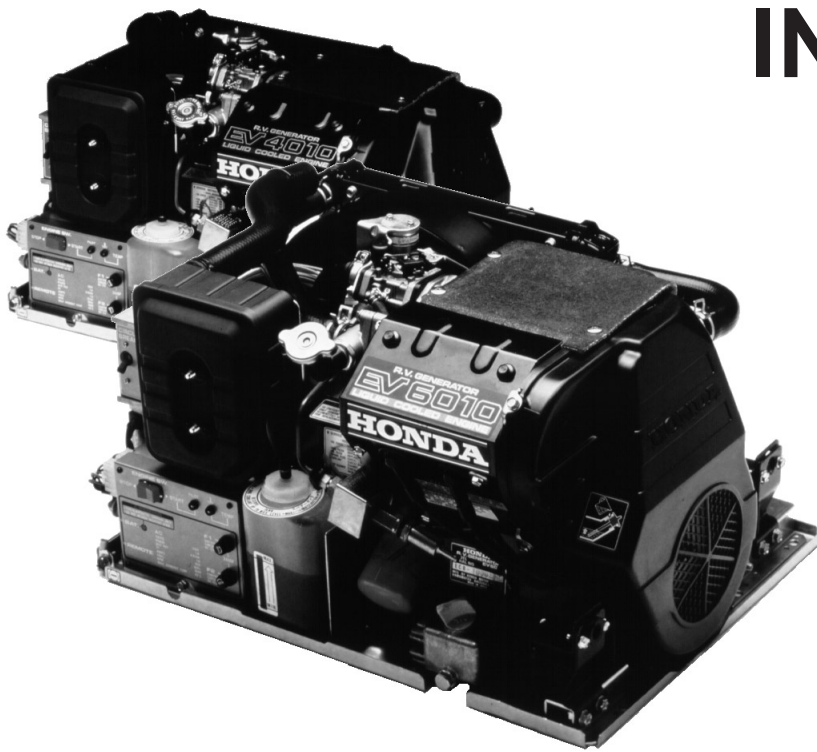


HONDA

EV4010/6010

EVD4010/6010

GENERATOR



INSTALLATION MANUAL

Please discard all previous manuals.

Installation and pre-delivery service must be performed
by an authorized Honda servicing dealer.

CONTENTS

This generator must be installed by an authorized Honda servicing dealer. The installation must comply with the standards and codes of the following organizations:

U.S.A. :

National Fire Protection Association (NFPA)
National Electric Code (NEC)
Recreational Vehicle Industry Assoc. (RVIA)

Canada :

Canadian Standards Association (CSA)


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Safety Messages

Your safety and the safety of others is very important. We have provided important safety messages in this manual. Please read these messages carefully.

A safety message alerts you to potential hazards that can hurt you and others. Each safety message is preceded by a safety alert symbol  and one of three words: DANGER, WARNING, or CAUTION.

These mean:

 **DANGER**

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

 **WARNING**

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

 **CAUTION**

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

Each message tells you what the hazard is, what can happen, and what you can do to avoid or reduce injury.

Damage Prevention Messages

You will also see other important messages that are preceded by the word NOTICE.

This word means:

NOTICE

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

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

PREFACE

Thank you for considering a Honda RV generator for your mobile power source. This manual will give you the information you need to help ensure the reliable power Honda generators are known for.

We realize that most mobile generator installations are exercises in compromise, but, due to the unique design of the EV-series generators, there are installation considerations which will greatly enhance the service life of the unit. In light of that, this manual is divided into three sections.

Read the ***Before Installation*** section even before unpacking the unit. It contains guidelines for matching the generator to the coach. If your installation does not meet these guidelines, seriously consider another source of mobile power.

The ***Installation Instructions*** provide information for the experienced installer — it is not intended for the casual mechanic. It assumes a skilled installer who knows the required industry standards for fuel and electrical practices. It also demands knowledge and skill in fabrication and design of mountings and enclosures.

The ***More Information*** section provides detail about the operation of Honda RV generators and will help you make better decisions in designing your installation.

If you should have questions regarding installation or the suitability of a Honda RV generator as a power source in a particular installation, call your Honda RV generator dealer or Honda RV generator distributor. Call 1-800-426-7701, extension 27 to find your nearest distributor.

BEFORE INSTALLATION

Be sure the application is suited to a Honda EV-series generator. Consider the following points:

ELECTRICAL LOAD

If your installation is repowering a coach, the output of the Honda generator should be equal to or greater than the existing unit. If this is a new installation, carefully calculate the expected loads, especially the startup loads for appliances like air conditioners and air compressors. If there is little margin between the expected load and the capacity of the EV generator, the customer may have to practice load management, or consider a different unit.

FUEL

Honda EV-series generators are designed to operate on unleaded regular gasoline. There are no EPA- or CARB-approved conversions to alternative fuels for units manufactured after January 1, 1997. If the coach does not have a nonpressurized supply of gasoline available, a separate fuel tank and lines will have to be installed.

GENERATOR COMPARTMENT

The location of the EV-series generator and its enclosure is the most significant factor affecting the trouble-free operation of the unit.

The interior dimensions of the enclosure should be 720 ~ 770 mm wide by 550 ~ 600 mm deep by 390 ~ 440 mm high (28~30 x 21.5~23.5 x 15.5~17.5 inches). In no case can the clearances between the generator and the enclosure be smaller than the minimums shown in the **Installation Instructions** section. The enclosure *must* be sealed except for a 545 cm² air inlet (84.5 in²) and air outlets as indicated on the tray template. The air flow through the compartment must have clean, ambient-temperature air entering through the inlet, and compartment air exiting through the ports in the tray *regardless of whether the generator is operating and/or the coach is in motion*.

EXHAUST

There are four exhaust system configurations available for EV-series generators: under- and side-mountings with exhaust outlets at either end of the muffler. The exhaust system must be located outside the generator compartment and at least 75 mm (3 in) away from any combustible material. The side-mounted muffler should be 200 mm (8 in) from any wall. No modifications may be made to the exhaust system except the addition of a tail pipe of no more than 3.6 m (12 ft).

If any of these areas presents an insurmountable problem, the feasibility of using a Honda EV-series generator is highly questionable.

IMPORTANCE OF INSTALLATION AND PRE-DELIVERY SERVICE

- Proper installation and pre-delivery service are essential to operator safety and the reliability of the generator. Any error or oversight made by the technician installing and servicing a new unit can easily result in faulty operation, damage to the generator, or injury to the operator.

WARNING

Improper installation or pre-delivery service can cause an unsafe condition that can lead to serious injury or death.

Follow the procedures and precautions in this Installation Manual and the Shop Manual carefully.

- Some of the most important safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing installation and pre-delivery service. 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.

Follow the procedures and precautions in this installation manual carefully.

IMPORTANT SAFETY PRECAUTIONS

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and safety equipment. When performing the installation or pre-delivery service, be especially careful of the following:
 - ☐ Read the instructions before you begin, and make sure you have the tools and skills required to perform the tasks safely.
- To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries. Use only a nonflammable solvent, not gasoline, to clean parts. Keep all cigarettes, sparks, and flames away from the battery and all fuel-related parts.
- Make sure the engine is off before you begin any maintenance or repairs. This will help eliminate several potential hazards:
 - ☐ Carbon monoxide poisoning from engine exhaust.
Be sure there is adequate ventilation whenever you run 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 the instruction tells you to do so. Even then, keep your hands, fingers, and clothing away.

SPECIFICATIONS

Generator Dimensions

ITEM \ MODEL		EV/EVD4010	EV/EVD6010
Manufacturer		HONDA MOTOR CO., LTD.	
Overall length	without exhaust system	650 mm (25.6 in)	
Overall width	without exhaust system	485 mm (19.1 in)	
Overall height	without exhaust system	360 mm (14.2 in)	
Dry weight	with under-mounting exhaust system	92.0 kg (203 lb)	97 kg (214 lb)
	with side-mounting exhaust system	98 kg (216 lb)	103 kg (227 lb)

Engine

ITEM \ MODEL		EV/EVD4010	EV/EVD6010
Model		Honda GX360K1 gasoline engine	
Type		4-stroke, OHC, 2 cylinders	
Total displacement		359 cm ³ (21.9 cu-in)	
Bore x stroke		58 x 68 mm (2.28 x 2.68 in)	
Max. horsepower		12.2 HP at 3,600 rpm	
Fuel consumption		2.5 liters (0.66 US gal)	
Engine speed		3,750 rpm (no-load)	
Compression ratio		8.5 : 1	
Cooling system		Liquid-cooling	
Ignition system		Transistorized magneto	
Spark plug		BPR4HS (NGK)	
Air cleaner		Dual-element type	
Starting system		Electric starter	
Cranking current		100 A (at 0 °C)	
Engine oil capacity		1.2 liters (1.27 US qt)	
Coolant capacity		2.4 liters (2.54 US qt)	

Specifications are subject to change without notice.

EV/EVD 4010/6010

Electrical

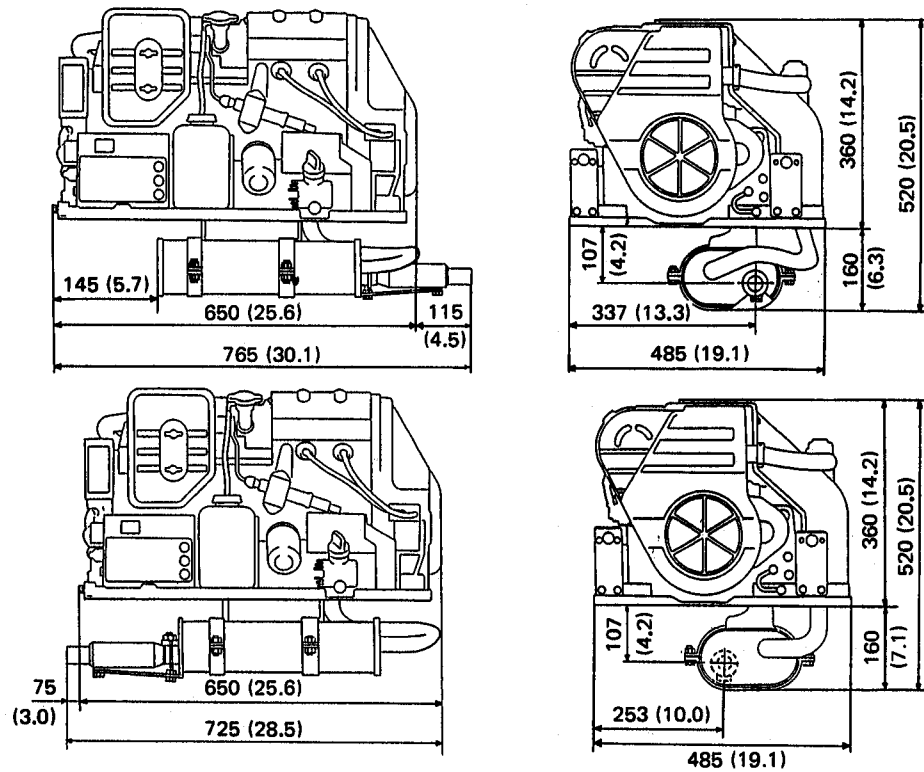
ITEM \ MODEL		EV4010	EVD4010	EV6010	EVD6010
Generator					
Type		2-poles, revolving-magnetic field			
DC	Maximum output to battery	10 A			
AC	Rated Output	4.0 kVA (4,000 Watts)		6.0 kVA (6,000 Watts)	
	Maximum output	4.0 kVA (4,000 Watts)		6.0 kVA (6,000 Watts)	
	Rated voltage	120 V	120/240 V	120 V	120/240 V
	Rated current	33.5 A	33.5/16.8 A	50 A	50/25 A
	Voltage regulating system	AVR (Automatic Voltage Regulator)			
Phase		Single			
Power factor		1.0			
Frequency		60 Hz			
EV4010 Engine only					
Type		Coil mounted under flywheel			
Voltage		12 Volts dc			
Current		10A			
Voltage regulating system		Regulator/Rectifier			

Specifications are subject to change without notice.

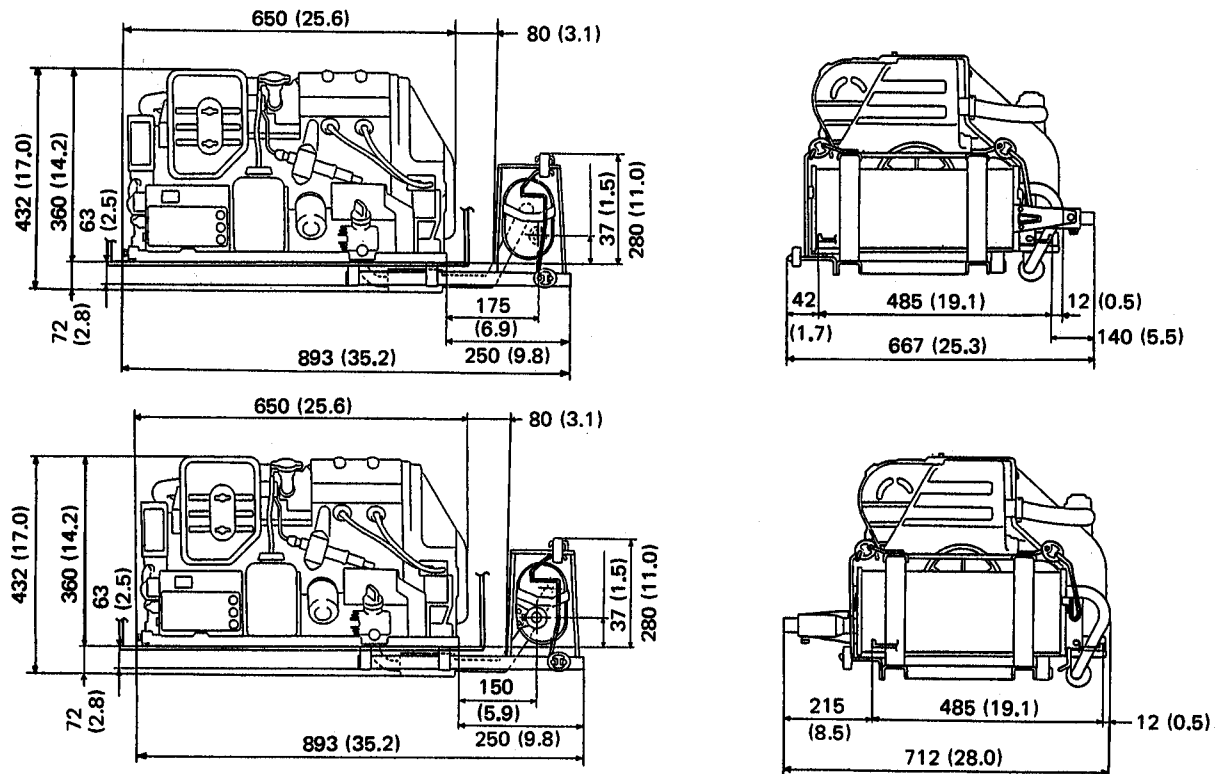
DIMENSIONAL DRAWINGS

UNDER-MOUNTING EXHAUST SYSTEM

Unit: mm (in)



SIDE-MOUNTING EXHAUST SYSTEM



INSTALLATION

GENERATOR COMPARTMENT CONSTRUCTION

• COMPARTMENT MINIMUM DIMENSION AND CLEARANCES

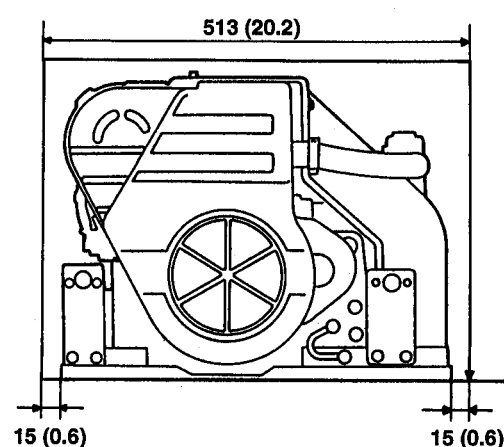
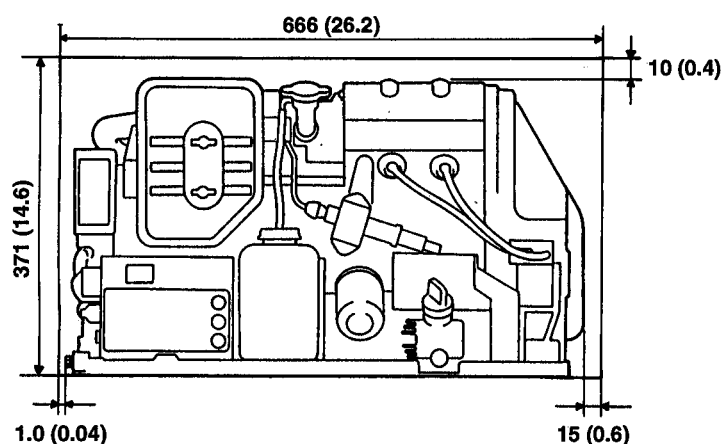
The compartment walls (not the mounting tray) may be lined with nonflammable acoustic insulation material. The acoustic insulation reduces the space within the compartment, so all minimum dimensions and generator clearances shown below must be measured from the inside surface of the insulation material.

The drawings show minimum clearances between the generator set and the walls of the enclosure. These minimums must be observed.

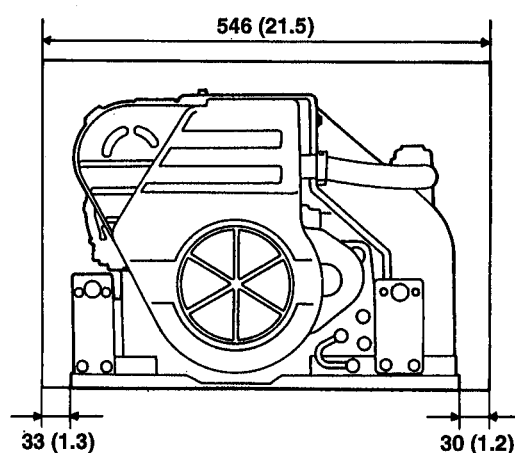
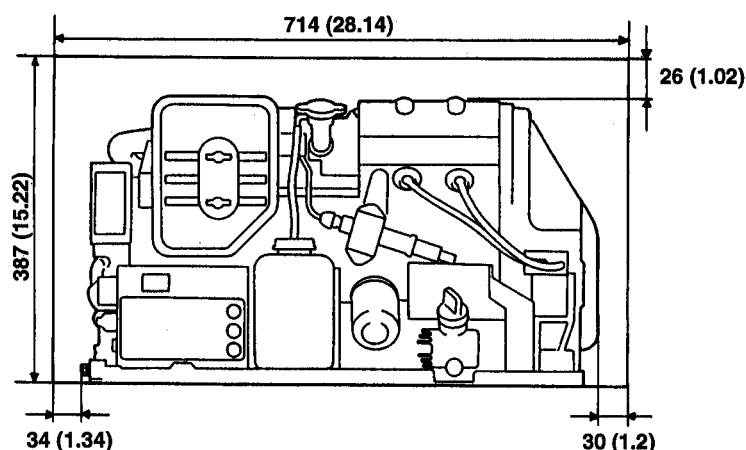
The maximum internal compartment dimensions must not exceed the minimum of any dimensions by more than 50 mm (2 in).

EVD4010

Unit: mm (in)



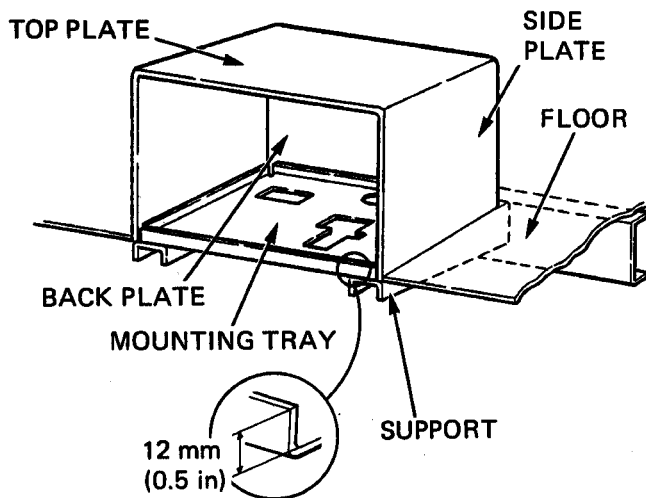
EVD6010



• COMPARTMENT DESIGN AND MATERIALS

This generator enclosure must be constructed from noncombustible materials. You cannot use wood.

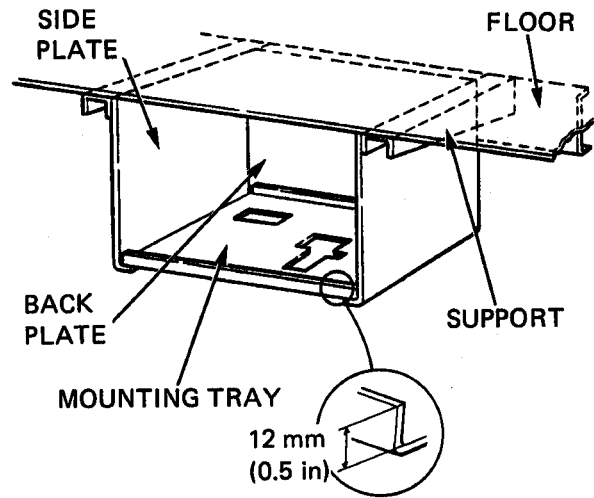
ABOVE-FLOOR INSTALLATION



Locate the generator compartment to permit convenient service access and generator installation/removal. A slide-out mounting tray can be used.


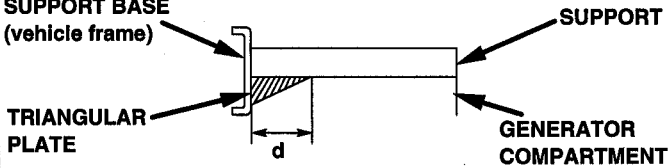


Construct the compartment and supports from steel of the size and thickness specified in the following table to assure adequate strength and rigidity. Alternative materials which are comparable in strength may be used.

BELOW-FLOOR INSTALLATION



Locate the supports so that they do not interfere with the muffler and do not cover the holes in the mounting tray.

The compartment must be sealed with ventilation provided only through the front cover or door (page 10) and out the bottom of the mounting tray. Seal all compartment joints and wiring ports.

Item		Minimum Size/Thickness	Note
Side/top/back plates		1.6 mm (0.06 in, 16 gauge)	To assure adequate compartment strength and rigidity, and to minimize vibration and resonance, the steel plates must be no thinner than the specified minimum.
Mounting tray		3.2 mm (0.13 in, 10 gauge)	
Support	Angle 	50 x 50 x 4.5 thickness (2 x 2 x 0.18 thickness)	 <p>SUPPORT BASE (vehicle frame)</p> <p>TRIANGULAR PLATE</p> <p>SUPPORT</p> <p>GENERATOR COMPARTMENT</p> <p>d</p> <p>If the distance (d) between the back of the generator compartment and the support base (vehicle frame) is greater than 50 mm (2 in), add triangular steel plates, as shown, to strengthen the support members.</p> <p>Do not cut away any part of the support members, as that would weaken them.</p>
	Channel 	75 x 75 x 75 x 3.2 thickness (3 x 3 x 3 x 0.13 thickness)	
	Box 	50 x 50 x 3.2 thickness (2 x 2 x 0.13 thickness)	

EV/EVD 4010/6010

• MOUNTING TRAY CONSTRUCTION

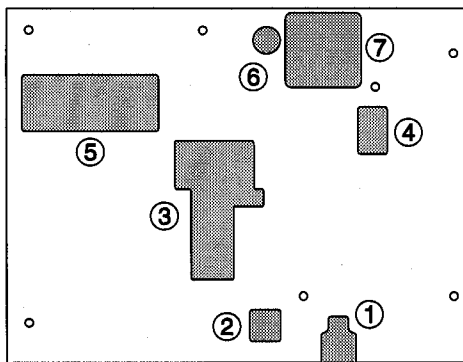
The generator must be mounted on the specified tray to support the generator assembly and provide hot-air outlets.

Full-size mounting tray templates are enclosed with each generator. Select the applicable template, position the template on the mounting tray to match the direction in which the generator must be installed, then cut and drill as shown on the template.

- When determining the correct length and width of the tray for your installation, allow for the acoustic insulation. Observe the minimum clearances shown on page 7.
- For added strength, fold unsupported tray edges, as shown in the illustration. You may also fold tray or side plate edges for attachment purposes.

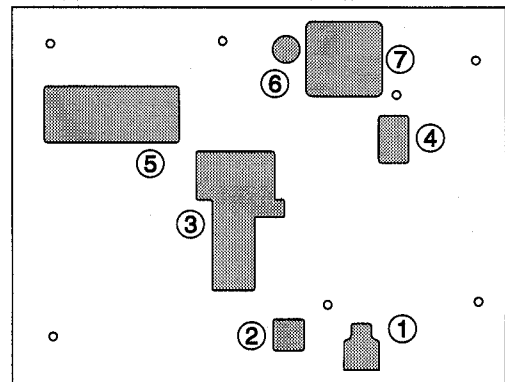
- ① OIL DRAIN HOLE
- ② CARBURETOR DRAIN HOLE
- ③ GENERATOR AIR OUTLET HOLE
- ④ MUFFLER BRACKET MOUNTING HOLE
- ⑤ RADIATOR AIR OUTLET
- ⑥ RADIATOR DRAIN HOLE
- ⑦ EXHAUST PIPE COOLING AIR OUTLET

EV/EVD4010 UNDER-MOUNTING EXHAUST SYSTEM



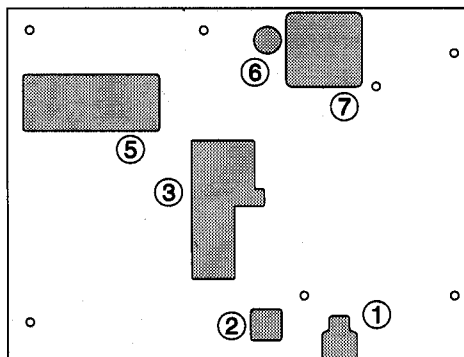
(this edge toward exterior opening)

EV/EVD6010 UNDER-MOUNTING EXHAUST SYSTEM



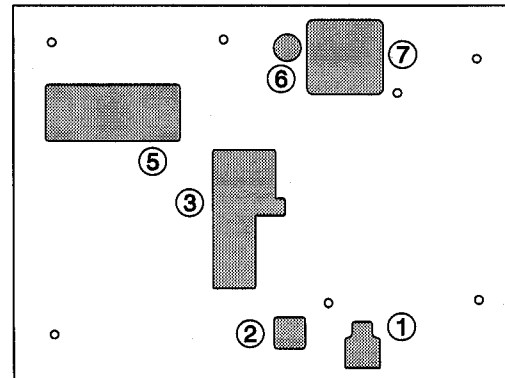
(this edge toward exterior opening)

EV/EVD4010 SIDE-MOUNTING EXHAUST SYSTEM



(this edge toward exterior opening)

EV/EVD6010 SIDE-MOUNTING EXHAUST SYSTEM



(this edge toward exterior opening)

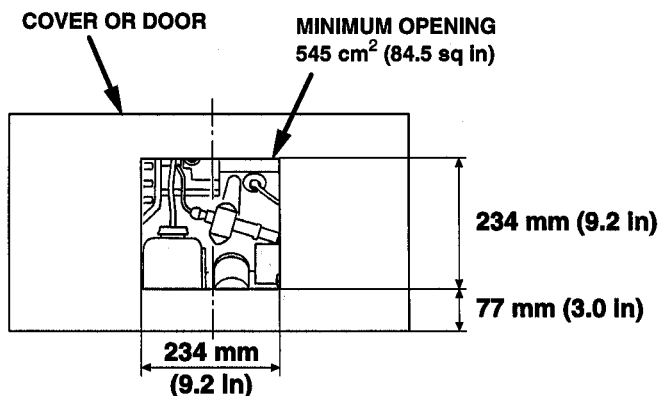
• EXTERIOR COVER OR DOOR CONSTRUCTION

The generator must draw cooling air through the air inlet, across the fuel pump and carburetor, then discharge the heated air downward through the mounting tray. The generator must be located close to the air inlet opening to allow for proper cooling of the fuel-related components. The air entering the inlet must be fresh, clean air at no more than the ambient temperature. Be sure that heated air discharged from the openings of the mounting tray or the generator exhaust does not enter the inlet.

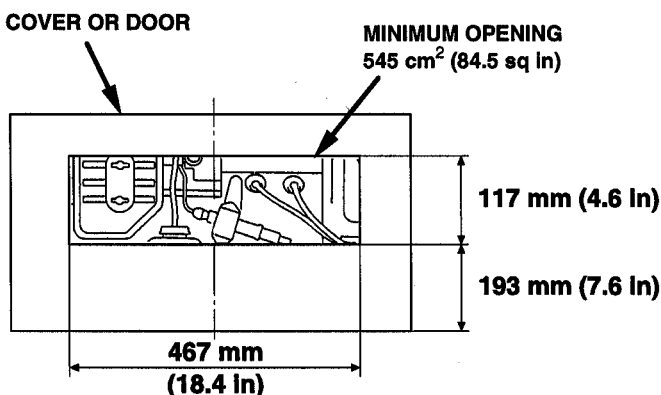
Ideally, the inlet will be located in the upper third of the door. This allows both the required air flow while the generator is running, and convection cooling on shutdown.

Alternatively, air may enter from the lower edge of the generator compartment door, but be especially careful of generator discharge air reentering the compartment with this arrangement. The total area for the air inlet opening must be at least 545 cm² (84.5 sq in).

SQUARE OPENING

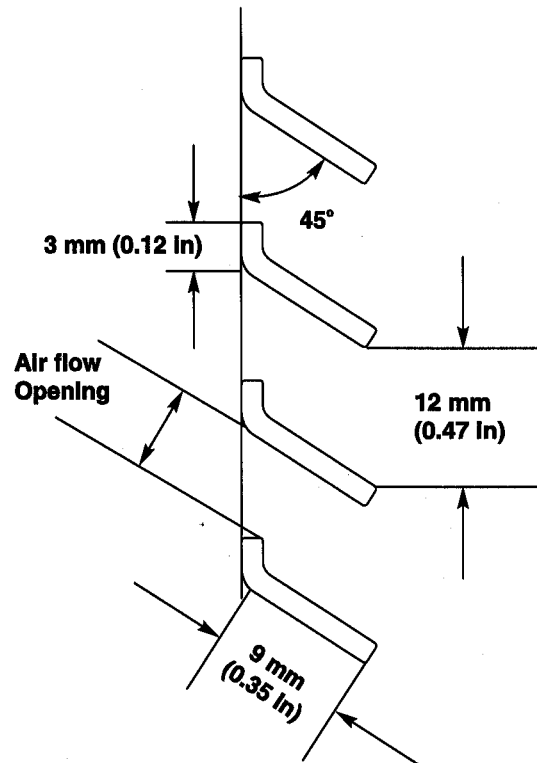


RECTANGULAR OPENING



The generator compartment must remain clean and dry. Therefore, the air openings must be protected to prevent rain, splashed water, and dirt from entering. This can be done by using louvers or an arrangement of flexible "mud flaps."

LOUVER DESIGN



Cooling efficiency will vary with the location and configuration of the air inlet opening. The air flow is adequate if the following generator temperatures do not exceed the recommended maximum during continuous operation under full load.

Spark plug base	160 °C (320 °F) Max.
Engine oil at dipstick	130 °C (266 °F) Max.
Engine, generator, air cleaner, inlet air	60 °C (140 °F) Max.
Air temperature around carburetor and fuel line	55 °C (131 °F) Max.

The above temperatures are based on an ambient temperature of 40 °C (104 °F).

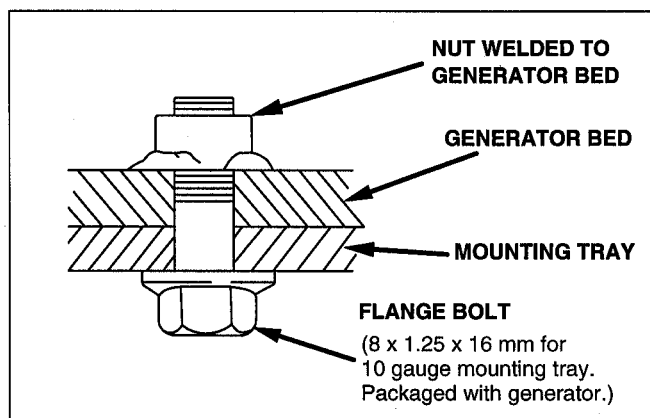
The difference between 40 °C (104 °F) and actual ambient temperature should be used to adjust maximum temperature readings.

• **MOUNTING TRAY INSTALLATION**

Place the generator on the mounting tray, and check to be sure the holes in the tray are properly aligned with the holes in the generator bed.

Fasten the generator bed to the mounting tray, using eight 8 x 1.25 mm flange bolts. Tighten all bolts securely.

If the mounting tray is made of 10 gauge steel, use 8 x 1.25 x 16 mm bolts. If the tray is especially thick, longer bolts may be required. If longer bolts are used, be sure they do not extend past the nuts and interfere with generator components.



PREINSTALLATION SERVICE

Fully service and test the generator set before installing it in the coach. Refer to the shop manual for specific information.

ENGINE OIL

Capacity: 1.2 ℓ (1.27 US qt)

Use 4-stroke motor oil that meets or exceeds the requirements for API service classification SH or SJ. Always check the API SERVICE label on the oil container to be sure it includes the letters SH or SJ.

Using nondetergent oil can shorten the engine's service life, and using 2-stroke oil can damage the engine.

SAE 10W-30 is recommended for general use. Other viscosities shown in the shop manual may be used when the average temperature in your area is within specific ranges.

Fill with the recommended oil to the upper limit mark on the dipstick. Measure the oil level without screwing in the dipstick.

COOLANT

Capacities:

Radiator & engine:	2.0 ℓ (2.11 US qt)	Reserve tank:	0.4 ℓ (0.42 US qt)
		Total system:	2.4 ℓ (2.54 US qt)

The cooling system is filled at time of manufacture. Check the coolant level in the radiator. Add coolant if necessary. Fill the reserve tank to slightly above the MIN mark.

Use high-quality ethylene glycol antifreeze that is specifically formulated for use in aluminum engines.

Mix the antifreeze with low-mineral drinking water or distilled water. A 50/50 mixture is recommended for most temperatures. The wrong type of antifreeze, hard water, or salt water can cause corrosion damage in the engine. Observe all warnings and precautionary statements on the antifreeze container.

AIR CLEANER

Check that the air cleaner elements are clean and properly installed.

TEST

After installation or on a test stand equipped with the required hot air outlets. (pg. 11)

- Hook up the test fuel tank and battery.
- Connect the load bank to the AC output of the generator. Start the generator and let the unit warm up at about 15 - 25% of rated load until the engine is at operating temperature.
- Loosen the air bleed bolt at the side of the thermostat housing. Use a shop towel or section of clear tubing to catch the coolant. Tighten the air bleed bolt when the coolant flows in a steady stream.
- Remove the load and check the no-load speed: 3750 rpm (62.5 Hz).
- Gradually add load until you reach the rated output, and let the generator run for about fifteen minutes. Watch the RPM throughout the test, looking for quick response to the load changes and stable, sixty Hertz output.
- Check for any unusual noises.
- Check for exhaust leaks.
- Gradually switch off the load and let the engine rest for a moment or two with no load before you shut it off.
- Check for fluid leaks and adjust fluid levels as necessary.

EXHAUST SYSTEM INSTALLATION

Exhaust systems for Honda EVD4010/6010 generators are available in four configurations for side- or under-generator installation on either side of the vehicle. Normally, a side-mounting exhaust system will be installed with a below-floor generator, and an under-mounting exhaust system will be installed with an above-floor generator. The exhaust system must be located outside the generator compartment to prevent excessive heat build-up and prevent the exhaust from entering the engine air intake.

Do not connect the generator exhaust system to the vehicle exhaust system. This would allow water vapor from the exhaust of one engine to enter the other engine, causing corrosion damage. Install the generator exhaust system separately from other exhaust systems.

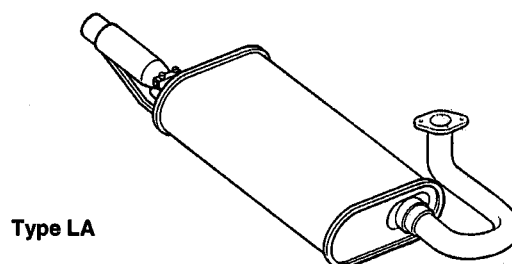
Nomenclature

The exhaust system type shown in the illustrations are those printed on the cartons and contained within the part number.

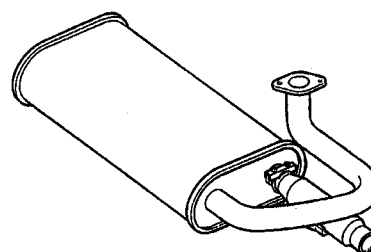
They relate to the order codes in the whole goods price list as follows:

Type LA	ACL
Type RA	ACR
Type BA	AUB
Type FA	AUF

UNDER-GENERATOR EXHAUST SYSTEMS:

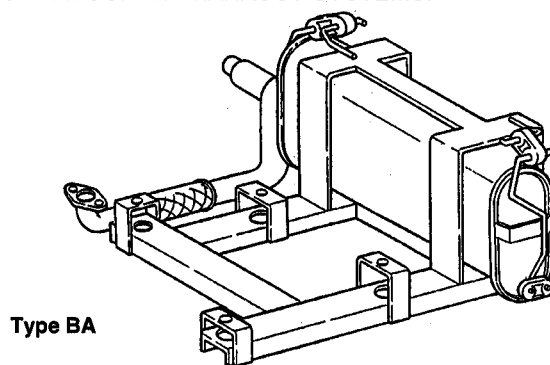


Type LA

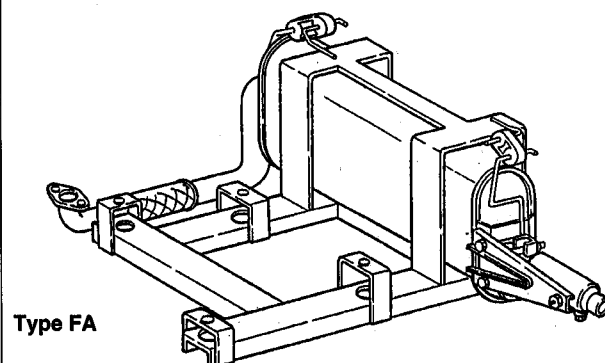


Type RA

SIDE-MOUNTED EXHAUST SYSTEMS:



Type BA



Type FA

EXHAUST SYSTEM INSTALLATION (continued)

A USDA-qualified/CSA-certified spark arrester is standard equipment. The spark arrester must be serviced every 100 hours to keep it functioning as designed, so the clean-out bolt must remain accessible after the exhaust system is installed.

The exhaust outlet should be located at least 900 mm (3 ft) away from the vehicle fuel filler spout (more distance may be required by local codes).

Certain states (particularly California) have an ordinance regarding the type and use of mufflers and spark arresters on engine-driven equipment in vehicles. Be sure your installation meets all federal, state, and local codes. Failure to provide and maintain a spark arrester may be against the law.

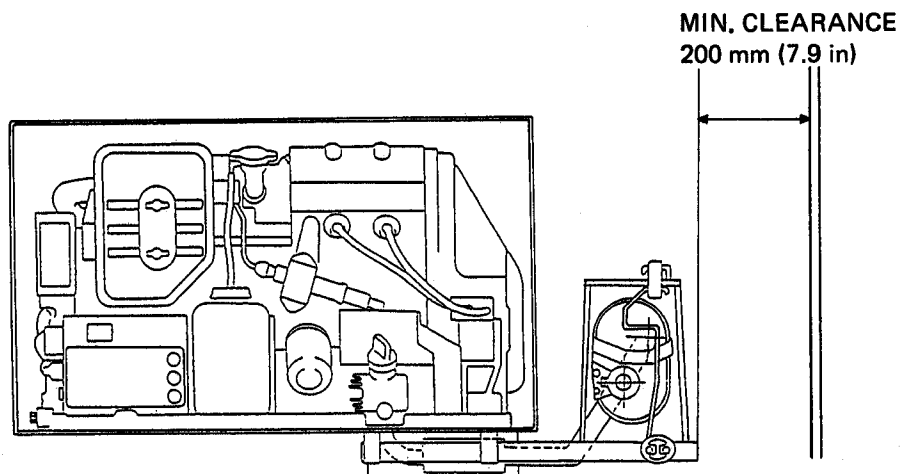
The installed exhaust system should be at least 75 mm (3 in) away from any combustible material. If that is not possible, the exhaust system must be insulated or shielded, so it does not raise the temperature of any combustible material more than 21 °C (70 °F) above air temperature.

The side-mounting muffler should be at least 200 mm (7.9 in) away from any wall.

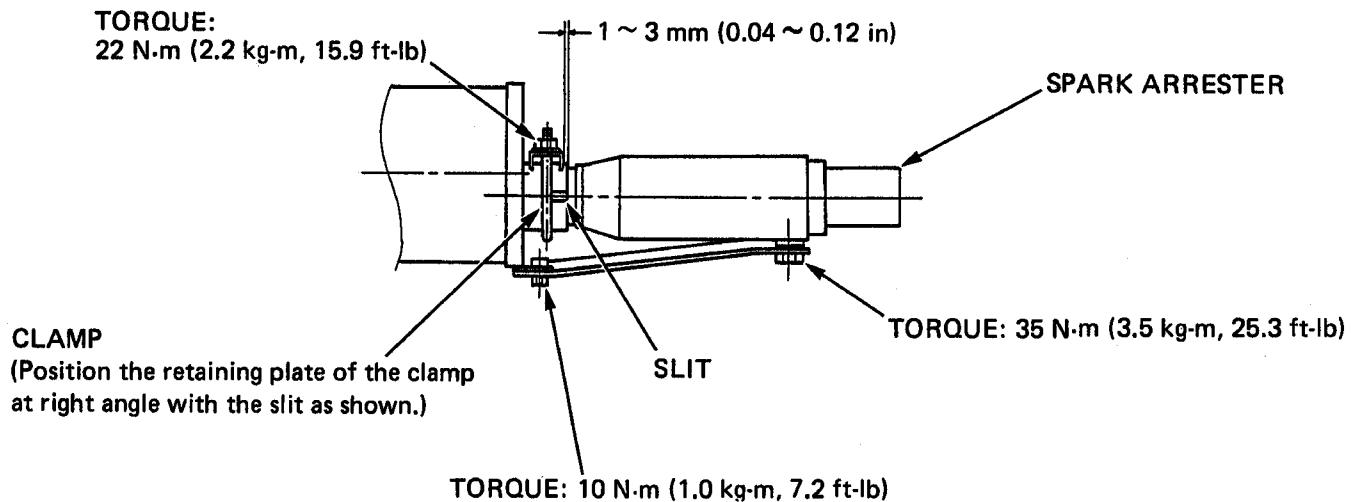
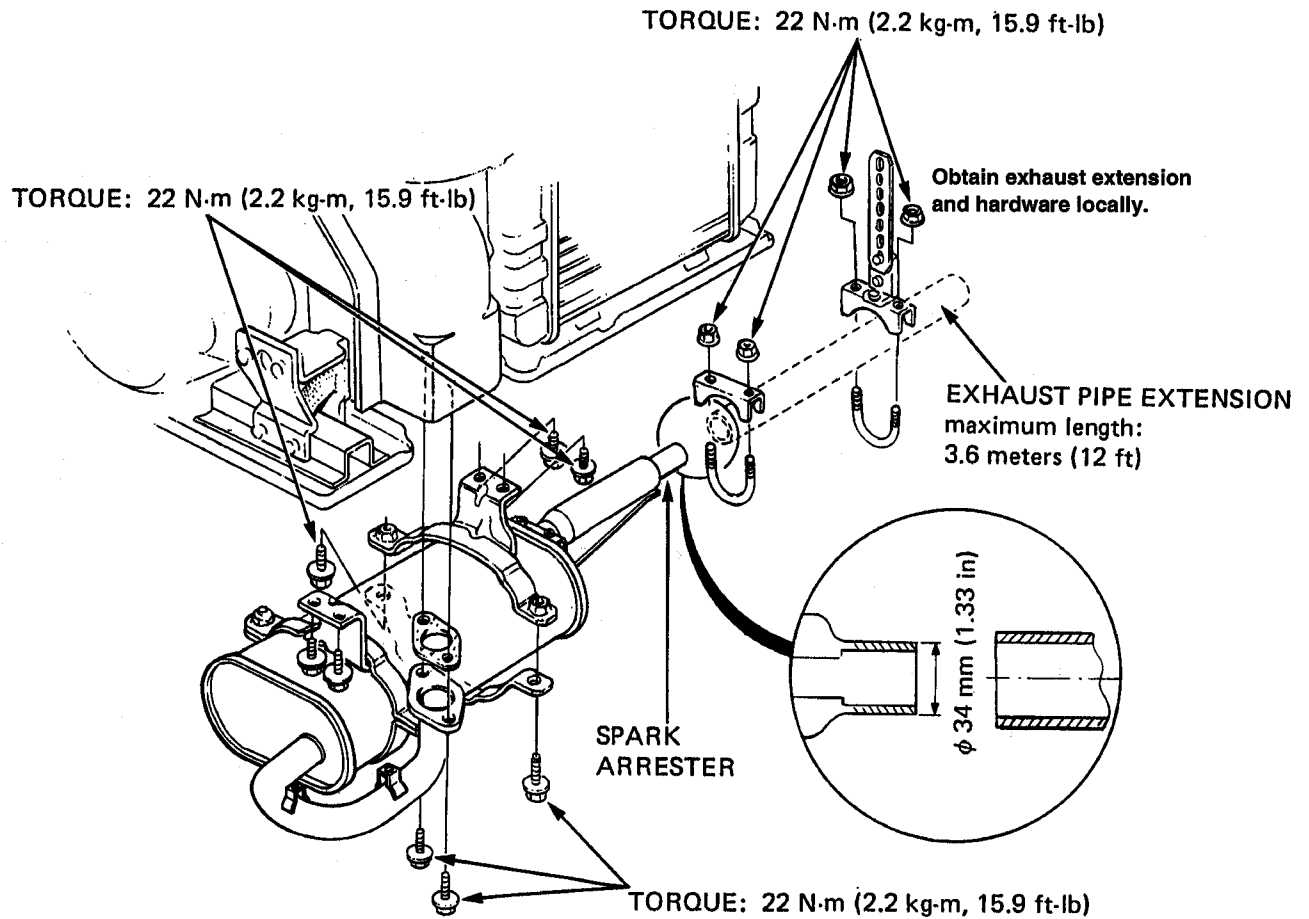
The exhaust system must extend beyond the vehicle perimeter and away from vehicle windows that can be opened or generator air intake. If it is necessary to add a length of exhaust pipe to extend the exhaust system, use pipe with a minimum inside diameter of 34 mm (1 in).

You can extend the exhaust system up to 3.6 meters (12 ft) without significantly decreasing engine efficiency; further extension is not recommended. Any bends will tend to restrict exhaust flow. Be sure to use standard bend radii when forming any extension, and remember that the more bends, the shorter the pipe should be from the 3.6 meter maximum.

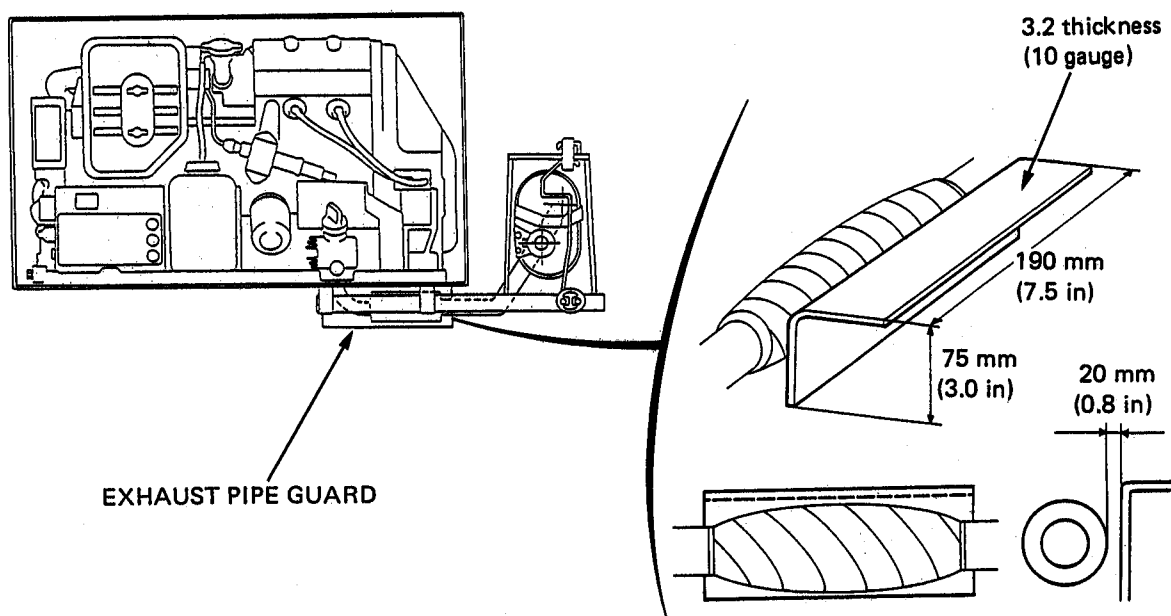
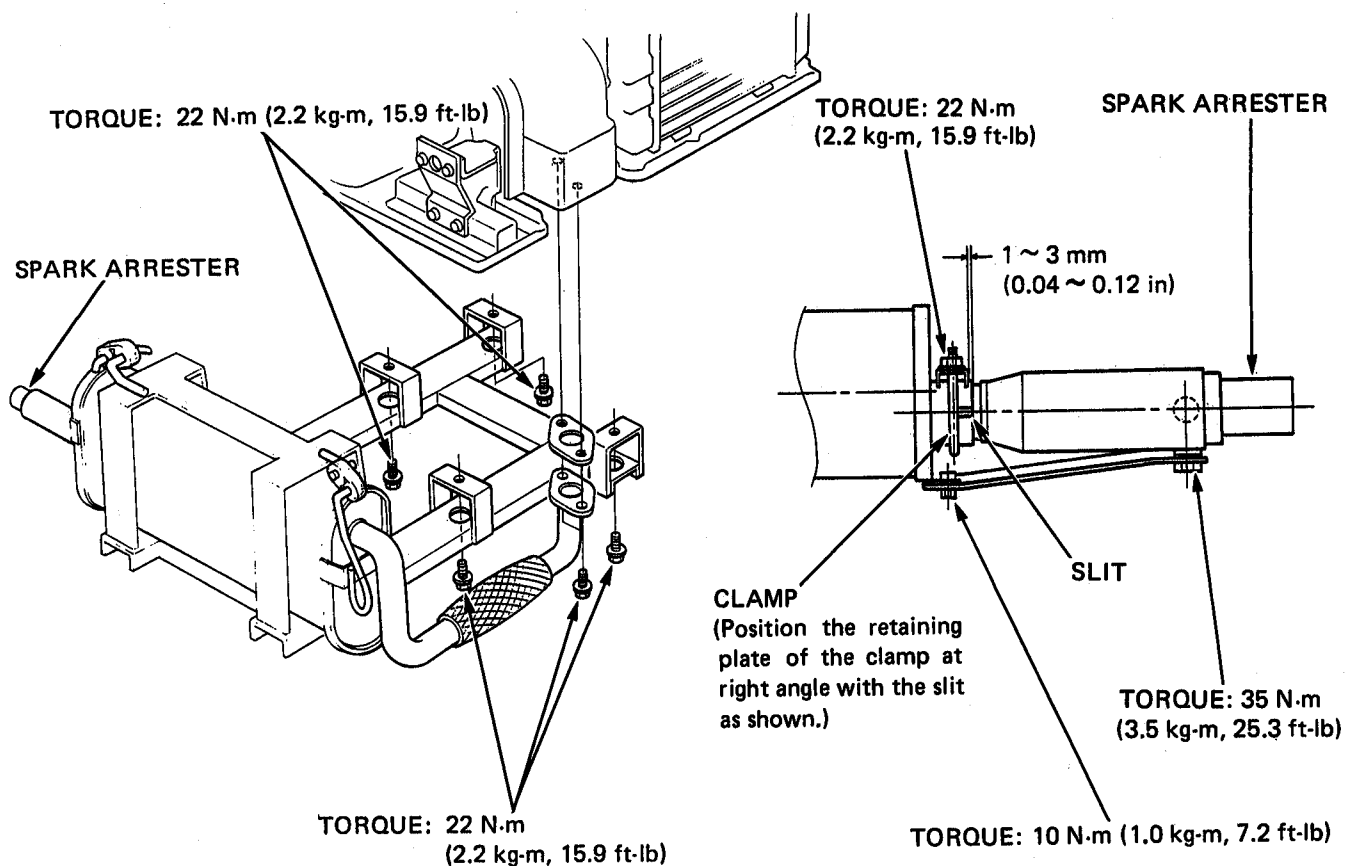
Install the exhaust system using the mounting hardware provided. Be sure the oil and fuel drain holes in the mounting tray remain unobstructed by the installation.



UNDER-MOUNTING EXHAUST SYSTEM



SIDE-MOUNTING EXHAUST SYSTEM



FUEL CONNECTIONS

These procedures require a skilled installer who knows the appropriate industry standards for fuel system modifications and fabrication.

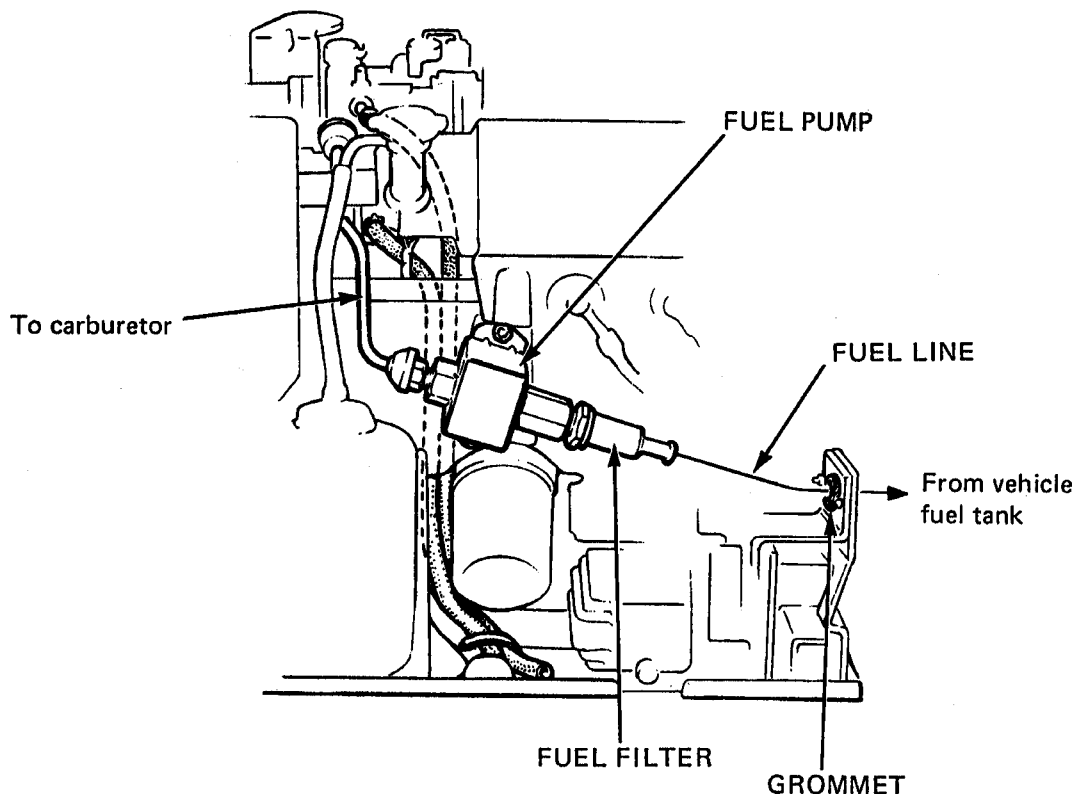
The Honda EVD4010/6010 generator is designed to share the vehicle's fuel tank, using any gasoline that has a pump octane rating of 86 or higher. We recommend unleaded gasoline, because it produces fewer engine and spark plug deposits, and it extends exhaust system life.

Connect the generator only to a nonpressurized auxiliary pickup on the fuel tank. If the fuel tank does not have an auxiliary pickup, contact the vehicle manufacturer to see if an auxiliary pickup can be obtained or fabricated.

Auxiliary fuel tanks must also be nonpressurized and must have baffles if the generator is to be operated when the vehicle is in motion.

Connect a 5/16-inch ID fuel line (SAE J512-OCT 1980 or ANSI B. 16.26 - 1967) between the vehicle fuel tank and the fuel filter on the generator engine. All fuel system connections must comply with the instructions of the chassis manufacturer and standard automotive practices.

- Use a fuel line long enough to allow for 100 mm (4 in) of generator movement.
- Route the fuel line through the grommet next to the fuel filter.
- Fasten the fuel line to the filter with a clamp.
- The generator fuel inlet should not experience more than 50 cm (20 in.) of head. That is roughly one-half PSI.
- The generator fuel pump will not draw fuel from a height greater than 127 cm (50 in).
- Do not route the fuel line next to electrical wiring.
- Route the fuel line away from hot engine and exhaust system components. Secure the fuel line with clamps and straps to avoid chaffing.



BATTERY CONNECTIONS

The Honda EVD4010/6010 generator is designed to be connected to a 12-volt battery, located outside the generator compartment. The battery should have an ampere-hour rating of at least 100 Ah, to operate the generator's starter motor.

EVD4010

The EVD4010 comes with a 10 A charging coil mounted under the engine flywheel. A regulator/rectifier and a 19-inch-long wiring harness is included in the shipping box.

The regulator/rectifier should be mounted on a nonvibrating surface, such as a wall of the generator compartment. Mount the regulator/rectifier with the connector pointing down to minimize water and dirt entry.

In making connections from the regulator/rectifier harness to the battery:

- Harness white wire to battery plus (+).
- Harness black wire to battery minus (-).

EVD6010, EV4010, EV6010

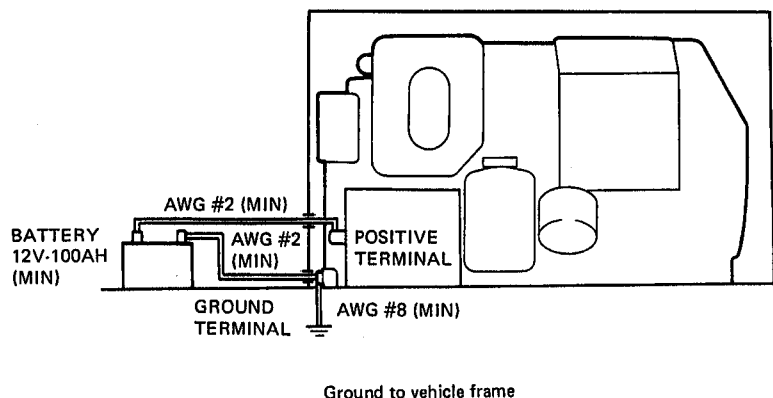
The EVD6010 charging circuit is designed to provide a maximum continuous output of 1 A to its starting battery.

The 12-volt charging system of this generator is not intended to be the 12-volt power source for the coach.

If the generator-starting battery is also used as a chassis battery to provide general 12-volt power to the coach, use a separate inverter to charge the battery, and install an isolator between the generator and the battery.

General Guidelines

- Use cables long enough to allow for 100 mm (4 in) of generator movement.
- Do not route the cables next to fuel lines or 120/240-volt wiring.
- Use insulated automotive cables (AWG #2 minimum) to connect the battery to the generator.
- Install a ground strap (AWG #8 minimum) between the generator negative terminal and the vehicle frame. Use a bolt at least 8 mm (5/16 in) in diameter, and place a star washer between the strap and the vehicle frame.



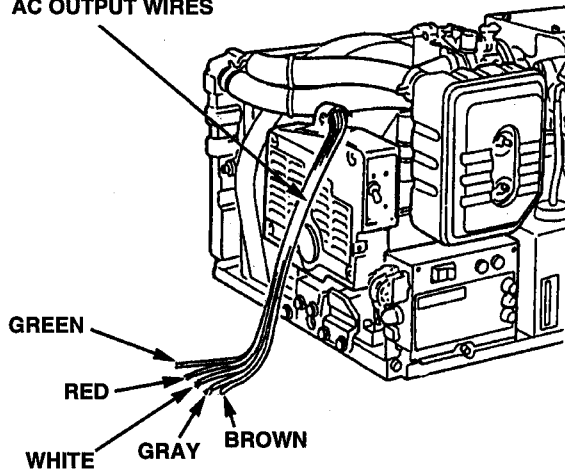
AC OUTPUT CONNECTIONS

These procedures require a skilled installer who knows the appropriate industry standards for electrical practices.

The generator must be connected to a junction box with multistrand wires in a flexible conduit, to allow for generator movement. The Honda EVD4010/6010 is prewired with enough multi-strand wiring for typical installations. A conduit clamp is built into the top of the circuit breaker box.

- For protection against electrical shock, all receptacles connected to the generator must be protected by ground-fault circuit interrupters.
- All individual circuits must be provided with circuit breakers or fuses for protection against circuit overload.
- Allow for 100 mm (4 in) of generator movement.
- Do not route wires next to fuel lines, battery connections, or exhaust components.

AC OUTPUT WIRES



- EV4010 has only red, white, and green.
- EV6010 has red with white stripes, red, two whites, and green.

Connections To Another Electrical System

Connections for standby power to another electrical system must be made by a qualified electrician. The connection must isolate the generator power from the other source of power, and must comply with all applicable laws and electrical codes.

⚠ WARNING

Improper standby power connections can allow generator backfeed into the power lines of the other electrical source.

Such backfeed can electrocute utility company workers or others who contact the lines during a power outage.

Improper standby power connections can allow the other power source to backfeed into the generator when such power is restored. If this happens, the generator can explode, burn, or cause fires in the electrical system.

Standby power connections must be made by a qualified electrician and must isolate generator power from other power sources.

REMOTE CONTROL INSTALLATION (optional equipment)

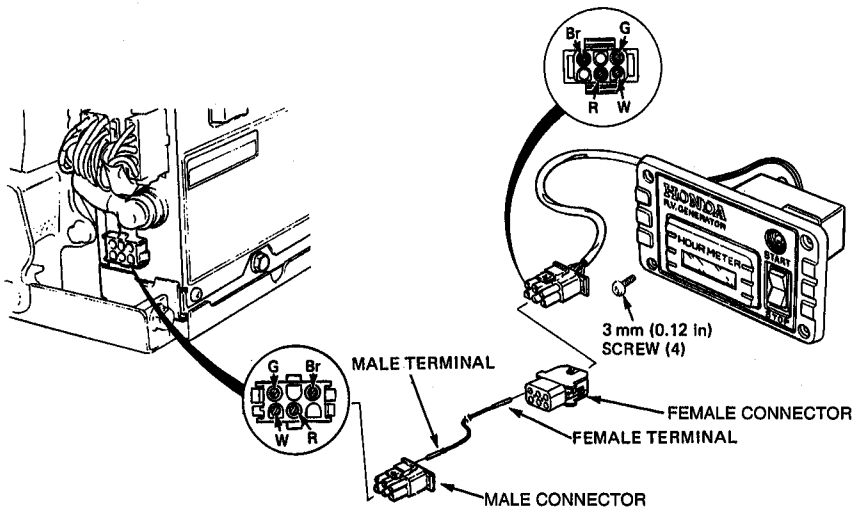
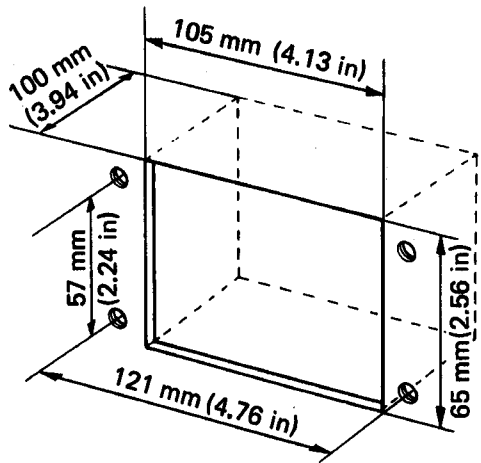
Optional Honda Switch Panel

Cut an opening for the remote control unit as shown. The opening must have a depth of at least 100 mm (3-15/16 in).

Wire the connectors, and connect the control box to the remote control unit.

MINIMUM WIRE GAUGE
1.25 mm ² (16 gauge) for distances up to 10 meters (33 feet)

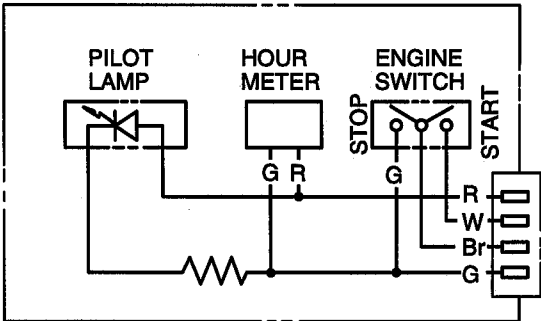
Install the remote control unit using four 3 mm (1/8 in) screws.



Other Manufacturer's Switch Panels

Unsuitable remote control devices can damage the generator. Use an equivalent panel that is equipped with a "running" indicator light. The red wire to the start switch always has 12 V+ applied — the switch is in the ground-side of the circuit. The following table provides wire colors and their corresponding functions for Honda and two other popular brand control panels.

Generator Terminal	Remote Sw. Terminal	Function	Wire Color		
			Honda	Onan	Meco
1	1	Common/Ground	Brown	Black	Brown
2	2	Stop	Green	Brown	Green
3	3	Start	White	Yellow	Red
6	6	Lamp/Hour	Red	Red	Blue



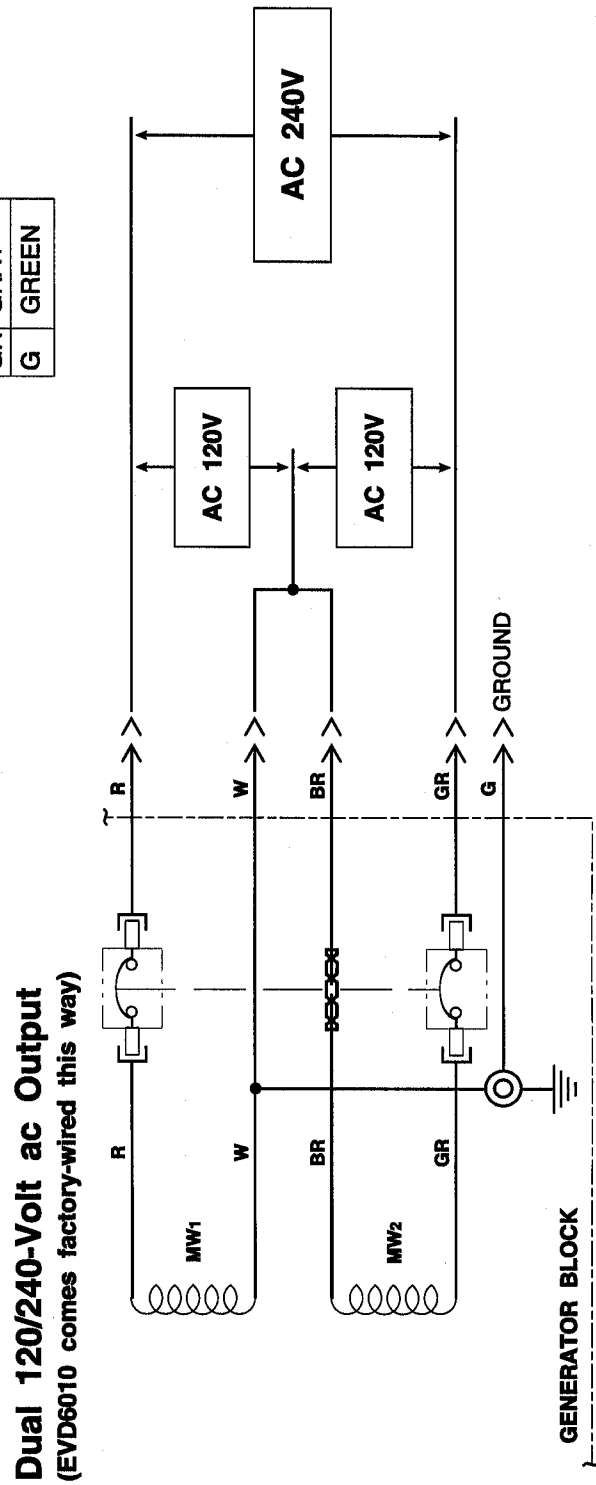
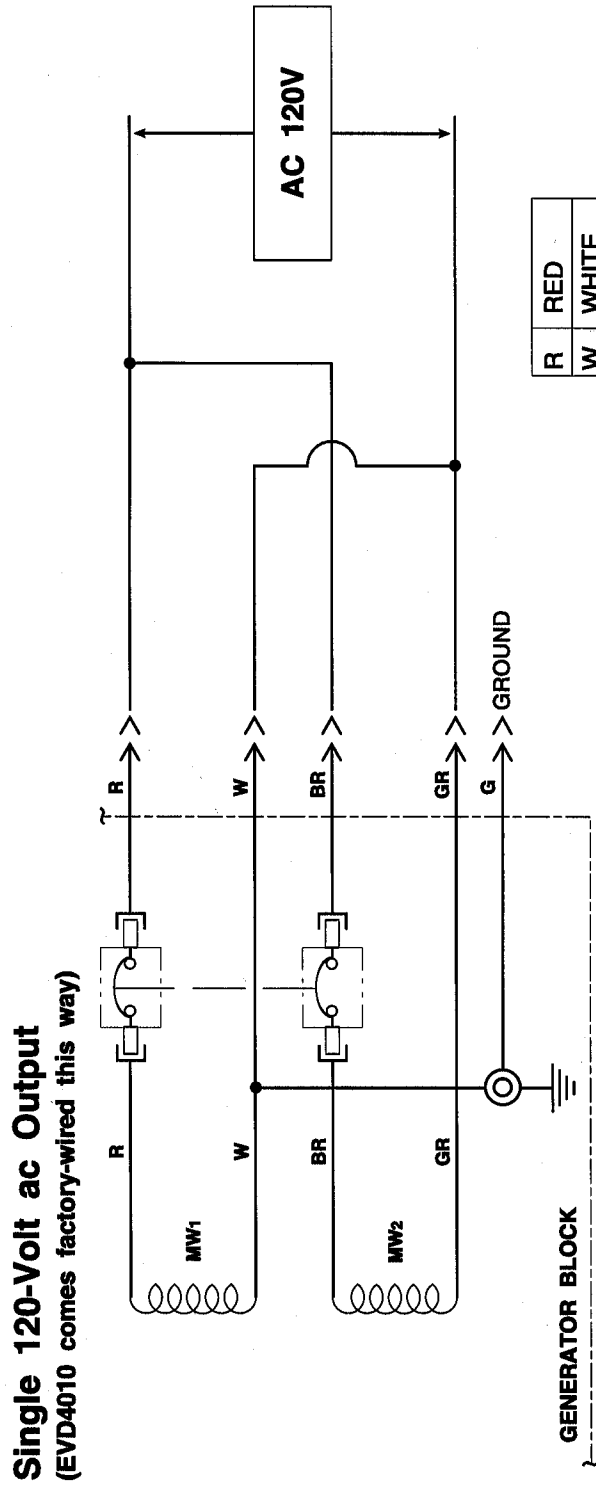
Harness Connection

Honda does not provide a remote control wiring harness, but a kit containing a male and a female connector with pins is available. P/N: 06560-ZB5-000AH

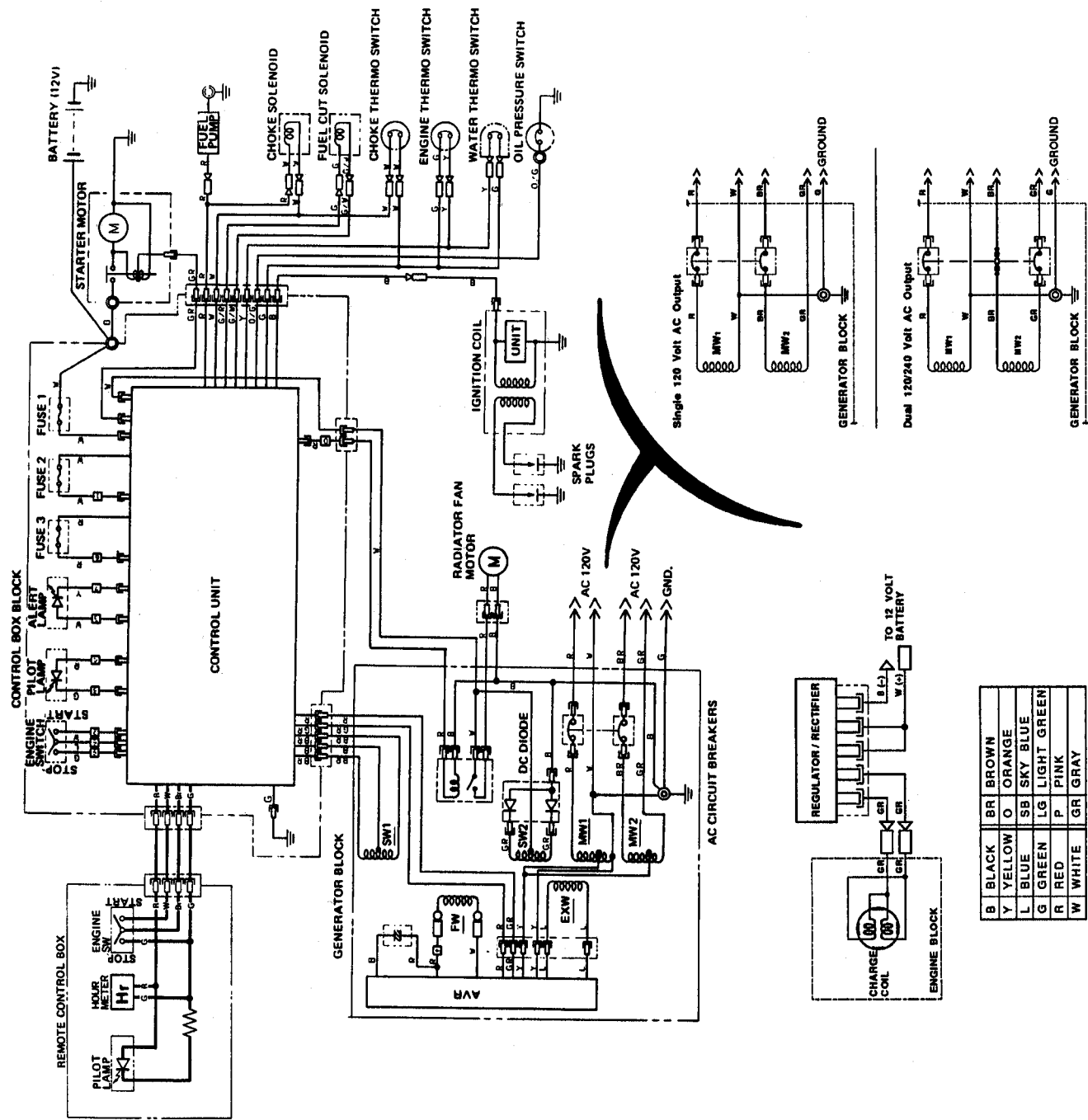
Single 120-Volt or Dual 120/240-Volt Wiring Connections

These procedures require a skilled installer who knows the appropriate industry standards for electrical practices.

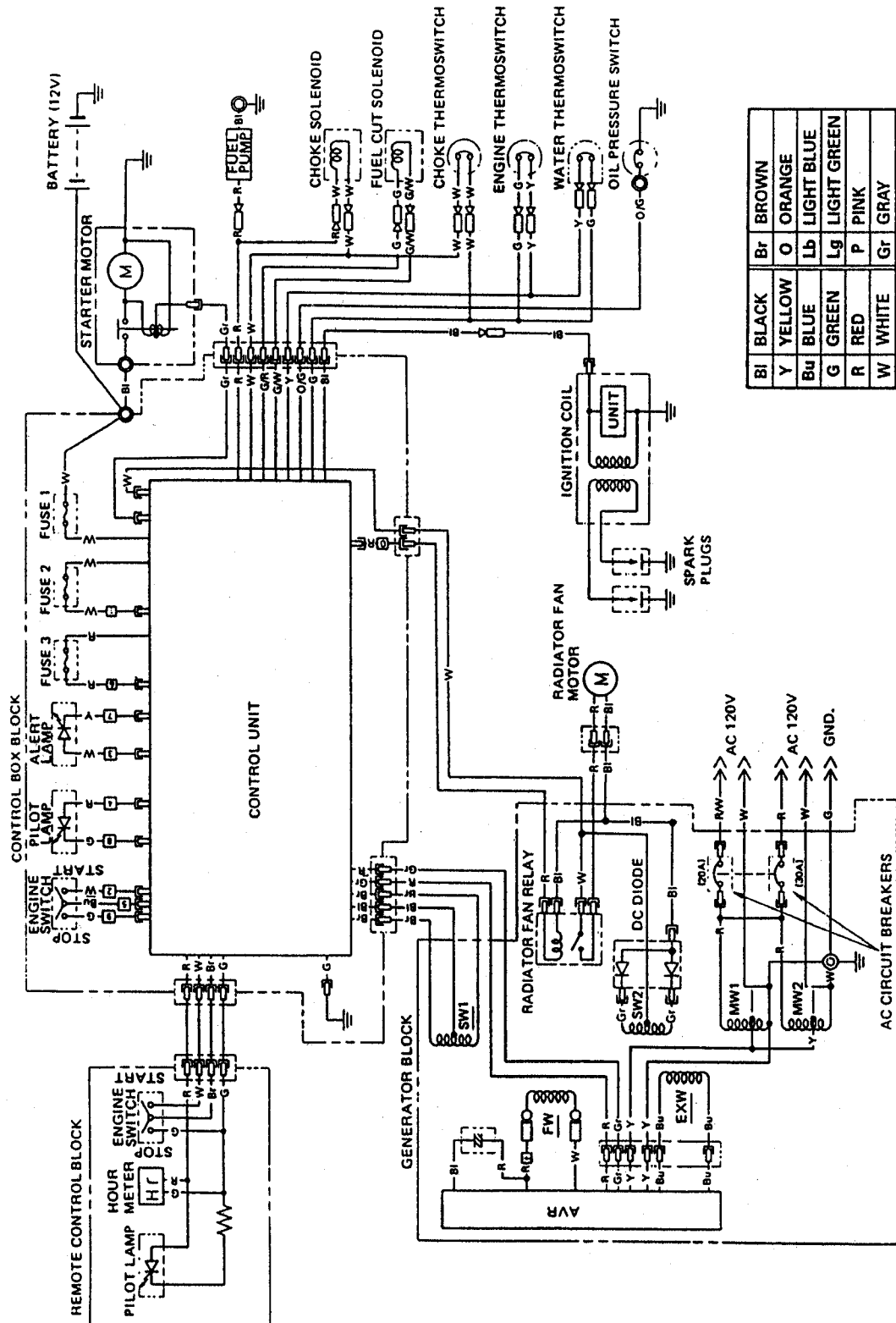
To switch from single 120-volt output to dual 120/240-volt output, change the wire that goes to the circuit breaker. For single 120-volt output, the brown wire goes to the circuit breaker. For dual 120/240-volt output, the gray wire must go to the circuit breaker. Use a UL-approved butt splice connector to connect the brown wire and UL-approved female spade connectors to connect to the circuit breaker



WIRING DIAGRAM



**EV6010 WITH 3-FUSE CONTROL BOX AND 20 A & 30 A CIRCUIT BREAKERS
FRAME SERIAL NUMBERS 1007306 AND SUBSEQUENT**



PRE-DELIVERY SERVICE CHECK LIST

Perform all procedures described in the following check list, and test the generator to be sure it is functioning properly before delivery. This service presumes that the preinstallation inspection (page 14) has been performed. If you are not familiar with Honda EV/EVD4010/6010 generators, refer to the shop manual for detailed descriptions of service procedures.

BEFORE STARTING

☐ **Fuel Line**

Check that the fuel line is properly routed and secured.

☐ **Wires And Battery Cables**

Check that all wires and cables are properly routed and secured.

☐ **Nuts, Bolts, And Other Fasteners**

Check security and tighten if necessary.

☐ **Exhaust System**

Check that the exhaust system is properly routed, secured, and leak free.

☐ **Generator Compartment**

Check that the generator compartment is clean and the compartment air inlet is unobstructed.

☐ **Fluid Levels**

Check oil and coolant levels and adjust if necessary.

OPERATION

- Start the generator from the remote-control panel (if installed). Hold the switch in the start position until the pilot lamp is illuminated.
- Operate all of the coach's appliances and circuits, up to the normal expected maximum load, and verify normal operation. Allow enough time for generator and appliance temperatures to stabilize.
- Check for any unusual noises and for exhaust leaks.
- Shut off the coach's load and shut off the generator. Allow enough time for heat to build up in the generator compartment, and restart the generator. If there are any problems restarting, check the fuel system for signs of "vapor locking." Correct any compartment ventilation problems.
- After shut down, check for leaks, signs of rubbing or chaffing, or other problems.

MORE INFORMATION

The Compartment

As far as EV-series generators are concerned, the generator compartment has two purposes beyond keeping the generator set out of sight and lowering the sound level:

- Control air flow through the generator.
- Keep the generator clean and out of the elements.

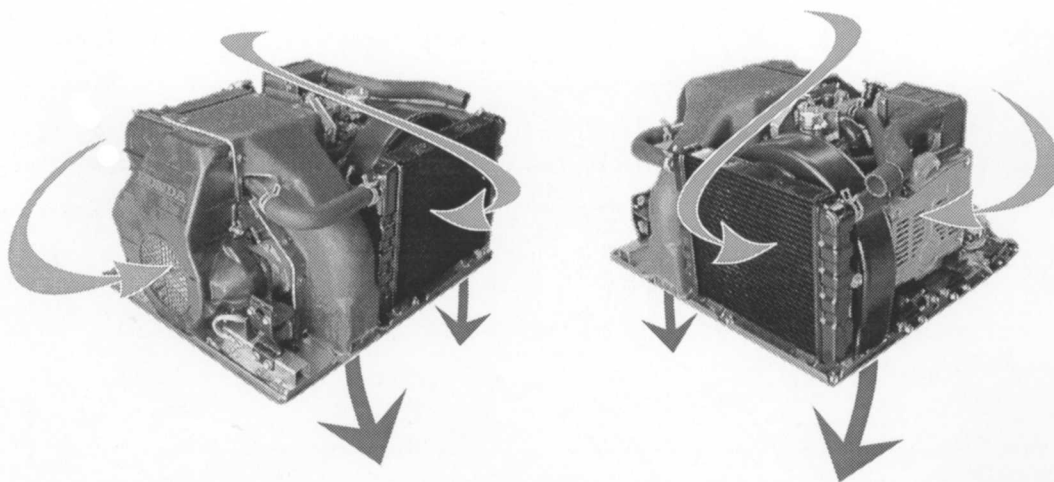
Air Flow

The EV-series generator set is air cooled.

Sure the engine is liquid cooled, but the radiator is sitting right next to it; as are the exhaust manifold and the generator windings — all heat sources that require a correct air flow of clean fresh air.

Once you think of the generator set as being air cooled, the importance of an enclosure that comes as close to the specified minimums without going under them, makes more sense. Your basic lawn mower engine is shrouded to direct the airflow. Aircraft engines are typically shrouded so tightly, that baffles rest directly on cylinder fins. The shrouds are needed to direct the air flow.

Consider the compartment for EV generators as a shroud. It needs to closely conform to the dimensions of the unit to ensure that the air flows through the passages built into the generator and then out through the precisely-shaped and essential openings in the mounting tray.



This illustration will give you an idea of what's happening:

The air inlet is on the door at the front of the generator (the side of the coach.) Air then flows to the rear and sides of the compartment to be drawn into the radiator, generator, aircleaner, and exhaust cooling duct. Heated air exhausts out the bottom of the compartment.

Dirt

Road dirt and water can kill generator sets — and nowhere is there more dirt and water than behind the rear wheels where all sorts of road debris can be thrown into the openings in the tray to coat the engine and generator. The easy answer, then, is not to mount the generator behind the rear axle; but sometimes there are no easy answers.

Consider all the air-cooled VWs with their engines hanging out behind the rear wheels, spending lifetimes on third-world dirt roads, yet never suffering from dirt ingestion:

- The air inlet for the engine compartment is in a natural high-pressure area when the car is in motion.
- The compartment is tightly sealed.

There's the secret. If the air inlet on the coach body is in a comparatively high-pressure area when the coach is in motion, dirt will not enter the generator enclosure. Now before you get visions of air scoops from a fuel dragster hanging on the side of a pristine motor home, think about the word: comparative.

We just have to be sure that pressure at the inlet of the enclosure is higher than the pressure at the outlets in the tray. This can be accomplished by something as simple as a spoiler (better known as a mud flap) below the coach and ahead of — perhaps, even beside — the tray. The spoiler effectively lowers the air pressure at the outlets, which means that, comparatively, the air pressure is higher at the inlet. As long as the inlet air is at a higher pressure than the air at the exit ports in the tray, dirt will not enter from the bottom of the vehicle.

Another situation to be aware of is the possibility of the generator outlet air being sucked directly into the inlet. This can happen on installations in which the inlet air is drawn from the bottom edge of the generator compartment door. Here again, the use of flexible rubber “mud flaps” can control the air flow.

The bottom line is:

Fully enclose the generator in a compartment whose dimensions approach as closely as possible the minimums specified in the installation manual. Consider the minimums as absolute — slightly larger is acceptable; smaller is not permitted. The bottom of the compartment (tray) must have the openings as described in the installation manual.

Fresh, clean air must enter the enclosure through the upper front (service side) of the enclosure and flow out the openings in the tray regardless of generator operation or the speed of the coach.

12-Volt System

The Charging Circuit

The subwinding stator coil #2 (SW2) provides 12 volts at a continuous 1 amp to the radiator fan and to the generator starting battery. The voltage from SW2 is not smoothly rectified DC, and the battery helps smooth out some of the voltage variations.

If the battery is used for other 12-volt supply without supplemental charging — The charging coil can put out up to 10 amps for short periods, but not continuously. If the 12-volt demand exceeds the output of the SW2 coil, voltage will drop; and the effectiveness of the radiator cooling fan will drop proportionally. The generator will execute an “overtemperature shutdown.”

If the battery is used for other 12-volt supply and charges from the coach’s alternator or inverter — There may never be a problem; but if there is a high-current load switched on the 12-volt circuit and the charging capacity of the alternator or inverter is relatively high, the resultant voltage spike can blow the F1 fuse. In this case, the generator will continue to run, but will not restart.

Some solutions

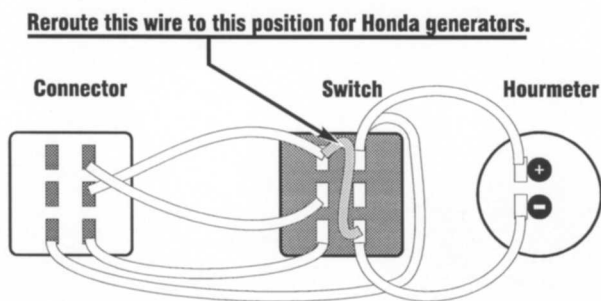
If the 12-volt system of the generator is connected with other loads, the battery must be charged by an inverter.

If you encounter problems with the F1 fuse failing, and you believe that this is due to voltage spikes in the 12-volt circuit, install an isolator between the battery and the generator. Be aware that this will eliminate the “smoothing” of the SW2 supply to the radiator cooling fan and may lead to premature fan motor failure.

Remote Control

The tables and diagrams in the Installation Instructions provide what you need to fabricate remote connections.

This diagram shows the necessary modification to make a Honda generator connect to an Onan panel:



Control System Operation

Twelve sensors and controls connect through the control box to control generator operation; but this box isn't like a complex fuel-injected engine's control unit. All of the input signals are either on or off, as are the control signals — no analog signals or variable output. Operation is fairly simple.

System Components

All of the system components work together and each depends on the others to function correctly.

Battery

Provides power through the control box for various output devices.

Remote Control

Provides start, run, and stop signals to the control box. The hour meter and pilot light receive power from the control box. The maximum current that can be supplied to the hour meter and light is 1 ampere.

Control Box

Because the control box is a "complex, mysterious black box," it's natural that we suspect it as the source of any generator problems. Actually, it's a fairly trouble-free component; but, like any solid-state device, the control box can be damaged by reversed-polarity current.

The following conditions will instantaneously destroy the control box:

- A non-Honda remote control is incorrectly wired; specifically, the brown and white wires (Honda color code) are reversed.
- When trying to power the fuel pump directly from the battery, the positive (+) is connected to the control box instead of the pump. Attach the positive lead to the male side of the fuel pump connector.
- When using the troubleshooting guide to diagnose a problem, you may disconnect both the fuel pump and ignition ground wires. If the two wires coming from the box are then connected together, the control box will be destroyed.
- The insulation of the remote-control white wire is damaged and the wire is grounded.

Control Input Devices

The input sensors are open in normal operation and closed in abnormal conditions.

Oil Pressure Switch

Low/no oil pressure: The switch closes and signals the control box to stop the engine.

Engine Thermoswitch

Overheat: The switch closes and signals the control box to stop the engine and turn the red temp light on.

Choke Thermoswitch

Engine cold: The switch is closed and signals the control box to apply the choke.

Radiator Thermoswitch

Overheat: The switch closes and signals the control box to stop the engine and turn the red temp light on.

Generator SW 1 (Sub-Winding) 1

After the start button is released, SW 1 provides an engine-running signal to the control box through the #3 fuse and turns the green pilot light on. If there is no SW 1 output, the green light does not come on and generator won't keep running after the start button is released.

Control Output Devices

Fuel Pump

The pump receives battery voltage from the control box when the generator switch is in start or run.

Choke Solenoid

The solenoid applies the choke for 2 to 3 seconds every time the start button is pressed. The control box will keep the choke on longer if the Choke Thermoswitch is cold (closed).

Starter Solenoid

Pushing and holding the start button closes a relay in the control box that, in turn, energizes the starter motor solenoid.

Fuel Cut Solenoid

When the stop button is pushed, the ignition primary circuit is grounded, and the control box provides power to the solenoid (mounted in the base of the carburetor). This closes the main jet until the generator comes to a stop (2-3 seconds) to prevent after-running.

Automatic Voltage Regulator (AVR)

Battery voltage through the control box provides the initial excitation of the generator field until the exciter winding comes on line. Once the generator is running, The AVR regulates brush voltage which controls output voltage.

Troubleshooting Tips

Before you begin troubleshooting remember that all of the components depend on one another and that they communicate through wiring and connections.

- Check the battery voltage. If it measures less than 12 volts at the control box terminal, charge the battery.
- Check for loose wires or poor connections on the control assembly terminal strip, relays, fuses, or control box connector plugs.
- Check the fuses. Inspect the fuse holders and caps.
- Check the fuses with an ohmmeter. Frequently a fuse will be open at an end where you can't see it.
- When you replace a fuse, use only the correct length, diameter, and capacity fuse.
- Disconnect the remote control (if installed) at the control box, and try to operate the generator from the control box.

HONDA