RV GENERATOR SETS

MODEL: 2.5CMZ

Operation and Installation Manual

TP-5418

KOHLER® POWER SYSTEMS

California Proposition 65

⚠ WARNING

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

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Safety Precautions and Warning Decals

A Generator Set, like any other electro–mechanical device can pose potential dangers to life and limb if improperly maintained or imprudently operated. The best safeguards against accidents are to be ever mindful of the potential dangers and to always use good common sense. In the interest of safety, some general precautions relating to operating of a Generator set follow. Keep these in mind. This manual contains several types of safety precautions which are explained below.

⚠ DANGER

Danger is used to indicate the presence of a hazard which *will* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ WARNING

Warning is used to indicate the presence of a hazard which *can* cause *severe* personal injury, death, or substantial property damage if the warning is ignored.

⚠ CAUTION

Caution is used to indicate the presence of a hazard which *will* or *can* cause *minor* personal injury or property damage if the warning is ignored.

NOTE

Note is used to notify people of installation, operation, or maintenance information which is important but not hazard–related.

⚠ CAUTION

Hot exhaust system can ignite adjacent combustible materials. Do not locate electrical wiring, fuel lines, or combustible material above the exhaust muffler. Be careful when parking your RV to prevent grass fires started by exhaust system and hot exhaust gases.

Hot generator can ignite debris in compartment. Keep the compartment and generator set clean and free of debris and combustible materials to minimize chances of fire. Do not block fuel/oil drain opening in generator mounting tray. If sub–flooring is used, cut a corresponding hole in the sub–flooring for drain opening.

⚠ WARNING

A flash fire can cause serious burns. Do not smoke or permit flame or spark to occur near carburetor, fuel line, fuel filter, fuel pump, or other potential sources of spilled fuel or fuel vapors. When removing fuel line or carburetor, use a proper container to catch all fuel.

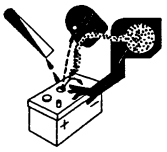
Spilled fuel can ignite on contact with hot engine parts. Use a container to catch fuel when draining fuel system. Wipe up all spilled fuel after draining system.

NOTE

Fuel leakage could cause an explosion. After all LP–Gas connections have been completed, the entire system must be test pressurized to 6–8 ounces (10–14 inches water column).

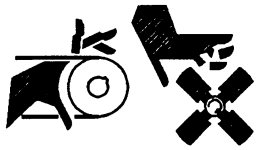
⚠ WARNING

Battery gases can cause an explosion.
Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Avoid contacting terminals with tools, etc. to prevent burns and to prevent sparks that could cause an explosion. Remove wristwatch, rings, and any other jewelry before handling battery. Never connect negative (–) battery cable to positive (+) connection terminal of starter solenoid. Do not test battery condition by shorting terminals together or sparks could ignite battery gases or fuel vapors. Any compartment containing batteries must be well ventilated to prevent accumulation of explosive gases. Do not mount battery in generator compartment. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before disconnecting battery connections. When disconnecting battery, remove negative lead first and reconnect it last.



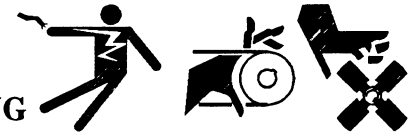
⚠ WARNING

Sulfuric acid in batteries can cause permanent damage to eyes, burn skin, and eat holes in clothing.
Always wear splash–proof safety goggles when working around the battery. If battery electrolyte is splashed in the eyes or on skin, immediately flush the affected area for 15 minutes with large quantities of clean water. In the case of eye contact, seek immediate medical aid. Never add acid to a battery once the battery has been placed in service. Doing so may result in hazardous spattering of electrolyte.



⚠ WARNING

Exposed moving parts can cause severe injury.
Keep hands, feet, hair, and clothing away from belts and pulleys when unit is running. Replace guards, covers, and screens before operating generator set. Do not open generator compartment door when unit is running.



⚠ WARNING

Accidental starting can cause death or serious personal injury. Disconnect battery cables (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator. The generator set can be started by remote start/stop switch unless this precaution is followed.

⚠ CAUTION

Hazardous noise can cause loss of hearing.
Never operate generator without adequate hearing protection or muffler. Never operate generator with faulty exhaust system.

⚠ CAUTION

RV generator fuel system is susceptible to explosion when used in non–RV applications. Use generator sets specified for RV use in RV installations only.

⚠ WARNING

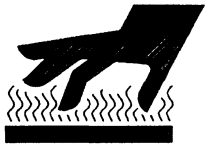
Carbon monoxide can cause death, severe nausea or fainting. Never operate the generator set inside a building unless the exhaust gas is piped safely outside. Never operate in any area where exhaust gas could accumulate and seep back inside an occupied building or coach. Be careful when parking your coach to avoid obstructing the exhaust outlet. The exhaust gases must discharge freely, otherwise carbon monoxide may deflect into the vehicle. Avoid breathing exhaust fumes when working on or near the generator set. Carbon monoxide is particularly dangerous because it is an odorless, colorless, tasteless, nonirritating gas which can cause death if inhaled for even a short period of time. The exhaust system must be leakproof and routinely inspected.

Carbon monoxide can cause death, severe nausea or fainting. When mounting the remote switch with choke cable, make sure the panel is air tight to prevent exhaust fumes from entering the coach.

Carbon monoxide can cause death, severe nausea or fainting. Install exhaust system tail pipe so discharged exhaust gases will not be drawn into vehicle interior through windows, doors, air conditioners, etc. Do not use flexible tail piping since this type could crack and allow lethal exhaust fumes to enter the vehicle.

⚠ WARNING

A sudden backfire can cause serious burns. Do not operate with air cleaner removed.



⚠ CAUTION

Hot parts can cause personal injury. Do not touch hot engine parts. An engine gets hot while running and exhaust system components get extremely hot.

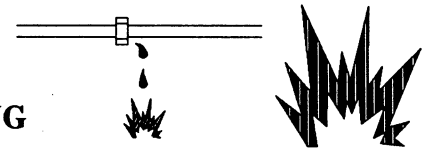
⚠ WARNING

Hazardous voltage can cause death or severe injury.

Perform electrical service only as prescribed in equipment manual. Be sure that generator is properly grounded. Never touch electrical leads or appliances with wet hands, when standing in water, or on wet ground as the chance of electrocution is especially prevalent under such conditions. Wiring should be inspected at the interval recommended in the service schedule — replace leads that are frayed or in poor condition. The function of a generator set is to produce electricity and that wherever electricity is present, there is the hazard of electrocution.

Hazardous "backfeed" voltage can cause death or severe injury.

The generator must not be used to "backfeed" by connecting it to building/campground electrical circuits. Install a transfer switch in RV generator installations to prevent connection of RV and other sources of power. Electrical backfeed into a utility electrical system can cause serious injury or death to utility personnel working on transmission lines.



⚠ WARNING

All fuels are highly explosive in a vapor state. Use extreme care when handling, storing, and using fuels

Store fuel in a well–ventilated area away from spark producing equipment and out of the reach of children. Never add fuel to the tank while the engine is running since spilled fuel may ignite on contact with hot parts or from ignition spark. Do not smoke or permit flame or spark to occur near potential sources of spilled fuel or fuel vapors. Keep fuel lines and connections tight and in good condition––don't replace flexible fuel lines with rigid lines. Flexible sections are used to avoid breakage due to vibration. Additional precautions must be taken when using the following fuels:

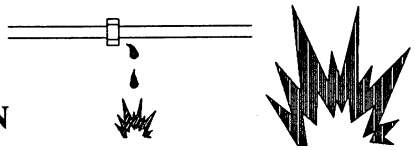
Gasoline – Store gasoline only in approved red containers clearly marked GASOLINE. Do not store gasoline in any occupied building.

Propane (LP) – Adequate ventilation is mandatory. Propane is heavier than air; install gas detectors low in room. Inspect detectors often.

Natural Gas – Adequate ventilation is mandatory. Natural gas rises; install gas detectors high in room. Inspect detectors often.

⚠ CAUTION

Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while adjustments are made. Remove wristwatch, rings, and jewelry that can cause short circuits.



⚠ CAUTION

Fuel leakage can cause an explosion. Check LP gas fuel system for leakage using a soap–water solution with fuel system test pressurized to 6–8 ounces (10–14 inches water column). Do not use test solutions that contain ammonia or chlorine, since the soap will not bubble for an accurate leakage test.

NOTE

RV generator sets do not comply with United States Coast Guard (U.S.C.G.) requirements and must not be used for marine applications. Use only generator sets specified for marine use in marine installations. U.S.C.G. Regulation 33CFR183 requires a generator set to be "ignition protected" when used in a gasoline–fueled environment.

Warning Decals

Warning decals are affixed to the generator set in prominent places to advise the operator or service technician of potentially hazardous situations. These decals are reproduced here to improve operator recognition and thereby increase decal effectiveness. For a further explanation of decal warning statements, reference preceding safety precautions. Before operating or servicing the generator set, be sure you understand the message of these decals. Replace decals if damaged or missing.

⚠ WARNING

Hazardous voltage Backfeed to utility system can cause electrocution or property damage.

Do not connect to any building electrical system without connecting through an approved device and after building main switch is open. See operator's manual.

239771

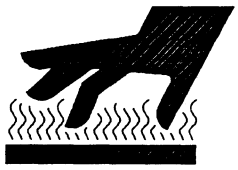
⚠ WARNING

carbon monoxide. Can cause severe nausea, fainting, or death.

Completlely seal off compartment to maintain vapor tightness to living space. See operator's manual for complete installation instructions.

239796

⚠ CAUTION



Hot engine and exhaust system. Can cause severe burns.

Do not work on generator set until unit is allowed to cool.

249809

⚠ WARNING

Fire or accident hazard. Can cause severe injury or death.

Install unit only in accordance with manufacturer's detailed installation instructions.

239773

Section 1. Specifications

Introduction

Your recreation vehicle is equipped with a dependable Kohler Alternating Current RV Generator Set. Service requirements of the Generator Set are minimal but it is important that the required services be performed at the prescribed intervals. Please take a few moments to read through this manual then carefully follow all service recommendations to keep your set in top condition. In the space provided, record the MODEL, SPECIFICATION, SERIAL and ENGINE SPEC. numbers as found on the nameplate attached to the frame of the generator. This information will enable your Kohler Generator Service Dealer to supply the correct part or data for your particular version. Keep this manual in your RV for future reference.

General Specifications

	2.5CMZ–RV (60Hz)
Dimensions – L x W x H —in. (mm)	15.75 x 14.00 x 19.74 (400 x 356 x 501)
Weight (dry) – lbs. (kg)	93.75 (42.19)
With Muffler	99.75 (44.89)
Air Requirements	
Combustion & Cooling	40 sq. in. inlet duct

Fuel Consumption — **2.5kW – Gasoline – gph (Lph)**

Load	**25%**	**50%**	**75%**	**100%**
2.5 kW Gasoline	0.28 (1.1)	0.38 (1.4)	0.48 (1.8)	0.56 (2.1)
2.5 kW LP	0.29 (1.0)	0.34 (1.3)	0.41 (1.6)	0.51 (1.9)

Generator

	2.5CMZ
Rated kW	2.5
Frequency – Hz	60
Rated Voltage	120
Rated Amps.	20.8
Overbolt Torque – in. lbs. (Nm)	70 (7.9)
Rotor Resistance (ohms)	3.2
Stator Resistance (ohms)**	
Leads:	
1–2, 3–4	0.5
55–66	1.5
Insulation (Rotor and Stator)	Class 155, Epoxy Varnish, Vacuum Impregnated
Fungus Resistance	Meets Mil–E–04970A Standard
Winding Material	Copper
Circuit Protection – Generator	25Amp.
Watts	2500

DERATION: The kilowatts of the generator set will decrease 3–1/2% for each 1000 feet (305 meters) above sea level and 1% for each 10°F (5.5°C) above 60°F (16°C).

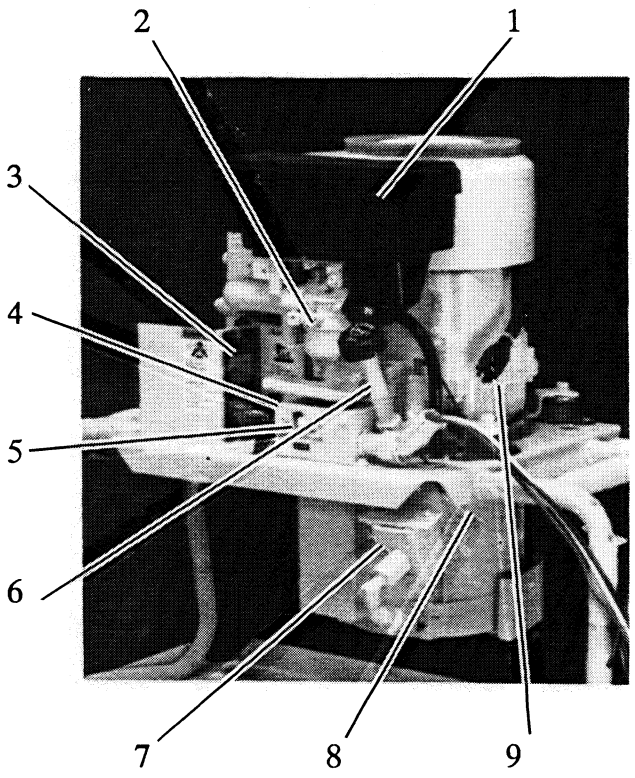
Engine

Some general engine specifications are listed below. Refer to the appropriate service section and the engine service manual for specific service details.

Manufacturer	Tecumseh
Model	TVM 140
	Vertical Shaft
Cycle	4
Number Cylinders	1
Displacement – cu.in. (cc)	13.53 (221.75)
Rated Horsepower	6.0
RPM @ 60 Hz	3600
Bore – in. (mm)	2.6 (66.7)
Stroke – in. (mm)	2.5 (63.5)
Valve Material	
Intake	Alloy steel
Exhaust	Austenitic steel
Cylinder Head Material	Aluminum
Cylinder Block Material	Aluminum
Crankshaft Material	Iron alloy
Bearings	Anti–friction, Aluminum alloy
Governor	Oil bathed, Mechanical
Lubrication System	Positive displacement pump
Oil Capacity – qts. (L)	1.25 (1.08)
Fuel Type	Unleaded Regular Gasoline
Fuel System	
Choke	Manual
Fuel Pump	Electric – with fuel shut–off
Battery Voltage	12
Battery Recommendation	12 Volt, 55 Amp. Hr.
Spark Plug Type	Champion ® RJ–8 or RJ–17LM
Spark Plug Gap – in. (mm)	0.030 (0.76)
Ignition System	Electronic
Starter Motor	12 Volt
Cooling System	Forced air

FRONT VIEW

1. Air Cleaner
2. Carburetor
3. Nameplate
4. Electrical Box
5. Circuit Protector
6. Oil Fill / Oil Check
7. Fuel Pump
8. Oil Drain
9. Start/Stop Panel Connection



BACK VIEW

10. Air Intake
11. Starter
12. Battery Negative Connection
13. Splash Guard
14. Battery Positive Connection
15. Starter Solenoid
16. Spark Plug

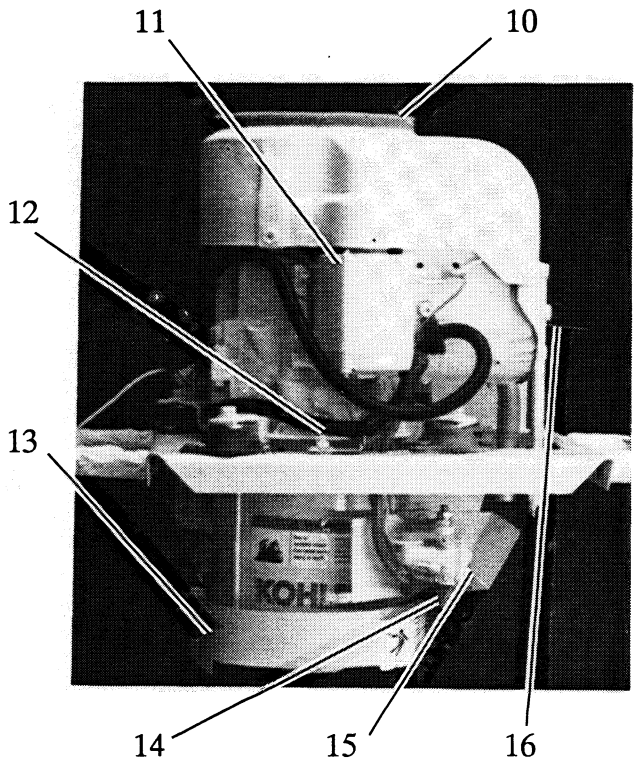


Figure 1-1 Service View

Section 2. Operating Instructions

To insure continued satisfactory operation, the following items should be checked before each start–up.

Prestart checklist

OIL LEVEL: Should be at or near Full mark (not over).

AIR INLETS: Must be clear and unobstructed.

COMPARTMENT: Interior must be clean.

AIR CLEANER: Must be clean and properly installed.

AIR SHROUDING: Must be tight and in proper position.

EXHAUST: Tail pipe must be clear, muffler and piping tight and in good condition.

ELECTRICAL: All connections (including battery) must be tight.

To Start

Pull the choke knob out to the closed position, see Figure 2–1. Place rocker switch to "START" position and hold until the engine is running but not more than ten seconds. When the switch is in the "START" position the "ON" light will go on indicating battery voltage availability to the electrical fuel pump. When the switch is released from the "START" position it will automatically return to the "RUN" position. If the generator set is running, the "ON" light will remain illuminated; otherwise, the light will go off indicating the engine failed to start. Normally the engine will start within five seconds. As the engine warms up, push the choke knob in.

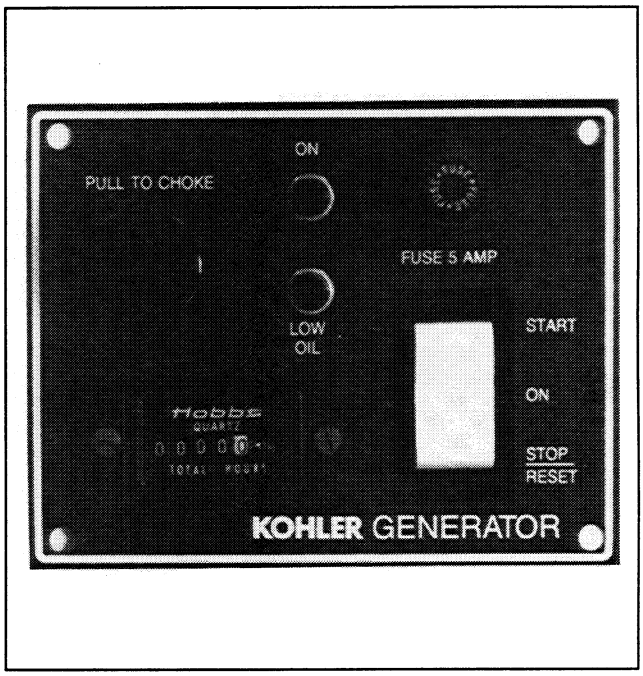


Figure 2–1. Remote Panel

NOTE

Do not crank engine continuously for more than ten seconds at a time. A 60 second cool–down period must be allowed between cranking attempts if the engine does not start. If the unit fails to start after three attempts have problem corrected by an Authorized Service Dealer. Failure to follow these guidelines may result in burn–out of the starter motor from overheating.

NOTE

Do not attempt to start the generator set while the unit is running. Teeth on the flywheel and starter will clash and could result in damage to the starter or flywheel.

NOTE

When starting LP gas units, do not use the choke when outside temperature is greater than 30°F (–1°C). When temperature is 30°F (–1°C) or below, choke for 3 seconds after starting and then open choke.

To indicate generator set output, a low wattage night light can be used as a generator "ON" light. Plug night light into any AC outlet in the motorhome and leave in the "ON" position.

To Stop

Whenever possible, allow a brief cooling period by running the set at low or no load for a few minutes prior to shut–down. To stop, place rocker switch in "OFF/RESET" position.

Section 3. Scheduled Maintenance

Service Schedule

In addition to the routine services listed in this manual, there are other important steps that should be taken to keep a generator set in top condition. Usually, tools and instruments required for these additional steps are not available to the generator set owner. For this reason, the set should be returned periodically to an authorized Service Dealer for complete servicing and tune–up every 200 hours or once a year. The benefits of such service will be improved performance and continuous satisfactory operation during a long trouble free service life.

If operating under extremely dusty and dirty conditions, use dry compressed air to blow dust out of the generator at frequent intervals. Do this with the generator set operating and direct the stream of air through the cooling slots at the end of the generator.

Perform Service at Intervals Indicated (X)	Before Each Start–Up	Every 25 Hours	Every 50 Hours	Every 100 Hours	Every 200 Hours	Every 500 Hours
Check exhaust outlet	X					
Check oil level	X					
Check fuel supply	X					
Keep cooling air inlets and outlets clean	X					
Remove loose dirt from compartment	X					
Change lube oil (see Lubrication)		X				
Service Air Cleaner		X				
Check generator set battery electrolyte level (if equipped)			X			
Service spark plugs				X		
Retighten electrical connections				X		
Check mounting bolts and vibro mounts				X		
"Tune–up" at Authorized Service Dealer (plug, decarbonize engine, lap valves)					X	
Replace in–line fuel filter						X

Lubrication System

Oil Check

Check the oil in the crankcase daily or before each startup to insure the level is in the safe range. DO NOT operate the set if the level is below the "ADD" mark. To bring the level from the "ADD" mark to full, add approx. 0.75 quart (0.71 liters).

1. Make sure unit is on a flat, level surface.
2. Wipe area around oil cap to prevent dirt or particles from entering the oil fill tube.
3. Unscrew oil cap and wipe dipstick clean. See Figure 3–1.
4. Re–insert dipstick into oil fill tube. Dipstick must be fully seated and tightened into oil fill tube when checking oil level. Remove dipstick to check oil level.
5. Add oil until level is above the "ADD" mark and below the "FULL" mark.
6. To add oil, a funnel is recommended to prevent oil spill, see Figure 3–2.

NOTE

Do not check oil level when the set is in operation. The Engine must be stopped.

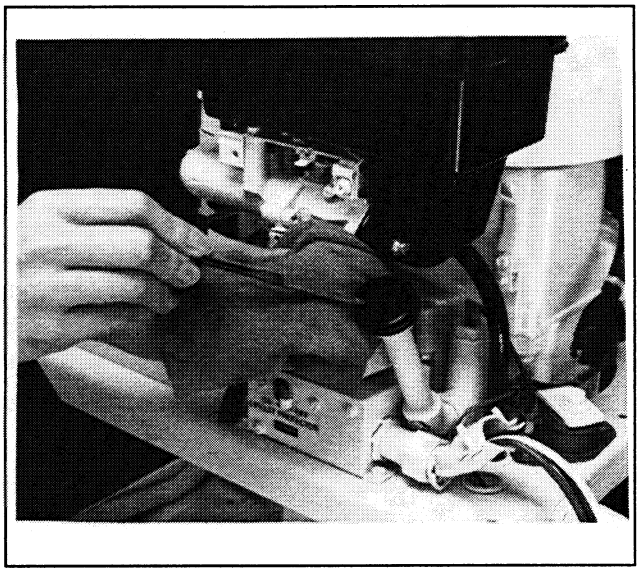


Figure 3–1. Oil Check

Oil Change

Change the oil after the first two (2) hours of operation and at 25 hour intervals thereafter. Change more frequently if operating under dirty, dusty conditions. If possible, drain oil while hot. To drain, open valve. Oil drain valve is located underneath mounting tray. Figure 3–3. Place a container underneath drain valve to catch draining oil. Close valve after oil has completely drained. Oil capacity is 1.2 quarts (1.08 liters). Refer to Oil Selection chart following for correct oil type.

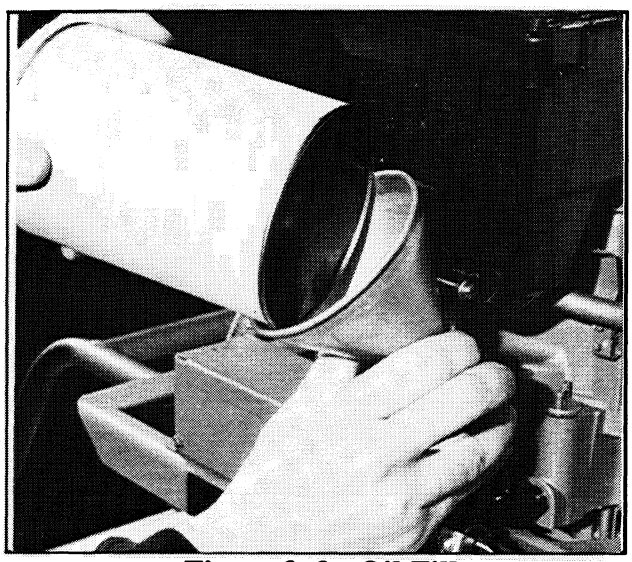


Figure 3–2. Oil Fill

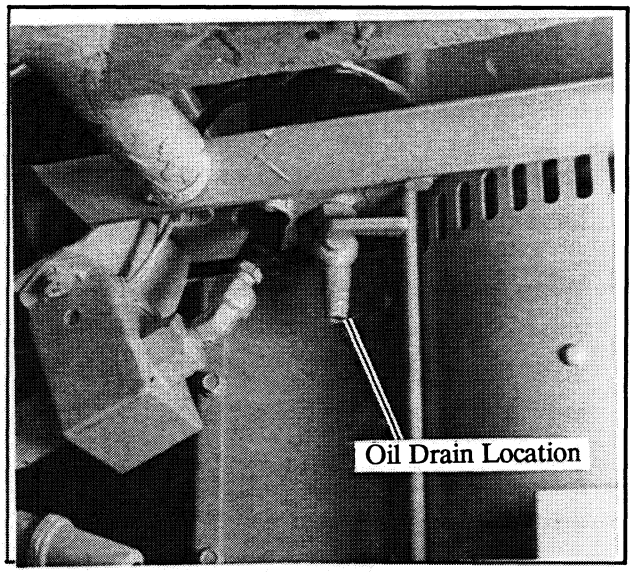


Figure 3–3. Oil Drain Location

Low Oil Shutdown Switch

The low oil shutdown feature protects the engine against internal damage if the oil level drops below "ADD" mark on dip stick. When oil level drops below safe operating level, unit will shutdown and the red light on the remote panel (labeled "Low Oil") will light. Oil level must be corrected and switch returned to "OFF/RESET" position before engine is re-started. Location of the low oil level switch is shown in Figure 3–4.

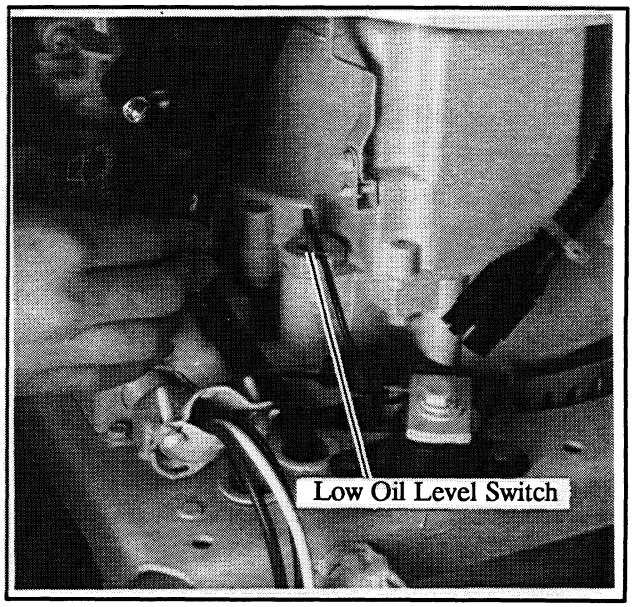


Figure 3–4. Low Oil Level Switch

Oil Selection

USE A CLEAN, HIGH QUALITY, DETERGENT OIL. Be sure original container is marked with engine service classification SC, SD, SE, or SF.

DO NOT USE SAE10W40 OIL.

Refer to the Oil Selection Chart for proper oil types; use of lighter weight oil, other than recommended, will cause increased oil consumption.

Oil Selection Chart

Air Temperature	Oil Viscosity
Above 32°F (0°C)	SAE 30 (SAE 10W30 is an acceptable substitute)
Below 32°F (0°C)	SAE 5W20 or 5W30 (SAE 10W is an acceptable substitute)

Air Cleaner

Your engine is equipped with a foam–type air filter. Every 25 hours remove the element and clean. Clean more frequently if using under extremely dirty, dusty conditions. Use the following procedure to service the air cleaner.

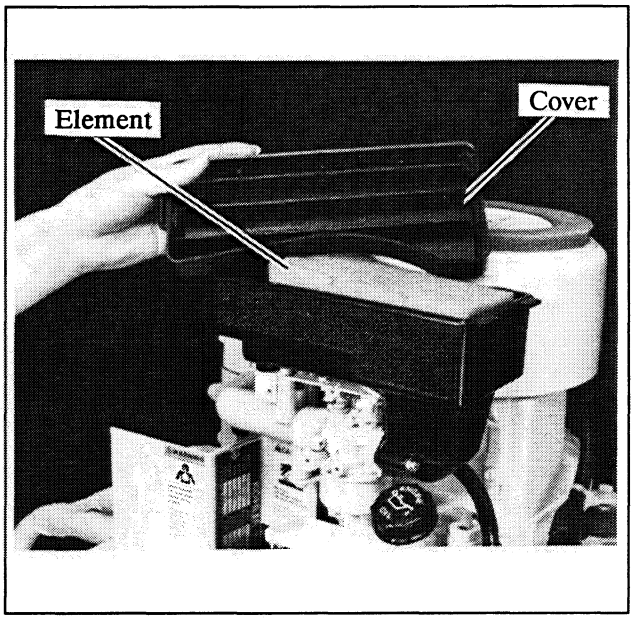


Figure 3–5. Air Cleaner Service

NOTE

If generator is equipped with optional air duct kit, remove baffle panel (secured with wing nuts) to access air cleaner.

1. Unsnap air cleaner cover. See Figure 3–5.
2. Remove filter. Wash filter in a water and DETERGENT solution.
3. Wrap in a clean cloth and squeeze dry (don't twist). Then apply liberal amounts of SAE 30W oil to filter. Work oil well into filter and then squeeze out excess oil.
4. Reinstall element, making sure it fits properly. Snap air cleaner cover back in place.

Spark Plugs

Every 100 hours remove the spark plug and check its condition. Good operating conditions are indicated when the plug has a light coating of gray or tan deposit. A dead white, blistered coat could indicate overheating. A black (carbon) coating may indicate an "overrich" fuel mixture caused by a clogged air cleaner or improper carburetor adjustment. Do not sandblast, wire brush, scrape or otherwise service a plug in poor condition – best results are obtained with a new plug.

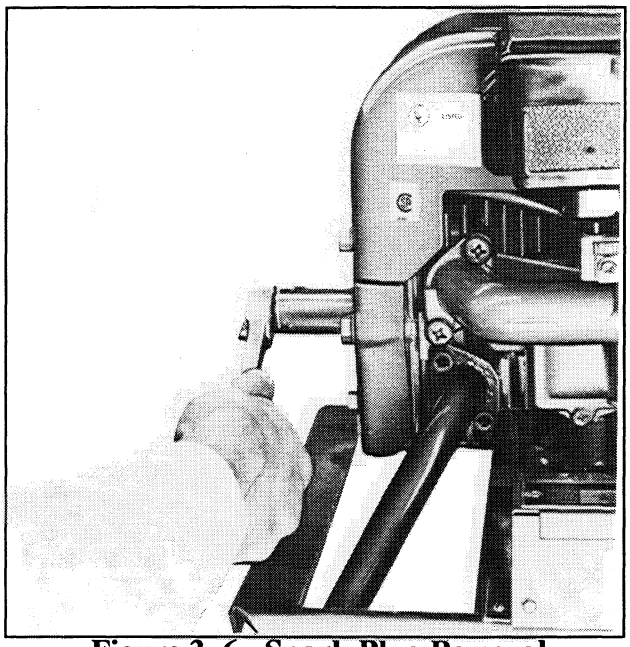


Figure 3–6. Spark Plug Removal

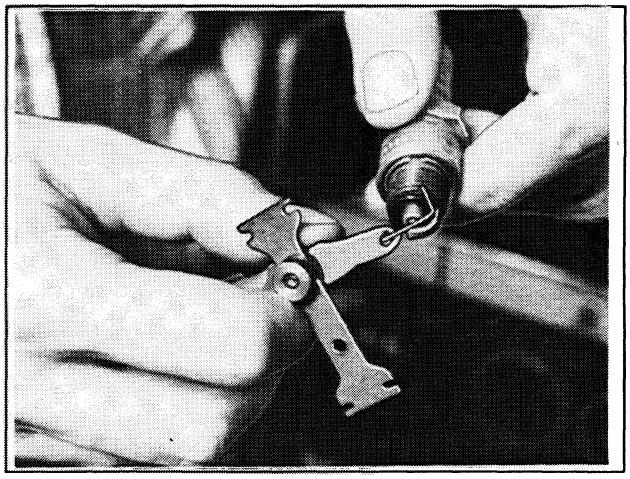


Figure 3–7. Gapping Spark Plug

To service, remove plug as shown in Figure 3–6. Spark plug gap is 0.030 in. (0.76 mm). Figure 3–7. For replacement plugs use Champion RJ–8 or RJ–17LM. A champion RJ–17LM resistor plug is required for Canadian radio frequency interference regulations.

Fuel System

Fuel Specifications

For best results, use only clean, fresh, regular grade unleaded gasoline with a pump sticker octane rating of 87 or higher in the U.S.A. In countries using the Research rating method, it should be 90 octane minimum.

Unleaded gasoline is recommended since it leaves less combustion chamber deposits. Regular grade leaded gasoline may also be used; however, be aware that the combustion chamber and cylinder head will require more frequent service.

Use fresh gasoline to ensure it is blended for the season, and to reduce the possibility of gum deposits forming which could clog the fuel system. Do not use gasoline left over from the previous season. Gasohol containing no more than 10% ethanol can be used if unleaded fuel is unavailable.

Never use gasoline containing METHANOL, gasohol containing more than 10% ethanol, gasoline additives, premium gasoline, or white gas because engine/fuel system damage could result.

Do not add oil to the gasoline.

Fuel Filter Service

Before servicing the fuel filter, drain the fuel from the carburetor/fuel line. This model utilizes an in–line type fuel filter connected to the fuel line, see Figure 3–8. Replaced the filter every 500 hours of running time or when rough operation indicates an engine tune–up may be necessary.

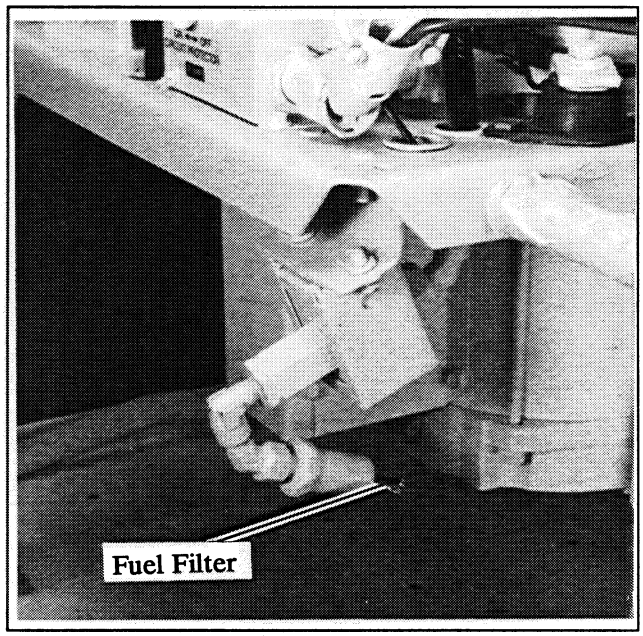


Figure 3–8. Fuel Filter Service

Carburetor Adjustments

Gasoline Carburetor Adjustments

The main fuel adjustment screw is located on the bottom of the carburetor bowl. Figure 3–9. Turn screw in until it bottoms lightly, then back out 1–1/4 turns. Minor adjustments may have to be made with the engine running at full load to achieve maximum power.

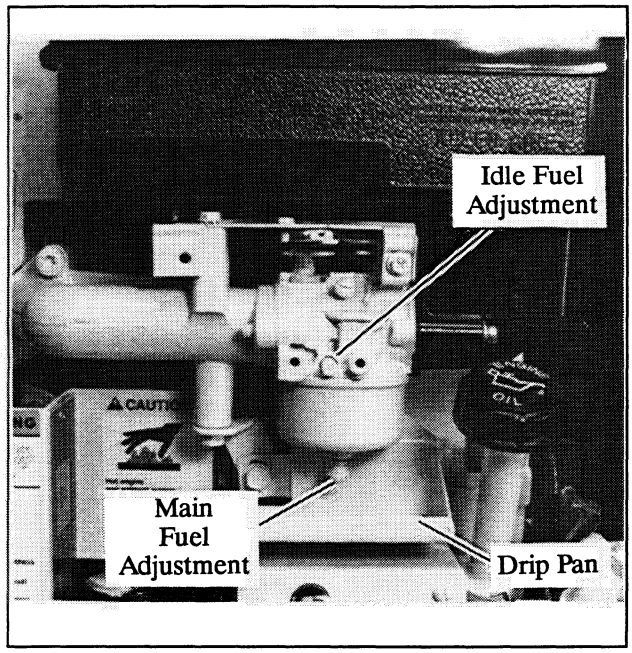


Figure 3–9. Gasoline Carburetor Adjustments

The idle fuel adjustment is located in the front, center of the carburetor. Turn the needle in until it bottoms lightly. Back out 3/4 of a turn.

LP Gas Carburetor Adjustments

The main fuel adjustment screw is located on the bottom of the carburetor bowl. Figure 3–10. Turn screw in until it bottoms lightly, then back out 1 full turn. Minor adjustments may have to be made with the engine running at full load to achieve maximum power.

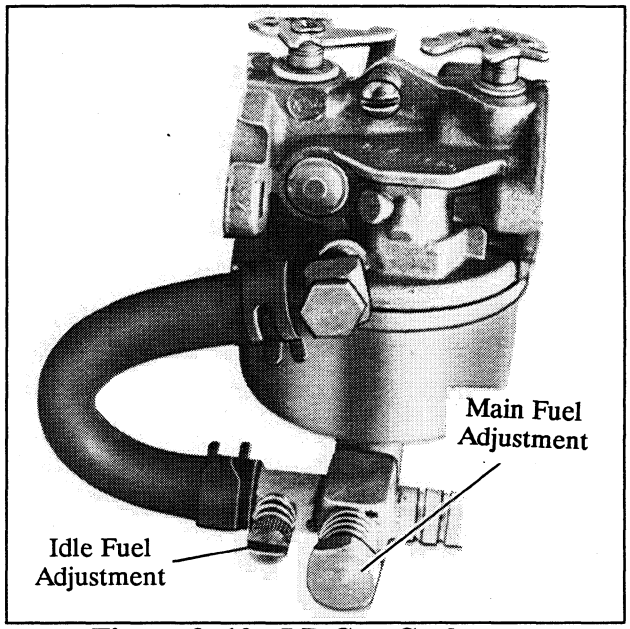


Figure 3–10. LP Gas Carburetor Adjustments

Open or close the idle fuel adjustment screw until smooth operation is obtained at no load (approximately 1–3 turns out from fully closed).

Battery Service (If Equipped)

Check the electrolyte level in the battery at frequent intervals and add distilled water as needed. To avoid unintentional starting while you are working on the set, disconnect the negative battery cable. Use a 12–Volt battery with an Amp. hour rating of at least 55. A negative ground system is used. Make sure the battery is properly connected and terminals are tight.

Governor Adjustments

The governor speed adjustment tab is located behind the carburetor (Figure 3–11). Governor speed at no load should be set at 63.5 Hz (3810 rpm). to increase speed, bend the control bracket outward (to expand the governor spring). To decrease speed, bend the control bracket inward (to compress the governor spring).

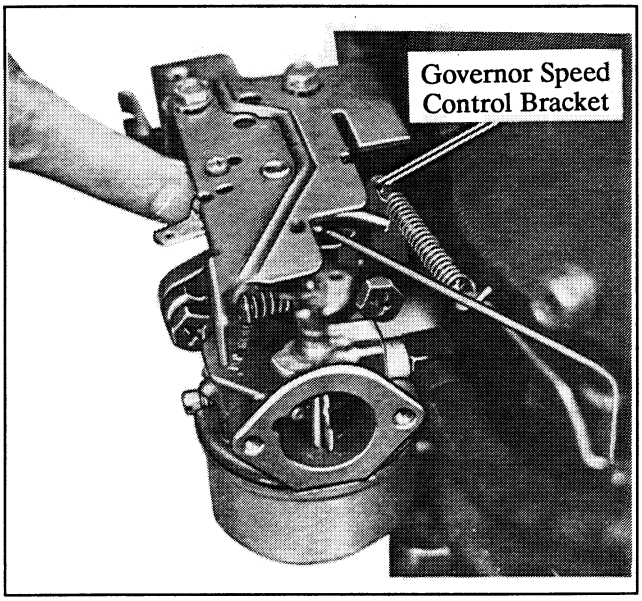


Figure 3–11. Governor Adjustment

Fuse Replacement

There is one 5 Amp. fuse on the start panel. This fuse protects the primary starting circuit and the electric fuel pump or LP fuel solenoid. Refer to Figure 3–12 for fuse location. If this fuse "blows", the fuel pump, or LP fuel solenoid will be deenergized and the set will stop when starved of fuel. Replace the fuse. If it "blows" again, contact an Authorized Kohler Generator Service Dealer for assistance in locating and correcting the cause.

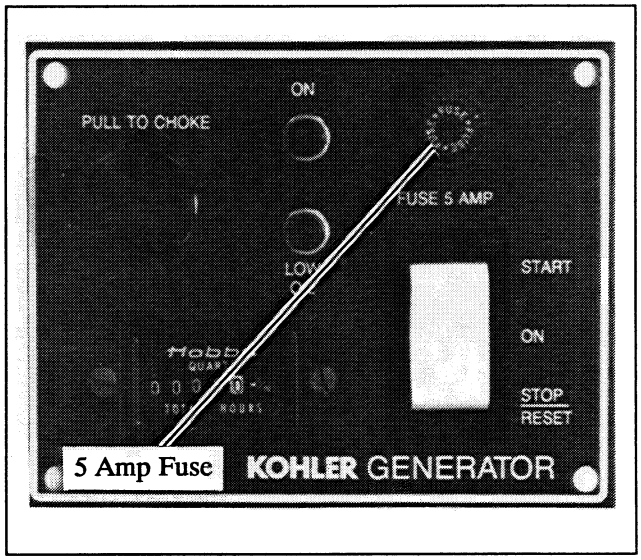


Figure 3–12. Fuse Replacement

Wattage Requirements

If the rated capacity of your generator is exceeded, the circuit protector located on the generator electrical box will trip to protect the generator against damage. This could be caused by a short in the AC circuit in your RV or simply by having too many appliances on at the same time, resulting in an overload condition. If the circuit protector trips, the set will continue running but there will be no AC output to the protected circuit. Before resetting the protector, turn off some of the appliances and lights inside the RV to bring the load down within the rated limits of the set. If this is done and the protector trips again after being reset, a short circuit is indicated. In this event, turn off the set and have an Authorized Kohler Generator Service Dealer locate and correct the cause of the short circuit.

NOTE

To reset the circuit protector in installations where the protector is barely visible, the ON position is where the handle is pointing outward.

The average wattage requirements of some common RV appliances and motor loads are listed in the following chart. Use these figures to calculate the total load on your set to avoid the inconvenience of having the circuit protector trip due to overload. The 2.5kW generator set will operate one 11,000 BTU air conditioner with 700 Watts to spare or one 13,500 BTU air conditioner with 300 Watts to spare.

Electrical Appliance	Rating (Watts)
Blanket	50–250
Blender	600
Broiler	1350
Dryer, Hair	500–1200
Fan, Air Circulating	25–100
Fan, Furnace	270
Heater, Space	750–1500
Heater, Water	1500
Pan, Frying	1200
Percolator, Coffee	650
Radio	50–100
Television	300–750
Toaster	750–1200

Storage Procedures

If your generator set is to be out of service for a considerable length of time (2 months or more), the following steps should be taken to preserve the set before placing it in storage.

Step 1. Drain the oil from the crankcase (while hot) then flush with clean light-weight oil. Refill crankcase with regular oil. See "Oil Type" section in this manual.

Step 2. Run generator until tank is empty (if separate tank is used). Drain the fuel from the carburetor bowl to prevent gasoline from becoming "stale" and forming gum deposits. If gasohol has been used as fuel, run generator for a short time on unleaded regular grade gasoline and repeat preceding instructions in Step 2.

Step 3. Remove the spark plug, squirt about 1 tablespoon of oil into the hole, crank the engine several times, then reinstall spark plug.

Step 4. Clean exterior surfaces of the generator set, then spread a light film of oil over any unpainted metallic surfaces which could rust or corrode.

Section 4. Troubleshooting

Under normal conditions, generator service will not be required on a regular basis. If operating under extremely dusty and dirty conditions, use dry compressed air to blow dust out of the generator at frequent intervals. Do this with the generator set operating and direct the stream of air in through the cooling slots at the end of the generator.

When troubles occur, don't overlook simple causes. A starting problem could be caused, for example, by improper fuel or an empty fuel tank. Make sure all electrical connections are secure. Remember the battery negative must have a good ground. The following charts list some common problems. If procedures in this manual do not correct the problem, take this generator set to an Authorized Kohler Service Dealer. Tell the service dealer personnel exactly what happened when the problem occurred and any adjustments made to the set.

Engine

Problem	Possible Cause	Corrective Action
Will Not Start	Starter motor or starter drive not functioning	Contact Authorized Kohler Service Dealer
	Fuse Blown	Replace
	Out of fuel	Replenish
	Clogged fuel filter	Clean
	Air cleaner clogged	Clean or replace element
	Battery connections made in reverse	Correct
	Faulty spark plug	Clean or replace, and regap
	Shorted or open magneto	Replace
	Faulty ground	Clean and retighten
	Loose spark plug lead connection	Reconnect
	Dead battery	Recharge
	Remote start panel connection loose	Check plug at generator
	Low oil level	Check level

Engine (Cont'd)

Problem	Possible Cause	Corrective Action
Hard Starting	Stale or bad fuel	Replace
	Air cleaner clogged	Clean or replace element
	Carburetor adjustment wrong	Adjust
	Faulty spark plug	Clean or replace, and regap
	Weak magneto	Replace
	Battery weak	Recharge or replace
Stops Suddenly	Out of fuel	Replenish
	Overheated	Check intake openings or bottom and top outlet ducts
	Air cleaner clogged	Clean or replace element
	Start panel fuse blown	Replace
	Faulty spark plug	Clean or replace, and regap
	Low oil level	Replenish
	Shorted ignition	Check or repair wiring
	Fuel pump not functioning properly	Check for proper operation
	Plugged fuel filter	Contact Authorized Service Dealer

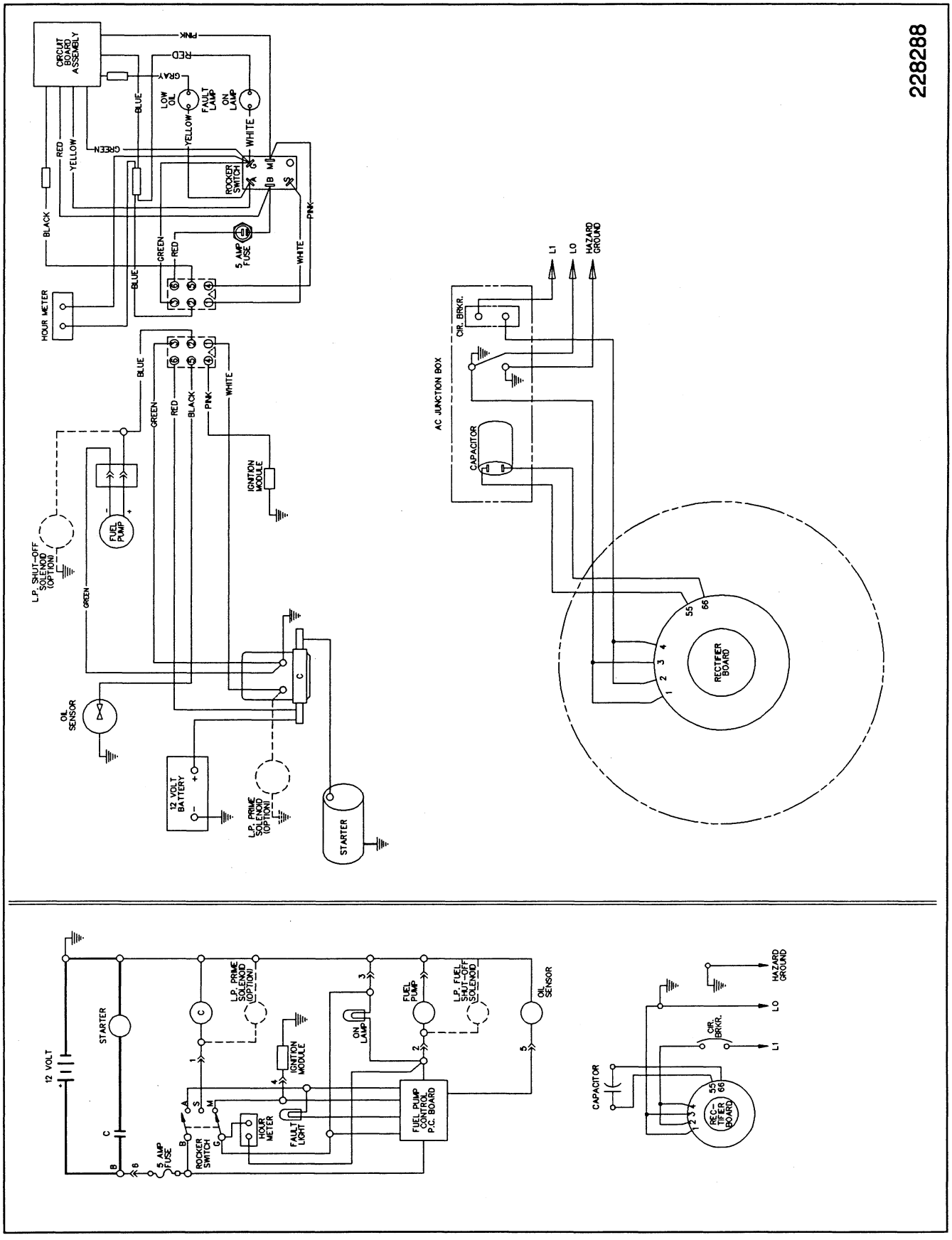
Engine (Cont'd)

Problem	Possible Cause	Corrective Action
Lacks Power	Air cleaner clogged	Clean or replace element
	Improper cooling	Inspect cooling system
	Engine overloaded	Reduce load
	Bad or stale fuel	Replace
	Faulty spark plug	Clean or replace, and regap
	Spark plug out of adjustment	Readjust
	Carburetor adjustments wrong	Readjust
	Carbon build–up	Service
	Improperly adjusted governor	Adjust
Operates Erratically	Air cleaner clogged	Clean or replace element
	Stale or bad fuel	Replace
	Faulty spark plug	Clean or replace, and regap
	Carburetor adjustment wrong	Readjust
Overheats	Improper cooling	Check intake and outlet openings
	Carburetor adjustment too lean	Adjust
	Engine ignition timing or damaged flywheel key	Contact Authorized Service Dealer
	Wrong spark plug	Replace with Champion RJ–8 or RJ–17LM

Generator

Problem	Possible Cause	Corrective Action
No AC Output	Circuit protector in OFF position	Reset to ON position
	Circuit protector tripping due to overload on generator set	Reduce load
	Short circuit in RV wiring causing circuit protector to trip	Reset, if trips repeatedly stop set and contact RV service center
	General malfunction	Internal fault, contact Authorized Service Dealer for repairs
Low Voltage or Frequency or Excessive Drop in Voltage	Engine speed too low	Adjust governor
	Generator overloaded	Reduce load
Sets Stops Suddenly	Out of fuel	Replenish
	Low Oil	Replenish
	Engine malfunction	See engine troubleshooting
	Fuse blown due to short or failure in engine wiring	Contact Authorized Service Dealer for repairs
High Output (Voltage or Frequency)	Engine speed too high	Adjust governor

Section 5. Wiring Diagram



Section 6. Installation

Introduction

Use this section as a guide when installing your RV generator set in your recreational vehicle, then refer to the Operation Manual section for specific service instructions. When installing an RV generator set, the installation must comply with CURRENT standards of (1) ANSI/RVIA EGS–1, (2) ANSI A 119.2/NFPA 501 C and (3) article 551 of ANSI/NFPA 70, National Electrical Code. Generator set installation must also comply with state and local requirements.

NOTE

RV generator sets do not comply with United States Coast Guard (U.S.C.G.) requirements and must not be used for marine applications. Use only generator sets specified for marine use in marine installations. U.S.C.G. Regulation 33CFR183 requires a generator set to be "ignition protected" when used in a gasoline–fueled environment.

Specifications	
Weight – dry (without muffler)	93.75 Lbs. (42.19 kg)
(with muffler)	99.75 Lbs. (44.89 kg)
Length – overall	15–3/4 in. (400 mm)
Width – overall	14 in. (356 mm)
Height – overall	19–3/4 in. (501 mm)
Air Requirements – Total	40 sq. in. (258 sq. cm) inlet duct
Fuel Inlet Connection Size – Gasoline	1/4 I.D. (6.3 mm)
Fuel Type	Unleaded Regular Gasoline
Battery Voltage	12 Volt
Battery Amp. Hr. (Minimum)	55
Battery Ground	Negative

Fuel Consumption

Load	25%	50%	75%	100%
2.5kW – Gasoline				
gph	0.28	0.34	0.43	0.49
(LPH)	(1.1)	(1.3)	(1.6)	(1.9)
2.5kw – LP*				
gph	0.35	0.40	0.49	0.60
(LPH)	(1.3)	(1.5)	(1.9)	(2.3)

*One gallon of LP fuel will produce approximately 0.4 cubic feet (0.012m cubed) of propane vapor per hour in ambient temperature down to 0° F (–18° C)

Generator Selection

Installation Factors

Each generator set is shipped as a unit except for the start panel and the optional exhaust system components. These are shipped loose for assembly after the set is installed in the vehicle.

When pre–planning the installation, the following factors must be considered.

1. **ELECTRICAL LOAD:** Does the set selected have adequate capacity to handle the load?

2. **COMPARTMENT SIZE:** Will there be sufficient room around the set to maintain minimum clearances?

3. **AIR REQUIREMENTS:** Are the compartment air inlets and outlets sized to allow adequate circulation of air for cooling and combustion?

4. **COMPARTMENT FLOOR:** Is the compartment floor strong enough to support the weight of the Generator Set?

5. **FUEL SYSTEM:** Is the system properly designed to prevent fuel starvation of either the main engine or generator set engine?

6. **EXHAUST SYSTEM:** Will the system meet all safety requirements after installation?

7. **ELECTRICAL CONNECTIONS:** Will all systems (battery, load and remote switch) be compatible with vehicle systems?

8. **START PANEL MOUNTING:** Will the start panel be airtight from the generator set compartment? Can the panel be installed so the choke cable will make no sharp bends or corners?

Each of these installation considerations are covered in detail on the following pages.

⚠ WARNING

Hazardous voltage can cause death or severe injury.

Perform electrical service only as prescribed in equipment manual. Be sure that generator is properly grounded. Never touch electrical leads or appliances with wet hands, when standing in water, or on wet ground as the chance of electrocution is especially prevalent under such conditions. Wiring should be inspected at the interval recommended in the service schedule -- replace leads that are frayed or in poor condition. The function of a generator set is to produce electricity and that wherever electricity is present, there is the hazard of electrocution.

Electrical Load

While the electrical load of the vehicle should have been calculated prior to purchase of the generator set, you may want to recheck the load before installing the set to make sure that the capacity is ample to meet demands without possible overloading.

Lighting Load

The lighting load is usually easiest to calculate. In most cases, simply add the wattage of each lamp to be operated off the generator set. Note that in many applications, not all of the lights or lamps are in the generator set AC circuit – some are DC powered by the 12–Volt battery in the vehicle. Make sure the total includes only lights actually on the generator set AC circuit and those powered through a converter (if equipped).

The lighting load is usually not too heavy in mobile installations; however, it must be accurately calculated to prevent overloading which could occur, for example, if all lights happened to be on when the air conditioner or other motor loads start up.

Motor Loads

When figuring generator set capacity requirements for installation involving motor loads, do not overlook the high current demanded by the motor during start–up. The "in–rush" or starting current may be 2–3 times higher than that required when the motor reaches normal operating speed. Reserve capacity must be allowed for in–rush demands plus other loads which could be on the line as the motor starts.

Air conditioning units are perhaps the most common type of motor load for generator sets in recreational vehicles. The starting characteristics of the different makes of air conditioners vary greatly – one particular 11,000 BTU unit has, for example, lower starting requirements than a 10,000 BTU unit of another make. The 2.5kW generator set will operate one 11,000 BTU air conditioner, provided the lighting and appliance load does not exceed 700 Watts or one 13,500 BTU air conditioner with the lighting and appliance load not to exceed 300 Watts.

The starting and running requirements of some motor loads common to mobile applications are listed on the next page – use this as a guide when selecting generator set capacity requirements involving motor loads.

Appliance Loads

Generator sets in recreational vehicles are often used to furnish AC for appliances such as TV, stereo, electric water heaters, etc. With the exception of the resistance type loads such as the water heater, requirements for appliances are usually low. Such loads must not, however, be overlooked when figuring total requirements. Reserve capacity should be available for anticipated appliance loads to avoid overloading of a set. The average power requirements of some electrical appliances are listed in Table 6–3.

Motor Requirements	1/4 HP	1/3 HP	1/2 HP	3/4 HP
Starting (In–Rush)	750	1000	1500	2000
Running Watts	350	400	600	750

Table 6–1. Motor Requirements

Kohler Model	Wattage Capacity	Will Operate Air–Conditioner of Size Indicated
2.5CMZ	2500	13,500 BTU

Table 6–2. Air Conditioner Ratings

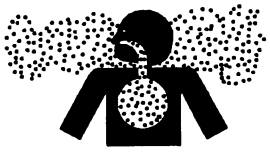
Electrical Appliance	Ratings (Watts)	Electrical Appliance	Rating (Watts)
Blanket	50–250	Heater, Water	1500
Blender	600	Pan, Frying	1200
Broiler	1350	Percolator, Coffee	650
Dryer, Hair	500–1200	Radio	50–100
Fan, Air Circulating	25–100	Television	300–750
Fan, Furnace	270	Toaster	750–1200
Heater, Space	750–1500		

Table 6–3. Appliance Ratings

Kilowatt Derating

The maximum kilowatt curve shows the performance of laboratory sets equipped with quiet–type muffler, corrected to sea level barometer, and operate at ambient temperature of 60°F (16°C). The kilowatts of the generator set will decrease 3–1/2% for each 1000 feet (305 meters) above sea level, 1% for each 10°F (5.5°C) increase in ambient temperature above 60°F (16°C).

Compartment Size



⚠ WARNING

Carbon monoxide can cause death, severe nausea or fainting. Never operate the generator set inside a building unless the exhaust gas is piped safely outside. Never operate in any area where exhaust gas could accumulate and seep back inside an occupied building or coach. Be careful when parking your coach to avoid obstructing the exhaust outlet. The exhaust gases must discharge freely, otherwise carbon monoxide may deflect into the vehicle. Avoid breathing exhaust fumes when working on or near the generator set. Carbon monoxide is particularly dangerous because it is an odorless, colorless, tasteless, nonirritating gas which can cause death if inhaled for even a short period of time. The exhaust system must be leakproof and routinely inspected.

When planning compartment size requirements, allow the minimum clearances for cooling of the generator set as shown in Table 6–4.

NOTE

Since the sets are flexibly mounted, the minimum clearances will assure that the sides of the compartment and the set will not rub while the set is in operation or while the vehicle is in transit.

Side	2 in. (50.8 mm) on spark plug side
	1 in. (25.4 mm) on opposite side
Top	1/4 in. (6 mm) + air duct (see air requirements)
Rear	1 in. (25.4 mm)
Font	1/4 in. (6 mm)

Table 6–4. Minimum Clearance Requirements

When designing the compartment allow sufficient room for the set to be easily removed when major service is required. In Figure 6–1, the set is shown being mounted to the angle iron. By removing the mounting screws, the set can be dropped down through the bottom of the motor home. Also, keep in mind that the compartment door must have air intake openings having a free area equal to or greater than that specified under "Air Requirements" following. Refer to Figure 6–2, Compartment Door Details, for requirements.

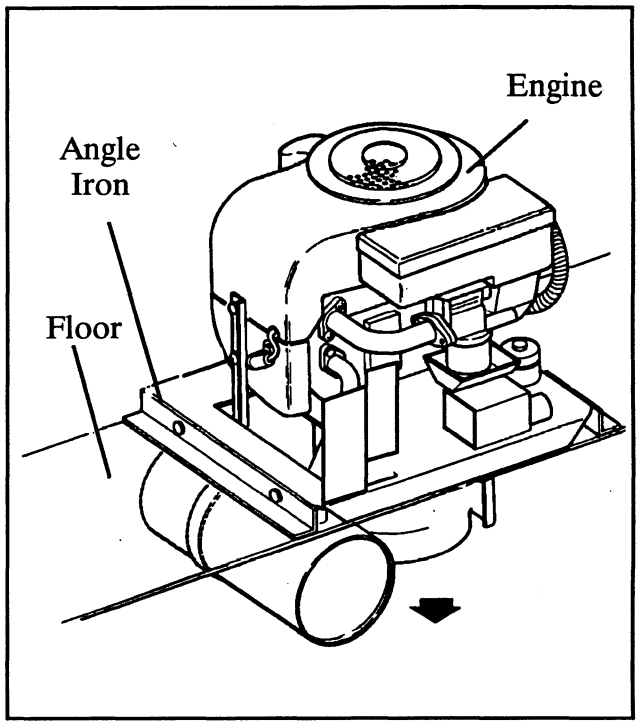


Figure 6–1. Mounting Feature for Removal

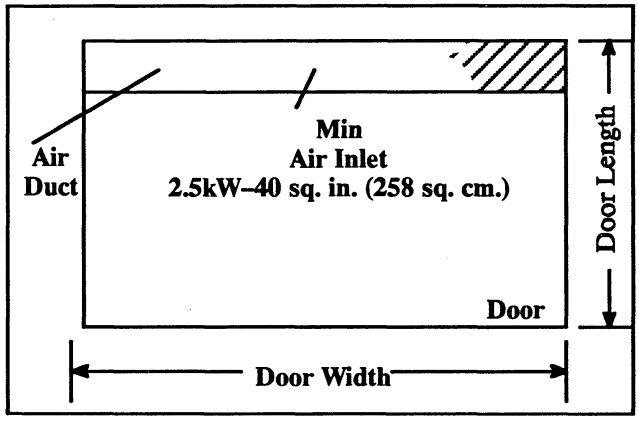


Figure 6–2. Compartment Door Details

The thickness of insulating and sound deadening material used to line the compartment must be taken into consideration when planning clearances. If necessary, enlarge the compartment so minimum clearance requirements are maintained. The generator set must be securely fastened to avoid unwanted movement from vibration and road shock. On a typical installation, the mounting tray is supported on the ends by 1–1/4 in. angle iron and has a full door for service access. The same number of bolts as mounting holes in the tray must be used to secure the tray to the support structure. Mounting hole dimensions are given in Figure 6–3.

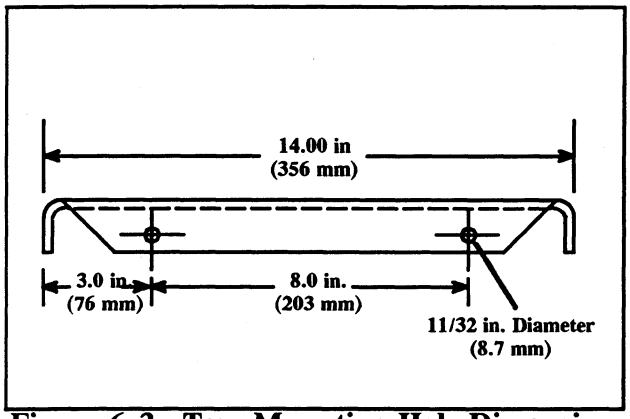
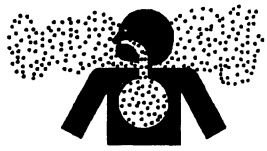


Figure 6–3. Tray Mounting Hole Dimensions

Make sure that the compartment is vapor tight and completely sealed off from the inside of the vehicle to prevent exhaust or other fumes from entering the vehicle. Line the compartment with a good sound deadening material. The material selected must be fireproof or highly resistant to fire. An available 3–layer foam material does a very efficient job of absorbing sound. This type material is easily cut to size with scissors and can be quickly installed using special fire retardant adhesive which bonds the material to almost any surface that is clean and dry. Other materials, such as fiberglass insulation with heat barrier has been used successfully in mobile installations.

Air Requirements



⚠ WARNING

Carbon monoxide can cause death, severe nausea or fainting. Never operate the generator set inside a building unless the exhaust gas is piped safely outside. Never operate in any area where exhaust gas could accumulate and seep back inside an occupied building or coach. Be careful when parking your coach to avoid obstructing the exhaust outlet. The exhaust gases must discharge freely, otherwise carbon monoxide may deflect into the vehicle. Avoid breathing exhaust fumes when working on or near the generator set. Carbon monoxide is particularly dangerous because it is an odorless, colorless, tasteless, nonirritating gas which can cause death if inhaled for even a short period of time. The exhaust system must be leakproof and routinely inspected.

This generator set features ducted air cooling. Fins on the flywheel of the engine pull cooling air into the compartment through the air intake screen on the top of the engine and force air past cooling fins on the cylinder head, and discharging the heated air downward and out of the compartment. Refer to Figure 6–4 for cooling air circulation. Figure 6–5 shows the floor dimensions needed to install the generator set.

NOTE

Engine air discharge **must not be blocked!** Blocking of air discharge will prevent proper engine cooling.

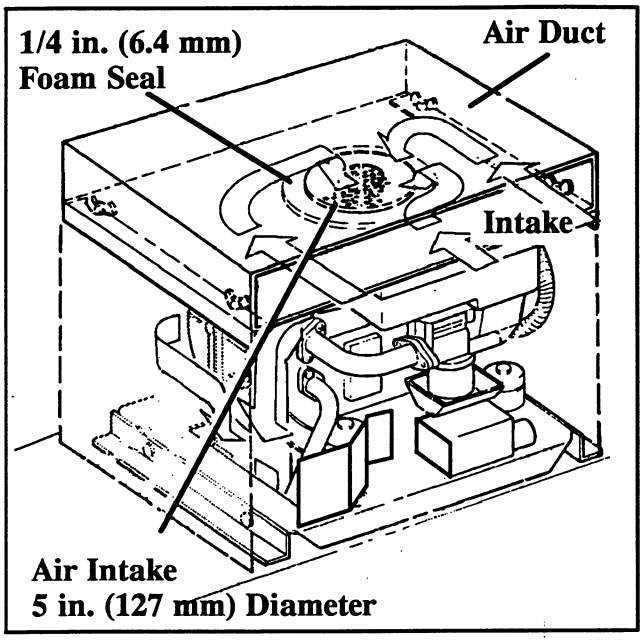


Figure 6–4. Cooling Air Circulation

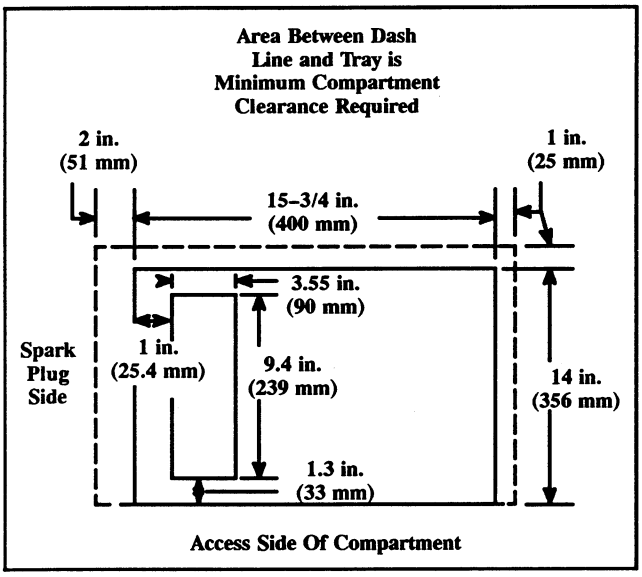


Figure 6–5. Floor Dimensions

A foam seal must be placed around the air intake of the engine. This seal is included with the generator set and should be mounted when installing. Figure 6–6. To install, peel the backing off of the foam seal and place around the engine air intake screen.

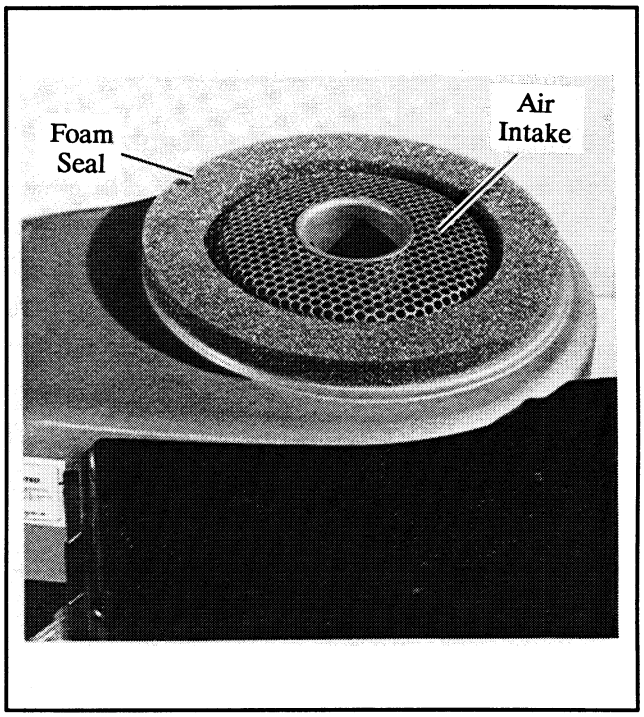


Figure 6–6. Foam Seal Installation

The air duct must be closed off from the engine compartment, except for the engine air intake opening. The duct must be constructed for easy removal to allow access to the air cleaner. The engine air intake opening must fit against the foam seal for proper engine cooling.

The engine air intake dimensions are given in Figure 6–7. The installation illustrated in Figure 6–8 shows two pieces of angle iron mounted to the compartment walls. The duct is secured to the angle iron with four screws and wing nuts. Notice the air intake opening fits snugly against the foam seal. A 3 inch (76 mm) by 15–3/4 inch (400 mm) duct is recommended for removal of the wing nuts and easier duct removal.

The minimum free air opening requirements is 40 sq. in. (258 sq. cm) for the 2.5kW. The screen positioning for the compartment door is shown in Figure 6–9. Remember louvers, screens and protective decorative grill work definitely restrict the amount of air available. Even a simple, relatively open mesh screen as seen in Figure 6–9 will restrict air flow as much as 45%. The intake opening must be increased to compensate for such restrictions.

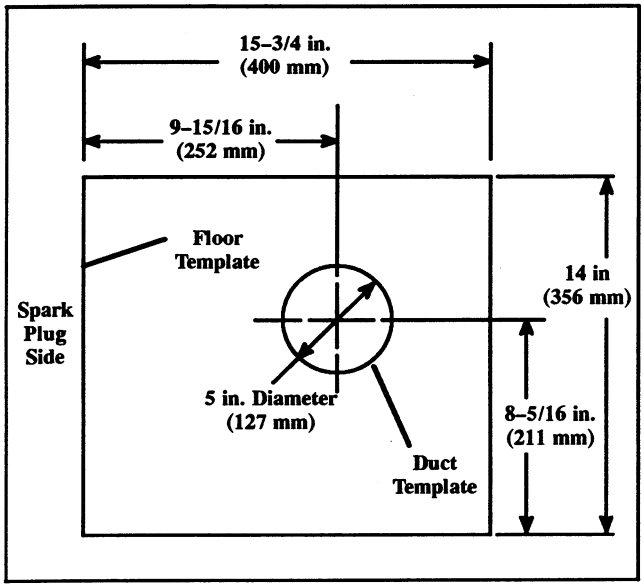


Figure 6–7. Air Duct Dimensions

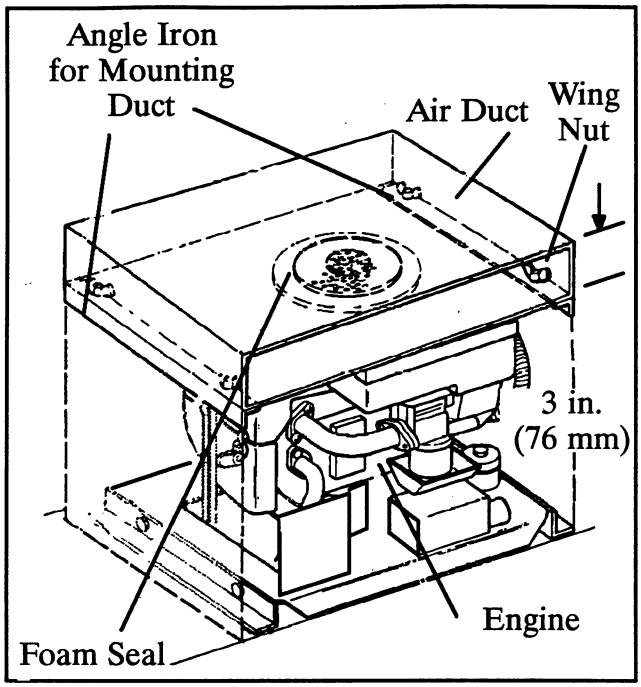


Figure 6–8. RV Installation

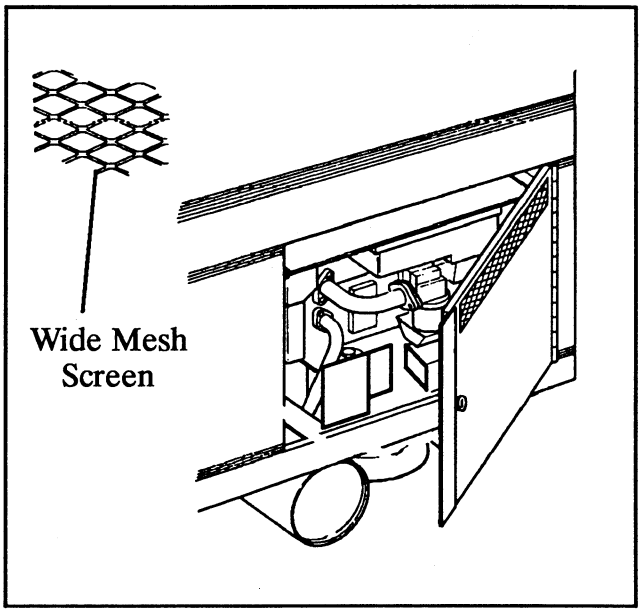
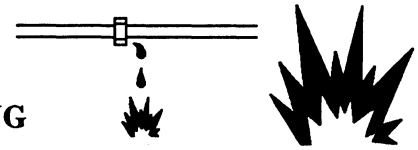


Figure 6–9. Inlet Screen and Louvers

Fuel System



⚠ WARNING

All fuels are highly explosive in a vapor state. Use extreme care when handling, storing, and using fuels

Store fuel in a well–ventilated area away from spark producing equipment and out of the reach of children. Never add fuel to the tank while the engine is running since spilled fuel may ignite on contact with hot parts or from ignition spark. Do not smoke or permit flame or spark to occur near potential sources of spilled fuel or fuel vapors. Keep fuel lines and connections tight and in good condition––don't replace flexible fuel lines with rigid lines. Flexible sections are used to avoid breakage due to vibration. Additional precautions must be taken when using the following fuels:

Gasoline – Store gasoline only in approved red containers clearly marked GASOLINE. Do not store gasoline in any occupied building.

Propane (LP) – Adequate ventilation is mandatory. Propane is heavier than air; install gas detectors low in room. Inspect detectors often.

Gasoline

For best results, use only clean fresh, regular grade unleaded gasoline with a pump sticker octane rating of 87 or higher in the U.S.A. In countries using the research rating method, it should be 90 octane minimum. Gasohol containing no more than 10% ethanol can be used if unleaded gasoline is unavailable. Never use gasohol containing more than 10% ethanol or gasoline containing Methanol. Oil must not be mixed with the fuel.

The GASOLINE fuel system for the generator set must be designed to operate independently of the system for vehicle engine if both engines are to be operated at the same time. The best way to do this is to have separate fuel tanks; however, this is usually impractical because of space restrictions. In most installations, both engines operate off a common tank with a two dip tube arrangement as shown in Figure 6–10. This prevents the smaller engine from being starved of fuel by the larger engine. The generator set dip tube is generally shorter than the vehicle dip tube. With this arrangement fuel may not be available to the generator set when fuel supply is low.

A simple tee fitting is sometimes used to provide fuel for both engines off a common tank; however, this usually prohibits simultaneous operation. There is also the possibility that operation of either engine could completely drain the fuel line and even the carburetor fuel bowl of the other engine, thus making starting difficult if not impossible. The tee arrangement should be avoided or used only as a last resort.

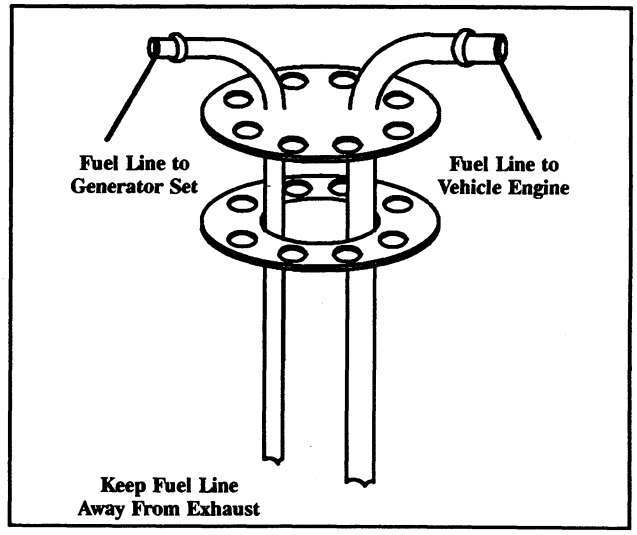


Figure 6–10. Two Dip Tube Arrangement

Care must be taken when routing the fuel line from the main tank to the generator set. Keep fuel lines as short as possible but maintain adequate clearance from exhaust system. Fuel lines must be run along the frame or undercarriage – never run fuel lines inside the coach. Locate fuel lines below the generator set compartment with entry point near fuel pump. The fuel line must be of adequate size to handle the flow of fuel and withstand road shock and year–round climate conditions. If steel tubing is used, it should be 1/8 in. (3.2 mm) I.P. (minimum) with an 8 in. (230 mm (minimum)) flexible section to allow free movement of the generator set.

The low–pressure fuel pump, under 1.75 psi (12 kPa), is used on the gasoline fuel system. A higher pressure pump will cause carburetor flooding and possible fuel spillage. Use only factory replacement pump or equivalent, if necessary to replace pump.

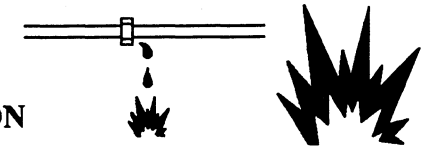
LP Gas

Use a flexible hose designated for use with LP Gas between the generator set and main tank. Care must be taken when routing the fuel line. A 2 in. (51mm) minimum clearance is required between the fuel line and any bare exhaust components. Electrical wiring can not be tied to any fuel lines and should be routed so that it will not inadvertently contact fuel lines. If the flexible hose passes through sheet metal, install grommets or clamps to prevent hose abrasion. The LP fuel system must conform to Section 3–6.4 of NFPA58, "Storage and Handling of Liquified Petroleum Gases."

NOTE

Avoid damaging fuel solenoid valve body! The fuel inlet fitting connecting LP fuel–supply line to the solenoid valve must be **carefully** tightened. See Figure 6–11. Be sure to check this connection when pressure testing the system.

For LP Gas systems, use pipe joint sealing compound to prevent dangerous fuel leaks. Use a sealing compound suitable for use with LP Gas. Apply sealing compound at all threaded fuel line pipe joints.



⚠ CAUTION

Fuel leakage can cause an explosion. Check LP gas fuel system for leakage using a soap–water solution with fuel system test pressurized to 6–8 ounces (10–14 inches water column). Do not use test solutions that contain ammonia or chlorine, since the soap will not bubble for an accurate leakage test.

Before starting the generator set, check the (secondary) gas regulator inlet pressure using an ounce pressure gauge or manometer. Pressure should be 4–6 ounces or 7–11 inches water column, adjust pressure on primary gas regulator.

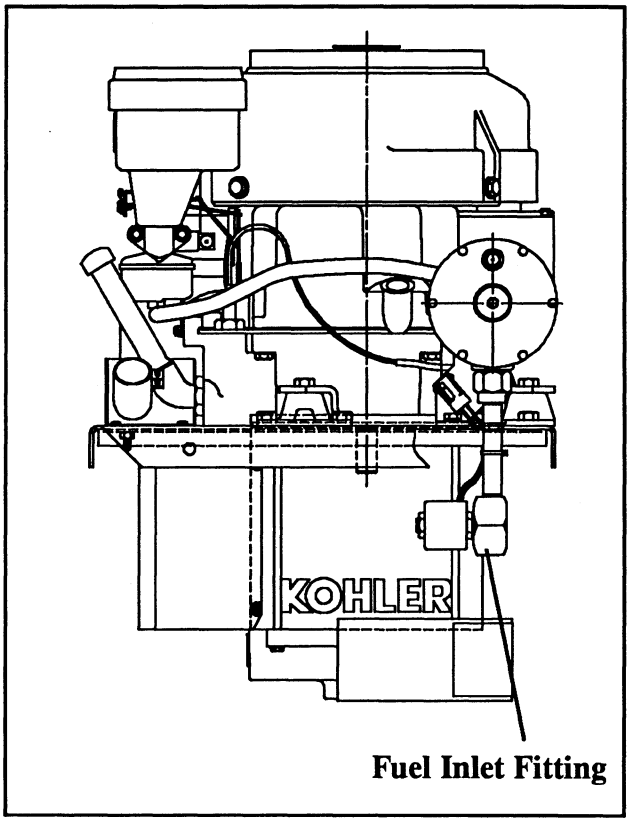


Figure 6–11. Fuel Inlet Fitting Location

Exhaust Systems

Two exhaust kits are available for the RV Generator Set. See Figure 6–12. Both versions include muffler and all mounting hardware. One version is designed for installation of the generator set with a curb or street side exhaust using a center tap outlet (PA–228159). The other version, for street side exhaust, uses a service side outlet (PA–228174).

A tail pipe is not furnished with these kits. A tail pipe must, however, be installed to direct the exhaust gases beyond the perimeter of the vehicle. Use a tail pipe with gradual bend (not 90°) to avoid excessive back pressure and face tail pipe away from normal air stream. Position tail pipe end so that discharged exhaust gases may not be drawn into vehicle interior through windows, doors, air conditioners, etc.

⚠ WARNING

Carbon monoxide can cause death, severe nausea or fainting. Install exhaust system tail pipe so discharged exhaust gases will not be drawn into vehicle interior through windows, doors, air conditioners, etc. Do not use flexible tail piping since this type could crack and allow lethal exhaust fumes to enter the vehicle.

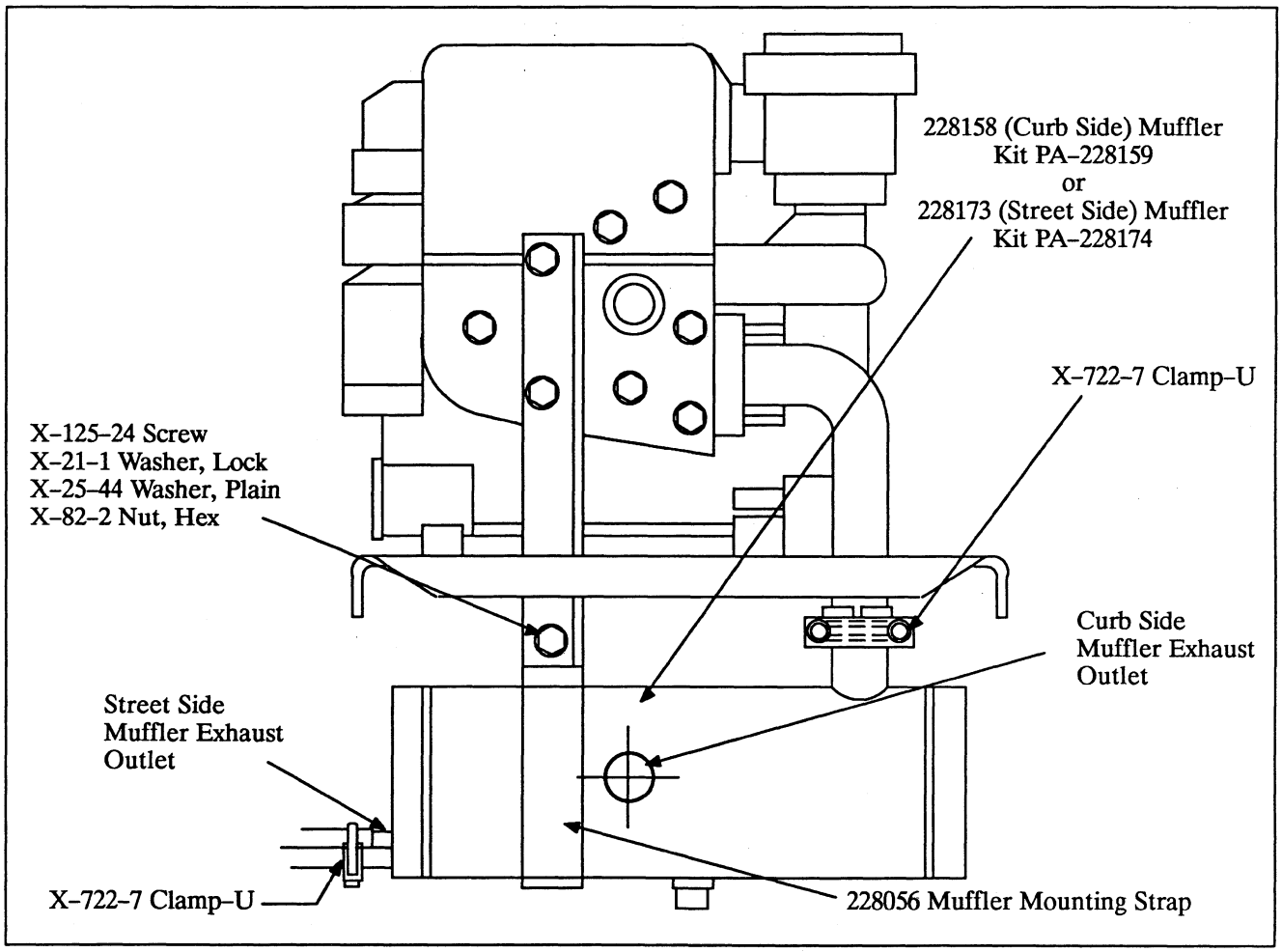


Figure 6–12. Exhaust Kit Installation

NOTE

The muffler material must be aluminized steel or other corrosion-resistant material of welded or crimped construction. The muffler must be a USDA-approved type or the muffler must be fitted with a USDA-approved spark arrestor.

Electrical Connections

Battery, load lead, and start panel connections are needed to complete the installation. Make final connections to the battery only after all other connections have been made as this will prevent unintentional starting. Some specific details on each connection are stated in the following paragraphs. Refer to the wiring diagram for specific details – connections should be made only be qualified electricians. All wiring to the generator set shall be securely supported or harnessed to prevent abrasion. Additional support is required to prevent exposure to the exhaust system and drippage of fuel, oil, or grease – at least 2 in. (51 mm) clearance must be provided between electrical wiring and hot exhaust parts. Also, wiring must not be located directly below or in close proximity to fuel system parts or oil drain fill locations. Some other points to consider when making AC load connections are covered in the following paragraphs.

NOTE

Wiring connections made at the time of installation should be accessible for inspection and servicing.

Battery and Connections

A 12–Volt battery is required for starting the generator set. With a separate battery, cables can be kept short which eliminates the problem of excessive voltage drop through long cables. Battery charging is not provided by the generator set, therefore, special provisions must be made to keep the battery charged. See Battery Cable chart for lengths and sized. Refer to Figure 6–13 (View A) for cable connections – note that a grounding strap must be connected between the battery negative and the generator tray.

If the starting battery for the vehicle engine must also be used for starting the generator engine, the negative battery terminal must be grounded to the vehicle frame and heavy gauge (#4) ground strap must connect the ground lug on the generator set to the vehicle frame as illustrated in Figure 6–13 (View B). See Figure 6–13A for battery connection location.

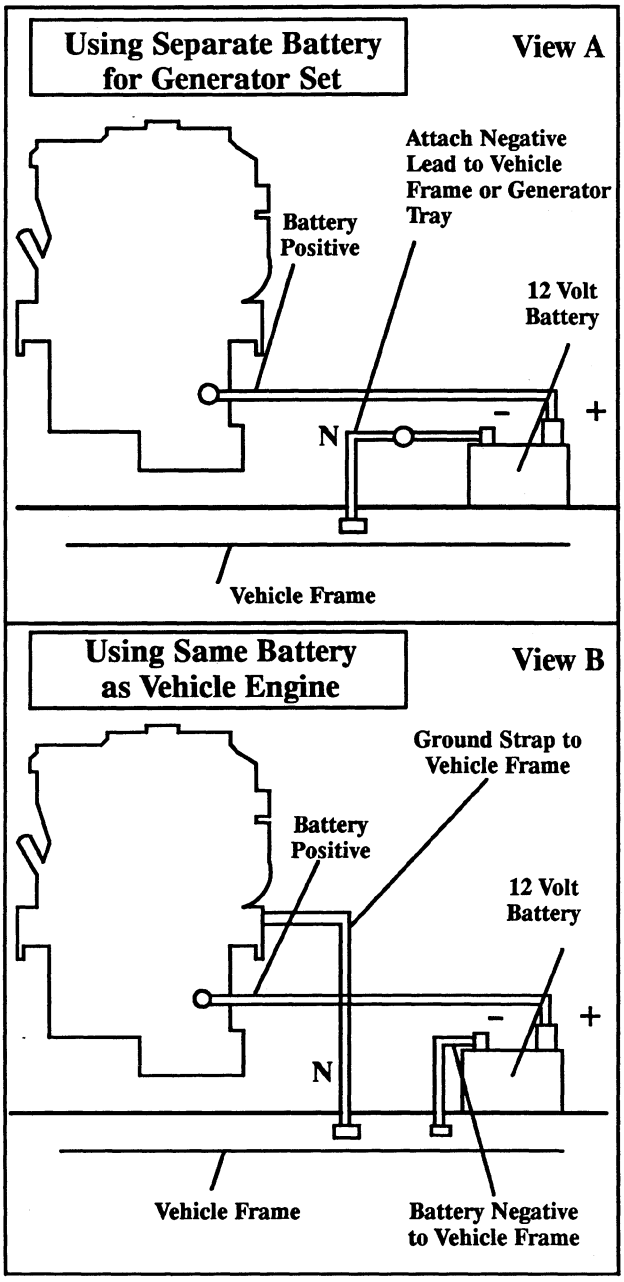


Figure 6–13. Battery Connection Details

Battery Cable Size Chart

Distance Between Generator Set and Battery	At 0°F (-18°C)	Cable Size (AWG) at 32°F (0°C)	At 75°F (24°C)
40 Feet (12.2 m)	00	0	1
30 Feet (9.1 m)	0	1	2
25 Feet (7.6 m)	1	2	4
20 Feet (6.1 m)	2	2	6
15 Feet (4.6 m)	2	4	6
10 Feet (3.0 m)	4	6	8
5 Feet (1.5 m)	6	6	8
2.5 Feet (0.8 m)	8	8	8

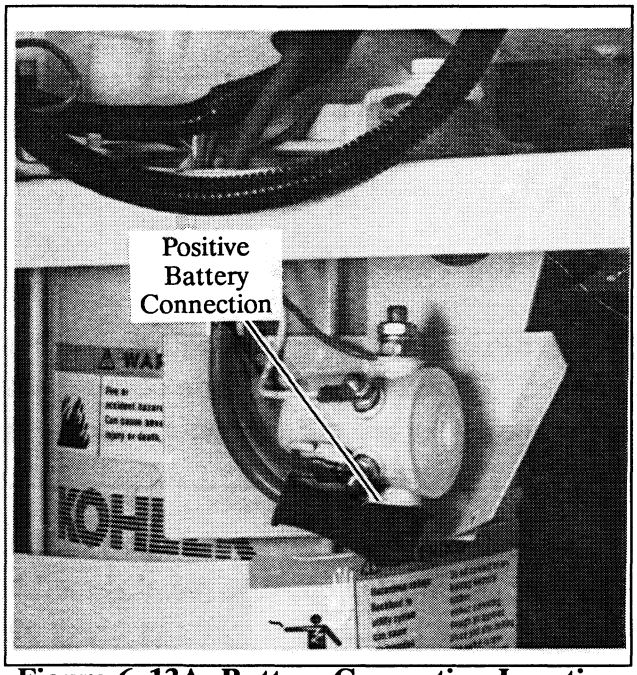


Figure 6–13A. Battery Connection Location

⚠ WARNING

Battery gases can cause an explosion.
Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Avoid contacting terminals with tools, etc. to prevent burns and to prevent sparks that could cause an explosion. Remove wristwatch, rings, and any other jewelry before handling battery. Never connect negative (-) battery cable to positive (+) connection terminal of starter solenoid. Do not test battery condition by shorting terminals together or sparks could ignite battery gases or fuel vapors. Any compartment containing batteries must be well ventilated to prevent accumulation of explosive gases. Do not mount battery in generator compartment. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before disconnecting battery connections. When disconnecting battery, remove negative lead first and reconnect it last.

AC Load Lead Connections

Color coded leads and a connector are provided for attaching a flexible conduit to the load terminal box provided in the compartment.

NOTE

Route load leads through flexible conduit and keep circuit away from the generator set, specifically fuel and exhaust system components.

Figure 6–14, RV Junction Box, represents position and dimensions for typical junction box installation. A junction box should be installed to make it accessible for inspection and service.

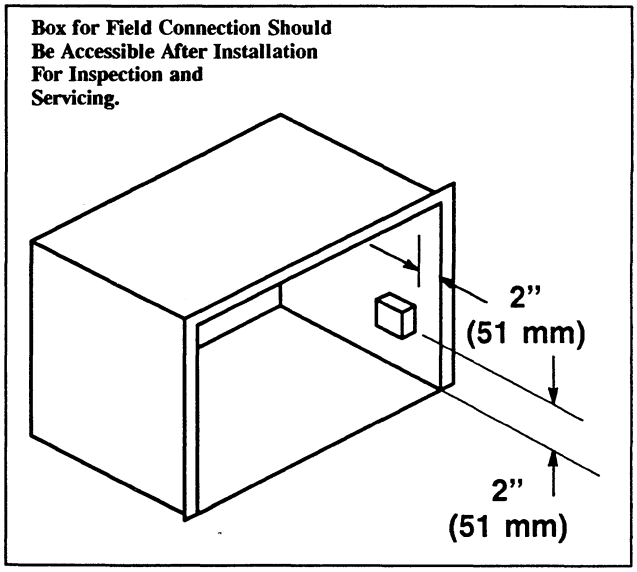


Figure 6–14. RV Junction Box

The AC load lead L0 (white or gray) is always the neutral lead on Kohler generator sets – make sure the neutral of the AC circuit in the vehicle is connected to lead L0 (white or gray). If equipment ground type plugs and receptacles (3 pronged) are used in the vehicle, the green wire must be connected to the "U" shaped pin. On vehicles which also have provisions for using an outside AC power source, the neutral as well as the "hot" leads (black) must be completely isolated from the generator set when power is switched to the outside source.

If the load and hazard ground leads are not long enough to reach the coach junction box, remove leads. Replace with leads of adequate length to reach from generator set connection box to coach junction box.

NOTE

Splicing leads outside of a junction box does not comply with National Electrical Code (NEC) standards.

NOTE

If transfer switch is used between outside power source and the generator set, the transfer switch must be wired so it breaks neutral as well as the hot leads (Figure 6–15).

NOTE

The generator and outside power conductors to the junction box for load connection must be protected by an appropriately rated overcurrent and ground fault protective device.

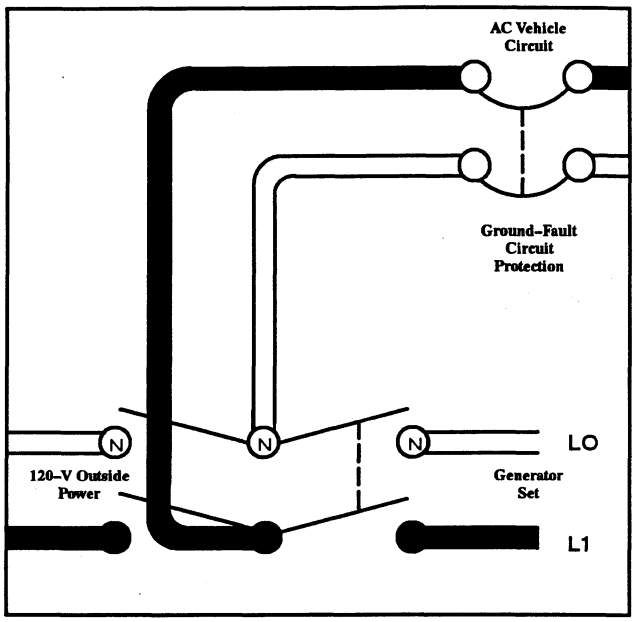


Figure 6–15. Transfer Switch Connection

Start/Stop Panel Mounting

The start/stop panel is supplied with your generator set. Mount the panel inside of the motor home and as close to the generator set as possible.

Choke cable length is 66 in. (168 cm) (67 in., 170 cm including knob). The panel should be located so the choke cable will not make any sharp corners or bends within a 3 in. (76 mm) minimum radius. A 3–5/8 in. (9.2 cm) minimum recess is needed for start/stop panel installation.

To install make a cutout for the panel as shown in Figure 6–16. Insert the start/stop panel into the cutout and mount with the four screws included. A hole must be made through the compartment wall for the choke cable. The cable must be sealed with a flexible sealant (silicone sealer) to make it air tight.

⚠ WARNING

Carbon monoxide can cause death, severe nausea or fainting. When mounting the remote switch with choke cable, make sure the panel is air tight to prevent exhaust fumes from entering the coach.

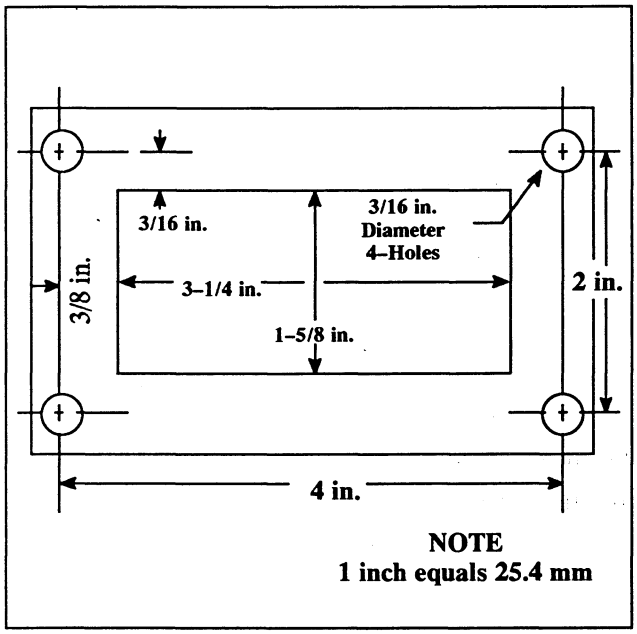


Figure 6–16. Start Panel Cutout Dimensions

To mount remote choke cable to carburetor choke lever, proceed as follows:

Step 1. With remote panel mounted in coach, loosen screw on mounting clamp and slide cable under clamp. See Figure 6–17.

Step 2. With knob on remote panel fully pushed in, cut cable leaving 1–1/4 in. (32 mm) beyond mounting clamp.

Step 3. Remove cable from clamp and cut–off 1–1/4 in. (32 mm) of cable outer–casing. Be careful not to nick or bend cable rod.

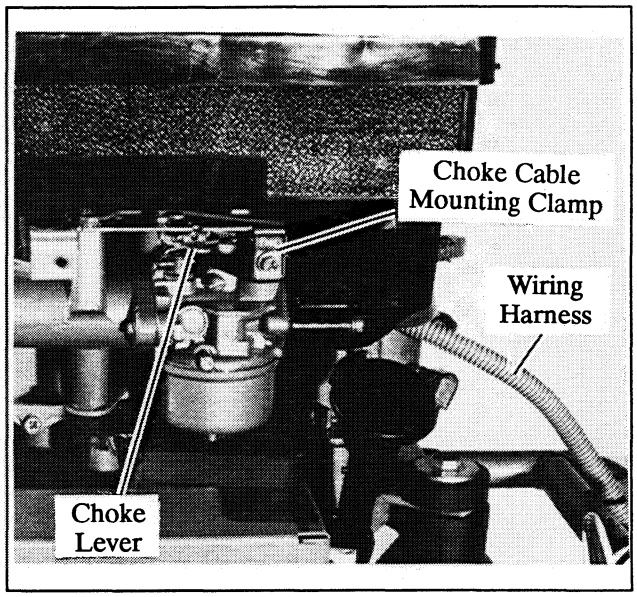


Figure 6–17. Start Panel Connections

Step 4. Bend cable rod using dimensions shown in Figure 6–18. Install cable rod through hole in choke lever, slide cable under clamp, and tighten screw. Cable outer–casing should be about flush with end of mounting clamp.

Step 5. Check for full travel of choke lever using choke knob. Adjust as necessary.

Step 6. Connect remote start/stop panel connector to generator set wiring harness connector.

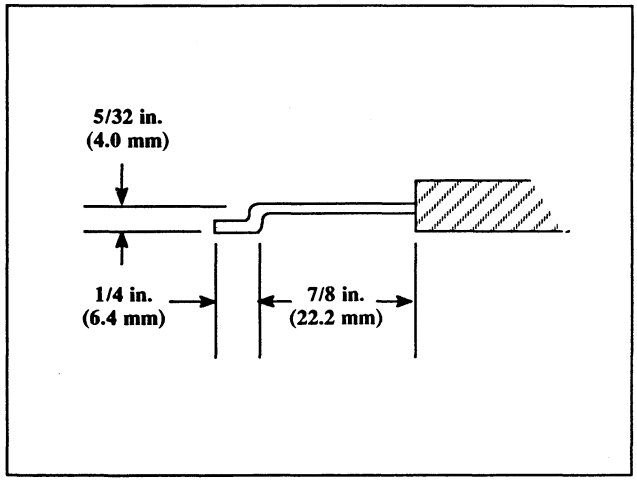
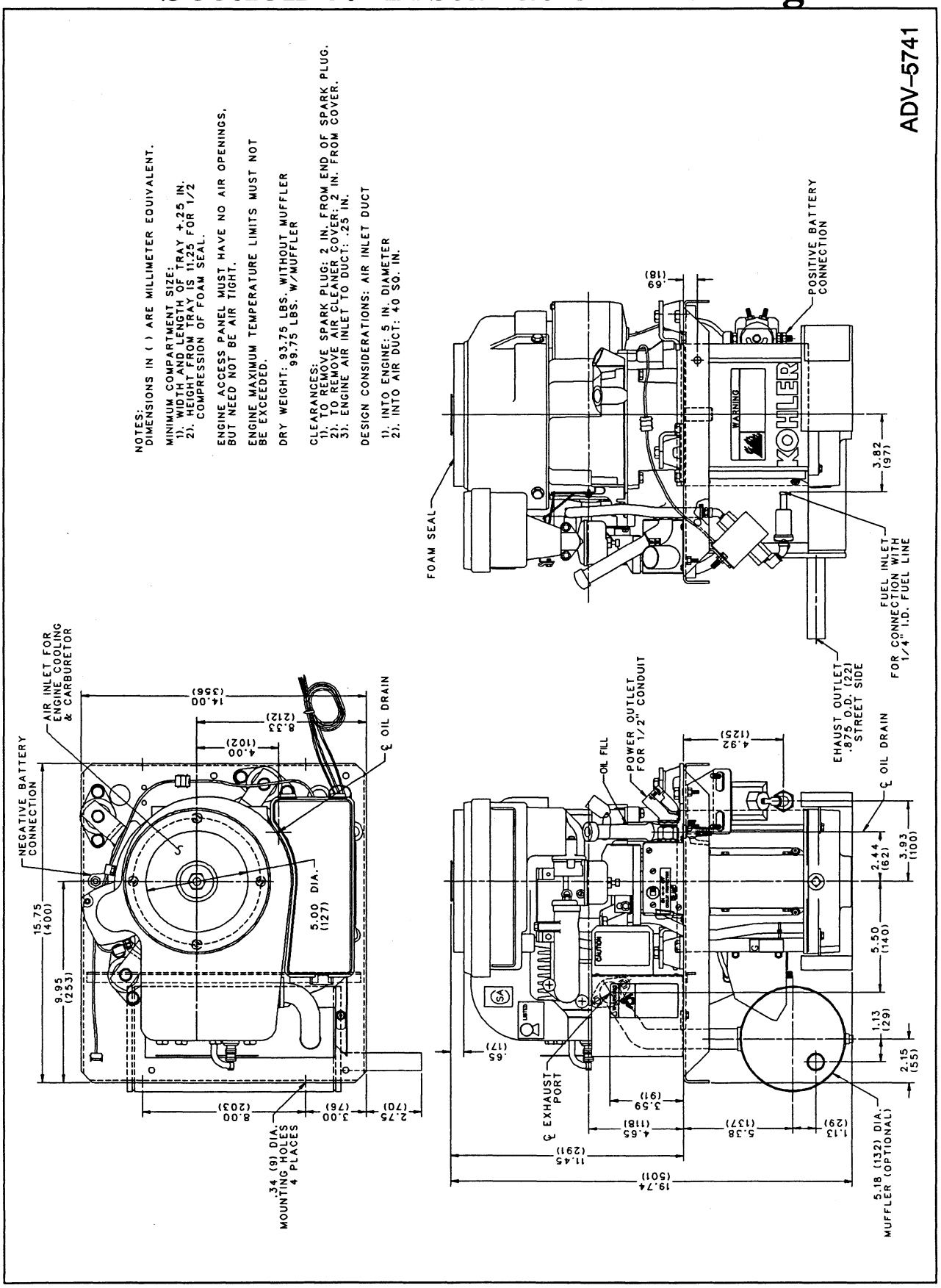
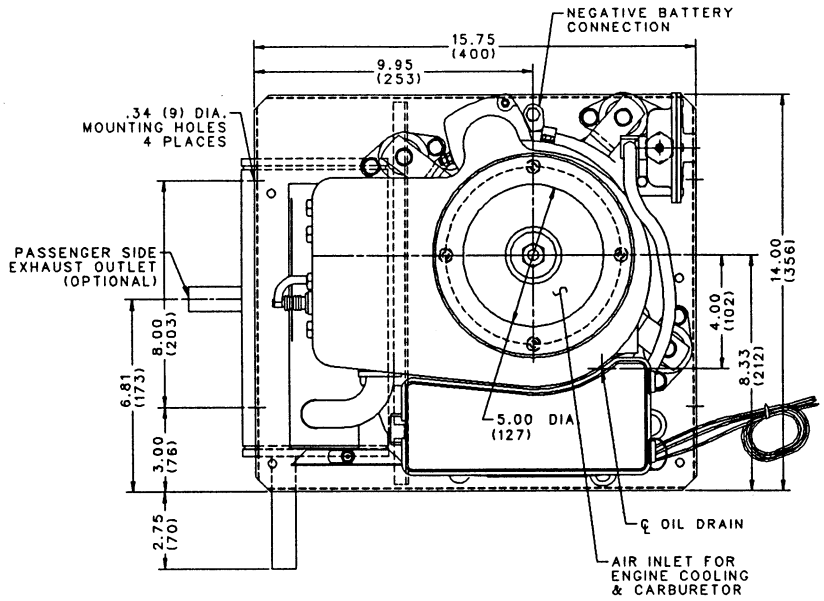


Figure 6–18. Cable Mounting Dimensions

Section 7. Installation Drawings





NOTES:
DIMENSIONS IN ( ) ARE MILLIMETER EQUIVALENT.

MINIMUM COMPARTMENT SIZE:
1). WIDTH AND LENGTH OF TRAY +.25 IN.
2). HEIGHT FROM TRAY IS 11.25 FOR 1/2 COMPRESSION OF FOAM SEAL.

ENGINE ACCESS PANEL MUST HAVE NO AIR OPENINGS, BUT NEED NOT BE AIR TIGHT.

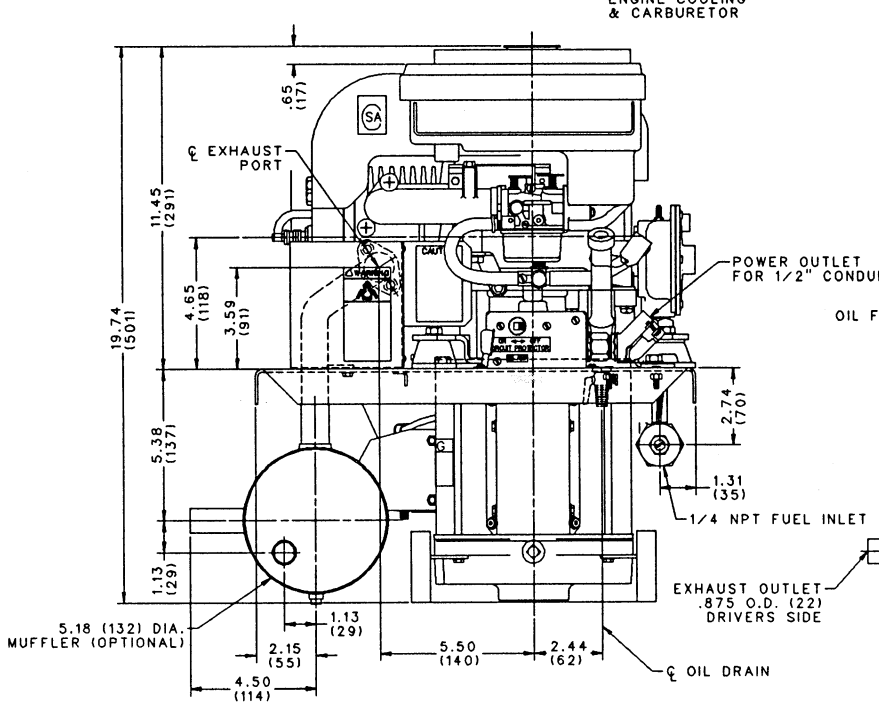
ENGINE MAXIMUM TEMPERATURE LIMITS MUST NOT BE EXCEEDED.

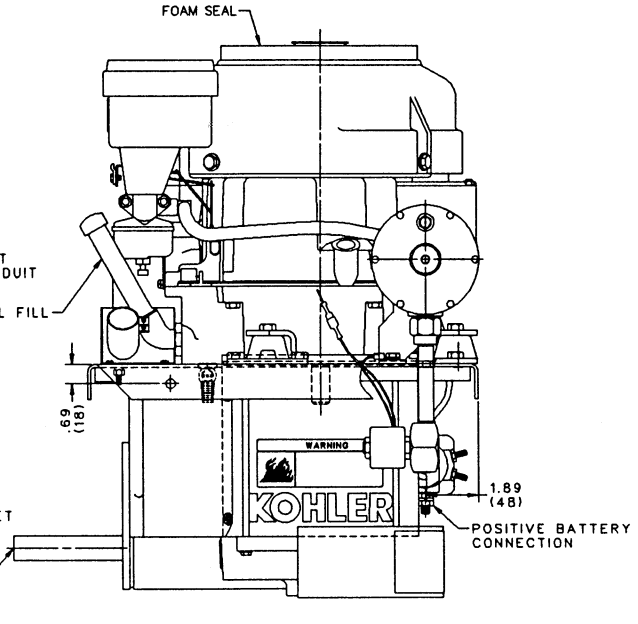
DRY WEIGHT: 93.75 LBS. WITHOUT MUFFLER
99.75 LBS. W/MUFFLER

CLEARANCES:
1). TO REMOVE SPARK PLUG: 2 IN. FROM END OF SPARK PLUG.
2). TO REMOVE AIR CLEANER COVER: 2 IN. FROM COVER.
3). ENGINE AIR INLET TO DUCT: .25 IN.

DESIGN CONSIDERATIONS: AIR INLET DUCT

1). INTO ENGINE: 5 IN. DIAMETER
2). INTO AIR DUCT: 40 SQ. IN.





ADV-5750

2.5CMZ L.P. Vapor Fuel

Section 8. Appendix A. Air Duct Kit PA–228246

The Air Duct Kit is designed to ensure proper cooling of the generator. Air is drawn into the compartment through the duct and past the fins on the cylinder head to cool the engine. Refer to the following procedure to install the Air Duct Kit.

NOTE

Remove the generator from the coach and mount in service stand before installing air duct kit.

⚠ WARNING

A flash fire can cause serious burns. Do not smoke or permit flame or spark to occur near carburetor, fuel line, fuel filter, fuel pump, or other potential sources of spilled fuel or fuel vapors. When removing fuel line or carburetor, use a proper container to catch all fuel.

Removing Generator From Coach (General Guidelines)

Step 1. Disconnect battery (negative lead first) to disable the generator.

Step 2. Disconnect load leads, remote start/stop switch, manual choke (if used) and exhaust system at muffler connection.

Step 3. Disconnect fuel line at fuel pump inlet. Cap fuel line and disconnect fuel line at fuel tank. Cap fuel tank connection. Drain all fuel from fuel line between fuel tank and generator. Remove entire fuel line from coach or cap and secure both ends of fuel line to prevent contamination.

Step 4. Remove mounting screws and existing duct work.

Step 5. Remove generator set from coach and mount service stand kit PA–228102 (gold) or PA–228208 (beige). If service stand is not used, support generator set on tray flanges. DO NOT REST STAND ON GENERATOR END BRACKET.

Installing Air Duct Kit

NOTE

Be sure the generator compartment is large enough to maintain minimum clearance requirements after installation of the air duct kit.

PARTS LISTING

Part No.	Description	Qty.
X-19-1	Washer, Lock #10	7
X-20-1	Washer, Lock 1/4	8
X-276-1	Nut, Wing	2
X-5-1	Screw, H.C 1/4-20 x 5/8.	8
X-50-2	Screw, R.H.M. 10-32 x 3/8	7
X-6209-1	Clip, Retaining	2
X-81-1	Nut, Hex 1/4-20	8
228247	Duct, Air	1
228248	Cover, Air Duct	1
228249	Support, Air Duct	1
228250	Support, Air Duct	1
228251	Panel, Baffle	1

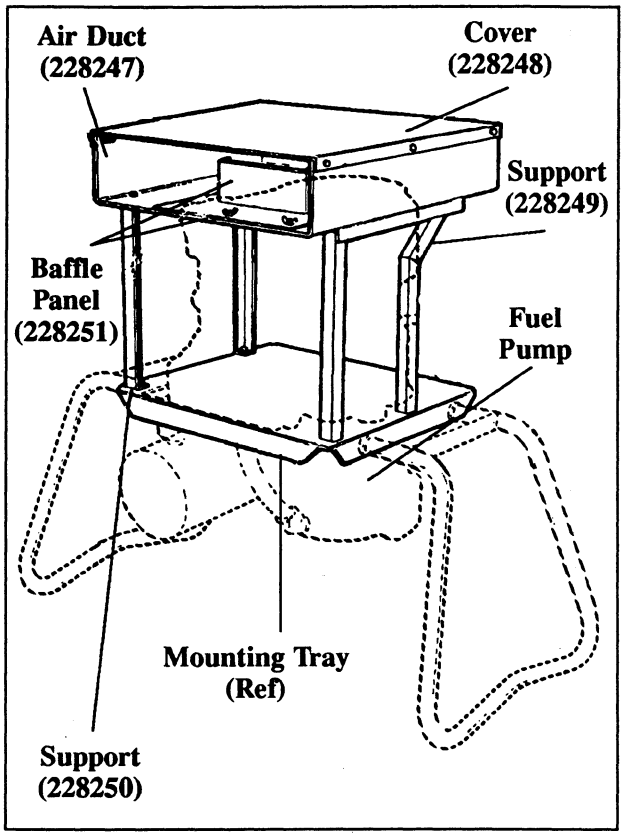


Figure 8-1. Bracket Position

Step 1. The air duct kit is supported be two brackets bolted to the generator mounting tray. The generator is equipped with a tray predrilled for installation of the air duct.

Step 2. Attached support brackets (228249 and 228250) to mounting tray using four screws (X-5-1), lock washers (X-20-1) and nuts (X-81-1). The offset bracket (with 45° bend) should be mounted adjacent to fuel pump, as shown in Figure 8-1.

Step 3. Position the circular opening in the air duct (228247) over the foam seal surrounding the air intake of the engine. The rectangular opening of the air duct should be directly above the engine air cleaner. A snug fit is necessary between seal and air duct to ensure proper cooling of the engine. The seal will be compressed when the air duct is installed. The foam seal is included with the generator and must be in place prior to installation of the duct. Attach air duct to support brackets with four screws (X-5-1), lock washers (X-20-1) and nuts (X-81-1).

Step 4. Slide the two retaining clips (X-6209-1) into position at rear edge of rectangular opening in air duct. See Figure 8-2 for placement of retaining clips.

Step 5. Position baffle panel (228251) over rectangular opening in air duct. Secure rear edge of baffle panel with retaining clips previously installed. Align hole in base of baffle panel with weld screw on bottom of air duct. Secure with wing nuts (X–276–1). See Figure 8–2. The baffle panel can be removed to service the engine air cleaner.

Step 6. Position air duct cover (228248) on air duct assembly. See Figure 8–3. Align holes in cover with holes in air duct assembly and secure with seven screws (X–50–2) and lock washers (X–19–1).

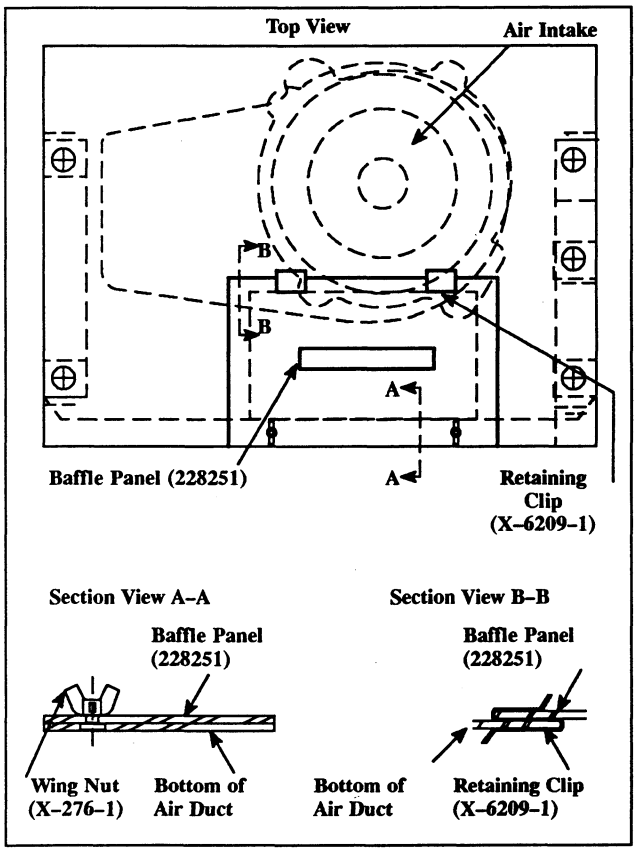


Figure 8–2. Installing Baffle Panel

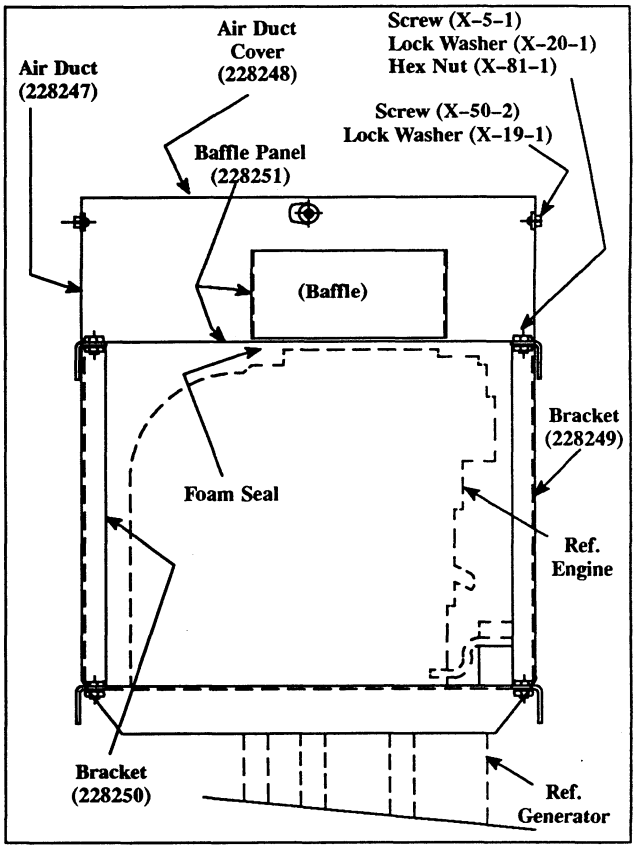


Figure 8–3. Air Duct Cover

Section 9. Service Ordering Instructions

In any communications regarding your generator set, please include the MODEL, SPECIFICATION, SERIAL and ENGINE SPEC. numbers as found on the nameplate attached to the frame of the generator or engine block. Your Authorized Service Dealer will need these numbers to provide the correct parts and information for your generator set. Do not attempt to replace major items or any item that calls for special tools or procedures – have this done only by qualified Kohler Generator Specialists. Check the yellow pages of your telephone directory under the heading GENERATORS–ELECTRIC for Kohler Generator Service Dealers in your area.

KOHLER CO., Kohler, Wisconsin 53044
Phone 414–565–3381, Telex 26888,
Fax 414–565–3648

For Sales & Service in U.S.A. & Canada
Phone 1–800–544–2444

Service Manual Procurement

A service manual or parts catalog for your generator set may be obtained through your RV dealer or Kohler Generator Distributor. Record Model, Spec. and Serial numbers (from generator set nameplate) in the spaces below.

Model No._____

Spec. No._____

Serial No._____

Engine Spec. No._____

Routine Service Parts

Your Kohler Generator Dealer has a complete listing of parts for your generator set. Contact him for service.

Section 10. Operating Service Log

The following is provided to help you keep an accumulative record of operating hours on your generator set and the dates required services were performed. Enter hours to the nearest quarter hour.

DATE RUN	OPERATING HOURS		SERVICE RECORD	
	HOURS RUN	ACCUMULATIVE	DATE	SERVICE

DATE RUN	OPERATING HOURS		SERVICE RECORD	
	HOURS RUN	ACCUMULATIVE	DATE	SERVICE

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