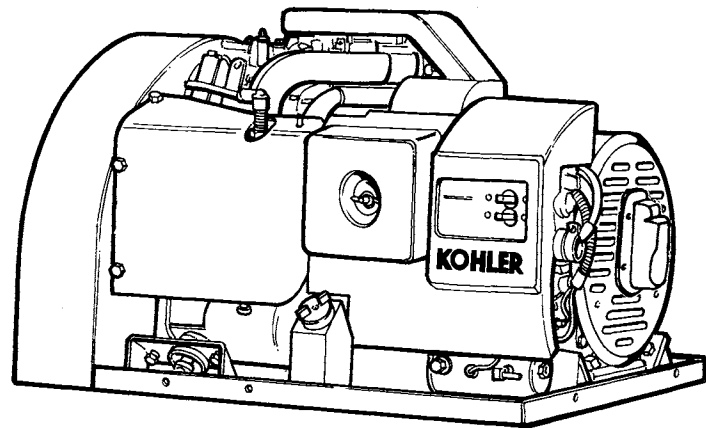


# RV GENERATOR SETS

MODELS: 7CKM21-RV  
7CKM22-RV



Operation  
and  
Installation  
Manual



**KOHLER**<sup>®</sup>  
GENERATORS

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# Introduction

Your recreational 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 (see "Service Ordering Instructions"). 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.

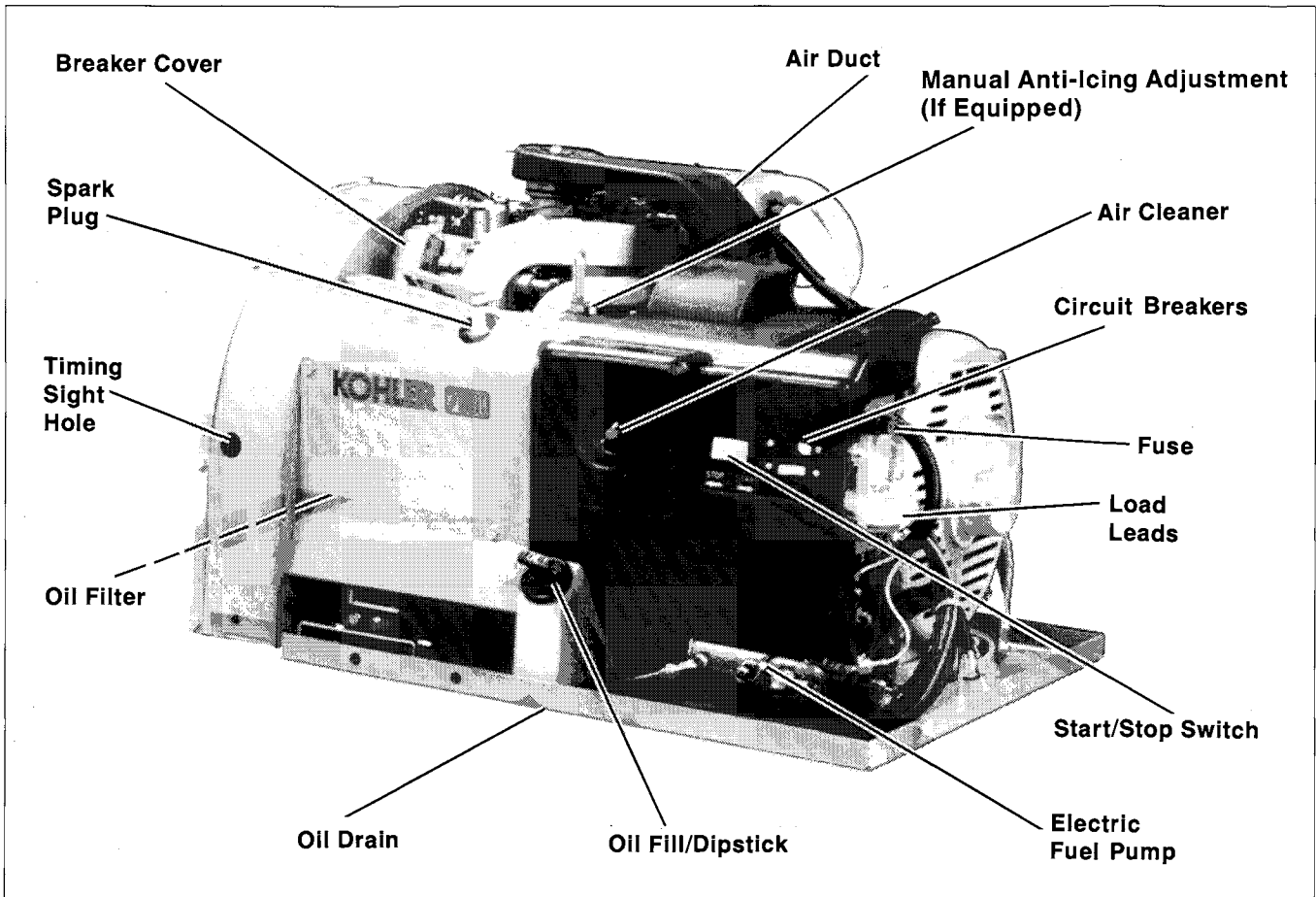


Figure 1-1. Service View

# 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 aware 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.



**FIRE HAZARD!** Be careful when parking your RV to prevent grass fires started by hot exhaust gases and exhaust system. Keep away from hot engine and generator parts to avoid burning yourself.

**FIRE HAZARD!** Keep the compartment and generator set clean and free of debris and combustible materials to minimize chances of fire. An opening is provided in the mounting tray of each set as a safety feature to allow any fuel or oil that might possibly leak out of the system to drain out of the compartment—make sure this opening is not blocked in any way when the set is installed. If sub-flooring is used, cut a corresponding hole in the sub-flooring for this drain opening.

**FIRE HAZARD!** Keep the compartment and generator clean and free of debris and combustible material to minimize chances of fire. Do not locate electrical wiring, fuel lines, or combustible material above the exhaust muffler. If sub-flooring exists beneath the set, an opening must be provided to allow fuel and/or oil that may leak from the system to drain out of the compartment. Make sure this opening is kept clear at all times.

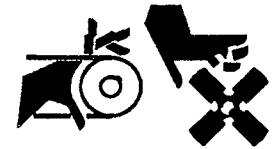
**⚠ DANGER**



**EXPLOSIVE BATTERY GASES!** The gases generated by a battery being charged are highly explosive. 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. Any compartment containing batteries must be well ventilated to prevent accumulation of explosive gases. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before disconnecting battery connections. Turn automotive test equipment off when connecting or removing battery clips. When removing or reconnecting battery cables, make sure ignition switch and all accessories are turned off.

**EXPLOSIVE BATTERY GASES!** The gases generated by a battery being charged are highly explosive. Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Any compartment containing batteries must be well ventilated to prevent accumulation of explosive gases. Do not mount battery in generator compartment.

**⚠ WARNING**



**MOVING PARTS!** Do not open generator set compartment door when unit is running, except for servicing by qualified technicians. Keep hands, feet, and clothing away from belts and related pulleys when unit is running. Replace guards, covers, and screens (if used) before operating generator set.

**⚠ WARNING**



**UNIT STARTS WITHOUT NOTICE!** To prevent accidental starting on units with a remote start/stop switch, always disconnect battery (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator.

**⚠ WARNING**



**EXCESSIVE NOISE!** Never operate without adequate muffler or with faulty exhaust system—exposure to excessive noise is not only tiring but can lead to impairment of hearing.

**⚠ CAUTION**



**EXPLOSION!** Use generator sets specified for RV use in RV installations only.

**⚠ CAUTION**

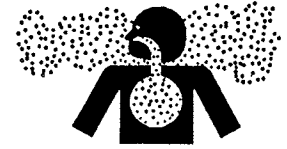


**HOT PIPING!** An engine gets hot while running and exhaust system components get extremely hot. Do not work on generator set until unit is allowed to cool.

**⚠ DANGER**



**CARBON MONOXIDE!** A gasoline/gas-engine discharges deadly carbon monoxide as part of the exhaust when operating. Carbon monoxide is particularly dangerous in that it is an odorless, tasteless, and nonirritating gas, but be ever mindful that it can cause death if inhaled for even a short period of time. Have only qualified technicians install and replace exhaust system components and have the system inspected frequently. Be careful when parking your coach to avoid obstructing the exhaust outlet. The exhaust gases must discharge freely, otherwise carbon monoxide may deflect under and into the vehicle or enter through open doors, windows, or vents. Also make sure that your exhaust cannot be discharged toward neighboring RV's, campers, or any occupied building. Be especially watchful for exhaust accumulation under calm, windless conditions.



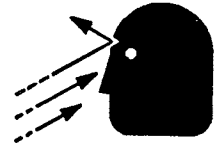
**CARBON MONOXIDE!** When installing exhaust system, position tail pipe end so that discharged exhaust gases may not be drawn into vehicle interior through windows, doors, air conditioners, etc. Do not use flexible tail piping as this type could crack or break and allow lethal exhaust fumes to enter the vehicle.

**⚠ CAUTION**



**BACKFIRE!** A sudden backfire can cause serious burns. Keep hands and face away from carburetor when the air cleaner is removed.

**⚠ CAUTION**



**LOOSE COMPONENTS!** When turning rotor for breaker point adjustment do not rotate thru bolt/crankshaft counterclockwise. Doing so can loosen thru bolt and result in serious injury when unit is running.

**LOOSE COMPONENTS!** When adjusting valves, do not use a ratchet wrench on crankshaft nut. Doing so can loosen nut and result in serious personal injury from nut or pulley flying off engine while unit is running.

**⚠ WARNING**



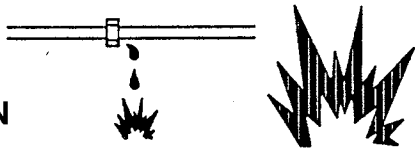
**ELECTRICAL SHOCK!** Battery can cause electrical burns and shocks. Exercise reasonable care when working near the battery to avoid electrical connections through tools. Remove wristwatch, rings, and any other jewelry.

**⚠ DANGER**



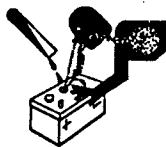
**HIGH VOLTAGE!** Remember that the function of a generator set is to produce electricity and that whenever electricity is present, there is the potential danger of electrocution. Take the same precautions with electrical appliances in your coach that you would observe in your home. Keep away from electrical circuits and wiring while the set is running and have electrical service performed only by qualified technicians. Make sure unqualified persons, especially children, cannot gain access to your set—keep the compartment door locked and securely latched at all times. 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.

**⚠ CAUTION**



**EXPLOSION!** Fuel leakage can cause an explosion. To prevent fuel leakage, the fuel system must be checked for leakage using a soap-water solution. Do not use solutions that contain ammonia or chlorine, for soap will not bubble for an accurate leakage test.

**⚠ WARNING**



**DANGEROUS ACID!** Avoid contact with battery electrolyte. It contains acid which can eat holes in clothing, burn skin, and cause permanent damage to eyes. 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 dangerous spattering of electrolyte.

**⚠ DANGER**



**FIRE HAZARD!** A sudden flash fire can cause serious burns. To avoid the possibility of a flash fire, 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.

**⚠ DANGER**



**HAZARDOUS FUMES!** When installing exhaust system, position tail pipe end so that discharged exhaust gases may not be drawn into vehicle interior through windows, doors, air conditioners, etc. Do not use flexible tail piping as this type could crack or break and allow lethal exhaust fumes to enter the vehicle.

**⚠ DANGER**



**DANGEROUS FUELS!** Use extreme caution when handling, storing, and using fuels—all fuels are highly explosive in a vapor state. 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 to prevent spilled fuel from igniting on contact with hot parts or from ignition spark. 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. Should any fuel leakage, fuel accumulation, or electrical sparks be noted, **DO NOT OPERATE GENERATOR SET.** Have systems repaired by qualified technicians before resuming generator operation. Additional precautions must be taken when using the following fuels:

**Gasoline**—Store gasoline only in approved red containers clearly marked **GASOLINE**. Don't 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.

**⚠ DANGER**



**ELECTROCUTION!** Your RV generator set must not be used to “backfeed” by connecting it to building/campground electrical circuits. Doing so can cause serious injury or death to utility personnel working on utility transmission lines and may also seriously injure persons in your household. Unauthorized connection may be unlawful in some states and/or localities. A transfer switch must be installed in the RV to prevent interconnection of generator and outside source of power.

**NOTE**

**PRESSURIZATION!** After all LP-Gas connections have been completed, the entire system shall be test pressurized to 6-8 ounces (10-14 inches water column).

**NOTE**


**MARINE APPLICATION!** 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.




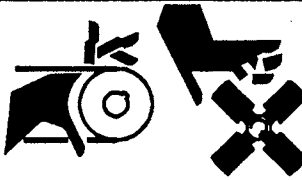
## Warning Decals

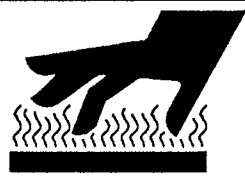
Warning decals are affixed to the generator set in prominent places to advise the operator or service technician of potentially hazardous situations. These decals are reproduced here to improve operator recognition and thereby increase decal effectiveness.

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.

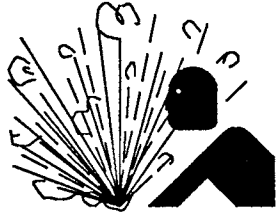
<b>⚠ WARNING</b>	
	<p><b>Hazardous voltage Backfeed to utility system can cause electrocution or property damage.</b></p> <p>Do not connect to any building electrical system without connecting through an approved device and after building main switch is open. See operator's manual.</p> <p style="text-align: right;">239771</p>

<b>⚠ WARNING</b>

<p><b>carbon monoxide. Can cause severe nausea, fainting, or death.</b></p> <p>Completely seal off compartment to maintain vapor tightness to living space. See operator's manual for complete installation instructions.</p> <p style="text-align: right;">239796</p>

<b>⚠ WARNING</b>

<p><b>Rotating parts. Can cause severe injury.</b></p> <p>Do not operate generator set without all guards, screens or covers in place.</p> <p style="text-align: right;">249808</p>

<b>⚠ CAUTION</b>

<p><b>Hot engine and exhaust system. Can cause severe burns.</b></p> <p>Do not work on generator set until unit is allowed to cool.</p> <p style="text-align: right;">249809</p>

<p><b>WARNING! THIS IS A POSITIVE TERMINAL ONLY. DO NOT ATTACH NEGATIVE LEAD!</b></p> <p style="text-align: right;">238402</p>
--

<b>⚠ WARNING</b>	
	<p><b>Hot coolant and steam. Can cause severe burns and personal injury.</b></p> <p>Before removing cap stop generator, allow to cool and loosen cap to relieve pressure. Fill system before starting unit.</p> <p style="text-align: right;">249810</p>



# General Specifications

## Engine

Your Kohler generator set is powered by a Kohler two cylinder model K-582 air-cooled, four-cycle gasoline engine. Some general specifications are listed below—refer to the appropriate service section in this manual for specific service details.

Bore x Stroke	3.50 in. x 3.0 in. (88.9 mm x 76.2 mm)
Displacement	57.7 cu. in. (945.7 cc)
Horsepower	13.8
RPM	1800
Lube Oil Capacity	4.0 U.S. qts. (3.78 L)
Battery Voltage	12 Volts
Battery Recommendation	290 Cold Cranking Amps./55 Amp. Hr.
Spark Plug Type	Champion RH10
Spark Plug Size	0.56 in. (14 mm)
Spark Plug Gap	
Gasoline	0.025 in (0.64 mm)
LP Gas	0.018 in. (0.46 mm)
Plug Tightening Torque	18/22 ft. lbs. (24-30 Nm)
Breaker Point Gap	0.020 in. (0.51 mm)
Timing (degrees)	19° BTDC
Valve Clearance	
Intake	0.008/0.010 (0.202/0.253)
Exhaust	0.017/0.020 (0.430/0.506)
Fuel Type	
Model 7CKM21-RV	Regular Grade Leaded or Unleaded Gasoline; Minimum Octane 86
Model 7CKM22-RV	LP Gas Blended for Season and/or Geographic Location

## Generator

Kohler designed and built rotating field, 60 Hertz, single-phase generators are direct-connected to the engine for permanent alignment. The generator features circuit breakers to protect against damage due to overload.

Model	Rated kW	Rated Voltage	Rated Amps
7 kW (Gasoline)	7.0	120	58.0
7 kW (LP Gas)	6.3	120	52.5
6 kW (Gasoline)	6.0	120	50.0

DERATION: The kilowatts of the generator set will decrease 3% for each 1000 feet (305 meters) above sea level, 2% (6 kW model 1%) for each 10°F (5.5°C) increase in ambient temperature above 60°F (16°C), and 11.1% when converted to LP Gas fuel.

## Controller

The Kohler relay controller has a rocker type momentary contact START-STOP switch for test operating the set at the controller. Also included is a keyed connector for installing a remote (inside coach) Start/Stop switch. See Figure 1-2. The green GENERATOR ON lamp on the optional

remote control panel will light whenever AC output is available from the generator. If the generator set has automatically stopped due to low oil pressure, 14 psi  $\pm$  2 psi (96 kPa) or less, the cause must be eliminated before the set can be restarted.

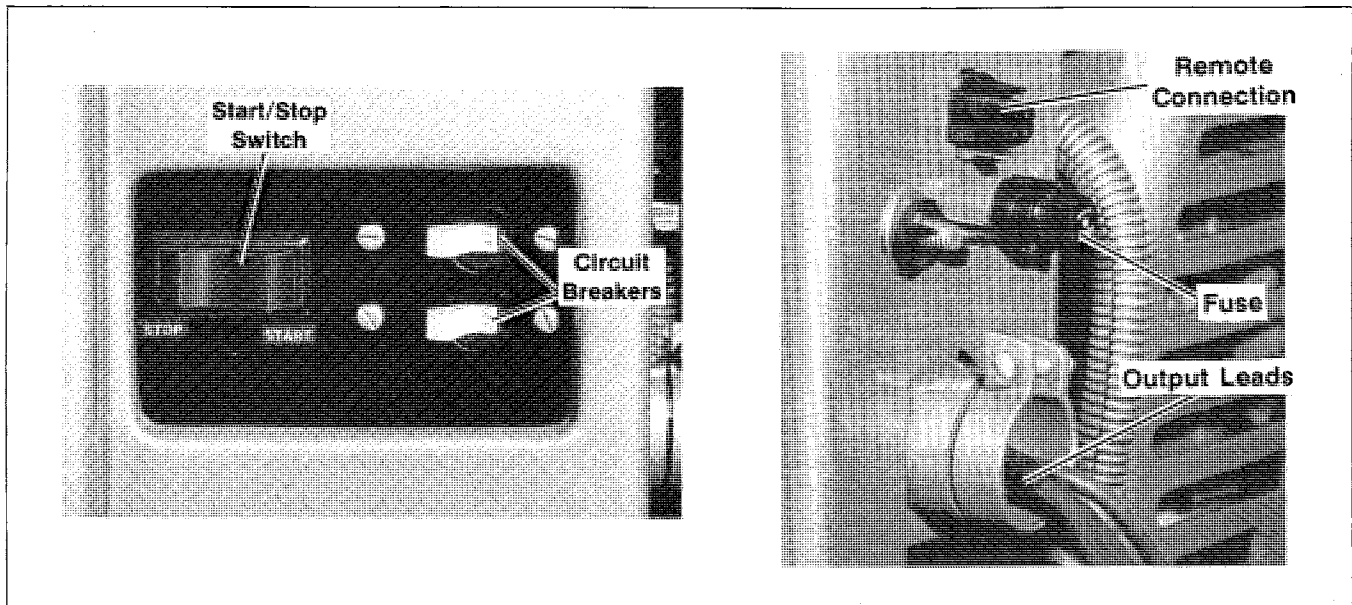


Figure 1-2. Controller

# 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.

## Start-Stop Procedure

Move the START-STOP switch into the START position and hold in this position until the engine is running, then release. Normally, the engine will start within 2 seconds. However, if it fails to start after cranking for 5 seconds, release the switch. Wait for engine to come to a complete halt before making a restart attempt. If the fly-

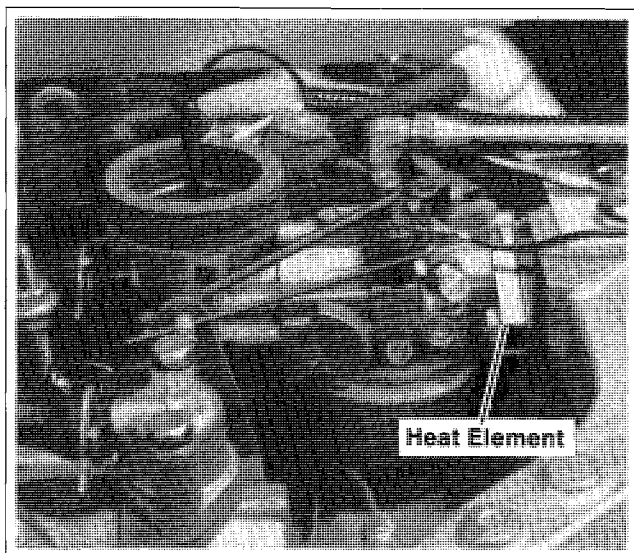
wheel ring gear is still rotating when the starter pinion gear is engaged, the pinion gear and ring gear will clash which may damage the ring gear teeth. Start-up of early model sets may require operation of the manual anti-icing system (if equipped). See "Anti-Icing Systems" following. Whenever possible, allow a brief cooling period by running the set at low or no load for a few minutes just prior to shut-down. To stop, move the switch to the STOP position and hold until the set comes to a complete halt. If the generator stops automatically, identify and correct the problem before attempting to restart.

## CAUTION

Do not crank engine continuously for more than 10 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 contact an Authorized Service Dealer for repair. Failure to follow these guidelines may result in burn-out of the starter motor.

## Anti-Icing Systems

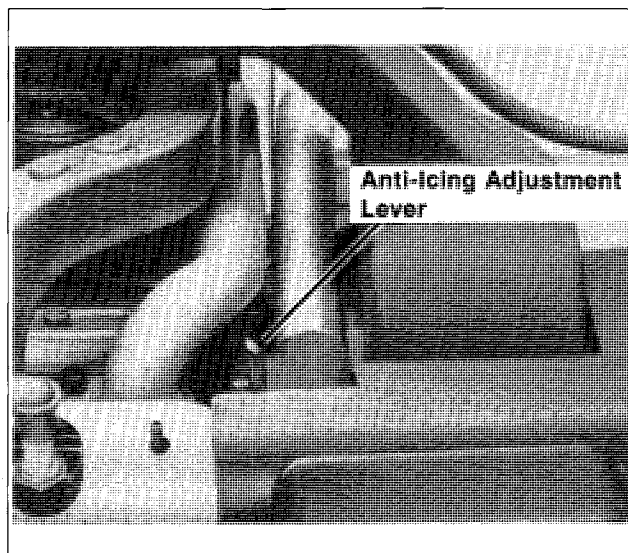
Later model generators are equipped with anti-icing devices designed to improve cold weather operation. Some models utilize an automatic anti-icing device while other sets are equipped with anti-icing devices requiring manual operation. Operation of both systems is explained in the following paragraphs.



**Figure 1-3a. Anti-Icing Heat Element (Automatic)**

### **Automatic Anti-Icing**

The automatic anti-icing system utilizes an electric heat element to warm the carburetor whenever the generator set is running. The system is activated when the START switch is pressed; current flow to the anti-icing device stops when the generator is stopped. Current required to operate the automatic anti-icing device decreases from approximately 3 Amps at start-up to 0.75 Amps when the carburetor temperature reaches 100-110°F (38-43°C). No adjustment or manual intervention is required with this system. The automatic anti-icing system can be identified by the anti-icing heat element shown in Figure 1-3a.



**Figure 1-3b. Anti-Icing Adjustment Lever (Manual)**

### **Manual Anti-Icing**

The manual anti-icing system functions by diverting heated manifold air to the carburetor intake. The system can be identified by the anti-icing adjustment lever shown in Figure 1-3b. When operating the generator at temperatures below 40°F (44°C) with high humidity, move the anti-icing adjustment lever to the “Winter” position. At temperatures above 70°F (21°C), move the adjustment lever to the “Summer” position. Between 40°F (4.4°C) and 70°F (21°C), the adjustment lever may be left in either position.

### **NOTE**

At temperatures above 70°F (21°C), operation of the generator set with the adjustment lever in the “Winter” position will cause decreased generator output.

## **Circuit Protection**

Two 30 Amp circuit breakers located in the controller (Figure 1-2) protect the generator set from damage due to overload or short circuits. (The 6kW model uses one 20 Amp. and one 30 Amp. circuit breaker.) If the circuit breakers trip, reduce the load and switch the breakers back to the “on” position. With the breakers in the “off” position, the engine will run but there will be no output voltage. A self-resetting 10 Amp. circuit breaker protects the battery charger circuitry (on sets equipped with battery charging).

The controller circuitry is also protected by a replaceable 10 Amp. fuse. If circuit breakers trip repeatedly, have generator examined by your Kohler Generator Service Dealer.

# 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. The benefits of such service will be improved performance and continuous satisfactory operation during a long trouble free service life.

Perform Service at Intervals Indicated (X)	Before Each Start-Up	Every 50 Hours or 6 Months	Every 100 Hours or 12 Months	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			
Check electrolyte level in battery .....	X			
Check air cleaner (replace if dirty) .....		X		
Change lube oil (change oil initially after first five hours of operation) .....			X	
Replace lube filter .....			X	
Service fuel pump internal filter .....			X	
Service or replace spark plugs .....			X	
Check battery specific gravity .....			X	
Check and tighten electrical connections .....			X	
Check and tighten mounting bolts and vibro-mounts .....			X	
Blow dust out of generator .....			X	
Check and service breaker points .....			X	
Check valve-tappet clearance .....				X
Service cylinder heads .....				X
Check ignition timing .....				X
Check compression .....				X
Replace fuel filter (external - later models only) .....				X

### NOTE

Unleaded gasoline is recommended. If leaded gasoline is used, service cylinder heads every 250 hours.



# Lubrication

Your engine has a positive pressure lubrication system and low oil pressure shutdown.

## Low Oil Pressure Shutdown

The low oil pressure shutdown feature protects the engine against internal damage if the oil pressure drops below  $14 \text{ psi} \pm 2 \text{ psi}$  (96.5 kPa) due to oil pump fault or other malfunction — it does not protect against damage due to operating with the oil level below the safe range — it is not a low oil level shutdown. The only protection against running out of oil is to check the level regularly and to add oil as needed.

## Oil Check

Check crankcase oil level daily or before each start. To check oil level, remove oil cap/dipstick assembly and wipe dipstick

clean. Reposition dipstick in crankcase but do not thread oil cap into shaft. Accurate oil level readings are only obtained with the oil cap resting on the oil shaft collar. Oil level should read between L and F on dipstick. Do not operate set if oil level exceeds “F” or registers below “L” on dipstick. Figure 1-4.

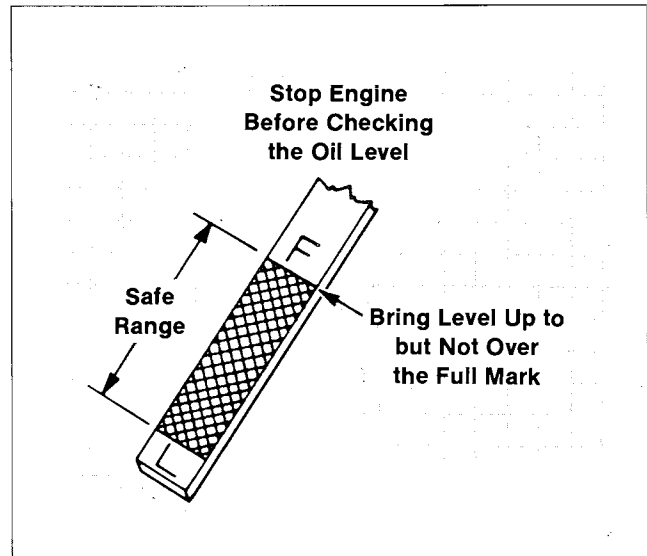


Figure 1-4. Lube Oil Level

## NOTE

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

## Oil Change

### Break-In Period Oil Recommendations

Generator set engines may be shipped “dry”; the oil used in factory testing having been drained. Before operating a new set, the engine crankcase should be filled to specified capacity with a straight-weight oil having a viscosity appropriate for your particular climate. Do not use synthetic oils during the first five hours of operation or the rings may not seat properly. This oil should be changed immediately after the first five hours of operation. See “OIL TYPE.”

On a new engine, change the oil after the first five hours of operation and thereafter at 100 hour intervals, or every 12 months, whichever occurs first. Replace the oil filter (Kohler filter 52 050 02) at every oil change. Whenever possible, drain the oil while it is still warm. To drain, place container below unit and use a 5/16 hex socket wrench to remove the oil drain plug (located directly beneath the dipstick assembly). Allow adequate time for generator to drain completely. If the filter is being replaced, remove enclosure cover to expose oil filter. Remove filter by rotating filter counter-

clockwise with an oil filter wrench. After draining, replace drain plug then install replacement filter if applicable. Before reinstalling replacement filter, apply a light coating of oil on the rubber seal at the base of the filter. Add new oil of proper weight and grade as specified under “OIL TYPE” following. After restarting, check the area around the filter for evidence of leakage—tighten filter if needed to stop leakage.

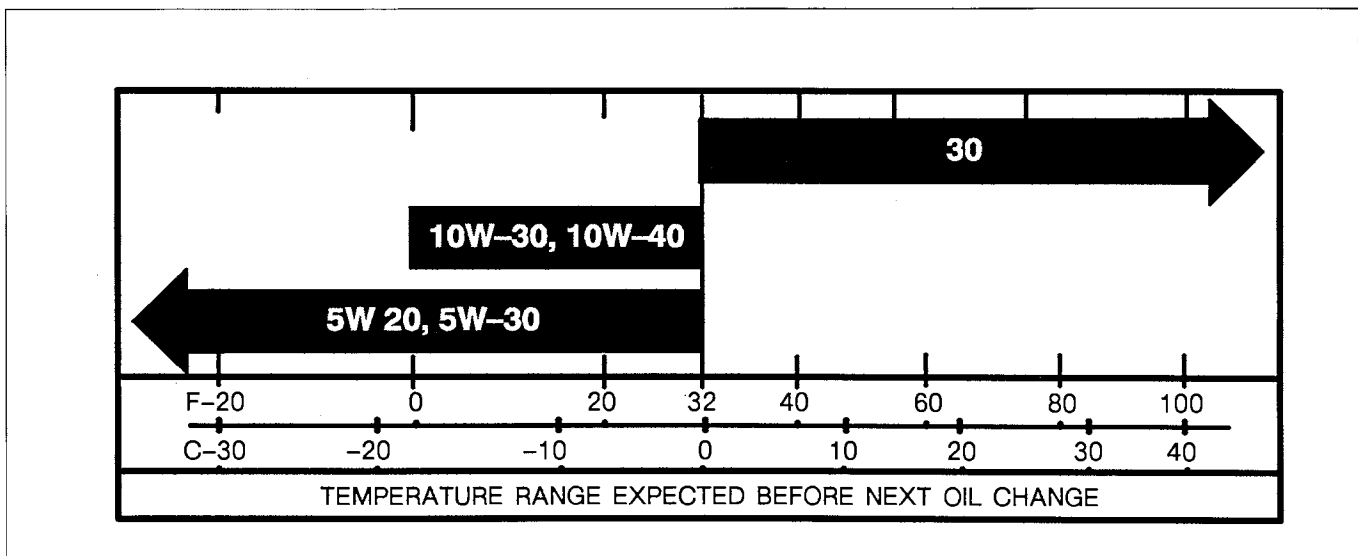
### Oil Refill Capacity: 4 U.S. Quarts (3.8 L)\*

\* Additional 1/2 pint (0.23 L) required when filter is replaced.

### Oil Type

High quality detergent oils meeting the requirements of SAE service class SC, SD, SE and SF are recommended for use in the Kohler K-582 engine. Use straight weight oils as specified. Do not use multi-viscosity oils above 32°F or increased oil consumption and combustion deposits will result. Base oil weight selection on air temperature at time of operation. Consult the SAE Viscosity Grade chart.

### RECOMMENDED SAE VISCOSITY GRADES



Recommended SAE Viscosity Grades

## Air Cleaner

The engine is equipped with a dry-type air cleaner. Every 50 hours remove element and service by tapping element lightly against flat surface to dislodge loose surface dirt. Do not clean in any liquid or blow out with compressed air as this will ruin filter material in element. Service air cleaner after each 100 hours of operation. If dirty, replace with genuine Kohler replacement element.

## Cooling System

To prevent damage to the generator set from overheating, keep the cooling air inlets to the compartment clean and unobstructed at all times.

A fan on the rotor of the generator draws cooling air into the compartment through the generator cooling slots and expels it at the engine-generator adapter. The engine of the generator set features an air-vac reverse flow cooling system. Fins on the engine flywheel pull cooling air past the fins of the cylinder heads and heated air is discharged downward and out of the compartment through the discharge chute. See Figure 1-5.

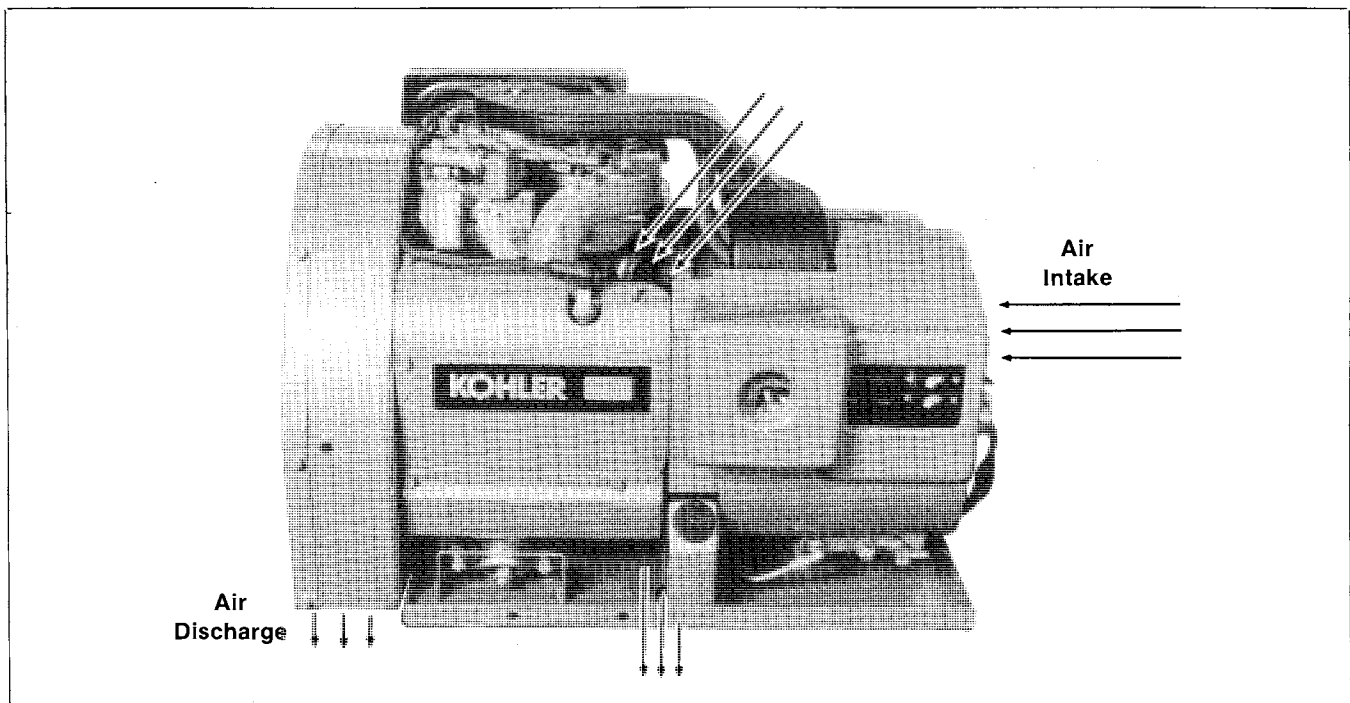


Figure 1-5. Cooling Air Circulation

# Ignition System

## Spark Plugs

Every 100 hours remove both spark plugs and check condition. Reset gap or replace plug if needed. Proper generator operation is indicated by a light deposit of gray or tan material on plug electrodes. A dead white, blistered coating could indicate overheating. A black (carbon) coating may indicate an “overrich” fuel mixture caused by a clogged air cleaner or improper carburetor adjustment.

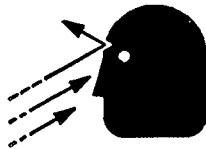
### NOTE

Do not sandblast, wire brush, scrape, or otherwise service plug in poor condition — best results are obtained with a new plug. Use only resistor type plugs. Set spark plug gap at 0.025 in. (0.64 mm) on gasoline-fueled sets. Spark plug gap on LP gas-fueled generators should be set at 0.018 in. (0.46 mm). Tighten plug to 18-22 ft. lbs. (24-30 Nm) when installing.

## Breaker Points

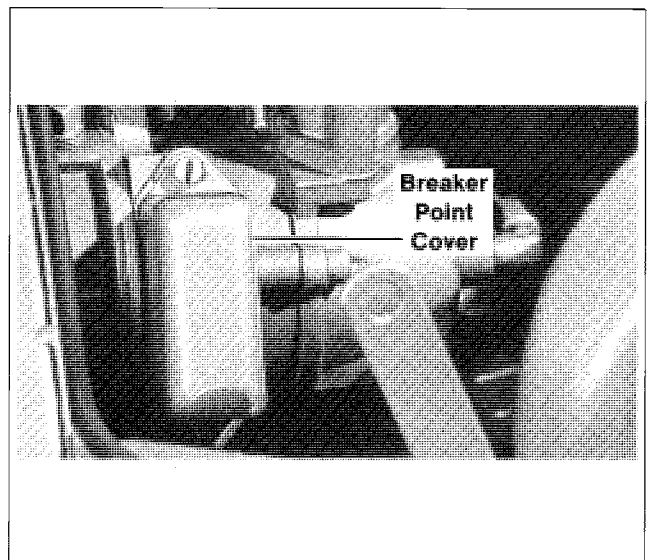
### CAUTION

**LOOSE COMPONENTS!** When turning rotor for breaker point adjustment do not rotate thru bolt/crankshaft counterclockwise. Doing so can loosen thru bolt and result in serious injury when unit is running.



Every 100 hours the breaker points should be inspected and serviced. If oxidized, dirty or oily, clean with coarse cloth — do not use emery cloth or sandpaper. Replace badly pitted or burned points. The gap must be adjusted after points are serviced or replaced since this setting establishes ignition timing. Read the following procedure before beginning the adjustment.

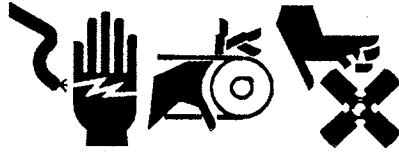
1. Disconnect battery (negative lead first) and remove the spark plug leads to prevent unintentional starting.
2. Remove the breaker point cover. See Figure 1-6.



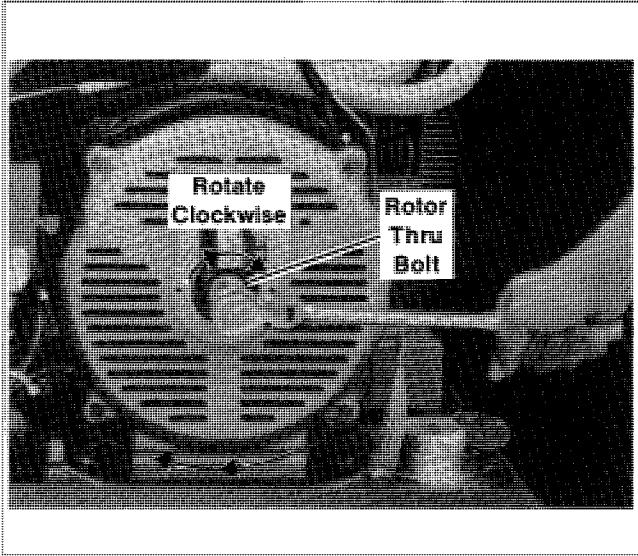
**Figure 1-6. Breaker Point Cover**

3. Using a 3/4 in. socket wrench, rotate the rotor thru bolt clockwise until the points reach the maximum opening. See Figure 1-7.

**⚠ WARNING**

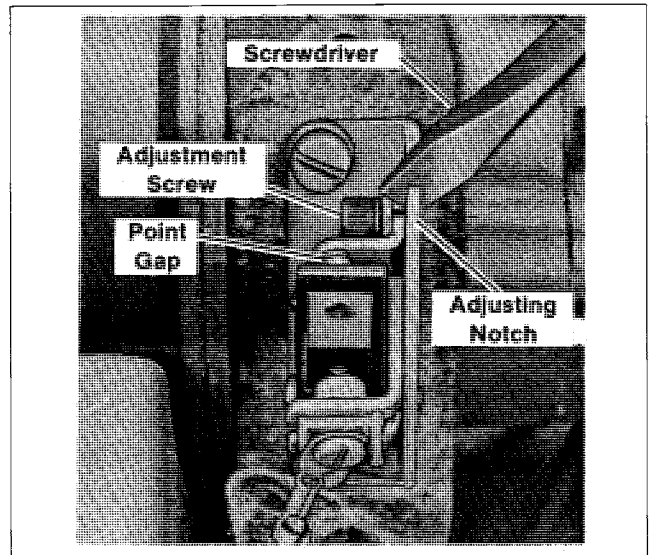


**UNIT STARTS WITHOUT NOTICE!** To prevent accidental starting on units with a remote start/stop switch, always disconnect battery (remove negative lead first and reconnect it last) to disable generator set before working on any equipment connected to generator.



**Figure 1-7. Rotating Rotor for Breaker Point Adjustment**

4. Measure the gap with a feeler gauge. The gap at full open should be 0.020 in. (0.51 mm). If not, loosen the point gap adjustment screw with an offset screwdriver or an allen wrench. Adjust the gap to 0.020 in. (0.51 mm) by inserting a screwdriver blade in the adjusting notch and shifting the movable plate. See Figure 1-8. Securely tighten the adjusting screw after setting the gap.



**Figure 1-8. Breaker Point Gap Adjustment**

5. Replace the breaker point cover.
6. Reconnect battery (negative lead last) and reconnect the spark plug leads.
7. Follow up with the final or precision adjustment using a timing light.

## Timing

The governor includes an automatic spark advance retard mechanism. Retard is 8° BTDC while the advance point is 19° BTDC. Timing is changed by shifting position of the governor and should not require adjustment unless the governor has been removed. FINAL TIMING IS MADE WITH A TIMING LIGHT AND SHOULD BE DONE BY QUALIFIED SERVICE SPECIALIST ONLY — THE FOLLOWING IS OFFERED AS A GUIDE TO THE SPECIALIST. Set breaker point gap per procedure then connect timing light leads per instructions included with light — timing can be done on

either cylinder. Before starting, rotate engine until “SP” mark is observed in timing sight hole — chalk mark the line for easy reading. Start engine and operate at 1800 RPM. Aim timing light into sight hole — light should flash just as “SP” mark lines up with the timing pointer inside the blower housing. If light flashes before mark is centered, timing is overadvanced. If light flashes after mark is centered, timing is retarded. To adjust, loosen (do not remove) governor flange mounting capscrews and shift or rotate until timing mark is exactly centered as light flashes. Retighten flange mounting screws after exact timing is achieved.

# Gasoline Fuel Specifications and Service

## Fuel Specifications

For best results, use only clean fresh, regular grade unleaded gasoline with a pump sticker octane rating of 86 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 fewer combustion chamber deposits. Regular grade leaded gasoline may also be used; however, be aware that the combustion chamber and cylinder head

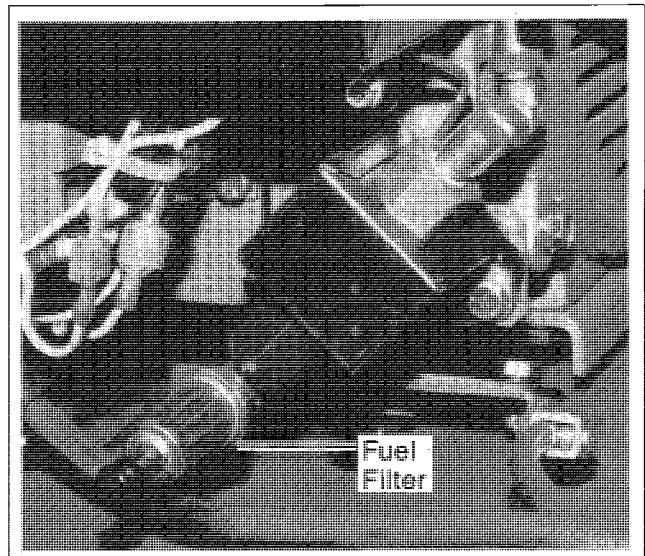
will require more frequent service. Gasohol containing no more than 10% ethanol can be used if unleaded gasoline is unavailable. Never use gasohol containing more than 10% ethanol or gasoline containing Methanol. Oil must not be mixed with the fuel.

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.

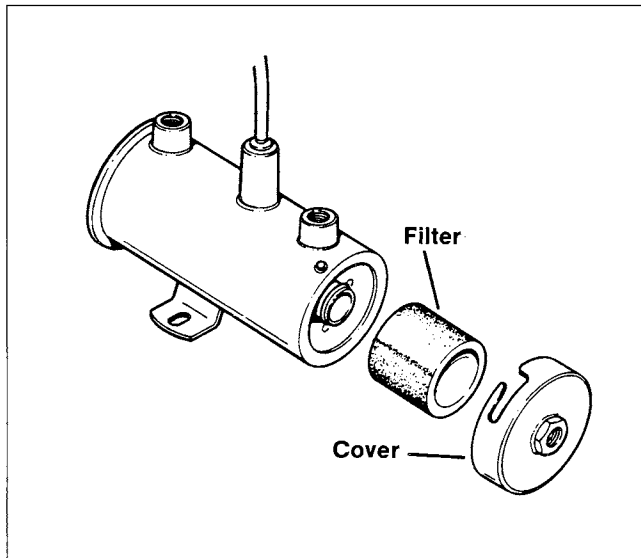
## Gasoline Fuel Filter Service

Early model generators were equipped with fuel pumps with built in fuel filters. See Figure 1-9. The internal filter on this type pump should be cleaned every 100 hours of operation. Remove the pump cover to remove the filter. Swish the filter in cleaning solvent to remove debris. Wipe the magnet and internal surfaces with a clean rag before reassembling.

Later model sets utilize a screw-in type fuel filter connected to the electric fuel pump. Replace the filter every 500 hours of running time or when rough operation indicates an engine tune-up may be necessary. Location of the fuel filter is shown in Figure 1-10.



**Figure 1-10. Gasoline Fuel Pump w/External Filter**

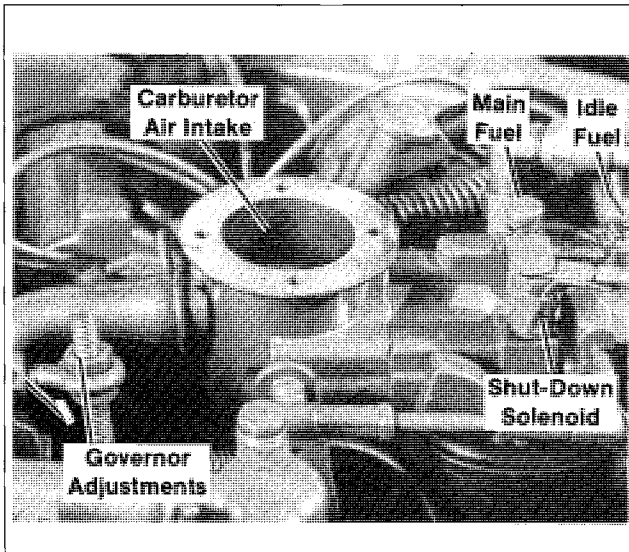


**Figure 1-9. Gasoline Fuel Pump w/Internal Filter**



# Gasoline Carburetor Adjustments

Lack of power and black sooty exhaust smoke usually indicate that the fuel mixture is too rich. An overrich mixture may be caused by a clogged air cleaner or improperly adjusted choke. Always check the air cleaner before readjusting the choke or carburetor. If the engine skips (misses) or backfires, the fuel mixture may be too lean. To locate adjustment screws refer to Figure 1-11.



**Figure 1-11. Carburetor Adjustment Screws**

## Main Fuel Mixture

For preliminary setting turn the MAIN FUEL screw in a clockwise direction until it bottoms lightly (do not force), then back out 2-1/2 turns. With the engine thoroughly warmed up and running at rated rpm under full load, turn MAIN FUEL screw in until the engine slows down (lean setting) then turn screw out until the engine regains speed and then starts to slow down (overrich setting). Turn the screw back in until it is positioned halfway between lean and overrich settings. When properly adjusted, the engine will operate with steady governor action.

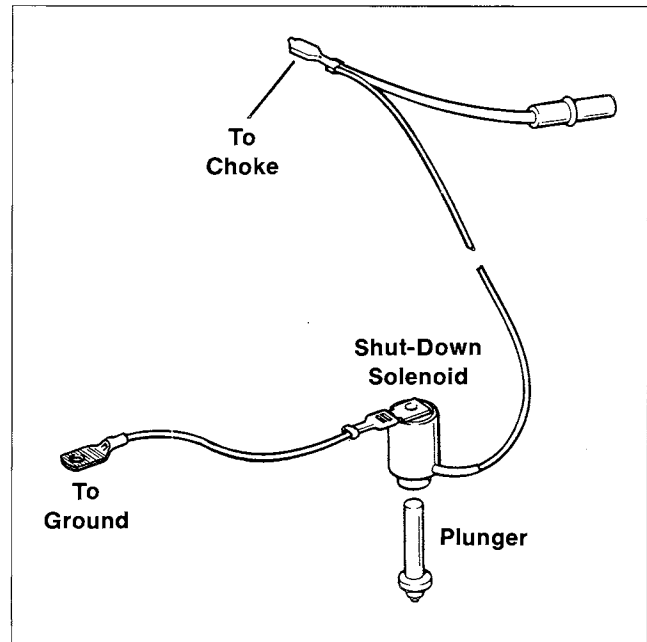
## Idle Fuel Mixture

The idle system functions only as the engine comes up through idle range. For this reason, the idle setting has only a momentary effect. To adjust, stop the engine and then turn the IDLE FUEL needle all the way in (clockwise) until it bottoms lightly (do not force) then back out 2-1/2 turns. No further adjustment is needed.

## Gasoline Shut-Down Solenoid

After running with a heavy load, engines tend to continue running (diesel) after the switch is moved to the stop position. To prevent this, the carburetor on your engine is equipped with a shut-down control (Figure 1-12) which stops all flow of fuel when the switch is moved to the stop position. When the engine is running, battery current through the solenoid attracts and holds a plunger. When the switch is moved to the stop position, the solenoid de-energizes and releases the plunger in the carburetor to equalize pressure and stop all flow of fuel. Should the solenoid fail, fuel cannot flow and the set will not run. As a temporary fix, the plunger can be removed until the solenoid is replaced. To remove, first turn the main fuel screw in until it bottoms lightly (do not force) and record the number of turns in; then turn the main fuel screw out far enough to shift the solenoid retaining bracket. Lift the solenoid and remove the plunger. Reinstall the solenoid and retaining bracket. Turn the main fuel screw in until

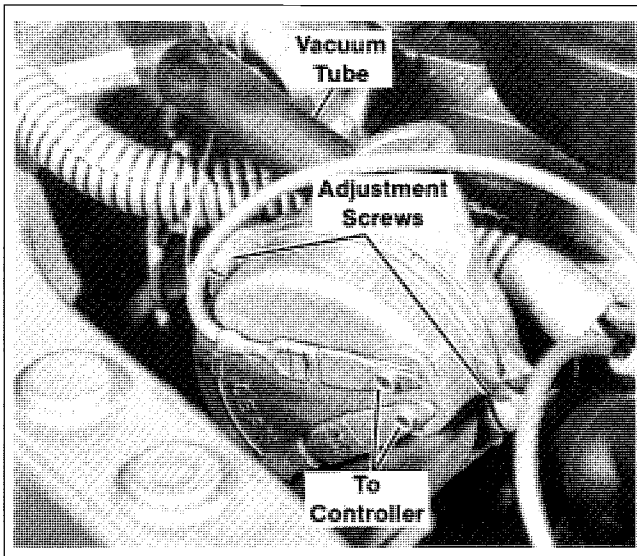
it bottoms lightly, then back out number of turns recorded (minor adjustments may have to be made). The lead on top of the shut-down solenoid grounds to the intake manifold. It is important that both connections are secure.



**Figure 1-12. Shut-Down Solenoid**

## Gasoline Choke Adjustment

A Kohler Thermo-electric automatic choke is used to enrich the gasoline fuel mixture during starting. The choke automatically closes as the ambient temperature cools or as the engine temperature decreases. As the engine warms, the coils inside the choke allow the choke plate to open. If readjustment is needed, loosen the two screws securing the choke bracket to the carburetor and shift the position of the choke assembly (Figure 1-13). When properly set, the choke plate will be within 5 to 10 degrees of full open at approximately 70°F (21°C).



**Figure 1-13. Automatic Choke Adjustment**

## LP Gas Fuel System

The LP gas liquid withdrawal fuel system utilizes a vaporizer/regulator to convert LP gas from a liquid to a gaseous state. Vaporized fuel is combined with air in the carburetor to produce the correct air/fuel mixture for proper combustion. Be sure the LP gas

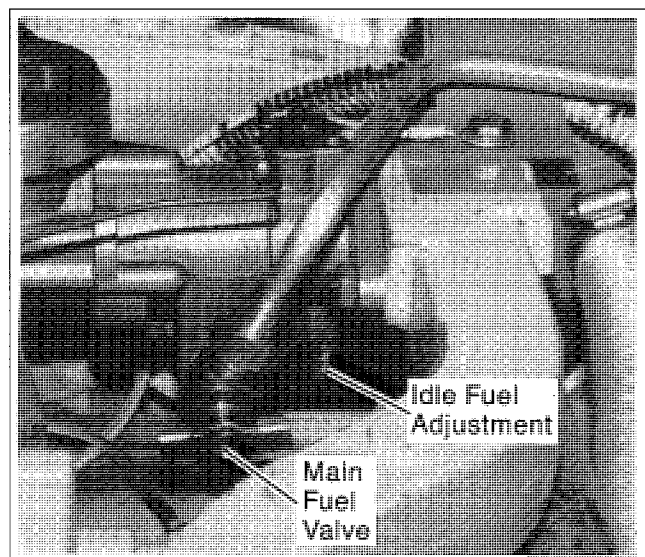
is properly blended for the season and/or geographic location in which the generator is operated. To locate carburetor adjustments refer to Figure 1-14.

### Main Fuel Mixture

For preliminary setting turn the MAIN FUEL valve in a clockwise direction until it bottoms lightly (do not force), then back out 4 turns. With the engine thoroughly warmed up and running at rated rpm under full load, turn MAIN FUEL valve in until the engine slows down (lean setting) then turn valve out until the engine regains full speed. When properly adjusted, the engine will operate with steady governor action.

### Idle Fuel Mixture

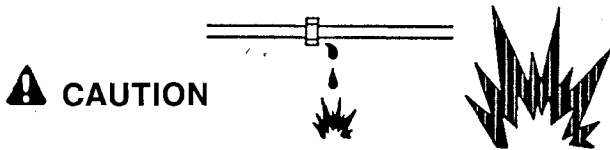
The idle system functions only as the engine comes up through idle range. For this reason, the idle setting has only a momentary effect. To adjust, stop the engine and then turn the IDLE FUEL screw all the way in (clockwise) until it bottoms lightly (do not force) then back out 2-1/2 turns. No further adjustment is needed.



**Figure 1-14. LP Gas Carburetor Adjustments**

## Fuel Valve and Filter

The LP fuel valve contains a replaceable filter which should be inspected yearly or after every 100 hours of operation. Normally, the filter requires replacement only after accumulation of filtered debris restricts fuel flow to the regulator/vaporizer. Rough generator operation and/or the presence of frost on the fuel valve outer surface indicates filter replacement is necessary. Assembly of the LP gas fuel valve and location of the fuel filter is shown in Figure 1-15.



**EXPLOSION!** Fuel leakage can cause an explosion. To prevent fuel leakage, the fuel system must be checked for leakage using a soap-water solution. Do not use solutions that contain ammonia or chlorine, for soap will not bubble for an accurate leakage test.

### NOTE

**PRESSURIZATION!** After all LP-Gas connections have been completed, the entire system shall be test pressurized to 6-8 ounces (10-14 inches water column).

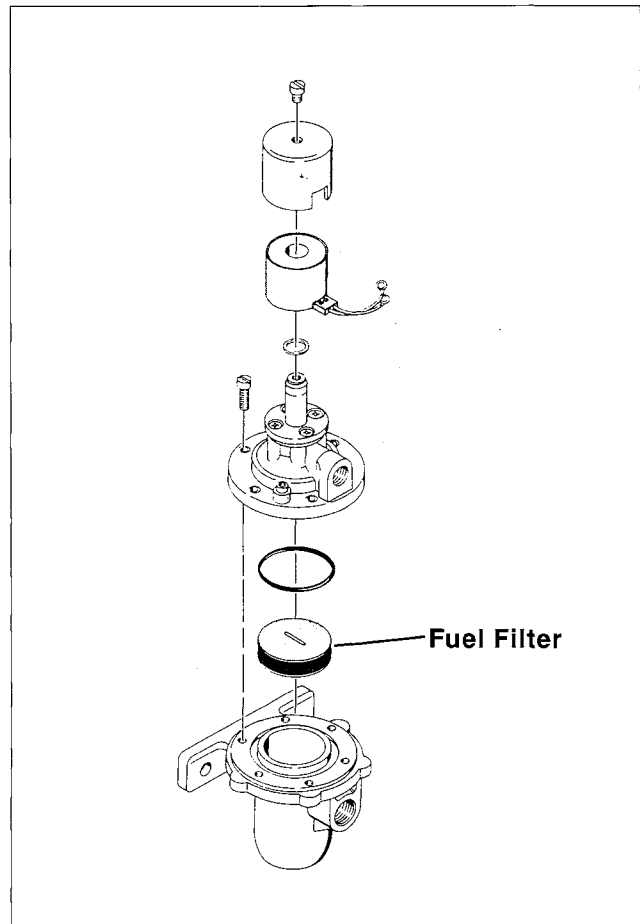


Figure 1-15. LP Gas Fuel Valve Assembly

# Governor Adjustments

## Speed

With the Constant Speed type governor, the throttle shaft is fixed at a definite length to establish a specific full load speed of 1800 RPM. Any variation in speed causes frequency changes in output of the generator — for this reason, only slight readjustment of speed is possible. To increase speed, loosen the inside speed adjusting locking nut and tighten the outside nut to draw the eyebolt closer to the bracket — to decrease speed, loosen the outside nut and tighten the inside nut. After speed is correct, tighten the nut that was loosened to lock the eyebolt at the new setting.

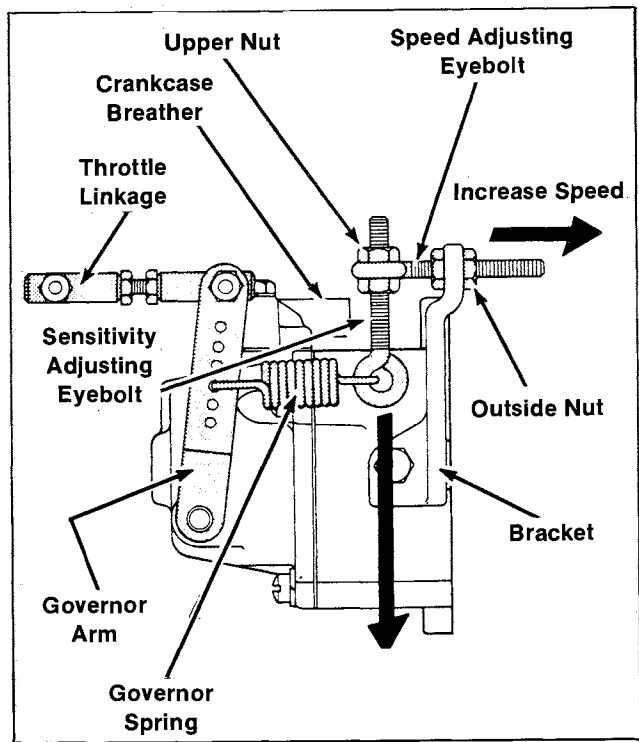


Figure 1-16. Governor Components and Adjustments

## Sensitivity

If the governor is too sensitive, speed surging will occur with change in load. If a big drop in speed occurs when normal load is applied, the governor should be set for greater sensitivity. Sensitivity is changed by repositioning the sensitivity adjusting eyebolt as shown in Figure 1-16. To make governor control more sensitive, loosen the upper nut and tighten the lower nut to force the eyebolt downward. To make control less sensitive, draw the eyebolt upward by loosening the lower nut and tightening the upper nut. Recheck speed after making sensitivity adjustment. Retighten nut that was loosened to lock eyebolt at the new setting.

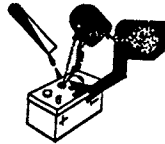
## Battery

Use a 12 Volt battery with a rating of at least 290 Cold Cranking Amps./55 Amp. Hr. When using a "Maintenance Free" battery, it is not necessary to check the specific gravity or electrolyte level. Otherwise, these procedures should be done at the intervals specified in the "Service Schedule." A negative ground system is used. Battery connections are shown on the wiring diagram. Make sure battery is properly connected and terminals are tight.

### NOTE

The generator set will not start if the battery connections are made in reverse.

## WARNING



**DANGEROUS ACID!** Avoid contact with battery electrolyte. It contains acid which can eat holes in clothing, burn skin, and cause permanent damage to eyes. 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 dangerous spattering of electrolyte.

## DANGER



**EXPLOSIVE BATTERY GASES!** The gases generated by a battery being charged are highly explosive. 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. Any compartment containing batteries should be well ventilated to prevent accumulation of explosive gases. To avoid sparks, do not disturb battery charger connections while battery is being charged and always turn charger off before disconnecting.

## CAUTION



**ELECTRICAL SHOCK!** Battery can cause electrical burns and shocks. Exercise reasonable care when working near the battery to avoid electrical connections through tools. Remove wristwatch, rings, and any other jewelry.

1-20

### Cleaning

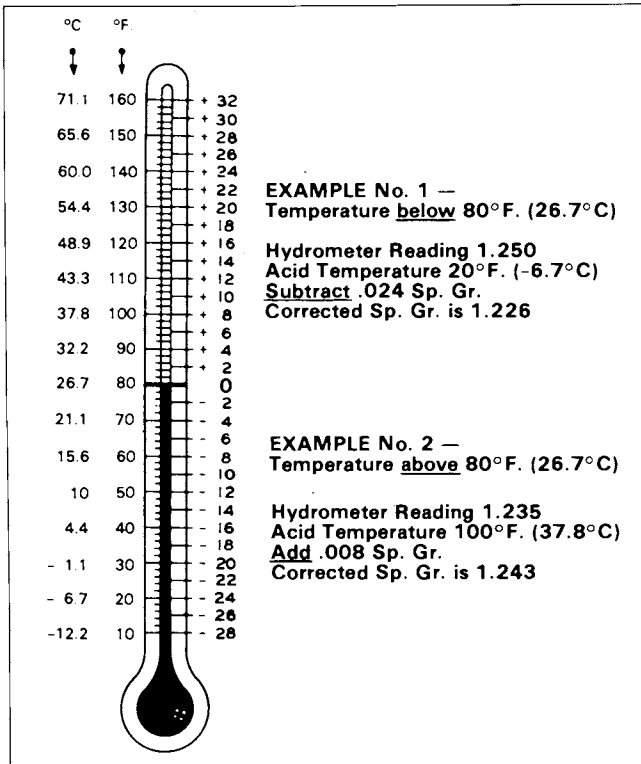
Keep battery clean by wiping it with a damp cloth. Keep all electrical connections dry and tight. If corrosion is present, disconnect cables from battery and remove corrosion with a wire brush. Clean battery and cables with a solution of baking soda and water. Be careful that cleaning solution does not enter battery cells. When cleaning is complete, flush battery and cables with clean water and wipe with a dry cloth. After the battery cables are reconnected, coat terminals with petroleum jelly or other non-conductive grease.

### Checking Electrolyte Level

Check the level of electrolyte before each start-up. Remove filler caps and check to see that electrolyte level is up to bottoms of filler holes. Refill as necessary with distilled water or clean tap water. DO NOT add fresh electrolyte! Be sure filler caps are tight.

### Checking Specific Gravity

Use a battery hydrometer to check the specific gravity of the electrolyte in each battery cell. While holding the hydrometer vertical, read the number on the glass bulb at the top of the electrolyte level. If the hydrometer used does not have a correction table, use the one in Figure 1-17.



**Figure 1-17. Specific Gravity Temperature Correction**

Determine specific gravity and electrolyte temperature of battery cells. Locate temperature in Figure 1-14 and adjust specific gravity by amount shown. The battery is fully charged if the specific gravity is 1.260 at an electrolyte temperature of 80°F (26.7°C). The difference between specific gravities of each cell should not exceed  $\pm 0.01$ . The battery should be charged if the specific gravity is below 1.215 at an electrolyte temperature of 80°F (26.7°C).

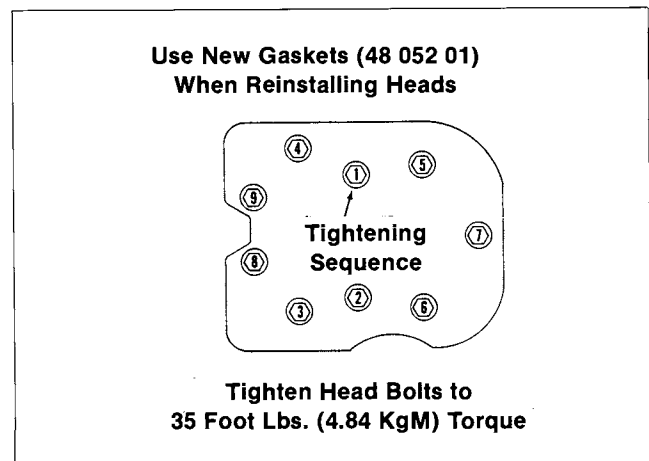
## Cylinder Head Service

After each 500 hours of operation, the cylinder heads should be taken off the engine and serviced. Remove carbon deposits from combustion chamber in head. Scrape and remove carbon with a sharp piece of wood. Wood or similar material is sug-

gested to avoid scratching aluminum surfaces of head. Always use new cylinder head gaskets. Make sure head bolts are tightened in the proper sequence and to the torque value specified. See Figure 1-18.

### NOTE

If engine is operated on leaded fuel or under certain conditions, such as continued light load or relatively constant speed, carbon may build up more rapidly. If there are early indications of this, such as heavy deposits of carbon on spark plug electrodes, service the heads more frequently. A 250 hour service interval is suggested under these conditions.



**Figure 1-18. Cylinder Head Tightening Sequence and Torque Values**

## Valve Service

After each 500 hours of operation (or sooner if a loose valve is detected), check clearance between the valve stems and tappets. The engine must be stopped and cooled to normal ambient temperatures to accurately gauge and adjust valve clearances. Use the following procedure to adjust.

1. Turn engine over until piston in #1 cylinder (closest to flywheel) is at Top Dead Center on compression — in this position, both valves WILL BE CLOSED and cam will have no effect on tappet.
2. Measure clearance between valve stem and tappet with a feeler gauge. To adjust, turn adjusting screw on tappet in or out until proper clearance is attained.

#### COLD CLEARANCE

##### INTAKE

0.008-0.010 in. (0.203 mm-0.254 mm)

##### EXHAUST

0.017-0.020 in. (0.432 mm-0.508 mm)

3. After adjusting valve tappet clearance on #1 cylinder, turn engine over until #2 cylinder is at TDC on compression and repeat adjustment on this cylinder.

## Fuse Replacement

### Controller

There is one 10 Amp. fuse located at the controller. This fuse protects the controller against damage if a short develops in the wiring harness to the remote start-stop switch. See Figure 1-19. If this fuse “blows”, the set will stop.

If the set has stopped due to causes other than lack of fuel, engine malfunction, or low oil pressure, check the fuse. If blown, replace the fuse then restart the generator set. If the fuse blows again, contact a Kohler Generator Service Center for assistance in locating and correcting the cause.

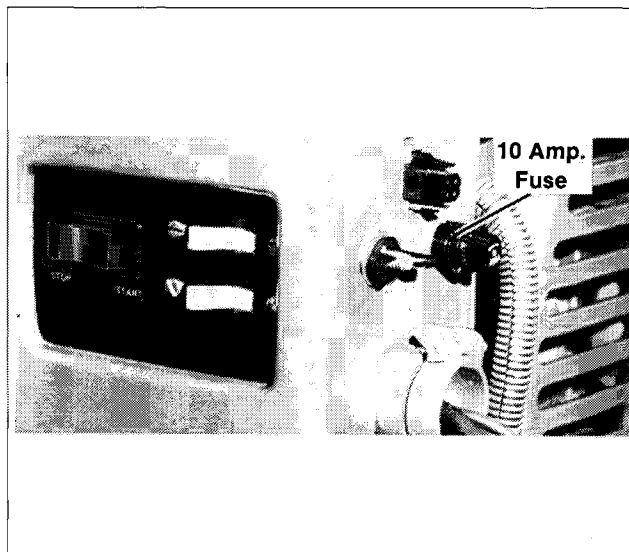


Figure 1-19. Fuse Location

## Wattage Requirements

If the rated capacity of your generator is exceeded, the circuit breaker(s) located in the controller 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 breaker(s) trip, the set may continue running but there will be no AC output to the protected circuit. Before resetting the circuit breaker(s), 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 circuit breaker(s) trips again after being reset, a short circuit is indicated. In this event, turn off the set and have a qualified electrician locate and correct the cause of the short circuit.



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 breaker trip due to overload. Your generator set will operate two 13,500 BTU air conditioners. The lighting load is easily determined by adding the wattage rating of each bulb in the circuit. Check the nameplate rating on motors and appliances in your RV for exact wattage requirements.

## Generator Service

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.

<b>Electrical Appliance</b>	<b>Rating (Watts)</b>
Blanket .....	50-250
Blender .....	600
Broiler .....	1350
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

# Troubleshooting

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 the generator set to a Service Dealer. Tell the Service Dealer personnel exactly what happened when the problem occurred and of any adjustments made to the set.

## Engine

Problem	Possible Cause	Corrective Action
<b>Will not start</b>	Fuse blown	Replace
	Out of fuel	Replenish
	Clogged fuel filter	Clean
	Air cleaner clogged	Clean or replace
	Faulty shut-down control plunger	Replace
	Breaker points dirty or out of adjustment	Clean or replace and readjust
	Battery connections made in reverse	Correct
	Faulty spark plug	Clean or replace, and regap
	Shorted or open ignition coil	Replace
	Faulty ground	Clean and retighten
	Loose spark plug wire connection	Reconnect
	Defective condenser or bad connection	Replace or clean, and retighten
	Weak or dead battery	Recharge or replace
	Choke adjustment wrong	Adjust
Low oil pressure (LOP) shutdown	Correct cause of shutdown	

## Engine (Cont'd)

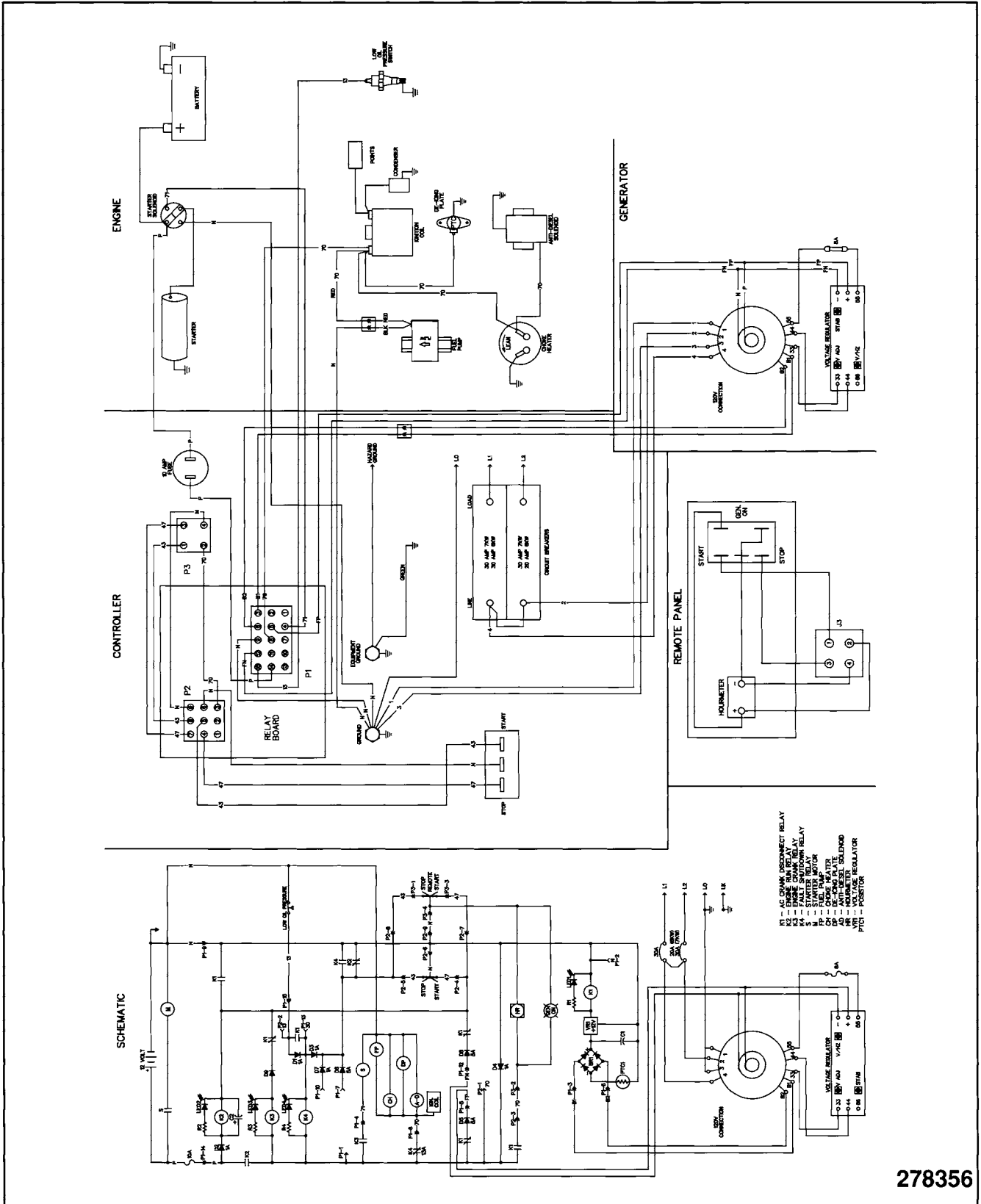
<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
<b>Hard starting</b>	Stale or bad fuel Air cleaner clogged Carburetor adjustment wrong Faulty spark plug Weak ignition coil Incorrect breaker point gap Improper cooling Choke adjustment wrong	Replace Clean or replace element Adjust Clean or replace, and regap Replace Adjust Inspect cooling system Adjust
<b>Stops suddenly</b>	Out of fuel Air cleaner clogged Fuse blown Faulty spark plug Low oil pressure Defective fuel shut-off solenoid Breaker points stuck	Replenish Clean or replace element Replace Clean or replace, and regap Check oil level Replace Clean or replace
<b>Lacks power</b>	Air cleaner clogged Improper cooling Engine overload Bad or stale fuel Faulty spark plug Breaker points dirty or out of adjustment Anti-icing adjustment lever in wrong position Carburetor adjustment wrong Carbon build-up Defective condenser or bad connection	Clean or replace element Inspect cooling system Reduce load Replace Clean or replace, and regap Clean or replace, and readjust Move anti-icing adjustment lever (if equipped) Adjust Service Replace or clean, and retighten

## Engine (Cont'd)

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
<b>Operates erratically</b>	Air cleaner clogged	Clean or replace element
	Stale or bad fuel	Replace
	Faulty spark plug	Clean or replace, and regap
	Breaker points dirty or out of adjustment	Clean or replace, and readjust
	Anti-icing adjustment lever in wrong position	Move anti-icing adjustment lever (if equipped)
	Carburetor adjustment wrong	Adjust
<b>Overheats</b>	Improper cooling	Check intake and outlet openings
	Air cleaner clogged	Clean or replace element
	Carburetor adjustment too lean	Adjust
	Engine ignition timing incorrect	Adjust

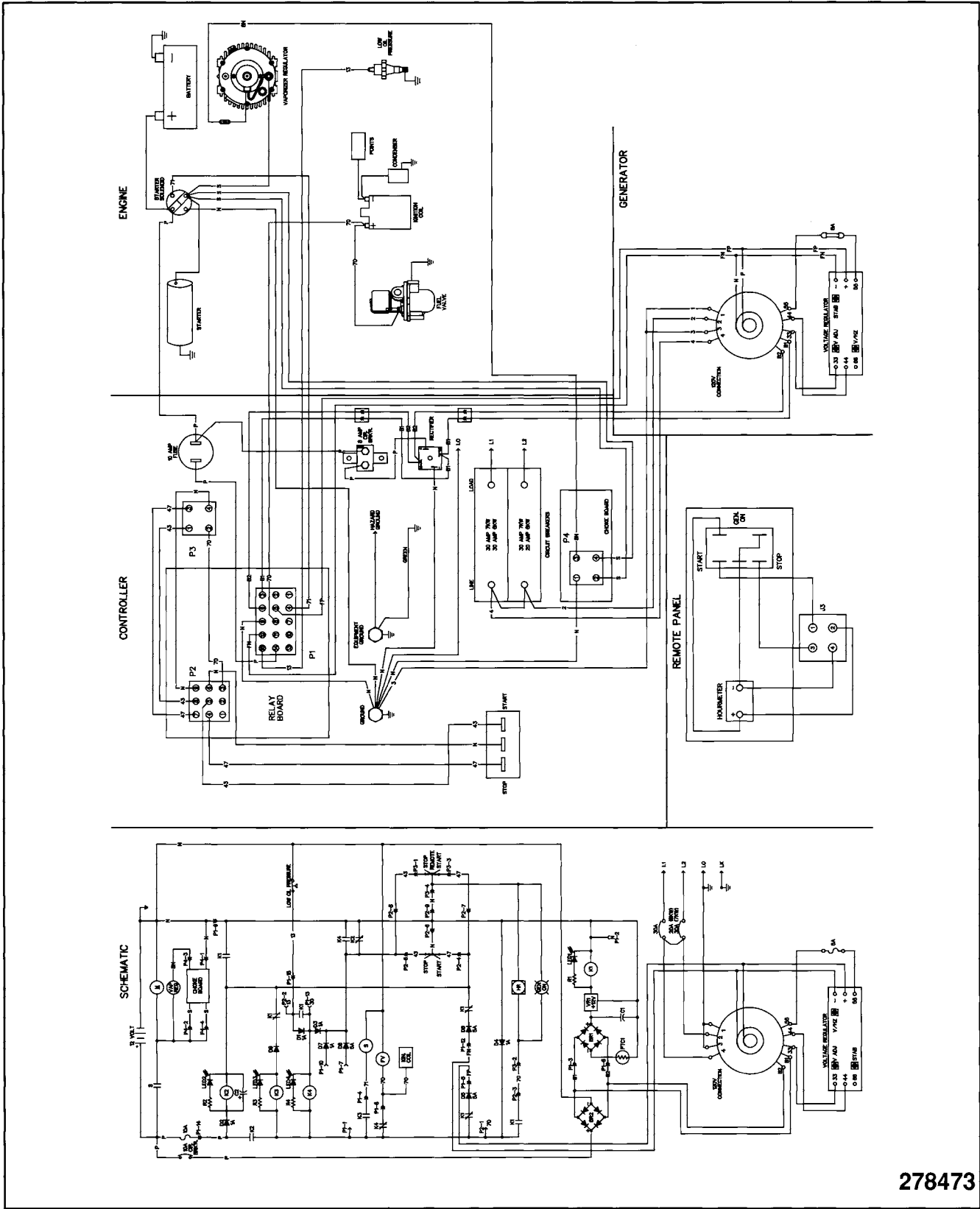
## Generator

<b>Problem</b>	<b>Possible Cause</b>	<b>Corrective Action</b>
<b>No AC output</b>	Circuit breaker in OFF position	Reset to ON position
	Circuit breaker tripping due to overload on generator set	Reduce load (see "Wattage Requirements")
	Short circuit in RV circuit causing RV breaker to trip	Reset — if it trips repeatedly, stop set and contact RV service center
	General malfunction such as faulty component or other internal fault	Contact Generator Service Dealer for repairs
<b>Low output or excessive drop in voltage</b>	Engine speed too low	Adjust governor
	Generator overloaded	Reduce load
<b>No battery charging output (if equipped)</b>	10 Amp. circuit breaker open	Allow circuit breaker to reset; if breaker "blows" again, contact Generator Service Dealer for repairs.



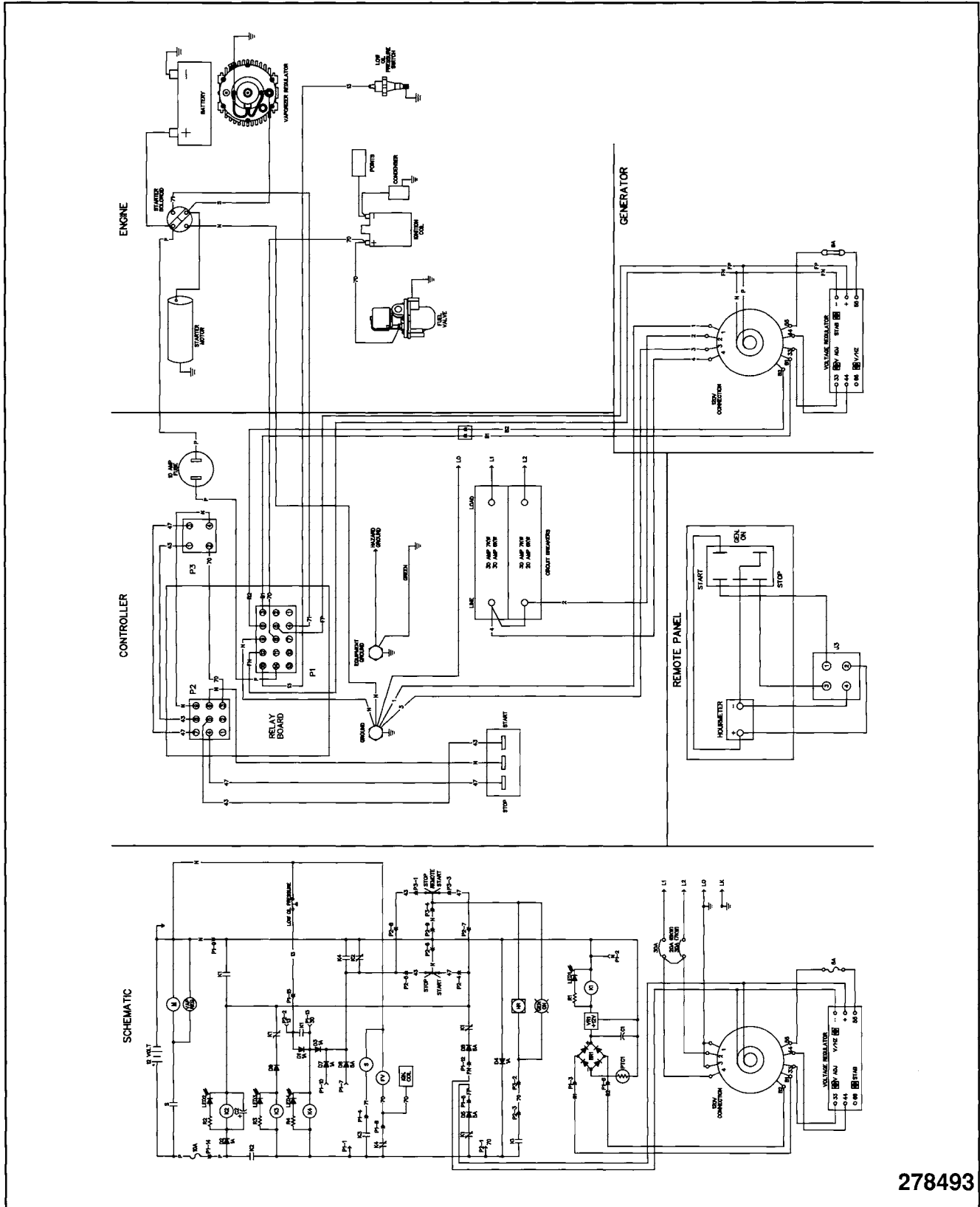
Wiring Diagram — 7CKM-RV Gasoline, 120 Volt

278356



278473

Wiring Diagram —7CKM-RV LP Gas, 120 Volt w/Battery Charging



278493

Wiring Diagram — 7CKM-RV LP Gas, 120 Volt (No Battery Charging)

## Storage Procedures

If your generator set is to be out of service for a considerable length of time, 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. Remove the spark plugs. Pour about 1 tablespoon of oil into each hole and crank the engine several times to lubricate the cylinders. Reinstall spark plugs.

Step 3. Gasoline-fueled generators - Drain the carburetor bowl (or run unit until empty). This step is done to prevent the gasoline from becoming "stale" which causes formation of gum. The bowl can be removed by unscrewing retaining bolt on bottom of bowl. Replace the bowl after draining the fuel. Use of a gas stabilizer for gasoline-fueled generators is permitted in lieu of draining the carburetor bowl; add the correct amount of gas stabilizer to the fuel and follow all recommendations of the gas stabilizer manufacturer.

LP gas-fueled generators - With the generator running, shut off LP gas fuel supply. Run generator set until set stops from lack of fuel.

Step 4. Gasoline-fueled generators only - On early models with round fuel pump (internal filter), drain the electric fuel pump by removing the pump cover. Clean the filter with solvent and wipe the magnet and internal surfaces with a clean rag before reassembling. On later models with rectangular solid state fuel pumps (external filter), remove the fuel line at the pump outlet to drain fuel line to carburetor. Reconnect fuel line. The pump itself requires no additional maintenance.

Step 5. Clean exterior surface of the generator set then spread a light film of oil over unpainted metallic surfaces which could rust or corrode.



# Installation

## Introduction

Use this section as a guide when installing a generator set in the 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) applicable articles of ANSI/NFPA 70, National Electrical Code. Generator set installation must also comply with state and local requirements.

### NOTE

**MARINE APPLICATION!** RV Generator sets do not comply with United States Coast Guard (USCG) requirements and must not be used for marine applications. Use only generator sets specified for marine use in marine installations. USCG regulation 33CFR183 requires a generator set to be “ignition protected” when used in a gasoline-fueled environment.

## General Information

This installation section covers the Kohler RV Generator Set Model listed in the chart. To determine which model is involved, check the model number found on the nameplate attached to the frame of the generator being installed. Follow all instructions to insure proper installation.

Model No.	Engine No.	Volts	Hz	kW	Phase	Amps
7CKM21-RV (Gasoline)	K582	120	60	7.0*	1	58*
7CKM22-RV (LP Gas)	K582	120	60	6.3	1	52.5

\*Some models are rated at 6 kW, 50 Amp.

## Features

All models feature Kohler designed and built 4-cycle air-cooled gasoline engines, rotating field Alternating Current generators, and Relay Controllers. Each generator is directly connected to the Kohler engine for permanent alignment. Permanent magnet type starting motors are used to crank the engine during start-up. Each Controller includes a START-STOP switch for test operating the set at the controller. The controller also has a keyed connector for connecting a wiring harness to a remote start-stop switch (usually located on the dashboard of the vehicle). All Kohler RV Sets are mounted on a steel drip pan-type mounting tray for quick installation to the frame of the vehicle. A full-length tray and an oversize tray are available for slide tray installation. Add oil as needed to the crankcase to bring the level up to the Full mark. Following are some general specifications.

<b>Specifications</b>	
Weight (approx.)	322 lbs. (145 kg)
Air Requirements — Total	675 CFM (19.1 CMM)
Fuel Inlet Connection Size — Gasoline	5/16 in. I.D. (7.9 mm)
Fuel Type — Model 7CKM21-RV	Unleaded Regular Gasoline
Fuel Type — Model 7CKM22-RV	LP Gas
Battery Voltage	12 Volts
Battery Recommendation (min.)	290 Cold Cranking Amps., 55 Amp. Hr.
Battery Ground	Negative

### Fuel Consumption

Load	25%	50%	75%	100%
Gasoline gph (Lph)	0.57 (2.2)	0.72 (2.7)	0.97 (3.7)	1.27 (4.8)
LP Gas gph (Lph)	0.70 (2.6)	0.79 (2.9)	0.96 (3.6)	1.1 (4.2)

### Installation Factors

Each generator set is shipped as a unit except for the optional exhaust system components which 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?

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

## **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.

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 2-5 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 12,000 BTU unit has, for example, lower starting requirements than a 10,000 BTU unit of another make. When only one unit is involved, there is usually no starting problem, provided of course, the lighting and appliance load is not too high when the unit is started.

The trend seems to be toward larger capacity air conditioners and the use of more than one unit in larger vehicles. Simultaneous starting of two units can present problems if the capacity is marginal. Because of the variation in starting characteristics of the various makes of air conditioners, no definite statements are made in this publication regarding multiple-motor starting capabilities of the mobile generator sets covered. Delayed starting or use of “easy starting” devices on air conditioner units should be considered whenever simultaneous starting of more than one motor is involved. The starting and running requirements of some motor loads common to mobile applications are listed in Table 2-1. Use this as a guide when selecting generator set capacity requirements involving motor loads. See Table 2-2 for generator set capabilities regarding air conditioners. Capabilities will vary according to “KILOWATT DERATING” following. For specific information regarding simultaneous starting of two or more motors, contact Kohler Co., Generator Division — Product Applications.

## 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 2-3.

Motor Requirements	1/4 HP	1/3 HP	1/2 HP	3/4 HP	1 HP	2 HP	3 HP
Starting (In-Rush)	750	1000	1500	2000	3300	4000	5000
Running Watts	350	400	600	750	1100	2000	3000

**Table 2-1. Motor Requirements**

Kohler Model	Wattage Capacity	Will Operate Air-Conditioner(s) of Size Indicated
7.0 kW Low Profile	7,000	Two 13,500 BTU
6.0 kW Low Profile	6,000	Two 13,500 BTU

**Table 2-2. Air Conditioner Ratings**

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

**Table 2-3. 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 operated at ambient temperature of 60°F (16°C). The kilowatts

of the generator set will decrease 3% for each 1000 feet (305 meters) above sea level, 2% (6 kW model 1%) for each 10°F (5.5°C) increase in ambient temperature above 60°F (16°C), and 11.1% when converted to LP fuel.

## Compartment Size

When planning compartment size requirements, allow the minimum clearances for cooling of the generator set as shown in Table 2-4.

### 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.

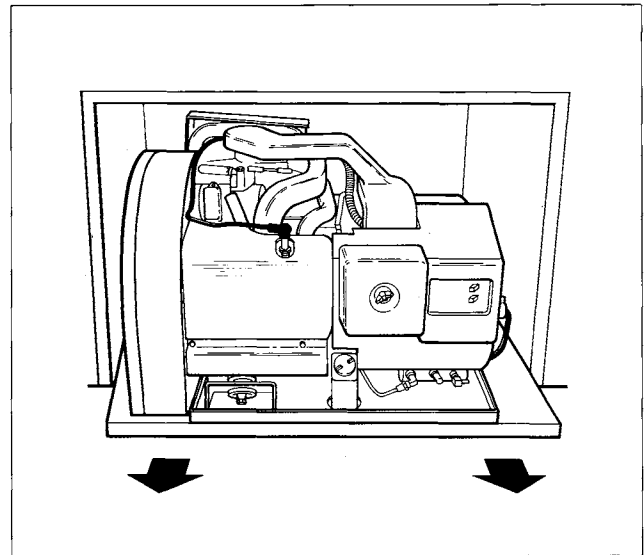
Front .....	1/2 in. (12.7 mm)
Side .....	1/2 in. (12.7 mm)
Top .....	1/2 in. (12.7 mm)
Rear .....	1-1/2 in. (38.1 mm)

**Table 2-4. Minimum Clearance Requirements**

To meet CSA standard, maintain a minimum clearance of 3" between exhaust piping and any combustible material in compartment or surrounding exhaust outlet in compartment floor.

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 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.

When designing the compartment, allow sufficient room for the set to be easily removed when major service is required. See Figure 2-1. 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.



**Figure 2-1. Slide Tray Feature for Complete Removal**

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.

### NOTE

If below floor installation is desired, an enclosure must be constructed around the generator set to protect electrical parts from road splash.

Line the compartment with a good sound deadening material. The material selected must be fireproof or highly resistant to fire. An available type of 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 have also been used successfully in mobile installations.

### Air Requirements

A fan on the rotor of the generator draws cooling air into the compartment through the generator cooling slots and expels it at the engine-generator adapter. The engine of the generator set features an air-vac reverse flow cooling system. Fins on the engine flywheel pull cooling air past the fins of the cylinder heads and the heated air is discharged downward and out of the compartment through the discharge chute. See Figure 2-2.

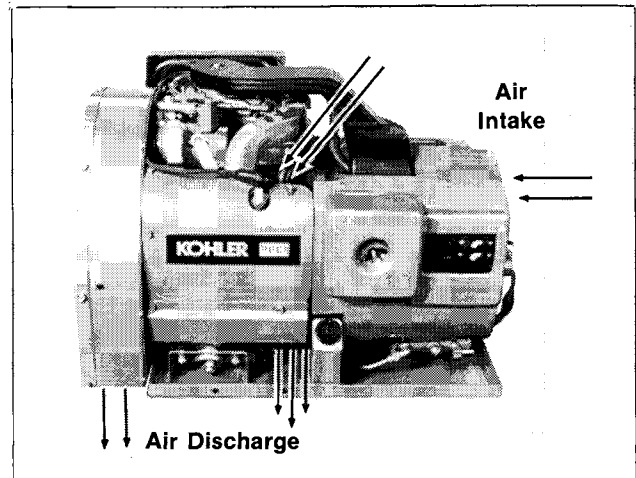


Figure 2-2. Cooling Air Circulation —  
7 kW "Low Profile"

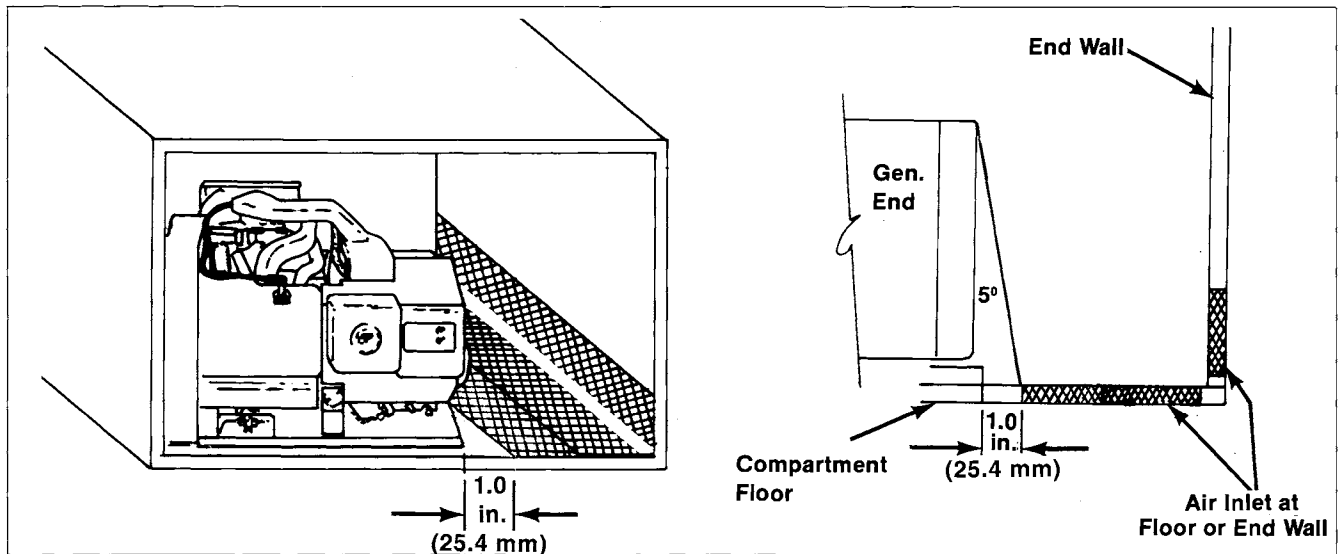
To prevent damage to the generator set from overheating, make sure the compartment openings are large enough to allow adequate circulation or cooling air. **The minimum free air opening in the compartment is 120 sq. in. (780 sq. cm.).** The free air opening may be located in the compartment door, floor, or end wall. See Figure 2-3 for position of the free air opening in the compartment floor or end wall. Position of the compartment door free air opening is shown in Figure 2-4.

If the air intake opening is located in the compartment floor or end wall, a space must remain between the generator end and the compartment air opening. The width of the space must be equal to a point on the compartment floor 5° from the top of the generator. (Typically, a distance of 1 in./25.4 mm on most 7CKM generator installations.) See Figure 2-3. A fireproof floor must also be installed between the mounting tray and enclosure walls. These precautions are necessary to prevent hot

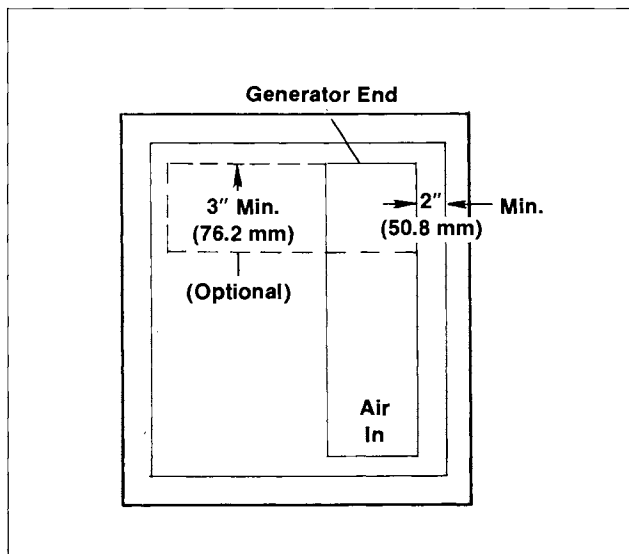
from leaving the generator compartment and igniting combustible material beneath the coach.

**NOTE**

Installation of a baffle beneath the engine air discharge is recommended to prevent expelled air from raising dust or ruining grass beneath the coach.



**Figure 2-3. Floor or End Wall Air Inlets**



**Figure 2-4. Air Inlet Positions for Compartment Door**

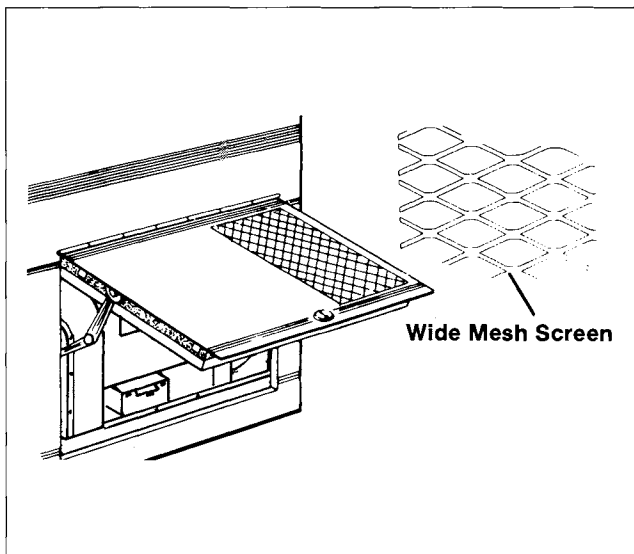
Remember, louvers, screens, and protective-decorative grill work definitely restrict the effective air flow. Even a simple, relatively open mesh screen as seen in Figure 2-5 will restrict air flow as much as 45%. The intake opening must be increased to compensate for such restrictions.

## Mounting

The generator set may be mounted by securing the generator tray directly to the compartment floor. If floor mounting is undesirable or impractical, full-length and oversize mounting trays are available through your Kohler Generator Dealer. These trays permit slide tray installation as shown in Figure 2-1. All installations require observance of minimum compartment clearances listed in Table 2-4.

### **⚠ CAUTION**

To avoid the possibility of igniting combustible material beneath the coach, the mounting tray must extend the full length and width of the enclosure. If a floor or end wall air inlet is used, a fireproof floor must be installed between mounting tray and enclosure walls.



**Figure 2-5. Inlet Screen/Louvers  
Restrict Air Flow**

### **⚠ CAUTION**

**OVERHEATING!** The screen position in relation to the generator end must be as shown in Figure 2-3 or 2-4 to prevent overheating.

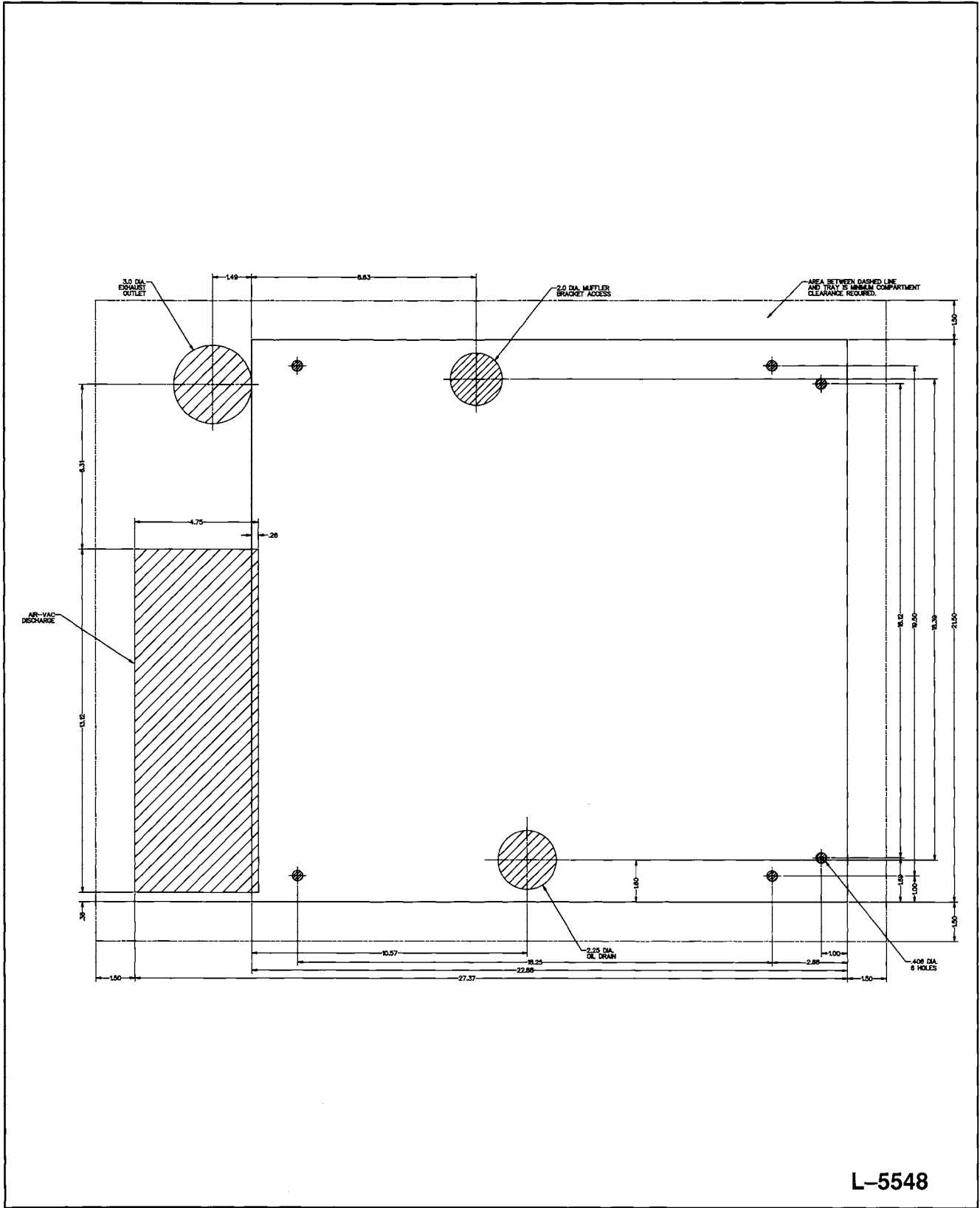
### **⚠ CAUTION**

If the generator set compartment is constructed with a floor below the set mounting tray, openings must be cut in the floor to allow cooling air discharge and oil drainage. Remaining floor should be closed off to prevent recirculation of hot air which could cause overheating of the generator set.

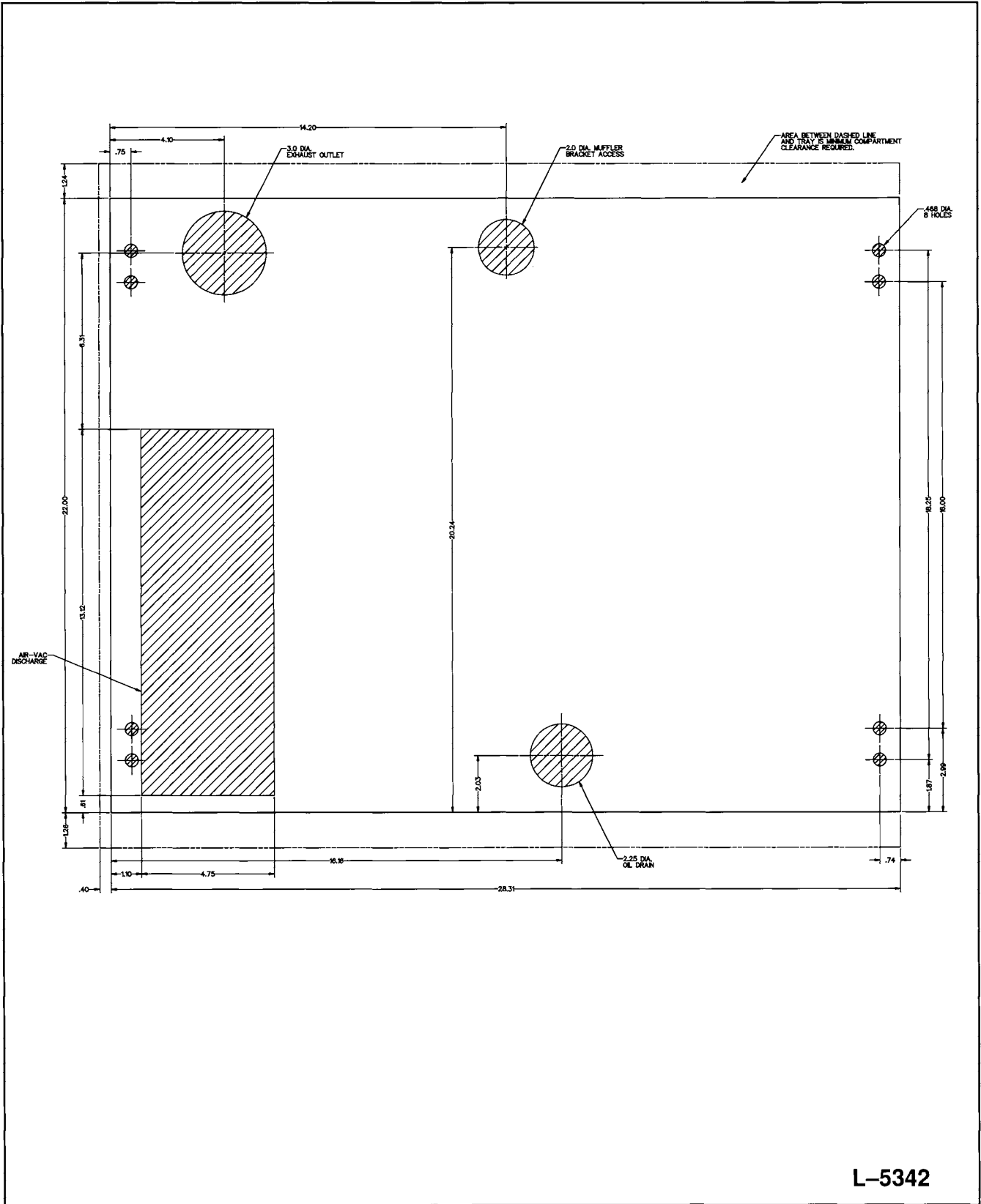
### **NOTE**

Installation of a baffle plate beneath the generator engine air discharge is recommended to prevent expelled air from raising dust or ruining grass beneath the coach.





**Figure 2-6. Floor Template - 7CKM-RV Standard Tray**



L-5342

Figure 2-7. Floor Template - 7CKM-RV Special Larger Tray

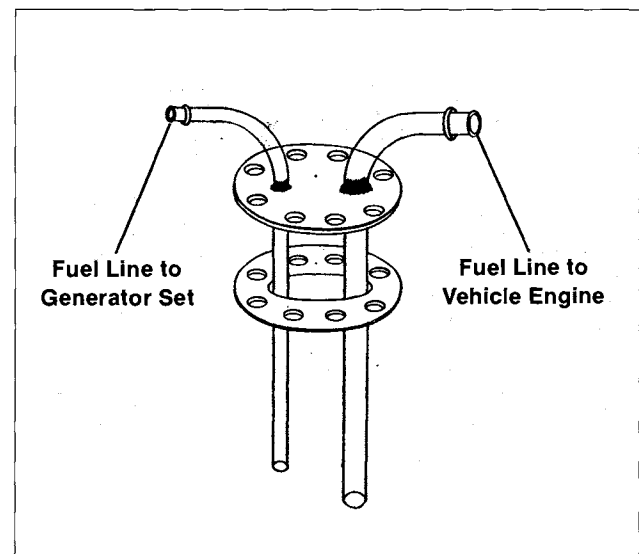
## Fuel System

### Gasoline

For best results, use only clean fresh, regular grade unleaded gasoline with a pump sticker octane rating of 86 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 from a common tank with a separate dip tube arrangement as shown in Figure 2-8. 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 2-8. Two Dip Tubes in Fuel Tank**

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.

**⚠ CAUTION**



**FIRE HAZARD!** Keep the compartment and generator set clean and free of debris and combustible materials to minimize chances of fire. An opening is provided in the mounting tray of each set as a safety feature to allow any fuel or oil that might possibly leak out of the system to drain out of the compartment—make sure this opening is not blocked in any way when the set is installed. If sub-flooring is used, cut a corresponding hole in the sub-flooring for this drain opening.

**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 two inch 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.

For LP gas system, use UL approved pipe joint sealing compound to prevent dangerous fuel leaks. Use a sealing compound

approved for use with LP Gas. Apply UL approved sealing compound at all fuel line pipe joints.

After all the LP connections have been completed, the entire system shall be test pressurized to 6-8 ounces (10-14 inches water column). Test the connections for leakage with soapy water or bubble solution. Do not use solutions that contain ammonia or chlorine for soap will not bubble for an accurate leakage test.

The gas and supply pressure should not exceed six ounces. To check inlet pressure, remove plug on fuel inlet for gas regulator. Insert ounce pressure gauge or manometer. Adjust operating pressure to 4-6 ounces or 7-11" water column; inlet pressure is adjusted on primary regulator.

**⚠ CAUTION**



**EXPLOSION!** Fuel leakage can cause an explosion. To prevent fuel leakage, the fuel system must be checked for leakage using a soap-water solution. Do not use solutions that contain ammonia or chlorine, for soap will not bubble for an accurate leakage test.

**NOTE**

**PRESSURIZATION!** After all LP-Gas connections have been completed, the entire system shall be test pressurized to 6-8 ounces (10-14 inches water column).

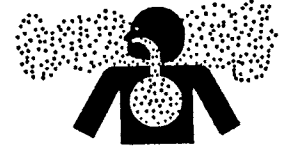
## Exhaust Systems

The 7CKM “Low Profile” model has four exhaust kits which include spark arrestor muffler and mounting hardware. See Figure 2-9. Two versions are designed for installation on vehicles with the compartment located at floor level while the others are intended for below floor installation. These kits allow the exhaust pipe to be routed to either the curb side or street side of the vehicle. Consult the appropriate installation drawing for specific mounting dimensions.

Because the length varies with most installations, a tail pipe is not furnished with the kits. A tail pipe must, however, be installed to direct the exhaust gases beyond the perimeter of the vehicle. Use a tail pipe with as few gradual bends as possible to avoid excessive back pressure and face tail pipe away from normal air stream. To meet CSA standard, maintain a minimum clearance of 3” between exhaust piping and any com-

bustible material in compartment or surrounding exhaust outlet in compartment floor.

**⚠ DANGER**



**CARBON MONOXIDE!** When installing exhaust system, position tail pipe end so that discharged exhaust gases may not be drawn into vehicle interior through windows, doors, air conditioners, etc. Do not use flexible tail piping as this type could crack or break and allow lethal exhaust fumes to enter the vehicle.

### NOTE

Make sure exhaust system components are positioned well away from the drain opening in the bottom of the mounting tray. Also make sure the components are not blocking access to the oil drain plug.

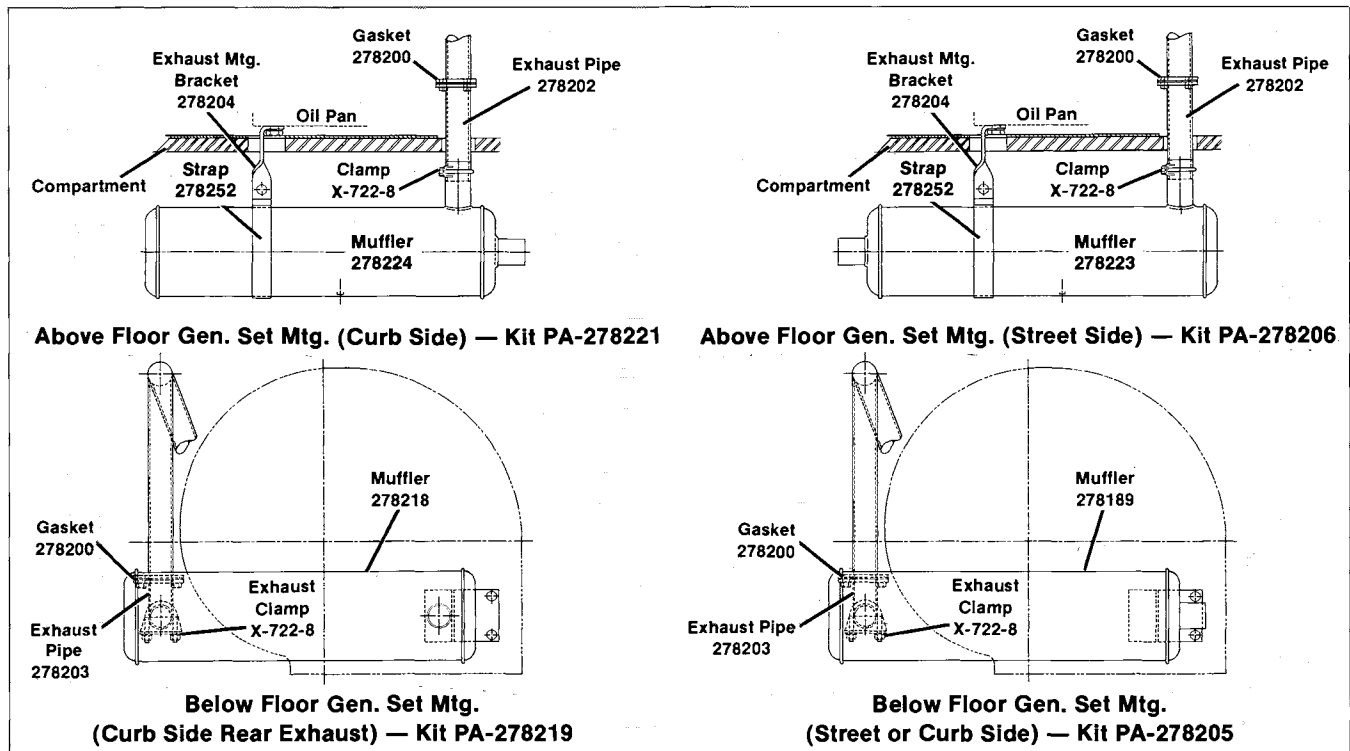


Figure 2-9. Exhaust Kits

## Electrical Connections

Battery, load lead, and remote switch 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 by 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" (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 fill tube. 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 separate 12-Volt battery is recommended for the generator set. With a separate battery, cables can be kept short which eliminates the problem of excessive voltage drop through long cables. See Table 2-5 for lengths and sizes. Refer to Figure 2-10 (View A) for cable connections — note that a grounding strap must be connected between the ground lug on the generator set and frame of the vehicle with this arrangement.

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

**Table 2-5. Battery Cable Size**

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 2-10 (View B).

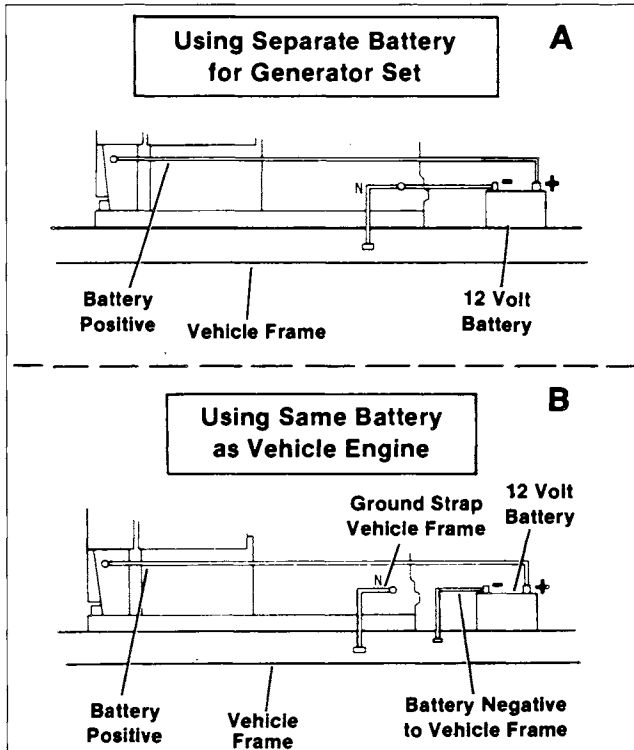


Figure 2-10. Battery Connection Details

**⚠ DANGER**



**EXPLOSIVE BATTERY GASES!** The gases generated by a battery being charged are highly explosive. Do not smoke or permit flame or spark to occur near a battery at any time, particularly when it is being charged. Any compartment containing batteries must be well ventilated to prevent accumulation of explosive gases. Do not mount battery in generator compartment.

## AC Load Lead Connections

Each set has four color-coded load leads and a connector for attaching flexible conduit from the generator end bracket to the load terminal junction box typically installed in the compartment. The black leads (L1 and L2) are hot, the gray lead (L0) is neutral, and the green lead is the hazard ground.

### NOTE

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

Figure 2-11 represents position and dimensions for typical junction box installation. A junction box should be installed to make it accessible for inspection and service.

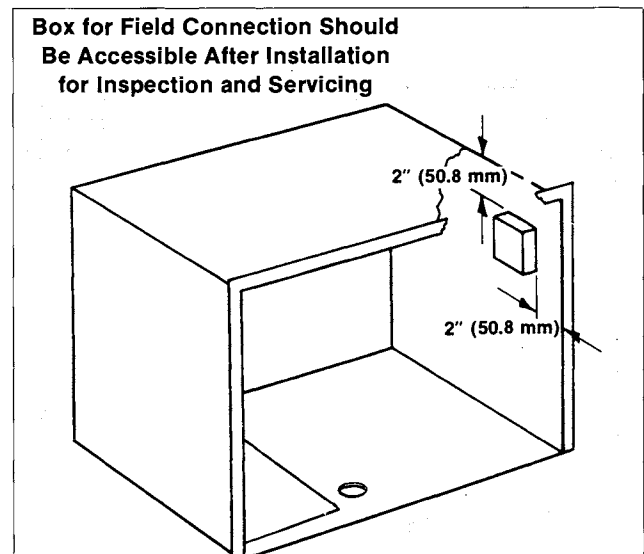
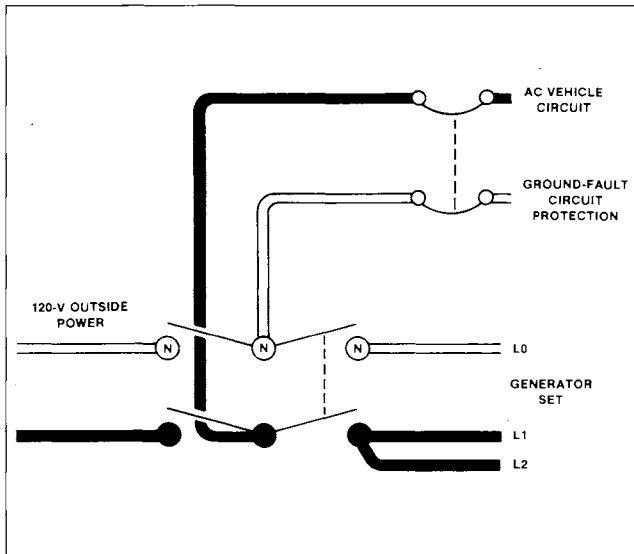


Figure 2-11. RV Junction Box

The AC load lead L0 (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 (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. See Figure 2-12.



**Figure 2-12. Transfer Switch Connection  
2-Wire AC Circuit**

**⚠ CAUTION**

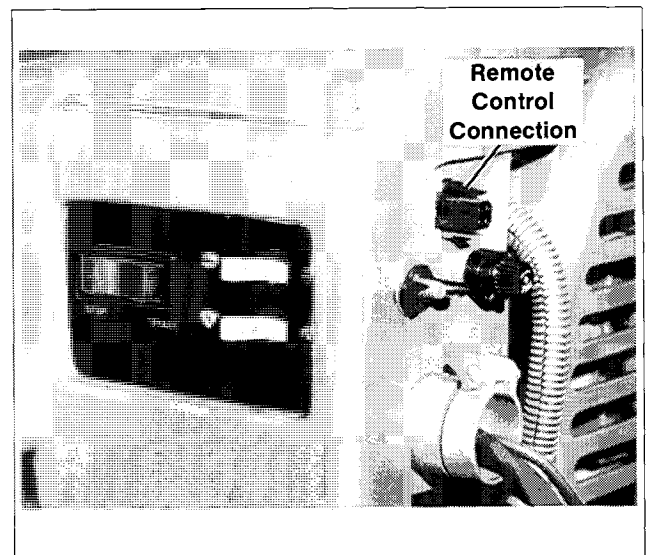
A double-pole, double-throw transfer switch, rated for the calculated load of the RV, must be used to transfer the load from one source to the other. A ground-fault circuit interrupter should be installed in the wiring system to protect all branch circuits.

**NOTE**

The AC load circuit of the generator set is protected by a circuit breaker(s) in the event of an overload or short circuit.

**Remote Switch Connection**

Kohler offers a remote switch panel for mounting on the dashboard or elsewhere in the vehicle. It measures 2 in. x 4 in. (51 mm x 103 mm) and requires a cutout of 1-3/4 in. x 3-1/4 in. (44 mm x 83 mm). The panel includes start-stop switch, generator ON light, and a digital hourmeter. Kohler also offers wiring harnesses of different lengths with keyed plugs or pigtails for quick connection between the controller on the set (Figure 2-13) and the remote switch panel in the vehicle. The wiring diagram shown in Figure 2-14 may be useful if the installer elects to use just a start-stop switch or separate lights and hourmeter.



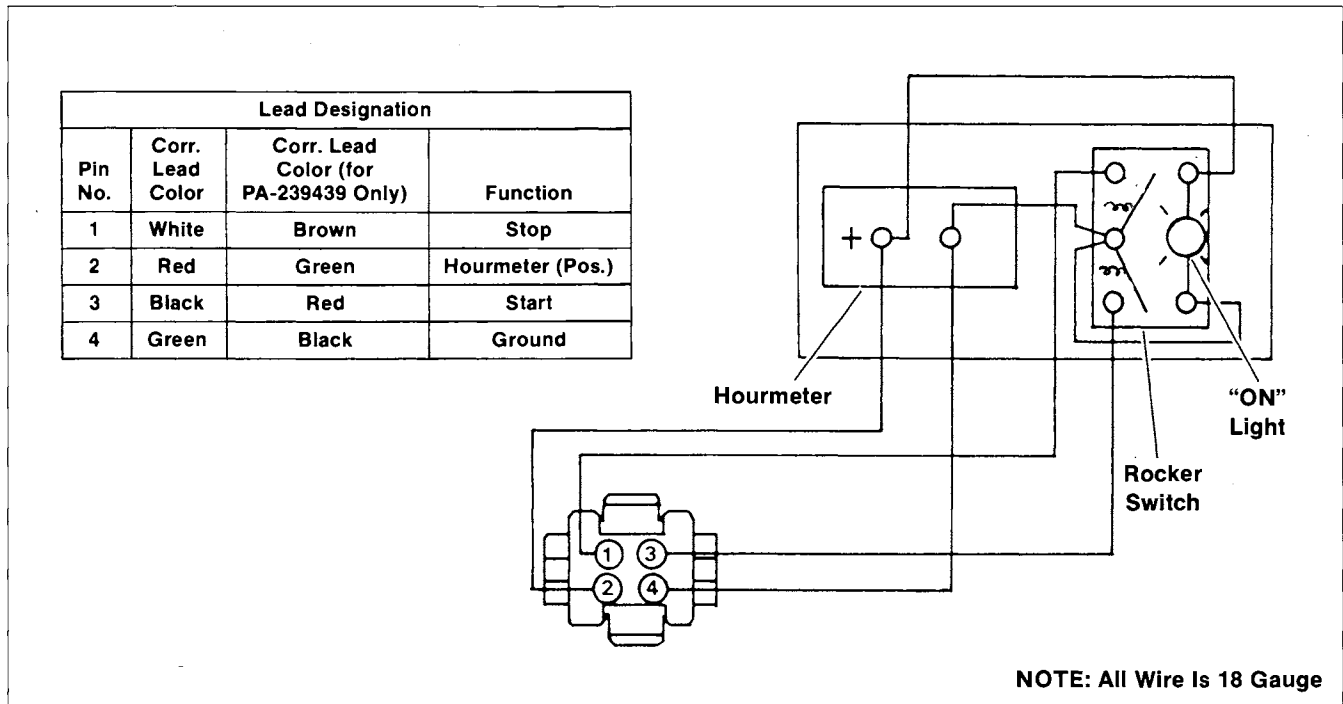
**Figure 2-13. Controller — Remote  
Connection**



**Remote Switch Assembly  
Digital Hourmeter  
PAA-239419**

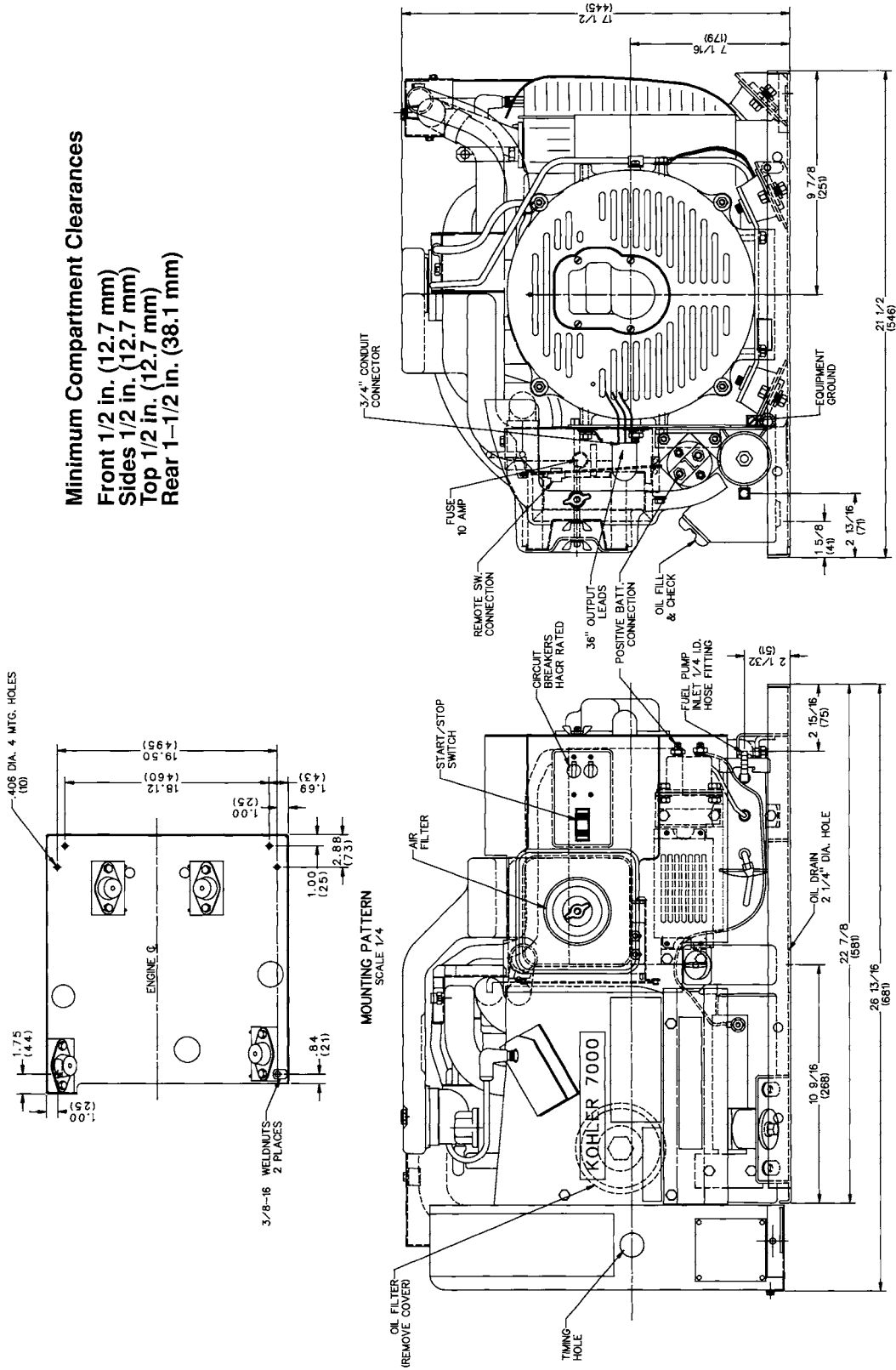
**Remote Switch Harnesses**

Part No.	Length	Connectors
PA-239412	30 ft. (9.1 m)	Both ends
PA-239413	40 ft. (12.2 m)	Both ends
PA-239414	15 ft. (4.6 m)	Both ends
PA-239430	1 ft. (.3 m)	One end
PA-239433	3 ft. (.9 m)	Winnebago Plug
PA-239436	3 ft. (.9 m)	One end
PA-239439	5 ft. (1.5 m)	One end (Shaum)
PA-278371	1 ft. (.3 m)	6-Pin, In-line Plug
PA-278372	3 ft. (.9 m)	6-Pin, In-line Plug

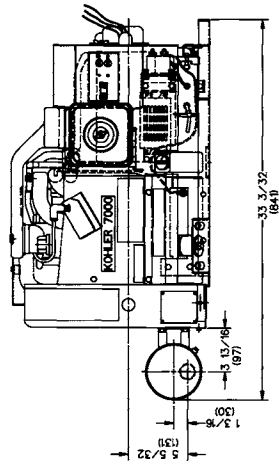


**Figure 2-14. Remote Control Panel Wiring**

Standard Tray – Round Fuel Pump

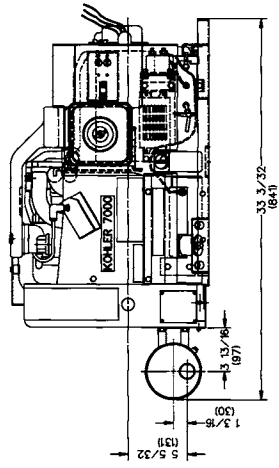
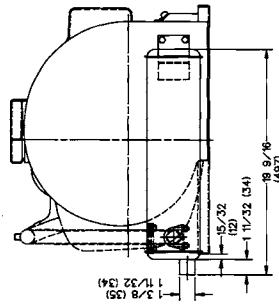


DIMENSIONS IN ( ) ARE MILLIMETRE EQUIVALENT



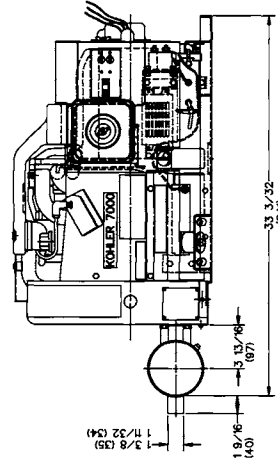
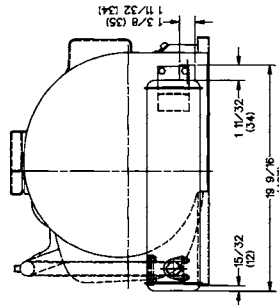
NOTE 278407

STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH



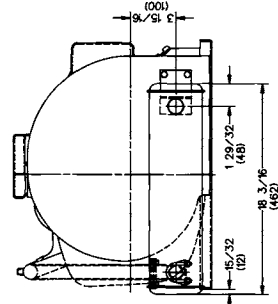
NOTE 278205

STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH

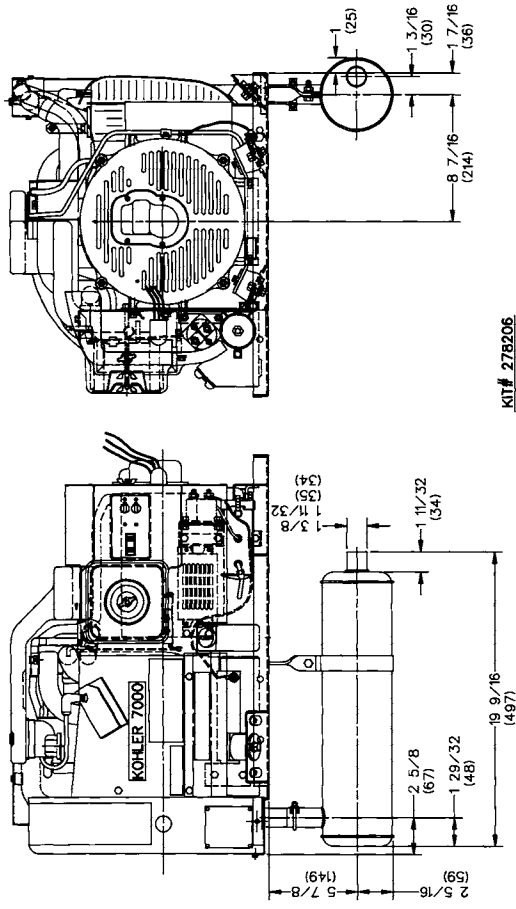


NOTE 278219

CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH

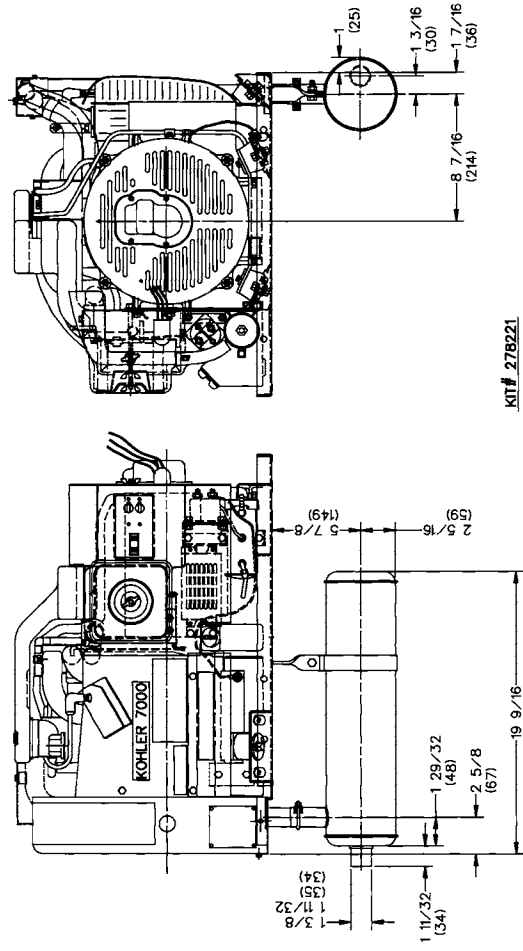


Exhaust Systems – Models w/Standard Tray and Round Fuel Pump



KIT# 278206

STREET SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH WHEN GEN. SET IS  
MOUNTED ABOVE THE FLOOR.



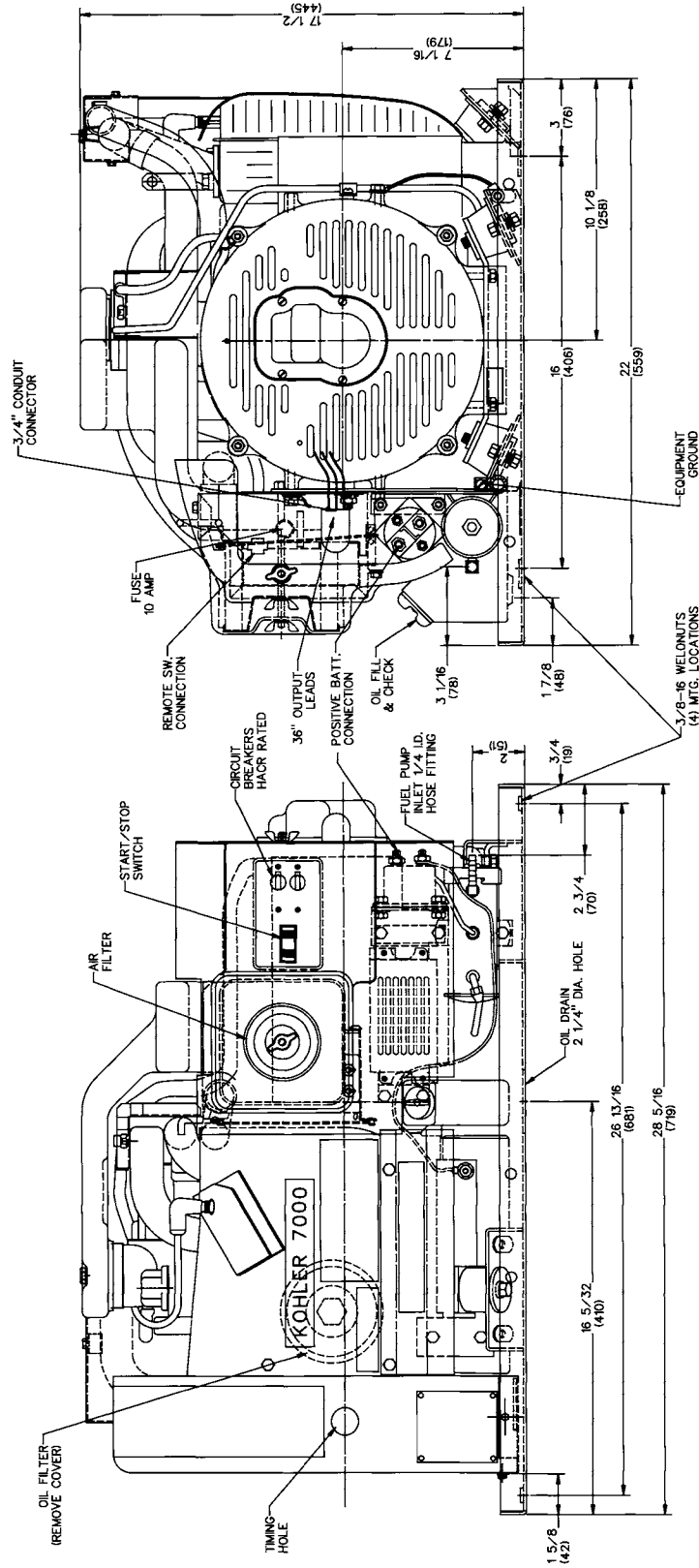
KIT# 278221

CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH WHEN GEN. SET IS  
MOUNTED ABOVE THE FLOOR.

Exhaust Systems – Models with Standard Tray and Round Fuel Pump

**Minimum Compartment Clearances**

- Front 1/2 in. (12.7 mm)
- Sides 1/2 in. (12.7 mm)
- Top 1/2 in. (12.7 mm)
- Rear 1-1/2 in. (38.1 mm)

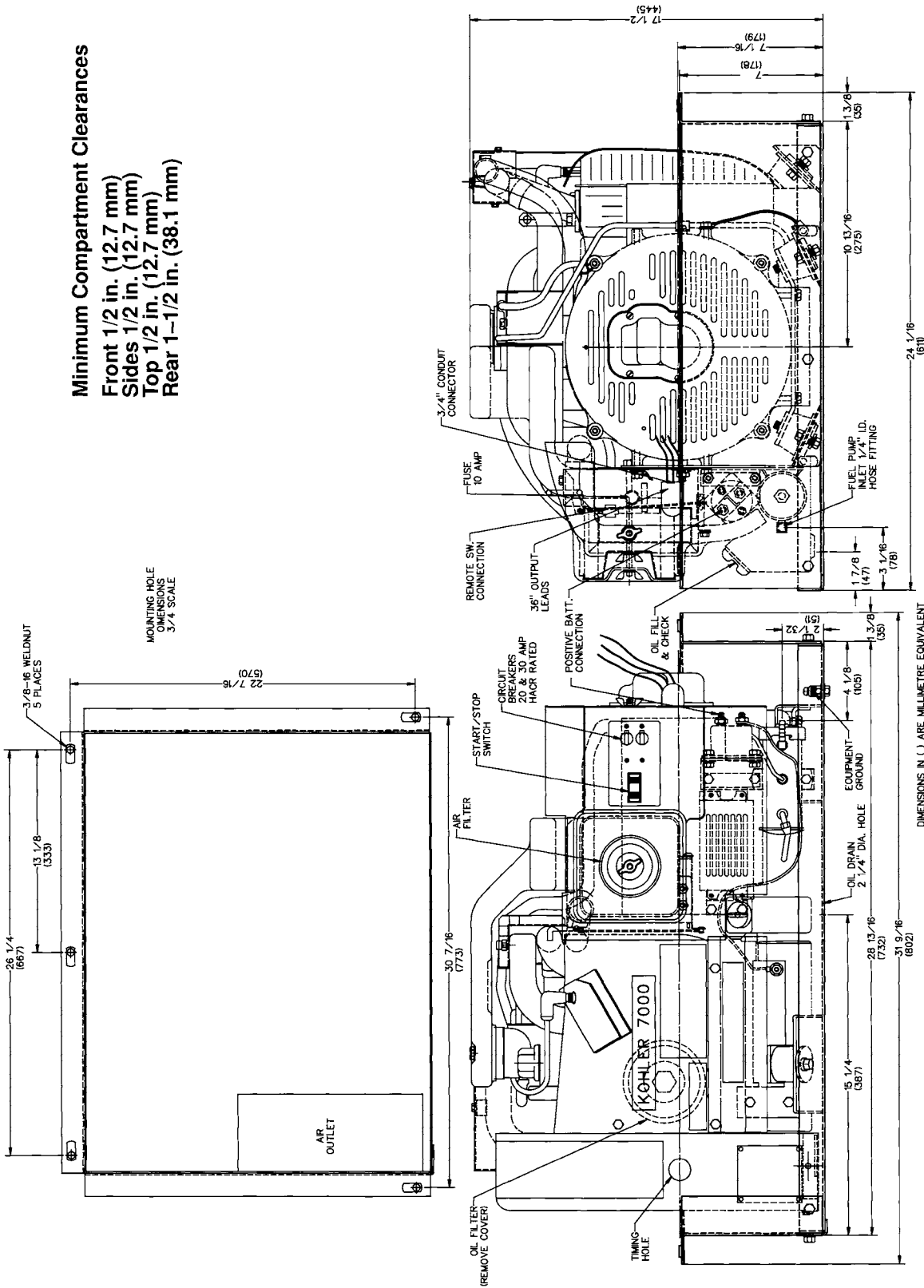


DIMENSIONS IN ( ) ARE MILLIMETRE EQUIVALENT  
SEE ADV-5586 FOR MUFFLER MOUNTING

**Large Tray (Shaum) with Round Fuel Pump**

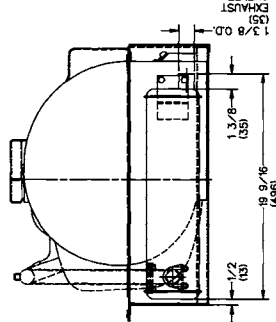
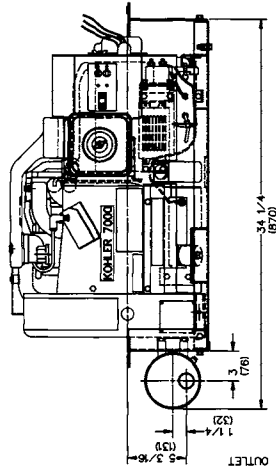
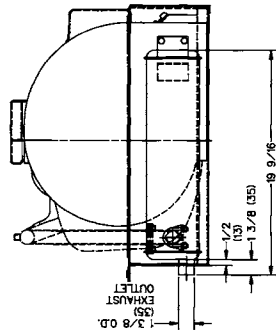
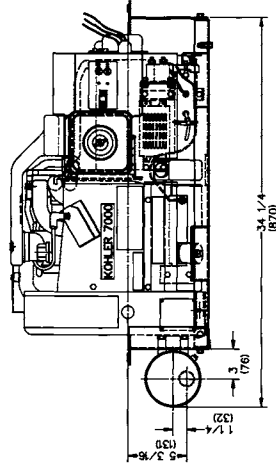
**Minimum Compartment Clearances**

- Front 1 1/2 in. (12.7 mm)
- Sides 1 1/2 in. (12.7 mm)
- Top 1 1/2 in. (12.7 mm)
- Rear 1-1/2 in. (38.1 mm)



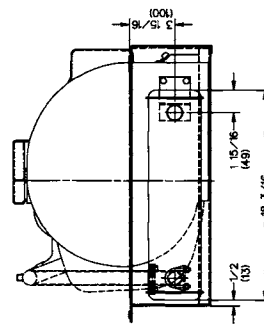
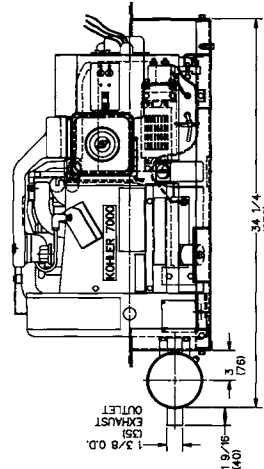
**ADV-5588**

**Winnebago Tray with Round Fuel Pump**



KIT# 276407  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.

KIT# 276205  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.

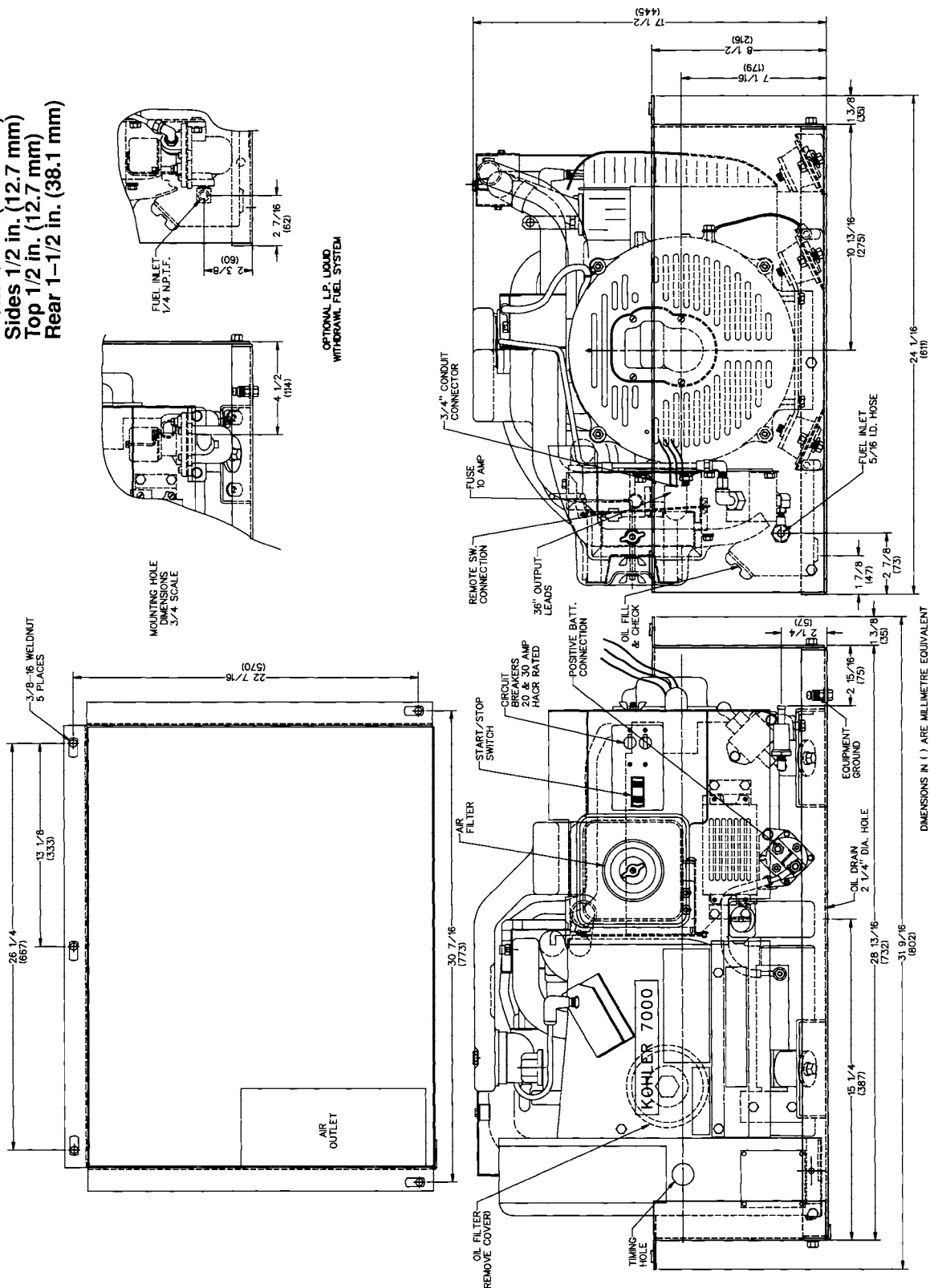


KIT# 276209  
CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH.

Exhaust Systems – Models with Winnebago Tray and Round Fuel Pump

**Minimum Compartment Clearances**

- Front 1/2 in. (12.7 mm)
- Sides 1/2 in. (12.7 mm)
- Top 1/2 in. (12.7 mm)
- Rear 1-1/2 in. (38.1 mm)

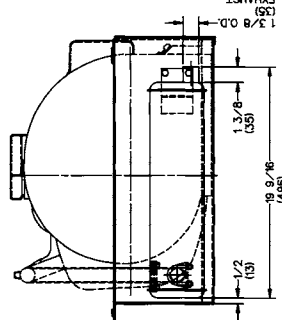
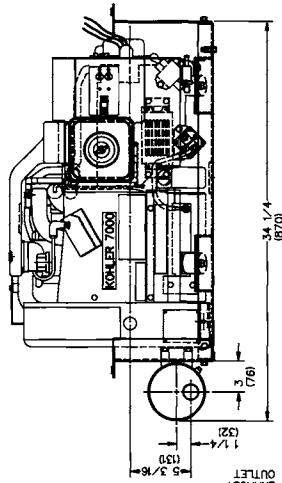
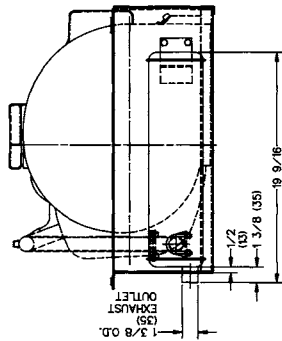
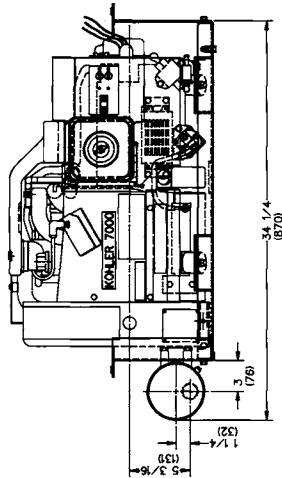


DIMENSIONS IN ( ) ARE MILLIMETRE EQUIVALENT

**ADV-5592**

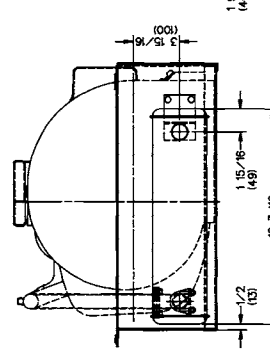
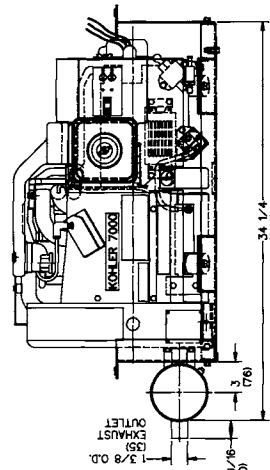
**Winnebago Tray – LP Models and Gasoline Models with Rectangular Fuel Pump**





KIT # 278407  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.

KIT # 278205  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.

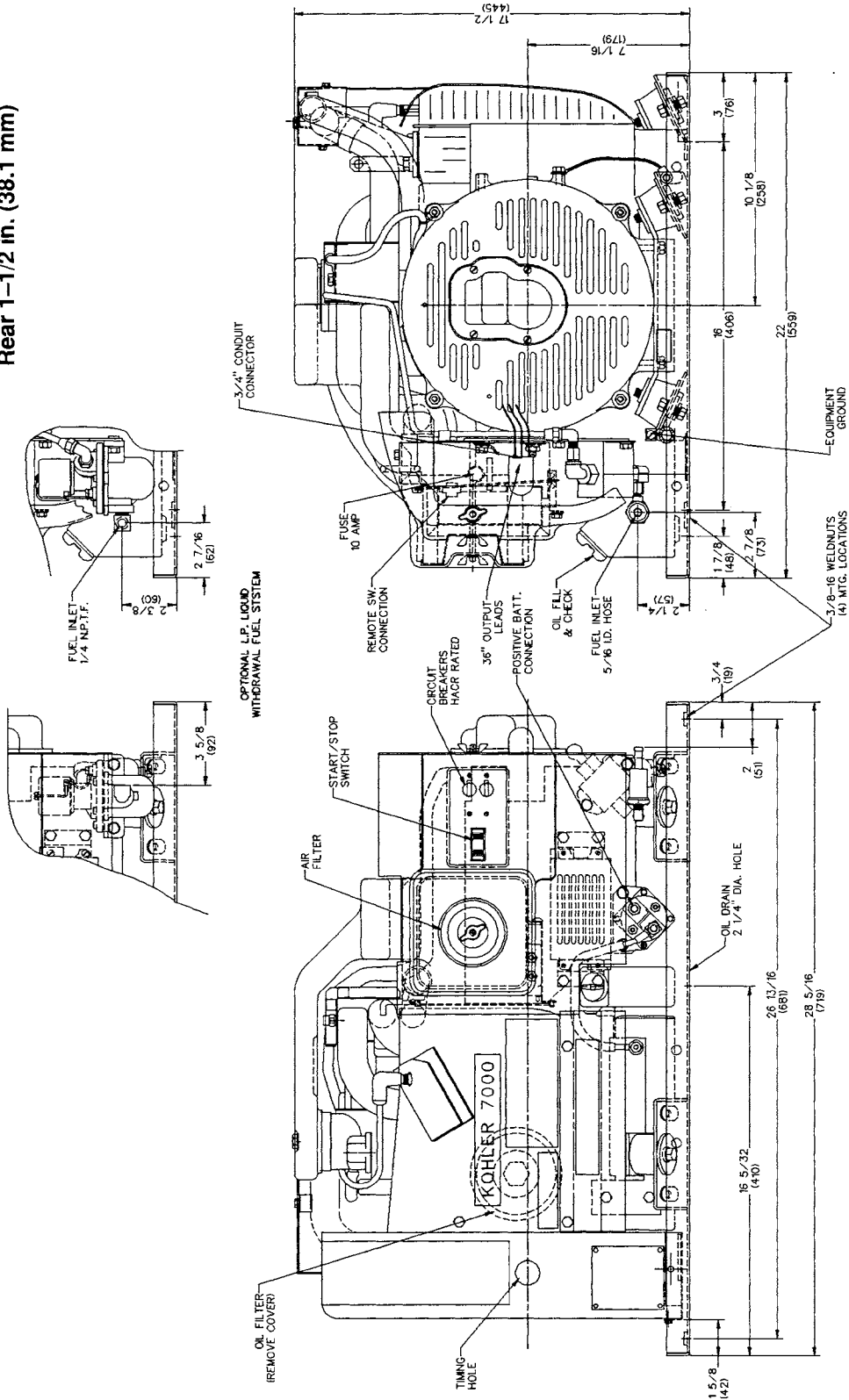


KIT # 278209  
CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH.

Exhaust Systems – Models w/Winnebago Tray – LP and Gasoline (Rectang. Fuel Pump)

**Minimum Compartment Clearances**

- Front 1/2 in. (12.7 mm)
- Sides 1/2 in. (12.7 mm)
- Top 1/2 in. (12.7 mm)
- Rear 1-1/2 in. (38.1 mm)



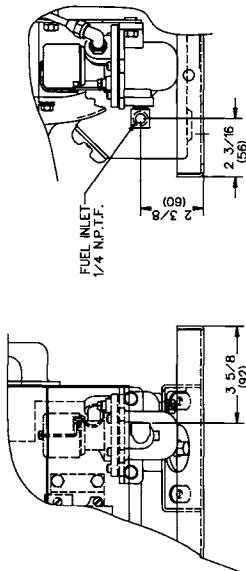
DIMENSIONS IN ( ) ARE MILLIMETRE EQUIVALENT  
SEE ADV-5594 FOR MUFFLER MOUNTING

**ADV-5593**

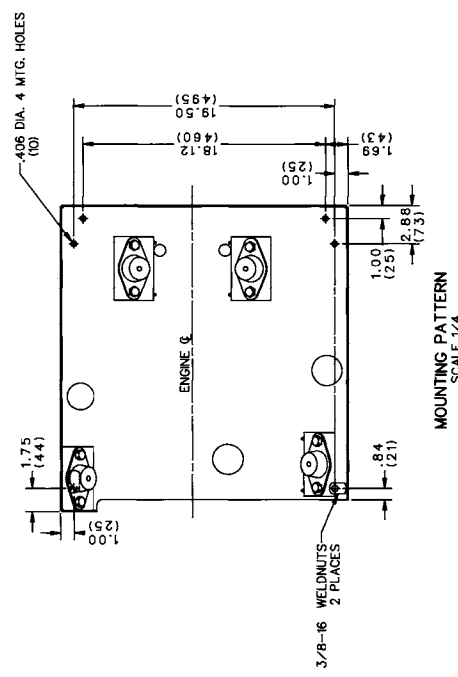
**Large Tray (Fleetwood/Shaum) LP and Gasoline (Rectangular Fuel Pump)**

**Minimum Compartment Clearances**

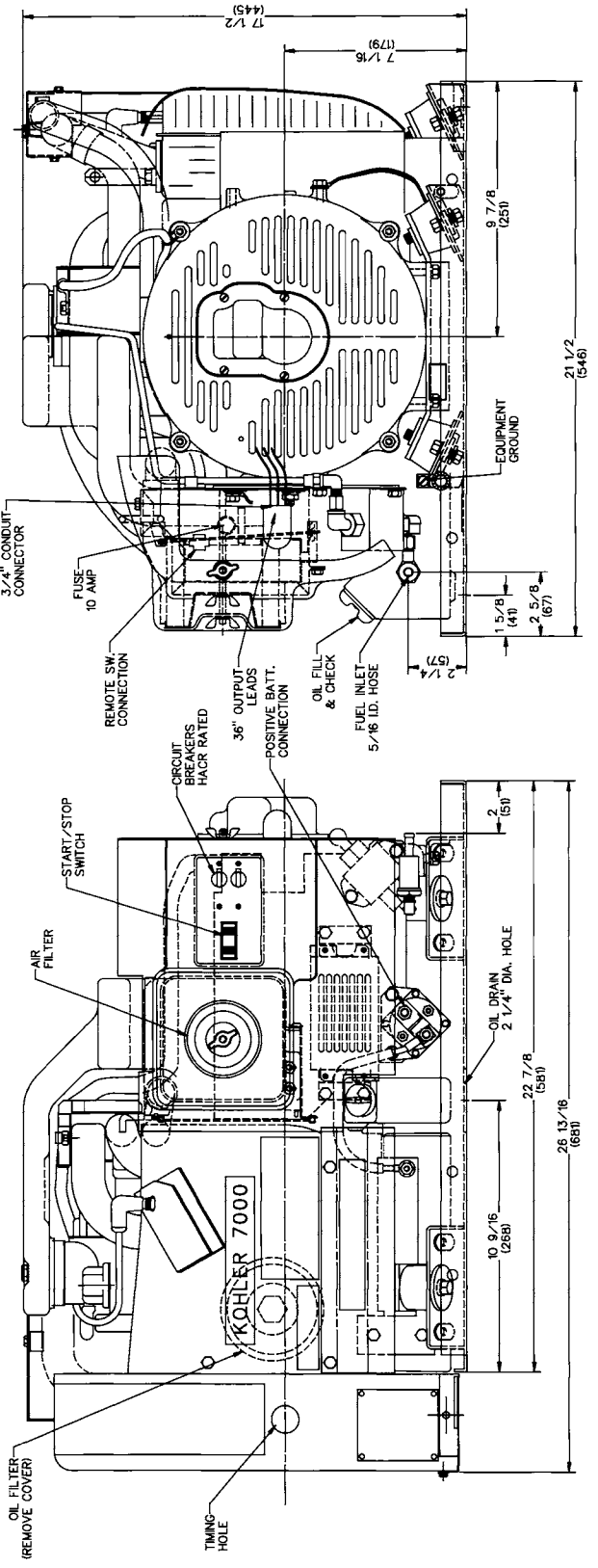
- Front 1/2 in. (12.7 mm)
- Sides 1/2 in. (12.7 mm)
- Top 1/2 in. (12.7 mm)
- Rear 1-1/2 in. (38.1 mm)



OPTIONAL L.P. LIQUID WITHDRAWAL FUEL SYSTEM

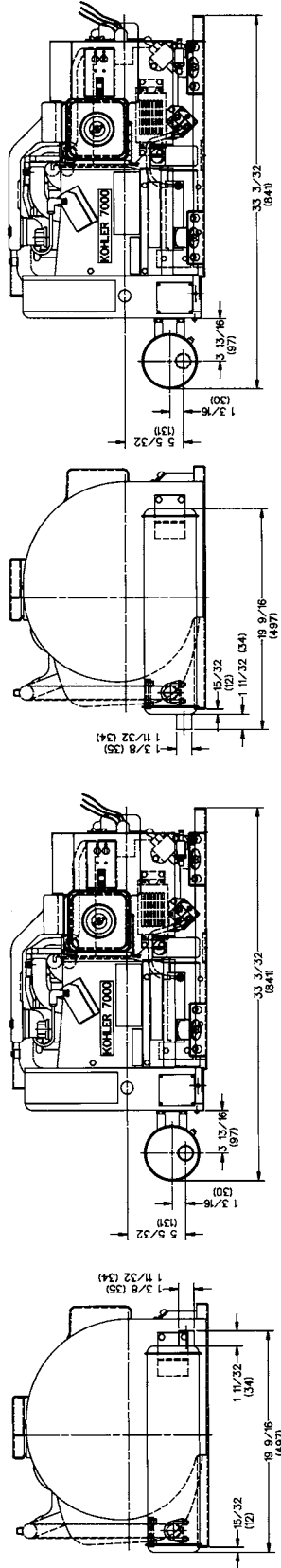


MOUNTING PATTERN SCALE 1/4



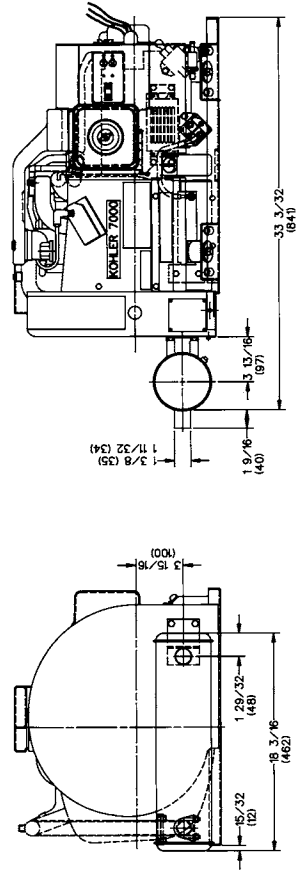
DIMENSIONS IN ( ) ARE MILLIMETRE EQUIVALENT

**Standard Tray (Fleetwood) – LP and Gasoline (Rectangular Fuel Pump)**



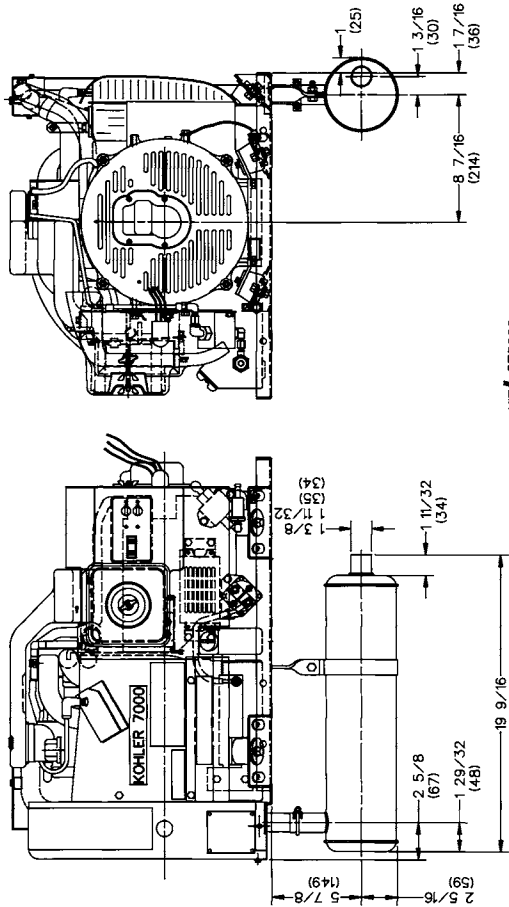
KIT# 278407  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.

KIT# 278205  
STREET OR CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
SIDE OF COACH.



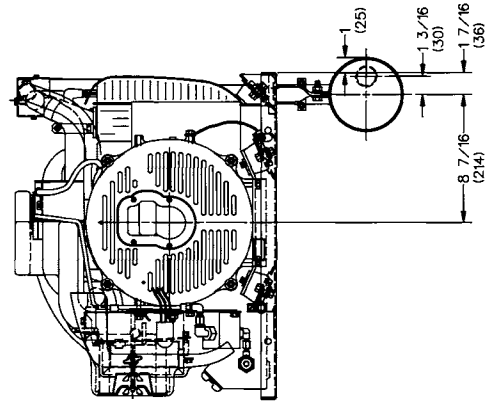
KIT# 278218  
CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH.

Exhaust Systems – Models w/Standard Tray – LP and Gasoline (Rectang. Fuel Pump)



KIT# 278206

STREET SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH WHEN GEN. SET IS  
MOUNTED ABOVE THE FLOOR.



KIT# 278221

CURB SIDE APPLICATIONS  
WITH EXHAUST EXTENDING TOWARDS  
REAR OF COACH WHEN GEN. SET IS  
MOUNTED ABOVE THE FLOOR.

Exhaust Systems – Models w/Standard Tray – LP and Gasoline (Rectang. Fuel Pump)



# 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.

## 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.

Part Description	Kohler Part No.
Engine	
Gasket, Cylinder Head	48 052 01
Element, Air Cleaner	277759
Filter, Oil	52 050 02
Ignition System	
Breaker Points (Set)	48 150 03
Condenser (with Screw)	230722
Gasket, Breaker Cover	52 041 11
Plug, Spark	Champion RH10
Controller	
Fuse, 10-A	223316











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GENERATORS  
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