Operator Manual

Performance you rely on.™

50 Hz Portable Generator Set

EGMBT / P4500
EGMBU / P5500e

English 04–2008 914–0114 (Issue 2)

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P4500 and P5000e Portable Generator Sets

⚠ WARNING

Gasoline and its vapor are flammable and explosive.

- Keep gasoline away from heat, sparks, and flame sources.
- Stop and cool unit 15 minutes before refueling.
- Refuel carefully and only outdoors on level ground.
- Fuel can leak from fuel cap vent.
  - ◇ Do not overfill.
  - ◇ Do not tip unit more than 15° (6.9 inches).
  - ◇ Cool unit and drain fuel before transporting.
- Wipe up fuel leaks immediately.

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SAFETY PRECAUTIONS

Thoroughly read the OPERATOR'S MANUAL before operating the generator set. Safe operation and top performance can only be attained when equipment is operated and maintained properly.

The following symbols, found throughout this manual, alert you to potentially dangerous conditions to operators, service personnel and equipment.

⚠ DANGER ***This symbol alerts you to an immediate hazard that will result in severe personal injury or death.***

⚠ WARNING ***This symbol alerts you to a hazard or unsafe practice that can result in severe personal injury or death.***

⚠ CAUTION ***This symbol alerts you to a hazard or unsafe practice that can result in personal injury or damage to equipment or property.***

Electricity, fuel, exhaust, moving parts and batteries present hazards against which precautions must to taken to prevent severe personal injury or death.

Exhaust Gas Is Deadly

- Operate the generator set outdoors only. Stay away from the exhaust outlet.
- Make sure generator set exhaust will not enter windows, doors, vents or air intakes of adjacent buildings, vehicles or boats.
- NEVER USE THE GENERTOR SET INSIDE a home, garage, crawl space, barn, shed, cabin, boat, boat house, RV or tent, or in a confined outdoor space such as an alley, ditch, parking garage or courtyard, or in any other space where exhaust can accumulate. Note that HAZARDOUS CARBON MONOXIDE LEVELS FROM ENGINE EXHAUST CAN ACCUMULATE INDOORS EVEN WHEN ALL WINDOWS AND DOORS ARE OPEN AND FANS ARE RUNNING.

Gasoline is Flammable / Explosive

- Refuel the generator set outdoors only.
- Static electric sparks caused by fuel flowing through a service station pump nozzle can ignite gasoline. Never fill the generator set with a service station pump nozzle. Instead, fill a safety tank sitting on the ground and then slowly transfer fuel to the generator set from the safety tank.
- DO NOT fill fuel tanks while the engine is running. A hot engine can ignite the fuel.
- To prevent fire due to fuel leakage, always close the fuel valve and let the generator set cool before transporting it or storing it in a confined space.
- DO NOT SMOKE OR ALLOW AN OPEN FLAME near the generator set. Keep flames, sparks, electrical switches, pilot lights, electrical arcs, arc-producing equipment and all other sources of ignition well away.

Generator Voltage is Deadly

- DO NOT CONNECT THE GENERATOR SET DIRECTLY TO ANY BUILDING ELECTRICAL SYSTEM. Back-feed could cause electrocution of utility line workers and damage to equipment. An approved switching device must be used to prevent interconnections. A trained and experienced electrician must make electricial connections when the generator set is used for emergency power.
- Make sure clothing, shoes and skin are dry when handling electrical equipment.
- Never operate the generator set in rain or snow or when it is sitting on wet ground.

Moving Parts Can Cause Severe Personal Injury or Death

- Before performing any maintenance on the generator set, disconnect the spark plug wire and the negative (**–**) cable of the battery to prevent accidental starting.
- Always keep hands away from moving parts.

- Do not wear loose clothing or jewelry while servicing the generator set. Loose clothing and jewelry can become caught in moving parts. Jewelry can short out electrical contacts causing sparks, flame and electrical shock.
- Make sure that fasteners and clamps on the generator set are tight. Keep guards in position over fans, rotors, etc.

Battery Gases are explosive

- Wear safety glasses when servicing batteries.
- Do not smoke.
- To reduce arcing when disconnecting or reconnecting battery cables, always disconnect the negative (**–**) cable of the battery first and reconnect it last.

General Precautions

- Keep children away from the generator set.
- Wear hearing protection when near an operating generator set.
- Keep a multi-class ABC fire extinguisher readily at hand. Class A fires involve ordinary combustible materials such as wood and cloth. Class B fires involve combustible and flammable liquids and gaseous fuels. Class C fires involve live electrical equipment. (ref. NFPA No. 10)
- Benzene and lead may be found in gasoline and have been identified by some state and federal agencies as causing cancer or reproductive toxicity. Do not ingest, inhale or contact gasoline.
- Used engine oils have been identified by some state and federal agencies as causing cancer or reproductive toxicity. Do not ingest, inhale or contact used engine oil or its vapors.
- Keep the generator set clean and dry at all times. Excess grease and oil can catch fire and/or accumulate dirt, which can cause overheating.
- Do not store anything on the generator set, such as oil cans, oily rags, chains or wooden blocks. A fire could result or operation could be adversely affected
- Do not work on the generator set when you are mentally or physically fatigued or have consumed alcohol or drugs.

INTRODUCTION

This manual covers the portable generator sets listed on the front cover. Study this manual and observe all of its warnings and precautions. Using and maintaining the generator set properly will result in longer generator set life, better performance, and safer operation.

Model Identification

Be ready to provide the model and serial numbers on the generator set nameplate (Figure 1) when contacting Onan for parts or service.

⚠ WARNING ***Improper service or replacement of parts can result in severe personal injury or damage to equipment. Service personnel must be trained and experienced in performing electrical and mechanical service.***

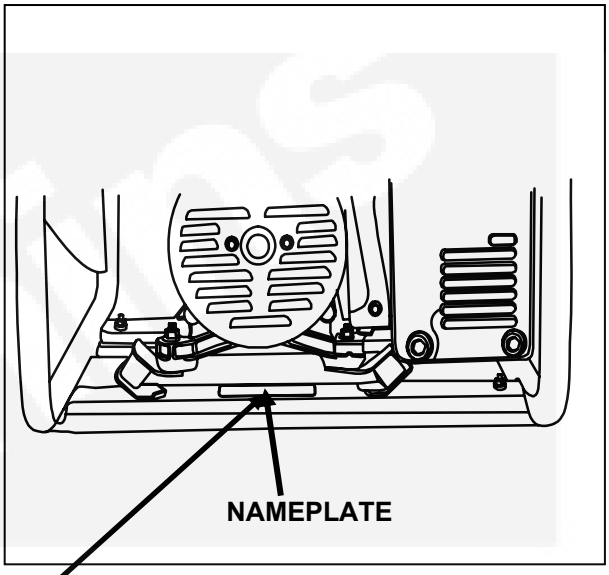
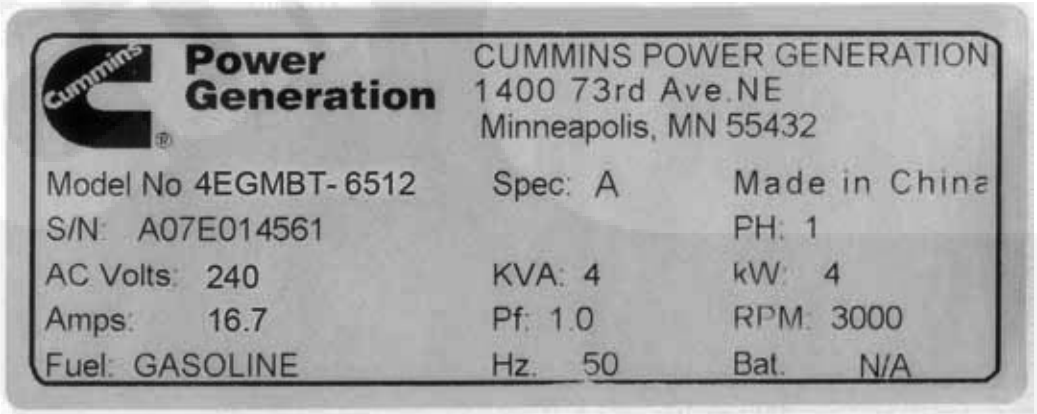
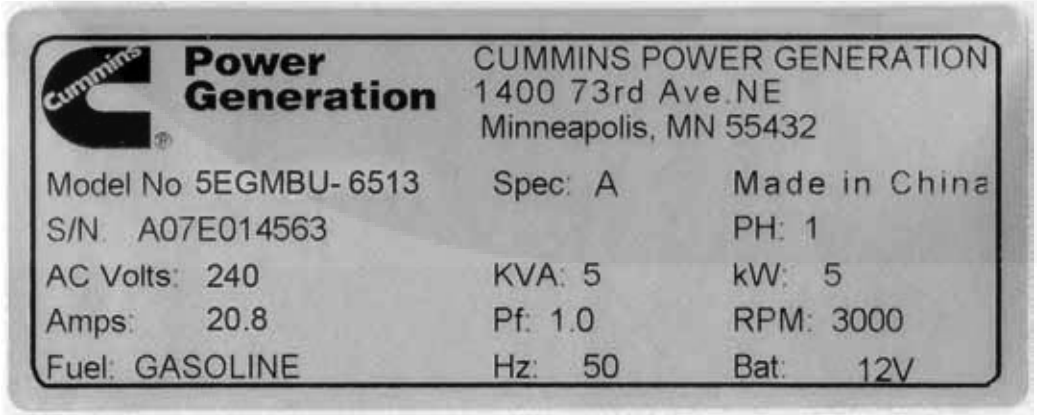


FIGURE 1. NAMEPLATE



4500 NAMEPLATE



5000*e* NAMEPLATE

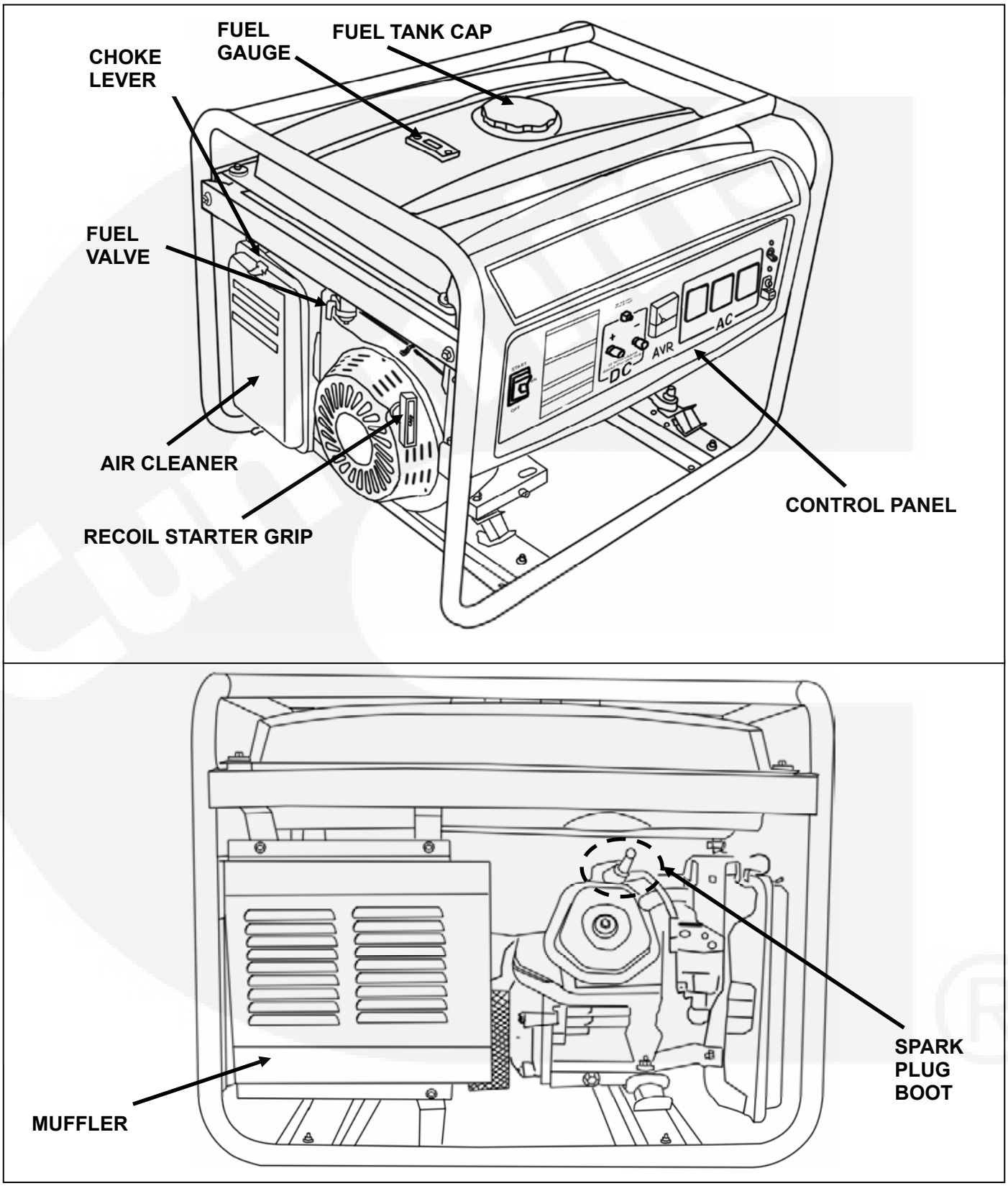


FIGURE 2. 4500 COMPONENT LOCATIONS

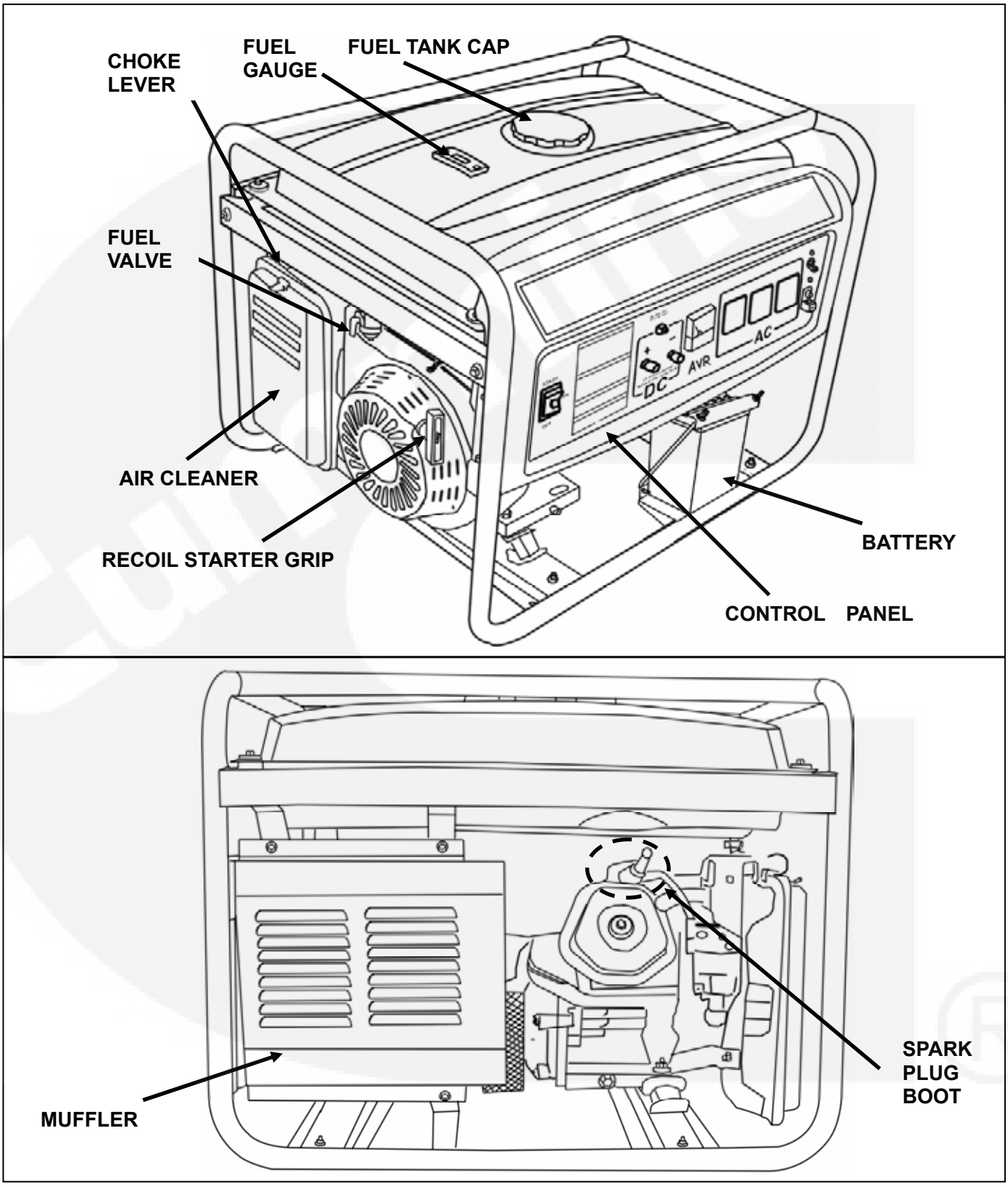


FIGURE 2. 5000e COMPONENT LOCATIONS

Fuel Recommendations

Use clean, fresh unleaded gasoline with an octane rating (anti-knock index) of 87 or higher.

During some times of the year only mandated “oxygenated” gasoline may be available; which is acceptable for use, but not preferable. Using leaded gasoline will result in extra maintenance required for removing combustion chamber and spark plug deposits. Do not use gasoline or gasoline additives (de-icers) containing methanol, which is corrosive to fuel system components.

⚠CAUTION ***Do not use gasoline or gasoline additives containing methanol. Methanol is corrosive to fuel system components.***

Avoid using leaded gasoline because of the extra engine maintenance that will be required.

⚠WARNING ***Gasoline is highly flammable and explosive. Do not smoke if you smell gasoline or are near fuel tanks or gasoline-burning equipment or are in an area sharing ventilation with such equipment. Keep flames, sparks, electrical switches, pilot lights, arc-producing equipment and all other sources of ignition well away.***

Engine oil Recommendations

Use API (American Petroleum Institute) performance Class SL or SJ engine oil or better. Also look for the SAE (Society of Automotive Engineers) viscosity grade. See Table 1. Choose the viscosity grade appropriate for the ambient temperatures expected until the next scheduled oil change.

Single-grade SAE 30 oil is best when temperatures are consistently above freezing. Multigrade oils are better when wide temperature variations are expected.

Starting Battery

The electric starter requires a 12 volt starting battery. See *Specifications* for requirements.

See *Maintenance* and any instructions available from the battery manufacturer for battery maintenance. Note that as long as the generator set is run regularly, the automatic battery recharging system on the engine should maintain battery charge.

TABLE 1. OIL VISCOSITY VS. TEMPERATURE

EXPECTED AMBIENT TEMPERATURES	SAE VISCOSITY GRADE
32° F (0° C) and higher	30
10° F to 100° F (–12° C to 38° C)	15W–40
0° F to 80° F (–18° C to 27° C)	10W–30 10W–40
–20° F to 50° F (–28° C to 10° C)	5W–30

STARTING AND RUNNING THE GENERATOR SET

Control Panel

Figure 3 illustrates the control panel. The control switches, meters, output receptacles and circuit breaker reset buttons are grouped for convenient operation.

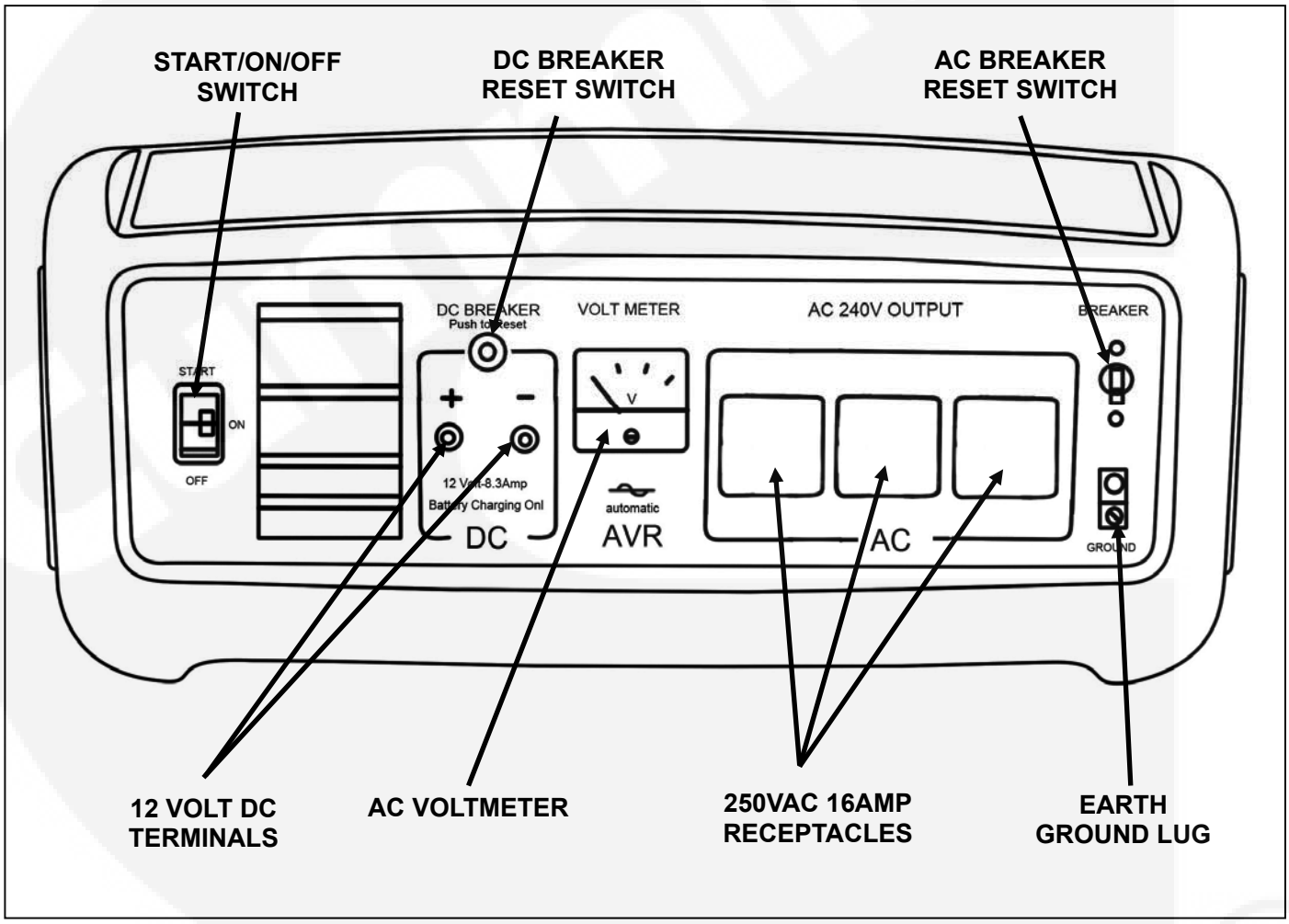


FIGURE 3. CONTROL PANEL

DANGER **EXHAUST GAS IS DEADLY!** **THE INDOOR USE OF A GENERATOR SET CAN KILL QUICKLY.**

Normal generator set exhaust gases contain carbon monoxide, an odorless and colorless gas. Carbon monoxide is poisonous and can cause severe injury and death. Symptoms of carbon monoxide poisoning include:

- ***Dizziness***
- ***Nausea***
- ***Headache***
- ***Weakness and Sleepiness***
- ***Throbbing in Temples***
- ***Muscular Twitching***
- ***Vomiting***
- ***Inability to Think Coherently***

IF YOU OR ANYONE ELSE EXPERIENCES ANY OF THESE SYMPTOMS WHEN ENGINES ARE OPERATING NEARBY, GET OUT INTO FRESH AIR IMMEDIATELY. Then:

- ***Seek immediate advice from poison control, medical center or emergency services. Be ware that:***
- ***CO symptoms can be mistaken for flu, dehydration, food poisoning or other illness***
- ***Injury or death can occur later when in fresh air and apparently recovering***
- ***Call the Fire Department to determine when it is safe to re-enter the area.***

Operate the generator set OUTDOORS Only. Stay away from and upwind of the exhaust outlet.

Make sure the exhaust will not enter windows, doors, vents or air intakes of adjacent buildings, vehicles or boats.

Never use the generator set inside a home, garage, crawl space, barn, shed, cabin, boat, boat house, RV or tent; or in a confined outdoor space such as an alley, ditch, parking garage or courtyard, or in any other space where exhaust can accumulate. Hazardous carbon monoxide levels from generator set exhaust can accumulate indoors even when windows and doors are open and fans are running.

Pre-Start checks

Before the first start of the day and after every eight hours of operation perform GENERAL INSPECTIONS and any scheduled maintenance due as indicated in Table 2 (Periodic Maintenance Schedule). If the generator set has been in storage, return it to service as instructed under Out-of-Service Protection.

WARNING ***Moving parts can cause severe personal injury or death. Hot exhaust parts can cause severe burns. Make sure all protective guards are properly in place before starting the generator set.***

A non-functioning receptacles or damaged or overloaded extension cord can cause electrocution or fire. Test the receptacles for proper operation. Make sure all extension cords are in good condition, are rated for outdoor use and have the proper plugs and amp and voltage ratings.

1. Locate the generator set outdoors in a dry, level place and chock the wheels, if so equipped.

   WARNING ***Gasoline is flammable and can be ignited by static electric sparks caused by fuel flowing through a service station pump nozzle. Never fill the generator set with a service station pump nozzle. Instead, fill a safety tank sitting on the ground and then slowly transfer fuel to the generator set from the safety tank.***

2. Check fuel and oil levels and fill as necessary.
3. Connect the grounding lug to earth ground in accordance with the local electrical code.

   WARNING ***If generator neutral supply is not grounded to earth, user may be left without ground fault protection.***

4. Test the receptacles for proper operation.

5. Make sure that all extension cords are in good condition, are rated for outdoor use and have the proper amp and voltage ratings and that they are equipped with proper plugs having grounding blades.
6. Make sure all tools and appliances have been turned off or disconnected.

Starting the Generator Set

⚠WARNING ***Do not operate the generator set in hazardous environments where it could ignite flammable gases or explosives.***

Because of the risk of electrocution, never operate the generator set in rain or snow or when it is sitting on wet ground.

Be careful not to touch the muffler which can get very hot.

⚠CAUTION ***The voltage surge at start-up can damage appliances such as TVs, microwave ovens, computers and so forth. Make sure all such appliances have been disconnected before starting the generator set.***

Using the Electric Starter

1. Open the fuel valve (Figure 4).
2. Pull the choke rod out to close the choke if the engine is cold (Figure 5).
3. Press and hold the Start/On/Off switch in the START position until the engine starts. The switch will return to the On position when released. Gradually push the choke rod in as the engine warms up.
4. Let the engine warm up for a few minutes before connecting tools or appliances. See POWERING TOOLS AND APPLIANCES.

Using the Recoil Starter

1. Open the fuel valve (Figure 4).
2. Pull the choke rod out to close the choke if the engine is cold (Figure 5).
3. Check that the Start/On/Off switch is in the On position.
4. With one hand on the generator, grip the recoil handle (Figure 6) with the other hand and pull it out smoothly and quickly. Repeat as necessary. Gradually push the choke rod in as the engine warms up.
5. Let the engine warm up for a few minutes before connecting tools or appliances. See POWERING TOOLS AND APPLIANCES.

Stopping the Generator Set

1) Turn off or disconnect all tools and appliances.
2) Let the generator set run for a few minutes to cool down.
3) Stop the generator set by pressing and holding the Start/On/Off switch in the Off position until the generator set stops.
4) Close the fuel valve.

⚠WARNING ***Gasoline is highly flammable and explosive. Always close the fuel valve when the engine is not in use to reduce the risk of fuel spillage.***

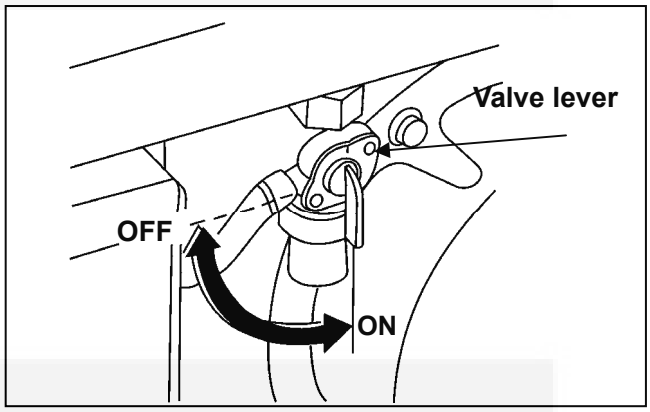


FIGURE 4. FUEL VALVE

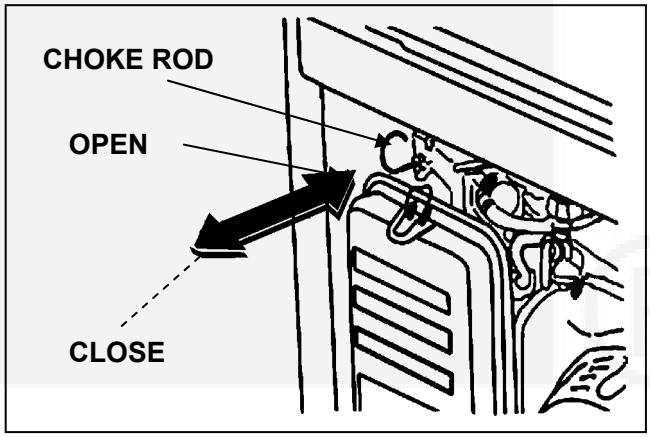


FIGURE 5. CHOKE ROD

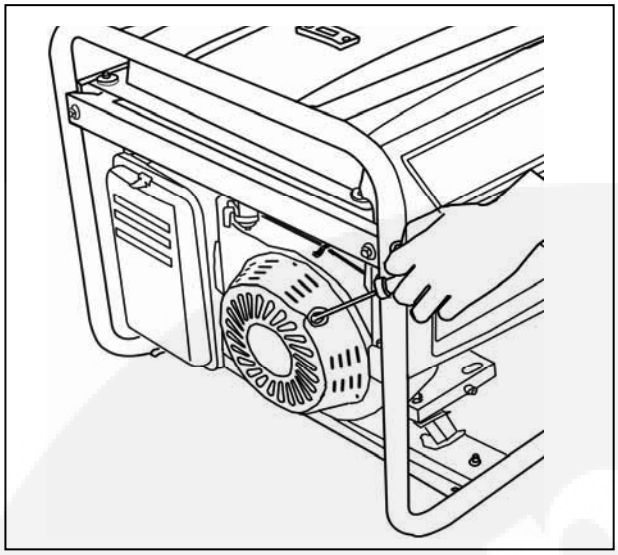


FIGURE 6. RECOIL START HANDLE

Powering Tools and Appliances

CAUTION ***Continuous overloading can damage the generator due to over heating. Keep loading within the generator set nameplate rating.***

Connecting Tools and Appliances

1. Make sure the tools and appliances to be connected are rated for the voltages at the generator set power output receptacles.
2. Note the KW rating on the generator set nameplate.
3. Check the power draw (watts) of each tool or appliance to be connected. Table 2 lists typical tool and appliance ratings in watts.
4. Add the watt ratings of all the loads that the generator set will be powering at the same time. Make sure that total wattage will not exceed the generator KW rating.

   Example: A generator set rated 5 kW (5000 watts) can power two 1500 watt heaters, a 900 watt circular saw, a 500 watt drill and a 100 watt light at the same time (4500 watts altogether). However, to operate a second 900 watt saw, it will be necessary to disconnect one of the 1500 watt heaters.

   Note: A motor draws much more power when starting up than when running. It may be necessary to power fewer tools or appliances when motors and air conditioners are cycling on and off.

5. Connect the AC power cords to the appropriate receptacles on the control panel. See Grounding.

TABLE 2. TYPICAL POWER DRAW RATINGS OF COMMON TOOLS AND APPLIANCES

Appliance or Tool	Typical Rating (Watts)
Battery Charger	Up to 800
Bench Grinder (8 in.)	1400
Circular Saw (7–1/4 in.)	900
Coffee Maker	850
Drill (3/8 in.)	400
Electric Water Pump	550
Electric Broom	200–500
Electric Drill	250–750
Electric Stove (Per Element)	350–1000
Electric Water Heater	1000–1500
Portable Heater	1500
Refrigerator	600–1000
Space Heater	1000–1500
Sump Pump	350
Television	200–600
Trimmer (12-in. heavy duty)	500

High Altitude

Maximum power decreases roughly four percent every 1000 feet (310 m) of increase in elevation above sea level. When operating the generator set at altitudes above 1000 feet it may be necessary to power fewer loads at the same time.

Charging Batteries

To reduce arcing, always stop the generator set before connecting or disconnecting the battery to be charged. Connect the battery to be charged to the DC terminals on the control panel. Make sure polarity is correct: positive (+) to positive (+); negative (-) to negative (-).

⚠WARNING ***Arcing at battery terminals can ignite battery gases causing severe personal injury - Ventilate the area before working on batteries - Wear safety glasses - Do not smoke - Always stop the generator set before connecting or disconnecting the battery- Always connect the negative (–) cable last and disconnect it first.***

Note: The battery on electric- start models has its own changing circuit and therefore must not be connected to the DC charging terminals

Circuit Breakers

If too many tools or appliances are connected, or a tool or appliance fails due to a short circuit, one or more of the AC or DC circuit breakers on the control panel will trip. Disconnect or turn off as many tools and appliances as possible and reset the circuit breaker by pushing the reset button back in. (It takes at least 10 seconds after tripping to reset.) Turn on or reconnect only as many tools and appliances as the generator set can power.

A tool or appliance probably has a short if it causes a circuit breaker to immediately trip when connected.

⚠WARNING ***Short circuits in faulty electrical tools and appliances can cause electrocution or fire. Read and follow the tool and appliance manufacturer's instructions and warnings regarding use, maintenance and proper grounding.***

Grounding

Ground the generator set to earth ground by connecting a suitable ground wire to the ground lug terminal on the generator set control panel. The other end of the wire must be connected to a suitable earth ground according to local electrical codes.

Do not connect grounds from tools or appliances to the Ground Lug terminal. Extension cords must have grounding blades if the tools they supply have grounding blades.

Low Oil Shutdown

The generator set will automatically stop if it senses low oil level. If the engine stops while running, or starts but then stops, check the oil level and add oil as necessary. See *Maintenance*.

Electrical Interference with Communications or Appliances

If the generator set causes electrical interference with communications devices, move the generator set and device farther apart or shut down the generator set while the device is operating.

Exercising the Generator Set

Exercise the generator set a least 2 hours every month if use is infrequent. Run it at approximately 50 percent capacity. A single two hour exercise period is better than several shorter periods. Exercising a generator set drives off moisture, re-lubricates the engine, replaces stale fuel and removes oxides from electrical contacts. The result is better starting, more reliable operation and longer engine life.

Engine Break-In

Proper engine break-in is necessary for top performance.

1. Operate the generator set as it is intended to be operated. However, for the first 1-1/2 hours, if possible, run the generator set at 50 percent capacity, occasionally operating at full power for brief periods. Avoid prolonged low-power operation during break-in.
2. Make sure the engine has oil of the proper viscosity for the ambient temperature. See RECOMMENDED ENGINE OIL.
3. Check the oil level twice a day or after every 4 hours of operation during the first 20 hours of operation. Change the engine oil after the first 20 hours of operation.

Out-of-Service Protection

If you are unable to exercise the generator set regularly, and it will not be in use for more than 120 days, the following storage procedure is recommended. Failure to provide out-of-service protection can result in difficult starting, rough engine operation and reduced engine life.

Storing the Generator Set

1. Add a fuel preservative and stabilizer to the fuel tank, or let the generator set run out of fuel. Follow the manufacturer's instructions for using the fuel additive.

   WARNING ***Fuel additives can cause a risk of personal injury. Read and follow manufacturer's instructions.***

2. Shut the fuel valve and drain the carburetor bowl. See Figure 7.
3. Remove the spark plug. Squirt one tablespoon (about 30 cm^3) of clean engine oil into the spark plug hole. Turn the engine over several revolutions. Replace the spark plug. Pull the recoil starter handle out slowly until compression is felt.
4. Change engine oil and attach a tag indicating the viscosity of oil used
5. Disconnect the cables from the starting battery, negative (–) cable first. Store the battery in accordance with the battery manufacturer's recommendations.
6. Store the generator set in a dry, protected area.

Returning the Generator Set to Service

1. Check the tag on generator set to verify that oil viscosity is correct for the current ambient temperature. Add or change oil as necessary.
2. Reconnect the starting battery, negative (-) cable last.
3. Clean the air cleaner if dirty.
4. Open the fuel valve.
5. Start the generator set. Initial start-up may be rough and smoky due to the extra oil in the cylinder. Remove and clean the spark plug if necessary.

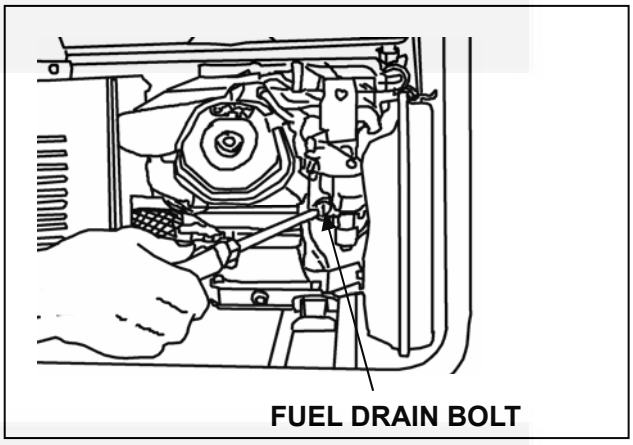


FIGURE 7. CARBURETOR DRAIN

MAINTENANCE

Periodic maintenance is essential for top performance. Use Table 3 as a guide. Under hot or dusty operating conditions some maintenance operations should be performed more frequently, as indicated by the footnotes in the table.

Keep a log of maintenance performed and the hours run. Recording maintenance will help you keep it regular and provide a basis for supporting warranty claims.

WARNING ***Accidental starting of the generatorset during maintenance can cause severe personal injury or death. Before performing maintenance, disconnect the spark plug wire from the spark plug. Electric start models: disconnect both generator set starting battery cables. Remove the negative (–) cable first to reduce the risk of arcing.***

WARNING ***A hot generator set can cause severe burns. Always allow the generator set to cool before performing any maintenance or service.***

TABLE 3. PERIODIC MAINTENANCE SCHEDULE

SERVICE THESE ITEMS	SERVICE INTERVAL					
	EACH USE	FIRST MONTH OR 20 HOURS	EVERY 3 MONTHS OR 50 HOURS	EVERY MONTH	EVERY 6 MONTHS OR 100 HOURS	EVERY YEAR OR 300 HOURS
General Inspection	x [1]					
Check Oil Level	x					
Test *receptacles*	x					
Change Engine Oil		x			x	
Clean Air Cleaner			x [2]			
Clean Cylinder Cooling Fins			x [2]			
Check Starting Battery (if equipped)				x		
Clean Spark Plug					x	
Clean the Spark Arrestor					x	
Clean Fuel Sediment Cup						x [3]
Clean Fuel Tank						x [3]
Adjust Valve Lash						x [3]
Check fuel line	Every 2 years(Replace if necessary) [3]					

1. See GENERAL INSPECTIONS.
2. Service more frequently when used in dusty environments.
3. These items must be performed by a trained and experienced mechanic (authorized Onan/ Cummins Onan dealer).

General Inspections

The operator should check the following before the first start of the day and after every eight hours of operation:

1. Look for fuel leaks around the fuel tank, fuel hose, fuel valve and carburetor. Close the fuel valve and repair leaks immediately.
2. Look and listen for exhaust leaks while the engine is running. Have all leaks repaired before continuing operation.

   ⚠WARNING ***Hot exhaust parts can cause severe burns. Allow the engine time to cool before servicing the exhaust system.***
3. Check for dirt and debris and clean as necessary.

   ⚠CAUTION ***A clogged flywheel air inlet screen or dirty cooling fins can cause overheating and engine damage. Keep the cooling fins and air inlet screen clean.***
4. Check the engine oil level and add oil as necessary. See CHANGING ENGINE OIL

Changing Engine Oil

⚠WARNING ***State and federal agencies have determined that contact with used engine oil can cause cancer or reproductive toxicity. Do not contact or ingest. Use rubber gloves and wash exposed skin.***

See Table 3 for scheduled oil changes and refer to Figure 8.

1. Make sure the generator set is level and has been run until warm.
2. Stop the generator and remove the oil fill cap.

   ⚠WARNING ***Crankcase pressure can blow hot engine oil out the fill opening causing severe burns. Always stop the genset before removing the oil fill cap.***
3. Remove the oil drain plug and drain the oil into a pan.
4. Reinstall the drain plug and refill with new engine oil just to the brim of the fill opening. Use the oil fill tube provided with the generator to fill oil. See ENGINE OIL RECOMMENDATIONS for the type of engine oil to use and *Specifications* for engine oil capacity.

   ⚠CAUTION ***Too little oil can cause severe engine damage. The oil level must be above the Add mark on the dipstick.***
5. Start the generator set and let it run for a short time while checking for oil leaks.
7. Used oil is harmful to the environment. Pour the used oil into a sealed container and deliver it to the nearest recycling center.

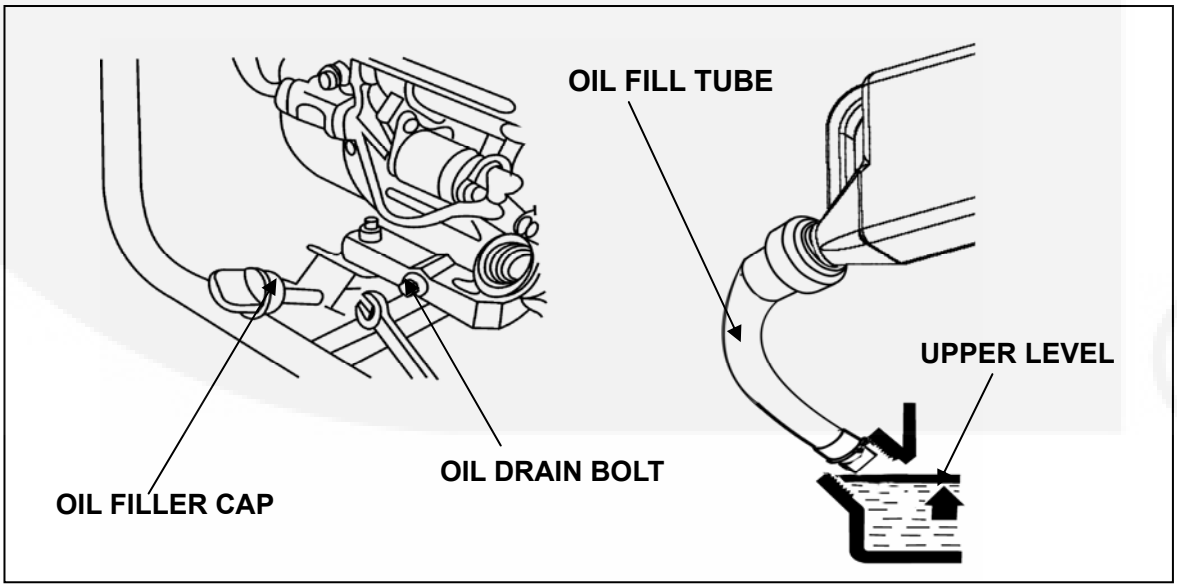


FIGURE 8. OIL CHECK/FILL/DRAIN

Air Cleaner Maintenance

See Table 3 for scheduled air cleaner maintenance. Clean more often in dusty environments. See Figure 9.

1. Remove the cleaner cover by unsnapping the two spring clips.
2. Remove the two foam filter elements and thoroughly wash them with soap and water. Let them dry thoroughly.
3. Knead in 1 teaspoon (5 cm^3) of clean engine oil into each foam filter element. The oil should be distributed evenly throughout each filer elements.
4. Reinstall the filter elements, the gray filter first (finer pores) and then the black filter (larger pores).
5. Secure the cover with the spring clips.

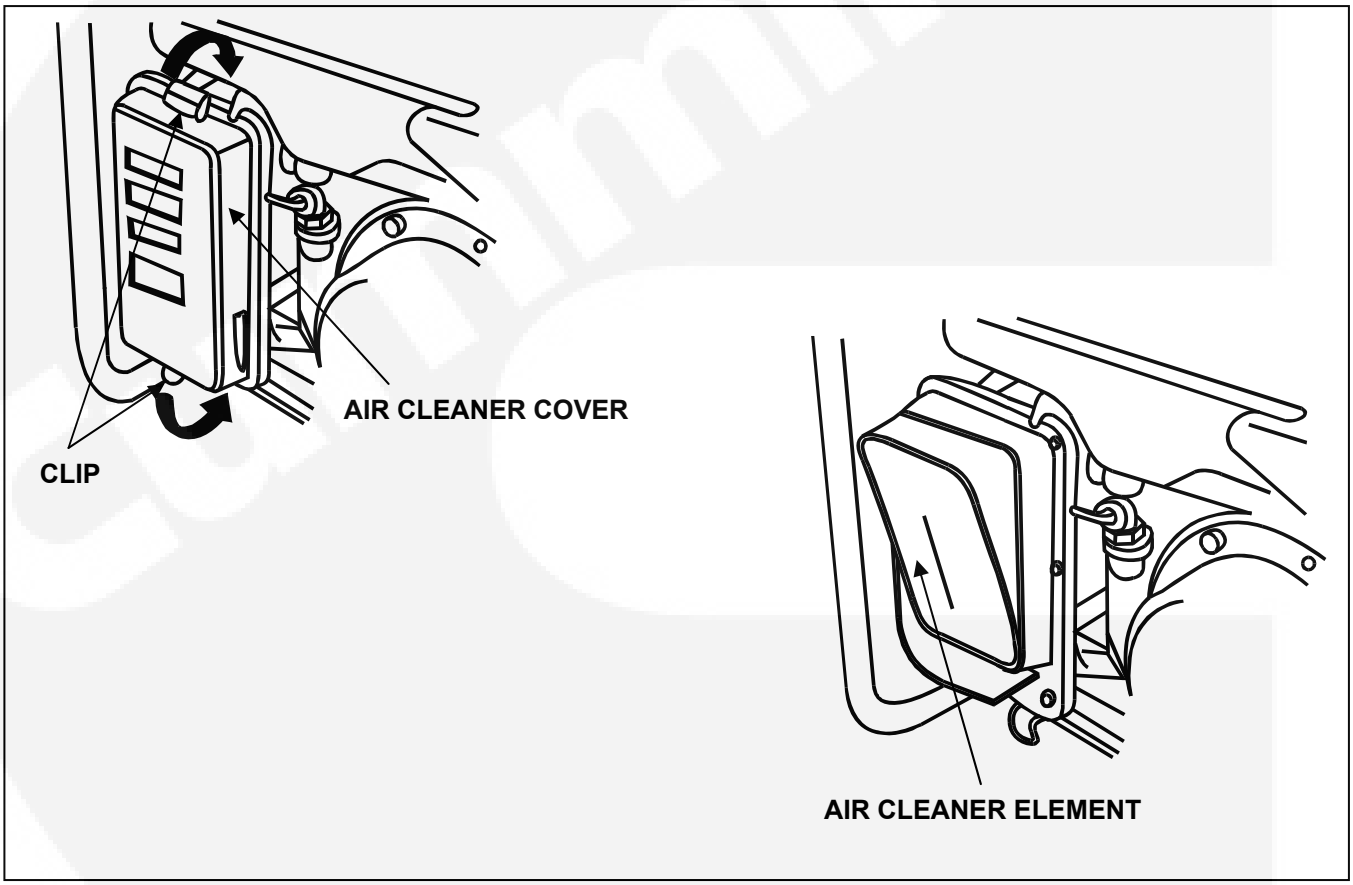


FIGURE 9. AIR CLEANER

Battery Maintenance

Refer to Table 3 for scheduled battery maintenance. Carefully follow the battery manufacturer's instructions.

⚠WARNING ***Arcing at battery terminals can ignite battery gases causing severe personal injury - Ventilate the area before working on batteries - Wear safety glasses - Do not smoke - Always disconnect the negative (–) cable first and reconnect it last.***

1. Keep the battery case clean and dry and the terminals tight.
2. Connect the Red starter cable (+) to the positive (–) terminal of the battery and the Green cable to the negative terminal. Always disconnect the Green cable (–) first and reconnect it last.
3. Make sure the battery is securely clamped in place in its mounting bracket (Figure 10).

⚠CAUTION ***If the generator set will be used before a starting battery is installed, insulate the red battery cable terminal with electrical insulating tape to prevent short circuits that can damage the battery charging system.***

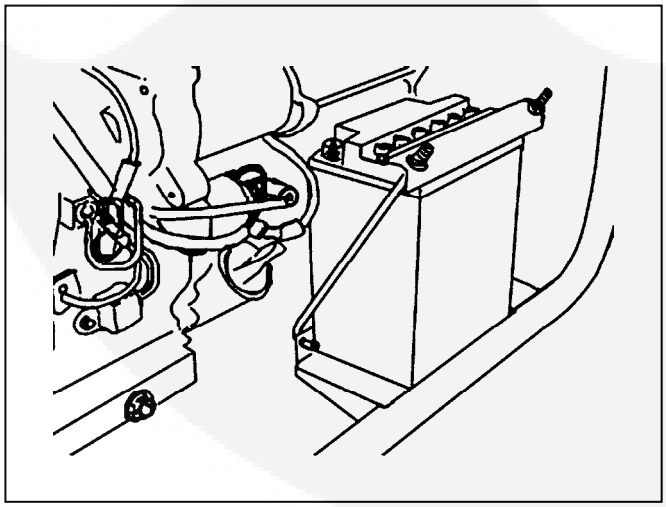


FIGURE 10. BATTERY MOUNTING

Fuel Sediment Cup Cleaning

Refer to Table 3 for scheduled cleaning. Cleaning must be performed by an authorized Onan dealer.

Spark Plug Maintenance

Refer to Table 3 for scheduled spark plug maintenance. Perform spark plug maintenance sooner if engine performance has deteriorated. A fouled spark plug can cause the engine to misfire, operate erratically or stop running when a load is applied.

Using the spark plug wrench remove the spark plug. If the spark plug is worn or damaged, replace it with a new one. Or clean it with a wire brush and reset the gap. See *Specifications*.

To prevent cross threading the spark plug always thread it in by hand until it seats. If the spark plug is being reused, turn it with a wrench an additional 1/4 turn. If the spark plug is new, turn it an additional 3/8 to 1/2 turn.

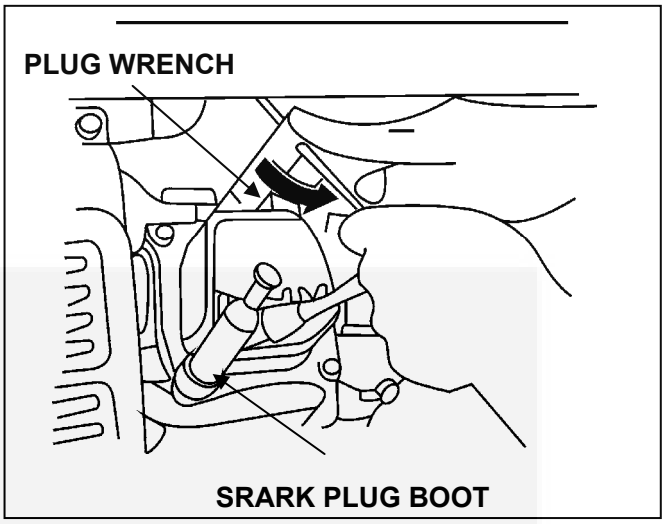


FIGURE 11. SPARK PLUG

Cleaning the Generator set

Refer to Table 3 for scheduled cleaning of the generator set. Clean more often in dusty environments. Remove spilled oil and fuel from the generator set immediately with a dry rag. Dispose of cleaning rags properly. Use a damp cloth to clean dust and dirt from the generator set. Do not use cleaning solvents, which can damage electrical components.

Wear safety glasses if it is necessary to use compressed air to clean the engine cooling fins. Do not use a pressure washer to clean the generator set. Water can enter the generator and other electrical components causing shorts that can disable the generator set.

⚠WARNING ***Wear safety glasses to protect your eyes from flying debris when cleaning the generator set with compressed air.***

⚠CAUTION ***Cleaning the generator set with a pressure washer can cause damage to the generator set by shorting the generator and other electrical components.***

Cleaning the Spark Arrestor

⚠WARNING ***A hot muffler can cause severe burns. Allow the generator set to cool before servicing the muffler.***

Refer to Table 3 for scheduled spark arrestor cleaning. After letting the generator set cool down, remove the spark arrestor screen (Figure 12). Inspect for damage, and replace if defective. To clean, lightly tap the screen and clean any deposits with a wire brush.

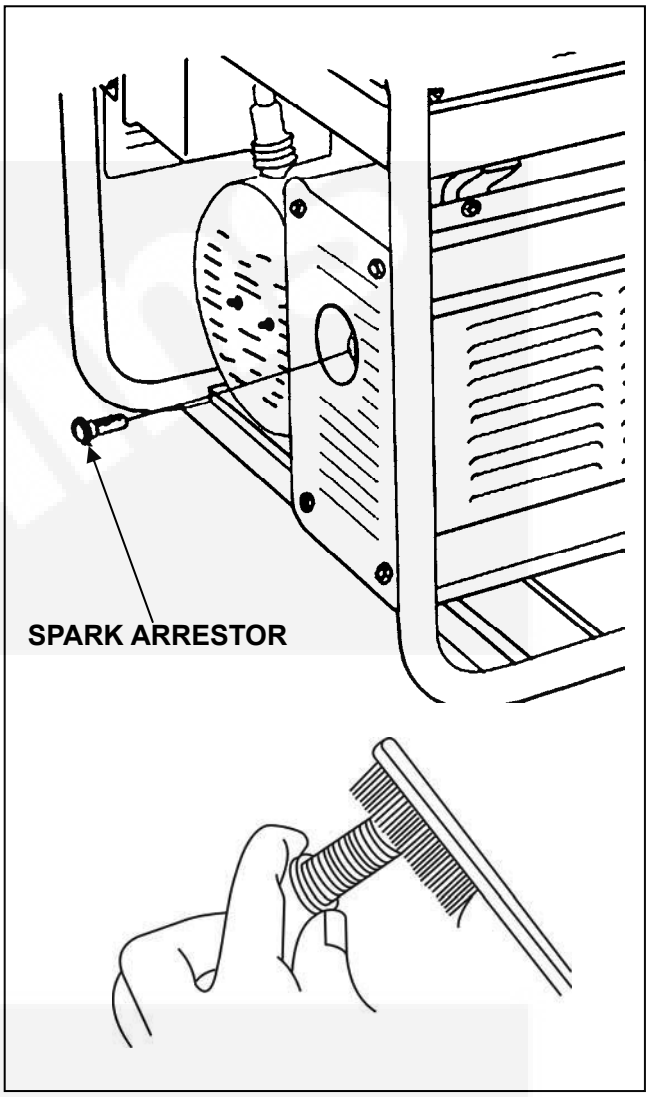


FIGURE 12. SPARK ARRESTOR

TROUBLESHOOTING

The following troubleshooting guide can be used for basic problem diagnosis. If these recommendations do not resolve the problem, contact an authorized Onan/Cummins Onan service center.

WARNING ***Many troubleshooting procedures present hazards which can result in severe personal injury or death. Only trained and experienced service personnel with knowledge of fuels, electricity, and machinery hazards should perform service procedures. Review Safety Precautions.***

A hot generator set can cause severe burns. Always allow the generator set to cool before performing any maintenance or service.

PROBLEM	PROBABLE CAUSE	SOLUTION
ENGINE DOES NOT CRANK (ELECTRIC START)	Low battery	Service battery
	Bad battery connection	Clean and tighten battery connections
ENGINE CRANKS SLOWLY (ELECTRIC START)	Low battery	Service battery
	Bad battery connection	Clean and tighten battery connections
	Engine oil is too heavy	Replace with recommended oil
	Load is connected	Disconnect load while starting
ENGINE WON'T START	Out of fuel	Fill the fuel tank
	Fuel valve closed	Fully open fuel valve
	Loose spark plug cable	Reconnect spark plug cable
	Fouled spark plug	Remove and clean or replace spark plug
	Low oil level	Add oil as necessary
BLACK EXHAUST	Choke stuck in closed position	Open choke
	Dirty air cleaner	Clean air cleaner
	Rich fuel mixture	Contact an Onan service center
ENGINE STOPS	Out of fuel	Fill the fuel tank
	Low oil level	Add oil as necessary
ENGINE SURGES	Loose spark plug cable	Reconnect cable or have it serviced if damaged
	Faulty spark plug	Remove and clean or replace spark plug
	Generator set not level	Move generator set to level surface
	Dirty fuel strainer	Have the strainer cleaned
NO AC OUTPUT	Tripped AC circuit breaker	Remove all loads, reset breaker, check loads for defects. Do not exceed generator set rating.
NO DC OUTPUT	Tripped DC circuit breaker	Disconnect battery, reset breaker and have battery tested for shorts

SPECIFICATIONS

GENERATOR	P4500	P5000e
AC OUTPUT:		
Frequency (Hertz)	50 Hz	50 Hz
Voltage	240 Volts	240 Volts
Rated Power	4000 Watts	5000 Watts
Rated Current	16.7 Amps	20.8 Amps
DC OUTPUT:	12 VDC / 8.3 Amps	12 VDC / 8.3 Amps
ENGINE		
Engine Speed (RPM)	3000	3000
Fuel	Gasoline	Gasoline
Engine Oil Capacity	1.16 US qt (1.1 L)	1.16 US qt (1.1 L)
Spark Plug Type	F7RTC	F7RTC
Spark Plug Gap	0.028 in. (0.7 mm)	0.028 in. (0.7 mm)
Engine Valve Lash (Intake and Exhaust)	0.0039 –0.006 inches (0.10 – 0.15 mm)	0.0039 –0.006 inches (0.10 – 0.15 mm)
Ignition Timing (fixed)	25° BTDC	25° BTDC
Starting System	Recoil	Electric / Recoil
Displacement	340 cc	389 cc
GENERATOR SET		
Dry Weight	176 lb (80 kg)	182 lb (83 kg)
Dimensions:		
Length	27.6 inches (702 mm)	27.6 inches (702 mm)
Width	22.1 inches (562 mm）	22.1 inches (562 mm）
Height	23.0 inches (585 mm)	23.0 inches (585 mm)
Fuel Tank Capacity	6.5 US gal (24.6 L)	6.5 US gal (24.6 L)
Operating Time at Rated Output	10 Hours	9 Hours
Starting Battery Requirements		12 Volt Generator purpose Battery, Type 14L-A2

Cummins **Onan**

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