

Onan

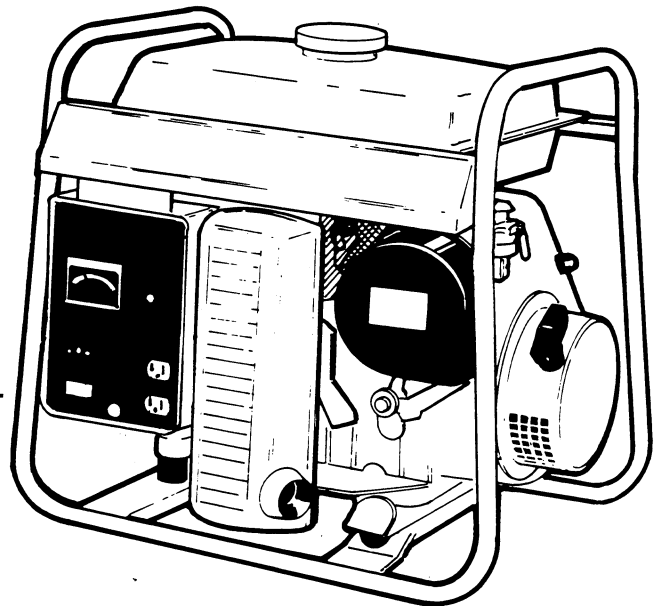
Operator's Manual

1400 - 3500 Watts

K-Series

GenSets

- **Portable Generators**



981-0128

1/87
Printed in U.S.A.

Safety Precautions

The following symbols in this manual signal potentially dangerous conditions to the operator or equipment. Read this manual carefully. Know when these conditions can exist. Then, take necessary steps to protect personnel as well as equipment.

▲ DANGER *This symbol warns of immediate hazards which will result in severe personal injury or death.*

▲ WARNING *This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.*

▲ CAUTION *This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.*

Fuels, electrical equipment, batteries, exhaust gases and moving parts present potential hazards that could result in serious, personal injury. Take care in following these recommended procedures.

- **Use Extreme Caution Near Gasoline. A constant potential explosive or fire hazard exists.**

Do not fill fuel tank when engine is hot or running. Do not smoke or use open flame near the unit or the fuel tank.

Do not store or transport the generator set without first removing the fuel from the fuel tank.

Have a fire extinguisher nearby. Be sure extinguisher is properly maintained and be familiar with its proper use. Extinguishers rated ABC by the NFPA are appropriate for all applications. Consult the local fire department for the correct type of extinguisher for various applications.

- **Guard Against Electric Shock**

Disconnect electric power before removing protective shields or touching electrical equipment. Use rubber insulative mats placed on dry wood platforms over floors that are metal or concrete when around electrical equipment. Do not wear damp clothing (particularly wet shoes) or allow skin surfaces to be damp when handling electrical equipment.

Jewelry is a good conductor of electricity and should be removed when working on electrical equipment.

DO NOT CONNECT GENERATOR SET DIRECTLY TO ANY BUILDING ELECTRICAL SYSTEM. Hazardous voltages can flow from the generator set into the utility line. This creates a potential for electrocution or property damage. Connect only through an approved device and after building main switch is open. Consult an electrician in regard to emergency power use.

Use extreme caution when working on electrical components. High voltages can cause severe injury or death.

Follow all state and local electrical codes. Have all electrical installations performed by a qualified licensed electrician.

- **Do Not Smoke While Servicing Batteries**

Batteries emit a highly explosive gas that can be ignited by electrical arcing or by smoking.

- **Exhaust Gases Are Toxic**

Engine exhaust contains CARBON MONOXIDE, a dangerous gas that is potentially lethal. Avoid carbon monoxide inhalation by operating the generator set out doors where exhaust gases can be discharged directly into the open air.

Do not operate the generator set in any type of enclosure that could allow exhaust gases to accumulate. Direct exhaust away from areas where people are gathered and away from buildings or enclosures.

- **Keep The Unit And Surrounding Area Clean**

Remove all oil deposits. Remove all unnecessary grease and oil from the unit. Accumulated grease and oil can cause overheating and subsequent engine damage and may present a potential fire hazard.

Do NOT store anything on the generator set such as oil cans, oily rags, chains, wooden blocks, etc. A fire could result or operation may be adversely affected. Keep clean and dry.

- **Protect Against Moving Parts**

Avoid moving parts of the unit. Loose jackets, shirts or sleeves should not be worn because of the danger of becoming caught in moving parts.

Make sure all nuts and bolts are secure. Keep power shields and guards in position.

If adjustments must be made while the unit is running, use extreme caution around hot exhaust moving parts, etc.

Do not work on this equipment when mentally or physically fatigued, or after consuming any alcohol or drug that makes the operation of equipment unsafe.

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▲WARNING

MANUFACTURER RECOMMENDS THAT ALL SERVICE INCLUDING INSTALLATION OF REPLACEMENT PARTS BE DONE BY QUALIFIED ELECTRICAL AND/OR MECHANICAL SERVICE PERSONNEL TO PREVENT POSSIBLE INJURY AND/OR EQUIPMENT DAMAGE. IT IS IMPORTANT THAT ALL SERVICE PERSONNEL BE QUALIFIED.

Introduction

ABOUT THIS MANUAL

This manual provides operation and maintenance information for your portable generator set. Read the manual carefully before operating your generator set. Observe all cautions and warnings.

YOUR GENERATOR SET

Your generator set is designed for convenient, portable power. Using the generator set properly and following a regular maintenance schedule can result in longer unit life and safer operation. The SPECIFICATIONS table lists your model, generator rating, capacities, and engine data.

HOW TO OBTAIN SERVICE

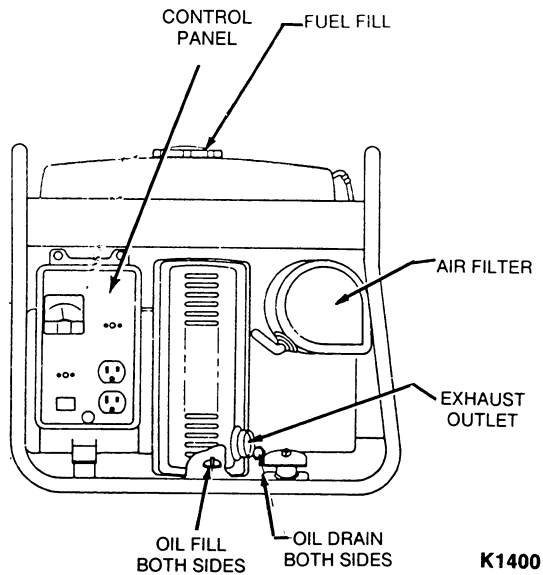
When the generator set requires servicing, contact an Onan service representative. Always furnish the complete model number and serial number.

For future reference, fill in the model number from the nameplate in the space provided here. Also note the serial number located on the engine blower housing and list that here too.

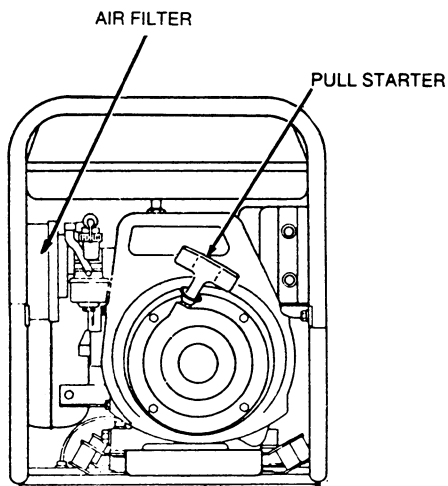
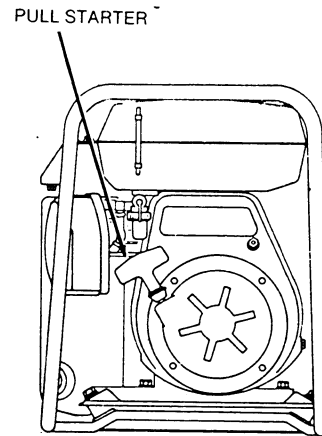
Model Number	
Serial Number	

Specifications

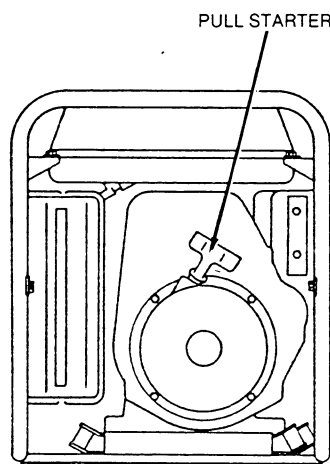
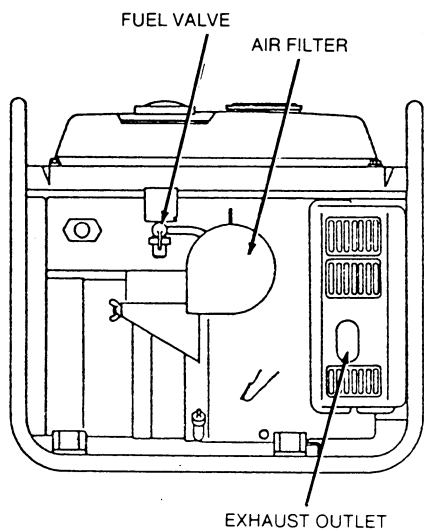
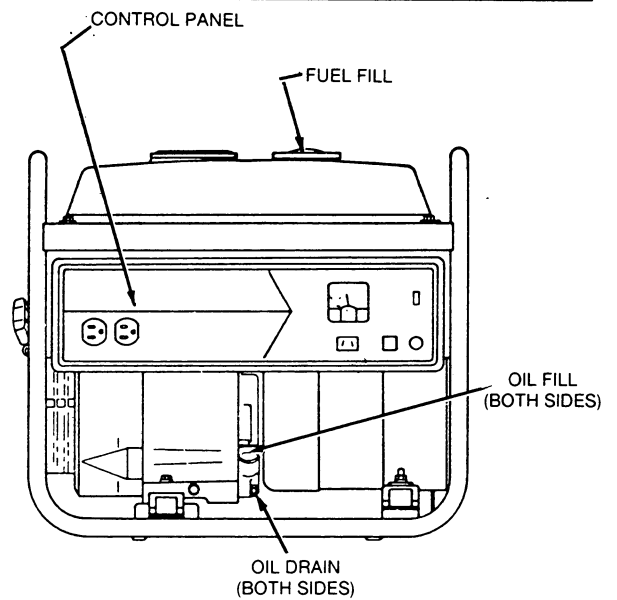
	K1400 (1.4KL-1P/1B)	K2200 2.2KM-1P/1B)	K3200 (3.2KN-3P/1B)	K3500 (3.5KP-3P/1B)
AC Output - 60 Hertz				
Voltage	120	120	120/240	120/240
Watts-Max Output	1400	2200	3200	3500
Watts-Rated Output	1200	1800	2500	3000
Amperes-Rated				
Current	10	15	20.8/10.4	25/12.5
DC Output				
Watts	100	120	120	120
Volts x Amperes	12. x 8.3	12 x 10	12 x 10	12 x 10
Engine Displacement	7.9 in ³ (130 cm ³)	12.3 in ³ (201 cm ³)	16.8 in ³ (276 cm ³)	16.8 in ³ (276 cm ³)
Starting System		Recoil Starter		
Fuel		Unleaded or Regular Grade Gasoline		
Fuel Tank Capacity	8.5 qt. (8 L)	13.5 qt. (12.8 L)	13.5 qt. (12.8 L)	13.5 qt. (12.8 L)
Oil Capacity	18.6 oz. (0.55 L)	20.3 oz. (0.6 L)	30.4 oz. (0.9 L)	30.4 oz. (0.9 L)
Spark Plug Gap	0.028 in. (0.7 mm)	0.028 in. (0.7 mm)	0.028 in. (0.7 mm)	0.028 in. (0.7 mm)



K1400



K2200



K3200, K3500

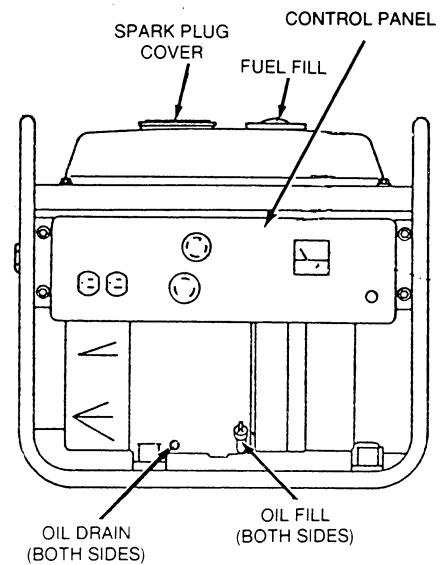


FIGURE 1. K-SERIES OUTLINES

Operation

PRE-STARTING CHECKS

Before starting the generator set, be sure it has sufficient oil and gasoline, and that it is generally ready for operation. Note the separate checks following.

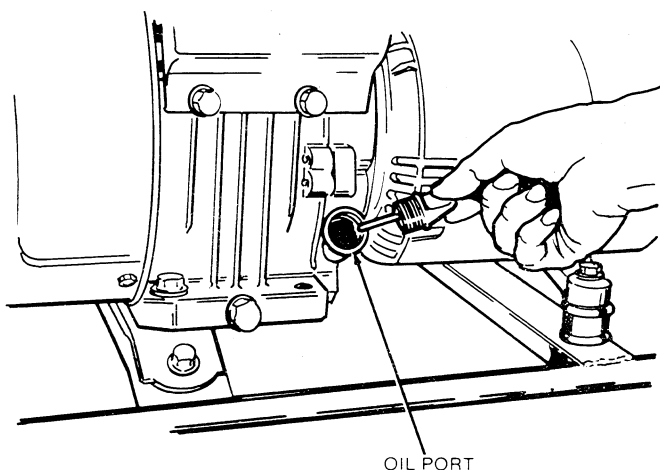
Engine Oil

Make sure the generator set is level when you are checking the engine oil. Otherwise, you will have an inaccurate oil level indication. Remove the oil cap from the engine. The oil level should appear to the top of the oil port. See Figure 2.

▲WARNING *Crankcase pressure can blow out hot oil and cause serious burns. Do not attempt to check oil while the generator is running.*

If you do need to add oil, add oil until it reaches the top of the oil port. Use an oil as specified in the MAINTENANCE section.

All models have an oil fill on both sides of engine.



LS-1122

FIGURE 2. CHECKING OIL LEVEL

Fuel

▲WARNING *Ignition of fuel can cause severe personal injury or death by fire or explosion. Never fill the fuel tank when the engine is hot or running, and never permit any flame, cigarette, or other ignition source near the fuel system.*

Note the preceding warning. Fill the fuel tank with unleaded or regular-grade gasoline. Figure 1 shows location of the fuel-level indicators and fuel tank cap. If operating generator set on a slight grade, do not fill completely.

If the use of unleaded gasoline is desired, use regular gasoline for the first 25 hours to allow the rings to seat well for best performance. Then use unleaded gasoline thereafter.

If regular gasoline is used continually, carbon and lead deposits must be removed from the cylinder heads as required because of engine power loss. Unleaded gasoline may be used safely after lead deposits have been removed.

▲WARNING *Ignition of fuel can cause severe personal injury or death by fire or explosion. Be sure fuel level indicator (on K1400 only) is secure and undamaged before starting generator set. If it looks damaged or loose, install a new indicator before starting generator set.*

Grounding Requirements

Local code enforcement might require that the generator set be electrically connected to a grounding electrode (water pipe, earth-driven grounding rod, etc.) during operation. A grounding lug is provided for connecting the generator set to a grounding electrode conductor if required. See Figure 8.

▲WARNING *1. If faulty electrical equipment is connected to the generator, an electrical shock hazard exists which can result in severe personal injury or death. Check all electrical equipment for frayed cords or breaks in the insulation before using.*

2. Properly applied and maintained ground fault circuit interrupters, often required by local codes, can afford additional protection against the hazard of electrical shock.

General

Give the generator set a visual inspection for loose bolts and nuts, oil leaks, fuel leaks, and exhaust leaks. Repair any problems before starting the generator set.

▲WARNING

EXHAUST GAS IS DEADLY!

Exhaust gases contain carbon monoxide, an odorless and colorless gas. Carbon monoxide is poisonous and can cause unconsciousness and death. Symptoms of carbon monoxide poisoning can include:

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

IF YOU OR ANYONE ELSE EXPERIENCE ANY OF THESE SYMPTOMS, GET OUT INTO THE FRESH AIR IMMEDIATELY. If symptoms persist, seek medical attention. Shut down the unit and do not operate until it has been inspected and repaired.

Protection against carbon monoxide inhalation includes proper installation and regular, frequent visual and audible inspections of the complete exhaust system.

STARTING

After checking the generator set as described under *Pre-Starting*, follow these steps in sequence.

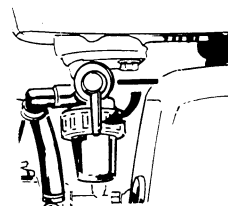
▲WARNING

1. Inhalation of exhaust gases can result in severe personal injury or death. Do not operate generator set in poorly-ventilated areas such as indoors, tanks, confined areas, depressions, or any areas where exhaust gases might accumulate. Face the exhaust toward well-ventilated areas so exhaust gases will not accumulate during operation.

2. Due to the danger of personal injury or death, do not operate the generator set in hazardous areas where it might ignite gases, combustibles, or explosive materials.

3. Because a generator set presents the hazard of electrical shock that can cause severe personal injury or death, never expose the generator set to rain, snow, or other similar wet conditions when operating.

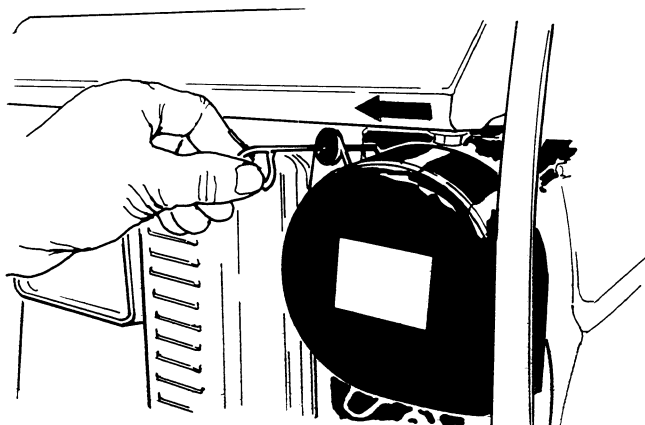
1. Open the fuel valve. See Figure 3.



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FIGURE 3. OPENING FUEL VALVE

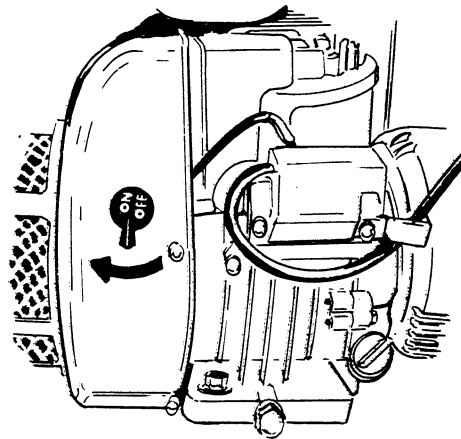
2. Close the choke if the engine is cold (engine has not run for awhile).



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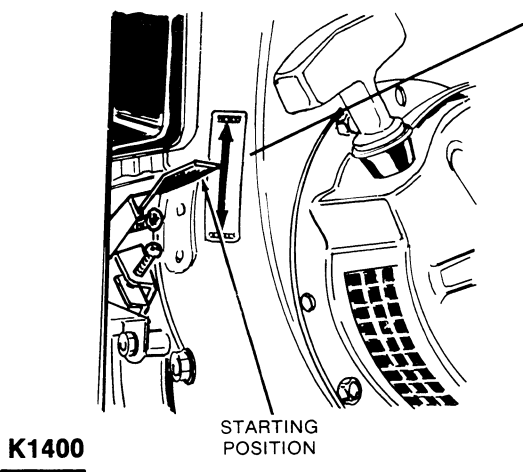
FIGURE 4. CLOSING THE CHOKE

3. Move the Engine Switch to ON. Figure 5 shows location of switch on K1400. Other models have switch located on control panel. See Figure 8.
4. Set the Speed Control Lever about midway between IDLE SPEED and OPERATING. See Figure 6.
5. With one hand on the generator set to steady it during cranking, grip the recoil starter handle and pull out smoothly and quickly. Repeat as necessary.



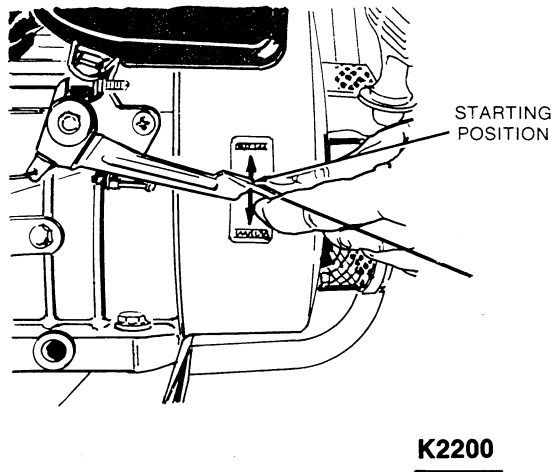
ES-1450

**FIGURE 5. ENGINE SWITCH LOCATION
(K1400)**

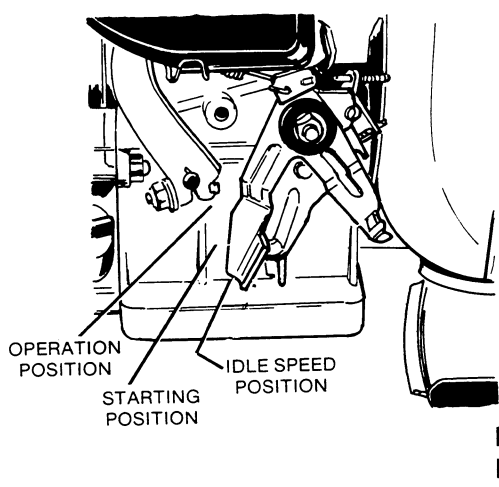


K1400

STARTING POSITION



K2200



K3200
K3500

ES-1451

FIGURE 6. SETTING SPEED CONTROL LEVER FOR STARTING

6. As engine warms up, gradually open the choke until it is completely open. Let the generator set run a few minutes without load to warm up the engine.

The voltmeter on the control panel indicates that generator output is available.

WARNING *The muffler can cause serious burns when the engine is running or right after the engine has run. Do not touch.*

ADDING LOADS

Follow the appropriate procedure for either AC loads or DC loads.

If the Oil Watch indicator flashes during cranking, add oil as described under "Pre-Starting Checks." Figure 7 shows an Oil-Watch Indicator for K2200, K3200 and K3500. On Model K1400, oil watch indicator is located on blower housing.

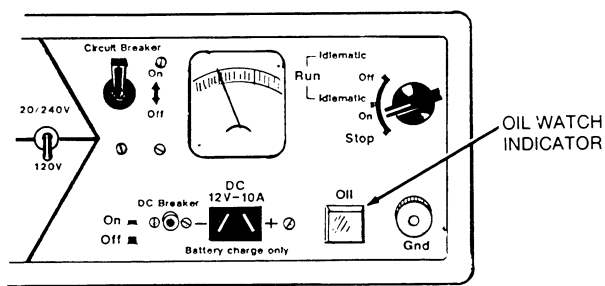
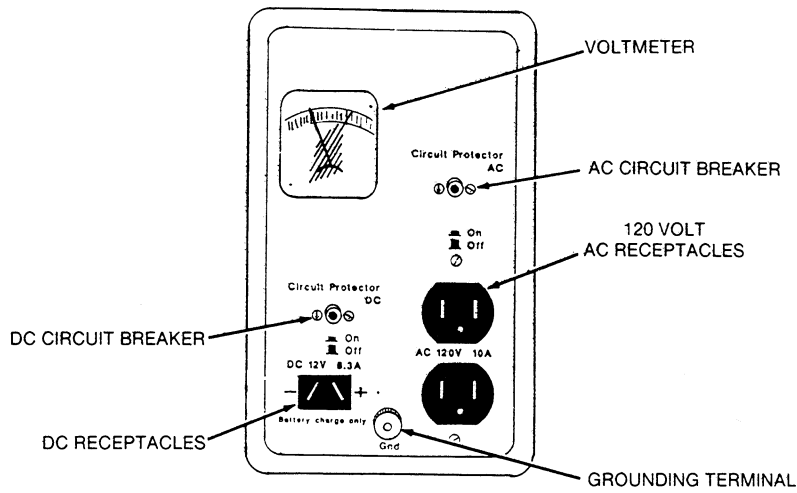
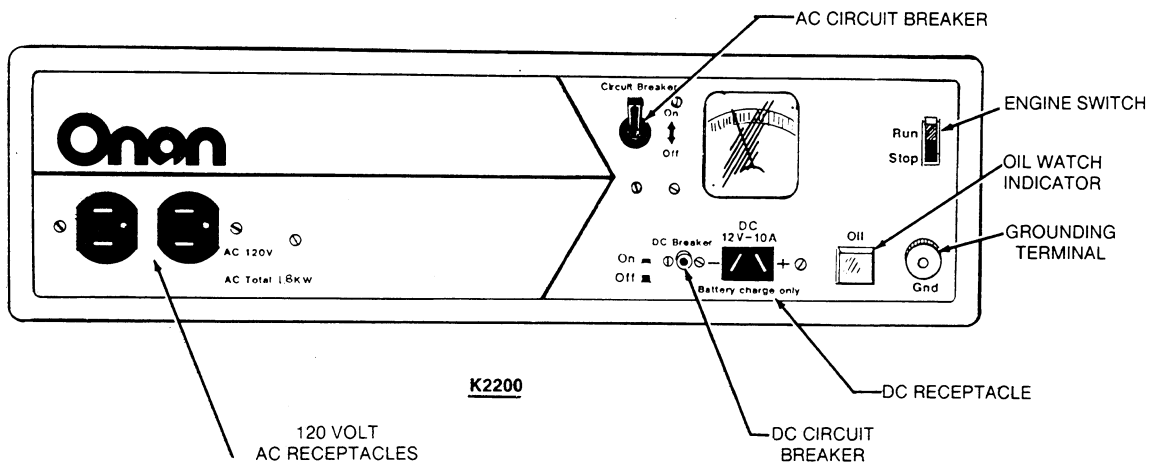


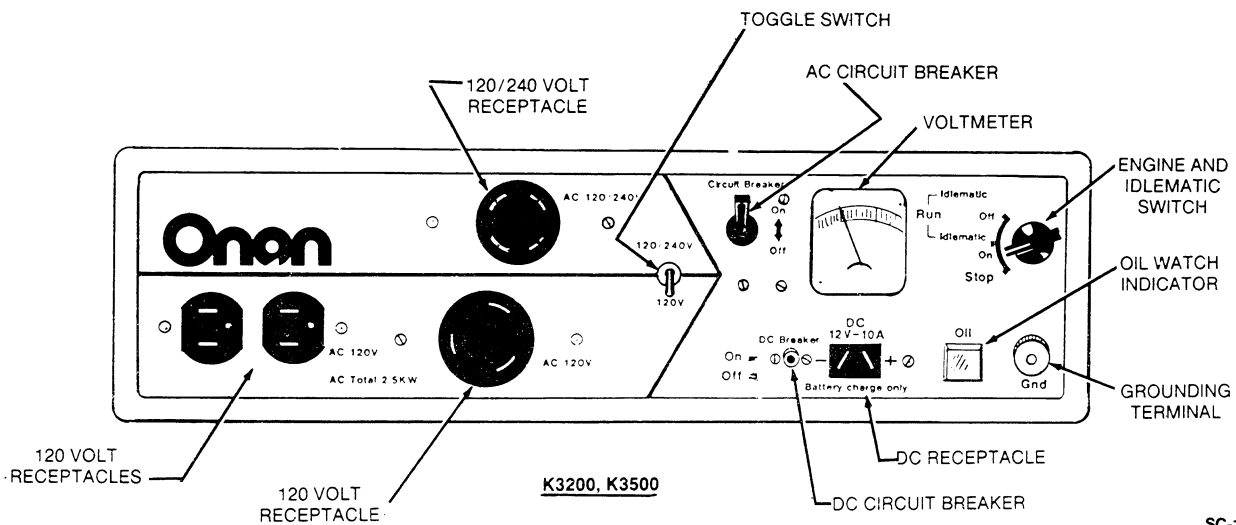
FIGURE 7. OIL WATCH INDICATOR-K2200, K3200, K3500



K1400



K2200



K3200, K3500

SC-1544

FIGURE 8. GENERATOR SET CONTROL PANELS

Adding AC Loads

1. Note the rated output of the generator set (from either nameplate or from *SPECIFICATIONS*).
2. Check the load rating of the items you plan to connect to the generator set. Table 1 lists typical wattages for common appliances and tools.
3. Add the wattages of the items you want to operate and make sure the total wattage is not more than the generator set rated output. Note the examples following.

Example 1: For a K1400 model with a 1200-watt rated output, you wish to operate a circle saw and some lighting. Since this saw uses 900 watts (from Table 1), there is 300 watts available for lighting or other loads.

Example 2: For a K2200 model with an 1800-watt rated output, you wish to operate a portable heater (1500 watts), a coffee percolator (850 watts), and a 100-watt light. Since the total is 2450 watts, you can not operate all these at the same time. For this example, we suggest you first use the heater and light, then the percolator and light, or vice versa.

If a motor load and another load total very close to the generator set rating. Onan recommends starting the motor load first. Motors consume much more current during starting than running (some as much as three times running load).

4. **Models K3200 and K3500:** Move the Change-over switch to 120V for use of the 120-volt duplex receptacle or 120-volt twist-lock receptacle, or to 120/240V for the 120/240-volt twist-lock receptacle that corresponds to the equipment plug.
5. **Models K3200 and K3500:** Move the Idlematic Switch to ON if you want the idlematic feature to operate automatically. This feature automatically controls engine speed to rise when loads are connected. If you do not want to use it, keep the switch at OFF (Figure 9).

Keep the Idlematic Switch at OFF if you have a lot of small interrupted loads or loads under 0.8 ampere.

6. Move the Speed Control Lever to OPERATING. See Figure 10.
7. Connect the AC loads to the receptacle(s) on the control panel. Make sure the cord and plug connector have ground terminals.

⚠ WARNING *Cord and plug equipment with a ground terminal can provide additional protection against electrical shock which can cause serious personal injury or death.*

K1400 ONLY: Do not use DC receptacles while using AC power.

TABLE 1. TYPICAL WATTAGE REQUIREMENTS

Electrical Equipment	Typical Running Watts*
Circle Saw (7-1/4 in.)	900
Drill (3/8 in.)	400
Bench Grinder (8 in.)	1400
Trimmer (12 in. heavy duty)	500
Portable Heater	1500
Electric Water Pump	550
Sump Pump	350
Coffee Maker (drip)	1500
Coffee Percolator	850
TV (B & W)	60
TV (Color)	200
Range (small burner)	1275
Range (large burner)	2400
Refrigerator	600

*See text for typical starting watts of motor loads.

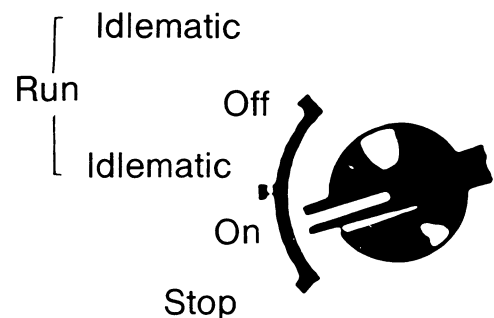
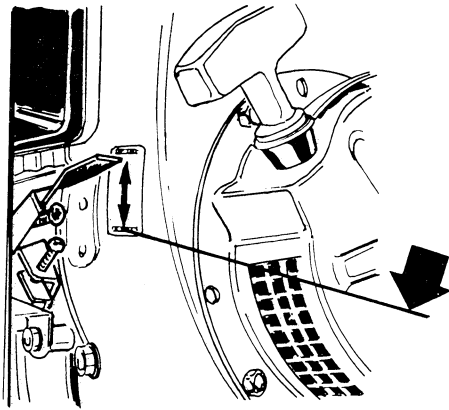
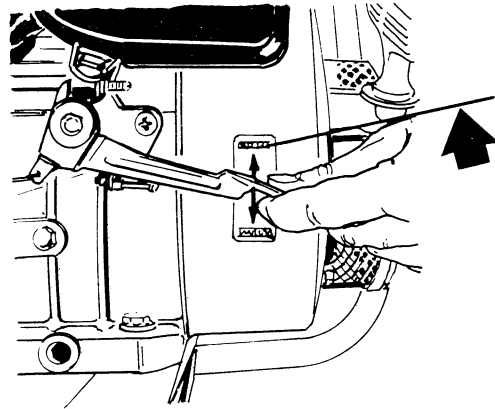


FIGURE 9. IDLEMATIC

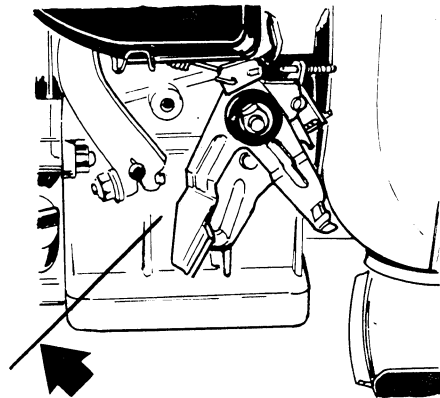
SC-1545



K1400



K2200



**K3200
K3500**

FS-1538

FIGURE 10. SPEED CONTROL LEVER OPERATION POSITION

Adding DC Loads

Connect the DC loads to the DC receptacles on the control panel. Make sure load wires + and - agree with the polarities at the receptacle on the control panel. Maximum DC output is 10 amperes, 12 volts, or 120 watts (K1400 output is 8.3 amperes, 12 volts, or 100 watts).

▲WARNING Batteries emit a highly-explosive gas that can be ignited by electrical arcing or by smoking. For battery charging, make sure first to connect the cables to the battery before connecting the cables to the generator set. This will prevent any arcing at the battery which can cause an explosion. When battery charging is complete, also make sure first to remove the cables at the generator set before removing the cables from the battery.

K1400 ONLY: Do not use AC receptacles while using DC power.

CIRCUIT BREAKERS

If either a DC or an AC circuit breaker opens, check to see if the generator set is overloaded. If so, remove some load from the generator set. Then reset the circuit breaker by pushing in the indicator (reset after a minimum of ten seconds of tripping).

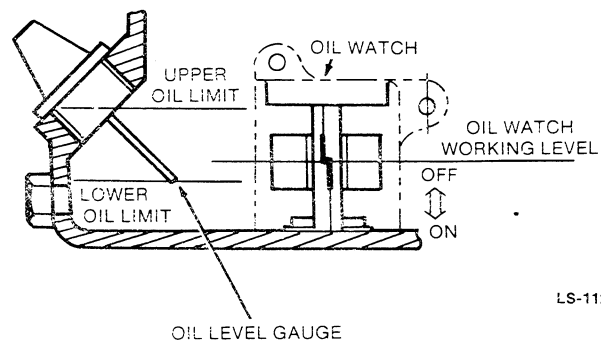
OPERATION INDICATORS

Voltmeter

The voltmeter on the control panel indicates rated generator output voltage.

Oil Watch Indicator

The oil watch flashes during cranking if the oil level is low. It also stops the generator set if it is running and reaches the low working level of the oil watch (oil watch indicator lights while engine is stopping). See Figures 7 and 11. Add oil as necessary before attempting to restart.

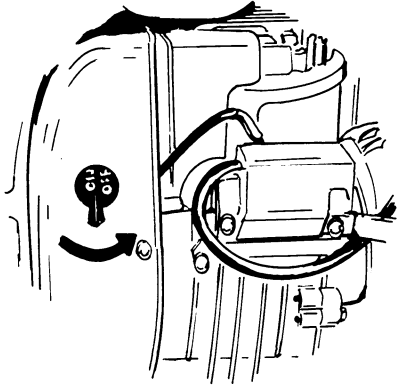


LS-1124

FIGURE 11. OIL WATCH

STOPPING

1. Remove all loads from the generator set.
2. Set the Speed Control Lever to IDLE SPEED.
3. Let the generator set run at least a few minutes without load to allow for cool-down of the engine.
4. Close the fuel valve.
5. Stop the generator set by moving Engine Switch to OFF. See Figure 12.



ES-1453

FIGURE 12. ENGINE SWITCH (K1400)

HIGH/LOW OPERATING TEMPERATURES

The generator will operate satisfactorily in both high and low temperatures. Use the oil recommended in the *MAINTENANCE* section for the expected temperature conditions.

High Operating Temperatures

1. See that nothing obstructs airflow to and from the generator.
2. Keep the engine cooling fins clean. Air housings should be properly installed and undamaged.

Low Operating Temperatures

1. Use fresh gasoline and keep the tank filled to avoid condensation.
2. Keep the spark plug clean and correctly gapped.

EXTREMELY DUSTY/DIRTY CONDITIONS

Observe the following when operating the generator set in extremely dusty or dirty conditions.

1. Keep the generator set clean, and do not allow dust and dirt to accumulate.
2. Clean the air cleaner more often than shown in the maintenance schedule.
3. Keep oil and gasoline in dust-tight containers suitable for storage of fuels.

LONG-TERM STORAGE

For storage longer than 30 days, Onan recommends the following procedure.

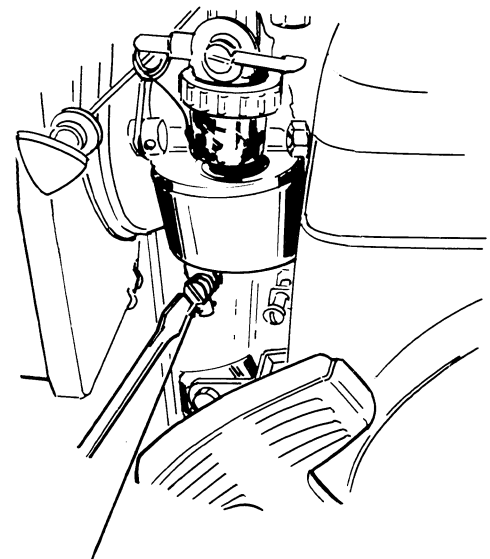
1. Run the generator set until it has reached warm operating temperatures.
2. Close the fuel valve and stop the generator set.
3. Change the oil while the engine is still warm.

▲WARNING *Hot oil can cause serious burns if spilled or splashed on the skin. Keep fingers and hands clear when removing the oil drain plug, and wear protective clothing.*

4. Let the engine cool. Then drain the gasoline from the fuel tank into a container designed for fuel usage.

▲WARNING *Ignition of fuel can cause serious personal injury or death. Do not permit any flame, cigarette, or other ignition source near the fuel system. Do not store generator set and fuel together. Proceed with care for any of the steps involving the fuel system!*

5. Drain gasoline from the carburetor float bowl by loosening the drain screw (make sure fuel valve is closed). Figure 13 shows a typical carburetor. Tighten the drain screw when finished.
6. Clean the fuel valve sediment bowl and screen.
7. Slowly pull the recoil handle until you feel heavy resistance. The engine is now in the compression stroke.
8. Cover the generator set and store it in a dry, protected area.



LOOSEN DRAIN SCREW

FS-1539

FIGURE 13. LOCATION OF CARBURETOR DRAIN SCREW

Maintenance

Regularly-scheduled maintenance is the key to lower operator costs and longer service life. Use the time intervals shown in the schedule as a guide for regular maintenance. However, actual operating conditions

should determine the schedule. Intervals must be reduced when operating in very dusty or dirty conditions or in hot and cold temperature extremes. Instructions for the maintenance items follow the schedule.

MAINTENANCE SCHEDULE

Maintenance Item	Interval					
	8 Hours	25 Hours	50 Hours	100 Hours	200 Hours	500 Hours
Clean generator set & check for loose parts	x ¹					
Check engine oil	x					
Clean air cleaner element		x ²				
Change engine oil	1st 10 hrs		x ²			
Clean spark plug			x			
Clean and inspect muffler				x		
Clean fuel filter					x	
Check spark plug gap					x	
Remove carbon deposits from cylinder head						x ³
Clean carburetor and tank						x
Adjust intake and exhaust valves						x ³
Overhaul						x ³

Change fuel pipe indicator every year (where applicable).

x¹ - Check for oil, fuel, and exhaust leaks. Make any repairs before operating.

x² - Perform more often for extremely dusty conditions.

x³ - Have Onan service representative perform.

CHANGE ENGINE OIL

Change the engine oil only after the engine has run and is still warm. This ensures most particulates in the oil are still suspended and will leave the crankcase with the oil.

The engine oil drain plug is at the base of the engine (Figure 14). Remove carefully to drain the oil and catch the old oil in a container. Re-install the drain plug when all the oil is drained.

▲WARNING *Hot oil can cause serious burns if spilled or splashed on skin. Keep fingers and hands clear when removing oil drain plug, and wear protective clothing.*

Use oils with the API (American Petroleum Institute) designation SE or SF class. Note the following temperature requirements.

Above 40°F (4.5°C)	SAE 30
Below 40°F (4.5°C)	SAE 20

Add oil to the engine until it reaches the top of the oil port (Figure 14). The *SPECIFICATIONS* section lists oil capacities.

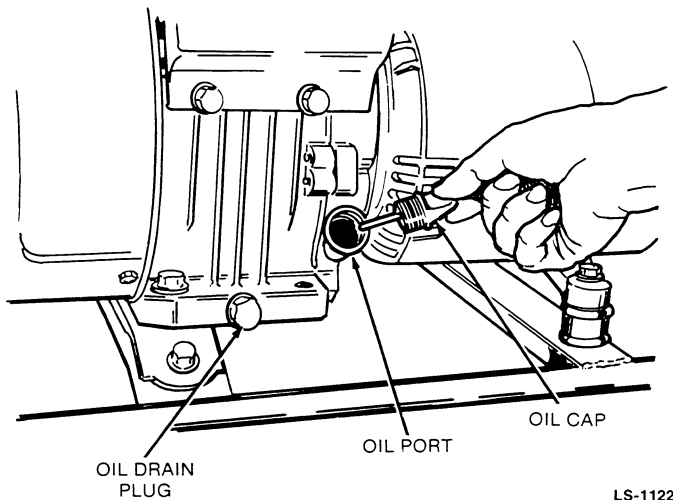


FIGURE 14. ENGINE OIL CAP, OIL PORT, AND OIL DRAIN PLUG

ENGINE FUEL SYSTEM

Fuel Filter

Periodically clean the fuel filter as follows:

1. Turn the fuel valve closed.
2. Turn the sediment bowl off the fuel valve. Be careful not to spill gasoline.

▲WARNING *Ignition of fuel can cause serious personal injury or death. Do not permit any flame, cigarette, or other ignition source near the fuel system. Proceed with care for any steps involving the fuel system!*

3. Remove the screen and clean out any dirt and particulate.
4. Re-install the screen and sediment bowl.

Drain Carburetor

1. Turn the fuel valve closed.
2. Loosen the carburetor float bowl drain screw and run gasoline into a container designed for gasoline usage. Figure 13 of *OPERATION* section shows drain screw location.

▲WARNING *Ignition of fuel can cause serious personal injury or death. Do not permit any flame, cigarette, or other ignition source near the fuel system. Proceed with care for any steps involving the fuel system!*

3. Tighten the carburetor bowl drain screw.

SPARK PLUG

A badly-fouled spark plug will cause misfiring, poor operation, poor economy, or stopping with a load applied. Remove the spark plug and clean any carbon and deposits with a wire brush. Adjust the plug gap after cleaning (Figure 15). Plug gaps are listed in the *SPECIFICATIONS* section.

▲CAUTION *Do not clean spark plug by sandblasting. Deposits remaining on the plug can cause premature engine wear.*

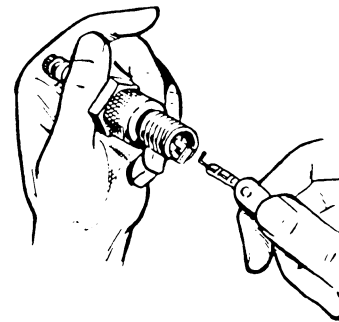
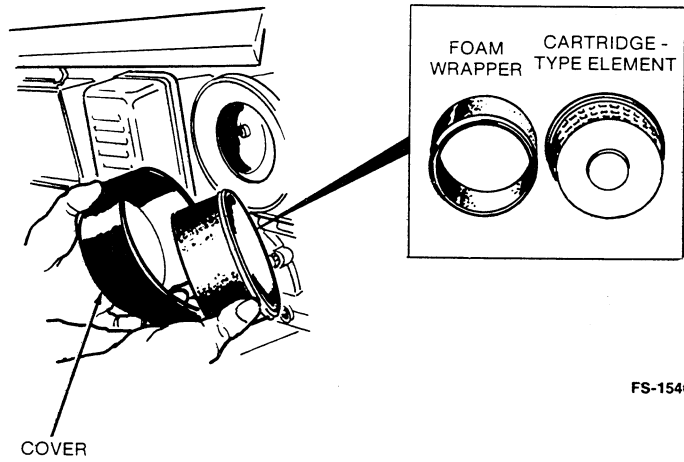


FIGURE 15. CHECKING SPARK PLUG GAP

AIR CLEANER

1. Loosen the air cleaner cover. See Figure 16.
2. Take out the air cleaner element.
3. Remove the foam wrapper, and wash it in detergent and water. Dry thoroughly when finished.
4. Re-oil the foam wrapper and squeeze out any excess oil.
5. Shake and tap the cartridge-type element to remove the dust and dirt. If still dirty, install new element.
6. Install the foam wrapper back onto the cartridge-type element.
7. Clean out the air cleaner housing and cover.
8. Re-install the element into the housing and put on the air cleaner cover.



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FIGURE 16. DUAL-ELEMENT AIR CLEANER

MUFFLER SERVICING

Every 100 hours or sooner, remove the spark arrestor screen and inspect for damage. If damaged, replace. To clean, lightly tap the screen and clean any carbon and deposits with a wire brush. Also use solvent if necessary. Replace and attach securely with two screws.

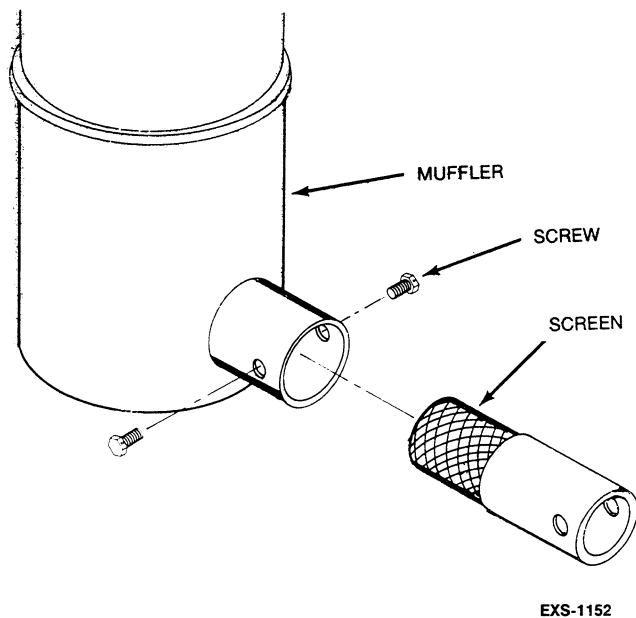


FIGURE 17. MUFFLER SERVICING

MANUFACTURER'S LIMITED WARRANTY

K Series Portable Generator U.S. AND CANADA

Onan extends to the original purchaser of goods for use, the following warranty covering goods manufactured or supplied by Onan, subject to the qualifications indicated.

THERE IS NO OTHER EXPRESS WARRANTY.

IMPLIED WARRANTIES INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO PERIODS OF WARRANTY SET FORTH BELOW AND TO THE EXTENT PERMITTED BY LAW, ANY AND ALL IMPLIED WARRANTIES ARE EXCLUDED.

IN NO EVENT IS ONAN LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Note: Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply in every instance.

- (1) Onan warrants to original purchaser for the periods set forth below that goods manufactured or supplied by it will be free from defects in workmanship and material, provided such goods are installed, operated, and maintained in accordance with Onan's written instructions.

PRODUCT APPLICATION

- Goods used in personal, family and household applications.
- Goods used in commercial-industrial applications.
- Repair or replacement parts.

PERIOD OF WARRANTY

- One (1) year from date of purchase.
- Ninety (90) days from date of purchase
- Ninety (90) days from date of purchase, excludes labor.

- (2) Onan's sole liability and Purchaser's sole remedy for a failure of goods under this warranty and for any and all other claims arising out of the purchase and use of the goods, including negligence on the part of the manufacturer, shall be limited to the repair of the product by the repair or replacement, at Onan's option, of parts that do not conform to this warranty, provided that the product or parts are returned to Onan's factory at 1400 73rd Avenue NE, Minneapolis, Minnesota 55432, or to an Onan Authorized Distributor or its designated service representative, transportation prepaid.
- (3) All claims must be brought to the attention of Onan or an Authorized Distributor or its designated service representative within thirty (30) days after discovery that goods or parts fails to meet this warranty.
- (4) THIS WARRANTY SHALL NOT APPLY TO:
- a) Cost of maintenance, adjustments, installation and start-up.
 - b) Failures due to normal wear, accident, misuse, abuse, negligence or improper installation, or lack of reasonable and necessary maintenance.
 - c) Products which are altered or modified in manner not authorized by manufacturer in writing.
 - d) Failure of goods caused by defects in the system or application in which the goods are installed.
 - e) Telephone, telegraph, teletype or other communication expenses.
 - f) Living and travel expenses of persons performing service.
 - g) Rental equipment used while warranty repairs are being performed.
 - h) Overtime labor requested by purchaser.

No person is authorized to give any other warranties or to assume any other liabilities on Onan's behalf, unless made or assumed in writing by an officer of Onan, and no person is authorized to give any warranties or assume any other liability on behalf of Seller unless made or assumed in writing by Seller.

- (5) This warranty gives the user specific legal rights, and the user may also have other rights which vary from state to state.



Onan Corporation
1400 73rd Avenue N.E.
Minneapolis, Minnesota 55432

Telephone: (612) 574-5000
Telex: 275477
Cable ONAN