WINCO®

WL12000HE/K & L GENERATOR

INSTALLATION AND OPERATORS MANUAL

WINCO INC. 225 S. CORDOVA AVE. LE CENTER, MN 56057 507-357-6821
SERVICE DEPT. 507-357-6831
www.wincogen.com

TABLE OF CONTENTS

SAVE THESE INSTRUCTIONS 2

SPECIFICATIONS 3
- GENERATOR
- ENGINE

SAFETY 3
- IMPORTANT SAFETY INSTRUCTIONS
- ANSI SAFETY DEFINITIONS

TESTING POLICY 4

INTRODUCTION 4
- INTENDED USES
- RESTRICTED USES

UNIT CAPABILITIES 4
- GENERATOR CONNECTIONS
- STARTING ELECTRIC MOTORS

PREPARING THE UNIT 5
- UNPACKING
- LUBRICATION
- OIL RECOMMENDATIONS
- OIL ALERT SYSTEM
- GASOLINE
- BATTERY INSTALLATION
- BATTERY CHARGING
- OPTIONAL DOLLY KIT

INITIAL START UP 6
- BASIC OPERATION
- STARTING HINTS

CONNECTING THE LOADS 8
- APPLYING THE LOADS
- GROUNDING
- WIRING

ENGINE CARE 9
- MAINTENANCE SCHEDULE
- CHECKING THE OIL LEVEL
- CHANGING THE OIL

GENERATOR CARE 10
- EXERCISING THE GENERATOR
- GENERATOR MAINTENANCE
- DUAL ELEMENT AIR FILTER
- SPARK PLUG
- CARBON CANISTER
- CLEANING

CONTROL PANEL WIRING DIAGRAM 11

TROUBLESHOOTING 11

24 MONTH LIMITED WARRANTY 12

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the generator. Read and understand all instructions in the manual before starting and operating the generator.

USING THIS MANUAL

Congratulations on your choice of a WINCO generator. You have selected a high-quality, precision-engineered generator designed and tested to give you years of satisfactory service.

To get the best performance from your new generator, it is important that you carefully read and follow the operating instructions in this manual.

Should you experience a problem please follow the “Troubleshooting Tables” near the end of this manual. The warranty listed in the manual describes what you can expect from WINCO should you need service assistance in the future.

COPY YOUR MODEL AND SERIAL NUMBER HERE

No other WINCO generator has the same serial number as yours. If you should ever need to contact us on this unit, it will help us to respond to your needs faster.

MODEL _____

SERIAL NUMBER _____

PURCHASE DATE _____

DEALER NAME _____

DEALER PHONE # _____

SPECIFICATIONS

GENERATOR

Model	WL12000HE/K & L
Surge Watts	12,000
Continuous Watts	10,800
Volts	120/240
Amps	90/45

Generator Manufacturer	Mecc Alte Spa
Generator Model Number	S20FS-160/A
Part Number	351836-1
Rotor Resistance	6.57 Ohms
Stator Resistance	0.124 Ohms
Cap Winding Resistance	0.60 Ohms
Capacitors	31.5 mF
Capacitor Part Number	300323-112

ENGINE

Engine Manufacturer	Honda
Engine Model Number	GX630R
Type	VXE1 NH1
Code	653951
Spark Plugs	ZFR5F (NGK)
Air Filter	17210-Z6L-010
Air Filter Pre-Cleaner	17218-Z6L-000
Oil Filter	15400-RTA-004
Fuel Filter	16910-Z6L-003
Spark Plug Gap	0.030 in
Intake Valve Clearance	0.006 - 0.010 in
Exhaust Valve Clearance	0.010 - 0.012 in
Oil Capacity	57 - 58 oz (1.78 - 1.81 qts)

SAFETY

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important information that should be understood and followed before the installation, operation and maintenance of the generator. Failure to follow the safety instructions in this manual could result in serious injury or death. Keep this manual available for future reference.

ANSI SAFETY DEFINITIONS

DANGER:
*DANGER indicates an imminently hazardous situation which, if not avoided, **will** result in death or serious injury. This signal word is to be limited to the most extreme situations.*

WARNING:
*WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.*

CAUTION:
*CAUTION indicates a potentially hazardous situation which, if not avoided, **may** result in minor or moderate injury. It may be used to alert against unsafe practices.*

NOTE: CAUTION is also used on the unit labels and in this manual to indicate a situation that could result in serious damage or destruction of the equipment and possible personal injury.

1. ELECTRIC SHOCK -

The output voltage present in this equipment can cause a fatal electric shock. This equipment must be operated by a responsible person.

A. Do not allow anyone to operate the generator without proper instruction.
B. Guard against electric shock.
C. Avoid contact with live terminals or receptacles.
D. Use extreme care if operating this unit in rain or snow.
E. Use only three-prong grounded plugs and extension cords.
F. Be sure the unit is properly grounded to an external ground rod driven into the earth.

2. FIRE HAZARD -

A. Keep a fire extinguisher nearby and know its proper use. Fire extinguishers rated ABC by NFPA are appropriate.

3. NOISE HAZARD -

Excessive noise is not only tiring, but continual exposure can lead to loss of hearing.

A. Use hearing protection when working around this equipment for long periods of time.
B. Keep your neighbors in mind when permanently installing this equipment.

4. CLEANLINESS -

Keep the generator and surrounding area clean.

A. Remove all grease, ice, snow or materials that create slippery conditions around the unit.
B. Remove any rags or other materials that could create a potential fire hazard.
C. Carefully clean up any gas or oil spills before starting the unit.

5.SERVICING EQUIPMENT -
All service, including the installation or replacement of service parts, **should be performed only by a qualified technician.**

A. Use only factory approved repair parts.
B. Do not work on this equipment fatigued.

C. Use extreme caution when working on electrical components. High output voltages from this equipment can cause serious injury or death.
D. Installing a generator is not a “do-it-yourself” project. Consult a qualified, licensed electrician or contractor. The installation must comply with all national, state, and local codes.

TESTING POLICY

Before any generator is shipped from the factory, it is fully checked for performance. The generator is loaded to its full capacity, and the voltage, current, and frequency are carefully checked.

Rated output of generator is based on engineering tests of typical units, and is subject to, and limited by, the temperature, altitude, fuel, and other conditions specified by the manufacturer of applicable engines.

INTRODUCTION

INTENDED USES

This engine generator set has been designed primarily for portable heavy duty commercial use. Both 120 volt and 240 volt receptacles are provided in the control panel to plug in your loads (lights, portable tools, and small appliances). These units are dual wound generators, therefore the 120 volt loads must be equally split with 1/2 of the rated capacity available on each of the two 120 volt circuits.

This portable unit requires large quantities of fresh air for cooling the engine and generator. For safety, long life and adequate performance, these units should never be run in small compartments without positive fresh air flow.

RESTRICTED USES

DO NOT remove from the cradle assembly. Removal of the generator from the cradle assembly may cause excessive vibration and damage to the engine-generator set.

DO NOT install and operate this generator in a small compartment., i.e. generator compartments of vehicles, motor homes or travel trailers. These compartments will not allow enough free flow of fresh air to reach the engine generator set for cooling and will cause the unit to overheat, damaging both the engine and generator. Small compartments will also develop hot spots where there is very little air flow and may cause a fire.

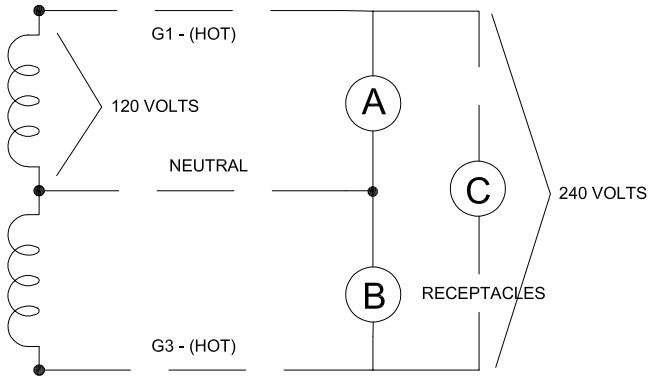
PLEASE NOTE There are 3rd party companies making enclosures for generators that have been properly engineered. The use of these 3rd party enclosures is acceptable as long as they have been certified and meet current code.

DO NOT attempt to operate at 50 cycles. These units are designed and governed to operate at 60 cycles only.

UNIT CAPABILITIES

GENERATOR CONNECTIONS

WL12000HE: 120 Volt and 240 Volt receptacles are provided for connection to various loads. The diagram below represents this 10,800 watt (rated output) generator. A & B represent the 120 volt output legs of this generator. Up to 5400 watts at 120 volts (45 Amps) can be drawn from the receptacles attached to either A or B output legs. This generator is capable of producing 45 Amps of 240 volt current at C. Check the appliance or tool nameplates for the current and voltage to insure compatibility. Remember that power taken from C reduces the power available at equally both A and B and vice versa.



STARTING ELECTRIC MOTORS

Electric motors require much more current (amps) to start them than to run them. Some motors, particularly low cost split-phase motors, are very hard to start and require 5 to 7 times as much starting current as running current. Capacitor motors are easier to start and usually require 2 to 4 times as much starting current as running current. Repulsion Induction motors are the easiest to start and require only 1 1/2 to 2 1/2 times as much starting as running current.

Most fractional horsepower motors take about the same amount of current to run them whether they are Repulsion Induction (RI), Capacitor (Cap), or Split-Phase (SP) type.

If the electric motor is connected to a hard starting load such as an air compressor, it will require more starting current. If it is connected to a light load, or no load such as a power saw, it will require less starting current. The exact requirement will also vary with the brand or design of the motor.

Self-exciting generators respond to severe overloading differently than utility power. When overloaded, the engine is not able to supply enough power to bring the electric motor up to operating speed. The generator responds with high initial starting current, but the engine speed drops sharply. The overload may stall the engine. If allowed to operate at very low speeds, the electric motor starting winding will burn out in a short time. The generator winding might also be damaged.

CAUTION: EQUIPMENT DAMAGE
Running the generator set under these conditions may result in damage to the generator stator as well as the motor winding.

The heavy surge of current required for starting motors is required for only an instant. The generator will not be damaged if it can bring the motor up to speed in a few seconds of time. If difficulty is experienced in starting motors, turn all other electrical loads off and if possible reduce the load on the electric motor.

PREPARING THE UNIT

UNPACKING

CAUTION: EQUIPMENT DAMAGE
THIS UNIT HAS BEEN SHIPPED WITHOUT OIL. Failure to maintain the engine oil at the proper level will result in serious engine damage.

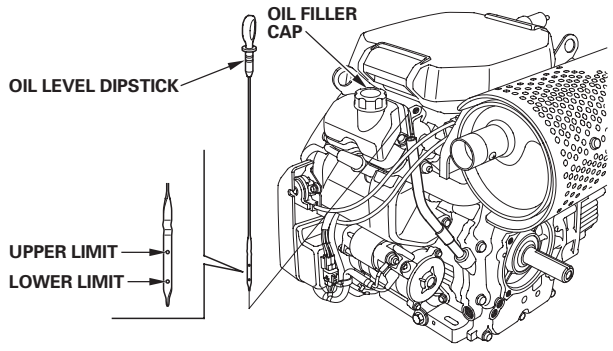
When you unpack your engine-generator set be sure to remove all the information sheets and manuals from the carton.

1. As you receive your unit, it is critical to check it for any damage. If any damage is noted, it is always easiest to refuse the shipment and let WINCO take care of the freight claim. If you sign for the unit, the transfer of the ownership requires that you file the freight claim

2. Before proceeding with the preparations of your new generator for operation, take a couple of minutes to ensure the unit you have received is the correct model and review the specification pages in this manual to ensure that this unit meets your job requirements.

LUBRICATION

Before starting the engine, fill the crankcase to the proper level with a good quality oil. The recommended grade oil and quantity of oil required is listed in the engine operator's manual and under the service tab in this manual. This unit was shipped with most of the oil removed. The engine normally holds 57 to 58 ounces (1.78 to 1.81 quarts) of oil. Since there is some trapped in the engine, when filling the crankcase the first time, use the dipstick to ensure that you do not over fill the crankcase. The full oil level mark on the dipstick is depicted in the following image.

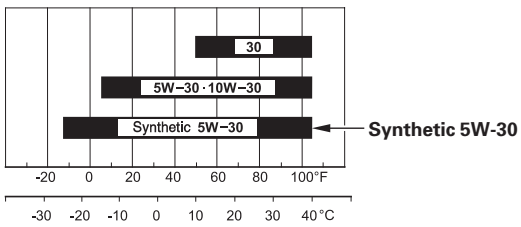


Oil is added to the engine by removing the oil cap and adding oil at this point. After filling the crankcase to the proper level, be sure you properly tighten the oil fill cap.

NOTE: This engine generator must be on a level surface before you check or add oil to the system.
The necessity of using the correct oil and keeping the crankcase full cannot be overemphasized. Engine failures resulting from inadequate or improper lubricant are considered abuse and not covered by the generator or engine manufacturer's warranty.

OIL RECOMMENDATIONS

Outdoor temperatures determine the proper oil viscosity for the engines. Use the chart to select the best viscosity for the outdoor temperature range expected.



SAE 10W-30 or 5W-30 is recommended for general use. Use a full synthetic 5W-30 for starting/operating temperatures between 5°F (−15°C) and −13°F (−25°C). Other viscosities shown in the chart may be used when the average temperature in your area is within the indicated range.

OIL ALERT SYSTEM

This generator is equipped with a low oil shutdown system. This Honda engine uses an float switch mounted insode the engine. If the oil level drops below a certain point the low oil module on the engine will shut it down. This low oil warning system will automatically stop the engine before the oil level reaches critical danger point. This feature is designed to prevent costly repairs and downtime.

CAUTION: EQUIPMENT DAMAGE
Allowing the engine to shutdown repeatedly on low oil level may cause excessive wear which can be cumulative.

GASOLINE

When using gasoline, always use fresh, clean, unleaded fuel. The engine is certified to operate on unleaded gasoline with a minimum octane rating of 87 or higher. Gasoline containing no more the 10% ethanol is acceptable.

CAUTION: EQUIPMENT DAMAGE
Do not use unapproved gasolines, such as E15 or E85. Do not mix oil in the gasoline. Use of unapproved fuels will damage the engine compenents and void the engine warranty.

Use of fuels with content of ethanol greater than shown above may cause starting and/or performance problems. Always ensure that the fuel is clean and free of all impurities.

WARNING: FIRE DANGER
Gasoline and its fumes are VERY explosive when proper precautions are not taken.

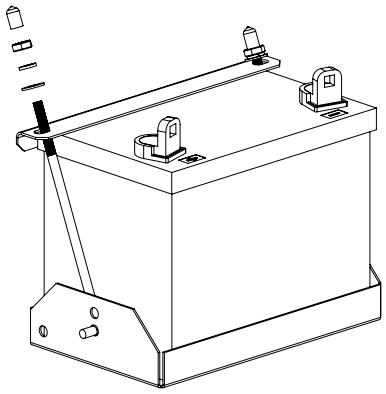
Never use gasoline that has been stored for an extended period of time as the fuel will lose its volatile properties and you will be left with varnish residue. The varnish like substance will clog the carburetor and will not burn properly.

The use of fuel additives, such as Sta-Bil, or an equivalent will minimize the formation of fuel gum deposits. If a unit has been out of operation for an extended period of time, it is best to drain old fuel from the engine and replace with fresh fuel before attempting to start.

See the engine manual for special instruction for operating this unit at over 5000 feet.

BATTERY INSTALLATION

This engine generator set is shipped with a battery tie down kit for customer installation. This kit consists of a battery tie down and hardware for installation of the customer supplied battery on the unit.



If you intend to use the power plant's electric start system, you will need to purchase and install a battery to operate it.

WARNING: EQUIPMENT DAMAGE
The battery positive (+) cable is shipped with a plastic protective cap. When starting manually, this protective cap must remain in place to avoid possible damage to the engine electrical system and/or generator end.

A 12 Volt battery, BCI group U1 rated at 275 CCA or larger is recommended for this electric start engine-generator set. Follow the battery manufacturers recommendations for servicing and charging prior to use. Connect the battery to the electric start system using the cables provided.

CAUTION: EQUIPMENT DAMAGE
These electric start engines are NEGATIVE GROUND. Use extreme caution when connecting the battery. Connect the NEGATIVE battery terminal to GROUND.

For your safety, always connect the positive battery cable to the "bat+" terminal first. Then connect the negative battery cable to the "Bat-" terminal. Make sure all connections are clean an tight. Reverse the sequence when disconnecting, disconnect the negative cable first. These engines produce enough direct current to keep the battery charged under normal operating conditions, but were not intended to be used as a battery charger.

WARNING: PERSONAL INJURY
Lead acid batteries produce explosive hydrogen gas when charging. Keep sparks, flames, and burning cigarettes away from the battery. Ventilate the area when charging or using the battery in an enclosed space. Lead acid batteries contain sulfuric acid, which causes severe burns. If acid contacts eyes, skin, or clothing, flush well with water. ***For contact with the eyes, get immediate medical attention.***

BATTERY CHARGING

Units have a small flywheel charger built into the engine flywheel assembly for recharging the starting battery. This flywheel charger generates a small AC current that passes through a diode assembly to produce DC charging current of about 1 to 3 Amps. This circuit is not designed to be used as a battery charging circuit to recharge dead batteries.

OPTIONAL DOLLY KIT

An optional 4-wheel dolly kit is available for this generator. The dolly kit comes with instructions and parts list.

INITIAL START UP

The throttle control on these generators is preset and locked to operate at 3600 RPM (nominal) with no load speed set at 3690 RPM. Only a trained service technician should be allowed to adjust this speed setting.

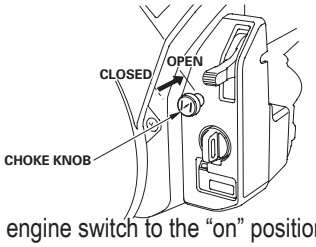
NOTICE: ENGINE START LOCKOUT
This unit will not start if it is low on oil. The lubricating oil level must be at the full mark before the engine will start and run.

BASIC OPERATION

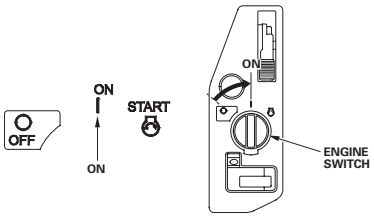
If the engine is cold and stiff or if the battery is not fully charged, starting can be made easier by slowly hand cranking the engine through the compression stroke before pushing the starter switch. This permits the starter to gain momentum before the heavy load of the compression stroke occurs. This minimizes the drain on the battery and improves the possibility of starting under such adverse conditions. Always keep the battery charged, especially during cold weather operation.

1. Check oil level, refill as needed.
2. Turn on the fuel supply. Ref "A". Lever pointing up is on, lever pointing down is off.

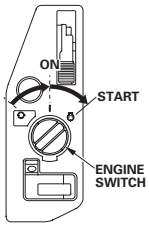
3. Engage the choke by pulling it out. A warm engine will require less choking than a cold engine.



4. Turn the engine switch to the “on” position.



5. Operating the starter. Rotate the key switch briefly to the START position. The starter life is improved by using shorter starting cycles with time to cool off between cranking cycles. Do not operate the starter more than 5 seconds and wait at least 10 seconds before operating the starter again. Repeat cycle if necessary.



6. When the engine starts, release the key switch, allowing it to return to the “on” position.
7. Gradually push the choke as the engine warms up.
8. The engine should promptly come up to operating speed.

CAUTION: EQUIPMENT DAMAGE
Never permit the choke to remain on after the engine has run for a short time. It is not necessary to choke the engine when it is warm. Avoid over-choking.

STARTING HINTS

1. COLD WEATHER

A. Use the proper oil for the temperature expected.
B. Use fresh winter grade fuel. Winter grade gasoline is blended to improve starting. Do not use summer grade gasoline.

2. HOT WEATHER

A. Use the proper oil for the temperature expected.
B. Use only summer blended gasoline. Using gasoline left over from winter may cause the unit to vapor lock.

STOPPING AND STORING

1. Move the key to the “OFF” position.
2. Turn off the fuel supply valve.
3. Before extended storage (over 30 days) certain precautions must be taken to ensure the fuel doesn’t deteriorate and clog the fuel system.

NOTE: The use of a fuel additive, such as Sta-Bil or equivalent will minimize the formation of gum deposits during storage. The additive may be added to gasoline in the engines fuel tank or to gasoline in a storage container.

A. Add the fuel stabilizer to the fuel in the tank and run for 2 minutes to circulate the stabilizer throughout the fuel system.
B. If you choose to remove the remaining fuel from the fuel tank, it must be drained into an approved container.
C. Start the engine and allow it to run until all the fuel in the carburetor and the fuel lines has been used up and the engine stops.

NOTE: Running the engine to use up the fuel in the lines and carburetor will still leave a small amount of fuel in carburetor. It is best extended storage to treat the fuel before draining.

D. While the engine is warm, drain the oil and refill with fresh oil.
E. Clean dirt and chaff from cylinder, cylinder head fins, blower housing, screen, and muffler areas.
F. Store in a clean and dry area.

OPERATING SPEED

The engine-generator must be run at the correct speed in order to produce the proper electrical voltage and frequency.

CAUTION: EQUIPMENT DAMAGE
The output voltage should be checked to ensure the generator is working properly prior to connecting a load to the generator. Failure to do so could result in damage to equipment plugged into the unit and possible injury to the individual.

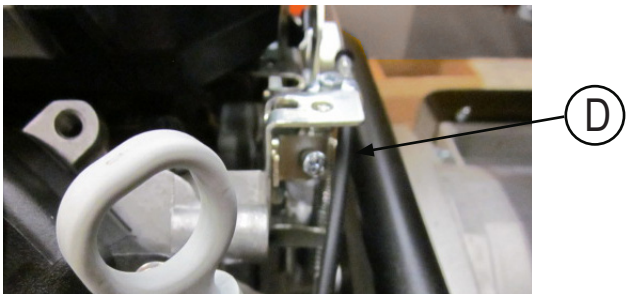
All engines have a tendency to slow down when a load is applied. When the electrical load is connected to the generator, the engine is more heavily loaded, and as a result, the speed drops slightly. This slight decrease in speed, together with the voltage drop within the generator itself, results in a slightly lower voltage when the generator is loaded to its full capacity than when running no load. The slight variation in speed also affects the frequency of the output current. This frequency variation has no appreciable effect in the operation of motors, lights, and most appliances. However, electronic equipment and clocks will be affected if correct RPM is not maintained. See Load vs. Output chart.

Although individual units and models vary slightly, the normal voltage and frequency of the engine-generator described in this manual are approximately as follows, under varying loads:

LOAD vs. OUTPUT			
Generator Load	Speed (RPM)	Frequency (Hz)	Voltage
None	3690	61.5	125V
Half	3600	60.0	120V
Full	3510	58.5	115V

The speed of the engine was carefully adjusted at the factory so that the generator produces the proper voltage and frequency. For normal usage, the speed setting should not be charged. If the generator is being run continuously on a very light load, it is often advisable to lower the operating speed slightly.

Reference “D” in the following image is the speed adjustment for this engine.



CAUTION: EQUIPMENT DAMAGE
SPEED ADJUSTMENTS SHOULD ONLY BE MADE BY A QUALIFIED SERVICE TECH. *Whenever making any speed adjustments, check the unit with a voltmeter and a frequency meter or a tachometer and be sure the voltage and speed are correct.*

Lower voltage may damage both the generator and any load connected to it. Running the engine at excessively high speeds results in high voltage, which may significantly shorten the life of appliances being used.

Output voltage should be checked periodically to ensure continued proper operation of the generating plant and appliances. If the generator is not equipped with a voltmeter, it can be checked with a portable meter.

CONNECTING THE LOADS

APPLYING THE LOADS

Allow the engine to warm up for two or three minutes before applying any load. This will allow the engine to reach normal operating temperature and oil to circulate throughout the engine. A shot warm-up time will permit the engine to work more efficiently when the load is applied and will reduce the wear in the engine, extending its life.

Receptacles have been provided to allow loads to be connected to the generator. The loads should be added one at a time. If a large motor is being started: or multiple motors are being started, they should be started individually and the largest should be started first.

CAUTION: EQUIPMENT OVERLOAD
Keep the generator load within in the generator and receptacle nameplate rating. Overloading may cause damage to the generator and/or the loads.

Most electric tools and appliances will have the voltage and amperage requirements on their individual nameplates. When in doubt, consult the manufacturer or a local electrician. The nameplate amperage rating for electric motors can be misleading. See “Starting Electric Motors” in the Unit Capabilities.

These engine-generator sets are inherently self regulating based on engine speed. The engine governor will automatically adjust itself to the load. No harm to the generator will result if it is operated with no load connected. Proper utilization of the receptacles located on the control panel is necessary to prevent damage to either the receptacles or the generator. The generator is a limited source of electrical power, therefore, pay special attention to the receptacle and generator ratings. The nameplate rating can be obtained through a single receptacle as long as the receptacles amperage rating is not exceeded.

GROUNDING

All units must be grounded. Drive a 3/4 or 1” copper pipe or rod into the ground close to the engine-generator set. The pipe must penetrate moist earth. Connect an approved ground clamp to the pipe. Run a no. 10 Awg wire from the clamp to the generator ground lug on the receptacle panel. Do not connect to a water pipe or to a ground used by a radio system. The engine-generators covered in this manual were designed primarily for portable use. If you are connecting into a building wiring system that is already grounded using the 14-60 4 wire plug, you do not have to ground the unit.

WARNING: PERSONAL DANGER
DO NOT OPERATE THIS GENERATOR INDOORS, *The unit should be stored in a warm, dry location. During a power outage, move the unit outdoors to a flat, dry location such as a driveway or sidewalk.*

WIRING

Plug your tools such as drills, saws, blowers, sump pump, and other items to be powered directly into the generator receptacles. Before plugging in all the tools and cord sets, recheck the rating of the generator set. Be sure it can handle the intended load and is compatible with the voltage, phase, and current ratings. ‘Hard wiring’ this unit directly into a temporary construction site electrical system is **NOT A SIMPLE DO-IT-YOURSELF JOB.** For your safety, all wiring must be done by a qualified electrician and conform to the National Electric Code and comply with all state and local codes and regulations. Check with local authorities before proceeding.

WARNING: PERSONAL DANGER
A fully isolated, double pole double throw manual transfer switch must be installed any time a generator is being connected to an existing distribution system.

1. These engine-generator sets are designed for portable heavy duty commercial use. Receptacles are provided on the control panel to permit 120 and 240 Volt portable appliances and tools to be plugged directly into them. Please note that the 3-wire 240 Volt receptacle(s) on these units are designed to power only 240 Volt tools. There are two hot leads and a ground wire, but no neutral connection, in the 3-wire 240Volt receptacle. A 4-wire receptacle (two hot, one ground, and one neutral) has been provided on the control panel for use in temporary power applications requiring 120/240 Volt power. Consult a licensed electrician for wiring the TemPower plug and connecting it as temporary service.

To connect these units directly to an un-powered, isolated construction site TemPower panel, have your electrician connect to the control panel using a 120/240 Volt, 4-wire twist-lock plug (14-60P).

NOTE: Never attempt to use the 240 Volt 3-wire receptacle to wire into a building. This is a GFCI circuit and is designed for 240 Volt output only. It has no neutral connection. If you attempt to draw 120 Volt from this receptacle, the GFCI breaker will trip.

2. If the generator set is connected to an existing distribution system, a fully isolated manual transfer switch must be installed. The transfer switch prevents damage to the generator and the other circuit components if main line power is restored while the generator is connected. Installing a transfer switch also permits the use of normal fusing.

3.Many homes and construction sites are wired for at least 60 to 100 Amp entrance service, much greater than the capacity of this portable generator. When installing the generator at these sites, a secondary emergency distribution panel may have to be installed. The emergency distribution panel must be installed by a licensed electrician according to all applicable codes. The electrician will move the critical circuits to be powered during the outage to the emergency panel. Keep in mind only a limited amount of amperage is available from the generator set. Some circuit breakers may still have to be turned off to prevent an overload on the generator during the initial start up. See the nameplate on your generator for the amperage capabilities of your unit.

CAUTION: EQUIPMENT DAMAGE
Failure to properly limit and balance the load a[[lied to the generator will cause the generator to produce low voltage and may damage the engine generator set. It may also cause severe damage to the loads connected to the generator at that time. Improper loading of the generator set constitutes abuse and will not be covered by warranty.

ENGINE CARE

MAINTENANCE SCHEDULE

If major engine service or repair is required, contact an authorized engine service center. The manufacturer of these engines has established an excellent world-wide engine service organization. Engine service is very likely available from a nearby authorized dealer or distributor. See following table.

REGULAR SERVICE PERIOD (3) Perform at every indicated month or operating hour interval, whichever comes first. / ITEM		Each Use	First Month or 20 Hrs	Every 6 Months or 100 Hrs	Every Year or 300 Hrs	Every 2 Years or 500 Hrs	Refer to Page
Engine oil	Check level	○					8
	Change		○	○			8
Engine oil filter	Replace	Every 200 Hrs.					9
Air cleaner	Check	○					9
	Clean			○ (1)			
	Replace					○ *	
Spark plug	Check-adjust			○			10
	Replace				○		
Spark arrester (applicable types)	Clean			○			11
Idle speed	Check-adjust				○ (2)		* *
Valve clearance	Check-adjust				○ (2)		* *
Combustion chamber	Clean	After every 1000 Hrs. (2)					* *
Fuel filter	Replace				○ (2)		* *
Fuel tube	Check	Every 2 years (Replace if necessary) (2)					* *

* Replace the paper filter element only.
* * Refer to the Shop Manual.

(1) Service more frequently when used in dusty areas.

(2) These items should be serviced by your Honda servicing dealer, unless you have the proper tools and are mechanically proficient. Refer to the Honda shop manual for service procedures.

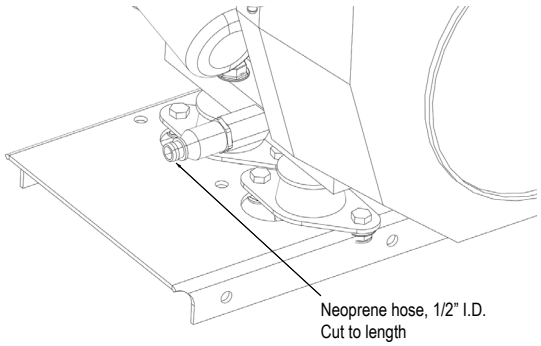
CHECKING THE OIL LEVEL

The oil level must always be checked before the engine is started. Refer to page 5 of this manual for instructions on checking the oil level. Take care to remove any dirt or debris from around the oil plug before removing. Be sure the oil level is maintained.

CHANGING THE OIL

Refer to the Maintenance Schedule Chart for required oil change intervals.

A. Start the engine and warm it up, stop the engine and remove the spark plug wire to prevent it from accidentally being started.
B. This engine has an oil drain valve for your convenience. Attach a neoprene hose and drain the oil into an approved container.



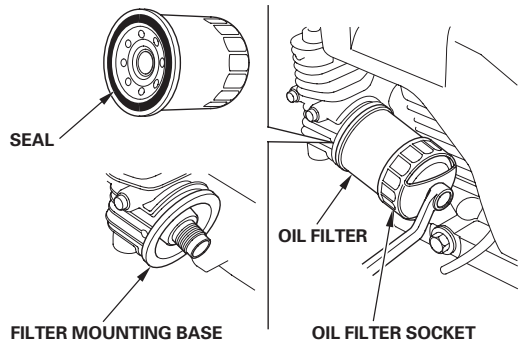
C. Remove the oil filter and dispose of it properly.
D. Before you install the new oil filter, clean the filter mounting base

and coat the seal of the new oil filter will clean engine oil.

E. Install the oil filter by hand until the gasket contacts the oil filter adapter, then tighten the oil filter 1/2 to 3/4 turns.

F. Replace oil drain bolt making sure the sealing washer is in place.

G. Remover the oil filter plug and refill with new oil. Make sure to use the proper grade oil based on your operating temperature.



NOTE: This engine requires 57 to 58 ounces (1.78 to 1.81 quarts) of oil if it is completely drained. Use caution when refilling the engine as some residual oil may have remained in the engine. Always use the dipstick when filling the engine with oil to prevent overfilling.

H. Replace filter plug.

I. Start the engine and warm it up.

J . After warming up the engine, recheck the oil level and refill as necessary to bring it to the proper level.

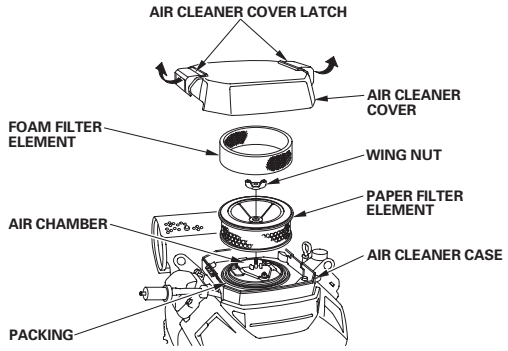
DUAL ELEMENT AIR FILTER

Clean and/or replace the foam pre-cleaner and the air filter annually or every 100 hours. Service more often under dusty conditions.

WARNING: EQUIPMENT DAMAGE

Never start or run the engine with the air filter removed.

A. Unsnap the air cleaner cover latches and remove the cover.



B. Remove the wing nut.

C. Remove the paper filter element and foam element from the air cleaner case.

D. Remove the foam filter elements from the paper filter element.

E. Inspect both filter elements and replace them if damaged. Always replace the paper filter element at the scheduled interval.

F. To loosen debris, gently tap the air filter on a hard surface. If the air filter is excessively dirty replace with a new filter. You can use pressurized air (not to exceed 30 psi) to clean the filter. Always blow the compressed air from inside to the outside.

G. Wash the foam filter element in liquid detergent and water. Then allow it to thoroughly air dry. Dip the foam filter element in clean engine oil and squeeze out all the excess before reinstalling it. The engine will smoke when started if too much oil is left in the foam.

H. Clean the dirt from the inside of the air cleaner body and cover. Reinstall the sir filter in housing making sure the packing is in place beneath the filter element. Tighten the wing nut securely.

I. Install and secure the cover.

SPARK PLUG

Replace annually or every 300 hours of operation. Always replace with the same spark plug that came in the engine and check gap before installing. Spark plug gap is 0.030”. Poor spark will also occur if spark plug wire does not fit firmly on spark plug. If this happens, reform the terminal to fit firmly on spark plug tip.

CARBON CANISTER

Designed to collect, store, and dispose of fuel vapors created in the fuel tank/fuel system. The canister should last the life of the unit as long as it stays dry.

GENERATOR CARE

Proper care and maintenance of the generator is necessary to ensure a long trouble free life.

EXERCISING THE GENERATOR

The generator should be operated every three to four weeks. It should be operated for a period of time sufficient to warm the unit up and to dry out any moisture that has accumulated in the windings. If left, this moisture can cause corrosion in the winding. Frequent operation of the engine-generator set will also ensure that the set is operating properly should it be needed in an emergency.

GENERATOR MAINTENANCE

Any major generator service, including the installation or replacement of parts, should be performed only by a qualified electrical service technician. **USE ONLY FACTORY APPROVED REPAIR PARTS.**

A. Bearing - The bearing used in these generators is a heavy duty, double sealed ball bearing. They require no maintenance or lubrication.

B. Receptacles - Quality receptacles have been utilized. If a receptacle should become cracked or otherwise damaged, replace it. Using damaged or cracked receptacles can be both dangerous to the operator and destructive to the equipment.

CLEANING

Remove dirt and debris with a cloth or brush. DO NOT use high pressure spray to clean either the engine or the generator. The high pressure spray could contaminate the fuel system and the generator components.

1. Keep the air inlet screen on both the engine and generator free of any dirt or debris to ensure proper cooling. At least yearly, remove the blower housing on the engine and clean the chaff and dirt out of the engine cooling fins and fly wheel. Clean more often if necessary. Failure to keep these areas clean may cause overheating and permanent damage to the unit.

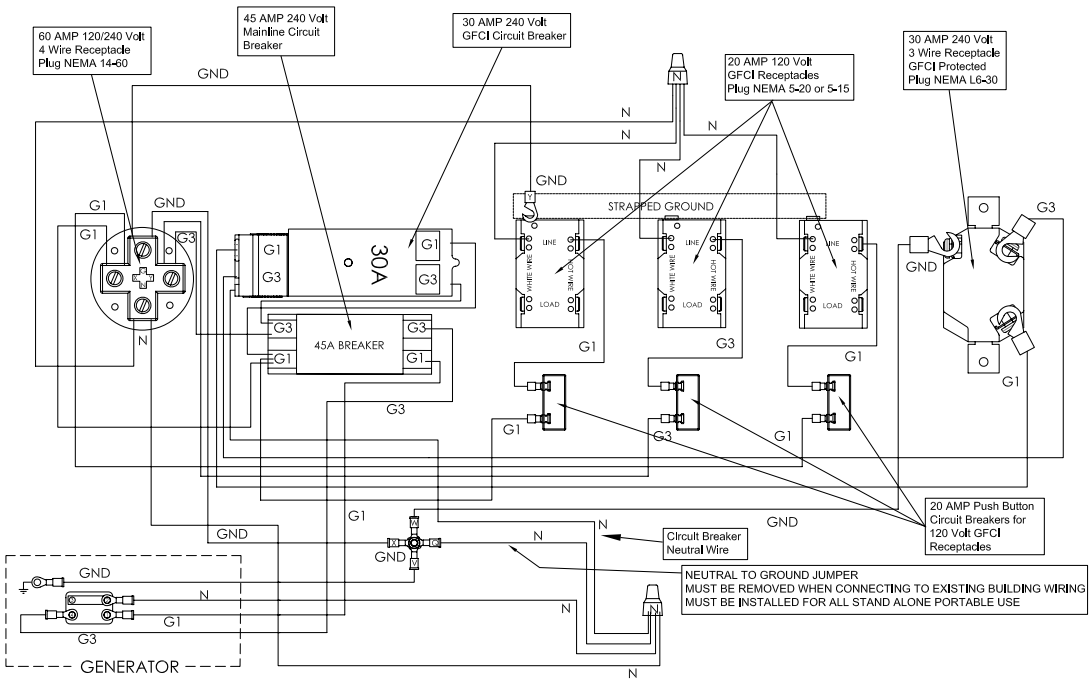
2. Periodically clean muffler area to remove all grass, dirt, and combustible debris to prevent a fire.

3. On engine mufflers equipped with spark arresters, the spark arrester must be removed every 50 hours for cleaning and inspection. Replace if damaged.

TROUBLESHOOTING

Problem	Possible Causes
Won't start	Low oil level Fouled spark plug Out of fuel Start switch in OFF position Fuel Valve turned off Plugged fuel filter Blown fuse in key switch
Voltage too low	Engine speed is too low Generator overloaded Defective stator Defective rotor (field) Defective capacitor
Circuit breaker trips	Defective load Defective receptacle Excessive load
Voltage too high	Engine speed is too high
Generator overheating	Overloaded Insufficient ventilation
No output voltage	Short in load (disconnect) Tripped or defective circuit breaker Broken or loose wire Defective receptacle No residual magnetism (in generator) Defective stator Defective rotor (field) Shorted capacitor Shorted diodes on rotor GFCI receptacle tripped

CONTROL PANEL WIRING DIAGRAM



WINCO INC 24 MONTH LIMITED WARRANTY

WINCO, Incorporated warrants to the original purchaser for 24 months 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 WINCO written instructions.

WINCO's sole liability, and Purchaser's sole remedy for a failure under this warranty, shall be limited to the repair of the product. At WINCO's option, material found to be defective in material or workmanship under normal use and service will be repaired or replaced. For warranty service, return the product within 24 months from the date of purchase, transportation charges prepaid, to your nearest WINCO Authorized Service Center or to WINCO, Inc. at Le Center Minnesota.

THERE IS NO OTHER EXPRESS WARRANTY.

To the extent permitted by law, any and all warranties, including those of merchantability and fitness for a particular purpose, are limited to 12 months or 1000 hours which ever occurs first, from date of purchase. In no event is WINCO liable for incidental or consequential damages.

Note: Some states do not allow limitation on the duration of implied warranty and some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply in every instance. This warranty gives you specific legal rights which may vary from state to state.

WINCO reserves the right to change or improve its products without incurring any obligations to make such changes or improvement on products purchased previously.

EXCLUSIONS:

WINCO does not warrant Engines. Engines are covered exclusively by the warranties of their respective manufacturers, see enclosed warranties.

WINCO does not warrant Component Parts that are warranted by their respective manufacturers.

WINCO does not warrant modifications or alterations which were not made by WINCO, Inc.

WINCO does not warrant products which have been subjected to misuse and/or negligence or have been involved in an accident.

This warranty does not include travel time, mileage, or labor for removal or re-installation of WINCO product from its application.

CALIFORNIA EVAPORATIVE EMISSION CONTROL WARRANTY STATEMENT

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board is pleased to explain the evaporative emission control system's warranty on your model 2013 or later generator. In California, new equipment that uses small off-road engines must be designed, built, and equipped to meet the State's stringent anti-smog standards. WINCO must warrant the evaporative emission control system on your generator for the period listed below provided there has been no abuse, neglect or improper maintenance of your equipment.

Your evaporative emission control system may include parts such as: carburetor, fuel tanks, fuel lines, fuel caps, valves, canisters, filters, vapor hoses, clamps, connectors and other associated components.

MANUFACTURER'S WARRANTY COVERAGE

The evaporative emission control system is warranted for two years. If any evaporative emission related parts on your equipment are defective, the parts will be repaired or replaced by WINCO.