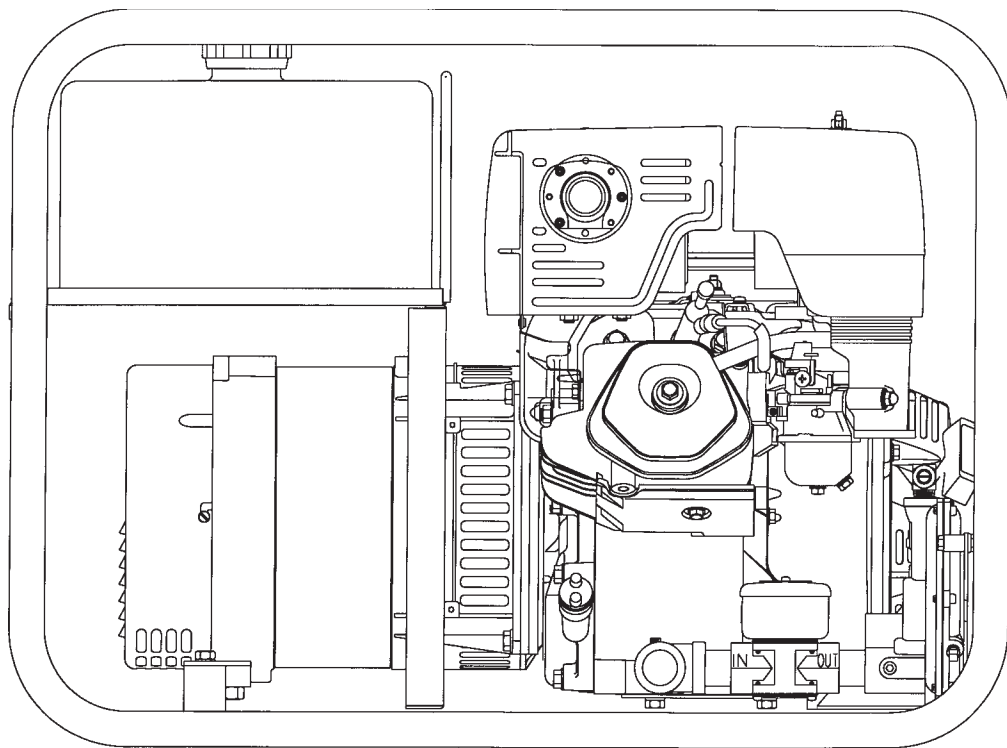


WINCO INC[®]

*A Division of **DTE** Dyna Technology Inc*

OWNERS MANUAL

MODELS PSS6HE/E



**INSTALLATION, OPERATION,
and MAINTENANCE INSTRUCTIONS**

Read and understand all instructions in the manual before starting and operating the generator set.

USING THIS MANUAL

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

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

Should you experience a problem please follow the "Things To Check" near the end of this manual. The warranty listed in this manual describes what you can expect from Winco should you need service assistance in the future.

PROPER USE AND INSTALLATION

You must be sure your new engine generator set is:

- * Properly serviced before starting
- * Operated in a well ventilated area
- * Operated so that exhaust gases are dispersed safely
- * Wired by a qualified electrician
- * Operated only for its designed purposes
- * Used only by operators who understand its operation
- * Properly maintained

COPY YOUR MODEL AND SERIAL NUMBER HERE

No other Winco generator has the same serial number as yours. It is important that you record the number and other vital information here. 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 _____

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SAFETY INFORMATION

This engine generator set has been designed and manufactured to allow safe, reliable performance. Poor maintenance, improper or careless use can result in potential deadly hazards; from electrical shock, exhaust gas asphyxiation, or fire. Please read all safety instructions carefully before installation or use. Keep these instructions handy for future reference. Take special note and follow all warnings on the unit labels and in the manuals.

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 also 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 receptacles and extension cords.
- f. Be sure the unit is properly grounded to an external ground rod driven into the earth.

2. FIRE HAZARD - Natural gas and L.P. present a hazard of possible explosion and/or fire.

- a. Do not refuel when the engine is running or hot. Allow the engine to cool at least two minutes

- before refueling.
- b. Keep fuel containers out of reach of children.
- c. Do not smoke or use open flame near the generator set or fuel tank.
- d. Keep a fire extinguisher nearby and know its proper use. Fire extinguishers rated ABC by NFPA are appropriate.
- e. Store fuel only in an approved container, and only in a well-ventilated area.
- f. Follow local codes for closeness to combustible material.

3. DEADLY EXHAUST GAS - Exhaust fumes from any gasoline engine contain carbon monoxide, an invisible, odorless and deadly gas that must be mixed with fresh air.

- a. Operate only in well ventilated areas.
- b. Never operate indoors.
- c. Never operate the unit in such a way as to allow exhaust gases to seep back into closed rooms (i.e. through windows, walls or floors).

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

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

5. 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 material that could create potential fire hazards.
- c. Carefully clean up any gas or oil spills before starting the unit.
- d. Never allow leaves or other flammable material to build up around the engine intake or exhaust area.

6. 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 when fatigued.
- c. Never remove the protective guards, cover, or receptacle panels while the engine is running.
- d. Use extreme caution when working on electrical components. High output voltages from this equipment can cause serious injury or death.
- e. Always avoid hot mufflers, exhaust manifolds, and engine parts. They all can cause severe burns instantly.
- f. Installing a generator set 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.

INTENDED USES

These engine generator sets have been designed primarily for portable use. Both 120 and 240 volt AC receptacles are provided in the 'control panel' to plug in your loads (portable tools, and small appliances and lights). 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. See unit capabilities for further explanation.

These portable units require large quantities of fresh air for cooling of both the engine and the generator. Fresh air is drawn from both the engine end and the generator end and is exhausted at the center of the unit. For safety, long life and adequate performance, these units should never be run in small compartments or enclosed areas, 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 these portable generators in a small compartment., i.e. generator compartment of vehicles, motor homes or travel trailers. These compartments will not allow enough free flow fresh air to reach the engine generator set for cooling and will cause the unit to overheat damaging both the engine and the generator. Small compartments will also develop hot spots where there is very little air flow and may cause a fire.

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

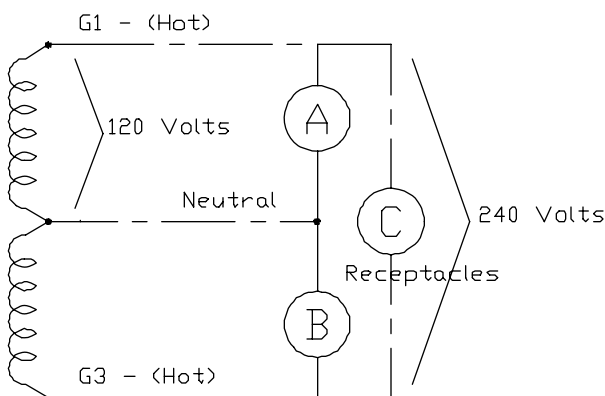


Figure A

UNIT CAPABILITIES

Generator Connections - The diagram (figure A) represents a 5500 watt generator. Loads A and B are 120 Volt loads. Up to 2750 watts at 120 volts (22.9 Amps) can be drawn from the generator at each of the load points. This generator produces 120 and 240 volt, 60 Hz (Hertz), AC (Alternating Current).

CAUTION: EQUIPMENT DAMAGE

CAUTION MUST BE EXERCISED TO PREVENT OVERLOADING EITHER OF THE GENERATORS 120 VOLT OUTPUT CIRCUITS (A OR B).

Check the appliance or tool nameplates for the current and voltage to insure compatibility. Remember that amperage utilized by the 240 volt load shown as C reduces the power available at both A and B. Any remaining 120 volt loads should be equally divided between A and B. Failure to split the load will cause permanent damage to the stator. Although circuit breakers are provided, damage due to overloading constitutes abuse and will not be warranted.

DESCRIPTION

This package system consists of an electric 'key start' engine generator set equipped to run any one of three fuels; gasoline, vapor LP (propane) or natural gas; manual transfer load center rated for 60 amps and wheel kit for the generator allowing you greater mobility; generator cover and a battery tender (charger).

ENGINE/GENERATOR

The engine generator set consists of a Honda overhead valve, single cylinder, air cooled engine equipped to run on gasoline, vapor LP (propane) or natural gas. The engine operates at 3600 rpm and frequency regulation is maintained by the engine governor within 4 cycle's variation (62.5 Hz to 58.5 Hz) from no load to full rated load.

The generator is rated at 6000 watts surge, 5500 watts (5.5 kW) continuous, it is a brushless, single bearing, direct drive, rotating field design. The generator is connected to the engine's tapered (quill) crankshaft extension. The engine generator is mounted in a full wrap around cradle assembly.

A four-wire 125/250 volt receptacle (NEMA L14-30R) is provided on the generator receptacle panel for connecting to the manual transfer load center. Two additional 120 volt receptacles are also provided for your convenience.

The engine electric start function is handled by the key start on the engine control panel. For LP or NG operation, a 12 volt fuel solenoid has been installed on the set, with a 120 volt control relay. The control relay is wired across the generator output and is used as a safety to shut the vapor fuel off in case the engine should stop for any reason. To start on vapor fuel, the bypass button on the outside of the control relay box must be depressed. Depressing the bypass engages the 12 volt fuel solenoid until the generator can build output voltage. This powers the 120 volt relay, closing the relay contacts to provide 12 volts to the fuel solenoid. A customer supplied 235 CCA (BCI Group U1) battery is required to operate the unit electric start system.

EMERGENCY TRANSFER SERVICE

The Emergency Transfer Service kit includes a UL Approved Square 'D' manual power isolation switch. When properly installed it will safely disconnect the normal power service from your home emergency electrical circuits and reconnect them to a portable generator. It is not designed to transfer your whole electrical system, only selected circuits you need powered during a power failure (i.e. furnace, refrigerator, freezer and minimal lighting). This system is comprised of three major parts. The manual transfer center, exterior 'J' (junction) box for connections and cord storage and the 12' four wire cord set with the plug installed.

The manual transfer center is built around two 60 amp backfeed Square "D" circuit breakers with a mechanical interlock bar installed. Manual transfer center also has additional space for the customer to install two 240 volt breakers, or one 240 volt and two 120 volt breakers or four 120 volt breakers. The load center uses standard Square D circuit breakers type QO and Q1. The 120 volt breakers may be replaced with type QO-T circuit breakers, providing up to eight 120 volt circuits.

Before beginning the installation process it is very important to plan which circuits you want to move from your main circuit breaker panel into the manual emergency transfer panel. That way you can purchase only the breakers you need and will have room for everything when you are completed.

BATTERY TENDER

A two-stage battery tender is provided with this system. This battery tender charges at a rate of 750 mA until the battery is fully charged and then automatically switches to a 13.2 VDC float charger. The charger has an indicator light on it, red indicates it is charging, and green indicates it is in the storage mode (float charge).

WHEEL KIT & COVER

The Wheel Kit is shipped loose and comes with its own set of instructions. This wheel kit will allow greater mobility with the generator as well as making it easier to move inside for storage. Do not leave the generator stored outside without protection. The cover will protect the generator, but must be removed from the unit during operation.

UNPACKING THE SYSTEM

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 new ENGINE GENERATOR be sure to remove all the information sheets and manuals from the carton.

1. This power plant was in good order when shipped. Inspect the power plant promptly after receiving it. If damage is noted, notify the transportation company immediately; request proper procedures for filing a "concealed damage" claim. Title to the equipment and responsibility for filing a claim rests with you when a generator is sent F.O.B. shipping point. Only you can legally file a claim.
2. Before proceeding with the preparation of your new engine generator set for operation, take a couple of minutes to insure that the unit you have received is the correct model and review the specification pages in this manual to insure that this unit fits your job requirements.
3. After removing the engine generator from the carton locate and remove the shipping strap attached to the generator shock mount. See attached tag for removal instructions.

UNIT PREPARATION

Before your engine generator was shipped from our factory it was fully checked for performance. The generator was load tested to its full capacity, and the voltage and frequency were carefully checked and adjusted.

Lubrication

Before starting the engine, fill the crankcase to the proper level with a good quality oil. The recommended grade of oil and quantity of oil required is listed in the engine operator's manual. 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 are not covered by the generator or the engine manufacturer's warranty.

Gasoline Fuel

When using gasoline always use a good grade of unleaded fuel. Leaded gasoline may be used if unleaded is not available. Gasoline containing alcohol, such as gasohol is not recommended. However, if gasoline with alcohol is used, it must not contain more than 10 percent Ethanol and must be removed from the engine during storage. DO NOT use gasoline containing methanol. Always insure 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 only the varnish residue. This varnish-like substance will clog the carburetor and will not burn properly. The use of a fuel additive, 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.

BATTERY INSTALLATION

If you intend to use the power plant's electric start system (Required when using LP or NG), you will need to purchase a battery to operate it. Units equipped with a recoil or rope start will operate satisfactorily without a battery on gasoline only. A twelve volt battery, group U1 rated at 235 CCA or larger is recommended for this electric start engine generator set. Follow the battery manufacturer's recommendations for servicing and charging prior to use.

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 and tight. Reverse the sequence when disconnecting, disconnect the negative cable first. These engines produce only enough direct current to keep a 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 eyes, get immediate medical attention.

BATTERY CHARGING

Units equipped with electric start 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 at the end of the charging lead to produce a DC charging current of about 1 AMP. This circuit is not designed to be used as a battery charging circuit to recharge dead batteries.

LOW OIL LEVEL SHUTDOWN SYSTEM

Honda powered generators - These engine generator sets come equipped standard with the Honda Oil Alert System.

The Oil Alert system is designed to prevent damage caused by an insufficient amount of oil in the crankcase. Before the oil level in the crankcase falls below a safe limit, the Oil Alert system will automatically shut down the engine (the engine switch will remain in the ON position).

If the Oil Alert system shuts down the engine, the Oil Alert lamp will flash when you attempt to start the engine and it will not run. If this occurs, check the engine oil level.

Use of the Oil Alert system on applications that are subject to shock, bumping or severe angles of operation (in excess of 15 degrees) should be avoided. This is especially true if an unexpected **shutdown would cause a safety hazard** or serious inconvenience for the operator.

LP/NG FUEL INSTALLATION

The information in this instruction manual is offered to assist you in providing the proper vapor fuel supply for your engine. This information is only provided to advise you of the engine's requirements and the decisions you must make. In no case should this information be interpreted to conflict with any local, state or national code. If in doubt, always follow local codes.

DANGER: FIRE - PERSONAL INJURY -

All fuel lines must be installed by a qualified fuel supplier.

OPERATING LOCATION

The engine-generator models covered in this manual were designed for portable use. **DO NOT INSTALL OR OPERATE THESE UNITS INDOORS.** The unit should be stored in a dry location. During a power outage move the unit outdoors to a flat dry location such as a driveway, concrete pad or sidewalk. We recommend installing the optional wheel kit provided or equivalent for ease of handling.

The fuel source should be as close as possible to the outdoor operating location. This will reduce the installation cost of fuel runs. Connect the fuel supply line to the inlet of the fuel demand regulator on the unit using a locally approved flexible fuel line (see table for recommended line size). **The pressure supplied to the demand regulator must be FOUR TO SIX OUNCES or 7 to 11 INCHES W.C. (water column).** The primary regulator at the fuel supply must be capable of delivering the proper volume of fuel at this pressure.

Have your local fuel supplier install a protected fuel connection at the outside operating location. He should also install a lockable fuel shutoff valve at the connection point. Have your fuel supplier permanently install a flexible fuel line to the demand regulator on the engine generator set.

INSTALLING THE FUEL LINE

DANGER: PERSONAL INJURY

Units that are intended to be run unattended MUST have an electric fuel solenoid installed. This solenoid MUST be wired to AUTOMATICALLY turn off the fuel whenever the engine stops. See page 9 for additional information.

Unit location will determine the size of fuel line that is required to supply the engine with a constant fuel pressure. Refer to the tables below for fuel line size, and recommended tank size. For distances of 100 feet and over, a two regulator fuel system is recommended. This system consisting of a primary 10-15# regulator at the tank and a 6 ounce secondary regulator installed about 10 feet from the generator. You need to run a 3/4 inch line or larger from the secondary regulator to the engine-generator set. When a two (2) regulator fuel system is used, a fuel line size of 3/8 inch is generally adequate for distances up to 300 feet. The line size from the following table applies to the distance from the second regulator to the fuel solenoid valve.

The fuel line used to connect the supply line to the fuel solenoid must be a locally approved flexible fuel line. Products used will vary in different regions depending on availability and local codes. Consult with your local fuel supplier to insure complete compliance with ALL codes.

1. Remove the pipe plug from the solenoid valve.
2. Connect the flex fuel line to the solenoid valve.

DANGER: PERSONAL INJURY

Do not use galvanized pipe in the fuel line runs. The galvanized coating will become eroded and flake off, causing possible obstruction or damage to the regulator or fuel valve. The obstruction could cause an inoperative engine or an explosive fuel leak.

Size of pipe required for generators operating on natural gas/LP gas.

Length of Fuel Line*	Fuel Line Size
less than 25 feet	3/4 inch black pipe
25 to 100 feet	1 inch black pipe
over 100 feet	not recommended

*allow an additional 3 feet for each standard elbow.

Do not use 'street ells' (restrictive)

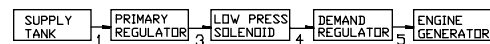
DANGER! - FIRE - PERSONAL INJURY -

Be careful when sealing gas joints. Excessive sealing compound can be drawn into the solenoid, regulator or carburetor causing an engine malfunction or dangerous fuel leak.

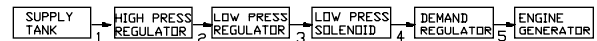
FUEL PRESSURE

Correct fuel pressure cannot be stressed enough. The most common cause for inoperative systems is an inadequate or incorrect fuel pressure. Power and performance of the engine is in direct relation to the correctness of the fuel system. Shown below is a block diagram of a typical L.P. or N.G. installation.

Single Regulator Fuel System



Two Regulator Fuel System



Reference numbers 1 through 3 in the block diagrams above are fuel lines supplied by customer.

Reference number 4 & 5 are already installed on your engine generator set.

Remember that whichever fuel delivery system or type of vapor fuel used, the fuel pressure at the fuel solenoid valve installed on the engine generator must be between 4 and 6 oz. (7-11 inches of water column). Any lower pressure and the unit will starve for fuel under load. Any higher and the unit will 'flood' when attempting to start.

LP TANK SIZING

Once above the minimum acceptable size, the size of LP tank used will generally depend on how long you want the unit to run without refilling. The tank sizes shown below are the smallest recommended tank sizes based on the outside temperature. Keep in mind the colder it gets the slower L.P. will vaporize. This is the reason for the larger tanks at low temperature. Minimum sizing is not based on running time.

Temp	60 deg f.	30 deg f.	0 deg f.	-20 deg f.
PSS6HE	40 gal	50 gal	125 gal	350 gal

CHANGING FUEL TYPES

These engine generator sets are designed to run on three different fuels; gasoline, natural gas or LP vapor. They may be easily changed from one fuel to another.

FROM GASOLINE TO LP/NG

1. With the engine running, turn off the gasoline fuel valve.
2. Run the engine until it runs out of fuel.
3. Remove the plastic plug from the fuel solenoid valve.
4. Install locally approved flexible fuel line.
5. Connect the LP/NG vapor fuel line.
6. Units have two different hose fittings on the top of the demand regulator. One is for LP and one is for Natural Gas. Make sure the hose is attached to the proper fitting.
7. Turn on the vapor fuel.
8. Start the engine.
9. Apply the load to the generator.

FROM LP/NG TO GASOLINE

1. With the engine running turn off the LP/NG fuel supply.
2. Run the engine until it runs out of fuel.
3. Remove the flexible fuel line from the fuel solenoid valve.
4. Reinstall the plastic plug in the fuel valve.
5. Check to be sure the gasoline fuel valve is off.
6. Fill the gasoline fuel tank.
7. Turn on the gasoline fuel valve.
8. Start the engine.
9. No adjustment should be necessary as the engine has been tested on gasoline.

Wheel Kit

The wheel kit is shipped loose and must be assembled. The wheel kit comes with instructions and parts list. After installing the wheel kit, file the instructions and parts list in the back of this manual for future reference.

INITIAL START UP

Use the following checklist to verify the correct preparation of the engine generator before starting.

Before Starting always Check:

1. Engine oil, fill as required with correct grade and quantity.
2. Fuel level, fill as required with clean fresh fuel.
3. Visually for loose parts.

STARTING

NOTICE: TRI-FUEL STARTING

*Tri-Fuel generators operating on vapor fuel, (either LP or NG) must be started using the electric start system provided. You cannot hand crank the unit fast enough to develop the proper vacuum to make the vapor fuel system work. In addition the electric fuel solenoid valve requires a battery to operate. For starting the black button on the fuel control relay panel must be depressed. **WHEN USING VAPOR FUEL NEVER USE THE CHOKE.** Use of the choke will prevent the air and fuel from properly mixing.*

The throttle control on these generators is preset and locked to operate at 3600 RPM (nominal) with no load speed set at 3750 RPM. Only a trained service technician should be allowed to adjust this speed setting. See "Operating Speed" section for additional information.

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.*

MANUAL STARTING - (For Gasoline Only)

Refer to the engine manual for additional starting, operating, and stopping instructions.

1. Turn on the GASOLINE supply.
2. Move the choke to the full "on" position. A warm engine will require less choking than a cold engine.
3. Grasp starter grip and pull slowly until starter engages, then pull cord rapidly to overcome compression, prevent kickback and start the engine. Repeat if necessary.
4. When the engine starts, open the choke gradually.
5. The engine should promptly come up to operating speed.

Electric Starting - 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 also minimizes the drain on the battery and improves the possibility of starting under adverse conditions. Always keep the battery charged, but especially during cold weather operation.

1. Turn on the fuel supply.
2. Move the choke to the full "on" position (**for gasoline only**). A warm engine will require less choking than a cold engine.
3. Engage the engine start 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 15 seconds during each minute. Repeat if necessary. **Remember when starting the PSS6HE on vapor fuel the solenoid bypass button must also be depressed on the control panel.**
4. When the engine starts, open the choke gradually.
5. 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 gasoline.
 - c. A slightly richer fuel mixture will usually improve cold starting.
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.
 - c. DO NOT over-choke the unit.

STOPPING AND STORAGE

1. Remove the load.
2. Turn off the key switch on the engine to 'ground out' the spark or turn off the fuel.
3. Before extended storage (over 30 days) certain

actions must be taken to ensure the fuel doesn't deteriorate and clog the fuel system.

- a. Remove the remaining fuel from the fuel tank.
- b. 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.
- c. While the engine is warm, drain the oil and refill with fresh oil.
- d. Remove the spark plug, pour approximately 1/2 ounce (15 cc) of engine oil into the cylinder and crank slowly to distribute oil. Replace spark plug.
- e. Clean dirt and chaff from cylinder, cylinder head fins, blower housing, rotating screen and muffler areas.
- f. Store in a clean and dry area.

Note:

The use of a fuel additive, such as STA-BIL, or an equivalent, will minimize the formation of gum deposits during storage. Such an additive may be added to gasoline in the engine's fuel tank or to gasoline in a storage container.

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 insure 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 may vary slightly, the normal voltage and frequency of the engine generators described in this book are approximately as follows, under varying loads:

LOAD vs. OUTPUT

Generator Load Applied*	Frequency Speed		Voltage 120V Recpt.
	(RPM)	(Hz)	
None	3750	62.5	129V
Half	3600	60.0	120V
Full	3540	59.0	115V

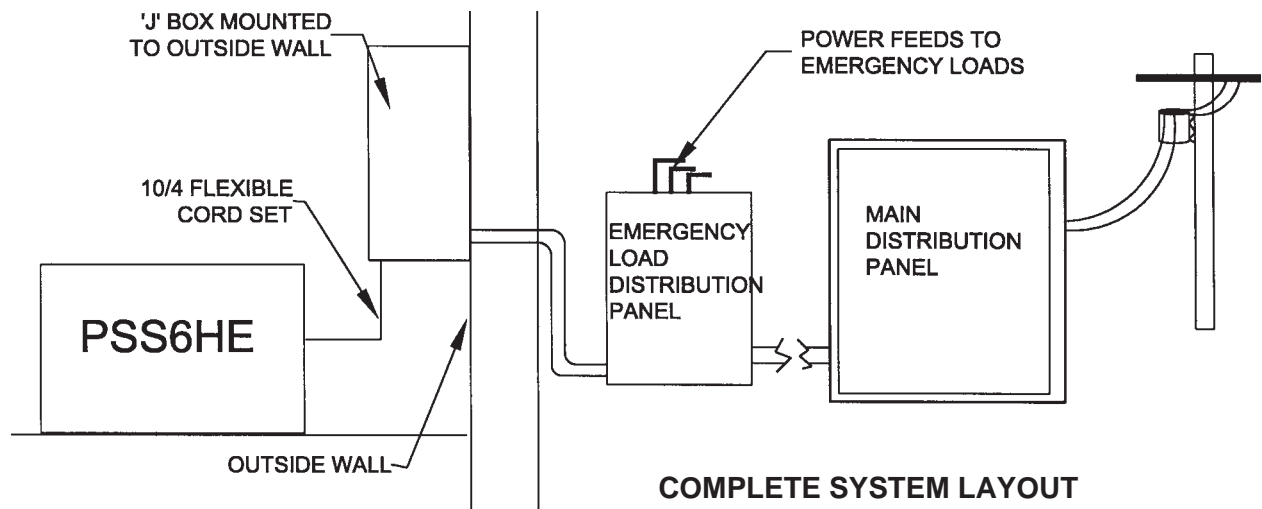
*Portion of plant's rated output current.

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 changed. If the generator is being run continuously on a very light load, it is often advisable to lower the operating speed slightly. Whenever making any speed adjustments check the unit with a voltmeter or a tachometer and be sure the speed is 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. The generator is not equipped with a voltmeter, but it can be checked with a portable meter. Frequency can be checked by using an electric clock with a sweep second hand. Timed against a wrist watch or a stop watch the clock should be correct within +/- 2 seconds per minute.

WIRING THE EMERGENCY TRANSFER SERVICE KIT



WARNING - PERSONAL INJURY

All wiring must be done by a licensed electrician, and must conform to the national electrical code and comply with all state and local codes and regulations. Check with your local electrical inspectors before proceeding!

PREPARATION

Before doing any wiring you must decide which circuits you want to back up. As discussed earlier you will have a limited number of circuits that can be moved from your primary distribution panel to the Emergency Load Distribution Panel.

The primary thing to remember when you are selecting your circuits is that the generator has a very limited amperage capability. The PSS6H/E generator is limited to 22.9 amp of output at 240 volts. What this means is that your combined load on the generator cannot exceed 22.9 on either power feed from the generator.

Also take into account any electric motors that you are going to operate. Motor loads have a very high amperage inrush when the motors first start up. If you don't have sufficient generator capability with your other loads running, the motor will stall and possibly do damage to the motor or other connected loads.

INSTALLATION

The first step will be to install the 'J' box on the outside of the house and the Emergency Load Distribution Panel next to your existing distribution panel. Remember the circuits you take out of the main panel will be reinstalled in the emergency panel, so these should be as close together as possible.

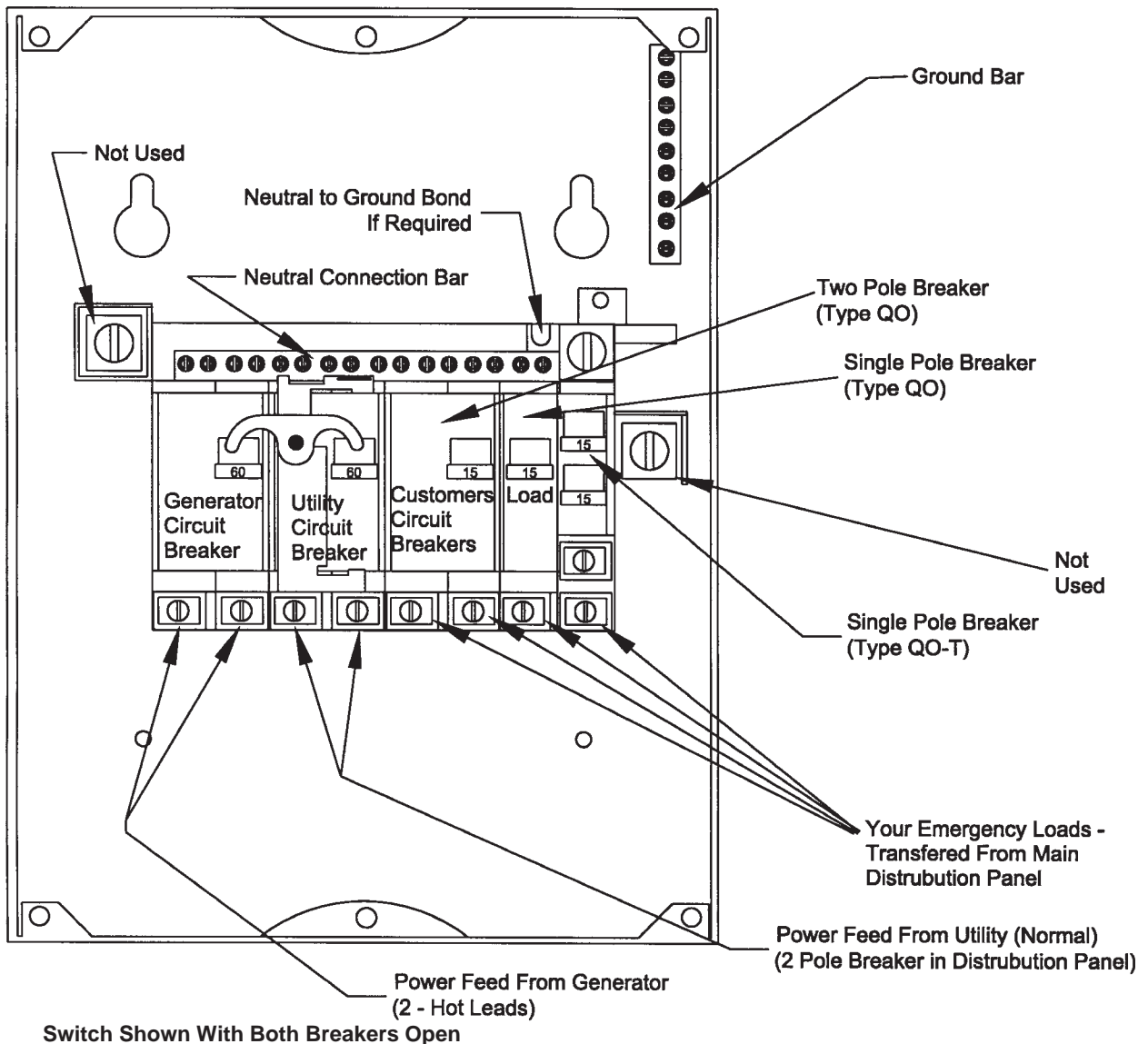
Next you need to install a two pole (240 Volt) circuit breaker in the current distribution panel. This circuit breaker should be sized according to the load you are going to wire into the emergency panel. But in no case can it exceed the 60 amp breaker rating in the Emergency panel.

Next you will need to pull four wires from the main panel to the emergency panel. The wire size will depend on what amperage breaker you are using. The two Hot leads will attach to the right hand 60 amp breaker. The neutral and ground will be attached to the appropriate bars in the emergency panel.

You will also need to install four leads from the 'J' box to the emergency panel. These leads should be attached to the cord set provided with the Emergency Transfer Service Kit. The cord set is color coded the red and black leads are hot, white is neutral and green is ground. Be sure to mark your leads before installation to insure that they get attached in the Emergency panel correctly. All connections in the 'J' box should be watertight. The red and black leads will attach to the left hand 60 amp circuit breaker in the emergency panel. The white will be routed to the neutral bar and the green to the ground bar.

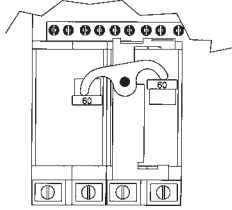
Next you will need to install your load circuit breakers in the emergency panel. Again you can use any combination of breakers that you want. The emergency panel uses Square "D" circuit breakers type QO, if you need to use the tandem breakers on the 120 circuit they are type QO-T.

The final step will be to move your load leads from the main distribution panel to the emergency panel.



TESTING THE SYSTEM

1. Your first step in testing the Emergency panel will be to close the circuit breaker in the main panel feeding the Emergency panel. Check your voltage in the emergency panel to insure you have the correct voltage in all locations. Then close the utility circuit breaker in the emergency panel.

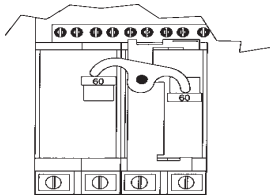


INTERLOCKING BREAKER IN THE UTILITY POSITION

2. Close your load breakers and make sure everything that you have wired to the Emergency panel is working properly on utility power.

3. Start the engine generator set and plug the power cord into the generator. Check your voltages at the bottom lugs on the generator circuit breaker (left 60 amp breaker).

4. If the voltages are correct shut the utility breaker off and move the generator breaker to the on position. The generator should now be powering your connected loads. Monitor the voltage coming from the generator and make sure that it stays at the proper level.



INTERLOCKING BREAKER IN THE GENERATOR POSITION

5. If the voltage from the generator should drop too far, turn the generator side breaker off. This will remove the load from the generator. At this point you are going to have to determine why the voltage dropped. Either you have it overloaded (over 22.9 amps per leg on LP or 20 amps on NG) or the engine is not getting enough fuel to carry the load.

6. After correcting the problem, retest the system starting at step 3.

7. If everything tests ok, you can turn the generator breaker off and turn the utility breaker back on. This is how the system is left until you need the generator.

CONNECTING THE LOADS

Applying The Load

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 short 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.

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.

CAUTION: EQUIPMENT OVERLOAD

Keep the generator load within 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, because of higher starting current.

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.

CAUTION: EQUIPMENT DAMAGE

Caution must be used when loading the generator, overloading either of the 120 volt sides will cause the breaker to trip disconnecting all the loads

CAUTION: EQUIPMENT DAMAGE

Failure to properly limit and balance the load applied 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.

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 #10 AWG wire from clamp to the generator ground lug on the "end cover". Do not connect to a water pipe or to a ground used by a radio system.

ENGINE CARE

If major engine service or repair is required contact an authorized engine service center. The manufacturer of these engines has established an excellent worldwide engine service organization. Engine service is very likely available from a nearby authorized dealer or distributor. Check the yellow pages of your local telephone directory under "Engines-Gasoline" for the closest engine repair center or ask the dealer from whom you purchased the power plant.

1. **Change the oil** after the first five hours of operation and every 50 hours thereafter under normal operating conditions. Change engine oil every 25 hours of operation if the engine is operated under heavy load, or in high ambient temperatures.

- a. Remove oil drain plug at base of the engine and drain the oil with the engine warm.
- b. Replace oil drain plug.
- c. Remove oil filler plug and refill with new oil. Refer to the table in the engine manual for the proper grade of oil based on your operating temperature.
- d. Replace filler plug.

2. **Checking the Oil Level:** The oil level must always be checked before the engine is started. Take care to remove any dirt or debris from around the oil fill plug before removing. Be sure the oil level is maintained. **FILL TO POINT OF OVERFLOWING** or on units with the extended oil fill to the "FULL" mark on the dipstick.

3. **Cartridge Air Cleaner** - Remove and clean cartridge yearly or after every 25 hours, whichever occurs first. Service more often if necessary. Clean by tapping gently on flat surface. If very dirty, replace the cartridge using only original equipment parts available at any engine service center.

Do not use petroleum solvents, such as kerosene, to attempt to clean the cartridge. They may cause deterioration of the cartridge. **DO NOT OIL CARTRIDGE, DO NOT USE PRESSURIZED AIR TO CLEAN OR DRY CARTRIDGE.**

4. **Dual Element Air Cleaner** - Clean and re-oil foam pre-cleaner at three month intervals or every 25 hours, whichever occurs first. Service more often under dusty conditions.

- a. Remove knob and cover.
- b. Remove foam pre-cleaner by sliding it off the paper cartridge.
- c. Wash foam pre-cleaner in kerosene or liquid detergent and water
- d. Wrap foam pre-cleaner in cloth and squeeze dry.
- e. Saturate foam pre-cleaner in engine oil. Squeeze to remove excess oil.
- f. Install foam pre-cleaner over paper cartridge. Reassemble cover and screw down tight.

Replace the cartridge included with Dual Element Air Cleaner yearly or every 100 hours. Service more often if necessary.

5. **Spark Plug** - Clean and reset gap at .030" every 100 hours of operation. Do not blast clean spark plug. Clean by scraping or wire brushing and washing with a commercial solvent. Poor spark will occur if terminal does not fit firmly on spark plug. If this happens reform the terminal to fit firmly on spark plug tip.

GENERATOR CARE

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

1. 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 windings. Frequent operation of the engine generator set will also insure that the set is operating properly should it be needed in an emergency.

2. 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. This 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 insure 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 flywheel. 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 HINTS

PROBLEM (SYMPTOMS) POSSIBLE CAUSES

Won't Start	*Low Oil Level. *Fouled spark plug. *Out of fuel. *Stop switch in stop position.
Voltage too low	*Engine speed is too low. *Generator overloaded. *Defective rectifier. *Defective stator. *Defective rotor (field).
Circuit Breaker Trips	*Defective load. *Defective receptacle.
Voltage too high	*Engine speed is too high.
Generator overheating	*Overloaded. *Insufficient ventilation.
No output voltage	*Short in load (disconnect). *Broken or loose wire. *Defective receptacle. *No residual magnetism (in generator). *Defective stator. *Defective rotor (field). *Shorted capacitor. *Defective rectifier.

WINCO®

I N C O R P O R A T E D

WINCO, Incorporated warrants to the original purchaser for 12 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 12 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 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, Batteries, or Other 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.

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