

# OPERATOR'S MANUAL

**EG-4600** 

Serial Number 20000 Thru 20300

EG-4601

Serial Number 50000 & Up

**EG-5600E** 

Serial Number 30000 & Up

**EG-7600E** 

Serial Number 40000 & Up

**GENERATOR** 

# WARNING A DANGER

READ INSTRUCTIONS CAREFULLY AND FOLLOW RULES FOR SAFE OPERATION. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY.

For your nearest ECHO Dealer, call 1-800-432-ECHO (3246)

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Specifications, descriptions and illustrations are as accurate as known at the time of publication, but are subject to change without notice. Illustrations may include optional equipment and accessories, and may not include all standard equipment.



THIS DEVICE ACCOMPANIED BY THE WORDS WARNING AND DANGER CALLS ATTENTIONS TO AN ACT OR A CONDITION WHICH CAN LEAD TO SERIOUS PERSONAL INJURY.

Circle and slash symbol means whatever is shown is prohibited.



# **IMPORTANT**

This enclosed message provides information necessary for the protection of the unit.

### NOTE

This enclosed message provides tips for use, care and maintenance of the unit.





PAGE

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

# <u>IMPORTANT</u>

# PLEASE READ BEFORE USING YOUR ECHO GENERATOR

The popularity of generators being used as secondary or emergency power sources in commercial, industrial or residential structures has led many states to enact strict codes. Such as, if a generator is hooked to a main power supply system it is to be connected by an isolation switch (double throw switch).

Potential hazard exists when a portable electric generator is connected to the main electrical supply system without the installation of a double throw switch at the power supply point. It is at this point that the electrical generator could feed back into the distribution system of the utility company causing possible electrocution of workers who are repairing the electricity line.

Laws in many states require that:

 Any owner, renter or lessee who connects an electrical generator to the electrical system of an industrial, commercial or residential structure is to notify the public utility or utility district.
 Violation of any of the above provisions will be punishable by fine or imprisonment.

# WARNING ADANGER

ELECTROCUTION OR PROPERTY DAMAGE CAN OCCUR: DO NOT CONNECT THIS GENERATOR TO ANY BUILDING'S ELECTRICAL SYSTEM UNLESS AN ISOLATION SWITCH HAS BEEN INSTALLED BY A LICENSED ELECTRICIAN. REFER TO THE OPERATOR'S MANUAL.

Thank you for purchasing an ECHO Generator. This manual covers operation and maintenance.

All information in this publication is based on the latest product information available at the time of approval for print. ECHO, INCORPORATED reserves the right to make changes at any time without notice and without incurring any obligations.

This manual should be considered a permanent part of the generator and should remain with the unit when it is sold. Pay special attention to boxed statements they indicate a possibility of personal injury or equipment damage if instructions are not followed.

# **IMPORTANT**

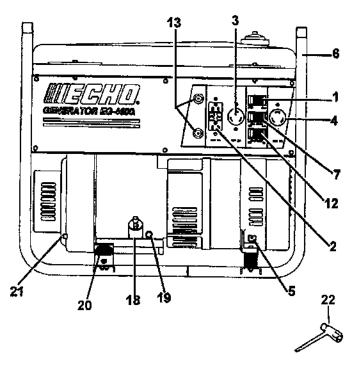
Before starting engine for the first time, add oil as unit is shipped dry.

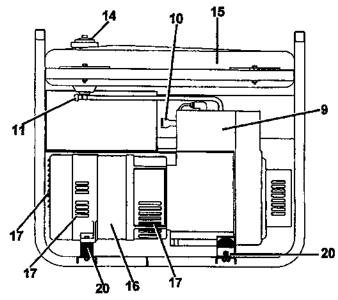
# FILL OUT AND KEEP FOR YOUR OWN RECORD MODEL\_\_\_\_\_\_ SERIAL NO. \_\_\_\_\_ PURCHASE DATE \_\_\_\_\_\_ Bill of Sale No. \_\_\_\_\_ Payment Record (Check No., etc.) \_\_\_\_\_ Dealer Name \_\_\_\_\_\_ Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_ Zip \_\_\_\_ Any part claimed to be defective must be returned by delivering it to an authorized ECHO dealer or distributor. Contact ECHO, INCORPORATED at (800) 432-ECHO (3246) for the location of your nearest ECHO dealer.

# **SPECIFICATIONS**

DESCRIPTION	EG4600/EG4601		EG-5600E	EG-7600E	
Engine Model	Kohler M8 Magnum	9 HP Vanguard Briggs & Stratton	Kohler CV11 OHV Command	Kohler CV14 OHV Command	
Horse Power		9 HP ( 6.7kw)	11.0 (9 kw)	14.0 (10.4 kw)	
Displacement	18.64 cu.in. (305.4cc)	18.0 cu.in. (296 cc)	29.07 cu.in. (398cc)	31.27 cu.in. (398cc)	
Frequency Hz		60	60	60	
Continous Rated Watts	4	1000	5000	7000	
Watts AC Intermitant	4	1600	5600	7600	
Engine Speed (RPM)	3	3600	3600	3600	
Voltage	12	0/240	120/240	120/240	
Rated Amperage	33.3	@ 120V	41.6 @ 120V	58.3 @120V	
Trated Amperage	16.7	@ 240V	20.8 @ 240V	29.1 @ 240V	
Starting System	Reco	il Starter	Elec/Recoil	Elec/Recoil	
Fuel Capacity	6.0 ga	I. (22.7 lit.)	6.0 gal. (22.7 lit.)	6.0 gal. (22.7 lit.)	
Run Time Full Load	7.4 Hours	8.5 Hours	7.2 Hours	5.2 Hours	
Run Time 1/2 Load	10 Hours	12 Hours	9.2 Hours	8.3 Hours	
Ignition	Electronic		Electronic	Electronic	
Automatic Voltage	Yes		Yes	Yes	
Regulation	<u>+</u> 3%		<u>+</u> 3%	÷ 3%	
ECHO-Mizer® Automatic Idle Control		Yes	Yes	Yes	
AC Circuit Breaker		Yes	Yes	Yes	
AC Receptacles	1/240 & 1/120 twist lock, 2/120 GFCI		1/240 & 1/120 twist lock, 2/120 std, 2/120 GFCI, 1/240 4 prong twist lock	1/120 & 1/240 twist lock, 2/120 std, 2/120 GFCI, 1/240 4 prong twist lock	
Spark Arrester Muffler	Muffler Yes Yes		Yes	Yes	
Oil Crank Case Capacity	2.5	5 pints	4 pints	4 pints	
	1.2 liters 1.9 lit		1.9 liters	1.9 liters	
Low Oil Shutdown	Yes		Yes	Yes	
L	27" (686 mm)		29.5" (749 mm)	29.5" (749 mm)	
Dimensions W	19.5" (495 mm)		21.5" (546 mm)	21.5" (546 mm)	
Н	23.5" (597 mm)		29.25" (749 mm)	29.25" (749 mm)	
Net Weight	138 lbs	s. (63.6 kg)	172 lbs. (78 kg)	216 lbs. (98 kg)	
Shipping Weight	138 lbs	s. (63.6 kg)	180 lbs. (81.6 kg)	223 lbs. (101 kg)	
Recommended Battery for Electric Start		N/A	Purchase separately, not included with unit	12V (Min.) 45 A H	

# GENERAL IDENTIFICATIONS MODEL EG-4600/EG-4601

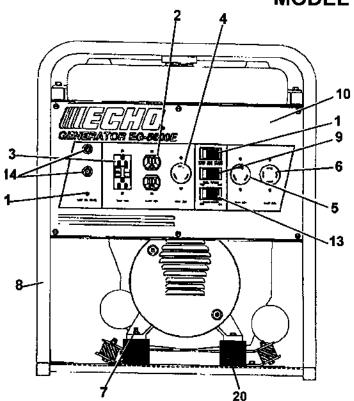




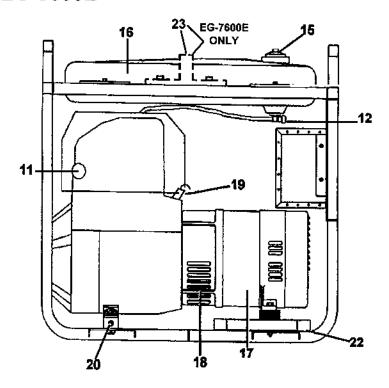
- Ignition Switch Switch to left is "OFF" -right is "ON" or "RUN".
- 120 V/15 AMP Duplex G.F.C.I. (Ground Fault Circuit Interrupter) Receptacle - G.F.C.I. Receptacle opens (Stops electricity) when a short occurs between the electric tool and ground path to the generator to protect the operator. To rest the G.F.C.I., wait one minute and depress reset button.
- 3. 120 V A.C. 3 Hole Twist Lock Receptacle.
- 4. 240V A.C. 3 Hole Twist Lock Receptacle.
- Grounding Lug Attachment point for adding a ground strap to an external earth ground.
- 6. **Handle/Tube Frame -** Protective carrying frame for generator.
- Full Power Switch Allows use of 120V only and/or 120V/240V tools.
- Receptacle Panel Contains wiring for receptacles, circuit breaker and control switches.
- Air Filter Contains automotive style paper element. Refer to the engine Operator's Manual for maintenance.
- Muffler/Spark Arrester Prevents hot exhaust particles from exiting the engine. Refer to engine Operator's Manual for maintenance.
- Fuel Shut Off Valve Turn clockwise to shut off fuel after shutdown.

- Echo-Mizer When "ON" Echo-Mizer idles unit down to conserve fuel when no electricity is being used.
- AC Circuit Breaker (20 amp) Protects
  receptacles and generator winding from over
  load. Breaker button pushed in allows electricity flow to receptacles. Breaker button out
  (tripped) prevents electricity flow to receptacles.
- 14. Fuel Tank Cap Covers and seals fuel tank.
- 15. Fuel Tank Six (6) gallon capacity.
- Generator Housing Houses electricity generating components.
- Generator Vents Provides cooling air flow for electricity generating components. DO NOT BLOCK.
- Oil Filler Cap/Dipstick Access cap for adding or replacing engine oil. Refer the engine Operator's Manual for maintenance intervals.
- Oil Drain Plug Access plug to drain engine sump oil.
- Generator Mounts Reduces engine vibration to the frame.
- Engine Low Oil Sensor Illuminates lamp and shuts engine off when oil is too low. Lamp glows momentarily as engine is pulled over during restart indicating low oil. Sensor will not allow restart.
- 22. Spark Plug Removal Tool (EG-4600 Only)

# GENERAL IDENTIFICATIONS MODEL EG-5600E

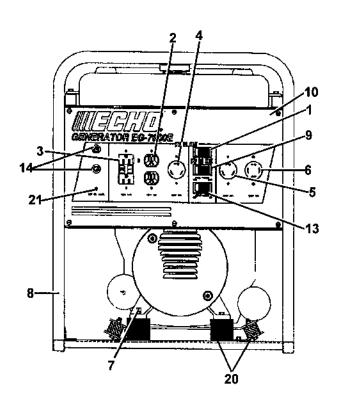


- Ignition Switch Switch to left is "OFF" -right is "ON" or "RUN".
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- 120 V/15 AMP Duplex G.F.C.I. (Ground Fault Circuit Interrupter) Receptacle - G.F.C.I. Receptacle opens (Stops electricity) when a short occurs between the electric tool and ground path to the generator to protect the operator. To rest the G.F.C.I., wait one minute and depress reset button.
- 4. 120 V A.C. 3 Hole Twist Lock Receptacle.
- 5. 240 V A.C. 3 Hole Twist Lock Receptacle.
- 6. 240 V A.C. 4 Hole Twist Lock Receptacle.
- Grounding Lug Attachment point for adding a ground strap to an external earth ground.
- 8. **Handle/Tube Frame -** Protective carrying frame for generator.
- Full Power Switch Allows use of 120V only and/or 120V/240V tools.
- Receptacle Panel Contains wiring for receptacles, circuit breaker and control switches.
- Muffler/Spark Arrester Prevents hot exhaust particles from exiting the engine. Refer to engine Operator's Manual for maintenance.
- Fuel Shut Off Valve Turn clockwise to shut off fuel after shutdown.



- Echo-Mizer When "ON" Echo-Mizer idles unit down to conserve fuel when no electricity is being used.
- 14. AC Circuit Breaker (25 amp) Protects receptacles and generator winding from overload. Breaker button pushed in allows electricity flow to receptacles. Breaker button out (tripped) prevents electricity flow to receptacles.
- Fuel Tank Cap Covers and seals fuel tank.
- 16. Fuel Tank Six (6) gallon capacity.
- Generator Housing Houses electricity generating components.
- Generator Vents Provides cooling air flow for electricity generating components. DO NOT BLOCK.
- Oil Filler Cap/Dipstick Access cap for adding or replacing engine oil. Refer the engine Operator's Manual for maintenance intervals.
- Generator Mounts Reduces engine vibration to the frame.
- Engine Low Oil Sensor Illuminates lamp and shuts engine off when oil is too low. Lamp glows momentarily as engine is pulled over during restart indicating low oil. Sensor will not allow restart.
- 22. Battery Holder Secures battery to frame.
- 23. Sky Hook Optional on EG-5600E.

# GENERAL IDENTIFICATIONS MODEL EG-7600E



- 11 19 19 22
- Ignition Switch Switch to left is "OFF" -right is "ON" or "RUN".
- 2. 120 V Duplex Receptacle
- 120 V/15 AMP Duplex G.F.C.I. (Ground Fault Circuit Interrupter) Receptacle - G.F.C.I. Receptacle opens (Stops electricity) when a short occurs between the electric tool and ground path to the generator to protect the operator. To rest the G.F.C.I., wait one minute and depress reset button.
- 4. 120 V A.C. 3 Hole Twist Lock Receptacle.
- 5. 240 V A.C. 3 Hole Twist Lock Receptacle.
- 6. 240 V A.C. 4 Hole Twist Lock Receptacle.
- Grounding Lug Attachment point for adding a ground strap to an external earth ground.
- Handle/Tube Frame Protective carrying frame for generator.
- Full Power Switch Allows use of 120V only and/or 120V/240V tools.
- Receptacle Panel Contains wiring for receptacles, circuit breaker and control switches.
- Muffler/Spark Arrester Prevents hot exhaust particles from exiting the engine. Refer to engine Operator's Manual for maintenance.
- Fuel Shut Off Valve Turn clockwise to shut off fuel after shutdown.

- Echo-Mizer When "ON" Echo-Mizer idles unit down to conserve fuel when no electricity is being used.
- AC Circuit Breaker (30 amp) Protects
  receptacles and generator winding from over
  load. Breaker button pushed in allows electricity flow to receptacles. Breaker button out
  (tripped) prevents electricity flow to receptacles.
- 15. Fuel Tank Cap Covers and seals fuel tank.
- 16. Fuel Tank Six (6) gallon capacity.
- Generator Housing Houses electricity generating components.
- Generator Vents Provides cooling air flow for electricity generating components.
   DO NOT BLOCK.
- Oil Filler Cap/Dipstick Access cap for adding or replacing engine oil. Refer the engine Operator's Manual for maintenance intervals.
- Generator Mounts Reduces engine vibration to the frame.
- Engine Low Oil Sensor Illuminates lamp and shuts engine off when oil is too low. Lamp glows momentarily as engine is pulled over during restart indicating low oil. Sensor will not allow restart.
- 22. Battery Holder Secures battery to frame.
- 23. Sky Hook Standard on EG-7600E.

# SAFETY PRECAUTIONS

# **LEARN GENERATOR SAFETY**

Improper use or maintenance can result in injury. Follow these safety suggestions.

Carefully read this manual. Learn how to operate your generator correctly. Also pay attention to point of use safety messages in this manual.

# WARNING A DANGER

UNAUTHORIZED MODIFICATIONS TO THE GENERATOR MAY IMPAIR THE FUNCTION AND/OR SAFETY AND AFFECT MACHINE LIFE. USE ONLY APPROVED ACCESSORIES ON THE GENERATOR.

**DO NOT** let any one operate the generator without proper instruction.

#### PROTECT PEOPLE AND PETS

KEEP PEOPLE AND PETS OUT OF THE AREA where you are using the generator.

**DO NOT** let children operate the generator, or handle electrical power cords.

OPERATION OF GENERATOR should be restricted to mature, properly instructed individuals.

# **HANDLE FUEL SAFELY - AVOID FIRES**

DO NOT USE ANY OTHER FUEL than that recommended in your engine manufacturer's Operator's Manual. Handle gasoline with care: it is highly flammable. Use an approved gasoline container.

FILL THE FUEL TANK OUTDOORS.

DO NOT OVERFILL FUEL TANK.

DO NOT SMOKE while you fill fuel tank or service fuel system.

DO NOT REMOVE GAS CAP OR ADD GASOLINE to tank if engine is hot or running.

CLEAN UP spilled gasoline.

**MOVE AWAY** from refueling area before attempting to start generator engine.

KEEP ENGINE CLEAN. Remove grass, leaves, excess oil and dirt before you start engine.

**LET ENGINE COOL** before you store generator in a building.

**DO NOT** store generator where fuel fumes could reach an open flame or spark.

Drain gasoline before transporting generator.

**REFUEL IN A SAFE PLACE.** Move the generator at least 10 feet from its operating location. Open the fuel cap slowly to release any pressure which may have formed in the fuel tank. Return the generator to its original location before re-starting the engine.

### OPERATE ENGINE SAFELY

**DO NOT RUN ENGINE** in an enclosed or poorly ventilated area (inside a room, garage, barn, etc.). Exhaust gas contains carbon monoxide, an odorless and deadly poison.

#### DO NOT TOUCH HOT ENGINE OR MUFFLER.

### **OBEY ALL FIRE SAFETY REGULATIONS.**

Fire prevention regulations of the U.S. Forestry jurisdiction require approved spark arrestor screen to be installed on gasoline powered products used on U.S. Forestry forests, brush and grasslands.

Your unit is equipped with a spark arrestor screen installed on the muffler. Keep this screen properly maintained at all times. An improperly maintained screen can cause engine power loss and improper functioning on the exhaust system.

#### NOTE

Compliance with local, state and federal laws is the user's responsibility. Replacement spark arrester screen kits are available for your generator from the engine dealer. If you have any questions concerning spark arrestor screens or their use, please contact your ECHO servicing dealer.

# **OPERATE GENERATOR SAFELY**

DO NOT ATTEMPT TO CARRY GENERATOR when engine is running.

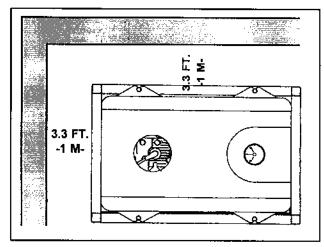
## DO NOT OPERATE GENERATOR ON AN INCLINE.

It should be placed on a firm, dry, level surface for proper engine operation and lubrication. Keep the area free of any flammable material such as leaves, brush or fuels.

# WARNING A DANGER

- \*AVOID ACCIDENTAL FIRES AND ENGINE OVERHEATING.
- \*DO NOT AIMENGINE EXHAUST AT MATERIALS THAT COULD CATCH FIRE.
- \*FACE COOLING AIR INTAKE (RECOIL START AREA) AND MUFFLER SIDE OF ENGINE 3.3 FT. 1 M (OR ONE METER) AWAY FROM BUILDINGS, OBSTRUCTIONS AND OTHER BURNABLE OBJECTS.

# SAFETY PRECAUTIONS



# WARNING A DANGER

- DO NOT OPERATE GENERATOR IN AREA OF FLAMMABLE MATERIALS.
- DO NOT ENCLOSE UNIT. IT RELIES ON FREE AIR CIRCULATION TO COOL THE ENGINE AND GENERATOR. ENCLOSING THE UNIT CAN CREATE A FIRE HAZARD RESULTING FROM ENTRAPPED GAS FUMES AND OVER-HEATING WHICH CAN RESULT IN DAMAGE TO THE ENGINE AND OTHER COMPONENTS.
- THESE GENERATORS ARE NOT INTENDED FOR INSTALLATION IN RV'S (RECREATIONAL VEHICLES), BOATS OR SIMILAR LOCATIONS.

#### RESPECT ELECTRICITY

DO NOT TOUCH ELECTRICAL EQUIPMENT while standing on metal floors, damp concrete, or other well-grounded surfaces.

DO NOT HANDLE ELECTRICAL EQUIPMENT while wearing damp clothing (particularly wet shoes) or while skin surfaces are damp.

BE EXTRA CAUTIOUS WHEN WORKING with generator during wet weather. Generators are not waterproofed. Using a generator in a wet place or during stormy weather could result in short circuits, electric shock or electrocution.

DO NOT pour water directly over the generator, nor wash it with water.

**DO NOT** operate equipment when mentally or physically stressed.

DO NOT WORK on ungrounded electrical equipment.

DO NOT CONNECT GENERATOR DIRECTLY to house hold electrical circuits.

DO NOT USE ungrounded extension cords.

**NEVER ALTER CORD**, or plug of any appliance to be used with generator.

# WARNING A DANGER

THESE UNITS PRODUCE 120V WHICH MAY CAUSE FATAL ELECTRICAL SHOCK IF PRECAUTIONS ARE NOT FOLLOWED.

USE ONLY POWER CORDS that are suitable for use outdoors and are so marked. Always examine power cords for signs of fraying, damage or cracks in the insulation before using them.

DO NOT HANDLE POWER CORDS that have damaged insulation or are wet.

DO NOT PLUG IN EXTENSION CORDS OR HOOK UP appliances until generator has been properly started, has reached full engine speed and is generating electricity.

DO NOT, under any circumstances, connect your generator to any circuit or receptacle receiving electrical power (home, office, etc.) from any other sources as this is likely to result in a fire and damage all electrical systems.

**DO NOT**, under any circumstances, use the generator for any purpose that exceeds its rated capacity.

**GROUND THE GENERATOR.** The manufacturer has provided a grounding lug for the proper grounding of the generator. Manufacturer does not supply the required grounding conductor or grounding electrode because it would be impossible to cover every exception and meet all local code requirements. See your local code requirements for the proper grounding governing the use of your generator.

IF CONSIDERING CONNECTING GENERATOR to existing wiring systems (house, barn, pumps, for example), CONTACT A LICENSED ELECTRICIAN to ensure proper, safe connection and compliance with local electrical, fire safety and building codes.

# **INSPECT GENERATOR CAREFULLY**

**INSPECT THE GENERATOR CAREFULLY** before you operate it.

GUARDS AND SHIELDS must be in place.

KEEP NUTS, BOLTS, AND SCREWS TIGHT. Loose parts may result in personal injury or damage to the unit.

**DO NOT** operate the generator without an air filter. Rapid engine wear will result.

DO NOT operate the generator if the oil level is low.

**VENTILATING OPENINGS** such as the generator cover, air filter and muffler exhaust outlet must be cleaned periodically and kept free of debris to ensure proper operation and adequate cooling of the generator.

# SAFETY PRECAUTIONS

#### SERVICE GENERATOR SAFELY

KEEP generator clean.

BEFORE you service or remove parts, let the engine

**DO NOT** work on generator while it is being operated.

DO NOT adjust generator when engine is running. unless the procedure is approved. STOP THE ENGINE.

WAIT until generator is stopped before you service it.

USE ONLY identical replacement parts when servicing unit.

DO NOT ALTER EXHAUST SYSTEM. Use only Engine Manufacturer approved exhaust mufflers.

DO NOT ALTER ENGINE SETTINGS. The engine speed is controlled by a preset governor to deliver rated electrical frequency (60 Hz). Consult your ECHO servicing dealer if in doubt.

## STORE GENERATOR SAFELY

Before you leave the generator unattended:

- Stop engine by moving the Engine Ignition Switch to the OFF position.
- 2. Turn fuel valve to OFF position.
- Disconnect spark plug wire.
- Do not store generator where fuel fumes could reach an open flame or spark.

WHEN NOT IN USE, STORE GENERATOR in a cool, dry place and AWAY FROM POSSIBLE SOURCES of ignition such as gas water heaters. furnaces, clothes dryers, etc.

WHEN TRANSPORTING your generator, make sure it is in an upright position and that gasoline is not leaking. Secure it from sliding.

# HAVE A FIRE EXTINGUISHER NEARBY

Have a multipurpose dry chemical fire extinguisher filled and handy. Know how to use it.

COMPLY WITH ALL FIRE PREVENTION REGULA-TIONS. We recommend you keep a fire extinguisher and long-handle shovel close by whenever using a generator in area where dry grass, leaves or other flammable materials are present.

# **FUELS AND LUBRICANTS**

#### ENGINE OIL

#### IMPORTANT

Before starting engine for first time, add oil, as unit is shipped dry.

#### IMPORTANT

Operating a generator with a low oil level will cause serious engine damage.

#### **FUEL**



HANDLE FUEL CAREFULLY. IF THE ENGINE IS HOT OR RUNNING, DO NOT FILL THE FUEL TANK. DO NOT SMOKE WHILE YOU FILL THE FUEL TANK OR SERVICE THE FUEL SYSTEM.

See engine manufacturer's Operator's Manual for all engine operating and maintenance requirements.

# WATTAGE CALCULATING INSTRUCTIONS

#### **IMPORTANT**

Do not exceed rated capacity of your generator. Serious damage to the generator or appliance can result from overload.

- When matching generator wattage capacity to tool or appliance operation, starting and running wattage requirements should be calculated to insure the generator is not overloaded.
- 2. Two types of electrical appliances may be powered by your generator.
  - a. "Resistive Load Appliance" (i.e., lights, heaters, television sets, radios) starting wattage and running wattage requirements are the same.
  - b. "Inductive Load Appliance" (i.e., electric motors and hand held power tools) starting wattage may be 1.5 to 3.5 times greater than the running or operating wattage requirement.

# CALCULATING WATTAGE REQUIREMENTS

Before operating the generator list all the appliances and/or tools you intend to operate at the same time. Then determine starting requirements and running wattage requirements.

# CALCULATING STARTING WATTAGE REQUIREMENTS

 Some tools and appliances will list on the motor label starting and running voltage and amperage requirements. Refer to the starting volts and amps shown on the label. To convert this information to wattage use the following formula:

Volts X Amps = Watts

Ex. (Starting voltage and amperage for 1/4 hp drill) 120V X 10 Amps = 1200 Watts 2. Use actual listed values from the motor label if available. If only one value is shown that value is the running volt/amps. Determine the approximate starting wattage requirement by multiplying the calculated wattage by 3 times for most motor types to assure adequate generator capacity. If no label information is available use the values in the following chart as a guide.

w	WATTS REQUIRED TO START MOTOR						
Motor Size (HP)	Running Watts	Repulsion Induction	Capacitor	Split Phase			
1/6	275	600	850	2050			
1/4	400	850	1050	2400			
1/3	450	975	1350	2700			
1/2	600	1300	1800	3600			
3/4	850	1900	2600	-			
1	1100	2500	3300				

The starting wattage required by resistive loads is the same as running wattage and is usually listed in watts on the label.

e.g. 60 watt light bulb

# CALCULATING RUNNING WATTAGE REQUIREMENTS

 Running wattage requirements are calculated the same as starting wattage. Refer to the running or operating volts and amps referenced on the motor label and calculate watts by multiplying Volts and Amps.

# WATTAGE CALCULATING INSTRUCTIONS

# CALCULATING TOTAL WATTAGE REQUIREMENTS

Generator capacity must be equal to or exceed total starting and running wattage load.

- To determine total wattage load, list all appliances that may be operated by the generator at the same time.
- List running wattage requirements of appliances that will operate in constant application.

GENERATOR APPLICATION WORKSHEET					
Requirem'ts	Running Wattage	Starting Wattage	Total Wattage		
Furnace "1/8"HP	300	500	500		
Lights	60	60	60		
Radio	80	80	80		
TV	255	255	255		
TOTAL			895		

- List starting wattage requirements of appliances that may cycle on and off.
- Compare the running and starting wattage requirements for each appliance, and list the larger wattage requirement in the column TOTAL WATTAGE.
- Add the total wattage requirements for all appliances to determine the maximum generator load.

In the above example running and starting wattages for lights, radio and T.V. are the same values. However, the starting wattage for the furnace, which will cycle on and off, is greater than the running wattage. Therefore, total wattage load on the generator will equal the furnace starting wattage of 500 watts plus the running wattages of the lights, radio and T.V., a total of 895 watts, as shown in the TOTAL WATTAGE column.

Using figures calculated, use chart to compare requirements to generator capacity.

If generator capacities are not adequate to cover all requirements, deduct the least needed appliance so generator can be used without overloading.

If requirements are mandatory and cannot be reduced, obtain a larger capacity generator.

GENERATOR CAPACITY CHART				
Model EG	Continuous Running Wattage Capacity	Maximum Wattage Capacity		
4600	4000	4600		
5600E	5000	5600		
7600E	7000	7600		

## **EXTENSION CORD USAGE**

When using a tool at a considerable distance from power source, a 3-conductor, grounding type extension cord of adequate size must be used for safety, and to prevent loss of power and overheating. Use the following table to determine the minimum wire size required.

#### NOTE

Use only three wire extension cords with a three-prong grounding type plug and three-pole receptacles which accept the tool's plug. Replace or repair damaged cords immediately.

# **IMPORTANT**

A cord that is hot to touch is overloaded.

WIRE GAUGE CHART				
Extension Cable Length	120V/240V *Gauge			
25 Ft. (7.62 M)	10			
50 Ft. (15.24 M)	10			
75 Ft. (22.86 M)	10			
100 Ft. (30.48 M)	8			
150 Ft. (45.27 M)	8			
200 Ft. (60.94 M)	8			

<sup>\*</sup>American Wire Gauge Size

# **VOLTAGE DROP IN ELECTRIC EXTENSION CORDS**

When a long electric cord is used to connect an appliance or tool to the generator a certain amount of voltage drop occurs in the extension cord which lessens the effective voltage available to the appliance or tool. The chart below has been prepared to illustrate the approximate voltage loss when an extension cord of 300 feet (approx. 100 meters) is used to connect an appliance or tool to the generator.

Nominal Cross Section	A.W.G. Gauge No.	Allowable Current	No. of Strands/Strand Dia.	Resistance	Current Amp.						
mm³	No.	A	No./mm	Ohms/100m	1A	ЗА	5A	8.8	10A	12A	15A
0.75	18	7	30/0.18	2.477	2.5V	87	12.5V	•	-	-	-
1.27	16	12	50/0.18	1.486	1.5V	5∨	7.5	12V	15V	18V	-
2.0	14	17	37/0.26	0.952	1V	3V	5V	8∨	10V	12V	15V
3.5	12~10	23	45/0.32	0.517	T -	1.5V	2.5V	4٧	5V	6.5∨	7.5V
5.5	10~8	35	70/0.32	0.332	-	17	2V	2.5V	3.5V	4٧	5V

# MAXIMUM OUTPUT OPERATION

Limit operation of the generator at maximum output to 3 minutes. Additional 3 minute periods of maximum output are possible if the generator is allowed 10 minutes to cool between periods of maximum output. Cool engine by operating in the throttle position with the output load disconnected.

# MISCELLANEOUS WATTAGE REQUIREMENT

	T	TAGE REGUITERS	····
REQUIREMENTS	TOTAL Inductive Starting Watts	REQUIREMENTS	TOTAL Inductive Starting Watts
Air Condition, Central 20,000 BTU 24,000 BTU Blanket, Electric*	5,800 8,750 400	Furnace Fan (Gas or Fuel Oil) 1/8 HP 1/6 HP 1/4 HP 1/3 HP 1/2 HP	800 1,250 1,600 2,100 3,225
Charger, Battery* 4 amp 10 amp 15 amp 30 amp w/200 amp boost 60 amp w/250 amp boost	90 200 380 650/3,600 1,500/5,750	Grinder, Bench 6 inch 8 inch Heater, Portable Space	1,720 3,900
Cleaner, Grain 1/4 HP	1,650	(Kerosene, Diesel Fuel) 30,000 BTU 50,000 BTU 85,000 BTU	800 1,000 1,225
Coffee Maker *  Compressor, Air 1/2 HP 1 HP	1,750 3,000 6,000	90,000 BTU 140,000 BTU 150,000 BTU 350,000 BTU	1,225 1,625 1,625 2,125
Conveyor, Portable 1/2 Hp	3,400	Iron * Light Bulbs *	1,200
Cooler, Milk	2,900	Light, Flood	
Cultivator, Electric	2,100	HID Metal Halide Mercury Vapor	125 313 
Dehumidifier  De-Icer, Stock Tank *	1,450 1,000	(not recommended) Sodium Vapor	1,250
Dish Washer Cool dry Hot dry	2,100 1,000	Milker 3-1/2 cu. ft. 1/2 HP Mixer (Vacuum Pump)	3,300
Drill, Hand 1/4 inch 3/8 inch 1/2 inch	350 400 800	2 HP Mixer, 55 gal. drum 1/4 HP	1,900
<b>Dryer, Clothes</b> Gas Electric	2,500 7,550	Motors, Farm Duty Standard (e.g. conveyor, feed augeb, air compressor) 1/3 HP 1/2 HP	1,720 2,575
Dryer, Hair	300 - 1,200	3/4 HP	4,500
Elevator, Grain 3/4 HP	4,400	High Torque (e.g. Barn leaners silo unloaders, silo hoists, bunk feeders)	
Fence, Electric * (25 mile)	250	1-1/2 HP	8,100
Freezer	2,900	Motors, Industrial Duty Split Phase 1/8 HP 1/6 HP	800 1,225
Fry Pan, Electric	1,300	1/4 HP 1/3 HP	1,600 2,100

<sup>\*</sup>These are resistive loads in which starting wattage requirements do not exist.

# **MISCELLANEOUS WATTAGE REQUIREMENT(cont.)**

REQUIREMENTS TOTAL Inductive Starting Watts		REQUIREMENTS	TOTAL Inductive Starting Watts
Capacitor Start, Induction Run 1/3 HP 1/2 HP 3/4 HP	2,020 3,075 4,500	Electric Chain 12 inch, 1-1/2 HP 14 inch, 2 HP	900 1,100
Capacitor Start, Capacitor Run 1-1/2 HP	8,100	<b>Table</b> 9 inch 10 inch	4,500 6,300
Fan Duty 1/8 HP 1/6 HP 1/4 HP 1/3 HP 1/2 HP	1,000 1,400 1,850 2,400 3,500	Television * Color Black and White  Toaster * 2 slice	300 100 1,050
Opener, Garage Door 1/4 HP 1/3 HP	1,100 1,400	4 slice Trimmer, Hedge 18 inch	1,625 400
Oven, Microwave (625 watt)	2,800	Trimmer, Nylon Line Standard 9 inch Heavy Duty 12 inch	350 500
Polisher, Floor 16 inch - 3/4 HP 20 inch - 1 HP	4,500 6,100	Vacuum Cleaner Standard Deluxe	800 1,100
Pumps Centrifugal, 900 GHP Submersible, 400 GPH Sump	900 600	Vacuum, Wet & Dry 1.7 HP 2.5 HP	900
1/3 HP 1/2 HP Wet	2,100 3,200	Washer, Clothes	3,450
1/3 HP 1/2 HP	2,150 3,100	Washer, High-Pressure 5/8 HP 1 HP	4,600
Radio *	50 - 200	1-1/2 HP	9,050 10,310
Refrigerator	2,900	Welder *	
Saws Bank, 14 inch Circular,	2,500	70 amp 100 amp 200 amp	2,000 3,600 9,000
6-1/2 inch 7-1/4 inch 8-1/4 inch	500 900 1,400		

### **IMPORTANT:**

There are examples of appliances in this chart that are more than rated generator capacities. They are shown for reference data only. The running and additional inductive starting wattage shown in this chart are approximations. Actual wattage can usually be found on light bulbs or appliance name plate. If not, determine wattage by multiplying listed amperage by voltage.

<sup>\*</sup>These are resistive loads in which starting wattage requirements do not exist.

# PRESTARTING INFORMATION

# WARNING A DANGER

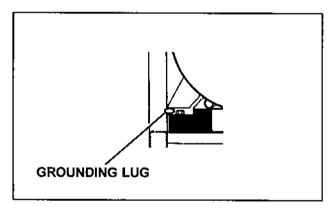
DO NOT RUN ENGINE IN AN ENCLOSED AREA. EXHAUST GAS CONTAINS CARBON MONOXIDE, AN ODORLESS AND DEADLY POISON.

### **IMPORTANT**

Do not start engine with AC loads connected. Damage to the generator or appliance may result.

## 1. GROUNDING GENERATOR

The National Electrical Code (NEC) requires that all separately derived AC systems be grounded per Article 250-26. Manufacturer has added a grounding lug type terminal per Article 250-26 (a) from the noncurrent-carrying metal parts to the conductor to be grounded. Manufacturer does not supply the required grounding conductor or grounding electrode because it would be impossible to cover every exception and all local code requirements. See your local codes and the NEC manual for the proper grounding for your application.



Location of grounding lug type terminal.

#### NOTE

- As a general rule, do not use electrical equipment in wet or damp areas. Additional rules from NEC, OSHA and state codes apply to portable generators when used on construction sites.
- It is the responsibility of the consumer to meet the above requirements.

# **IMPORTANT**

The generator must be placed on a firm, level surface for proper lubrication of the engine.

# 2. AC RECEPTACLES/CIRCUIT BREAKER -ALL MODELS-

### **IMPORTANT**

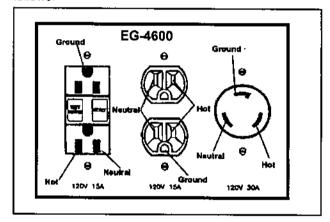
Do not exceed rated capacity of your generator, as serious damage to the generator or appliance could result. Do not start engine under load, i.e., when appliance is connected.

# 2.1 CONNECTING 120 V RECEPTACLES -ALL MODELS-

### **IMPORTANT**

Note receptacle wiring polarity to prevent equipment or generator failure.

Plug connections to all equipment should be as follows:

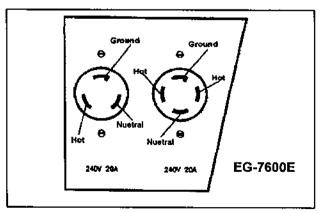


# 2.2 CONNECTING 120 V/240V RECEPTACLE

# **IMPORTANT**

Note receptacle wiring polarity to prevent equipment or generator failure.

Plug connections to all equipment should be as follows:



# **PRESTARTING INFORMATION (cont.)**

# 3. AC RECEPTACLES/CIRCUIT BREAKER/GFCI

## **GROUND FAULT CIRCUIT INTERRUPTER (GFCI)**

These GFCI outlets provide protection against ground fault currents which can cause shocks that may be fatal. A ground fault current is caused by an AC system with faulty insulation. When a person uses the defective AC system, and if that person is contacting an electrical ground, then stray current caused by faulty insulation will flow through the person's body.

When a ground fault is detected in an AC system, the GFCI outlet will "trip" and interrupt the flow of current.

Test both outlets regularly. Push the test button and all current to the outlets on that line should be interrupted. If the power is not interrupted, do not use the outlets, and have a qualified technician make the necessary repairs. Press the reset button to restore power to all the outlets.

# IMPORTANT

Do not exceed maximum rated capacity of your generator, as serious damage to the generator or appliance could result.

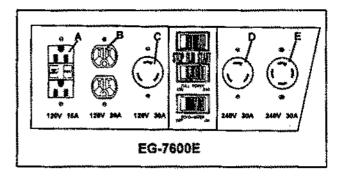
Disconnect appliances from generator before starting engine.

The generator is equipped with a frame grounded 120V(GFCI) 15 amp receptacle (A), 120V 15 or 20 amp A.C. duplex receptacle (B), 120V 30 amp three hole receptacle (C), 240V 20 OR 30 amp three hole receptacle (D), 240V 20 or 30 amp four hole receptacle (E). The receptacles are protected by button-type circuit breakers.

# NOTE

Circuit breakers trip automatically under circuit overload. When a circuit breaker trips, determine the cause. Typical causes are excessive loading or electrical system shorting.

If a circuit breaker trips, locate and correct the problem, and allow circuit breaker to cool for 1 minute. Then reset circuit breaker by pushing button in.



# 4. FULL POWER VOLTAGE SELECTING SWITCH

This generator will supply 240V output. The 240V AC receptacle(s) supplies 240 volts when the voltage selecting/changeover switch is placed in the right hand position.

#### **IMPORTANT**

Do not attempt to plug 240 volt equipment into a 120 volt receptacle or 120 volt equipment into a 240 volt receptacle on the generator, as serious damage to the generator or appliance could result.

### 5. OPERATING GENERATOR/ AC OUTPUT-ALL MODELS

- Make sure all power tools, extension cords, appliances are disconnected from the generator.
- Check that equipment switches are in the "OFF" position.
- 3. Start engine (See Engine Operator's Manual).

# IMPORTANT

Do not plug in extension cords to generator receptacles or attempt to operate electrical tools or appliances when engine is operating at idle or intermediate speed positions, as damage to generator or appliance could result.

 Allow the engine to warm up 2 ~ 3 minutes before connecting tools or appliances.

# PRESTARTING INFORMATION (cont.)

- Set the voltage selecting/changeover switch. Left hand position for 120V use, right hand position for 240V use.
- 6. Connect equipment to generator receptacle.

### **IMPORTANT**

When full power switch is set on the 120V side the full rated amperage is available through a combination of 120V receptacles. When full power switch is set on the 240V side the full rated amperage at 240V is available through the 240V outlet(s). The operator will also have available up to 50% of the 120 volt rated amperage through the 120 volt outlets. IN ANY COMBINATION OF 120V OR 120V 240V OPERATION DO NOT EXCEED TOTAL RATED AMPERAGE OF THE GENERATOR. FAILURE TO OBSERVE THE WARNING COULD RESULT IN GENERATOR FAILURE OR DAMAGE.

# 6. FREQUENCY (Hz)

Your generator has been factory preset to 60 cycles (one Hertz (Hz) equals one cycle/per second, the same as 120 volt household current) at 3600 rpm with throttle in **FULL** position, under load.

The 60 cycle output is the standard electrical frequency for the United States.

#### NOTE

Adjustment or changing of frequency should only be made by an authorized ECHO servicing dealer.

# TROUBLESHOOTING

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Engine does not start	<ol> <li>Unit loaded during start - up</li> <li>Low on fuel or oil</li> <li>Faulty spark plug</li> <li>Loose wire</li> <li>Ignition switch off</li> <li>Fuel valve off</li> <li>Make sure Auto Idle Switch is in the "OFF" position duringstart-up and warm up.</li> </ol>	1. Remove load 2. Add fuel or oil 3. Replace 4. Inspect & repair 5. Turn to "ON" position 6. Turn to "ON" position
No electrical output	<ol> <li>Faulty circuit breaker</li> <li>Faulty receptacle</li> <li>Tripped G.F.C.I.</li> <li>Circuit breaker</li> <li>Faulty power cord</li> </ol>	a) Reset to "ON" position     b) Replace     Replace     Reset     Depress and Reset     Inspect & replace
Repeated circuit breaker tripping or fuse failure	Overload     Faulty equipment or cords	Reduce load     Check for bare wires or frayed insulation on equipment

When the engine will not start:

- 1. Is there enough fuel?
- 2. Is the fuel valve on?
- Is gasoline reaching the carburetor? To check, loosen the carburetor float bowl drain plug with the fuel valve on.

# WARNING A DANGER

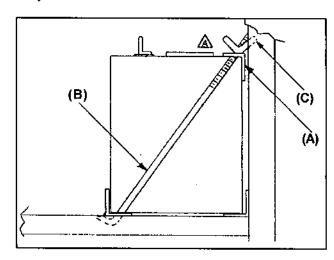
IF ANY FUEL IS SPILLED, MAKE SURE THE AREA IS DRY BEFORE TESTING THE SPARK PLUG OR STARTING THE ENGINE. FUEL VAPOR OR SPILLED FUEL MAY IGNITE.

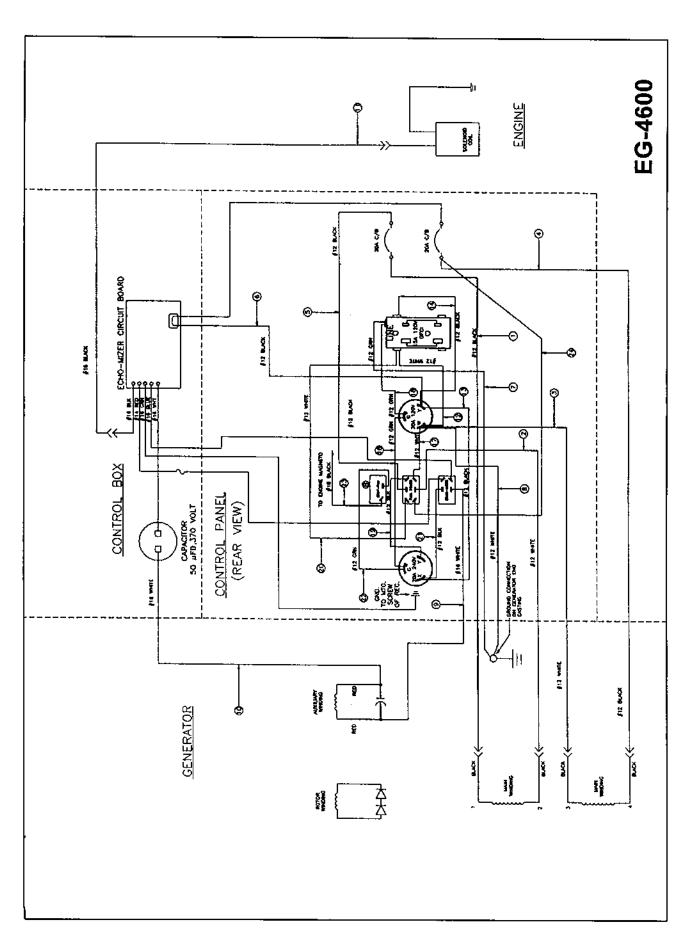
- Is the engine ignition switch "ON"?
- Is there enough oil in the engine? If not, the oil alert lamp will go on when the starter grip is being pulled.

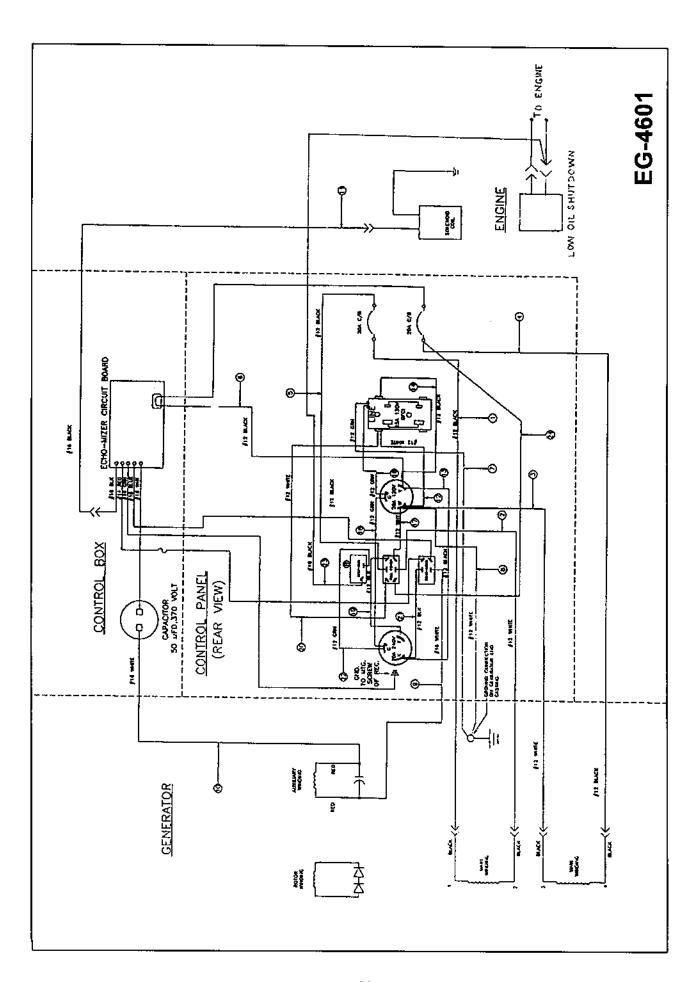
- 6. Is the choke lever in its proper position?
- 7. Is there a spark at the spark plug?
  - a) Remove the spark plug cap. Clean any dirt from around the spark plug base, then remove the spark plug.
  - b) Install the spark plug in the plug cap.
  - c) Turn the engine switch on.
  - d) Ground the side electrode of the spark plug to any engine ground, pull the recoil starter to see if sparks jump across the gap.
  - e) If there are no sparks, replace the spark plug. If OK, try to start the engine according to the instructions.
- If the engine still does not start, take your generator to the nearest ECHO dealer.

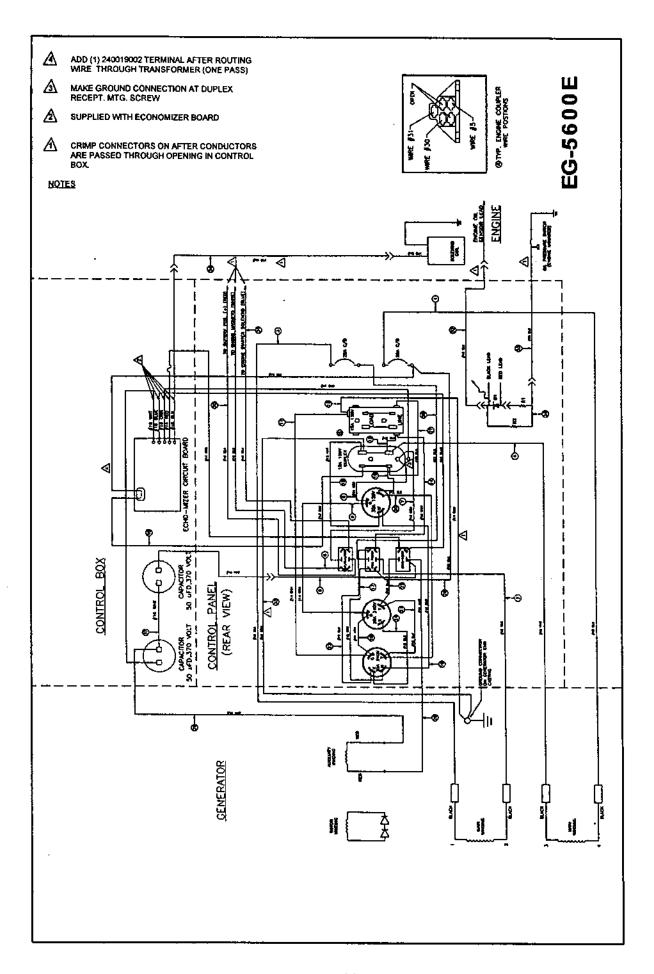
# BATTERY AND BATTERY FRAME INSTALLATION MODELS EG-5600E, EG-7600E

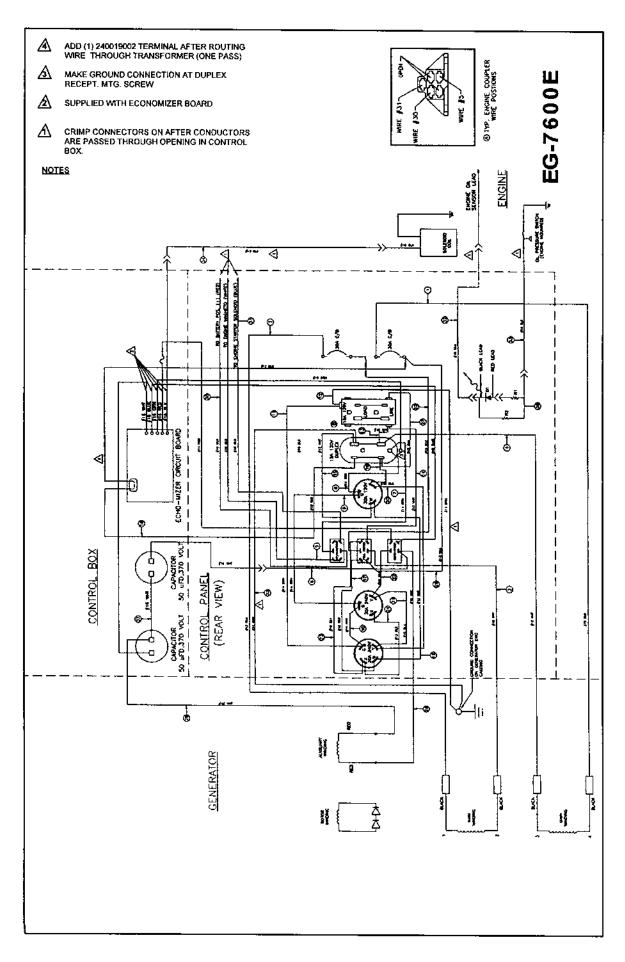
- Place battery in rack with terminals facing towards generator head.
- Place battery bracket (A) over battery as shown (opposite battery terminals).
- Place "L" bolt (B) through top and bottom brackets and secure with wing nut (C).











# **PARTS CATALOG**

To obtain a parts catalog send a check or money order for \$2.00 per parts book made payable to ECHO, INCORPORATED. Include a sheet of paper stating your name, address and specify

EG-4600/4601 Part #99922202497 EG-5600E Part #99922202498 EG-7600E Part #99922202499

Mail to:

ECHO, INCORPORATED 400 Oakwood Road Lake Zurich, IL 60047

