WINCO INC

A Division of DTE Dyna Technology Inc

INSTALLATION, OPERATION, and MAINTENANCE INSTRUCTIONS

CSAW6010DEX/C

OWNERS MANUAL

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.

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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.

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PROPER USE AND INSTALLATION

You must be sure your new engine generator set is:

* Properly serviced before starting
* Operated in a well ventilated area
* 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_____

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.

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WARNING:

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

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CAUTION:

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

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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- Gasoline and other fuels always 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.

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 wipe up any gas or oil spills before starting the unit.
   d. Never allow leaves or other flammable material to build up around the engine 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. This generator set is not intended for permanent installation. Consult dealer for units intended for stand-by service. 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.

SPECIFICATIONS

MODEL	CSAW6010DEX/C
Generator	
Surge Watts	6000
Continuous Watts	5500
Volts	120/240
AMPs @ 240 Volts	22.9
AMPs @ 120 Volts	45.8
Engine	
Size	9.9 HP
Model	Hatz U-4 Var XI
Type -	See Engine Shroud For Type
Fuel Capacity-	7 gal
Fuel Consumption	.7 gal/hr
Starting System	12 Volt Electric
	Key
Muffler	Low Tone
Type -	1B40
Stop System	Key
Complete Unit	
Weight (dry)	288 LBS
Dimensions LxWxH	32 X 22 X23
Owner Must Provide	
Fuel	#2 Diesel
Oil Type	5W-40 CD, CE, CF, CG
See engine manual for additional oil information.	
Oil Capacity	1.64 Quarts

INTENDED USES

1. These engine generator sets have been designed specifically for Vehicle mounting and mobile use. The generator output is available in the junction box on the top of the generator shell. Receptacles are not provided in the “control box” since the unit is intended to be wired into the vehicles electrical distribution system. The vehicle electrical distribution system must include a main line circuit breaker (MLCB) to protect the generator and your wiring. The vehicle distribution wiring and receptacles carry the generator output power to the loads (portable lights appliances and tools). These units are dual wound generators, with two separate 120 Volt windings. These windings can be connected for full power 120 volt OR 120/240 volt output. When connected for 120/240 dual voltage, the 120 volt loads must be split and balanced to avoid overloading one of the generator 120 volt windings. See unit capabilities for further explanation.

2. These 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 not be run in small compartments without the access door open to allow positive fresh air flow.

RESTRICTED USES

1. DO NOT remove from the base assembly. Removal of the generator from the base assembly or operating without the shock mounts installed may cause excessive vibration and damage to the engine generator set.

2. DO NOT operate this generator without the compartment door open., i.e. generator compartment of rescue vehicles, motor homes or travel trailers. Closed compartments will not allow enough free flow fresh air to reach the engine generator set for cooling. Overheating will cause damage to both the engine and the generator. Small compartments may also develop hot spots where there is very little air flow and could cause fire.

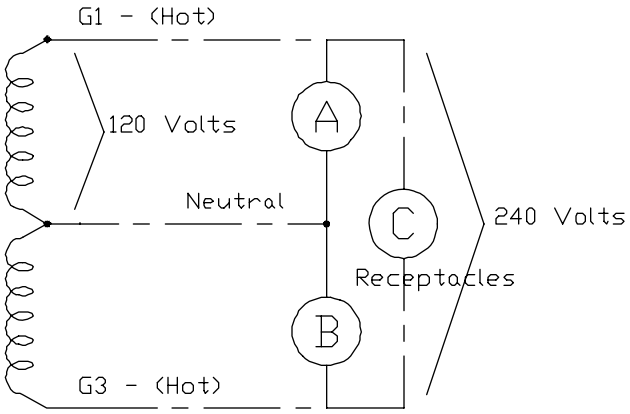
3. DO NOT attempt to operate this unit at 50 cycles. These units are designed and governed to operate at 60 Cycles only.

UNIT CAPABILITIES

Generator Connections - The diagram below represents a typical 5500 watt generator. Receptacles A and B are the two 120 Volt duplex receptacles. Up to 2750 watts at 120 volts (22.9 Amps) can be taken from the generator at each of the receptacles. 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 power taken from receptacle 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.

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 current to start them as to run them. Capacitor motors are easier to start and usually require 2 to 4 times as much current to start them as to run them. Repulsion Induction motors are the easiest to start and usually require 1 1/2 to 2 1/2 times as much to start them as to run them.

Most fractional horsepower motors take about the same amount of current to run them whether they are of Repulsion-Induction (RI), Capacitor (Cap), or Split-Phase (SP) type. The chart below shows the approximate current required to start and run various types and sizes of 120 volt 60 cycle electric motors under average load conditions.

	RUNNING	STARTING AMPS		
HP	AMPS	SP	CAP	RI
1/6	3.2	16 TO 22	6 TO 13	5 TO 8
1/4	4.5	22 TO 32	9 TO 18	7 TO 12
1/3	5.2	26 TO 35	10 TO 21	8 TO 17
1/2	7.2	NOT MADE	14 TO 29	11 TO 18
1	13.0	NOT MADE	26 TO 52	20 TO 33

The figures given above are for an average load such as a blower or fan. 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-excited generators respond to severe overloading differently than the power line. 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 DAMAGING THE GENERATOR STATOR AS WELL AS THE MOTOR WINDING.

Because 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.

Motor Starting Capacity - listed below you will find the motor starting capability of your engine generator set.

Generator Model	Motor Size (code “G” capacitor start)
W6010DR	3.0 HP

Trying to start a larger motor or higher code (ie. J or K) motor may result in damage to both the generator and the electric motor especially 120 volt motors.

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.

UNPACKING

When you unpack your new ENGINE GENERATOR, be sure to remove all the information sheets and manuals from the carton.

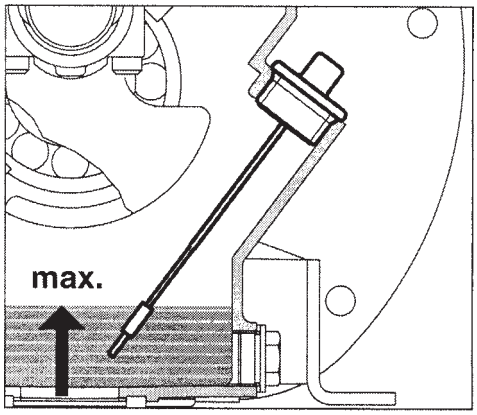
1. This power plant was in good order when shipped. Inspect the power plant promptly after receiving it. If damage is noted, notify the transportation company immediately; request proper procedures for filing a “concealed damage” claim. Title to the equipment and responsibility for filing claim rests 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.



Proper Oil Level

1. 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 operators 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 manufacturers warranty.

2. Diesel Fuel and Fuel Line Connections - Always use a good grade of # 2 diesel fuel. For cold weather, blended # 1 fuel may be used - See engine operators manual for recommendations. Never use gasoline or gasohol. Always insure that the fuel is clean and free of all impurities.

WARNING: FIRE
Diesel fuel is flammable and can be ignited to cause or enlarge fires when proper precautions are not taken.

Never use fuel that has been stored for an extended period of time. Fuel will lose its volatile properties and you will be left with a 'gum' / varnish residue. This varnish like substance will clog the filters, fuel lines and injectors. Old, contaminated, stale fuel 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.

3. Battery connection - All electric start engine generator sets are shipped with a battery kit for customer installation. This kit consists of a battery rack, battery tie down, battery cables, and instruction sheet for installation. After installing the battery rack, file the instruction sheet in the back of this manual for future reference.

A twelve volt battery, group U1 rated at 300 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.

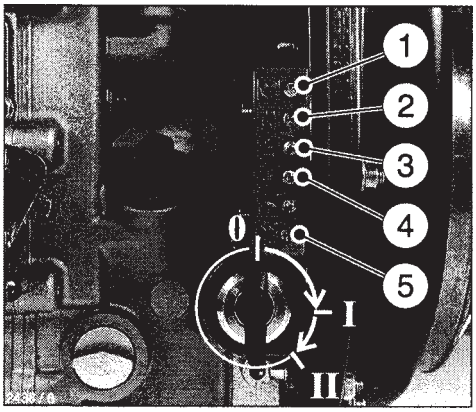
CAUTION: EQUIPMENT DAMAGE
These electric start engines are NEGATIVE GROUND. Use extreme caution when connecting the battery. Connect the NEGATIVE battery terminal to GROUND.

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 and tight. Reverse the sequence when disconnecting, disconnect the negative cable first.

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.

OPERATION/INSTALLATION

This engine generator set consists of a Hatz 9.9 hp diesel engine and a 6 kw generator end. The Hatz engine is a electric key start engine with internal diagnostics. The engine is equipped with both low oil pressure protection (3) and high cylinder head temperature protection (4). If either should occur the engine will shut it self off and display a shutdown light.



Two additional lights will tell you the unit is running (1) and battery charging system is working (2). Lamp #5 is a preheat which is not used (See the engine operators manual for addition information).

INITIAL START UP

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

On All Units Check:

1. Engine oil, fill as required with correct grade and quantity.

2. Fuel level, fill as required with clean fresh fuel.

3. Visually check unit for loose parts.

STARTING and STOPPING

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. See "Operating Speed" section for additional information.

1. Manual starting - Provision for manual starting is not provided - If the battery is dead or defective, recharge or replace it. Refer to the engine manual for additional starting, operating, and stopping instructions.

2. Electric Starting - Always keep the battery charged, but especially during cold weather operation.

a. Turn on the fuel supply and prime the fuel line up to the injector pump.

b. Operate the key switch. Position #I will turn on the fuel solenoid and position #II will engage the starter. The switch is spring loaded to the #I position, so when you release the key the switch returns to this position.

Once the engine is started the only way to reengage the starter if the engine should stop is to rotate it to the O position and then back to the #I and #II position. The engine has a built in lockout that prevents the starter from being engaged once the unit has started.

c. The engine will start and come up to operating speed. Light number 1 should light up at this point to indicate the unit is operating properly.

d. To shut the unit off rotate the key switch to the O position and the unit is stopped by shutting off the fuel solenoid

STARTING HINTS

1. Cold weather

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a. Use the proper oil for the temperature expected.

b. Use fresh winter grade fuel. Winter grade fuel is blended to improve starting. Do not use old or straight summer blend fuel.

CAUTION: EQUIPMENT DAMAGE

Never use ether or any other starting aides. Serious engine damage or personal injury may result from ignoring this simple warning.

2. Hot weather

a. Be sure to use the proper oil for the temperature expected.

b. Use only summer blended fuel. Using old fuel left over from winter may cause damage to the engine or clogging of the fuel filters and injection pump. See Engine Manufacturers instructions.

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

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Load Applied*	Speed (RPM)	Frequency (Hz)	Generator voltage 120V Recpt.	240V Recpt.
None	3690	61.5	129V	258V
Half	3600	60.0	120V	240V
Full	3510	58.5	115V	230V

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*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 tachometer and be sure the speed is correct.

The engine will govern itself at full speed. Intentionally overriding the governor and operating the generator at low 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 light bulbs and appliances being used, as well as possibly damaging the engine.

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. 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.

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.

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. See “Starting Electric Motors” in Unit Capabilities (page 3).

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 receptacle 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 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 for portable use. **DO NOT OPERATE INDOORS.** The unit should be stored in a warm dry location. **Move the unit outdoors** to a flat dry location for use.

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 is 2 hots and a ground wire, but no neutral connection, in the 3 wire 240 volt receptacle. A 4 wire receptacle (2 hot, 1 ground, and 1 neutral) has been provided on the control panel for use in temporay 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, four wire twist-lock plug (L14-30P). The use of locking receptacles and locking plugs provides the convenience of quick disconnect, for moving, while allowing non electrical workers to safely reconnect the power. In addition they prevent the plug from being accidentally removed by bumping or vibration.

2. If the generator set is be connected to existing distribution system a fully isolated manual transfer switch must be installed. The transfer switch prevents damage to the generator and 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 these portable generators. When installing the generator at these sites, a secondary emergency distribution panel may have to be installed, such as the Emergency Transfer/Service

(ET/S) system available through your WINCO dealer. 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 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.

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. A listing of service centers is included with the engine operators literature package. Engine service is very likely available from a nearby authorized dealer or distributor. Check the yellow pages of your local telephone directory under “Engines-Diesel” for the closest engine repair center or ask the dealer from whom you purchased the power plant.

1. Change the oil as recommended in the engine operators manual. It is usually required to change oil after the first 25 hours of operation and every 250 hours thereafter under normal operating conditions. If the engine is not used frequently, change the oil every 12 months, regardless of the actual number of hours of operation.

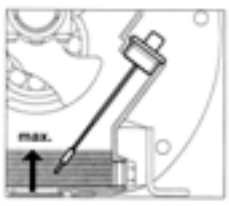
a. Remove oil drain plug at base of the engine and drain the oil with the engine warm.

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.



3. Servicing Air Cleaners: Consult engine operators manual for recommendations, procedures and intervals. Service more often if necessary if very dirty. Replace the cartridge using only original equipment parts available at any engine service center.

LOW OIL LEVEL SHUTDOWN SYSTEM

This low oil warning system will automatically stop the engine before the oil pressure reaches an operational danger point. This feature is designed to prevent costly repairs and downtime.

Use of the oil safety shutdown 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.

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 winding. 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 man. 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 dangerous both to the operator and to the equipment.

CLEANING

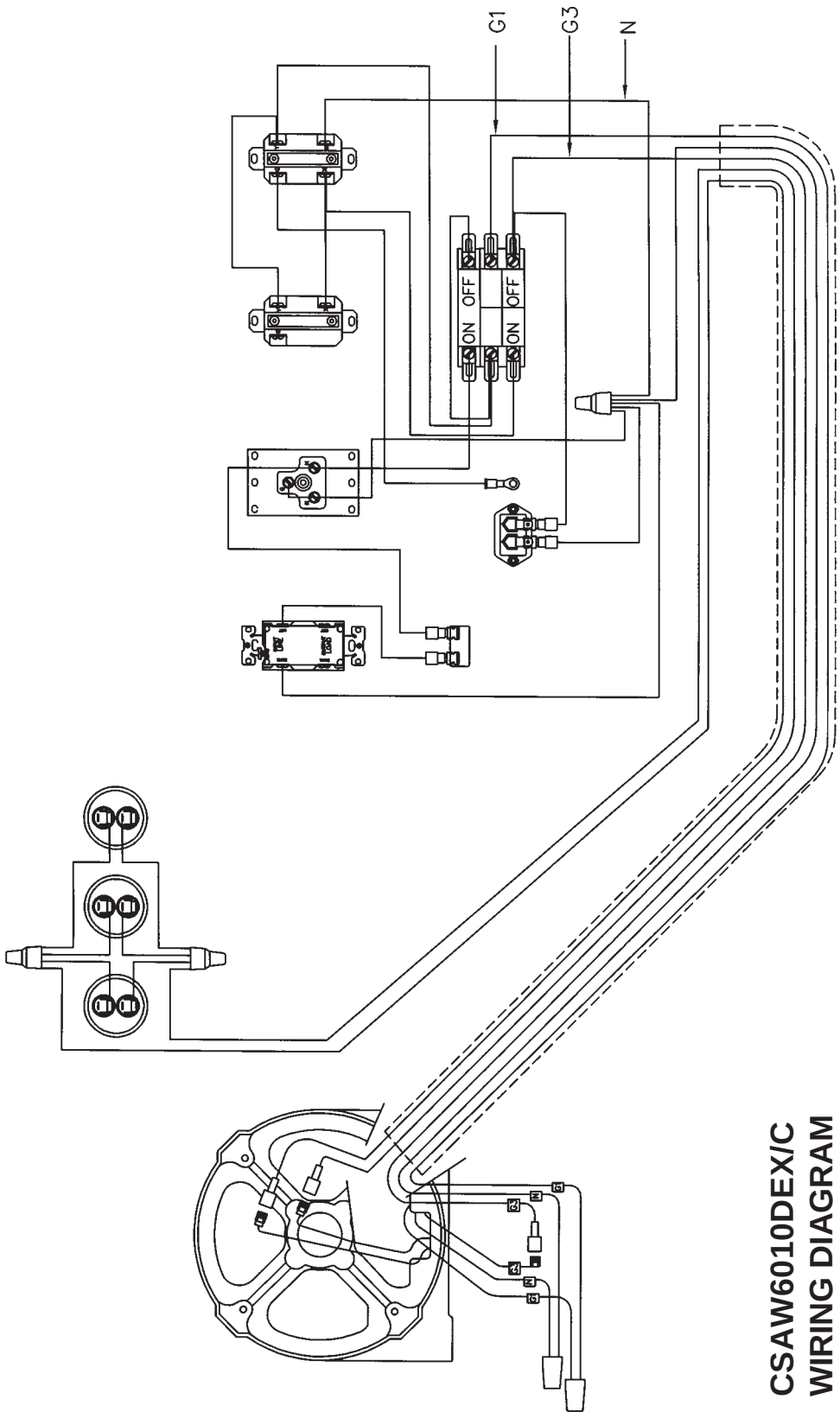
Remove dirt and debris with a cloth or brush. DO NOT use high pressure spray to clean either the engine or the generator. This high pressure spray could contaminate the fuel system and the generator components.

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.

PROBLEM (SYMPTOMS)	POSSIBLE CAUSES
Won't Start (electric)	*Fouled fuel injector. *Out of fuel. *Dead battery. *Defective start switch. *Defective start solenoid.
Voltage too low	*Engine speed is too low. *Generator overloaded. *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 diode.



CSAW6010DEX/C
WIRING DIAGRAM

WINCO®

INCORPORATED

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 24 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. Engines are covered exclusively by the warranties of their respective manufacturers, see enclosed warranties.

WINCO does not warrant 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.

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

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