VALSI®

# G80MG1500KVAE

## SERVICE MANUAL
## *MANUAL DE SERVICIO*


Powered by:
KOHLER COMMAND® PRO

***NOTE: REQUIRES BATTERY 12 VOLTS FOR ELECTRIC START (NOT INCLUDED)***

**TO HELP PREVENT SERIOUS INJURY OR DEATH, READ AND UNDERSTAND ALL WARNINGS AND INSTRUCTIONS BEFORE USE.**

***PARA PREVENIR SERIAS LESIONES O MUERTE, LEA Y COMPRENDA ESTE MANUAL Y TODAS SUS INSTRUCCIONES Y PRECAUCIONES ANTES DE USARLO***

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English

# SPECIFICATIONS G80MG1500KVAE

| ITEM | SPECIFICATIONS | G80MG1500KVAE |
|---|---|---|
| GENERATOR | Alternator type | Brushless, Self-excited, 2 poles, single phase |
| | Frequency | 60 Hz |
| | Maximum power | 7.6 kW |
| | Continuous rated power | 6.7 kW |
| | Voltage | 120 / 240 V |
| | Rated current | 56 / 28 A |
| | Power factor | 1 |
| | Overload/ Short circuit Protection | 30 Amps circuit breaker |
| ENGINE | Type | Gasoline, 4 stroke, air cooled, overhead valves |
| | Model | Kohler®: CH15 |
| | Rated Power | 426 cc @ 3600 RPM |
| | Muffler | Low profile |
| | Noise level (7m) | 77 dB |
| | Emissions control | EPA |
| | Gasoline tank capacity | 6.6 Gal (25L) |
| | Start | Electric Start |
| | Running time: 50% Load | 8.0 Hours |
| SUGGESTED OIL | | SAE 10W-30 |
| MATERIAL | | 1" squared type |
| OVERALL DIMENSIONS | | 28½" (L) x 19 5/8" (W) x 28 (H) in |

## FEATURES

**OIL SENSOR**
Oil sensor automatically shuts off the engine whenever the oil level falls down below the lower limit to protect the engine from seizure.

**NO RADIO NOISE**
Noise suppressor spark plug is equipped to prevent radio frequency interference.

**LARGE FUEL TANK**
The large fuel tank ( 6.6 gal.) more than full load 7 hours of continuous operation which is sufficient for a half day or one day work without refueling.

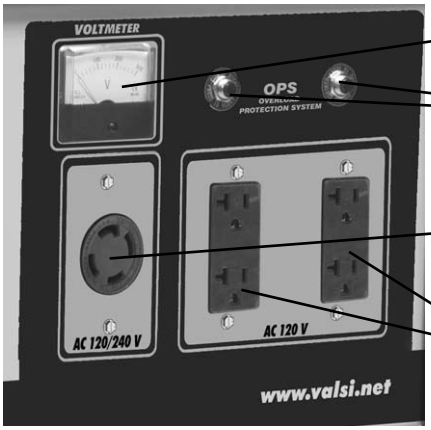
**PIPE FRAME**
Pipe frame protects the generator all around.

**MINIMAL MAINTENANCE**
* A drip - proof alternator design.
* No - fuse circuit breakers.
* An electronic pointless ignition system.

**LONG LIFE DURABILITY**
The heavy- duty 4 stroke Kohler® OHV engine:
* Fuel rubber mount in a sturdy tubular frame.
* A forged steel crankshaft supported by two main ball bearings.
* A pointless electronic ignition system
* A cast- iron cylinder liner

## GENERAL DESCRIPTION


## CONTROL PANEL





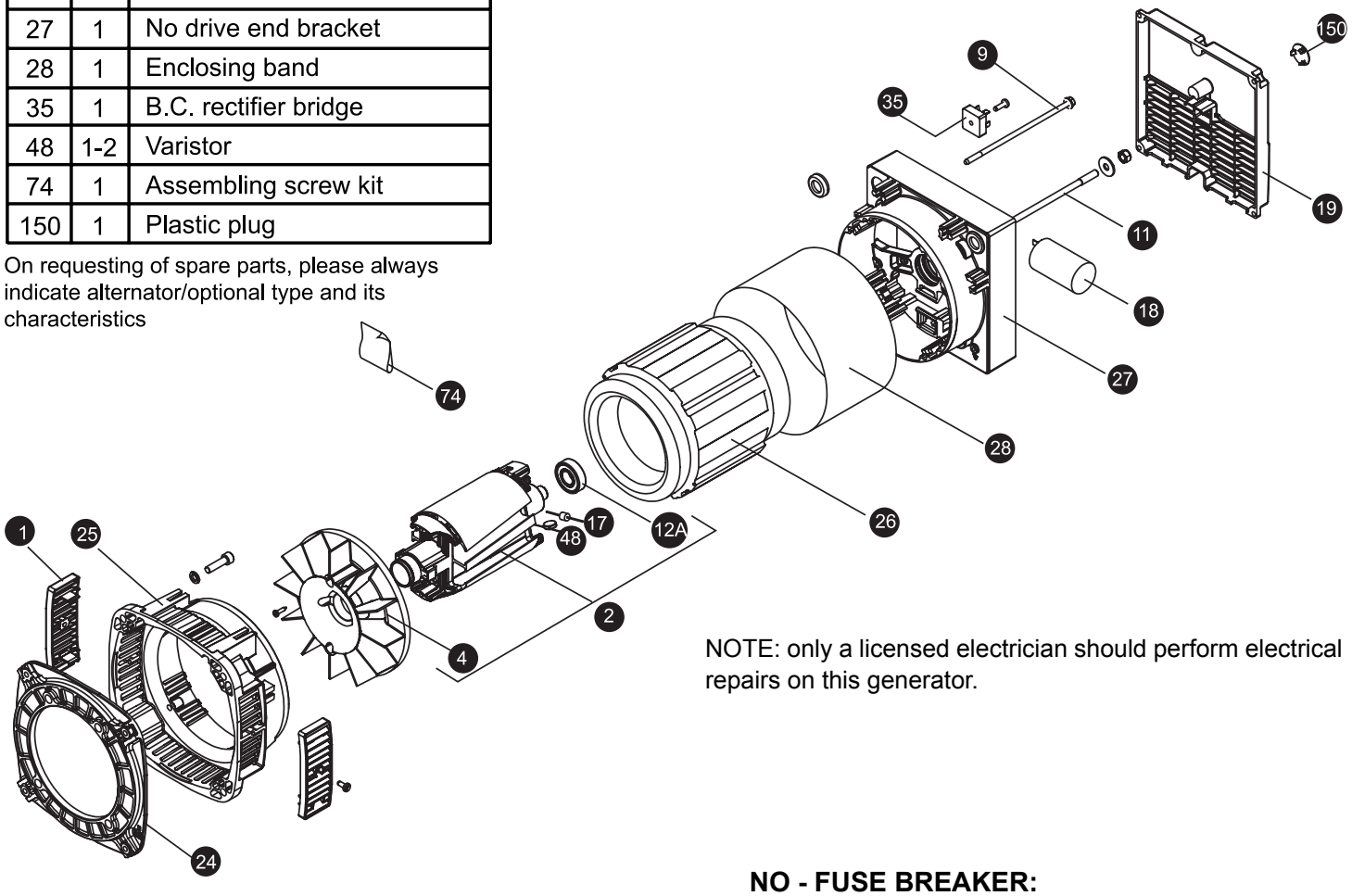

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

## SE100FX SPARE PARTS LIST

| REF | QTY | DESCRIPTION |
|---|---|---|
| 1 | 2 | IP23 outlet grid |
| 2 | 1 | Complete Wound rotor (with 4-12A-17-48) |
| 4 | 1 | Fan |
| 9 | 4 | Screws for bracket fixing |
| 11 | 1 | Rotor rod |
| 12A | 1 | Ball bearing |
| 17 | 1-2 | Rotor diode |
| 18 | 1 | Capacitor |
| 19 | 1 | Blind or wired cover |
| 24 | 1 | Coupling flange |
| 25 | 1 | Drive end bracket |
| 26 | 1 | Wound stator |
| 27 | 1 | No drive end bracket |
| 28 | 1 | Enclosing band |
| 35 | 1 | B.C. rectifier bridge |
| 48 | 1-2 | Varistor |
| 74 | 1 | Assembling screw kit |
| 150 | 1 | Plastic plug |

On requesting of spare parts, please always indicate alternator/optional type and its characteristics

NOTE: Some parts are shown for illustration purposes only and are not available individually as replacement parts.



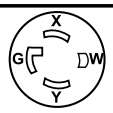

NOTE: only a licensed electrician should perform electrical repairs on this generator.

**NO - FUSE BREAKER:**
The no- fuse breaker protects the generator from getting damage by overloading or short circuit in the appliance.

| SPECIFICATION | THERMAL BREAKER | OBJECT OF PROTECTION |
|---|---|---|
| **60 Hz - 120 V / 240 V** | **25 AMP** | **Total output amperage** |

## RECEPTACLE AND AC PLUG

These are used for taking AC output power from the generator. A total of two kinds of receptacles, each varying in rated voltage and current from another, are used. Each model has at least one receptacle to deliver the rated generator output. The number of AC plugs that can be connected are as many as the receptacles.
The table shows the rated current for each receptacle. Be careful not to use the receptacles and AC plugs beyond the specified amperage limits to prevent burning.

| STYLE | AMPERE | RECEPTACLE | AC PLUG | DESCRIPTION |
|---|---|---|---|---|
|  | up to 20 A | NEMA 5-20 R | NEMA 5-20 P | Receptacle duplex |
|   | up to 30 A | NEMA L14-30R | NEMA L14-30P | Locking Receptacle |

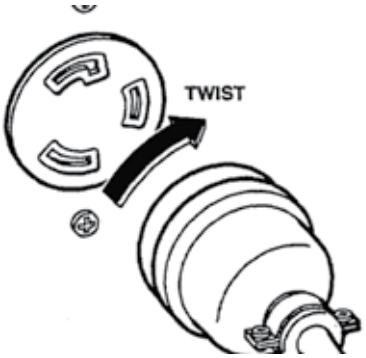
**5-20P**

**L14-30P**

**CAUTION**

**Please note that NEMA 5-20R duplex receptacles are not GFCI.**

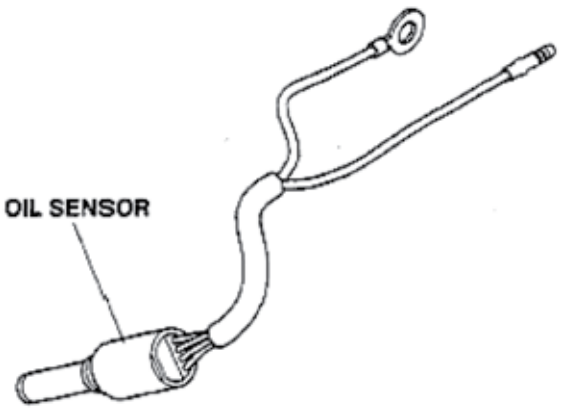
⚠ To connect the appliance to locking receptacle, insert the plug into the receptacle and turn it clockwise to lock.




## OIL SENSOR

**DESCRIPTION**
The oil sensor mainly functions to detect position of the surface of engine oil in the crankcase of engines for general use and to stop the engine automatically when the oil level goes down below the lower limit specified. This prevents seizure of engine from occurring due to insufficient amount of oil in the crankcase.
Since the sensor has been designed to consume a part of power supplied to the igniter to energize its electronic circuits, any other external power supply is not necessary so that it can be mounted at the oil filter port.
Introduction of newly developed sensing principle features super durability and no change with the passage of time as it does not use any moving part.

Merits due to introduction of electrical conductivity detection are as follows:

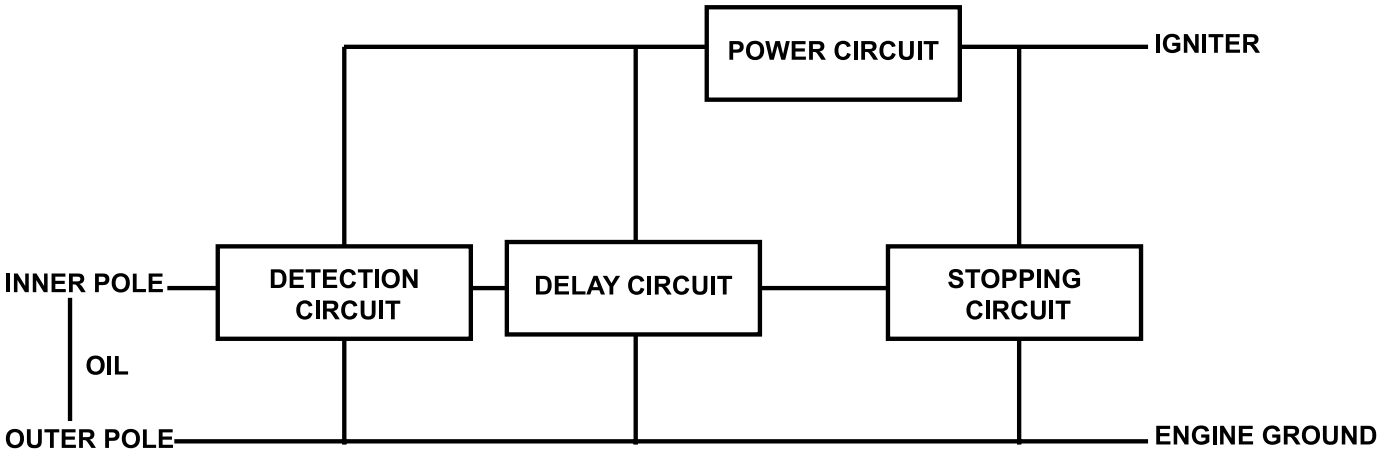



1. It has resistance to mechanical shocks and property of no change with the passage of time as sensing element consist simply of electrodes having no moving parts.
2. At the same time, it is capable of detecting the oil level stably as it is not influenced by engine vibrations.
3. No error occurs due to foam and flow of the oil.
4. Influence against the ignition system or the electronics units can be neglected because an electric current supplied to the sensor can be decreased.

**PRINCIPLE OF SENSING OIL LEVEL**
There is a great difference between electric resistance of the air and that of oil. Since the resistance or air is higher than that of oil, more electric current passes through the oil than through the air, although absolute value of the current is very small. The sensor detects this current difference and make use of it.

The sensor judges the oil quantity, by comparing a current flowing across a pair of electrodes (inner and outer) with the reference, in such a way that if a current flows between the electrodes more than the reference, sufficient oil is in the crankcase, on the other hand, if a current flows less than the reference, oil is not sufficient. Since an electric current is flown to detect oil quantity, this is called the “electrical conductivity detection” type of sensor. The oil level to be detected is determined by the length of electrodes and their mounting positions with the engine.

**BLOCK DIAGRAM OF THE CIRCUIT**




**JUDGEMENT OF OIL LEVEL**
When sufficient oil is in the crankcase, both of inner and outer electrodes are immersed in the oil through which current flows across the electrodes. The sensor judges that oil in the crankcase is sufficient. When oil level goes down and the inner electrode is exposed to the air due to consumption of oil, no current flow between the electrodes as air is considered to be electrically nonconductive. The sensor in this case judges that oil is insufficient.

**DECISION OF OIL SHORTAGE**
Oil level at the electrodes may go down momentarily probably due to the engine being slanted or affected by vibration even if a sufficient oil is in the crankcase. For that reason, the sensor has an electronic timer circuit to prevent it from interpreting as short of oil when amount of oil is sufficient. The sensor has been designed so that the engine is to be stopped only when oil-shortage is detected for 5 seconds uninterrupted. The timer employs an integration circuit and it is to be reset when the inner electrode is soaked in the oil again before the sensor decides it as oil-shortage. The oil level where the sensor decides as oil-shortage, when oil level goes down gradually, is cold “threshold level”

**AUTOMATIC STOP OF ENGINE**
When the sensor decides as oil -shortage, it makes the engine to stop running automatically for protection of engine. Once the stopping circuit is activated, it keeps functioning until it confirms that the engine has made a complete stop, then the circuit stops functioning automatically.

❶ **POWER CIRCUIT**
This rectifies a part of the igniter and regulates it to supply the stabilized power to necessary circuits.

❷ **DETECTION CIRCUIT**
This detects quantity of oil, sufficient or not, according to difference of electric resistance across inner and outer electrodes

❸ **DELAY CIRCUIT**
This delay prevents the sensor from making an unnecessary stop of the engine by momentary lowering of the oil level due to the engine being slanted or affected by vibration in spite of sufficient oil in the crankcase.

❹ **STOPPING CIRCUIT**
This automatically stops the engine running.

## CAUTIONS TO BE TAKEN ON HANDLING THE SENSOR

❶ **OIL SENSOR UNIT**
Be sure not to damage each wire. Broken or short-circuited power supply wires and/or a grounding wire in particular may lead to malfunction or breakdown.
The sensor is not interchangeable from the engine because the sensor is to be exclusively installed individually in each engine employed

❷ **MOUNTING AND WIRING OF OIL SENSOR UNIT**
Although this has been designed to have enough antinoise properties in practical use, do not route the sensor wirings in the vicinity of noise-generating sources such as ignition plugs or high voltage cords. This may cause malfunction or breakdown.
Since capacity of power source is limited, current flown in the electronic circuit of the sensor is kept as low as possible. Be sure to use terminals with a high contact reliability of more than that of tinned terminals

❸ **OPERATION OF OIL SENSOR**
If operating with the engine kept tilted, oil surface inside of the engine varies and the correct oil level can not to be detected which in turn obstructs the preventing function of engine seizure. Operate the engine by keeping it level.
When starting the engine with an insufficient oil in the crankcase, engine starts once then it stops automatically after it runs for 5 seconds.
When the enginne has been stopped by the oil sensor, voltage remained in the electronic circuit prevents the sensor from being restarted for 3 seconds after the engine stop. Try to restart the engine after 3 seconds or more.

# SAFETY PRECAUTIONS

**1 Use extreme caution near fuel. A constant danger of explosion of fire exist.**
Do not fill fuel tank while the engine is running. Do not smoke or use open flame near the fuel tank. Be careful not to spill fuel when refueling. If split, wipe it and let dry before starting the engine.

**2 Do not place inflammable materials near the generator.**
Be careful not to put fuel matches, gunpowder, oily cloth, straw, and any other inflammables near the generator.

**3 Do not operate the generator in a room, cave or tunnel. Always operate in a well-ventilated area**
Otherwise the engine may overheat and also, the poisonous carbon monoxide contained in the exhaust gases will endanger human lives. Keep the generator at least 1 m (4 feet) away from structures or facilities during use.

**4 Operate the generator on a level surface.**
If the generator is tilted or moved during use, there is a danger of fuel spillage and a chance that the generator may tip over.

**5 Do not operate with wet hands or in the rain.**
Severe electric shock may occur. If the generator is wet by rain or snow, wipe it and thoroughly dry it before starting. Don`t pour water over the generator directly nor wash it with water. If the generator is wet with water, the insulations will be adversely affected and may cause current leakage and electric shock.

**6 Do not connect the generator to the commercial power lines.**
This may cause a short-circuit or damage to the generator. Use a transfer switch (optional parts) for connecting with indoor wiring.

**7 Be sure to check and remedy the cause of circuit breaker tripping before resetting it on.**

**CAUTION: If the circuit breaker tripped off as a result of using an electrical appliance, the cause can be an overload or a short-circuit. In such a case, stop operation immediately and carefully check the electrical appliance and AC plugs for faulty wiring.**

# RANGE OF APPLICATIONS

Generally, the power rating of an electrical appliance indicates the amount of work that can be done by it. The electric power required for operating an electrical appliance is not always equal to the output wattage of the appliance. The electrical appliances generally have a label showing their rated voltage, frequency, and power consumption (input wattage). The power consumption of an electrical appliance is the power necessary for using it. When using a generator for operating an electrical appliance, the power factor and starting wattage must be taken into consideration.
In order to determine the right size generator, it is necessary to add the total wattage of all appliances to be connected to the unit.
Refer to the followings to calculate the power consumption of each appliance or equipment by its type.

**1 Incandescent lamp, heater, etc. with a power factor of 1.0**
Total power consumption must be equal to or less than the rated output of the generator.
Example: A rated 3000W generator can turn on thirty 100W incandescent lamps.

**2 Fluorescent lamps, motor driven tools, light electrical appliances, etc. with a smaller power factor**
Select a generator with a rated output equivalent to 1.2 to 2 times of the power consumption of the load. Generally the starting wattage of motor driven tools and light electrical appliances are 1.2 to 3 times lager than their running wattage.
Example: A rated 250 W electric drill requires a 400 W generator to start it.
**NOTE 1:** If a power factor correction capacitor is not applied to the fluorescent lamp, the more
power shall be required to drive the lamps.
**NOTE 2:** Nominal wattage of the fluorescent lamp generally indicates the output wattage of the lamp.
Therefore, if the fluorescent lamp has no special indication as to the power consumption,
efficiency should be taken into account as explained in Item (5) on the following page.

**3 Mercury lamps with a smaller power factor**
Loads for mercury lamps require 2 to 3 times the indicated wattage during start-up.
Example : A 400 W mercury lamp requires 800 W to 1200 W power source to be turned on. A rated 3000 W generator can power two or three 400 W mercury lamps.

**4 Initially loaded motor driven appliances such as water pumps, compressors, etc.**
These appliances require large starting wattage which is 3 to 5 times of running wattage.
Example : A rated 900 W compressor requires a 4500 W generator to drive it.
**NOTE 1:** Motor-driven appliances require the above mentioned generator output only at the starting. Once their motors are started, the appliances consume about 1.2 to 2 times their rated power consumption so that the excess power generated by the generator can be used for other electrical appliances.
**NOTE 2 :** Motor-driven appliances mentioned in items (3) and (4) vary in their required motor
starting power depending on the kind of motor and start-up load. If it is difficult to determine the optimum generator capacity, select a generator with a larger capacity.

**5 Appliances without any indication as to power consumption**
Some appliances have no indication as to power consumption; but instead the work load (output) is indicated. In such a case, power consumption is to be worked out according to the numerical formula mentioned below.

$$\frac{\text{(Output of electrical appliance)}}{\text{(Efficiency)}} = \text{(Power consumption)}$$

Efficiencies of some electrical appliances are as follows:
Single-phase motor 0.6 to 0.75
Fluorescent lamp 0.7 to 0.8
(The smaller the motor, the lower the efficiency)
**Example 1:** A 40W fluorescent lamp means that its luminous output is 40W. Its efficiency is 0.7 and accordingly, power consumption will be 40÷0.7= 57W. As explained in Item (2), multiply this power consumption value of 57 W by 1.2 to 2 and you will get the figure of the necessary capacity of a generator. In other words, a generator with a rated output of 1000W capacity can light nine to fourteen 40 W fluorescent lamps.
**Example 2 :** Generally speaking, a 400 W motor means that its work load is 400 W. Efficiency of this motor is 0.7 and power consumption will be 400÷0.7= 570 W. When this motor is used for a motor-driven tool, the capacity of the generator should be multiple of 570 W by 1.2 to 3 as explained in the Item (3). 570 (W) × 1.2 to 3 = 684 (W) to 1710 (W).

| FREQUENCY | 60 Hz |
|---|---|
| Incandesent lamp, heater, etc. | 6,000 W |
| Fluorescent lamp, Motor-driven tool, general purpose | aprox 3,000 W |
| Mercury lamp, etc. | aprox 2,000 W |
| Pump, compressor, etc. | aprox 1,400 W |

**NOTES:** Wiring between generator and electrical appliances
1. **Allowable current of cable**
Use a cable with an allowable current that is higher than the rated input current of the load (electrical appliance). If the input current is higher than the allowable current of the cable used, the cable will become excessively heated and deteriorate the insulation, possibly burning it out. Table below shows cables and their allowable currents for your reference.
2. **Cable length**
If a long cable is used, a voltage drop occurs due to the increased resistance in the conductors decreasing the input voltage to the load (electrical product). As a result, the load can be damaged. Table below shows voltage drops per 100 meters of cable.

Voltage drop indicates as $V = \frac{1}{100} \times R \times I \times L$

**R** = resistance (Ω/ 100 m) on the above table
**I** = electric current through the wire (A).
**L** = the length of the wire (m).
The lenght of wire indicates round length, it means twice the length from generator to electrical tools.

# MEASURING PROCEDURES

## MEASURING INSTRUMENTS

### ❶ VOLTMETER
AC voltmeter is necessary.
The approximate AC voltage ranges of the voltmeters to be used for various types of generators are as follows:
**0 to 150 V :** Type with an output voltage of 110 or 120 V
**0 to 300 V :** Type with an output voltage of 220, 230 or 240 V
0 to 150 V, 0 to 330 V : Dual voltage type

FOR AC

### ❷ AMMETER
AC ammeter is necessary.
An AC ammeter with a range that can be changed according to the current rating of a given generator is the most desirable. (About 10 A, 20 A, 100 A)

FOR AC

### ❸ FREQUENCY METER
Frequency range : About 45 to 65Hz
**NOTE :** Be careful of the frequency meter's input voltage range.

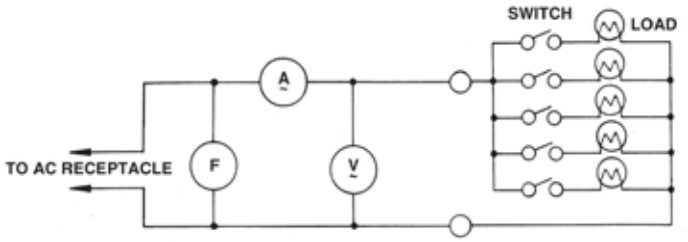

### ❹ CIRCUIT TESTER
Used for measuring resistance, etc.

### ❺ MEGGER TESTER
Used for measuring generator insulation resistance.
Select one with testing voltage range of 500V.

| SECTIONAL AREA / mm2 | ALLOWABLE CURRENT / A | GAUGE No./ WIRE ELEMENT No. / mm | RESISTANCE Ohm / 100m | VOLTAGE DROP PER 100 m | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1A | 3A | 5A | 8A | 10A | 12A | 15A |
| 0.75 | 7 | 30 / 0.18 | 2.477 | 2.5 V | 8 V | 12.5 V | | | | |
| 1.25 | 12 | 50 / 0.18 | 1.486 | 1.5 V | 5 V | 7.5 V | 12 V | 15 V | 18 V | |
| 2.0 | 17 | 37 / 0.26 | 0.952 | 1.0 V | 3 V | 5.0 V | 8 V | 10 V | 12 V | 15 V |
| 3.5 | 23 | 45 / 0.32 | 0.517 | | 1.5 V | 2.5 V | 4 V | 5 V | 6.5 V | 7.5 V |
| 5.5 | 35 | 70 / 0.32 | 0.332 | | 1 V | 2 V | 2.5 V | 3.5 V | 4 V | 5 V |

**6 TACHOMETER**
Use the contactless type tachometer

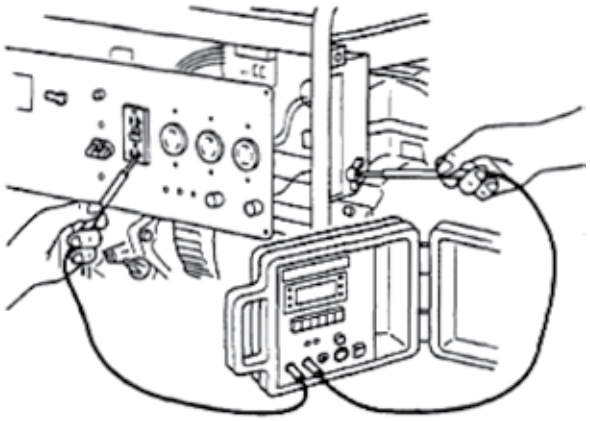
## AC OUTPUT MEASURING



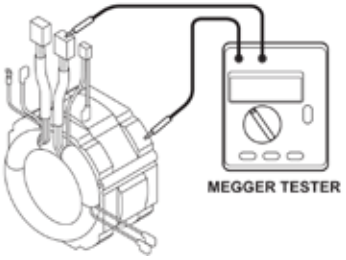

Use a circuit above for measuring AC output.
A hot plate or lamp with a power factor of 1.0 may be used as a load. Adjust the load and rpm and check that the voltage range is as specified in the following table at the rated amperage and rated rpm.

## MEASURING INSULATION RESISTANCE

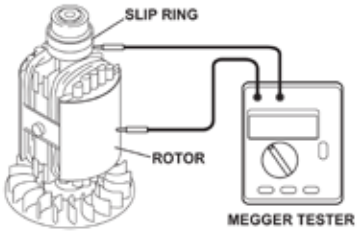
Use a megger tester to check the insulation resistance. Remove the control panel, and disconnect the connector of GREEN lead for ground. Connect a megger tester to one of receptacle output terminals and the ground terminal, then measure the insulation resistance.
An insulation resistance of 1 megohm or more is normal.
(The original insulation resistance at the time of shipment from the factory is 10 megohm or more.)
If it is less than 1 megohm, disassemble the generator and measure the insulation resistance of the stator, rotor and control panel individually.



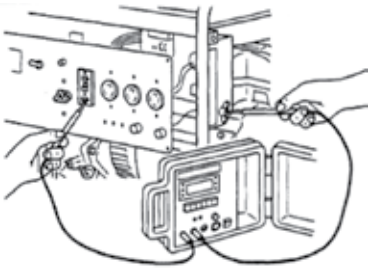
**1 STATOR**
Measure the insulation resistance between each lead wire and the core.




**2 ROTOR**
Measure the insulation resistance between the slip ring and the core.



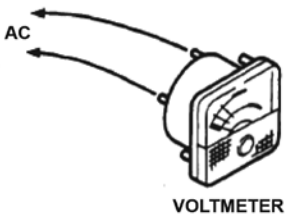

**3 CONTROL PANEL**
Measure the insulation resistance between the live parts and the grounded parts.



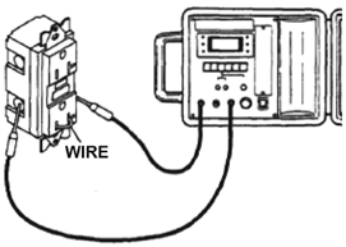
Any part where the insulation resistance is less than 1MΩ has faulty insulation, and may cause electric leakage and electric shock. Replace the faulty part.

## CHECKING FUNCTIONAL MEMBERS

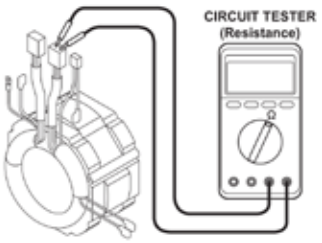
**1 VOLTMETER**
Check the voltmeter if it is turned on by applying specific voltage. Voltmeter cannot be checked with circuit tester because its resistance is too large.
Check that no disconnection nor short-circuit occurs with a tester, and the internal resistance is around 00k ohms normaly.
Turn on the commercial power supply input and check the indication




**2 RECEPTACLES**
Using a circuit tester, check continuity between the two terminals at the rear of the receptacles while the receptacle is mounted on the control panel. When continuity is found between the output terminals of the receptacle with a wire connected across these terminals, the receptacle is normal. When the wire is removed and no continuity is found between these terminals, the receptacles are also normal.



### 3 STATOR

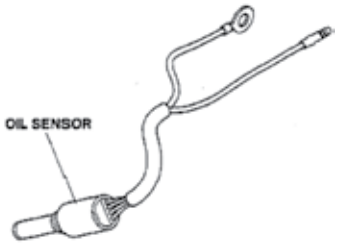



Disengage connectors on the wires from stator and check the resistance between wires with a circuit tester referring to the table below.

**NOTE :** If the circuit tester is not sufficiently accurate, it may not show the values given and may give erroneous readings. Erroneous readings will also occur when there is a wide variation of resistance among coil windings or when measurement is performed at ambient temperatures different from 20 °C (68 °F).

| ALTERNATOR WINDING RESISTANCES | | | | | | |
|---|---|---|---|---|---|---|
| | KVA | STATOR Ω | | AUXILIARY Ω | CB Ω | ROTOR Ω |
| | | 120/240V | 110/220V | | | |
| SE100FX | 6.5 | 0,3 | 0,28 | 1,92 | 0,11 | 2,75 |

### 4 OIL SENSOR




(1) Disconnect wires comming from the sensor at the connection.
(2) Loosen the sensor to remove it from the engine.
(3) Plug the opening of oil filler hole (created after sensor is removed) with suitable means such as oil gauge.
(4) Connect the removed wires again with the oil sensor.
(5) Start the engine with the oil sensor removed and confirm if ;
a. Engine stops after 5 seconds which is normal, or
b. Engine does not stop after more than 10 seconds which is unusual.
**NOTE :** The sensor will not operate properly when wire is broken or poorly connected.
Check the wires for correct connection. If it fails to stop within 5 seconds after the wirings have checked, the sensor is wrong. Replace the sensor with new one.

## DISASSEMBLY AND ASSEMBLY

### 1

Drain the oil from the generator completely making sure no oil is left on the unit. If the unit is later lifted (alternator plastic cover facing upward) without following this instruction, then the engine will cease to function. If further details are needed on how to drain the oil from the engine, check the engine owner's manual.

### 2 TANK DISASSEMBLY

2.1

2.1. Use a 7/16" wrench to unscrew the 4 bolts

2.2

2.2 Pull out the gasoline hose from the closed valve using needle nose pliers to loosen the clamp.

2.3


2.3 Lift and remove the tank

2.4

2.5

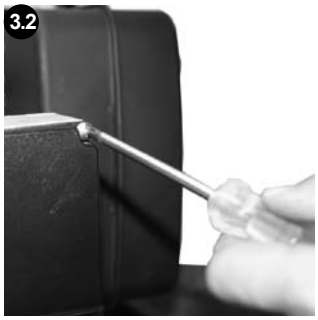

2.4 Unscrew the bolts using a 1/4" wrench from the tank heat deflector and then,
2.5 lift and remove the tank heat deflector

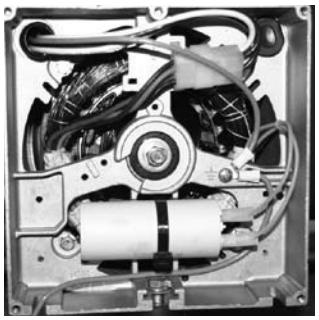
### 3 CONTROL PANEL DISASSEMBLY

3.1

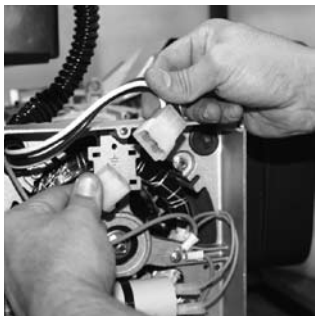
3.1 Lift the generator so that the alternator plastic cover is facing upward. Unscrew the ground terminal to release the ground cable using two 7/16" wrenches.

3.2

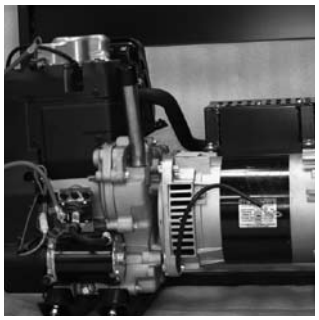




3.2 Remove the alternator plastic cover using a (Phillips) screwdriver.

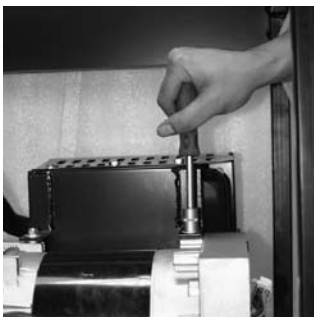


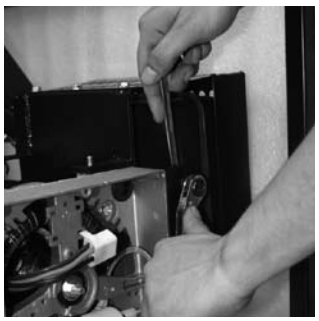
3.3 Separate the control panel cable housing from alternator wire housing and remove each one of the cables from the receptacle housing. Do this carefully using a very small flat screwdriver. Finally, unscrew the control panel ground terminal using a (Phillips) screwdriver.



3.4 Using a 7/16” wrench, unscrew the bolts that hold the control panel against the frame and remove it entirely from the generator.


## 4 MUFFLER DISASSEMBLY





4.1 Using a two 1/2” wrenches, unscrew the bolts that hold the muffler heat deflector to the alternator followed by the muffler/alternator support. Next, unscrew all 6 bolts (3 above and 3 below the muffler) that hold the muffler housing and then remove the housing. Finally unscrew the nuts that hold the muffler heat deflector to the side of the alternator to remove the heat deflector.

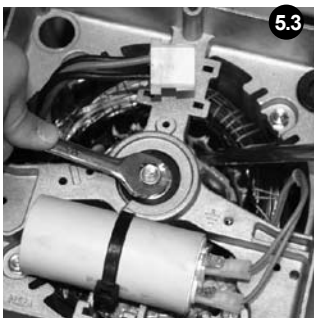
4.2 Using a 1/2” wrench, unscrew the two bolts that hold the manifold and the muffler together and remove the muffler.

## 5 ALTERNATOR DISASSEMBLY

5.1 Lift the generator up with the alternator plastic cover facing upward. Using two 1/2” wrenches, separate the alternator support from the frame.

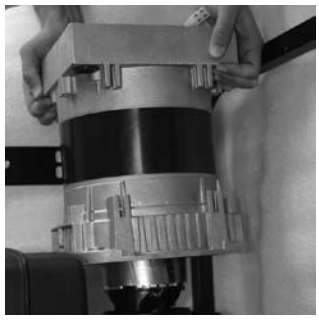
5.2 Loosen the nut on the anti-vibrating neoprene to remove it from the alternator.

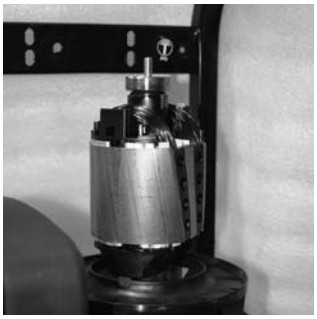
5.3 Use a big flat screwdriver to place it between the rotor and stator to avoid rotation of the rotor so that the nut (using a 1/2” wrench) from the alternator stud bolt pin.



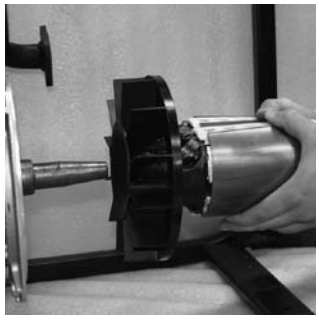


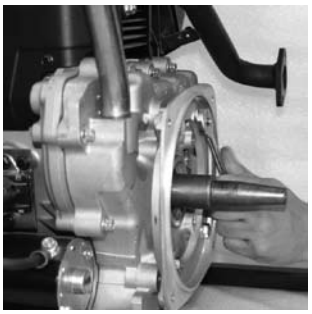
5.4 Use a 6mm Allen wrench to unscrew all four bolts that hold the stator to the alternator flange. Then, use a rubber hammer to help loosen the coupled stator to the flange on a motion contrary to the coupling of the flange and the stator. Finally, remove the stator on a slow, controlled motion to avoid any damage to the rotor.

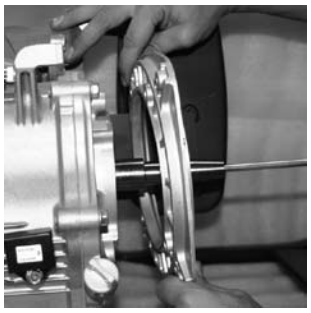





5.5 To help decouple the alternator to the engine shaft, hit the steel ball bearing with a rubber hammer. Be careful not to hit the rotor anywhere else, including the windings. Then, carefully pull out the rotor.








5.6 Use a 9/16” wrench to unscrew the four bolts that hold the alternator flange to the engine and then remove the flange.

**DISASSEMBLY VIEWS**

Rotor view

Stator rear view

Fan front view

Alternator front view

## SINGLE PHASE ALTERNATOR

**INSTRUCTIONS**

Object of these instructions is to give the user correct operating- conditions about the alternator.

### ⚠ WARNING ⚠

The operating instructions include only the directions to be followed by the qualified personnel; they must be supplemented by the relevant legal provisions and standards.
Electric rotating machines have dangerous parts; they have live and rotating components.
Therefore, improper use, inadequate inspection and maintenance and the removal of protective covers and the disconnection of protection devices can cause severe personal injury or property damage.

**PRELIMINARYCHECKS**
On receipt it is recommended to inspect the alternator to find out whether it has got damages during transportation.
**STORAGE**
If the alternator is not installed immediately, it should be kept indoor, in a clean and dry place. Before starting up the alternator after long periods of inactivity or storage, the windings insulation resistance must to be measured. That should be higher than 2 m at room temperature.
If this value cannot be obtained it is necessary to reset the insulation, drying the windings (using an oven at 60º-80º C).
**MECHANICAL COUPLING**
See assembling instructions. Brush generators: always check to make sure that the brushes are suitably centered on the slip rings
**ELECTRIC CONNECTION**
Make sure that the various equipment to be connected to the generator conforms to the rating plate data. Carry out the connections as shown in the diagram on page 14 and ground the generator by the terminals supplied for this purpose. Before using the generator, it is necessary to make sure that the above mentioned procedures have been carried out correctly and that no obstacles to rotor rotation are present. Also check that when the generator runs in no load condition the current measured on each outlet on the electric board corresponds to the recommended rated voltage. It is dangerous to operate the generator with a load at a RPM different than the nominal value (max deviation: -2%,+ 5%): this type of working conditions represents an overload condition.
**INSTALLATION**
Set up the unit in a well- cooled place. Make sure that cooling air intake and discharge openings are free and unblocked. The alternator must suck in clean air only: the suction of the hot air expelled from the alternator itself and/ or the prime motor must be avoided, as well as the suction of motor exhaust fumes, dust and dirt.
**MAINTENANCE**
The alternator as well as the possible accessories should always be kept clean. It is recommended to periodically check that the unit operates without anomalous vibrations or noises, and the ventilation circuit is not obstructed. Brush generators: periodically check the wear and the position of the brushes.

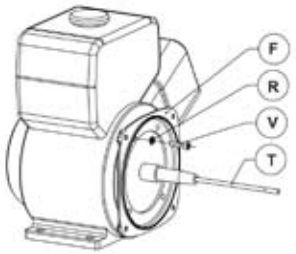
## SINGLE PHASE ALTERNATOR

**⚠ CAUTION ⚠**

Before assembling verify that the conical coupling parts are in order and clean.

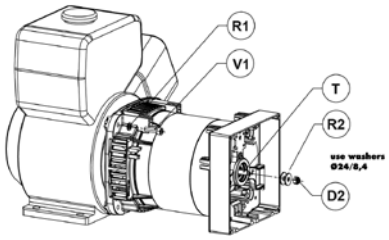
1. Fasten the flange F to the motor using screws and washers adequate to the purpose. (fig. 1A).
2. Apply the rod T for the axial clamping of the rotor, and screw it tight on the engine shaft. (fig. 1A).

Fig. 1A




3. Fasten the complete alternator to the flange using the 4 screws V1 and washers R1 provided (driving torque 25Nm). (fig. 1B).
4. Lock axially the rotor by placing the washer R2 and tight the self- locking nut D2 on the rod , using a torque spanner (driving torque 25 - 30Nm).

Fig. 1B

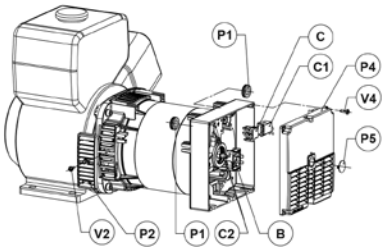



**⚠ CAUTION ⚠**

Caution: before applying the nut, make sure that the threaded part of the rod enters the rotor, in order to obtain a tight lock.

5. Connect the alternator to the electric control panel P4 by joining the C and C1 connectors (Fig 1C); fasten the connector unit to the shield by fitting it into the C2 housing provided.
6. Fasten the cover (P4) to the alternator using the 5 V4 screws (self- tapping M5 x 16 screws).
7. Close the hole on the electric control panel P4 using the plastic plug; close the holes on the P5 shield (if not used) using P1 the membrane- type cable glands.
8. Optional IP23: assemble the two P2 protections by snapping them into the front shield and then fastening each one in place using the appropriate V2 self- tapping M5x16 screw.
9. Fasten the alternator to the frame using appropriate vibration- damping supports.

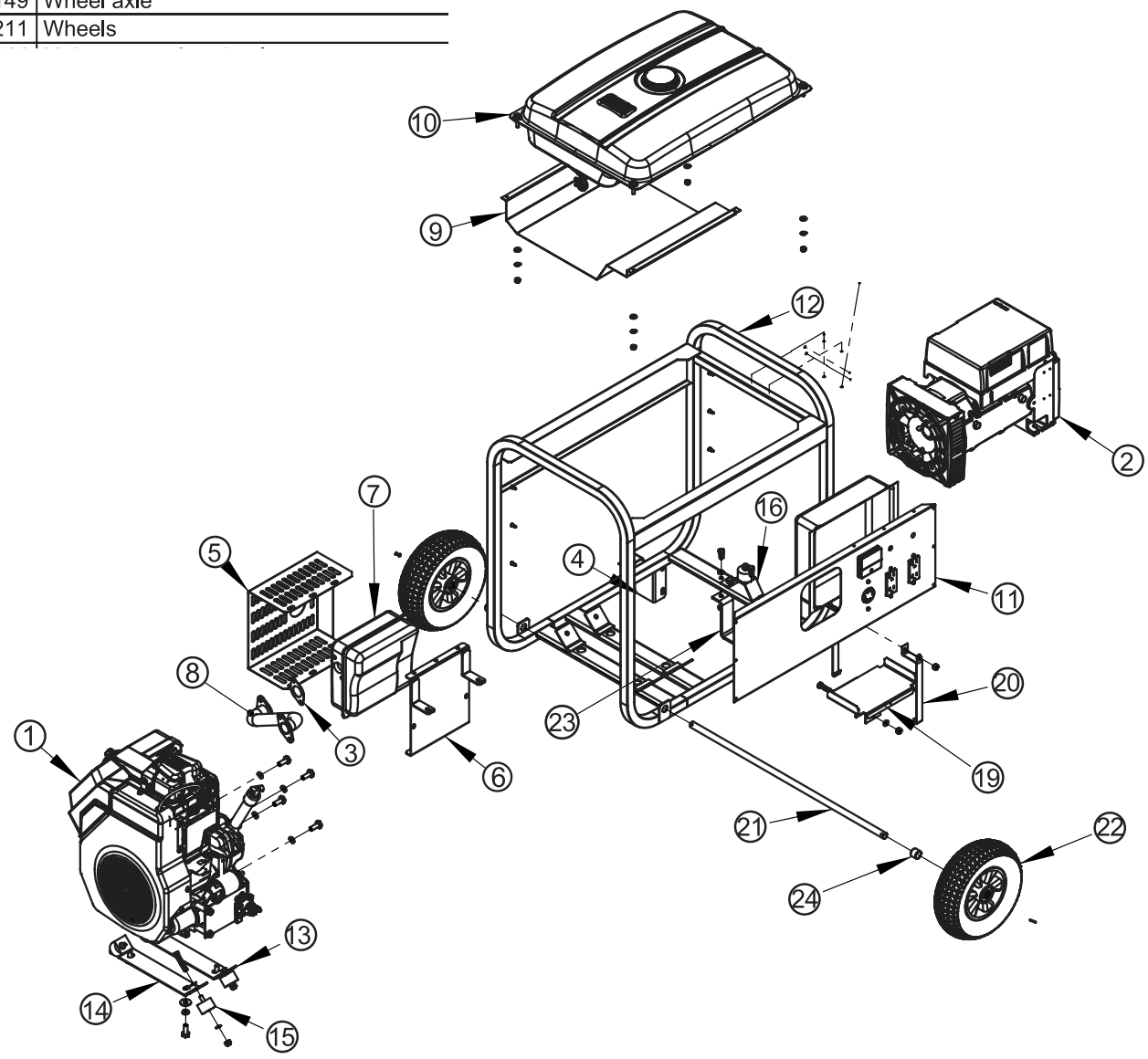
Fig. 1C



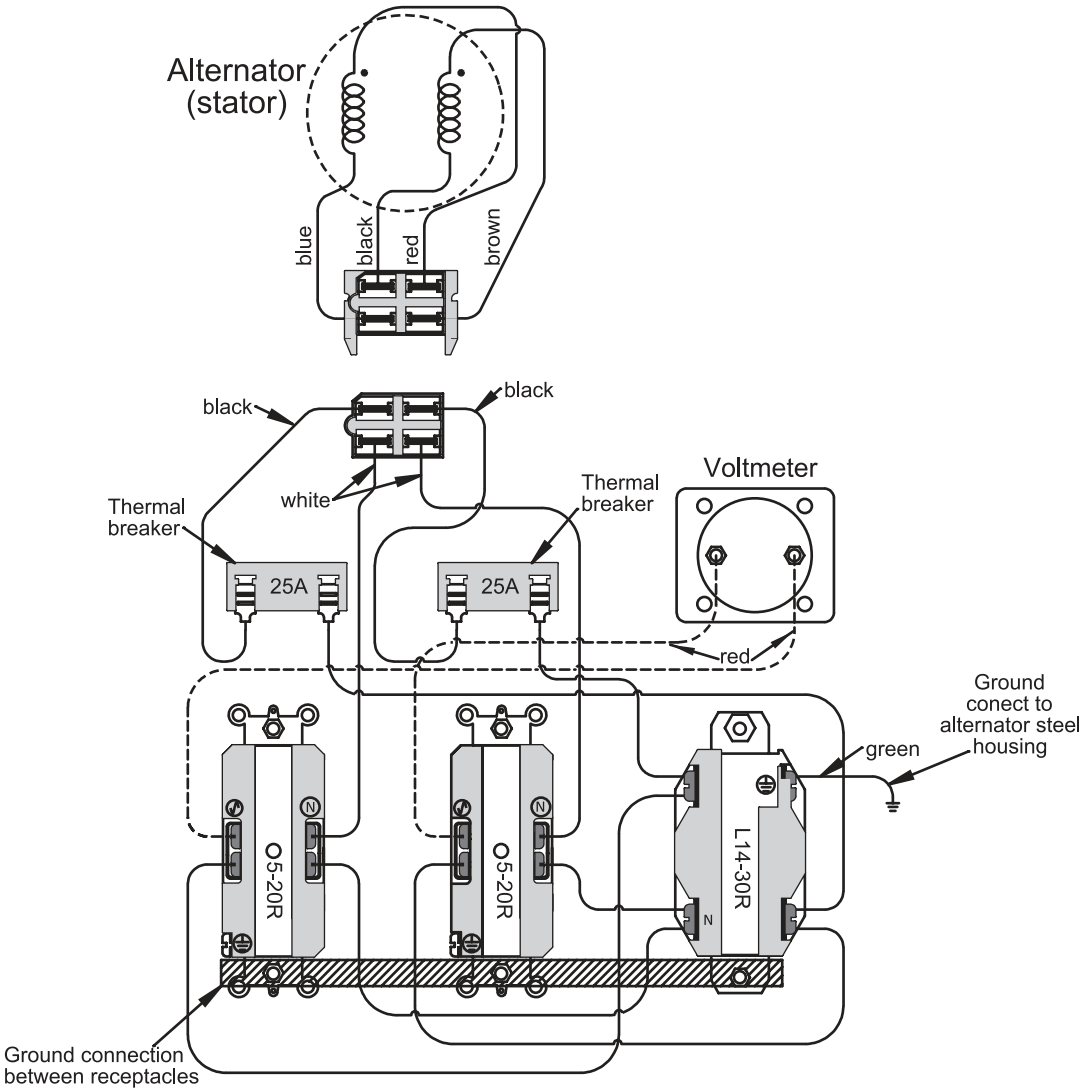
# G80 GENERAL DRAWING ASSEMBLY

**BILL OF MATERIALS**

| item | code | description |
|---|---|---|
| 1 | PA-44550 | GASOLINE ENGINE 426 cc KOHLER |
| 2 | SE100FX | 6.5kVA 60 Hz Alternator |
| 3 | 15211120 | Muffler gasket |
| 4 | 15411871 | Muffler support |
| 5 | 15231307 | Muffler cover |
| 6 | 15422215 | Sub-ens heat deflector for alternator |
| 7 | 30140093 | Kohler muffler |
| 8 | 15211119 | Manifold |
| 9 | 15170133 | Heat deflector for fuel tank |
| 10 | 30051102 | Fuel Tank |
| 11 | 15030278 | G80 Electrical arnes |
| 12 | 15051185 | G80 frame |
| 13 | 15411110 | Engine support k2 |
| 14 | 15411109 | Engine support k1 |
| 15 | 10160102 | Antivibration supports |
| 16 | 15050103 | Alternator support |
| 17 | 15261501 | Right handle |
| 18 | 15261502 | Left handle |
| 19 | 15422305 | Battery base |
| 20 | 10160202 | Battery holders |
| 21 | 15200149 | Wheel axle |
| 22 | 65080211 | Wheels |



# G80 GENERATOR ELECTRICAL WIRING DIAGRAM



# TROUBLE SHOOTING CHART

| THERE ISN'T NO LOAD VOLTAGE AFTER THE STARTING | |
|---|---|
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Loss of residual magnetism | Feed for one second the output terminal (stator, connector or sockets) with a DC voltage (4.5 V + 12 V) without stopping the machine |
| Fault capacitor | Change it |
| Rotor diode failure | Change it |
| Short circuit in winding or fault insulation or loose connections | Check the windings resistances (as table) and the insulation |
| **TO LOW NO-LOAD VOLTAGE** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Too low engine speed | 3750 RPM (60Hz) in no-load condition |
| Rotor diode failure | Change it |
| Short circuit in winding | Check the windings resistances (as table) |
| **TO HIGH NO-LOAD VOLTAGE** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Wrong alternator capacitor | Change it |
| Too high engine speed | 3750 RPM (60Hz) in no-load condition |
| **CORRECT NO-LOAD VOLTAGE, LOW LOAD VOLTAGE** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Rotor diode failure | Change it |
| Possible overload | Check the total load current |
| The engine speed fall off | Contact the engine specialist; too low engine power |
| **OVER HEATING** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Ventilation inlet-outlet partialy blocked | Disassemble and clean the inlet casting or the front cover if is necessary |
| Possible overload | Check valve of load current |
| **UNSTABLE VOLTAGE** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Loose contact | Check connections |
| Uneven rotation | Check for uniform rotation speed (contact the engine specialist) |
| **NOISY GENERATOR** | |
| **CAUSE OF TROUBLE** | **HOW TO CORRECT IT** |
| Broken bearing | Replace it |
| Poor coupling | Check and repair |
| Verify screws, muffler | Tight them if needed |

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