

TOTAL

One-Stop Tools Station

TOTAL

GASOLINE GENERATOR

TP130005, UTP130005, TP130005-1, UTP130005-1,
TP130005-1-5, TP130005-5, TP130005E-5, TP130005S,
TP130005-6, TP130005-8, TP130005-1-6, TP130005-1-8,
TP130002, UTP130002, TP130002-1, UTP130002-1,



 totaltoolsworld
 TOTAL TOOLS WORLD



FOREWORD

DANGER

Indicates a possibility of death or serious injury if instructions are not followed.

WARNING

Indicates a strong possibility of severe personal injury, loss of life and equipment damage if instructions are not followed.

[CAUTION]

Indicates a possibility of personal injury or equipment damage if instructions are not followed.

NOTE:

Gives helpful information.

If a problem should arise, or if you have any questions about the generator, consult an authorized dealer or service shop

WARNING

- The generator is designed to give safe and dependable service if operated according to instructions.
- Do not operate the generator before you have read and understood the instructions. Failure to do so could result in death, personal injury or equipment damage.

 **DANGER**

Using a generator indoors CAN KILL YOU IN MINUTES.
Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.

	
NEVER use inside a home or garage, EVEN IF doors and windows are open.	Only use OUTSIDE and far away from windows, doors, and vents.

 **DANGER**

Never let split fuel REACH HOT PART of Generator.



1. SAFETY INSTRUCTIONS

Please make sure you review each precaution carefully.

⚠ WARNING

Do not operate the generator near gasoline or gaseous fuel because of the potential danger of explosion or fire.

Do not fill the fuel tank with fuel while the engine is running. Do not smoke or use open flame near the fuel tank. Be careful not to spill fuel during refueling. If fuel is spilt, wipe it off and let dry before starting the engine.



⚠ WARNING

Do not place in flammables near the generator.

Be careful not to place fuel, matches, gunpowder, oily cloths, straw, trash, or any other in flammables near the generator.

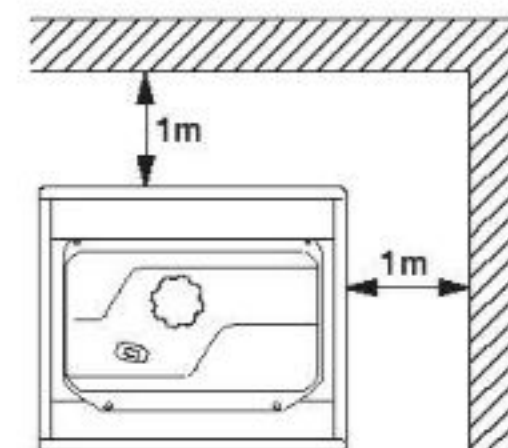
⚠ WARNING

Do not operate the generator inside a room, cave, tunnel, or other insufficiently ventilated area.

Always operate it in a well-ventilated area, otherwise the engine may become overheated, and the poisonous carbon monoxide gas, an odorless, colorless, poison gas, contained in the exhaust gas will endanger human lives.

Operate generator only outdoors and far from open windows, doors, ventilation intakes and other openings.

Keep the generator at least 1 meter (3 feet) away, including overhead, from any structure or building use.



⚠ WARNING

Do not enclose the generator nor cover it with a box.

The generator has a built-in forced air cooling system, and may become overheated if it is enclosed.

If generator has been covered to protect it from the weather during non use, be sure to remove it and keep it well away from the area during generator use.

⚠ WARNING

Operate the generator on a level surface.

It is not necessary to prepare a special foundation for the generator.

However, the generator will vibrate on an irregular surface, so choose a level place without surface irregularities.

If the generator is tilted or moved during operation, fuel may spill and / or the generator may tip over, causing a hazardous situation.

Proper lubrication cannot be expected if the generator is operated on a steep incline or slope. In such a case, piston seizure may occur even if the oil is above the upper level.

⚠ WARNING

Pay attention to the wiring or extension cords from the generator to the connected device.

If the wire is under the generator or in contact with a vibrating part, it may break and possibly cause a fire, generator burnout, or electric shock hazard.

Replace damaged or worn cords immediately.



⚠ WARNING

Do not operate in rain, in wet or damp conditions, or with wet hands.
The operator may suffer severe electric shock if the generator is wet due to rain or snow.

⚠ WARNING

If wet, wipe and dry it well before starting. Do not pour water directly over the generator, nor wash it with water.

⚠ WARNING

Be extremely careful that all necessary electrical grounding procedures are followed during each and every use. Failure to do so can be fatal.

⚠ WARNING

Do not connect the generator to a commercial power line. Connection to a commercial power line may short circuit the generator and ruin it or cause electric shock hazard. Use the transfer switch for connecting to domestic circuit.



⚠ WARNING

No smoking while handling the battery. The battery emits flammable hydrogen gas, which can explode if exposed to electric arcing or open flame. Keep the area well-ventilated and keep open flames/sparks away when handling the battery.



⚠ WARNING

Engine becomes extremely hot during and for some time after operation. Keep combustible materials well away from generator area. Be very careful not to touch any parts of the hot engine especially the muffler area or serious burns may result.



⚠ WARNING

Keep children and all bystanders at a safe distance from work areas.

⚠ WARNING

It is absolutely essential that you know the safe and proper use of the power tool or appliance that you intend to use. All operators must read, understand and follow the tool/appliance owners manual. Tool and appliance applications and limitations must be understood. Follow all directions given on labels and warnings. Keep all instruction manuals and literature in a safe place for future reference.

⚠ WARNING

Use only "LISTED" extension cords.
When a tool or appliance is used outdoors, use only extension cords marked "For Outdoor Use".
Extension cords, when not in use should be stored in a dry and well ventilated area.

⚠ WARNING

Always switch off generator's AC circuit breaker and disconnect tools or appliances when not in use, before servicing, adjusting, or installing accessories and attachments.

⚠ CAUTION

Make sure the engine is stopped before starting any maintenance, servicing or repair.
Make sure maintenance and repair of the generator set are performed by properly trained personnel only.

2. SPECIFICATIONS

Model	TP130002	UTP130002	TP130002-1	UTP130002-1
Rated AC Voltage(V)	220-240	110-120/220-240	220-240	110-120/220-240
Rated Frequency(Hz)	50	60	50	60
Phase	Single	Single	Single	Single
Max.AC Output(kW)	3.0	3.0	3.0	3.0
Rated AC Output(kW)	2.8	2.8	2.8	2.8
Max.AC current(A)	13.0	25.0/13.0	13.0	25.0/13.0
Rated AC current(A)	12.2	23.3/12.2	12.2	23.3/12.2
Voltage regulation	AVR	AVR	AVR	AVR
Engine Max. Output(HP)	7.0	7.0	7.0	7.0
Displacement(ml)	210	210	210	210
Cooling System	Air-cooled	Air-cooled	Air-cooled	Air-cooled
Starting System	Recoil	Recoil	Recoil+Electric	Recoil+Electric
Fuel tank capacity	15L	3.95Gal	15L	3.95Gal
Continuous Operation Hours	10	10	10	10

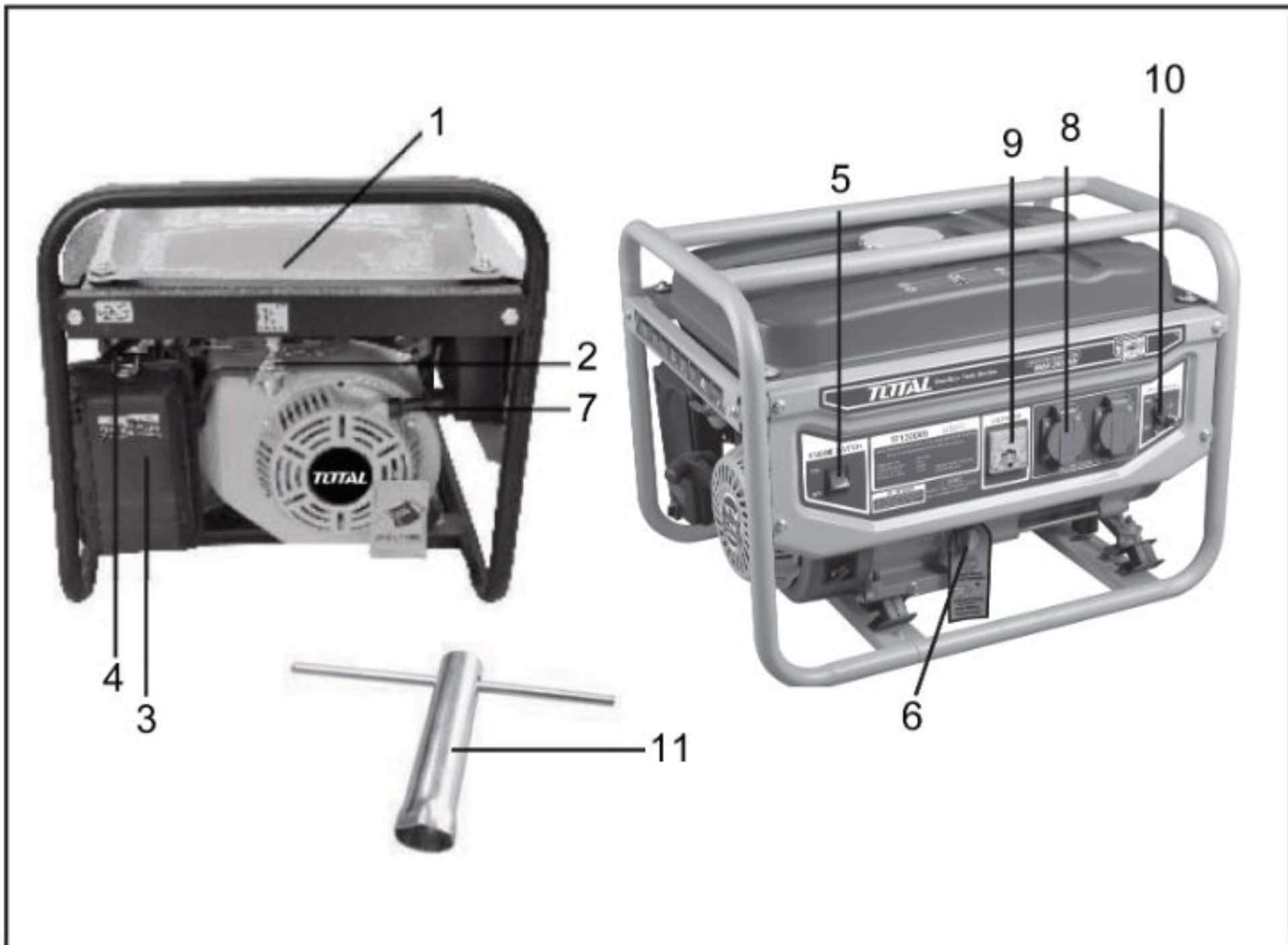
Model	TP130005-1	UTP130005	TP130005-1-5	UTP130005-1
Rated AC Voltage(V)	220-240	110-120/220-240	220-240	110-120/220-240
Rated Frequency(Hz)	50	60	60	60
Phase	Single	Single	Single	Single
Max.AC Output(KVA)	3.0	3.0	3.0	3.0
Rated AC Output(KVA)	2.8	2.8	2.8	2.8
Max.AC current(A)	12.5	25/12.5	12.5	25/12.5
Rated AC current(A)	11.3	23.3/11.3	11.3	23.3/11.3
Voltage regulation	AVR	AVR	AVR	AVR
Engine Max. Output(HP)	7.0	7.0	7.0	7.0
Displacement(ml)	210	210	210	210
Cooling System	Air-cooled	Air-cooled	Air-cooled	Air-cooled
Starting	Recoil+Electric	Recoil	Recoil+Electric	Recoil+Electric
Fuel tank capacity	15L	4Gal	15L	4Gal
Continuous Operation Hours	10	10	10	10

Model	TP130005	TP130005-5	TP130005E-5	TP130005S
Rated AC Voltage(V)	220-240	220-240	220-240	220-240
Rated Frequency(Hz)	50	60	60	50
Phase	Single	Single	Single	Single
Max.AC Output(KVA)	3.0	3.0	3.0	3.0
Rated AC Output(KVA)	2.8	2.8	2.8	2.8
Max.AC current(A)	12.5	12.5	12.5	12.5
Rated AC current(A)	11.3	11.3	11.3	11.3
Voltage regulation	AVR	AVR	AVR	AVR
Engine Max. Output(HP)	7.0	7.0	7.0	7.0
Displacement(ml)	210	210	210	210
Cooling System	Air-cooled	Air-cooled	Air-cooled	Air-cooled
Starting	Recoil	Recoil	Recoil+Electric	Recoil
Fuel tank capacity	15L	15L	15L	15L
Continuous Operation Hours	10	10	10	10

Model	TP130005-6	TP130005-8	TP130005-1-6	TP130005-1-8
Rated AC Voltage(V)	220-240	220-240	220-240	220-240
Rated Frequency(Hz)	50	50	50	50
Phase	Single	Single	Single	Single
Max.AC Output(KVA)	3.0	3.0	3.0	3.0
Rated AC Output(KVA)	2.8	2.8	2.8	2.8
Max.AC current(A)	12.5	12.5	12.5	12.5
Rated AC current(A)	11.3	11.3	11.3	11.3
Voltage regulation	AVR	AVR	AVR	AVR
Engine Max. Output(HP)	7.0	7.0	7.0	7.0
Displacement(ml)	210	210	210	210
Cooling System	Air-cooled	Air-cooled	Air-cooled	Air-cooled
Starting	Recoil	Recoil	Recoil	Recoil
Fuel tank capacity	15L	15L	15L	15L
Continuous Operation Hours	10	10	10	10

Specifications are subject to change without notice.

3. COMPONENTS



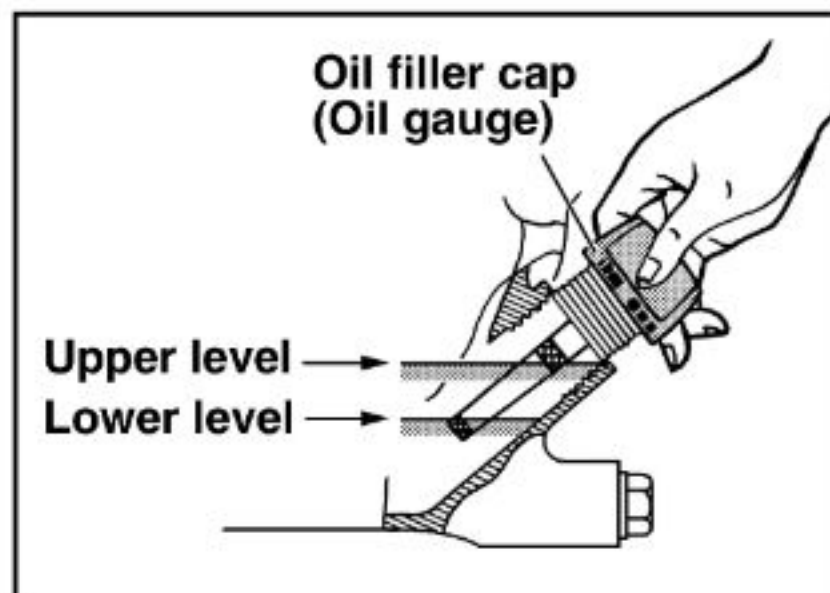
- | | |
|-----|-----------------------|
| 1. | Fuel tank |
| 2. | Fuel valve |
| 3. | Air filter cover |
| 4. | Choke lever |
| 5. | Engine switch |
| 6. | Oil filter plug |
| 7. | Recoil starter handle |
| 8. | AC socket |
| 9. | Voltmeter |
| 10. | AC circuit breaker |
| 11. | Spark plug wrench |

4. PRE-OPERATION CHECKS

CHECK ENGINE OIL

Before checking or refilling oil, be sure generator is located on stable and level surface with engine stopped.

- Remove oil filler cap and check the engine oil level.
- If oil level is below the lower level line, refill with suitable oil (see table) to upper level line. Do not screw in the oil filler cap when checking oil level.
- Change oil if contaminated.
(See "How-To" Maintenance.)



Oil capacity (Upper level) : 0.6L / 0.15Gal

Recommended engine oil :

Use 4-stroke automotive detergent oil of API service class **SE** or higher grade (**SG**, **SH** or **SJ** is recommended). **SAE 10W-30** or **10W-40** is recommended for general, all-temperature use. If single viscosity oil is used, select the appropriate viscosity for the average temperature in your area.

Single grade	5W						
	10W						
	20W						
	#20						
	#30						
					#40		
Multigrade	10W-30						
	10W-40						
Ambient temperature	-20	-10	0	10	20	30	40°C
	-4	14	32	50	68	86	104°F

CHECK ENGINE FUEL.

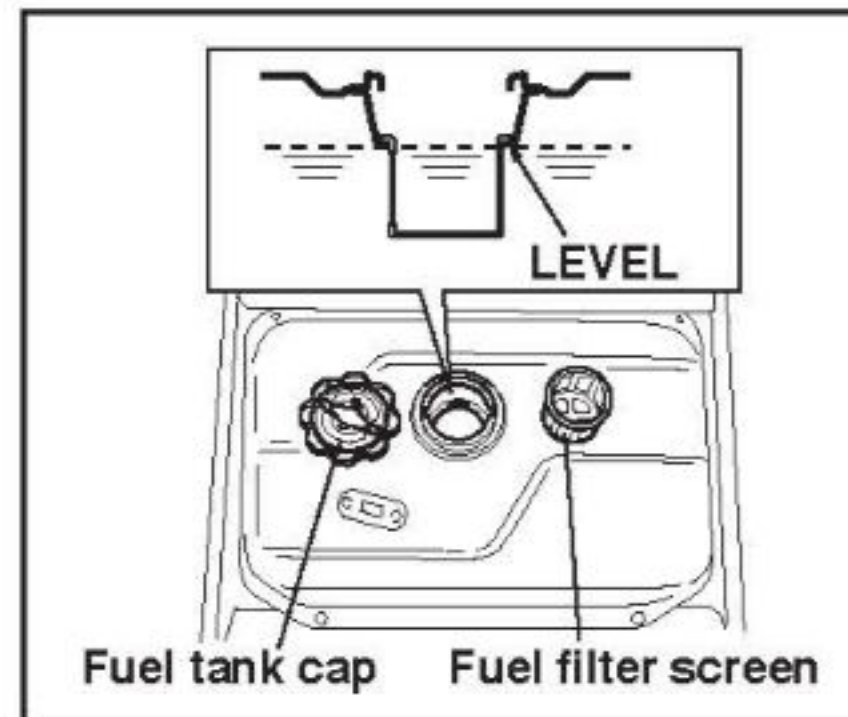
⚠ WARNING

Do not refuel while smoking or near open flame or other such potential fire hazards. Otherwise fire accident may occur.

NOTE :

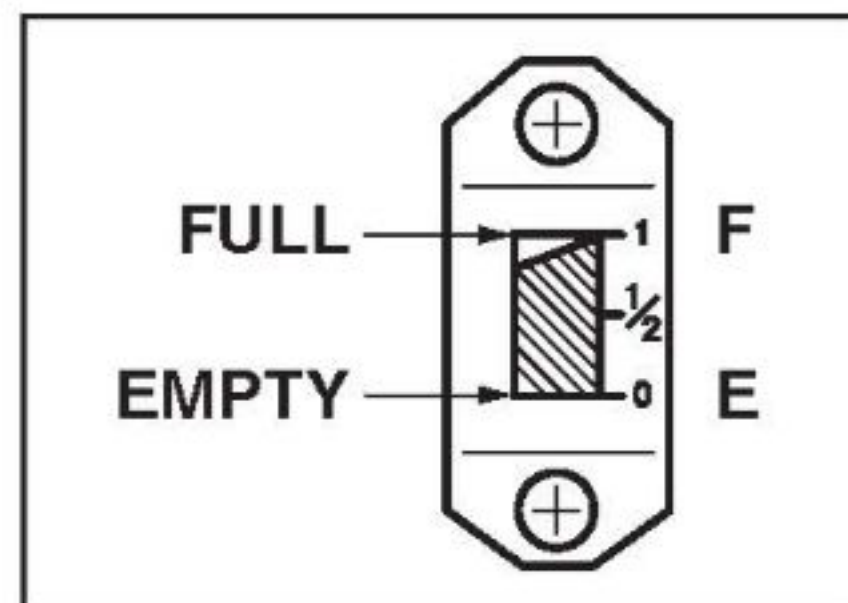
THIS ENGINE IS CERTIFIED TO OPERATE ON AUTOMOTIVE UNLEADED GASOLINE.

- Check fuel level at fuel level gauge.
- If fuel level is low, refill with unleaded automotive gasoline.
- Be sure to use the fuel filter screen on the fuel filter neck.



Fuel Amount

up to "LEVEL" position : (15L/3.95Gal)



⚠ WARNING

Make sure you review each warning in order to prevent fire hazard.

- Do not refill tank while engine is running or hot.
- Close fuel valve before refueling with fuel.
- Be careful not to admit dust, dirt, water or other foreign objects into fuel.
- Wipe off spilt fuel thoroughly before starting engine.
- Keep open flames away.

CHECKING COMPONENT PARTS

Check following items before starting engine:

- Fuel leakage from fuel hose, etc.
- Bolts and nuts for looseness.
- Components for damage or breakage.
- Generator not resting on or against any adjacent wiring.

CHECK GENERATOR SURROUNDINGS

WARNING

Make sure you review each warning in order to prevent fire hazard.

- Keep area clear of in flammables or other hazardous materials.
- Keep generator at least 3 feet (1 meter) away from buildings or other structures.
- Only operate generator in a dry, well ventilated area.
- Keep exhaust pipe clear of foreign objects.
- Keep generator away from open flame. No smoking!
- Keep generator on a stable and level surface.
- Do not block generator air vents with paper or other material.

BATTERY INSTALLATION (Electric Starter Model)

Recommended Battery

Type	: Lead-acid battery
Capacity (Ah)	: 12V,7AH or more
Size	: Less than 190(L) x 90(W) x 175(H) mm

⚠ WARNING

Death, personal injury and/or property damage may occur unless instructions are followed carefully.

- Use battery of recommended capacity.
- Turn the starter switch to the "STOP" position when mounting or dismounting battery. When mounting battery, connect the positive (+) cable first and then the negative (-) cable to the battery. Be careful not to short battery cables. When dismounting battery, disconnect negative (-) cable first.

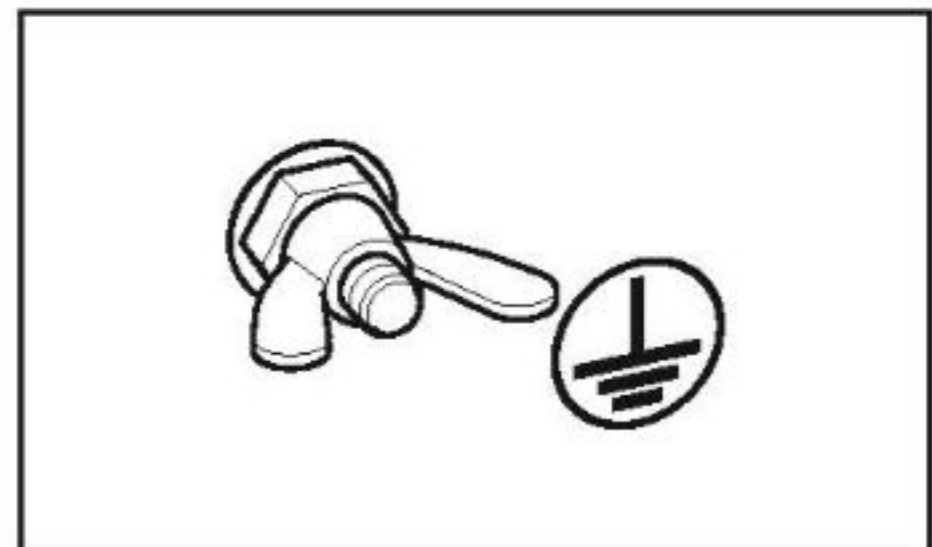
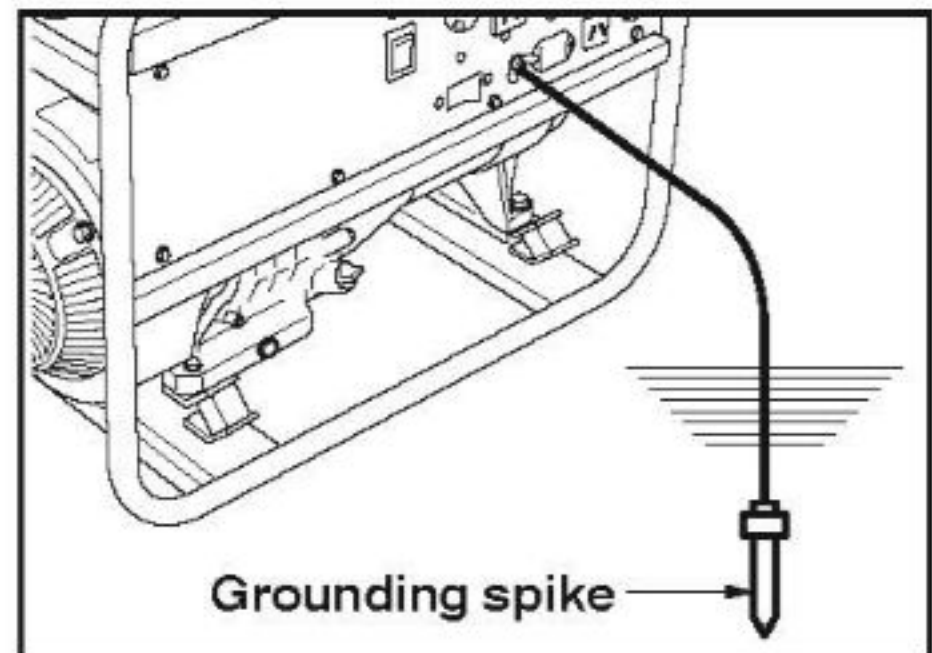
RED CABLE : To positive (+) terminal

BLACK CABLE : To negative (-) terminal

- Should the connection be made in incorrect manner, the generator will be broken.
- Tighten bolts and nuts on terminals securely so they will not be loosened by vibration.
- Disconnect battery cables when charging battery.

GROUNDING THE GENERATOR

- To ground the generator to the earth, connect the grounding lug of the generator to the grounding spike driven into the earth or to the conductor which has been already grounded to the earth.
- If such grounding conductor or grounding electrode is unavailable, connect the grounding lug of the generator to the grounding terminal of the using electric tool or appliance.



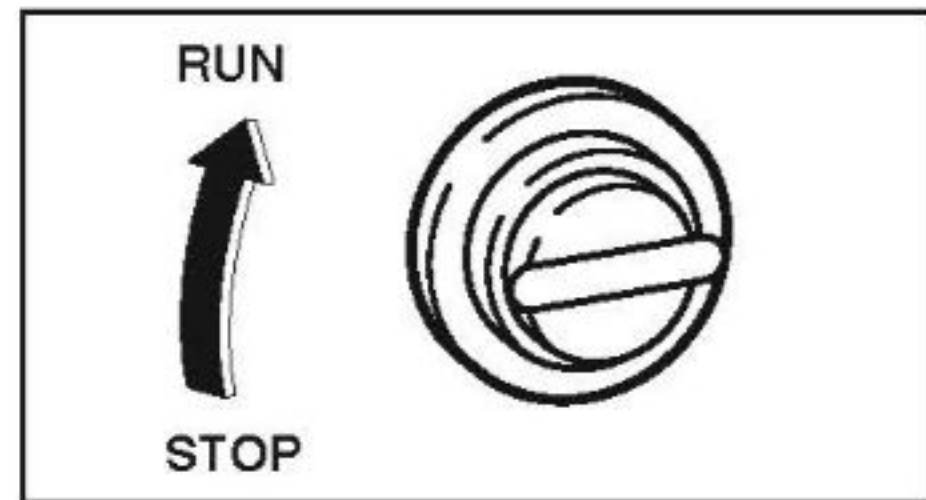
5. OPERATING PROCEDURES

STARTING THE GENERATOR

[CAUTION]

Check the oil level before each operations as outlined by the article "CHECK ENGINE OIL "

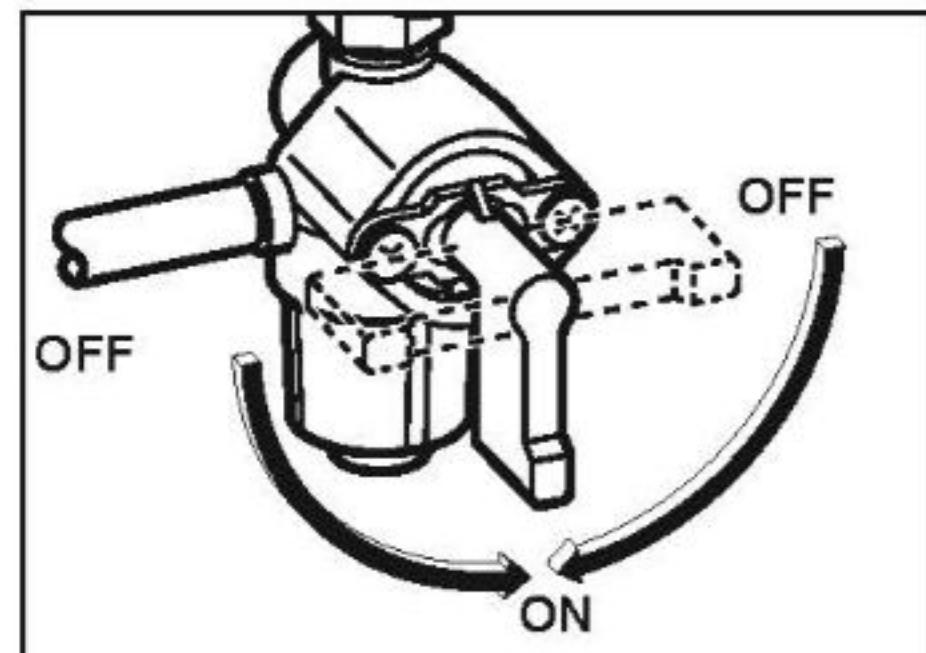
(a) Turn the Engine switch to the position "RUN".



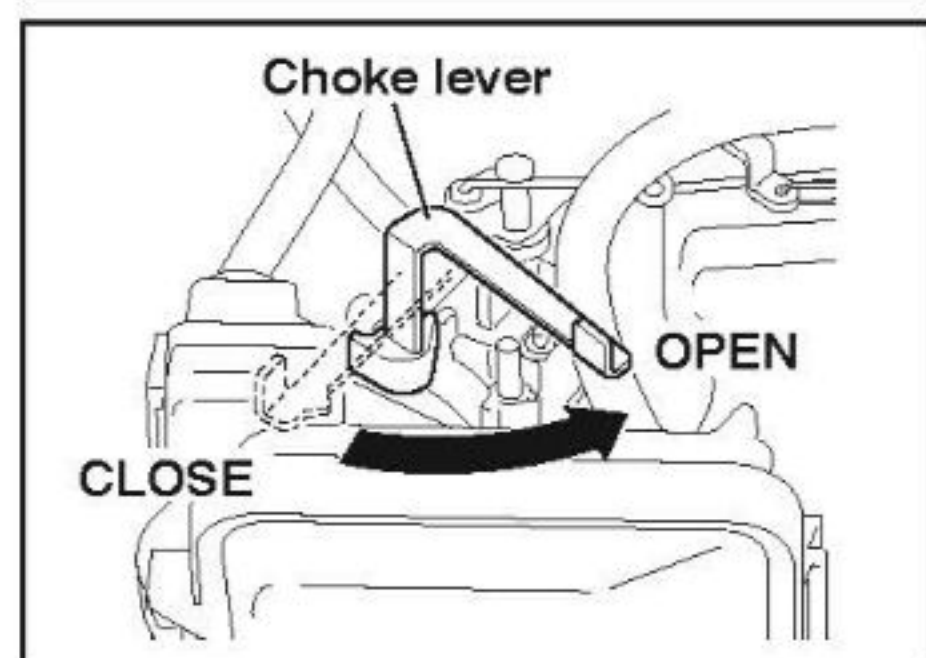
(b) Turn the AC circuit breaker to the position "OFF".



(c) Open the fuel valve.



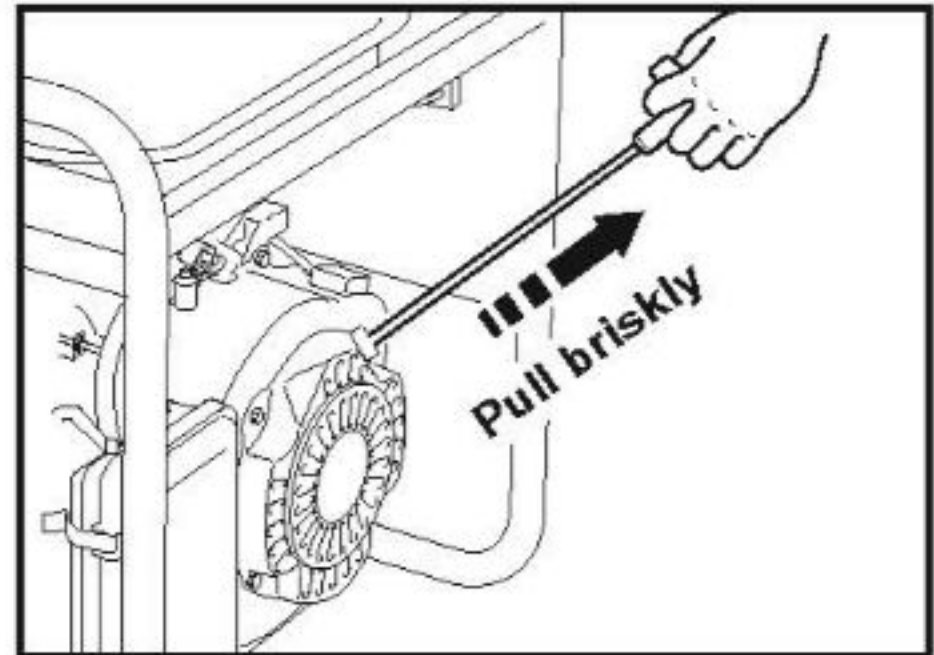
(d) Set choke lever to close if the engine is cold.



(e) **[Recoil starter model]**

Pull the starter handle slowly until passing the compression point (resistance will be felt), then return the handle to its original position and pull briskly.

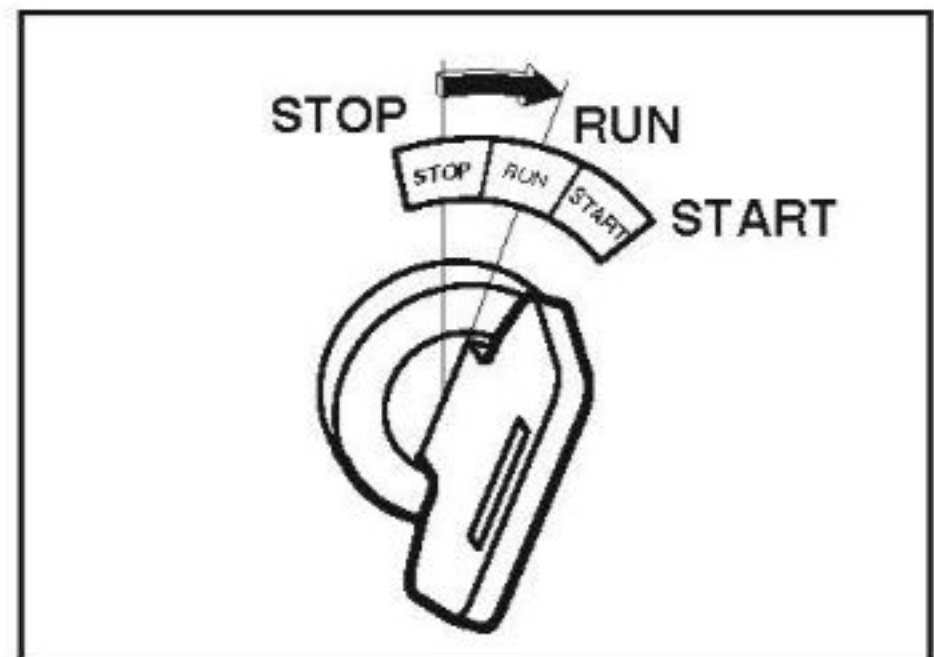
- If the engine fails to start after several attempts, repeat above procedures with choke lever returned to "OPEN" position.
- Do not fully pull out the rope.
- After starting, allow the starter handle to return to its original position while still holding the handle.



(f) **[Electric starter model]**

Insert the key into the key switch and turn it clockwise to the "RUN" position to start the engine.

Then turn the key further to the "START" position. The engine will be started by starting motor.



[CAUTION]

- **Do not run the starting motor over 5 seconds continuously.**
If the engine fails to start, return the key to the "RUN" position and wait about 10 seconds then start again.
- **Do not turn the key switch to "START" position when the engine is running to prevent damage of starting motor.**
- **When starting the engine by recoil starter, set the key switch at the "RUN" position and pull the starter handle.**

(g) Warm up the engine without a load for a few minutes.

USING ELECTRIC POWER

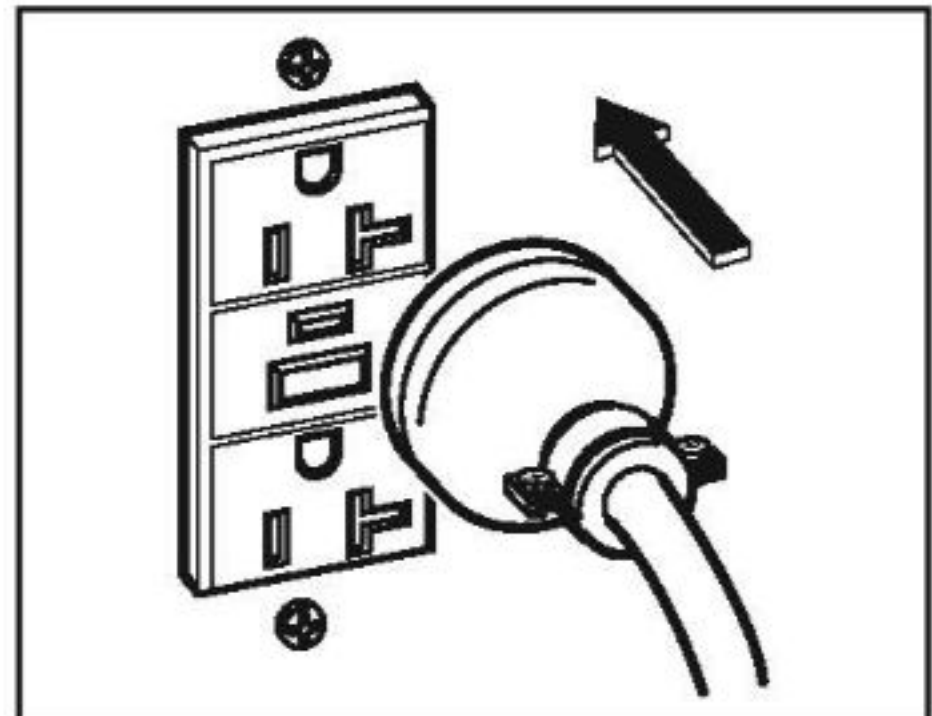
⚠ WARNING

- Make sure that the appliance is switched OFF before connecting it to the generator.
- Do not move the generator while it is running.
- Be sure to ground the generator if the connected appliance is grounded. Failure to ground unit may lead to electrical shock.

(1) AC APPLICATION

(a) Turn off the switch (es) of the electrical appliance (s) before connecting to the generator.

(b) Insert the plug (s) of the electrical appliance(s) into the receptacle.



- Check the amperage of the receptacles used referring to **TABLE 1**, and be sure not to take a current exceeding the specified amperage.
- Be sure that the total wattage of all appliances dose not exceed the rated output of the generator.







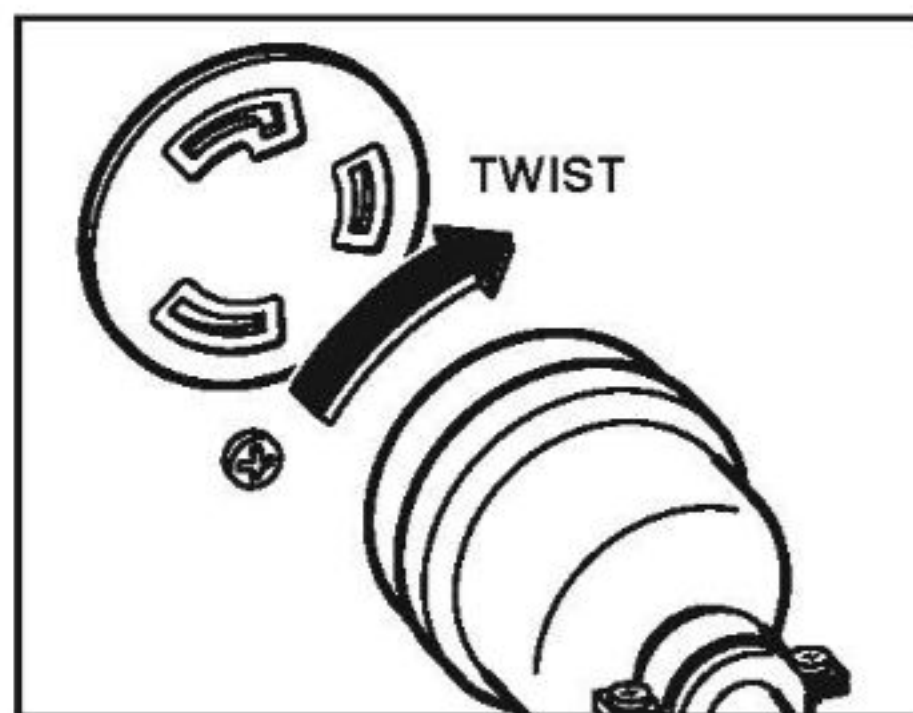
Style	Ampere	Voltage	Description
	up to 20A	110-120V	GFCI (Ground Fault Circuit Interrupter) Receptacle, duplex (REC1)
	up to 30A	110-120V	Locking Receptacle (REC3)
	up to 30A	110-120V 220-240V	Locking Receptacle (REC4)
	up to 16A	220-240V	BS Standard
	up to 32A	220-240V	BS323 Standard
 VDE	up to 16A	220-240V	2P+E European type

TABLE 1

WARNING

- To take power out from the **TWIST LOCK RECEPTACLE**, insert the plug into the receptacle, and turn it clockwise to the lock position.
- Be sure to ground the generator if the connected electrical device is grounded.



NOTE :

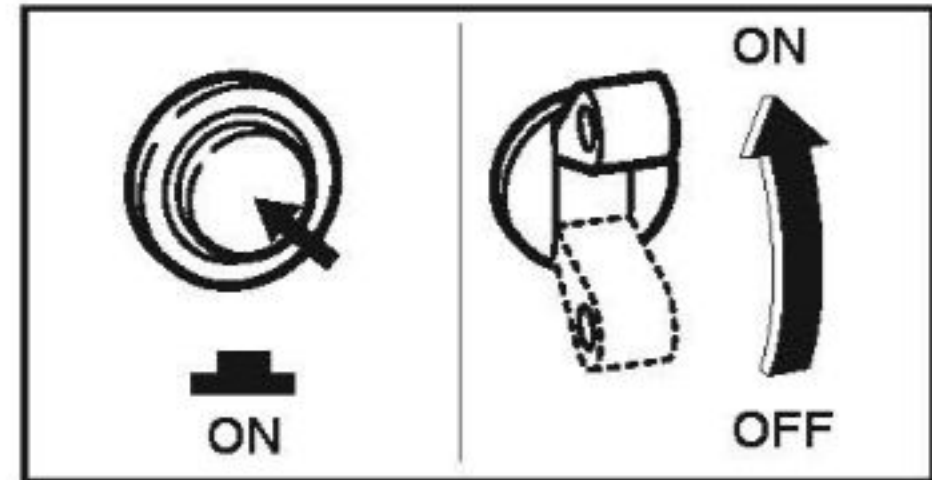
When the AC circuit breaker turns off during operation, the generator is overloaded or the appliance is defective. Stop the generator immediately, check the appliance and / or generator for overloading or detect and have repaired as necessary by TOTAL TOOLS dealer or service shop.

[CAUTION]

The duplex 120V receptacle is protected by a GFCI (Ground Fault Circuit Interrupter). GFCI shuts off the output current from the duplex 120V receptacle when a ground fault occurs in the generator or the appliance. Please note that other receptacles are not protected by GFCI.

(c) Turn the AC circuit breaker to the position "ON".

(d) Turn on the switch of the appliance.



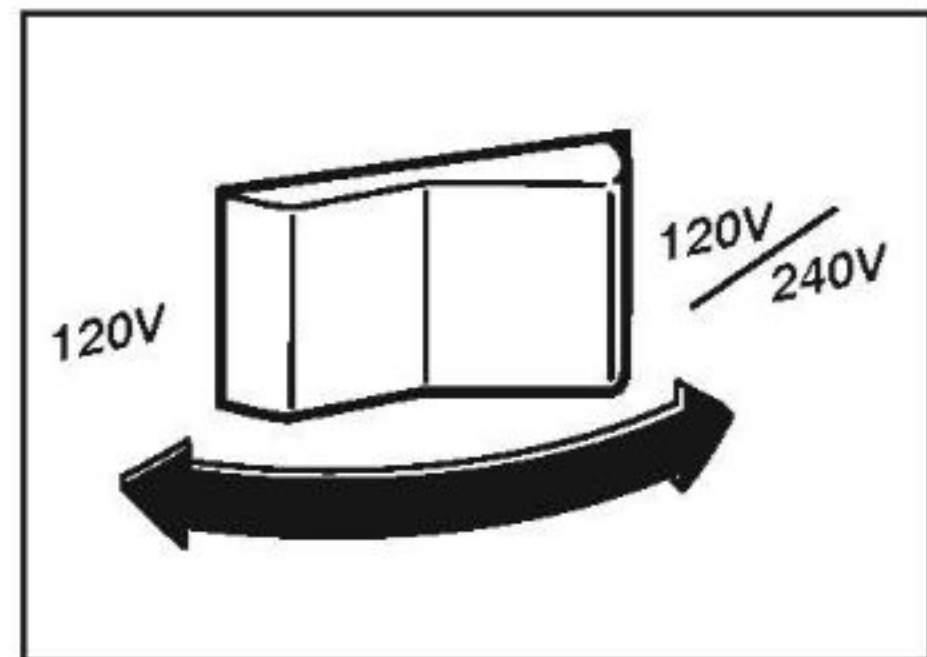
VOLTAGE SWITCH(If applicable)

Select the voltage using the VOLTAGE SWITCH in accordance with the electrical appliance.

Refer to **TABLE 2**.

[CAUTION]

Change the VOLTAGE SWITCH after turning the AC circuit breaker to "OFF".



Switch position	Lower Voltage Receptacle	Higher Voltage Receptacle
120V	Activated full rated output	N.A
120/240V	Activated half of rated output	Activated full rated output

TABLE 2

(2) STOPPING THE ENGINE

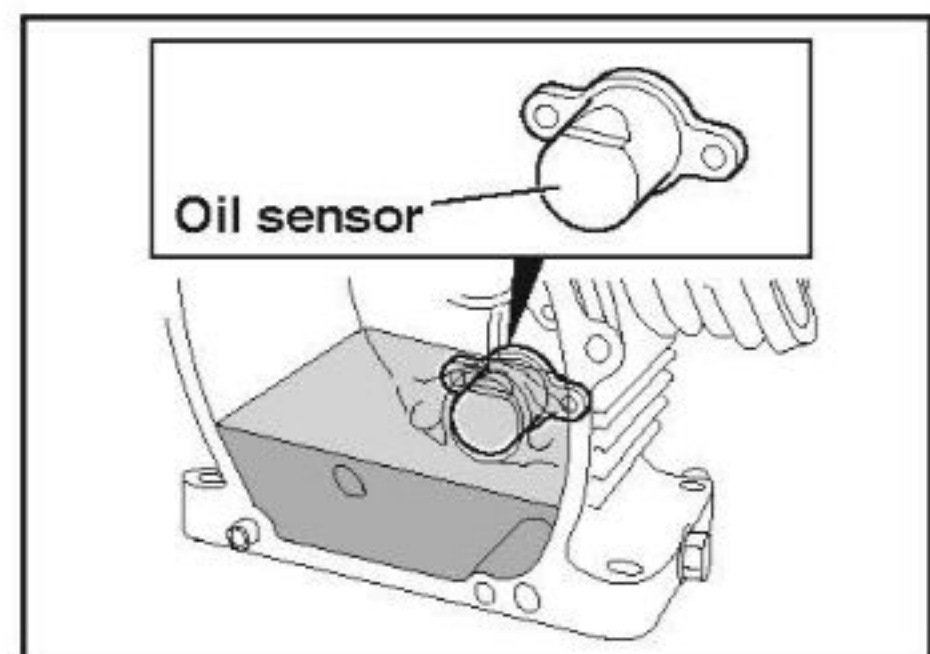
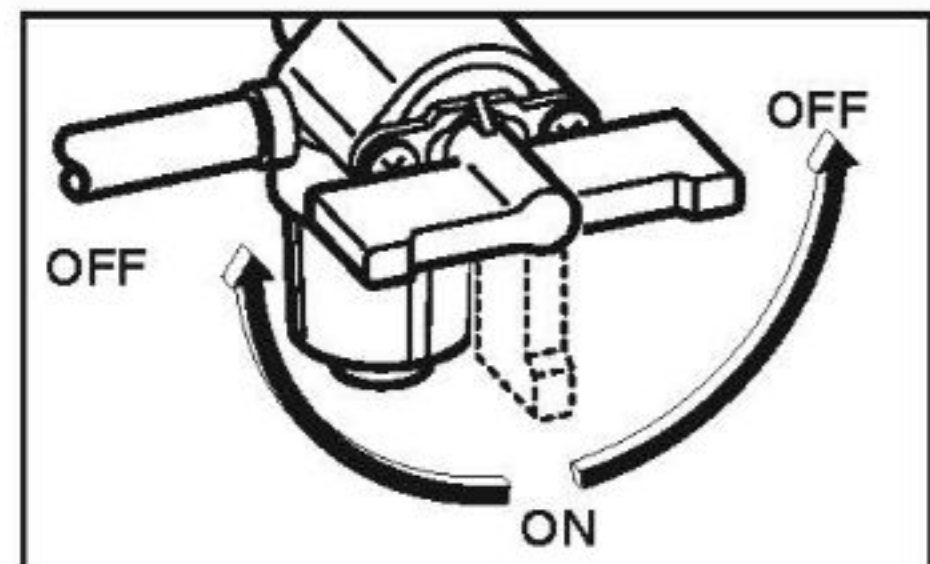
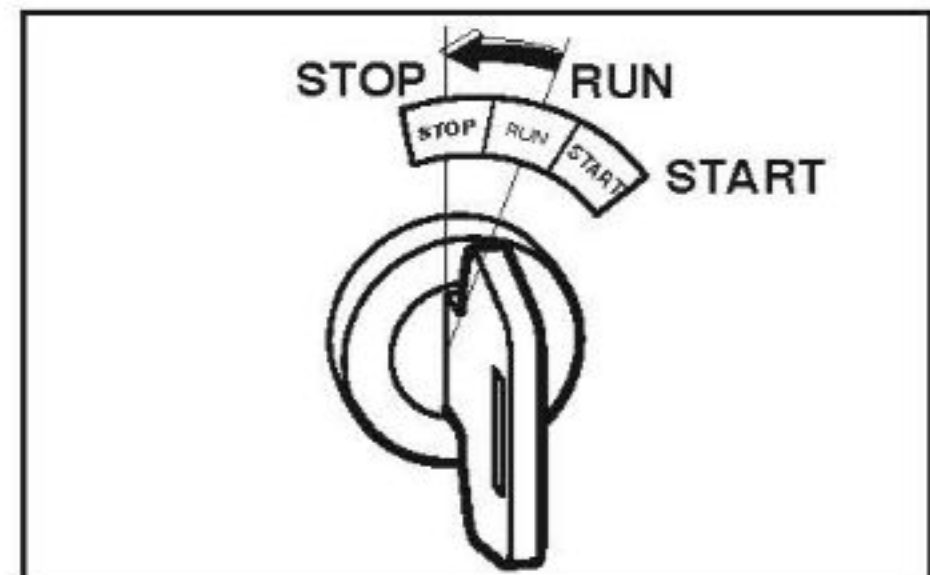
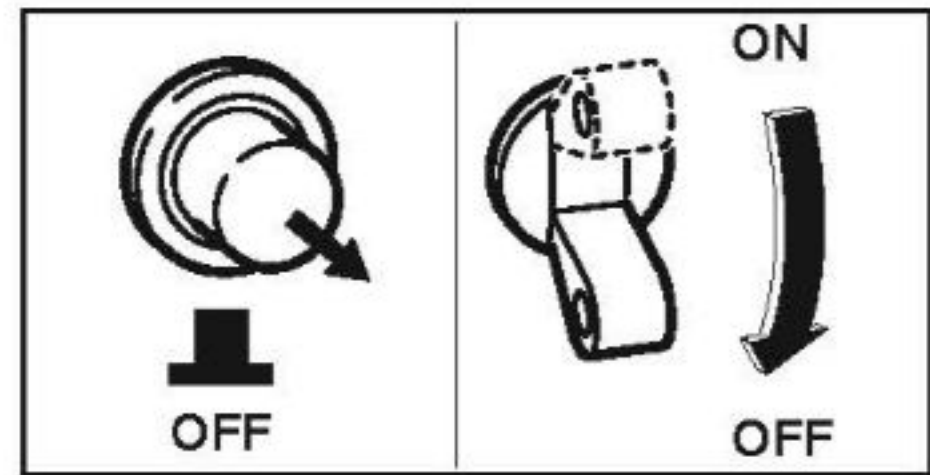
- Turn off the switch of load.
- Switch off generator's AC breaker.
- Disconnect tool or appliance.
- Turn the STOP SWITCH to the position "O" (STOP).

NOTE :

Allow the engine about 3 minutes to cool down at no-load before stopping.

STOPPING THE GENERATOR

- (a) Turn off the power switch of the electric equipment and unplug the cord from receptacle of the generator.
- (b) Turn the AC circuit breaker to the "OFF" position.
- (c) Allow the engine about 3 minutes to cool down at no-load before stopping.
- (d) **[Recoil starter model]**
Turn the engine switch to the position "STOP".
[Electric starter model]
Turn the key switch to the STOP position.
- (e) Close the fuel valve.



OIL SENSOR(IF APPLICABLE)

- (a) The oil sensor detects the fall in oil level in the crankcase and automatically stops the engine when the oil level falls below a predetermined level.
- (b) When engine has stopped automatically, switch off generator's AC circuit breaker, and check the oil level.
Refill engine oil to the upper level as instructed and restart the engine.
- (c) If the engine does not start by usual starting procedures, check the oil level.

6. WATTAGE INFORMATION

Depending on their wattage output, generators will run anything from a small lamp to a number of large appliances. To determine the size generator you will need, total the wattage of the maximum number of items you will be running simultaneously.

For example: running a 100 watt light bulb, a 200 watt slow cooker, a 1,200 watt refrigerator with a start up wattage of 2,900 watts and a 750 watt TV would require 3,950 watts.

Some appliances need a "surge" of energy when starting.

This means that the amount of electrical power needed to start the appliance may exceed the amount needed to maintain its use.

Electrical appliances and tools normally come with a label indicating voltage, cycles / Hz, amperage (amps) and electrical power needed to run the appliance or tool.

Check with your nearest dealer or service center with questions regarding power surge of certain appliances or power tools.

- Electrical loads such as incandescent lamps and hot plates require the same wattage to start as is needed to maintain use.
- Loads such as fluorescent lamps require 1.2 to 2 times the indicated wattage during start-up.
- Loads for mercury lamps require 2 to 3 times the indicated wattage during start-up.
- Electrical motors require a large starting current. Power requirements depend on the type of motor and its use. Once enough "surge" is attained to start the motor, the appliance will require only 50% to 30% of the wattage to continue running.
- Most electrical tools require 1.2 to 3 times their wattage for running under load during use. For example, a 5,000 watt generator can power a 1800 to 4000 watt electrical tool.
- Loads such as submersible pumps and air compressors require a very large force to start. They need 3 to 5 times the normal running wattage in order to start.
For example, a 5,000 watt generator would only be able to drive a 1,000 to 1,700 watt pump.

NOTE :

The following wattage chart is general guide only. Refer to your specific appliance for correct wattage.

To determine the total wattage required to run a particular electrical appliance or tool, multiply the voltage figure of the appliance/tool by the amperage (amps) figure of same. The voltage and amperage (amps) information can be found on a name plate which is normally attached to electrical appliances and tools.

Don't just add up the total wattage for everything you want to power. See our section on power management to learn how to use a smaller generator to power more. See the chart below to estimate your power needs.

Home Applications

	Approximate Starting Wattage	Approximate Running Wattage	240V required
Refrigerator or Freezer (Energy Star)	1200	132-192	
Microwave Oven			
650 watts	1000	1000	
800 watts	1300	1300	
1000 watts	1500	1500	
Incandescent Lights	as indicated on bulb (i.e. 60W)	as indicated on bulb (i.e. 60W)	
Furnace Fan, gas or fuel oil			
1/8 Horsepower	500	300	Y
1/6 Horsepower	750	500	Y
1/4 Horsepower	1000	600	Y
1/3 Horsepower	1400	700	Y
1/2 Horsepower	2350	875	Y
Television			
Tube type	300	300	
Flat Screen (20")	120	120	
Flat Screen (46")	190	190	
Coffee Maker (4 cup)	600	600	
Dishwasher (Cool Dry)	540	216	
Electric Fry Pan	1500	1500	
Electric Range (8-inch	2100	2100	Y

	Approximate Starting Wattage	Approximate Running Wattage	240V required
element)			
Automatic Washer	1200	1200	
Clothes Dryer (Electric)	6750	5400	Y
Radio	50 to 200	50 to 200	
Sump Pump			
1/3 Horsepower	1300	800	Y
1/2 Horsepower	2150	1050	Y
Window Air Conditioner (10,000 BTU)	2200	1500	
Computer			
Laptop	200-250	200-250	
Desktop	600-800	600-800	
Monitor (LCD style)	30	30	
Printer	400-600	400-600	
Hot Water Heater	4500	4500	Y
Garage Door Opener	1420	720	

Recreational Applications

	Approximate Starting Wattage	Approximate Running Wattage	240V required
Television			
Tube type	300	300	
Flat Screen	120	120	
RV Air Conditioner			
11000 BTU	1600	1010	
13500 BTU	2800	1800	
15000 BTU	3300	2000	
RV Refrigerator	600	180	
Blender	850	400	
Electric Grill (tabletop)	1650	1650	
Slow Cooker	170-270	170-270	
Hair Dryer (1600 watts)	1900	1800	
Microwave Oven (650 watts)	1000	1000	
Coffee Maker	600	600	

	Approximate Starting Wattage	Approximate Running Wattage	240V required
Radiant Heater	1300	1300	
Laptop computer	200-250	200-250	
Satellite Receiver	250	250	
Radio	50 to 200	50 to 200	
Two-Way Radio			
12A	360W	360W	
23A	840W	840W	
35A	960W	960W	
Fan (portable)	120	40	
DVD Player	350	350	

Contractor Applications

	Approximate Starting Wattage	Approximate Running Wattage
Air Compressor		
1/2 hp	1600	975
1 hp	4500	1600
Bench Grinder (8 in.)	2500	1400
Circular Saw (Heavy Duty, 7 1/4 in.)	2300	1400
Concrete Vibrator		
1/2 hp	840 (avg.)	840 (avg.)
1 hp	1080 (avg.)	1080 (avg.)
2 hp	1560 (avg.)	1560 (avg.)
3 hp	2400 (avg.)	2400 (avg.),
Demolition hammer	1260 (avg.)	1260 (avg.)
Drain cleaner	250 (avg.)	250 (avg.)
Drills		
3/8 inch, 4 amps	600	440
1/2 inch, 5.4 amps	900	600
Electric Chain Saw (14 inches, 2 hp)	1100	1100
Hand Drill (1/2 in.)	900	600
High-pressure Washer (1 hp)	3600	1200
Rotary hammer	1200 (avg.)	1200 (avg.)

	Approximate Starting Wattage	Approximate Running Wattage
Table Saw (10 in.)	4500	1800
Industrial Motors		
Split Phase		
1/8 Horsepower	1200	275
1/4 Horsepower	1700	400
1/3 Horsepower	1950	450
1/2 Horsepower	2600	600
Capacitor Start Induction Run		
1/8 Horsepower	850	275
1/4 Horsepower	1050	400
1/3 Horsepower	1350	450
1/2 Horsepower	1800	600
3/4 Horsepower	2600	850
1 Horsepower	3000	1000
1 1/2 Horsepower	4200	1600
2 Horsepower	5100	2000
3 Horsepower	6800	3000
4 Horsepower	9800	4800
Capacitor Start Capacitor Run		
1/8 Horsepower	600	275
1/4 Horsepower	850	400
1/3 Horsepower	975	450
1/2 Horsepower	1300	600
3/4 Horsepower	1900	850
1 Horsepower	2300	1000
1-1/2 Horsepower	3200	1600
2 Horsepower	3900	2000
3 Horsepower	5200	3000
4 Horsepower	7500	4800
Fan Duty		
1/4 Horsepower	1200	650

Farm Equipment

	Approximate Starting Wattage	Approximate Running Wattage
Electric Fence, 25 miles	250	250
Milk Cooler	1800	1100
Milker (vacuum pump, 2hp)	2300	1000
Portable Heater (kerosene, diesel fuel)		
50,000 BTU	600	400
90,000 BTU	725	500
150,000 BTU	1000	625
Battery Charger		
15 amp	380	380
60 amp with 250-amp boost	1500/5750	1500/5750

VOLTAGE DROP IN ELECTRIC EXTENSION CORDS

When a long electric extension cord is used to connect an appliance or tool to the generator, a certain amount of voltage drop or loss occurs in the extension cord which reduces the effective voltage available for the appliance or tool.

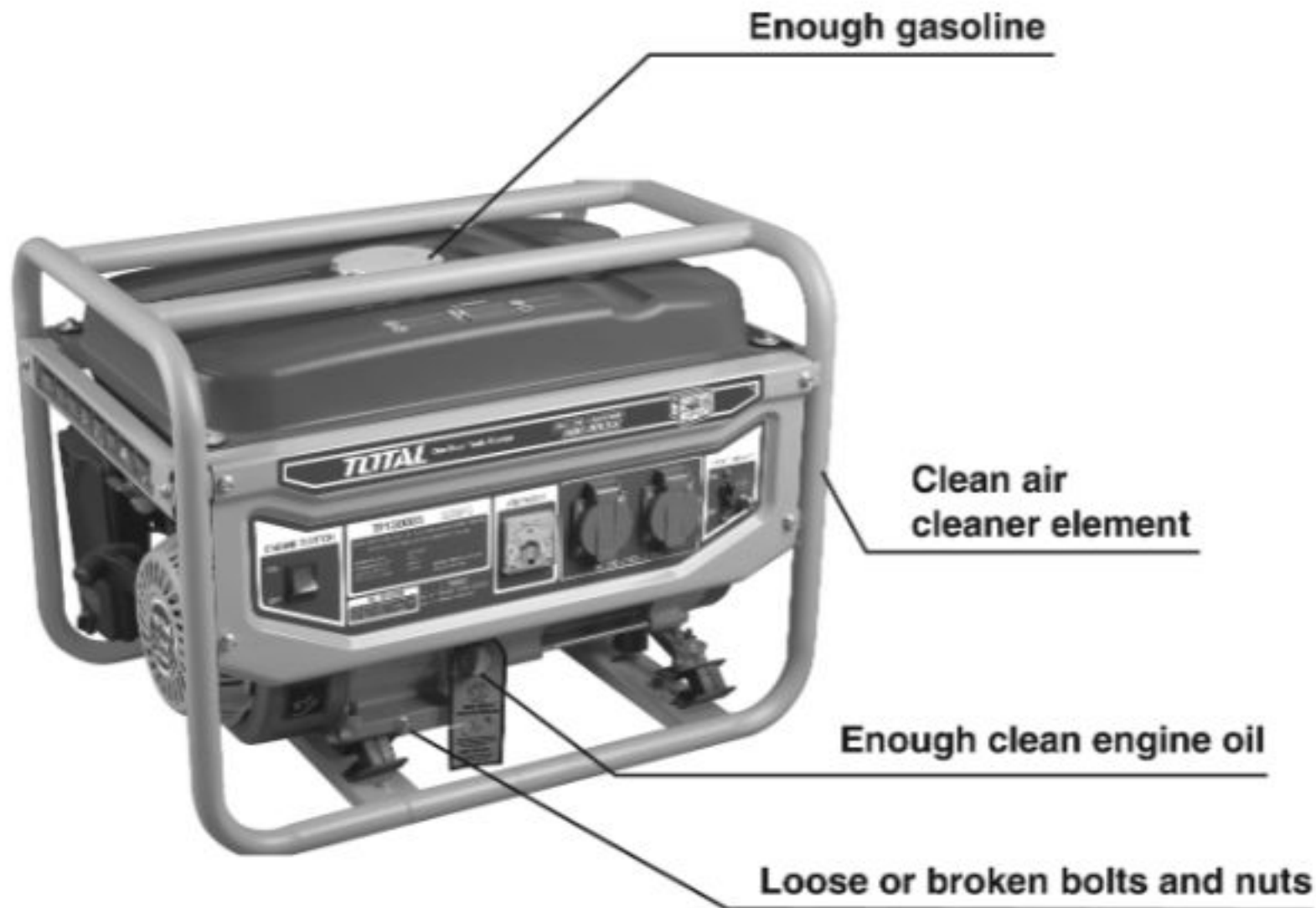
The chart below has been prepared to illustrate the approximate voltage loss when an extension cord of 300 feet (approx. 100 meters) is used to connect an appliance or tool to the generator.

Nominal cross section	A.W.G.	Allowable current	No.of strands / strands dia.	Resistance	Current Amp.							Voltage drop
mm ²	No.	A	No./mm	Ω /100m	1A	3A	5A	8A	10A	12A	15A	
0.75	18	7	30/0.18	2.477	2.5V	8V	12.5V	—	—	—	—	
1.27	16	12	50/0.16	1.486	1.5V	5V	7.5V	12V	15V	18V	—	
2.0	14	17	37/0.26	0.952	1V	3V	5V	8V	10V	12V	15V	
3.5	12 to 10	23	45/0.32	0.517	—	1.5V	2.5V	4V	5V	6.5V	7.5V	
5.5	10 to 8	35	70/0.32	0.332	—	1V	2V	2.5V	3.5V	4V	5V	

7. MAINTENANCE SCHEDULE

DAILY INSPECTION

Before running the generator, check the following service items:



PERIODIC MAINTENANCE

Periodic maintenance is vital to safe and efficient operation of your generator. Check the table below for periodic maintenance intervals.

IT IS ALSO NECESSARY FOR THE USER OF THIS GENERATOR TO CONDUCT THE MAINTENANCE AND ADJUSTMENTS ON THE EMISSION-RELATED PARTS LISTED BELOW TO KEEP THE EMISSION CONTROL SYSTEM EFFECTIVE.

The emission control system consists of the following parts :

- | | | |
|---|--|--|
| (1) Carburetor and internal parts | (4) Air cleaner elements | (8) Exhaust manifold, if applicable |
| (2) Cold start enrichment system, if applicable | (5) Spark plug | (9) Hoses, belts, connectors, and assemblies |
| (3) Intake manifold, if applicable | (6) Magneto or electronic ignition system | |
| | (7) Spark advance/retard system, if applicable | |

The maintenance schedule indicated in the table is based on the normal generator operation. Should the generator be operated in extremely dusty condition or in heavier loading condition, the maintenance intervals must be shortened depending on the contamination of oil, clogging of filter elements, wear of parts, and so on.

Periodic Maintenance Schedule table

Maintenance Items	Every 8 hours (Daily)	Every 50 hours (Weekly)	Every 200 hours (Monthly)	Every 500 hours	Every 1000 hours
Clean generator and check bolt and nuts	● (Daily)				
Check and refill engine oil	● (Refill daily up to upper level)				
Change engine oil (*Note1)	● (Initial 20 hours)	● (Every 100 hours)			
Clean spark plug		● (Every 100 hours)			
Clean air cleaner		● (Every 100 hours)			
Replace air cleaner element			●		
Clean fuel filter			●		
Clean and adjust spark plug and electrodes			●		
Replace spark plug				●	
Remove carbon from cylinder head (*Note 2)				●	
Check and adjust valve clearance (*Note 2)				●	
Clean and adjust carburetor (*Note 2)				●	
Check and replace carbon brushes				●	
Replace fuel lines					● (Yearly)
Overhaul engine (*Note 2)					●
Check AC receptacles	● (Daily)				
Check terminal	● (Daily)				
Check engine switch	● (Daily)				
Check rotor					●
Check stator					●
Replace engine mount					●

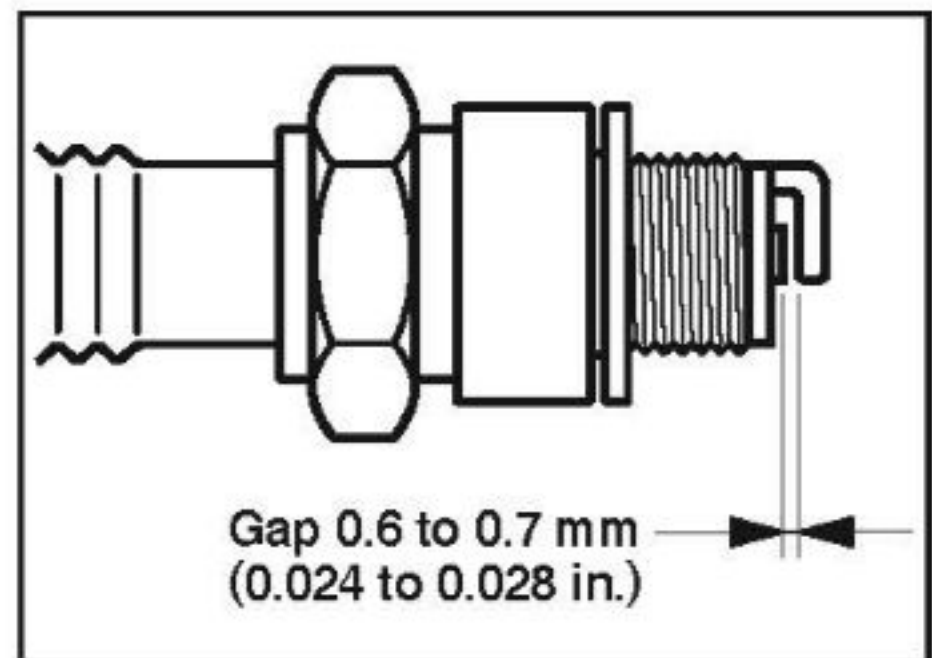
*Note: 1. Initial oil change should be performed after first twenty (20) hours of operation.
Thereafter change oil every hundred (100) hours.
Before changing oil, check for a suitable way to dispose of old oil.

*Note: 2. As to the procedures for these items, please refer to the SERVICE MANUAL or consult your nearest service dealer.

8. "HOW-TO" MAINTENANCE

CLEANING AND ADJUSTING SPARK PLUG

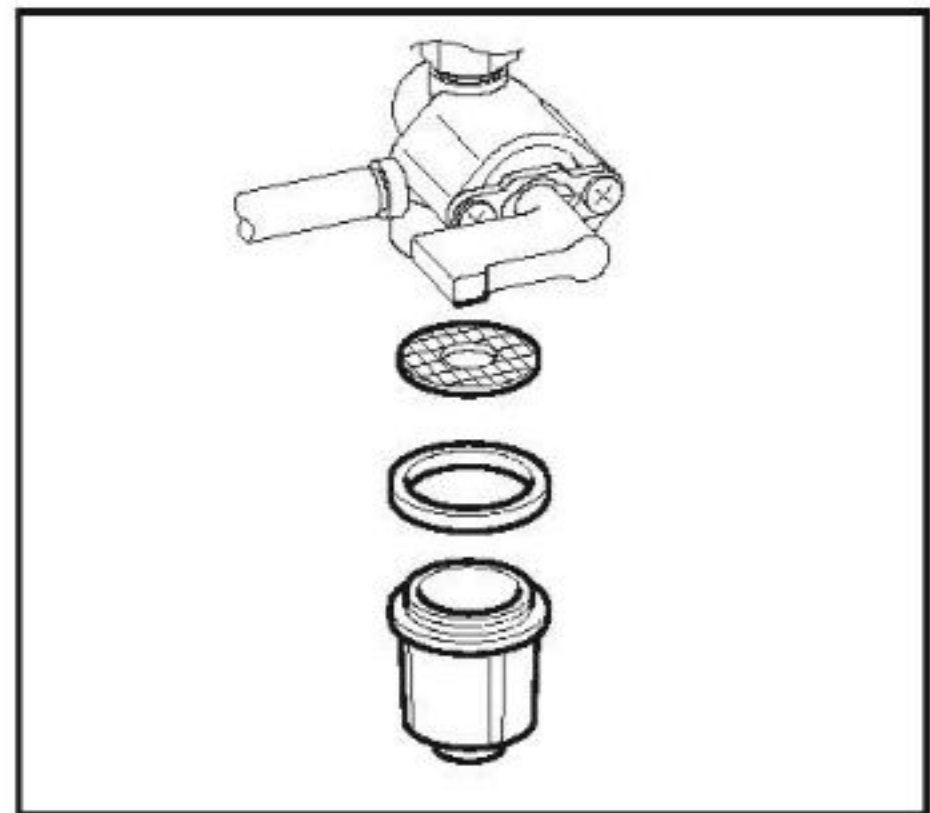
- (a) If the plug is contaminated with carbon, remove it using a plug cleaner or wire brush.
- (b) Adjust the electrode gap to 0.6 to 0.7 mm (0.024 to 0.028 in.).



CLEANING FUEL STRAINER

Dirt and water in the fuel are removed by the fuel strainer.

- (a) Remove the strainer cup and throw away water and dirt.
- (b) Clean the screen and strainer cup with gasoline.
- (c) Tightly fasten the cup to main body, making sure to avoid fuel leak.



CHECKING CARBON BRUSH

Brush Maintenance Essentials (Effective Length)

The brush is the area which touches the slip ring, and its surface must be kept smooth.

If it is not smooth then carbon and other substances will adhere between the brush and slip ring.

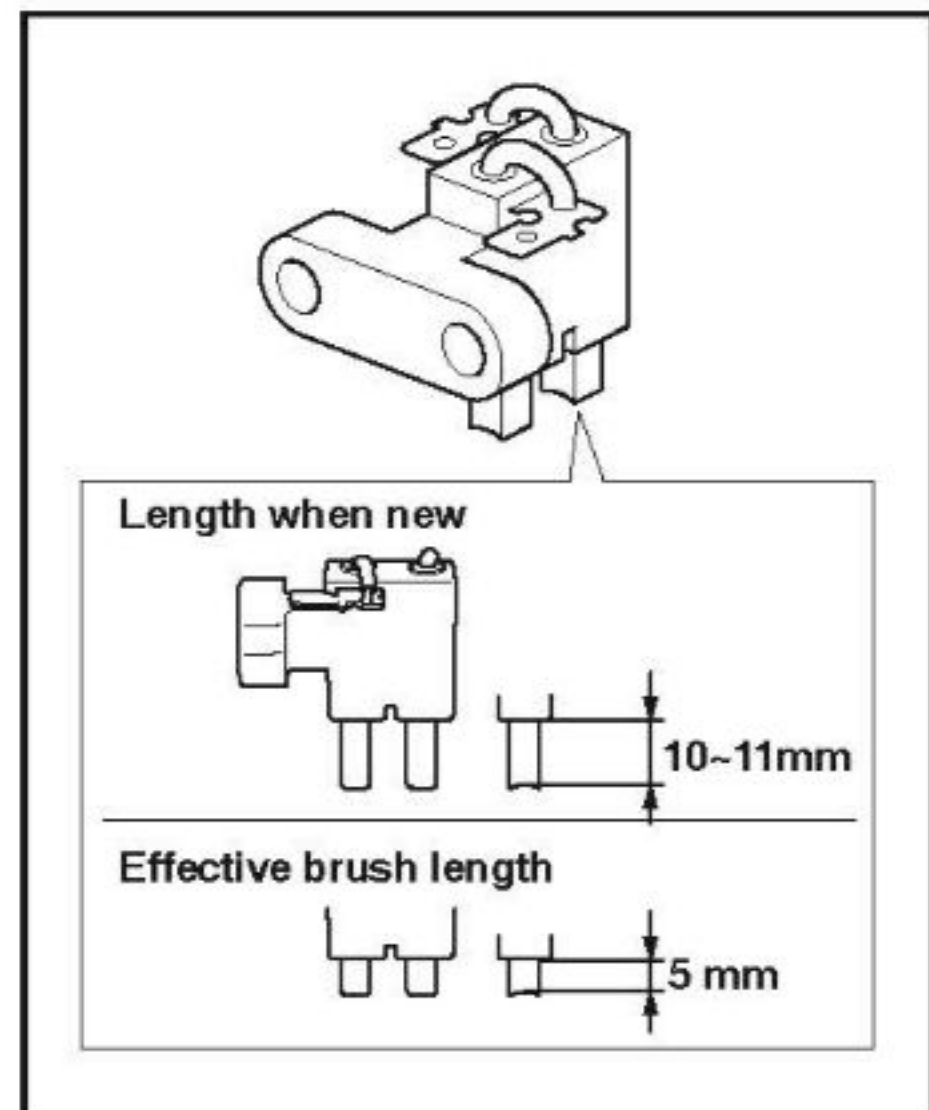
This must be buffed with sandpaper or the like because it is hazardous.

The usable length of the brush is 5~11 mm, so if the brush is 5mm long or less replace it with a new one.

This is done because if the length of the brush gets any shorter, its contact pressure with the slip ring will decrease, resulting in a drop in generator efficiency and the output voltage.

Check the brush every 500 hours to confirm its length.

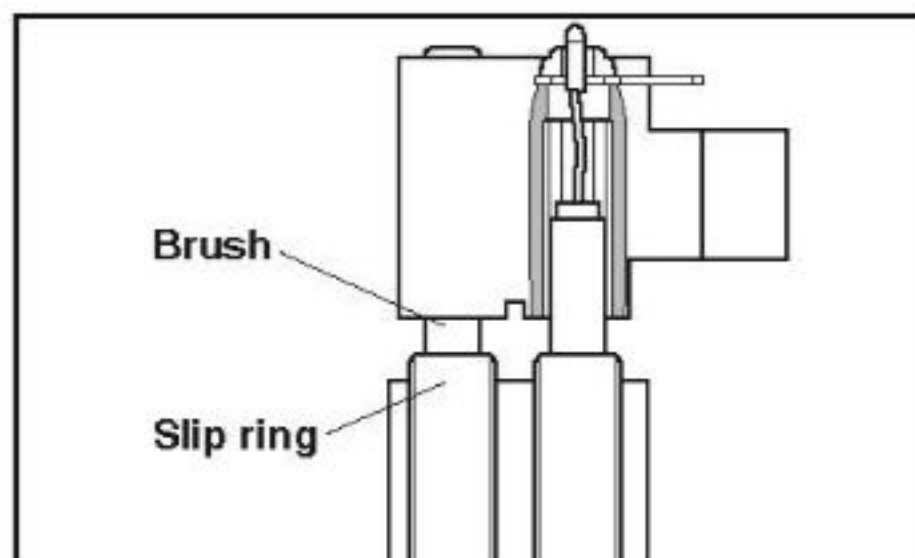
In addition, check the brush length if the generator malfunctions, such as when it is not generating power or its voltage is low.



Brush Maintenance Essentials (Disassembly and Assembly)

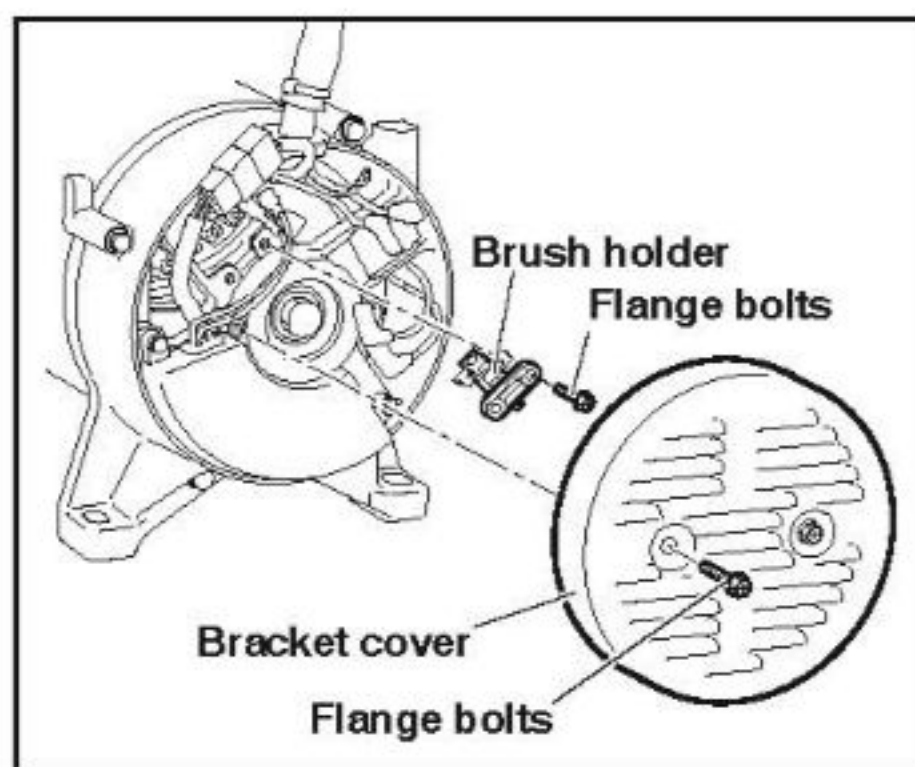
Disassembly

1. Remove the two flange bolts, then remove the bracket cover.
2. Remove the two flange bolts, then remove the brush.



Assembly

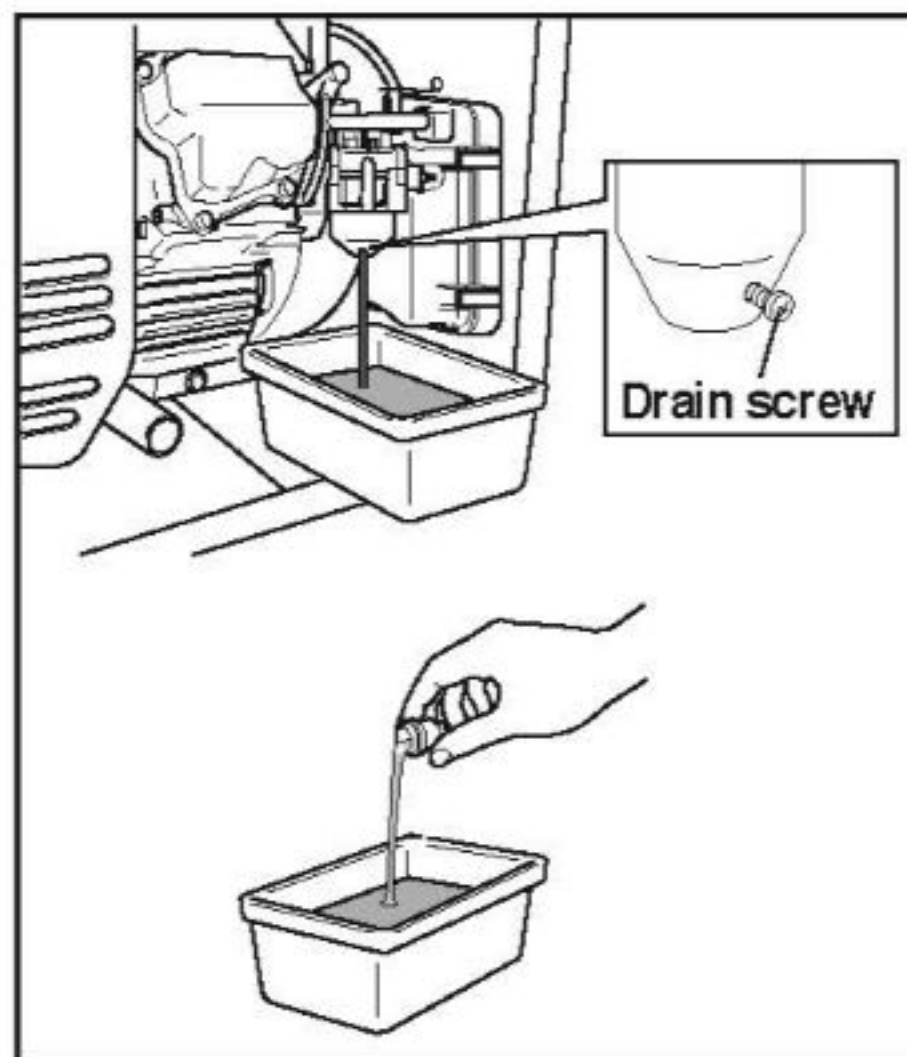
1. While pressing the brush against the slip ring, secure it by tightening it with the two flange bolts.
When doing so, confirm that the brush is in the proper position relative to the slip ring.
2. Secure the bracket cover by tightening it with the two flange bolts



9. PREPARATION FOR STORAGE

The following procedures should be followed prior to storage of your generator for periods of 6 months or longer.

- Drain fuel from fuel tank carefully by disconnecting the fuel line. Gasoline left in the fuel tank will eventually deteriorate making engine-starting difficult.
- Remove the carburetor float chamber and also drain the carburetor.
- Change engine oil.
- Check for loose bolts and screws, tighten them if necessary.
- Clean generator thoroughly with oiled cloth. Spray with preservative if available. **NEVER USE WATER TO CLEAN GENERATOR !**
- Pull starter handle until resistance is felt, leaving handle in that position.
- Store generator in a well ventilated, low humidity area.



10. TROUBLESHOOTING

When generator engine fails to start after several attempts, or if no electricity is available at the output socket, check the following chart. If your generator still fails to start or generate electricity, contact your nearest dealer or service shop for further information or corrective procedures.

When Engine Fails to Start :

Check if choke lever is in its proper position.		Set the choke lever to "CLOSE" position.
Check if fuel valve is open.	↔	If closed, open fuel valve.
Check fuel level.		If empty, refill fuel tank making sure not to overfill.
Check if engine switch is in OFF.		Turn engine switch to ON.
Check to make sure generator is not connected to an appliance.		If connected, turn off the power switch on the connected appliance and unplug.
Check spark plug for loose spark plug cap.	↔	If loose, push spark plug cap back into place.
Check spark plug for contamination.		Remove spark plug and clean electrode.

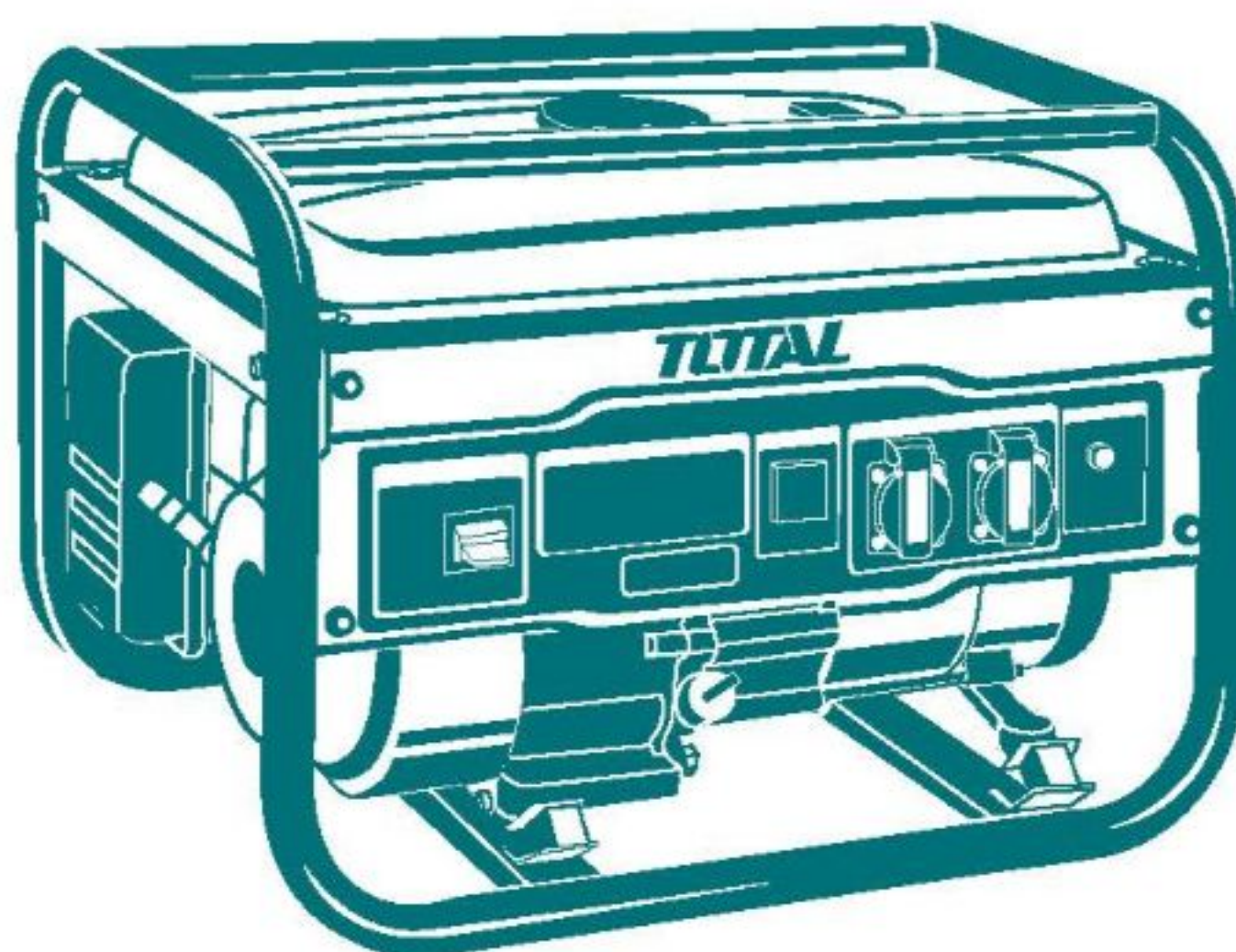
When No Electricity Is Generated at Receptacle :

Check to make sure AC circuit breaker is in the "ON" position.	↔	After making sure that the total wattage of the electrical appliance is within permissible limits and there are no defects in the appliance, turn the AC circuit breaker to the "ON" position. If breakers continue to actuate, consult your nearest servicing dealer.
Check AC receptacle terminals for loose connection.		Secure connection if necessary.
Check to see if engine starting was attempted with appliances already connected to generator.	↔	Turn off switch on the appliance, and disconnect cable from receptacle. Reconnect after generator has been started properly.
Low power.		Carbon brushes are excessively worn

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