



# Operator Manual

Cummins **Onan**

Performance you rely on.™



## 50 Hz Commercial Portable Generator Set EGMBM / PX6100e

# FOREWORD

Thank you for purchasing a Cummins generator.

This manual covers operation and maintenance of the Cummins generators. All information in this publication is based on the latest production information available at the time of approval for printing.

Pay special attention to statements preceded by the following words:

## **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.**









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# 1. SAFETY PRECAUTIONS


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-  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.
-  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.
-  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 contained in the exhaust gases will endanger human lives. Keep the generator at least 1 meter (3 feet) away from any structure or building during use. If the generator must be used indoors, the area must be well-ventilated and extreme caution must be taken regarding the discharge of exhaust gases.
-  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.
-  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.

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-  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.
  -  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.
  -  If wet, wipe and dry it well before starting. Do not pour water directly over the generator, nor wash it with water.
  -  Be extremely careful that all necessary electrical grounding procedures are followed during each and every use. Failure to do so can be fatal.
  -  Do not contact 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.
  -  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.
  -  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.
  -  Keep children and all bystanders at a safe distance from work areas.

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 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.

 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.

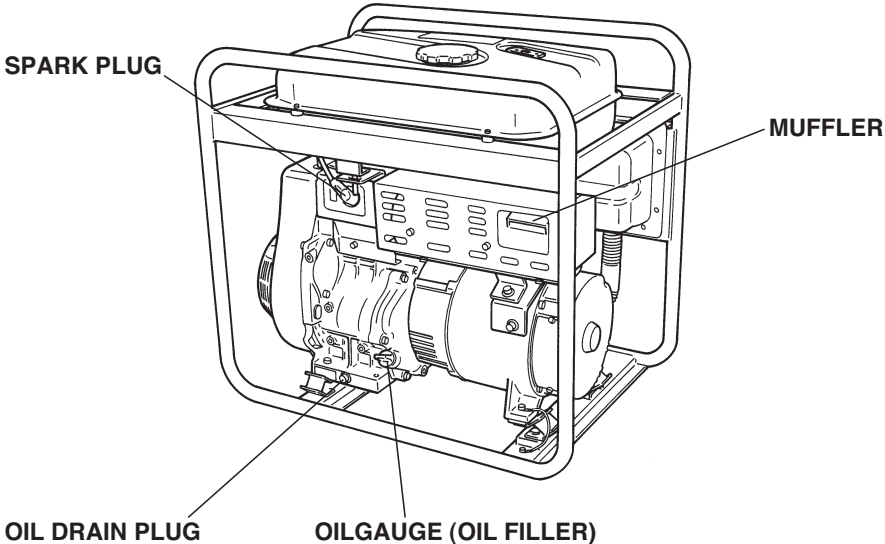
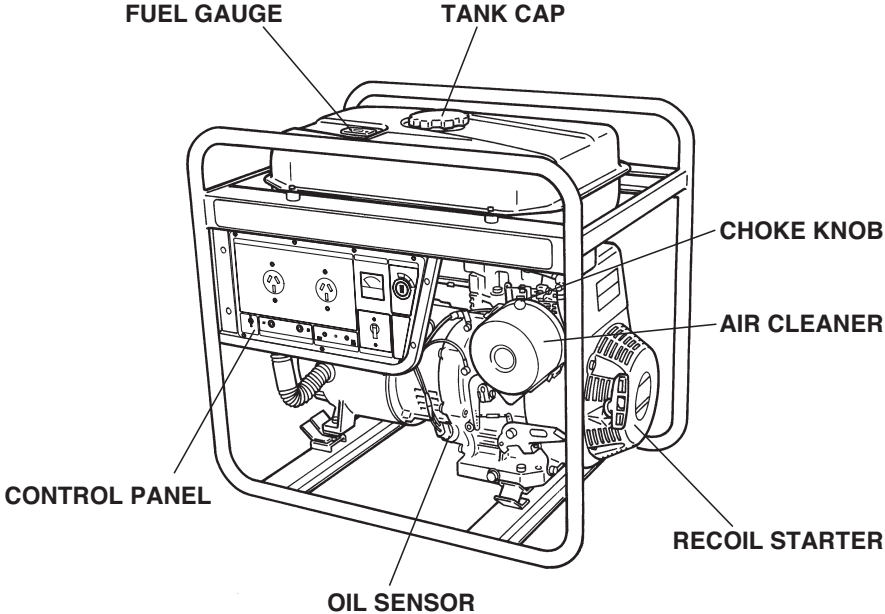
 Always switch off generator's AC circuit breaker and disconnect tools or appliances when not in use, before servicing, adjusting, or installing accessories and attachments.

# 2. SPECIFICATIONS

MODEL		PX6100e	
Generator	Type	Brushless, Self-Exciting, 2-Poles, Single Phase	
	Voltage regulating system	Condenser type	
	AC Output		
	Frequency	Hz	50
	Rated voltage	V	240
	Rated current	A	18.3
	Rated output	VA (W)	4400
	Maximum output	VA (W)	5000
	Rated power factor		1.0
	Over current protector		Fuse-less circuit breaker
	DC Output		
	Rated voltage	V	12
	Rated current	A	8.3
Safety device type		Fuse-less circuit breaker	
Engine	Model	EH34D	
	Type	Forced air-cooled, 4-cycle, Gasoline Engine	
	Displacement	mL	338
	Fuel		Automobile Gasoline
	Fuel tank capacity	L	21.5
	Rated continuous operation	H	8.0
	Engine oil capacity	L	1.2
	Spark plug		BPR6ES (NGK)
	Starting system		Electric starter / Recoil
Dimension	Length	mm	680
	Width	mm	470
	Height	mm	630
Dry weight	kg	81.5	

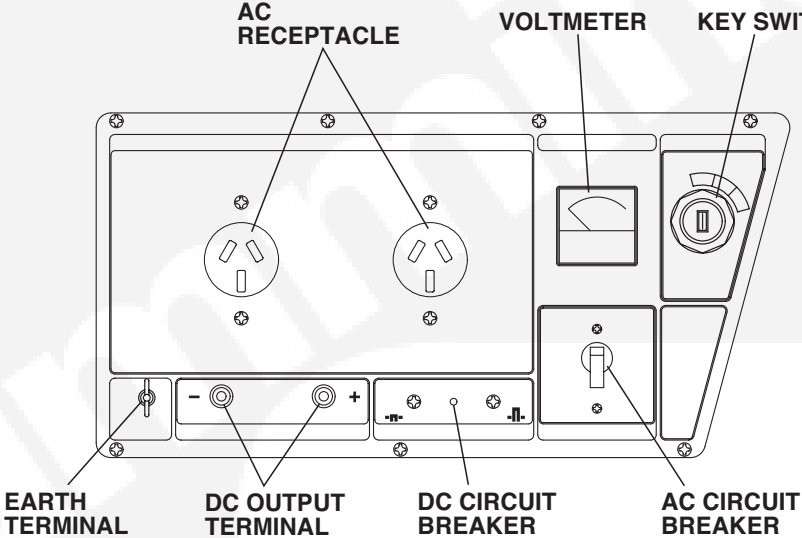
Specifications are subject to change without notice.

# 3. COMPONENTS





# CONTROL PANEL

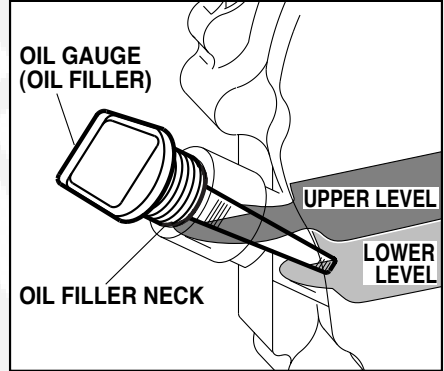


# 4. PRE-OPERATION CHECKS

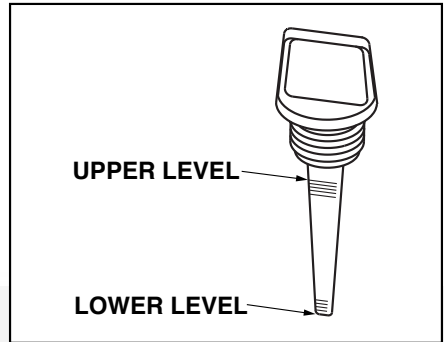
## CHECK ENGINE OIL.

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.)



<b>Oil capacity (Upper level) :</b>	<b>(L)</b>
<b>PX6100e</b> . . . . .	<b>1.2</b>



### Recommended engine oil :

Use class SC (API classification) oil or a higher grade oil according to the table below. 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.

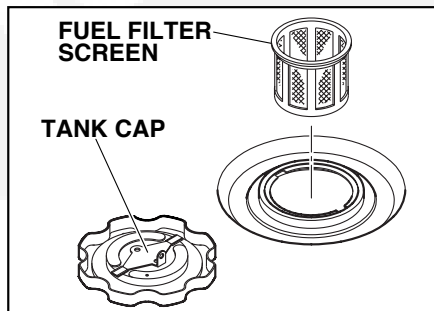
Single grade	5W	10W	20W	#20	#30	#40	
Multigrade	10W-30						
	10W-40						
Ambient temperature	-20	-10	0	10	20	30	40°C
	-4	14	32	50	68	86	104°F

## CHECK ENGINE FUEL.

### **⚠ WARNING**

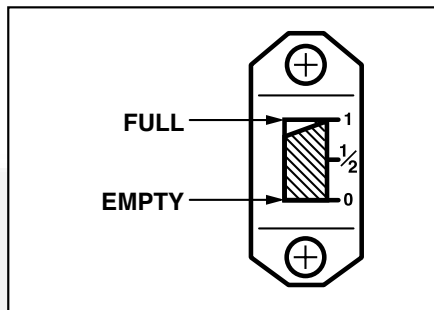
Do not refuel while smoking or near open flame or other such potential fire hazards. Otherwise fire accident may occur.

- 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 tank capacity : (L)

PX6100e . . . . . 21.5



### **⚠ 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 cock 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.

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## 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 INSTALLTION

Recommended Battery: A capacity of 12V-24AH or larger.

## WARNING

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

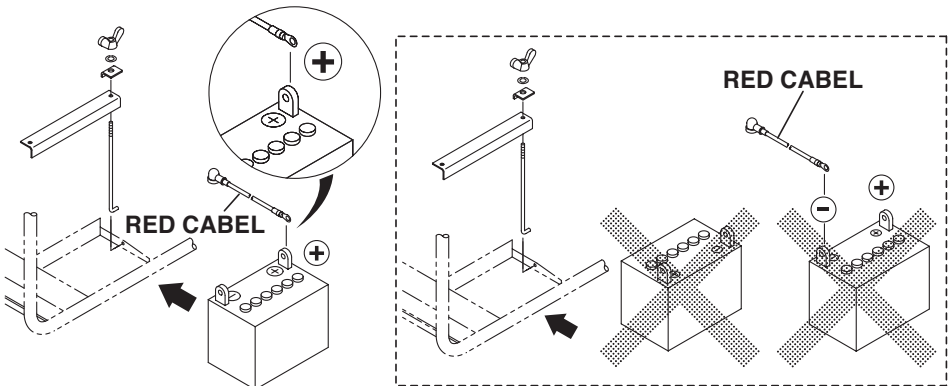
- Use battery of recommended capacity.
- Turn the starter switch to the "STOP" position when mounting or dismounting battery. When mounting battery, connect the positive (+) cable first and then the negative (-) cable to the battery. Be careful not to short battery cables. When dismantling battery, disconnect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

RED CABLE : To positive (+) terminal

BLACK CABLE : To negative (-) terminal

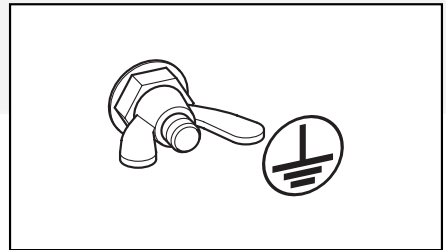
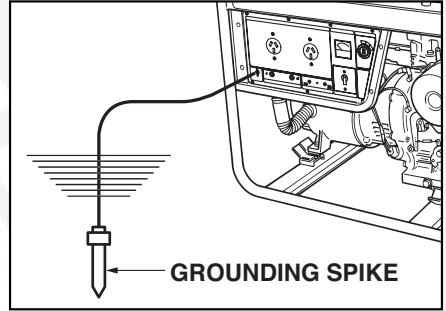
- Should the connection be made in incorrect manner, the generator will be broken.
- Tighten bolts and nuts on terminals securely so they will not be loosened by vibration.
- Disconnect battery cables when charging battery.

## "HOW TO" INSTALL BATTERY (See "OPTIONAL PARTS")



## 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.



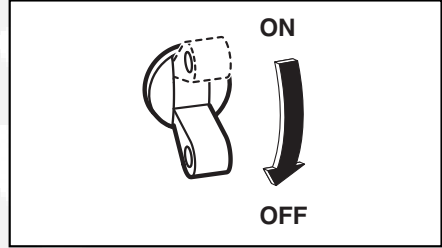
# 5. OPERATING PROCEDURES

## STARTING THE GENERATOR

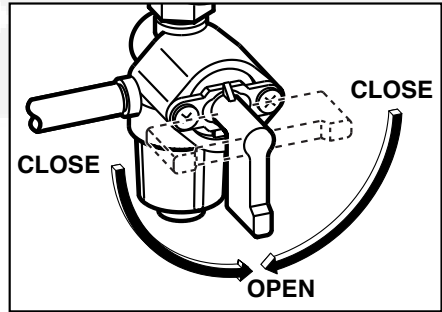
### [CAUTION]

Check the oil level before each operations as outlined on page 7.

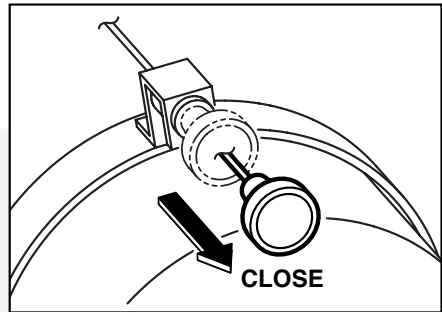
(a) Turn the AC circuit breaker to the "OFF" position.



(b) Open the fuel cock.

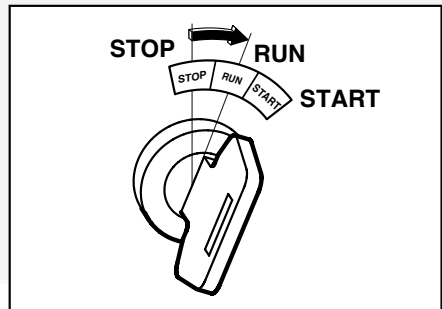


(c) Pull the choke knob to close if the engine is cold.



(d) 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.



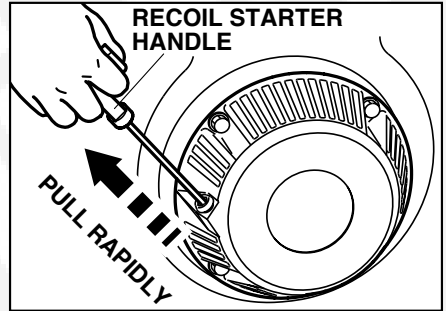
(e) [When starting with recoil starter]

Pull the starter handle slowly until resistance is felt.

This is the "compression" point.

Return the handle to its original position and then pull swiftly.

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

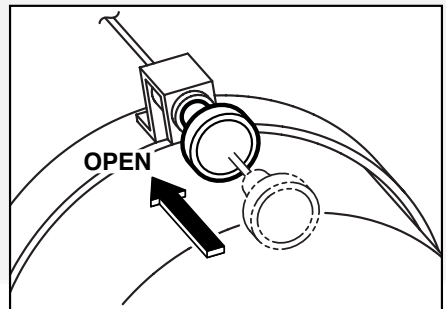


[CAUTION]

- 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 "ON" position and pull the starter handle.

(g) After the engine started, return the choke knob gradually to "OPEN" position.

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





## USING ELECTRIC POWER

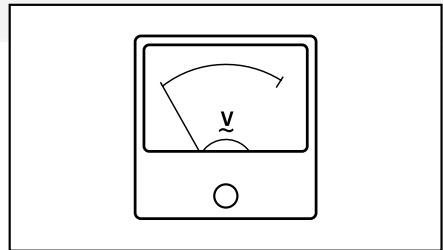
### **⚠ WARNING**

- 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.

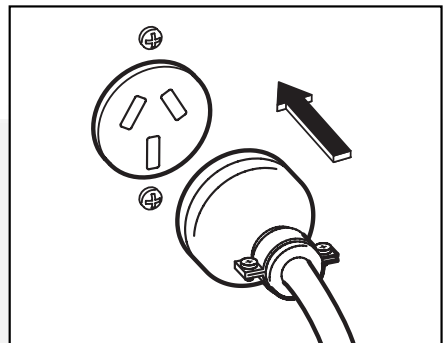
### (1) AC APPLICATION

(a) Check the voltmeter for proper voltage.

- This generator is thoroughly tested and adjusted in the factory. If the generator does not produce the specified voltage, consult your nearest Cummins dealer or service shop.

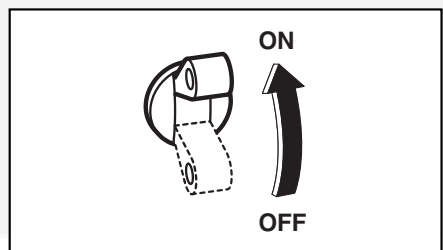


(b) Turn off the switch (es) of the electrical appliance (s) before connecting to the generator.




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

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



- Check the amperage of the receptacles used referring to **TABLE 1**, and be sure not to take a current exceeding the specified amperage.

Style	Ampere
	Up to 15A

**TABLE 1**

- Be sure that the total wattage of all appliances dose not exceed the rated output of the generator.

**⚠ WARNING**

**Be sure to ground the generator if the connected electrical device is grounded.**

**NOTE :**

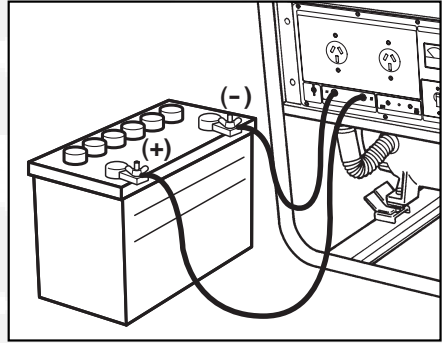
When the AC circuit breaker turns off during operation, the generator is overloaded or the appliance is defective. Stop the generator immediately, check the appliance and / or generator for overloading or detect and have repaired as necessary by Cummins dealer or service shop.

## (2) DC APPLICATION

The DC terminal is used only for charging 12 volt batteries. It provides up to 12V-8.3A (100W) of maximum power.

### CONNECTION OF CABLE :

- Connect positive (red) terminal on generator to positive (+) terminal on battery.
- Connect negative (black) terminal on generator to negative (-) terminal on battery.
- Both AC and DC output can be used at the same time if the total output is within rated output of the generator.

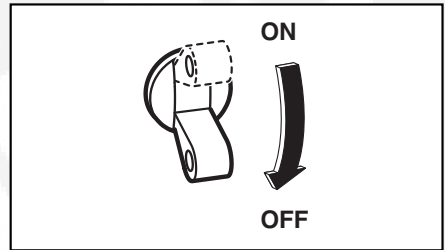


### SAFETY PRECAUTIONS WHILE CHARGING

- An explosive hydrogen gas is discharged through vent holes in the battery during the charging process. Do not allow spark or open flame around the generator or battery during the charging process.
- Electrolyte fluid can burn eyes and clothing. Be extremely careful to avoid contact. If injured, wash the affected area immediately with large quantities of water and consult a doctor for treatment.
- When charging a large capacity battery or totally discharged battery, excessive current may force the DC breaker to turn off. In such cases, use a battery charger to charge a large battery with AC output.
- Battery defects may cause the DC breaker to turn off. Check the battery before replacing the DC breaker.

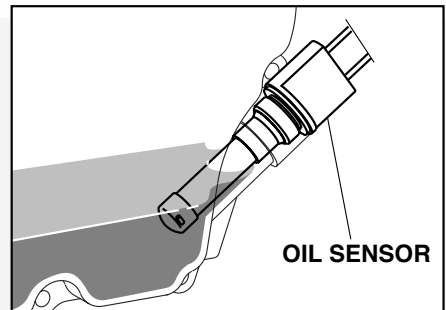
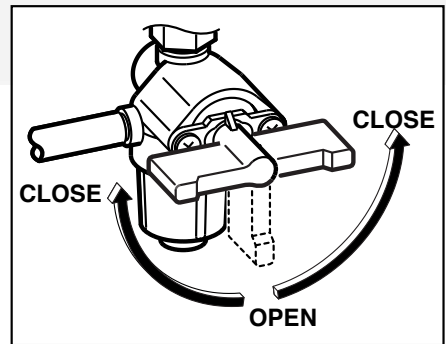
## STOPPING THE GENERATOR

- (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) Turn the key switch to the STOP position.
- (e) Close the fuel cock.



## OIL SENSOR

- (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 on page 7 and restart the engine.
- (c) If the engine does not start by usual starting procedures, check the oil level.



### [CAUTION]

**Do not remove OIL SENSOR PROBE when refilling with oil.  
Remove oil filler cap on the opposite side of carburetor.**

# 6. WATTAGE INFORMATION

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.

Applications	Applicable Wattage (W)
	PX6100e
	50Hz
Incandescent lamp, Heater	4400
Fluorescent lamp, Electric tool	2200
Mercury lamp	1600
Pump, Compressor	1000

## 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.							
					1A	3A	5A	8A	10A	12A	15A	
mm <sup>2</sup>	No.	A	No./mm	Ω/100m	1A	3A	5A	8A	10A	12A	15A	Voltage drop
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

<b>DAILY</b>	<ul style="list-style-type: none"> <li>■ Check oil level.</li> <li>■ Check all components according to "PRE-OPERATION CHECKS."</li> </ul>
<b>EVERY 50 HOURS</b>	<ul style="list-style-type: none"> <li>■ Wash cleaner element. -more often if used in dirty or dusty environments.</li> <li>■ Check spark plug, clean if necessary.</li> </ul>
<b>EVERY 100 HOURS</b>	<ul style="list-style-type: none"> <li>■ Change engine oil. *-more often if used in dusty or dirty environments.</li> </ul>
<b>EVERY 200 HOURS</b>	<ul style="list-style-type: none"> <li>■ Adjust spark plug gap.</li> <li>■ Clean fuel strainer.</li> </ul>
<b>EVERY 500 HOURS</b>	<ul style="list-style-type: none"> <li>■ Replace spark plug and cleaner element.</li> <li>■ Clean and adjust carburetor, valve clearance, and valve seat along with cylinder head.</li> </ul>
<b>EVERY 1,000 HOURS (24 MONTHS)</b>	<ul style="list-style-type: none"> <li>■ Inspect control panel parts.</li> <li>■ Check rotor and starter.</li> <li>■ Replace engine mount rubber.</li> <li>■ Overhaul engine.</li> <li>■ Change fuel lines.</li> </ul>

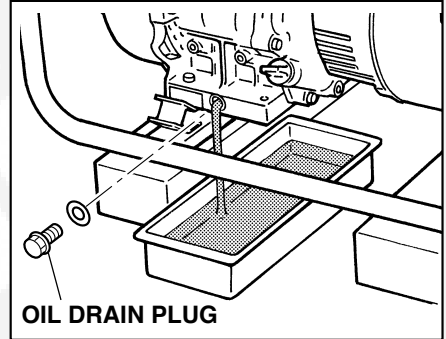
## NOTE : (\*)

- Initial oil change should be performed after first twenty (20) hours of use. Thereafter change oil every 100 hours.
- Before changing the oil, check for a suitable way to dispose of the old oil. Do not pour it down sewage drains, onto garden soil or into open streams. Your local zoning or environmental regulations will give you more detailed instructions on proper disposal.

# 8. "HOW-TO" MAINTENANCE

## ENGINE OIL CHANGE

- Change engine oil every 100 hours. (For new engine, change oil after 20 hours.)
- (a) Drain oil by removing the drain plug and the oil filler cap while the engine is warm.
- (b) Reinstall the drain plug and fill the engine with oil until it reaches the upper level on the oil filler cap.



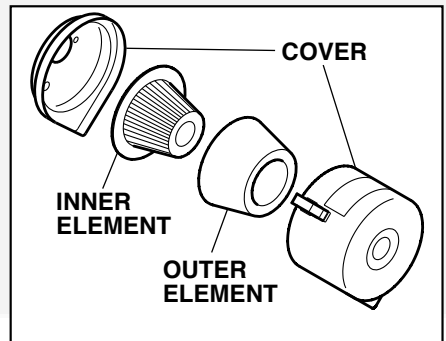
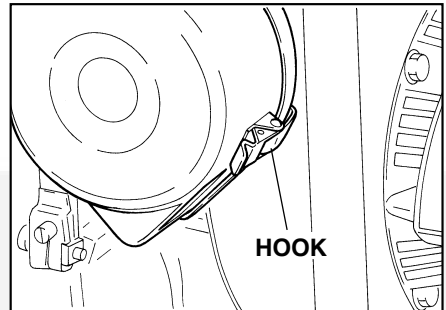
- Use fresh and high quality lubricating oil to the specified level as directed on page 7. If contaminated or deteriorated oil is used or the quantity of the engine oil is not sufficient, the engine damage will result and its life will be greatly shortened.

## SERVICING THE AIR CLEANER

Maintaining an air cleaner in proper condition is very important.

Dirt induced through improperly installed, improperly serviced or inadequate elements damages and wears out engines. Keep the element always clean.

- (a) Unhook the cover and remove the cleaner element.
- (b) Inner element : Wash the element with kerosene, then soak it in mixed oil (Kerosene (3 parts) : Engine oil (1 part)). Drain the mixed oil.
- (c) Outer element : Wash the element with kerosene, then dip it into the mixed oil (Kerosene (3 parts) : Engine oil (1 part)). Squeeze out the mixed oil. (Do not twist.)

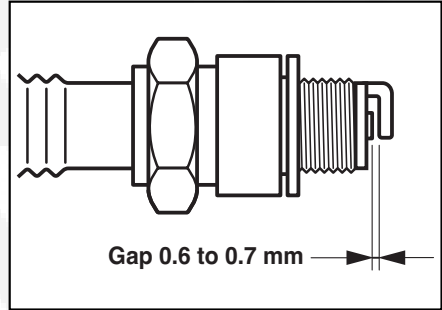




## CLEANING AND ADJUSTING SPARK PLUG

- (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.

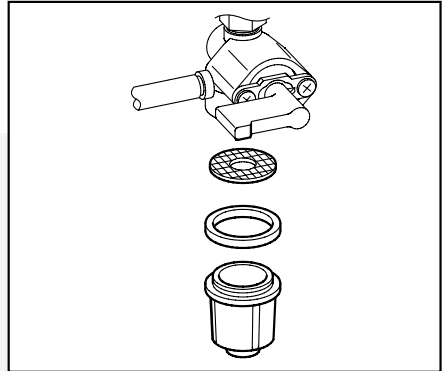
**Spark plug :** BPR6ES (NGK)



## 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.



## 9. PREPARATION FOR STORAGE

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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 Cummins dealer or service shop for further information or corrective procedures.

## When Engine Fails to Start :

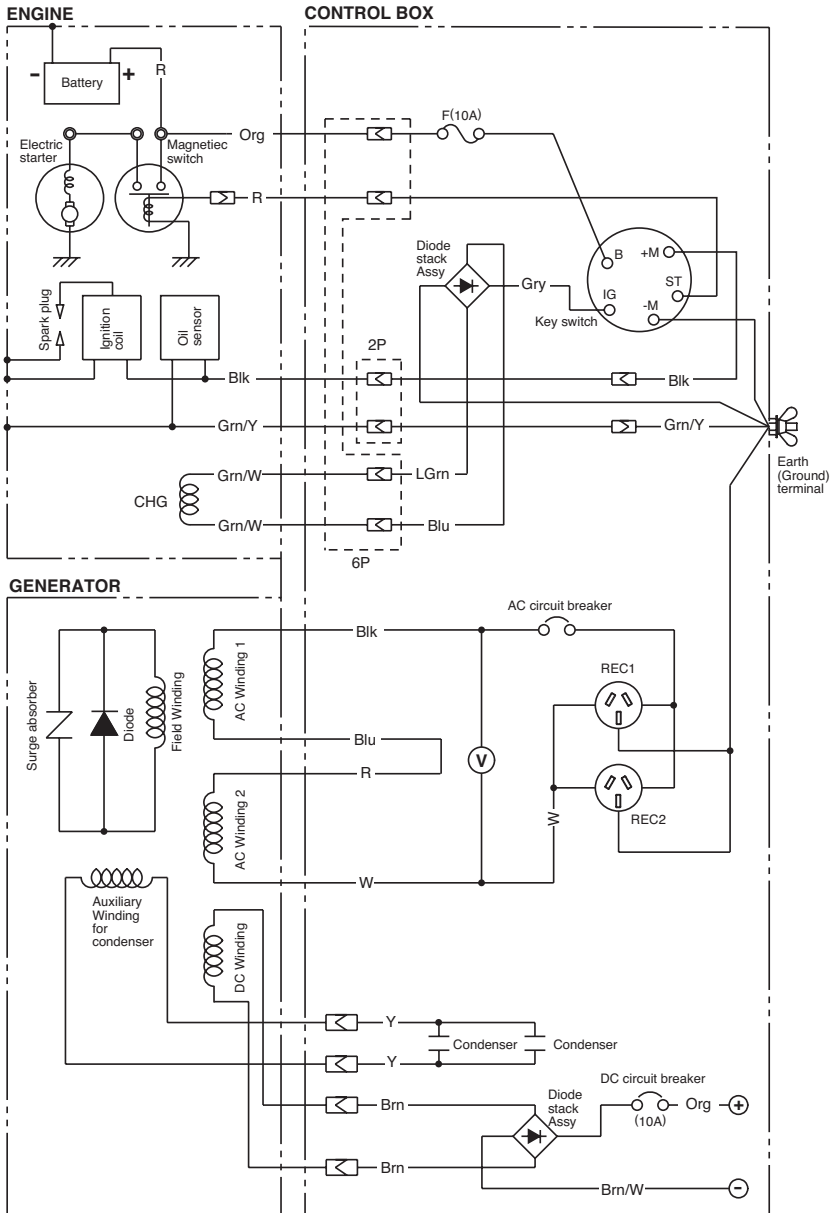
Check if choke lever is in its proper position.	↔	Set the choke lever to "CLOSE" position.
Check if fuel cock is open.	↔	If closed, open fuel cock.
Check fuel level.		If empty, refill fuel tank making sure not to overfill.
Check if engine switch is in OFF.		Turn engine switch to ON.
Check to make sure 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 and DC 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.

# 11. WIRING DIAGRAM

## PX6100e (50Hz-240V)



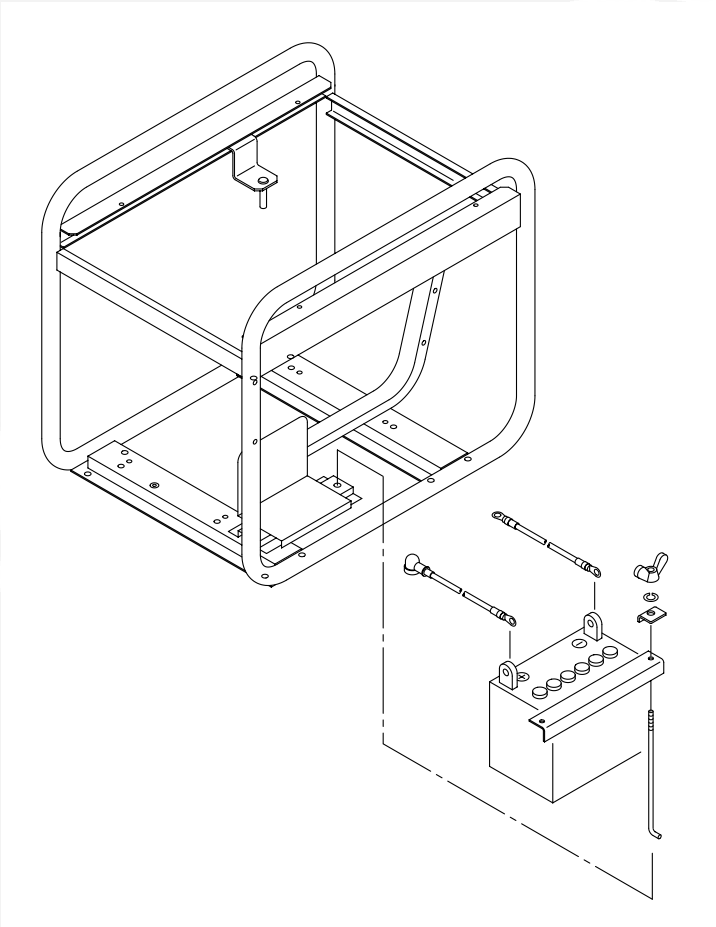
**Wiring color code**

Blk	: Black
Blk/W	: Black/White
Blu	: Blue
LBlu	: Light blue
Brn	: Brown
Brn/W	: Brown/White
Grn	: Green
Grn/W	: Green/White
Org	: Orange
Gry	: Gray
R	: Red
W	: White
Y	: Yellow
W/Blk	: White/Black
Grn/Y	: Green/Yellow
Pur	: Purple

# 12. OPTIONAL PARTS

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## "HOW TO" INSTALL BATTERY



Cummins

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