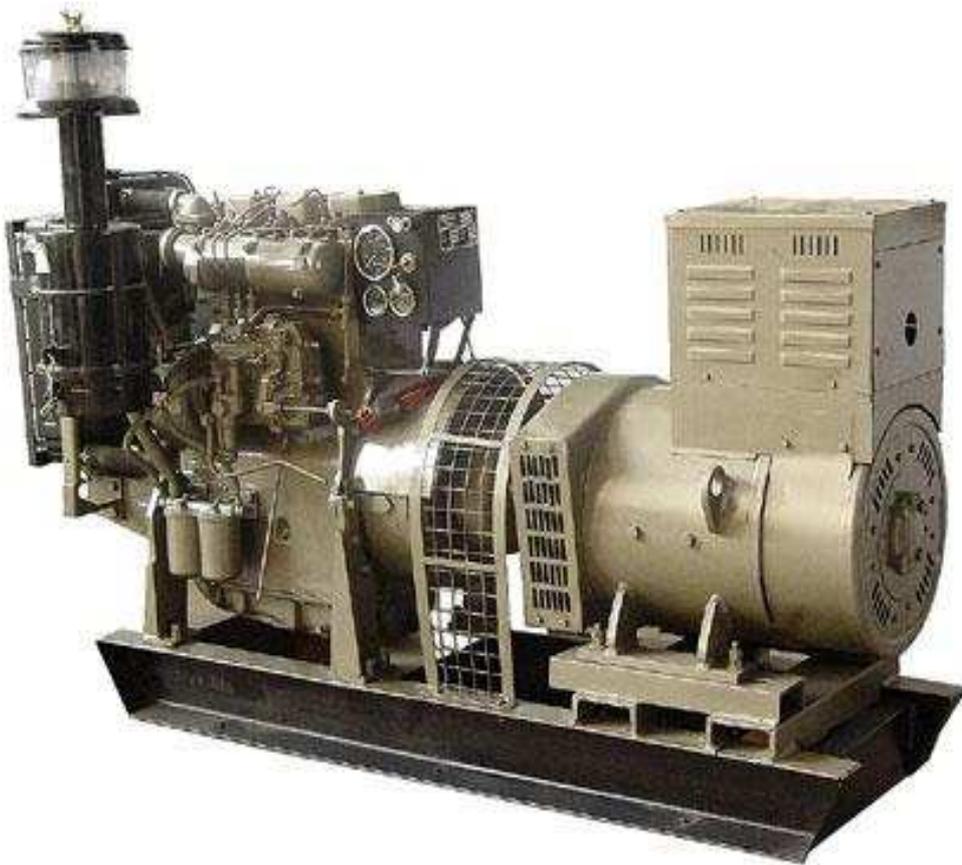


# Diesel Generator Safe Operating Procedures



## SAFE OPERATING PROCEDURES

1. Don't operate the unit in bad ventilation condition and constrained indoor space.
2. Do not operate the unit in the ambient temperature higher than 40<sup>0</sup>.
3. Don't operate the unit in humid environment.
4. Don't connect the unit to other power circuits while operating.
5. Keep inflammables at least 1 meter away from the unit.
6. Take care to avoid fuel spilling when filling, and smoking is prohibited while filling.
7. Make sure that the unit is at a cold-off state while filling.
8. Be aware of the dangerous by got an electric shock
  - a) Mechanism changeable switch should be used when the electricity produced by generator set enter into public electric circuits. Must be authorized by power supply bureau and should adopt special electrical equipment if indeed need to merge into the public circuits. Otherwise will cause serious problems both equipments shattered and body hurt.
  - b) Do comply with all provisions of the electrical equipment of some of the electrical installation and maintenance must have a qualified professional staff to conduct electrical.
9. Pay seriously attention to toxic emission
10. An appropriate drain system is needed for exhaust gas, and must check the drain system frequency to prevent be toxic by carbon monoxide or other toxic emission.
11. Operating safety
  - a) Ensure that generator set does not run in a location where there are combustible and explosive substances.

## SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

- b) Do not permit loose clothing, long hair or falling tools near moving generator, or else will be very dangerous to human or equipment.
- c) Keep the fingers, tools or other things away from naked pipes and parts of the operating opening type generator set, in case of be burn by it.

### 12. Fire prevention

- a) Do not allow metal objects fall into generator set, which will lead to short circuit and cause fire.
- b) Keep the engine clean, because excessive amount of oil pollution may trigger the body damage caused by overheating and fire.

### 13. Fill adequate amount of proper lubricating oil, which matches the operation temperature

### 14. Choose suitable cooling water, such as the use of soft water, rain.

### 15. Remove air from fuel circuit, by using hand pressure pump to press the fuel, and discharging the air in the circuit between fuel tank and filter, until there's no bubble in the outflow of the fuel pipe line.

### 16. Generator set must be connected to ground protection, and whether its neutral line should connect to the ground should meet the standards of local electric power.

### 17. After starting the new generator sets, it shouldn't get into full-load operation immediately. Instead, heat it up by letting it run without load first until the cooling water temperature reaches 50<sup>°C</sup>, and then it can be running in full load.

### 18. While operating, pay attention to its oil pressure, oil temperature and cooling water temperature, so as to make sure it is in normal state.

### 19. While operating, pay attention to oil circuit, waterways and connecting spots. If it leaks, the problem should be eliminated immediately to prevent from wasting and pollution of the environment.

### 20. New or overhauled diesel generator set should be set in operation for 60 hours before full load operation.

## SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

21. It is not allowed to operate generator set with problems unsolved, so as to avoid damage to parts, unit accident, and personal injury.
22. Don't run the generator while the differences among phases is over 25%, otherwise, some accident will happen.
23. For keeping your generator at good working state and generating electricity normally, you have to run it at least once per month, and the continuous time must not less than 20 minutes.
24. In order to ensure the accuracy of generating units to the normal operation of power generation, you should start generating units once a month at least, and run 20 minutes.
25. Must always pay attention to the parameters of the display screen whether it's normal or not, and also we need to pay attention to the color of exhaust smoke and the sound of operating. Stop the generator set immediately and check it when find out abnormal. When running normally, increase capacity orderly until reach the rated load.
26. Never allowed the person who doesn't know how to operate and who doesn't have basic electrical knowledge to operate the unit.
27. Make sure that all the pre-operation works have been done before starting except for automatic diesel generator set,
28. Precautions against fire. Keep fire far away from the running unit. When the diesel generator set runs near the inflammable goods, adding fire extinguisher set on the exhaust pipe.
29. Prohibit to disassemble and to adjust generator set while operating.
30. Stop the unit when there is abnormal noise, and restart it after the problem been obviated.
31. Always e careful during repairing or disassembly to avoid being injured by the running parts or other accidents.

# SAFETY AND ENVIRONMENT EDUCATION FOR DEVELOPMENT

32. Keep generator set under integrity circumstances, clean and wipe the generator set entirely both pre-teardown and pre-assembly in order to ensure the perfect quality of assembly. Complicated adjustment and maintenance should be carried out indoors to prevent environmental pollution of the generator inner units.

## INSPECTION PROCESS

### **Check-up & maintenance works**

The daily check-up & maintenance works of the Generator mainly carried out according to the manual of the manufacturer.

### **Lubricating system**

1. The oil change cycle should according to the condition of service and oil quality. The oil change cycle is according to 250~ 400hours worked for the ordinary circs.
2. It is necessary step to keep the super performance of the lube oil to replace the oil filter and filter element.

### **Fuel system**

For avoiding the high precision & high pressure oil pump would be damaged, any diesel should be filtrated before enter into the oil transfer pump. The strainer of the fuel filter should be replaced or cleaned after working for 250~400hours. (Would be brought forward based on the oiliness.

### **Cooling system**

1. The cleaning interval of intercooler and radiator should be confirmed accord to the working environment of Gen set. Commonly the internal system should be cleaned with neuter cleaning agent and pure water per 1500~2000hour. And should often to check and clean begrime on the heat sink.
2. The coolant should be replaced entirely after the cooling system has been cleaned.

## **Inlet system**

The maintenance of the inlet system mostly is to check, clean and replace element of air cleaner.

1. The non-throwaway air filter could discharge the dust from the dust outlet, open the covering and take out the filter element with the pressed air (the supreme air pressure should no more than 500Kpa). And blow it from outside or clap it lightly. As the same time, check whether the filter element by photic method is out of repair or not, and please pay attention not to let the seal ring been damaged. And the filter element should be replaced at least once per year.
2. The air resistance indicator of throwaway air filter should be checked after the engine has stopped. Please replace the air filter if there appears red mark. Press the barrage indicator for restoration. The air filter which has been replaced could be recycled again.