



Title: Preventive Maintenance of Generator (DG Set)

SOP No.:		Revision No.:	00
Effective Date:		Supersedes No.	Nil
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1.0 OBJECTIVE

1.1 To describe a procedure for the preventive maintenance of generator.

2.0 SCOPE

2.1 This procedure applies to the Engineering department.

3.0 RESPONSIBILITY

3.1 Engineering

4.0 ACCOUNTABILITY

4.1 Plant Head

5.0 REFERENCE (S)

5.1 In-house.

6.0 PROCEDURE

6.1 Before starting Preventive maintenance of D.G. put the D.G. in stationary position & the drive unit is "switched off".

6.2 Put "**Under Maintenance**" tag on the panel board.

6.3 Remove "**Under Maintenance**" tag on the panel board after Completion of the Maintenance.

6.4 After the completion of preventive maintenance, check the machine for smooth Operation.

6.5 The preventive maintenance job should be carried out by trained personnel (or) under supervision of qualified competent person.

6.6 The operator / technician who perform the job will enter his name / sign in "Done By" column and responsible Engineer/ Officer will put sign in "Checked by" column. Department head will review the record weekly and monthly.

6.7 Weekly maintenance check points.

6.7.1 Check engine oil level.

6.7.2 Drain sediments from fuel tank.

6.7.3 Clean pre cleaner dustpan

6.7.4 Check coolant level.

6.7.5 Check & corrects leaks.

6.7.6 Drain fuel filter / water separator.

6.7.7 Check oil level of marine gear & raw water pump.

6.8 **Monthly Maintenance/After 300 running hours:**

6.8.1 Change Engine Oil.

6.8.1.1 Start the engine in idle mode.

6.8.1.2 Bring the engine to operating temperature.

6.8.1.3 Shut down engine as per SOP.

6.8.1.4 Remove the drain plug from bottom oil pan and drain oil completely.

6.8.1.5 Install drain plug in oil pan.



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- 6.8.1.6 Fill the crankcase to 'H' mark on dip stick with Deusol Super 20W/40 Lubricating oil of CASTROL make or VEEDOL 20W-40CD OR equivalent.
- 6.8.2 Change lubricating oil filter elements.
 - 6.8.2.1 Loosen center bolt of lubricant oil filter element's Can.
 - 6.8.2.2 Remove filter element.
 - 6.8.2.3 Discharge 'O' Ring and elements.
 - 6.8.2.4 Insert new filter element & 'O' ring in to the Can.
 - 6.8.2.5 Install can and element, assembly with its mounting bolt and washer.
 - 6.8.2.6 Remove NPTF plug on can, fill some oil and replace the plug.
- 6.8.3 Change super Lube oil by pass filter elements.
 - 6.8.3.1 Loosen cap screws from head and removed head super lube oil by pass filter.
 - 6.8.3.2 Take out element and remove ring sealing between head & shell.
 - 6.8.3.3 Replace ring sealing and element.
 - 6.8.3.4 Fill the filter with Lube oil and re-assemble it.
- 6.8.4 Check Engine coolant.
 - 6.8.4.1 Take out 25ml coolant sample from engine in the beaker.
 - 6.8.4.2 Dip one strip of pH paper in the coolant sample and compare the colors with the Chart on the pH paper.
 - 6.8.4.2 PH should be between 8.5 and 10, if less than 8.5 add the pH controller in the coolant to achieve mention value.
- 6.8.5 Change Corrosion Resistance Element
 - 6.8.5.1 Loosen the bolt from head and remove old elements.
 - 6.8.5.2 Replace the new "Corrosion Resistance" elements and assemble the housing.
 - 6.8.5.3 Top up the coolant water with De-mineralized water.
- 6.8.6 Heat exchanger
 - 6.8.6.1 Clean the heat exchanger tube.
- 6.8.7 Change fuel filter element.
 - 6.8.7.1 Loosen cap screw of fuel oil filter housing.
 - 6.8.7.2 Remove filter element and 'O' ring and discard 'O' ring and elements.
 - 6.8.7.3 Install new filter element and 'O' ring in to the filter housing
 - 6.8.7.4 Fill housing with fuel and assemble shell to head with cap screw.
- 6.8.8 Air Intake System
 - 6.8.8.1 Check air intake pipe connection, tighten up.
 - 6.8.8.2 Clean the Air filter elements if it is damaged or clogged replace it.
 - 6.8.8.3 Clean crankcase breather.
- 6.8.9 Exhaust Air System
 - 6.8.9.1 Check the leakage and arrest them.
 - 6.8.9.2 Check and clean exhaust restriction.
- 6.8.10 Engine
 - 6.8.10.1 Check the engine for unusual vibration if found prevent them by with correcting the alignment.
 - 6.8.10.2 Tighten up foundation bolts.
 - 6.8.10.3 Clean the engine with help of wet and dry mopping.
- 6.8.10 Alternator
 - 6.8.10.1 Check and tight the electrical connection and winding connection.
 - 6.8.10.2 Apply the Grease over bearing.
 - 6.8.10.3 Clean the auto voltage regulator with the help of Air Blower.



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6.8.11 Electrical

6.8.11.1 Check the battery charging system.

6.8.11.2 Check the electrolyte level and specific gravity, if required top up.

6.8.11.3 Check the safety control and alarms circuit.

6.8.11.4 Check the A/M start operation.

6.8.11.5 Check and tight the all-electrical connection.

6.8.11.6 Check and clean the Air Circuit Breaker contact.

6.9 Frequency of preventive maintenance is weekly & monthly/ after 300 running hours of the D.G set, whichever is earlier.

7.0 HISTORY

7.1 Details are given below

SOP No.	REASON FOR CHANGE	EFFECTIVE DATE

8.0 ABBREVIATIONS: The abbreviations used in the SOP are as follows:

8.1 SOP - Standard Operating Procedure

8.2 No. - Number

8.3 QA - Quality Assurance



PHARMA DEVILS

ENGINEERING DEPARTMENT

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ANNEXURE-I

PREVENTIVE MAINTENANCE CHECK LIST FOR GENERATOR.

Equipment ID No. _____

Date: _____

S.No.	Particulars	Done/Not Done	Remarks
1	Cleaning of V-belt & entire machine.		
2	Check for the smooth functioning of the machine.		
3	Cleaning of complete machine.		
4	Oiling the moving parts		
6	Checking of battery condition & voltage.		
7	Checking of all electrical connections.		
8	Check engine oil level.		
9	Drain sediments from fuel tank.		
10	Clean pre cleaner dustpan.		
11	Check coolant level.		
12	Check & corrects leaks.		
13	Drain fuel filter / water separator.		



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ANNEXURE –II

Monthly Preventive maintenance checklist of Diesel Generator.

Equipment ID No. _____

Date: _____

S.No.	Particulars	Done/Not done	Remarks
1	Change Engine Oil		
1.1	Start the engine in idle mode as per SOP		
1.2	Bring the engine to operating temp.		
1.3	Shut down engine as per SOP		
1.4	Remove the drain plug from bottom oil pan & drain oil completely.		
1.5	Install drain plug in oil pan.		
1.6	Fill the crankcase to 'H' mark on dip stick with Deusol Super 20W/40 Lubricating oil of CASTROL make or VEEDOL 20W-40CD OR equivalent.		
2	Change lubricating oil filter elements.		
2.1	Loosen centre bolt of lubricant oil filter element's can.		
2.2	Remove filter element.		
2.3	Discharge 'O' ring & elements.		
2.4	Insert new filter & 'O-ring into the Can.		
2.5	Install Can & element, assembly with its mounting bolt & washer.		
2.6	Remove NPTF plug on can, fill some oil & replace the plug.		
3	Change super Lube oil by pass filter elements.		
3.1	Loosen cap screws from head & removed head super lube oil by pass filter.		
3.2	Take out element & remove ring sealing between head & shell.		
3.3	Replace ring sealing & element.		
3.4	Fill the filter with Lube oil & re-assemble it.		
4	Check Engine coolant		
4.1	Take out 25ML coolant sample from engine in the beaker.		
4.2	Dip one strip of PH paper in the coolant sample & compare the colour with the chart on the PH paper.		
4.3	PH should be between 8.5 to 10, If less than 8.5 add the PH controller in the coolant to achieve mention value.		
5	Change Corrosion Resistance Element		
5.1	Loosen the bolt from head & remove old elements.		
5.2	Replace the new "Corrosion Resistance" elements & assemble the housing.		
5.3	Top up the coolant water with De-mineralised.		



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S.No.	Particulars	Done/Not done	Remarks
6	Heat Exchanger		
6.1	Clean the heat exchanger tube.		
7	Change Fuel Filter Element		
7.1	Loosen cap screw of fuel oil filter housing.		
7.2	Remove filter element & 'O' ring & discard 'O' ring & elements.		
7.3	Install new filter element & 'O' ring into the filter housing.		
7.4	Fill housing with fuel & assemble shell to head with cap screw.		
8	Air Intake System		
8.1	Check air intake pipe connection, tighten up.		
8.2	Clean the air filter elements if it is damaged or clogged replace it.		
8.3	Clean crankcase breather.		
9	Exhaust Air System		
9.1	Check the leakage & arrest them.		
9.2	Check & clean exhaust restriction,		
10	Engine		
10.1	Check the engine for unusual vibration if found prevent them by with correcting the alignment.		
10.2	Clean the engine with the help of wet & dry mopping.		
11	Alternator		
11.1	Check & tight the electrical connection & winding connection.		
11.2	Apply the grease over bearing.		
11.3	Clean the auto voltage regulator with the help of air blower.		
12	Electrical.		
12.1	Check the battery charging system.		
12.2	Check the electrolyte level & specific gravity, if required top up.		
12.3	Check the safety control & alarms circuit.		
12.4	Check the Automatic start operation.		
12.5	Check & tight the all-electrical connection.		
12.6	Check & clean the Air Circuit Breaker contact with the help of CRC.		
12.7	Lubricate the Air Circuit Breaker linkages.		

Done by
(Sign & date)

Checked by
(Sign & date)