



**MECHANICAL SOP**

Issue No. 0	Rev. No: 02	Effective Date: 17/10/2017	SOP/MEC/020
Issued By: M.R		Approved By: HOD-Mechanical	
SOP-JSA for MAINTENANCE OF PUMPS			

SCOPE: MAINTENANCE OF PUMPS

**Responsibility: Section Sr.Engineer**

**Accountability: Mechanical - Section Incharge**

**PPE:**

1. Safety helmet,
2. Safety shoe,
3. Mask.
4. Gloves – Cotton knitted
5. Ear Plug
6. Goggles

**TOOLS:**

1. Box spanner set.
2. Ring spanner set.
3. Local stop key.
4. Grease gun.

**Hazard Analysis:**

Risks associated:

Water spillage

Tool slip

Mitigating Measures

appropriate P P E's.

Use appropriate tools

**PROCEDURE:**

1. Take the LOTO for pump and remove the electrical connection.
2. Clean the outer surface thoroughly.
3. Remove the motor from base frame.



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4. Remove the pump casing by unscrewing the casing nut and bolts.
5. Remove the coupling with hydraulic puller.
6. Remove impeller by unscrew the impeller nut.
7. Remove the gland / mechanical seal.
8. Remove the shaft sleeve by using brass rod and hammer.
9. Remove the circlip provided to the shaft at the pump side.
10. Remove the bearing and shaft assembly by unscrewing the bolts provided to the bearing housing.
11. Remove the external circlip provided to the bearing housing.
12. Remove the bearings from the bearing housing and shaft by means of hammer and brass rod.
13. Remove the oil seals from bearing housing.
14. Check the pump casing visually for any holes/damages.
15. Check the impeller, shaft and sleeve if any cracks or damage replace with new one.
16. Check the shaft at bearing steps by pressing the bearing, if the bearing is loosely fitted to the shaft do knurling to the shaft.
17. Check the shaft for bend, if any bends is observed replace the shaft.
18. Clean all parts thoroughly with diesel.
19. Replace with all new gaskets and oil seals.
20. Fit the bearings to the shaft with the help of brass rod and hammer or bearing heater.
21. Fit the bearing housing to the drive end bearing shaft.
22. Fit circlip to the bearing housing with the help of circlip player.
23. Insert the bearing housing and shaft assembly in bearing frame.
24. Fit oil seal to the bearing housing.
25. Fit the pump side circlip of the shaft by means of circlip player.
26. Fit the shaft sleeve, gland follower / mechanical seal to the shaft.



## DALMIA CEMENT (B) LIMITED – Ariyalur



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27. Tight the impeller to shaft.
28. Fit the pump casing to the bearing frame.
29. Fit the coupling for pump shaft.
30. Fit the motor at base and do the realignment of motor and pump.
31. Give the electrical connection and clear the line clearance.
32. Open the pump inlet and out let valves.

#### Emergency / Emergency Shut OFF:

1. If any injury takes place, provide First aid and inform to the Safety department or Call Emergency number 3108/9865152222

#### Records/Annexure:

1. Refer Line clearance certificates.
2. JSA as enclosed below

#### Job Safety Analysis:

<b>Job Safety Analysis</b>	<b>Job: Maintenance of Pump</b>	<b>Date: 1/09/2014</b>	<b>Analysis by: Section Engineer</b>	<b>Reviewed by: Section Head</b>
<b>Title of employee doing job: Technician</b>	<b>Supervisor: Section Engineer</b>	<b>Department: Mechanical</b>	<b>Section: Cement Plant</b>	<b>Approved by: HOD Mechanical</b>
<b>Required/recommended PPE: Safety helmet, Safety shoe, &amp; Safety belt, goggles</b>				
<b>Sequence of Basic Job Steps</b>	<b>Potential Hazards</b>	<b>Recommended Safe Job Procedure</b>	<b>What Could Go Wrong</b>	<b>Corrective Action</b>
Removal of motor	Motor Slip / Fall	Use proper lifting tools	Failure of lifting tools	Use tested tools Deploy trained manpower.



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Removal of impeller & bearings	Hand injury	Use correct hydraulic tools.	Failure of hydraulic components	Use tested tools Deploy trained manpower.
Assembly of impeller & bearings.	Hand Injury	Use correct hydraulic tools.	Failure of hydraulic components.	Use tested tools Deploy trained manpower.
Assembling of pump & motor	Motor Slip / Fall	Use proper lifting tools	Failure of lifting tools	Use tested tools Deploy trained manpower.

SL No	Activity				Tag / Name of the Equipment
					Isolation Type
				<b>Electrical Energy</b>	<b>Other Energy</b>

01	Maintenance of Pumps	Name and Tag for the Equipment	Related Drive	Inlet & Outlet Valves	Priming Line	
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