



**DALMIA CEMENT (B) LIMITED – CEMENT PLANT
ARIYALUR
ELECTRICAL MANUAL**



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| Issue No. 01 | Rev. No: 01 | Effective Date: 07.07.2017 | ELEC/SOP/045 |
| Issued By: M.R | | Approved By: HOD - ELECTRICAL | |
| SOP for 3200 KW BHEL Motors Bearing Replacement | | | |

Scope : Replacement of DE and NDE bearing of 3200 KW BHEL Motor.

Responsibility : Electrical Engineer

Accountability : Section Head

PPE:

1. Goggles
2. Asbestos hand Gloves
3. Cotton Gloves
4. Safety shoes
5. Safety helmet

Tools:

1. Hand Blower
2. Waste Cloth
3. Suitable spanner
4. Hammer
5. Shaft extension Arrangement.
6. Induction Heater.

Hazards:

Risk Associated
Electrical Shock
Minor body injury

Mitigating Measures
Electrical Safety Gloves
Safety shoes, gloves, helmet, goggles

Training needs:

1. Emergency preparedness



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Procedure:

1. Take the LOTO for the particular Motor as per ELEC/SOP/001.
2. Clean the Motor Bearing housing area with Hand Blower / Cloth.
3. Make necessary arrangement for extension of shaft in case of NDE bearing replacement.
4. Support the Motor Rotor on two no's 100 Ton Jack.
5. Removed the bearing housing and bearing grease cup bolts
6. Removed bearing housing it will come along with bearing outer race.
7. Clean the grease from the Shaft by cloth and remove the Inner race Slip Ring Chamber, Carbon Brushes & Holders with hand blower and cloth, while cleaning use PPEs like Nose mask, goggles and hand Gloves.
8. Check the Condition of Carbon Brushes, Measure the Length of Carbon Brushes.
9. Replace the Carbon Brushes, if worn out.
10. Check the Spring Tension of the Carbon Brush Holders properly.
11. Check the Condition of Insulators in all the Terminal Box and Slip Ring & Carbon Brush Holders.
12. Check the Insulation Resistance, Winding Resistance and Inductance of the Motor winding.
After checking the Insulation resistances again discharge the motor terminals with discharge rod.
13. Close the all Motor Terminal box cover and box up with Silicon Paste to restrict the dust entry.
14. Check the oil level in the bearings. Top up if the level is less than the normal indicated level.
For make up oil level, use proper instrument and avoid spillage of oil in the ground.
15. In case of any oil spillage while working, it is to be collected and returned store for recycling as per SOP / ELEC / 022.



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16. Clean the LPB and Check the Control Wiring Tightness, while cleaning use PPEs like Nose mask, goggles and hand Gloves.
17. Check the Motor and LPB Body earthing.
18. Check the Condition of LPB Actuators and Contacts.
19. Close the LPB Door Properly.
20. Clear the LOTO as per ELEC/SOP/002 and Check the Healthiness of the motor with CCR.
21. Take Trial if Possible and record all Check point in the concern Check list.

Emergency / Emergency Shut OFF:

1. If electrical shock injury or burn are there, give First aid and inform to the Safety department or Call Emergency number 3108/9865152222/9750963761.

Records/Annexure:

1. Refer LOTO permit.
2. JSA as enclosed below.



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JOB SAFETY ANALYSIS :(JSA)

| Job Safety Analysis | Job: LT panel maintenance | Date: | Analysis by: | Reviewed by: |
|---|------------------------------|--|---|---|
| Title of employee doing job: Electrician | Supervisor: Section Engineer | Department: Electrical | Section: | Approved by: |
| Req'd/recommended PPE: Nose mask, Goggles, Electrical safety Gloves,Cotton Gloves,Safety shoes, Safety helmet | | | | |
| Sequence of Basic Job Steps | Potential Hazards | Recommended Safe Job Procedure | What Could Go Wrong | Corrective Action |
| Put on PPE, Take Permit | | | | |
| Cleaning of motor | Eye irritation, | Wear goggles | Damaged goggles/non standard goggles | Periodic replacement |
| | Respiration problem | Wear Nose mask | Damaged nose mask | Periodic replacement |
| | Body injury | Wear safety helmet, safety shoes , hand gloves | Tools and material may fall on human body | Without PPE don't perform the job |
| Discharge the motor terminals by open the motor door, Check the tightness of Power and control terminals | Electrical shock | Use Electrical safety gloves | Damaged Gloves | Periodic replacement. |
| | Body injury | Use proper tools | Nonstandard /damaged tools | Training for tools handling/ Periodic replacement |
| | | Wear safety helmet, safety shoes , hand gloves | Tools and material may fall on human body | Without PPE don't perform the job |
| Check the motor carbon brushes, | Eye irritation, | Wear goggles | Damaged goggles/non standard goggles | Periodic replacement |
| Clean the motor cooler cooling Tubes | Respiration problem | Wear Nose mask | Damaged nose mask | Periodic replacement |
| | Body injury | Use proper tools | Nonstandard /damaged tools | Training for tools handling/ Periodic replacement |
| | | Wear safety helmet, safety shoes , hand gloves | Tools and material may fall on human body | Without PPE don't |



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| | | | | |
|---|-------------|--|---|---|
| Check the motor Door earthing, close the door properly. Clear permit | Body Injury | Use proper tools Wear safety helmet, safety shoes , hand gloves | Nonstandard /damaged tools Tools and material may fall on human body | perform the job Training for tools handling/ Periodic replacement Without PPE don't perform the job |
|---|-------------|--|---|---|