



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



Issue No. 01	Rev. No: 01	Effective Date: 07.07.2017	SOP/Elect /039
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Issued By:	Approved By: HOD - ELECTRICAL
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SOP For Vacuum Circuit Breaker Maintenance

Scope/Purpose : This Procedure is to establish and ensure safe method of Vacuum Circuit Breaker Maintenance

Responsibility : Section Engineer – Electrical

Accountability : Head-Electrical

PPE:

1. Safety shoe,
2. Tested Rubber Hand Gloves
3. Safety helmet
4. Nose mask
5. Goggle

Tools:

1. Insulated tools

Hazard Analysis:

Risks associated

Injury due to charged spring
Injury due to tip over of breaker
Electrocution (Fatal)

Mitigating Measures

Proper handling methods
Tested Rubber Hand Gloves
Proper training

Training needs:

1. Usage of tools and Nature of Hazards
2. Usage of PPEs
3. Electrical shock recovery Training
4. Emergency preparedness
5. First aid including CPR training
6. Electrical safety training



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Procedure:

1. Get work permit from the concerned Electrical section in-charge.
2. Draw out the breaker from cubicle.
3. Ensure spring in discharged condition before starting the maintenance.
4. Clean the circuit breaker.
5. Check the fixed & moving contacts.
6. Check the physical condition of Vacuum bottles.
7. Check, clean & lubricate the spring and spring charging mechanism.
8. Check the auxiliary contacts & limit switches.
9. Check the opening/closing coil and measure its resistance value.
10. Check the insulation resistance and contact resistance value at closed condition.
11. Check the close/open operation manually.
12. Check the close/open operation electrically in Test position.
13. Switch off the AC & DC sources and ensure the spring in discharged condition.
14. Restore the breaker in cubicle.
15. Return the Work permit.

Emergency / Emergency Shut OFF:

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



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Records/Annexure:

1. JSA is enclosed below.

JOB SAFETY ANALYSIS: (JSA)

Job Safety Analysis	Job: Vacuum Circuit Breaker maintenance	Date: 10.05.2013	Analysis by: SE	Reviewed by: SH
Title of employee doing job: Electrician	Supervisor: Section Engineer	Department: Electrical	Section: Plant	Approved by: HOD
Reqd./recommended PPE: Safety helmet, Safety shoe, goggle, nose mask & Tested Rubber Hand Gloves.				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Cleaning / checking of circuit breaker	Injury due to Bounce of handle	Ensuring proper engagement of manual spring charging handle	Slip of handle if not engaged properly / lock mechanism not in tact	Usage of proper handle / ensuring proper lock mechanism
	Injury due to release of charged spring	Ensuring spring is discharged before assessing any moving part	Mishandling / Improper flag operation	Proper handling & ensuring flag operating mechanism
	Eye irritation of dust.	Wear goggles	Damaged goggles/non standard goggles/ Not wearing goggle	Periodic replacement / Proper training / Follow SOP
	Respiration problem of dust	Wear Nose mask	Damaged nose mask/Not wearing Nose mask	Periodic replacement/ Proper training/ Follow SOP
IR value and contact resistance measurement	Electrical shock	Ensure good megger and good probes for measurement	Defective instrument / Damaged probe	Use calibrated instrument / Check the instrument and probes before use.
Lifting /shifting of circuit breaker	Injury due to slipping	Ensuring proper holding position & usage of suitable material for lifting & shifting of breaker	Improper holding methods / inferior lifting arrangement	Before handling, refer manual for methods & use tested and approved lifting accessories proper holding