



DALMIA CEMENT (B) LIMITED – Ariyalur



## MECHANICAL SOP

Issue No. 01	Rev. No: 00	Effective Date: 05/07/2015	SOP/MEC/134
Issued By: M.R		Approved By: HOD Mechanical	
Truck Tippler – Hydraulic cylinder Replacement			

**Scope:** Hydraulic cylinder Replacement.

**Responsibility:** Fitter/ Millwright Fitter / Supervisor

**Accountability:** Mechanical-Section Engineer / Section Head

**PPE:**

1. Safety helmet.
2. Safety shoe.
3. Nose Mask.
4. Hand Gloves.
5. Safety belt
6. Safety goggles

**TOOLS:**

1. Box spanner set.
2. Ring spanner set.
3. Chain Block – according to weight
4. Wire sling / Belt sling according to weight
5. D shackle
6. Wooden packing pieces

**Hazard Analysis:**

**Risks associated:**

**Mitigating Measures**

Slip of tools

: Use appropriate tools

Slip of Cylinder

: Use and hook with proper chain block & Sling

Oil splash

: make the system pressure is Zero.

### **SOP FOR HYDRAULIC CYLINDER MAINTENANCE**

- a. Lift the Truck tippler platform / connected equipment according to the mechanical stopper position.
- b. Put and Lock the mechanical stopper on both side of the platform.
- c. Take electrical LOTO as per isolation matric.
- d. Ensure the Hydraulic system oil is drained and line pressure is ZERO.



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- e. The necessary work permit should be given by the concerned section Engineer and Section Head.
- f. The Work Permit Paper should be with the person who is responsible for the job.
- g. Trained Worker must be engaged for job with appropriate PPE's.
- h. Fix the chain block in the platform hook for holding the hydraulic cylinder.
- i. Remove the both end hydraulic hose which has connected to the hydraulic cylinder.
- j. Drain the oil from the cylinder.
- k. Oil should not be spilled on ground and it is to be stored as per EMS standard.
- l. Remove the top & bottom connecting pin which connecting the hydraulic cylinder and platform.
- m. By using chain block, remove the Old hydraulic cylinder from platform.
- n. Measure/Check the piston position in new hydraulic cylinder
- o. Adjust the new cylinder piston position according to the connecting pin by using compressor air (less than 2 bar pressure) / Inert gas.
- p. Fix the new hydraulic cylinder in the platform by using Chain block.
- q. Fix the both top and bottom connecting pin in the hydraulic cylinder.
- r. Remove the chain block from the platform hook.
- s. Connect the hydraulic hose in both inlet and outlet of the hydraulic cylinder.
- t. Clear the LOTO and lift the tippler platform.
- u. Remove the both end mechanical stopper from tippler platform.

### 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



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#### Records/Annexure:

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

<b>Job Safety Analysis</b>	Job: Hydraulic cylinder replacement	Date: 05/07/2015	Analysis by: Section Engineer	Reviewed by: Section Head
Title of employee doing job: Cylinder seal replacement	Supervisor: Section Engineer	Department: Mechanical	Section: RMH Truck tippler	Approved by: HOD Mechanical

Req'd/recommended PPE:

Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
Removing the Hydraulic cylinder	Body injury	Use proper chain blocks & slings	Chain block slipped and hit the body.	Certified tools must be used. Inspect the condition of lifting equipment. 1. Slings / Belts 2. Chain block
Remove the Connecting Pin	Hand / Body Injury	Use proper tools and Hammers	While removing, hammer hits on his hand and Pin may flow in Air	Use Correct type of tools and hammers. Hold the pin while hammering and keep away the person near by
Position the piston rod in new cylinder by external force. 1.Pneumatic 2.Inert gas	Using other gases	Use inert gas / Compressed air with low pressure for position the piston rod.	If other media , due to oil in the cylinder and coal surrounding area chance of catching fire while using other gas to lift	Area should be cleaned; Only inert gas must be used for positioning the piston in cylinder.

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Fixing the Hydraulic cylinder	Body injury	Use proper chain blocks & slings	Chain block slipped and hit the body.	<p>Certified tools must be used.</p> <p>Inspect the condition of lifting equipment.</p> <ol style="list-style-type: none"> <li>1. Slings / Belts</li> <li>2. Chain block</li> </ol>
Fixing the Connecting Pin	Hand Injury	Use proper tools and Hammers	While fixing the pin, hammer hits on his hand.	Use Correct type of tools and hammers

**Isolation Matrix:**

[illegible]