



DALMIA CEMENT (B) LIMITED – Ariyalur

MECHANICAL SOP

Issue No. 02	Rev. No: 00	Effective Date: 1/11/2019	SOP/MEC/22
Issued By: M.R		Approved By: HOD Mechanical	
VERTICAL ROLLER MILL – Hydraulic cylinder seal replacement			

Scope: Hydraulic cylinder seal replacement

Responsibility: General 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

TOOLS:

1. Box spanner set.
2. Ring spanner set.
3. Hyd power wrench

Hazard Analysis:

Risks associated:

Mitigating Measures

Slip from top

: Platform to be provided properly

Slip of tools

: Use appropriate tools

Oil splash

: [make the system pressure is Zero.](#)

SOP FOR HYDRAULIC CYLINDER SEAL REPLACEMENT

- a. Gravity drain the oil from cylinder.
- b. Make the cylinder standing in vertical position. the supports to be given from the periphery of the cylinder at 2/3 rd of height (max)
- c. The temporary platform to be made to remove coupling and Allen bolts.
- d. Remove the coupling by keeping it in a vertical hanging support. Place the coupling on floor and clean the threads of the coupling. Apply proper lubricant on threads.



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- e. Loosen the set of Allen key bolts on the top cover of hydraulic cylinder.
- f. Lift the top cover of the hydraulic cylinder
- g. Lift the piston rod along with the piston head and top cover mating flanges. Care to be taken that the oil from the rod side will get flushed outside, so proper arrangements to be made.
- h. Remove the main seals, wear rings and o-rings in piston head and cylinder cover
- i. Check for the cylinder internals for scoring.
- j. Check the position sensor for abnormality
- k. Fix the new seals, wear rings & o-rings at top cover, mating flanges & piston head after proper lubricant is applied
- l. The piston along with head and mating flanges is lowered vertically downward. care to be taken in the seating the flange as before
- m. Place the top cover and fasten all the bolts.
- n. tighten of bolts as per OEM standards
- o. Now shift the cylinder to the mill and place it in the same position and assemble in the
- p. Fill appropriate oil level (after fixing the accumulator shells along with bladders- Optional)
- q. Open the vent screws partially and give pressure in tensioning and lifting side to remove the air in system.
- r. After fitting the hoses and make seal leak test above required operating pressure
- s. If any of the above has some abnormality, it is to be rectified accordingly

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.



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2. JSA as enclosed below

Job Safety Analysis	Job: Hydraulic cylinder seal replacement	Date: 01/09/2014	Analysis by: Section Engineer	Reviewed by: Section Head
Title of employee doing job: Cylinder seal replacement	Supervisor: Section Engineer	Department: Mechanical	Section: RVRM; CVRM; Coal VRM	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 and fixing of cylinder coupling	Fall due to Slippery temporary platform.	Use safety belt	Fall from height	Use safety belt
Lifting the piston	Fall of piston	Proper lifting tools to be used	Piston fall due to slip of lifting tool	Use tested lifting tools
Slip of Tools from platform	Injury due to impact of tools from top	Stay away from working platform	Fall of tools due to improper size and training	Only trained personnel should stay at work site



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Isolation Matrix:

S L N O	Activity	Tag / Name of the Equipment									
		Isolation Type									
		Electrical Energy					Other Energy				
1	VERTICAL ROLLER MILL – Hydraulic cylinder seal replacement	Name and Tag for the Equipment	361 MD2 Mill Main Motor	361SR1 Classifier	361FN3 Mill Fan	361AS1u xiliary drive Chain not to be connected					
		Name and Tag for the Equipment	331BC1 Mill feed Belt	361FN3/ Booster fan	361 LD4 hot gas inlet louver damper (In closed Condition)						
		Name and Tag for the Equipment	361SD2 hot gas inlet shut off damper (Inc losed Conditio on)	361LD5 Raw mill fan Out let Louver Damper (Closed Conditio on)	Triple flap gate						



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