



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

Issue No. 02	Rev. No: 00	Effective Date: 01.11.2019	SOP/INST/046
Issued By: M.R		Approved By: HOD - INSTRUMENTATION	
SOP for checking, Re alignment and replacing of Flame Sensor at HAG.			

**Scope:** To check the Flame Sensor.

**Responsibility:** Instrumentation technician.

**Accountability:** Instrumentation - Section Engineer.

**PPE:**

- Safety helmet
- Safety shoe
- Mask
- Goggles
- Hand gloves ( Cotton, Asbestos and Insulated)

**Tools required:**

- Multimeter
- Tester
- Screw Driver
- Screw spanner
- Pyrometer

**Hazard Analysis:**

**Risks associated**

**Mitigating Measures**

Electrocution

Use Insulated hand gloves & tools.

Burning Injury

Use PPE & asbestos gloves.

Compressed Air hit the body

close the compressed air valve

**1. Procedure:**

1.1 Check the flame sensor body temperature by using pyrometer, it should be below 45 deg C.



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- 1.2 If it is not below 45 deg. C then check the flame sensor cooling air pressure and ensure it should be above 0.2 bar. in pressure gauge.
- 1.3 Check the signal cable condition from the flame sensor to controller.
- 1.4 Check the controller power supply for ensures there is no any voltage fluctuation.
- 1.5 Check all terminal tightness at the flame sensor & controller side.
- 1.6 Ensure and ensure the earth of the controller properly connected.
- 1.7 Check the relay contact terminal tightness.
- 1.8 Check and ensure the sensor focusing glass window should be clear, if not remove the sensor after disconnecting the power cable from sensor as well as controller and Compressed air supply.
- 1.9 Clean the glass window, Fix back the sensor, power cable at both end and compressed air line.
- 1.10 Focus the sensor according to the flame position during the gas firing by adjusting the mounting holder.
- 1.11 After focusing the flame, tight the sensor bottom fixing bolts.

## **2 Replacing the sensor.**

- 2.1 If flame sensor is faulty, remove the power cable from flame sensor as well as controller.
- 2.2 Close the compressed air inlet valve and remove the compressed air line from the flame sensor.
- 2.3 Loosened the mounting bolts and remove the sensor.
- 2.4 Change with new or spare sensor and fix the mounting bolt.
- 2.5 Connect the compressed air line and open the compressed air inlet valve.
- 2.6 Connect the power cable in flame sensor and as well as controller side.
- 2.7 Repeat the procedure from 1.10 to 1.11.



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**Emergency / Emergency Shut OFF:**

1. If any unconsciousness from electrocution is there, give First aid and inform to the Safety department or Call Emergency number 3108/9865152222/9750963761.

**Records/Annexure:**

1. JSA as enclosed below.

**JOB SAFETY ANALYSIS :( JSA)**

<b>Job Safety Analysis</b>	Job: CHECKING OR REPALCING THE FLAME SENSOR	Date:20.09.2017	Analysis by:	Reviewed by:
Title of employee doing job: INST - TECHNICIAN	Supervisor: SECTION ENGINEER	Department: INSTRUMENTATION	Section: RM HAG.	Approved by:
Req'd/recommended PPE: SAFETY HELMET, SAFETY SHOES, GOGGLES, DUST MASK, and ASBESTOS, COTTON AND INSULTED HAND GLOVES.				
Sequence of Basic Job Steps	Potential Hazards	Recommended Safe Job Procedure	What Could Go Wrong	Corrective Action
1.CHECK THE COMPRESSED AIR PRESSURE	COMPRESSED AIR MAY HIT ON THE BODY	ENSURE THE AIR LEAKAGE IN AIR LINES, GAUGE & SWITCH FITTINGS.	RESULT IN INJURY DUE TO COMPRESSED AIR.	CLOSE THE AIR LINE, RECTIFY THE LEAKAGE.
2. REMOVE THE COMPRESSOR AIR AT SENSOR SIDE.	COMPRESSED AIR MAY HIT ON THE BODY	ENSURE THE ZERO PRESSURE BY USING PRESSURE GAUGE.	RESULT IN INJURY DUE TO COMPRESSED AIR.	CLOSE THE COMPRESSOR AIR LINE PROPERLY.



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3.CHECK THE FLAME SENSOR BODY TEMPERATURE	DUE TO HIGH TEMPERATURE OF SENSOR BURN INJURY MAY OCCUR.	TEMPERATURE SHOULD CHECK USING PYROMETER ONLY.	BURN INJURY MAY OCCUR.	WEAR PROPER HAND GLOVES.
4. CHECK THE SUPPLY BY USING MULTIMETER WITH INSULATED PROBE.	LIVE SUPPLY IS EXPOSED AT THE MEASURING POINT NEAR THE PROBE	ENSURE THE PROBE IS PROPERLY INSULATED	RESULT IN ELECTROCUTED	USE INSULATED HAND GLOVES & TOOLS
5. TIGHTEN THE TERMINAL BLOCKS USING SCREW DRIVER/TESTER.	LIVE SUPPLY IS EXPOSED AT THE METTALIC PART OF THE SCREW DRIVER/TESTER.	ENSURE THE METTALIC PART OF THE TESTER/SCREW DRIVER IS INSULATED PROPERLY.	RESULT IN ELECTROCUTED	USE INSULATED HAND GLOVES & TOOLS.
6. CLEAN THE FOCUSING GLASS WINDOW OF FLAME SENSOR.	HOT ZONE NEAR THE FLAME SENSOR.	ENSURE THE TECHNICIAN STAY ON PLATFORM.	BURN INJURY MAY OCCUR.	USE ASBESTOS HAND GLOVES & SAFETY SHOES.