



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



Issue No. 01	Rev. No: 02	Effective Date: 20.09.2017	INST/SOP/032
Issued By: M.R		Approved By: HOD - INSTRUMENTATION	
SOP for Checking of Package AC Unit			

**Scope** : This SOP is applicable to Safe working for Maintenance of Package AC Unit

**Responsibility** : AC Technician.

**Accountability** : Instrument -Section Engineer.

**PPE:**

1. Safety helmet.
2. Safety shoe.
3. Mask.
4. Gloves.
5. Safety googles.

**Tools:**

- Multimeter
- Tester
- Insulated Screw Driver sets
- Hand Blower
- Ring spanner sets

**Hazards:**

Risks associated

Cold burn & Frostbite (Contact with R22 gas)

Electrocution

Mitigating Measures

Use Hand Gloves and Safety Goggles

Use Insulated Hand Gloves and Tools

**Training needs:**

1. People have knowledge to work in Package AC Unit
2. Emergency procedure



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**Procedure:**

1. Switch off the system by pressing the Start / Stop button in Controller and ensure the System OFF Condition by seeing Red Light indication in Controller.
2. Take the Line clearance.
3. Use proper PPE and Tools.
4. Open the Blower unit door by using screw driver.
5. Clean the electric motor and blower vanes by using Clothes and brush.
6. Check the belt conditions of blower, Change the belt, if it is necessary.
7. Check the condition of electric motor pulley, if it is loose tight and align with blower.
8. Apply the lubricant in blower bearing.
9. Close the blower unit door by using screw driver.
10. Open the electrical panel door by using screw driver
11. Clean the electrical panel by using hand blower and clothes.
12. Check the tightness of Power and Control Cables.
13. Check the power contactor and look for pitted contacts
14. Close the electrical panel by using screw driver.
15. Open the Evaporator coil door.
16. Remove all the filters from evaporator coil.
17. Clean the evaporator coil by using soap water.



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18. Check the water drain line condition and ensure no water storage in drain tray.
19. Clean the filters by using hand blower and brush.
20. Fix the filter in correct position.
21. Check all the sensors tightness in R22 gas line.
22. Check refrigerant piping for sign of oil /leak
23. Close the Evaporator Coil door.
24. Open the outdoor unit cover by using screw driver.
25. Clean finned surface of condenser by using hand blower and soap water.
26. Check the tightness of all fasteners.
27. Check condition of outdoor unit motor and fan leaves. If it is required change necessary spares.
28. Close the outdoor units cover by using screw driver.
29. Normalize the Electrical clearance
30. Switch ON the System.
31. Check the R22 Gas Pressure in Compressor -1 Suction line and Discharge line.
32. The Suction Pressure should be 60 to 75 Psi and Discharge Pressure should be 200 to 250 Psi.
33. If the suction pressure is less than 50 Psi. Switch off the system.
34. Does the leak test in Compressor -1 by using soap water.
35. If any leak found in bolt and nut area tight the same.



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- 36.If the leakages is not visible drain the R22 gas to storage cylinder and ensure the line pressure is zero.
- 37.Apply high pressure N2 gas (250 Psi) in gas line and do the point no .34
- 38.After leakage found drain the N2 gas and ensure the line pressure is Zero.
- 39.If any leakage due to damaged part replace same.
- 40.If any welding is required arrest the same by following hot work permit.
- 41.Switch ON system and Connect R22 gas Cylinder in Compressor-1 suction line, refill the R22 Gas in Compressor-1 Up to 65 Psi.
- 42.Repeat the Point no 30 to 41 for remaining compressors.
- 43.Check the temperature actual & set point in temperature controller and ensure the delta temp shall be less than 3 Deg.c
- 44.If the delta temp is more than 3 Deg.c, check the air leak in air flow duct and arrest the same. Also ensure the all the entry doors and windows are closed in AC unit room and working area.
- 45.Update the PM check list – INST/PM/042 for package AC unit.

**Emergency / Emergency Shut OFF:**

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

**Records/Annexure:**

1. Refer Line clearance certificates.
2. JSA as enclosed below.
3. Check List



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**JOB SAFETY ANALYSIS: (JSA)**

<b>Job Safety Analysis</b>	Job: Package AC Unit	Date: 20.09.2017	Analysis by: Section Head	Reviewed by: HOD
Title of employee doing job: AC - Technician	Supervisor: Section Engineer	Department: Instrumentation	Section: AC	Approved by:
Req'd/recommended PPE: Safety helmet, Safety shoe, Mask, Goggles & Gloves.				
<b>Sequence of Basic Job Steps</b>	<b>Potential Hazards</b>	<b>Recommended Safe Job Procedure</b>	<b>What Could Go Wrong</b>	<b>Corrective Action</b>
1.Take the line clearance & switch off the isolator	Live supply 3 phase is exposed at the panel side	Ensure the isolation of power supply at the incoming side & check the incoming supply with Multimeter.	Result in electrocuted& flashing.	Check the incoming supply with Multimeter.
2.Clean the electric motor and blower vanes	Fine dust will come out.	Wear Goggles, Nose Mask and hand Gloves.	Coughing, Eye irritation may occur	Wear Goggles, Nose Mask and hand Gloves.
3.Cleaning of Electrical Panel	Fine dust will come out.	Wear Goggles, Nose Mask and hand Gloves.	Coughing, Eye irritation may occur	Wear Goggles, Nose Mask and hand Gloves.
4.Check the tightness of power and control cables	Chances for Terminal block damages.	Use proper tools based on the types of terminal blocks	Terminals may get damage and nuisance operation during panel startup	Select the proper tools



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5.Clean the Evaporator Coils	Cold water Condensation	Wear Hand Gloves	Cold burn	Wear Hand Gloves
6.Cleaning of Evaporator Coil Filters	Fine dust will come out.	Wear Goggles, Nose Mask and hand Gloves.	Coughing, Eye irritation may occur	Wear Goggles, Nose Mask and hand Gloves.
7.Clean the Outdoor units.	Fine dust will come out.	Wear Goggles, Nose Mask and hand Gloves.	Coughing, Eye irritation may occur	Wear Goggles, Nose Mask and hand Gloves.
8.Check the R22 Gas Pressure in Compressor Suction and Discharge Line.	Chances for R22 Gas Leak.	Wear Goggles, Gloves and Nose Mask	Touch the R22 Gas will Create Cold burn and Frostbite	Wear Goggles, Gloves and Nose Mask
9.Refill the R22 Gas	Chances for R22 Gas Leak.	Wear Goggles, Gloves and Nose Mask	Touch the R22 Gas will Create Cold burn and Frostbite	Wear Goggles, Gloves and Nose Mask