

SECTION 4 OPERATING PROCEDURES

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4.1 VENTILATION SYSTEMS

4.1.1 Supply & Extract Fans & Systems

The following are general instructions and should be read in conjunction with any Manufacturer's Instructions found in Section 11 of this Manual.

Pre-Operation Checks

Prior to starting plant for the first time or following a long period of shut down, it will be necessary to carry out a general inspection of all plant, etc, to ensure that they are serviceable and safe to operate. In addition, the following specific checks should be made and apply to each of the foregoing systems where applicable.

1. Inspect all ductwork flexible connections to ensure there are no tears or broken fixings.
2. Make an internal inspection of air handling units and ensure all tools, debris and other materials have been removed.
3. Check to ensure vee-belts have been correctly fitted, the drives correctly adjusted and the machine guards are firmly in place.
4. Check to ensure that electric motors are cleaned and that ventilation ports are unobstructed.
5. Check to ensure that filters are clean and correctly fitted, with filter manometers adjusted to zero, with the fans turned off.
6. Ensure that the air handling unit and supply/return air plenum access doors are closed and correctly secured, that door seals are airtight and that no leaks exist between the building structure and duct plenums.
7. Ensure that volume control dampers have not been disturbed, following balancing of the systems.
8. Read manufacturers' operating and maintenance literature in respect of the air handling units and extract fans.
9. Ensure that all diffusers and grilles are correctly set.
10. Ensure that all entry-exit louvres of the air handling units and fans are free of obstruction.
11. Ensure that all fire dampers are open, and that smoke dampers are operating correctly.
12. During very cold periods or in the event of snow, make a physical inspection of automatic damper linkages in air handling units, to ensure they are not frozen and are free to move.

Normal Operation

1. With any associated system referred to above operating and running, set the local electric isolator for the AHU and fans to the 'ON' position.
2. Turn equipment selector switch on the relevant control panel to the 'AUTO' position and the plant should run under automatic control.

3. Inspect the fan motors/impellers/belts frequently during the first few hours of operation to ensure that the motors are not running excessively hot, the fan belts are not broken or slipped or any undue noise is observed (fan impeller rubbing against casing etc).
4. After a few hours, check airflow at terminal outlets.

Shut Down

1. Turn equipment selector switches on the control panel to the 'OFF' position.
2. Turn local electrical isolators to the 'OFF' position.
3. Display appropriate warning notices.
4. For extended shutdown withdraw MCBs from the motor control panel / distribution board for this particular equipment.

4.2 AIR CONDITIONING SYSTEMS

4.2.1 Direct Expansion (DX) Systems

Note

The Mitsubishi Electric document "MA Remote Controller PAR-21MAA - Instruction Book" located in Section 11 (Manufacturers Literature) contains extensive information on the control of the split DX air conditioning systems.

The following are general instructions and should be read in conjunction with the above document and other Manufacturer's Instructions found in Section 11 of this Manual.

Pre-Operation Checks

Prior to starting plant for the first time or following a long period of shut down, it will be necessary to carry out a general inspection of all plant, etc, to ensure that they are serviceable and safe to operate. In addition, the following specific checks should be made and apply to each of the foregoing systems where applicable.

1. Make an internal inspection of units and ensure all tools, debris and other materials have been removed.
2. Check to ensure that electric motors are clean and that ventilation ports are unobstructed.
3. Check to ensure that filters are clean and correctly fitted.
4. Ensure that the air handling units access doors are closed and correctly secured, that door seals are airtight.
5. Read manufacturers' operating and maintenance literature in respect of the units.
6. Ensure that all grilles are free from obstruction.

Normal Operation

1. Set the local electric isolator for the air handling unit and condenser to the 'ON' position.
2. Switch on the system from the control panel and set to the 'AUTO' position. The plant should run under automatic control.
3. Inspect the fan motors/impellers/belts frequently during the first few hours of operation to ensure that the motors are not running excessively hot and there is no undue noise.
4. After a short period, check airflow at the discharge.

Shut Down

1. Select "OFF" on the control panel.
2. Turn local electrical isolators to the 'OFF' position.
3. Display appropriate warning notices.
4. For extended shutdown withdraw MCBs from the motor control panel / distribution board for this particular equipment.

4.3 HEATING SYSTEM

4.3.1 Boiler & Radiators

The following are general instructions and should be read in conjunction with any Manufacturer's Instructions found in Section 11 of this Manual. Reference to particular operational control of the boiler and system should be made to the Controls Specialist documentation.

The following has been provided as general guidance for LTHW heating systems.

Pre-Operation Checks and Start Up

Prior to starting the system for the first time of following a long period of shut-down, it will be necessary to carry out a general inspection of the plant, etc, to ensure it is safe and serviceable to operate.

The system may have been partially drained down for maintenance work to be carried out therefore before proceeding with the following recommended checks ensure that all maintenance work has been completed.

1. Check that all system drain valves are closed.
2. Ensure the system is full of water and that all radiators / heat emitters are thoroughly vented, including manual air release points within the distribution system and at all high points.
3. Check that the pH level in the distribution system is correct.
4. Ensure that all system isolating valves are open and that double regulating valves have been opened to their pre-set locked positions.
5. Ensure that the controls and associated motive equipment are initiated to function under automatic conditions.

Normal Operation

1. With all associated systems operating and running, set the local electrical isolators to the 'ON' position.
2. Turn equipment selector switches on the control panel to the 'AUTO' position and the circulation of LTHW should commence.
3. Inspect the circulation pump frequently during the first few hours of operation to ensure that the motor is not excessively hot, and that there is no undue noise.
4. After a few hours, check that the design flow and return temperatures have been attained.

Plant Shut Down

1. Turn equipment selector switches on the control panel to the 'OFF' position.
2. Turn local electrical isolators to the 'OFF' position.
3. For extended shutdown, withdraw MCBs from motor control panel / distribution board (for each particular item) and if there is a risk of freezing, drain the system down.
4. Display appropriate warning notices.

Emergency Shut Down

1. Consideration for safety of personnel should be the priority.
2. Depending on the cause of the shut down, e.g. fire in building, incorrect operation of controls causing build up of temperature and/or pressure, flooding, etc, isolate plant at the local isolator or withdraw the panel circuit fuses.
3. In the event of flooding attempt to isolate the area by closing the nearest branch isolating valve.

4.4 DOMESTIC SERVICES

4.4.1 Water Heaters

The following is an extract taken from the Heatrae Sadia document "HANDY ELECTRIC HANDWASH - Fitting Instructions and User Guide" located in Section 11 (Manufacturers Literature).

Section 8.0 COMMISSIONING (Page 14)

NOTE: The first operation of the handwash is intended to ensure the heater unit contains water before the appliance is switched on.

- 8.1 Before turning on the electricity and mains water to the handwash, ensure the control knob is turned fully clockwise.
- 8.2 Turn on the main water supply at the isolating stop valve and slowly turn the control knob anti-clockwise, (it will take approximately 30 seconds for a smooth flow of water to be obtained whilst any air is being dispersed from the handwash).
- 8.3 Stop the water flow by rotating the control knob clockwise.
- 8.4 Turn on the electrical supply at the isolating switch.
- 8.5 Rotate the control knob half a turn anti-clockwise. After approximately 15 seconds, the water will start to heat.
- 8.6 To obtain warmer water turn the control knob clockwise, and for cooler water turn anti-clockwise.
- 8.7 Shut off the handwash by turning the control knob clockwise. The appliance is now ready to use.
- 8.8 The neon will illuminate when the water is heating.

4.5 GAS

4.5.1 Gas Supply

Pre-Operation Checks

1. Inspect all pipework and valves.
2. Ensure purging and charging of gas system has been carried out.
3. Ensure related systems, including controls, are switched off.
4. Ensure cocks to equipment served are fully closed.
5. Ensure secondary containment of gas pipework is open at both ends.
6. Ensure required ventilation of spaces through which the gas pipework runs is available / operational.
7. Check thermal links over boilers intact and in correct positions.
8. Ensure gas proving systems operational where installed.

Start Up

1. Open main gas valve.
2. Open cocks to plant items following Manufacturer's Start Up procedures.

Shutdown

1. Close gas cocks to each individual item of plant following Manufacturer's Shut down procedures.
2. Close main gas valve.

Emergency Shutdown

1. Use emergency knock off button located at plantroom exit (operates solenoid valve)
2. Close main gas valve (manual emergency valve)
3. Close gas cocks to each item of plant.