Condensate drainage for air conditioning systems

This technical solution relates to split system installation and condensate drainage methods and may also be used for applications such as high efficiency ducted heaters and evaporative coolers.

Condensate drainage using a self sealing device

A self sealing device is, in effect, a waterless trap which is designed to close after waste discharge and prevent the admittance of foul air into the building. It offers the advantage, in the case of condensate drainage, of continuing to prevent foul air entry during times of little or no flow when a conventional water trap seal may evaporate.

The device is designed for 40mm UPVC pipe and can be installed in the vertical or on grade position but must be within a building, accessible and out of direct sunlight. An adaptor fitting (available from the manufacturer, or regular fittings) may be required for the upstream end of the valve to provide for the connection of 40mm pipe or a tundish. (See fig.1 below.)

Permitted locations

1(a) Via the discharge pipe beneath a sink, trough or vanity basin.

A junction and device is installed by the sanitary plumber in the vertical section of discharge pipe (50mm or 40mm) below the trap seal of the fixture and the self sealing device is installed in the vertical position as high as is practical to the underside of the benchtop. The discharge pipe, device and condensate drain must be adequately supported. A tundish is required on the top of the device to provide a physical air gap (20mm) in the condensate drain. (See figure 2 opposite.)

1(b) Via a dishwasher connection point on a DN 50mm fixture trap.

Alternatively the drain may discharge to the dishwasher connection point on a 50mm fixture trap using appropriate flexible hose and fittings providing all the conditions described in 1(a) can be met. (See figure 3 opposite.)
2 Waste or vent in a roof / ceiling space.

The condensate drainage from an air conditioning or heating appliance may be discharged to a vent pipe via a self sealing device located in a ceiling or roof space. The junction and device is to be installed by the sanitary plumber and must be supported in accordance with AS 3500. It is preferable for the device to be installed in the vertical position with an air gap provided over a tundish. (See figure 4 below.)

If it is not practical to install the device in the vertical position, it is acceptable in an on-grade position as long as a tundish incorporating an air gap is provided. (See fig. 5 opposite)

In the case of ceiling space installations, test the system under full operating conditions to ensure there is no spashing or spillage from the tundish on to the ceiling.

Split system air conditioning

Condensate drainage for split system air conditioners

Drain material

The material used for the drain must be suitable for the purpose and if a plastics material is used it must be of a type suitable for installation in direct sunlight.
**Pumped condensate**

If condensate from an indoor unit has to be pumped to its drainage termination point it is essential that the pump is installed in an accessible position for service/maintenance purposes.

**Termination points**

The following diagrams (figures 6 and 7) provide guidance on the approved methods of discharge for condensate drains from split system air conditioning.

1. **On to a garden bed.**

   ![Diagram of garden bed discharge]

2. **Concrete or paved surface.**

   Provided the surface is graded away from the building and ponding does not occur, and the discharge does not present a safety risk to pedestrians (e.g. across a footpath).

   ![Diagram of concrete or paved surface discharge]

3. **To a downpipe provided the following two points are observed;**

   (a) Provided there is a form of disconnection to prevent leakage into the building from the indoor unit if there is a blockage in the downpipe. (Figures 8 and 9)

   (b) The connection to the downpipe is a minimum of 300mm below the drain outlet of the indoor unit (Figure 10)

   ![Diagram of downpipe discharge]

4. **To a down pipe via a lower metal roof.**

   ![Diagram of down pipe via lower metal roof discharge]

5. **A sanitary drainage system**

   Via a tundish in one of the following forms in accordance with AS/NZS 3500.2.2 – 1996 clause 4.6.7.8 & 11.22.

   ![Diagram of tundish discharge]

5(a). To a fixture trap provided the connection is above the level of the water seal and the top of the tundish is above the overflow level of the fixture. (Figure 12).

   ![Diagram of fixture trap discharge]
Placement of an outdoor unit on a metal deck roof.

The following provides guidance for the installation of small domestic size outdoor units on a metal deck roof. (Figure 14 and 15)

- You must ensure that the weight of the unit is not excessive for the design of the roof structure.
- Larger units may require engineering computations to ensure adequate strength of the roof structure.
- If timber is to be used as a support material on a metal roof it should be redgum to minimise the possibility of staining the roof as it weathers. The redgum can be painted if necessary to further protect the timber and the roof.

It is not permitted to install timber bearers in the tray section of a steel deck roof as support for an outdoor unit as the flow of water in the tray is impeded.

If timber bearers are to be used as a support ensure they are placed on top of the ribs and insulated from the metal by a suitable material (eg rubber waffle pads) to prevent corrosion occurring.

Placement of an outdoor unit at ground level.

An outdoor unit should be mounted level on appropriate concrete slabs and secured by means of suitable brackets to an adjacent wall. (Figure 16)

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