

3 Water Pipework

3.1 Water Circuit Checks

Mono units are equipped with a water inlet and outlet for connection to a water circuit. Mono units should only be connected to closed water circuits. Connection to an open water circuit would lead to excessive corrosion of the water piping. Only materials complying with all applicable legislation should be used.

Before continuing installation of the unit, check the following:

- The maximum water pressure ≤ 3 bar.
- The maximum water temperature $\leq 70^{\circ}\text{C}$ according to safety device setting.
- Always use materials that are compatible with the water used in the system and with the materials used in the unit.
- Ensure that components installed in the field piping can withstand the water pressure and temperature.
- Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance.
- Air vents must be provided at all high points of the system. The vents should be located at points that are easily accessible for service. An automatic air purge is provided inside the unit. Check that this air purge valve is not tightened so that automatic release of air in the water circuit is possible.

3.2 Water Volume and Expansion Vessel Pre-pressure Checks

Outdoor units are equipped with an expansion vessel (8L) that has a default pre-pressure of 1.5 bar. To assure proper operation of the unit, the pre-pressure of the expansion vessel might need to be adjusted. Refer to Table 3-3.1. The total volume of water in the system must be at least 25L (for 4/6/8kW unit, the minimum volume is 15L) and should not exceed the limits specified in Figure 3-3.1.

Table 3-3.1: Expansion vessel pre-pressure adjustment

Installation height difference ¹	Water volume $\leq X \text{ L}^2$	Water volume $> X \text{ L}^2$
$\leq 12 \text{ m}$	No pre-pressure adjustment required	Actions required: <ul style="list-style-type: none"> • Pre-pressure must be decreased, calculate according to "Calculating the pre-pressure of the expansion vessel"³ • Check if the water volume is lower than maximum allowed water volume (refer to Figure 3-3.1)
$> 12 \text{ m}$	Actions required: <ul style="list-style-type: none"> • Pre-pressure must be increased, calculate according to "Calculating the pre-pressure of the expansion vessel"² • Check if the water volume is lower than maximum allowed water volume (refer to Figure 3-3.1) 	Expansion vessel in the outdoor unit too small for the system. An external expansion vessel (field supplied) is required.

Notes:

1. Height difference is between the highest point of the water circuit and the outdoor unit's expansion tank. Unless the unit is located at the highest point of the system, in which case the installation height difference is considered to be zero.
2. For 1-phase 12~16kW and 3-phase 12~16kW units, this value is 72L, for 5~9kW units, this value is 30 L.
3. Calculating the pre-pressure of the expansion vessel:
The pre-pressure (P_g) to be set depends on the maximum installation height difference (H) and is calculated as $P_g(\text{bar}) = (H(\text{m})/10 + 0.3)$ bar