

Qualitair Cellar Cooling Installation Details.

Important Note:

Only a qualified refrigeration engineer, who is familiar with refrigeration systems and components including all controls, should perform the installation and start-up of the cellar cooling system. To avoid potential injury, use care when working around coil surfaces or sharp edges of metal cabinets. All piping and electrical wiring must be installed in accordance with all applicable codes, regulations and local by-laws.

Location

The location of the units must be well ventilated so the unit can draw in and distribute plenty of air to allow even circulation to lower the cellar temperature. The condensing unit must have a minimum of 50mm clearance at the rear, 100mm at left hand side, 250mm at right hand side plus at least 600mm in front of the fan grille. The warm air must be allowed to escape and not recirculate to help reduce the condensing temperature.

To optimize the unit running conditions, the condenser coil must be cleaned at regular intervals. Minimum of once per year, more often if sited on the ground.

The indoor units can be mounted directly to a wall utilizing the fixing holes on the rear of the unit or No additional brackets are required. Avoid locating in corners or in alcoves which may restrict airflow. A minimum 10mm rawlbolt type fixing is required with a large steel washer to bear the unit weight. It is important to ensure that the wall is able to withstand the unit weight and that all fixings are secure.

Both indoor and outdoor units must be level.

Pipework

To ensure satisfactory operation and performance, the following points should be noted for field piping arrangements:

Pipework routes must be as simple and as short as possible.

Avoid low points on pipework where oil can accumulate.

Use only clean, dehydrated refrigeration grade new copper tube with long radius bends.

When brazing use only silver alloy rods.

Run braze without over filling to ensure there is no leakage into the tube.

To prevent oxidization, blow oxygen free nitrogen through pipework when brazing.

Install insulation with a minimum wall thickness of 3/8" on both liquid/expansion and suction lines.

Adequately support all pipe work at a maximum of 1 metre intervals.

Use of incorrect pipe sizes can affect system pressures/temperatures and gas velocity for proper oil return.

Important Note:

One of the main factors affecting equipment reliability and compressor service life is refrigeration circuit contamination. During installation, circuit contamination can be caused by:

Brazing & Welding Oxides

Filings & Particles from de-burring pipework

Brazing Flux

Moisture & Air

Pressure testing

Both the indoor and outdoor units have been pressure tested in the factory prior to dispatch. The indoor unit contains a holding charge of oxygen free nitrogen. The outdoor unit contains a charge of R410A refrigerant suitable for 7.5m of pipe work.

Once the pipework installation is complete, it should be pressure tested prior to evacuation to test for leaks.

A pressure leak test must be carried out using oxygen free nitrogen (OFN). NEVER USE OXYGEN FOR PRESSURE TESTING SYSTEMS. Before starting any pressure testing, ensure the area surrounding the system

is safe, inform relevant personnel and fit warning signs indicating high pressure testing. Also, use correct PPE as required.

A simple procedure for testing is as follows:

Connect a pressure hose from the regulator to the schrader connection on the service port on the condensing unit.

Pressure system slowly up to 3 bar for 5 minutes and check for any signs of leakage.

Increase pressure slowly up to 10 bar for 5 minutes and check for any signs of leakage.

Increase pressure slowly up to 20 bar and check for any signs of leakage. Leave system under pressure for 24 hours if possible.

Listen for any possible leaks and check all joints with bubble spray. If any leaks are discovered, release pressure slowly from system until empty, repair leak and then restart pressure testing procedure. Never attempt to repair a leak on a pressurized system.

Once testing has been completed satisfactorily, release the pressure from the system gradually and safely to external atmosphere.

Charging

Once the pressure testing has been completed, the system can now be evacuated to remove air and any moisture from the piping. This can

be done as follows:

Ensure any nitrogen charge is safely released from the system.

Connect a gauge manifold to the schrader connection on the service valve on the condensing unit.

Connect a vacuum pump and vacuum gauge to the system.

Evacuate the system until vacuum is below 250 microns (0.25 torr).

Once the system is isolated and the vacuum pump is switched off, any rise in pressure indicates that either there may be a leak in the system or moisture is still present. In this case, recheck the system for leaks, repair as necessary, and then restart the evacuation procedure. Once completed satisfactorily, the vacuum pump and vacuum gauge can be removed.

At this point, any additional refrigerant charge can be added to the system as required. Additional refrigerant must be charged in the liquid phase for R410a. Use weighing scales to add the correct amount.

With the gauge manifold connected and closed, slowly open both of the service ports fully on the condensing unit. This will release the refrigerant charge from the condensing unit into the system. Systems are pre-charged with R410a for 7.5m of pipe work. Additional refrigerant should be charged at a rate of 10g per metre of pipe work.

Electrical

Cable type and sizing must be selected for the particular application and the electrical installation should conform to the current local standards. All indoor and outdoor units are Single Phase.

Cables to the indoor unit should be routed through the rear of the indoor unit and fed into the rear of the electric box.

Cables to the outdoor unit should be routed under the plastic pipe / electrical connection cover on the end of the unit.

The interconnecting cable between the indoor and outdoor unit should be 3 core (2 core + E).

Connect the mains supply and interconnecting cables as per the wiring diagrams on the unit.

Access to the electrical terminals and components on the indoor unit is via the removable front cover plate of the unit. Removal of the cover plate gives access to the terminal block as well as the electronic controller and rocker switch connections. Wiring to the outdoor unit is CU (L) CU (N) and E. 1.5mm minimum cable should preferably SY type.

Commissioning

Switch on the power at the mains isolator and then switch on the rocker switch on the front of the indoor unit. Set the required operating temperature on the electronic controller and check the system parameters in the controller are as required (the controllers are preprogrammed in the factory to suggested settings with 11C as a set point).

Run the system to the required temperature and check system pressures, gas charge and running currents of motors to ensure correct operation.

Carry out final leak test and ensure all covers are fitted and securing screws are tightened.
Log all information along with system model and serial numbers for future reference.
Ensure that the customer / responsible person is provided with basic operating instructions and where electrical isolators are situated in case of emergency.
The evaporator design virtually eliminates any chance of freezing up but there is a 6 hourly defrost programmed into the controller.