

OSA 280RKTV

Reverse Cycle R410A Split System Outdoor Unit

Installation & Maintenance

GENERAL

This OSA 280RKTV Outdoor Unit must be installed in accordance with all national and local safety codes.

Options

1. TZT-100 Room Temperature Controller.
2. Anti-vibration mounts (rubber).
3. Drain connection adaptors - right angle.

INSTALLATION

Positioning

Refer to dimension diagram below for minimum clearances. Fasten the unit down to a firm flat horizontal base using the holes provided in the mounting rails.

When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with vibration isolating pads or rubber mounts (optional extra).

Drain

Four drain holes are provided in the base. Three plastic bungs are supplied (loose) should you want to direct the condensate and/or rain water to one of the holes provided. Drain connection adaptors (25/13) are available as an optional extra.

REFRIGERATION PIPING

General

The OSA 280 is shipped with a refrigerant charge sufficient for a 10 m line length; refer wiring diagram specification table for amount. The matched indoor unit is shipped with a holding charge of nitrogen. OSA 280 units have shut-off service valves and swaged assemblies. Two loose pipe extensions are supplied to enable a choice of exit – side or rear; both require brazing.

Recommended Pipe Sizes

Suction pipe: 28 mm OD
Liquid pipe: 13 mm OD

Line Lengths

The standard unit is suitable for a line length up to 40 m. For line lengths between 40 m and 90 m, refer to **temperzone's Split Systems Installation Guide** (refer www.temperzone.biz/Technical Support). Refer also to *Oil Charge* overleaf.

Maximum line length when extended is 90m.

Height Separation Limits

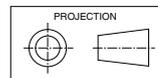
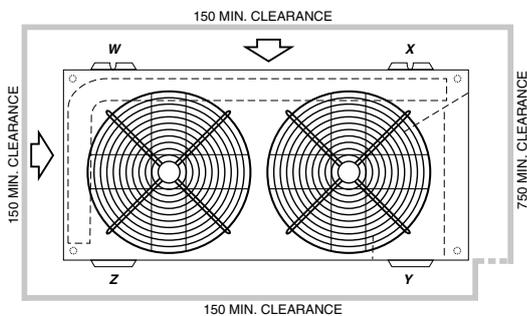
Outdoor Unit above Indoor Unit : 20 m
Outdoor Unit below Indoor Unit : 20 m

Vertical Risers

If the outdoor unit is to be installed above the indoor unit, then the suction riser should be trapped at the bottom of the vertical rise and then again at 8 m (maximum) intervals. This is to ensure oil return to the compressor. The trap to be a 'swan neck' curve in the pipe, with no change in the pipe size.

Dimensions (mm)

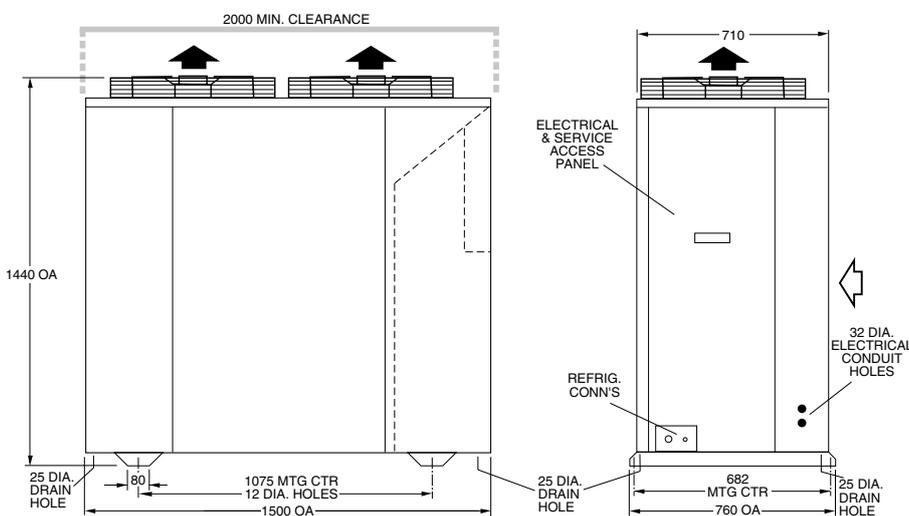
OSA 280RKTV



Not to Scale

Net Weight 260 kg

CORNER LOADS (kg)			
W	X	Y	Z
57	87	81	35



Piping

1. Use clean sealed refrigeration grade piping and accessories designed specifically for R410A.
 2. Cut pipe with a pipe cutter ONLY.
 3. Use long radius bends (2x pipe dia.).
 4. Insulate the suction (gas) line and seal all insulation joints.
 5. Bi-flow type filter dryer may be fitted in the liquid line.
 6. Include a process point on the interconnecting pipework.
 7. Ensure open pipe ends are sealed until the final connection is made.
 8. Purge pipes using Nitrogen during brazing.
 9. Immediately before removing brazed pipe connection's seal, reduce holding charge between connection points and service valves to atmospheric pressure.
- Warning:** Failure to do so may cause injury.

Charging

The unit is supplied with sufficient refrigerant HFC-410A (R410A) for 10 m of pipework between the indoor and outdoor units; refer wiring specification table for amount. Add, or subtract, 60 g of HFC-410A per metre to suit the installed line length.

Procedure:

1. Evacuate Indoor Unit and interconnecting pipework to a pressure of 500 microns and hold for 15 mins.
2. Add refrigerant via the Schraeder connection on the smaller of the Outdoor Unit's two service valve extension pipes.

- Open the service valve at the Outdoor Unit to allow refrigerant to flow throughout the system.
- Leak check all brazed and fitted joints.

IMPORTANT :

Step 8 of the 'Start Up Procedure' requires you to check that the superheat on the suction line (where it enters the Outdoor Unit) is between 3°C – 5°C on cooling cycle with an indoor air temperature in the range 21° – 27°C and outdoor air temperature in the range 24° – 35°C. If the conditions of the day do not allow this, use the heating cycle (on a reverse cycle unit) or other heat source to raise the indoor air temperature to about 24°C and blank off the outdoor coil to raise the head pressure to 400 psig (2760 kPag). Alter charge up or down to establish correct superheat.

WARNING:

This unit is designed for use ONLY with the refrigerant HFC-410A (R410A). The use of other refrigerants is NOT authorised or approved by the manufacturer and may cause operational problems such as poor performance and efficiency, loss of capacity, degradation of materials and refrigerant leaks. **The use of flammable or explosive materials as a refrigerant creates the additional risks of fire and explosion which may result in property damage, personal injury or death.**

Oil Charge

For line lengths in excess of 30 m, *Emkarate* RL22CF polyolester oil (or similar) should be added to the refrigerant at the rate of 30 ml/m of suction piping. **Note:** This oil absorbs moisture quickly if exposed to open air. Do not use mineral oil.

ELECTRICAL REQUIREMENTS

Electrical work must be done by a qualified electrician. The outdoor unit must be wired directly from a distribution board by means of a circuit breaker or H.R.C. fuse, and a mains isolator provided - preferably close to the Outdoor Unit.

Note: DO NOT USE REWIRABLE FUSES.

The OSA 280 is provided with a 24V AC control circuit for a thermostat, on/off switch and/or time clock.

Standard units are suitable for use with thermostats with either manual Heat/Cool selection or automatic changeover subject to the contact ratings of the thermostats.

Refer to **temperzone** for recommended thermostats.

If the matched ISD indoor unit is supplied without a temperzone SAT-2 Controller, then connect the 25m coil sensor lead (supplied that ISD) as per the wiring diagram.

It is recommended electricians run a spare wire between Outdoor Unit and Indoor Unit in case 'Indoor Fan Off During De-Ice' becomes a requirement. Leave this

spare wire unconnected until required. (Not required when using **temperzone** SAT-2 or TZT-100 Controller). Refer indoor unit's wiring diagram.

A 24 hour power supply to the 'control' phase is required to power the crankcase heaters, otherwise warranty is void.

SYSTEM CHECK TESTS

- Check the tightness of all electrical connections and sign the check label.
- Leave the remote ON/OFF switch, if fitted, in the OFF position and close the mains isolating switch.
A four hour delay period is required to allow the crankcase heater to drive any liquid refrigerant out of the compressor oil. Leave power applied and do not start either compressor during this time. Check CCH elements heat up.
- Check that all fan motors are free running.
- Check for correct rotation of the compressor. If rotation is incorrect the compressor will not pump and will draw minimal current. To correct motor rotation, change the phasing at the main power terminal.
- Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
- If applicable, check that the indoor coil sensor lead is correctly wired to the unit.
- Check that the air filters, if any, have been correctly installed.
- Check any supply air diffuser dampers are open.
- Touch up any outdoor unit paintwork damage to prevent corrosion.

START UP PROCEDURE

Use the supplied Commissioning Sheet to help you complete the following procedure:

- Fit discharge and suction gauges. **Important:** Gauges must be designed specifically for use with R410A.
- Switch on the unit after the four hour delay period for the crankcase heater has expired.
- Check the supply voltage.
- Measure the current draw on the compressor motor and on each fan motor. Check all readings against the specified values - particularly the indoor fan amps if the unit is installed in a free blow application.
- Measure the suction and discharge pressures.
- Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
- Check that the air flow over the outdoor unit's coil is adequate and that the fan is running smoothly.
- Check the superheat - refer charging procedure.
- Check the supply air flow at each outlet.

UNIT CONTROLLER (UC7)

The Unit Controller provides system protection functions such as coil frost protection, de-icing, high head pressure and low suction pressure cut-out.

It also protects against rapid cycling of the compressor(s) and loss of refrigerant. Various methods of head pressure control (or limiting) are employed in temperzone units. The particular method used varies from model to model, but is also handled by the Unit Controller. In combination, these features deliver optimised performance across a wide operating temperature range.

As a result of the UC's control of these inter-related functions, the outdoor fans may take some time to start rotating after each compressor start. They may also run on when the compressor stops. The fans will stop during a de-ice cycle. The speed will vary either smoothly, or in steps, in order to protect against excessively low or high head pressure.

Refer to UC7 Controller label on the unit or www.temperzone.biz for operation & fault diagnostics information.

MAINTENANCE

Weekly For First Four Weeks

- Check indoor unit air filters (if fitted) and vacuum or wash clean as necessary.
- Check condensate drain for free drainage.
- Check compressor compartment for oil stains indicating refrigerant leaks.
- Check tightness of electrical connections.

Six Monthly

- Check the tightness of all fan and motor mountings.
- Check tightness of electrical connections.
- Check that fan motors are free running.
- Check suction and discharge operating pressures.
- Replace indoor unit air filters (if fitted).
- Check condensate drain for free drainage.

Yearly

- Check all refrigerant piping for chafing and vibration.
- Check air supply at all diffusers.
- Check for excessive noise and vibration and correct as necessary.
- Check for insulation and duct damage and repair as necessary.
- Remove lint and dust accumulation from outdoor coil fins.
- Touch up all outdoor unit paintwork damage to prevent corrosion.

NOTE

The manufacturer reserves the right to change specifications at any time without notice or obligation. Certified dimensions available on request.

This pamphlet replaces the previous issue no. 3921 dated 12/13. Wiring revision D.

Pipe Length Capacity Loss On Cooling Cycle Due to Pressure Drop

Note : Loss percentages are approximations only, due to piping variations. No allowance made for vertical piping.

Pipe Size (mm)		Performance Loss per additional 10m beyond first 5m.	Additional Pipe Length to allow per Suction Pipe Bend Long 90° Radius (2 x pipe dia.)
Liquid	Suction		
13	28	1.5 %	0.61 m
13	35	0.7 %	0.76 m

