

OSA 83RKSH & OSA 95RKSH

Reverse Cycle R410A Single Phase Split System Outdoor Units

Installation & Maintenance

GENERAL

This OSA 83 and 95 Outdoor Units must be installed in accordance with all national and local safety codes.

Options

1. Vertical discharge grille.
2. Wall mounting brackets.
3. Anti-vibration mounts (rubber).
4. Soft starter kit
5. Drain connection adaptors - right angle.

INSTALLATION

Positioning

Refer to dimension diagram below for minimum clearances. Position the unit so that prevailing winds do not blow onto the exhaust to slow the fan, and one unit does not exhaust toward the inlet of another unit. The optional vertical discharge grille can be used to deflect prevailing winds and reduce clearances.

Mount either free standing or on a wall using the optional mounting brackets available.

Free Standing :

Fasten the unit down to a firm flat horizontal base using the four 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 springs or rubber mounts (optional extra) beneath the unit. These items are not supplied with the unit.

Wall Mounting Option:

Complete wall mounting instructions are supplied with the optional wall mounting kit.

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 83/95 is shipped with a refrigerant charge sufficient for a 10 m line length. The matched indoor unit is shipped with a holding charge of nitrogen. OSA 83/95 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 : 16 or 19 mm OD
Liquid pipe : 10 mm OD

Line Lengths

The standard unit allows for a line length up to 30 m. For line lengths between 30 m and 40 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 40m. For line lengths in excess of 15 m use a 19 mm OD suction pipe size.

Height Separation Limits

Outdoor Unit above Indoor Unit : 16 m
Outdoor Unit below Indoor Unit : 16 m

Vertical Risers

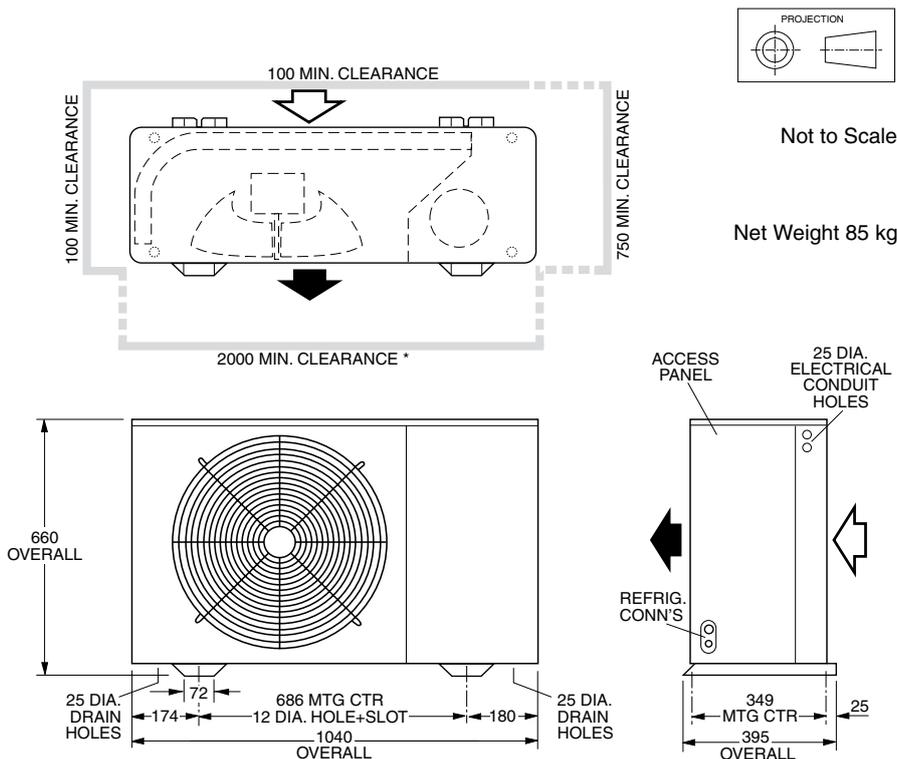
If the outdoor unit is to be installed above the indoor unit, then the suction riser should be trapped at the bottom of the vertical rise and then again at 5 m (maximum) intervals. This is to ensure oil return to the compressor. The trap to be a 'swan neck' curve in the pipe, with no change in the pipe size.

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 in the interconnecting pipework.
 7. Ensure open pipe ends are sealed until the final connection is made.
 8. 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.

Dimensions (mm)

OSA 83/95 RKSH



* 600 min with optional Vertical Discharge Grille

Charging

The unit is supplied with refrigerant HFC-410A (R410A) which is sufficient for up to 10 m of pipework between the indoor and outdoor units; refer wiring diagram specification table for amount. Add 45 g of HFC-410A per metre over 10 m.

Procedure:

1. Evacuate Indoor Unit and interconnecting pipework to a pressure of 500 microns and hold for 15 mins.
2. Add refrigerant, if needed, via the Schraeder connection on the smaller of the Outdoor Unit's two service valves.
3. Open the service valve at the Outdoor Unit to allow refrigerant to flow throughout the system.
4. 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 or other heat source to raise the indoor air temperature to about 24°C. Return to cooling cycle 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. 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, *Idemitsu* polyolvinylether oil (PVE) should be added to the refrigerant at the rate of 10 ml/m of suction piping. **Note:** As an alternative, mineral oil or polyol ester oil (POE) may be added, but no more than 65 ml.

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.

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.

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 Controller). Refer indoor unit's wiring diagram.

A 24 hour power supply is required to the unit. Disconnect the crankcase heater if the total line length is less than 8 m.

SYSTEM CHECK TESTS

1. Leave the remote switch 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. Bypass the crankcase heater thermostat (CCHT) for this period only.
2. Check that all fan motors are free running.
3. Check tightness of electrical connections.
4. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
5. Check that the air filters, if any, have been correctly installed.
6. Check any supply air diffuser dampers are open.

START UP PROCEDURE

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

1. Switch on the unit after the four hour delay period has expired. Ensure the crankcase heater thermostat has been reconnected.
2. Check the supply voltage.
3. 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.
4. Fit gauges and measure the suction and discharge pressures.
Important: Gauges must be designed specifically for use with R410A.
5. Test the operation of the high pressure safety control by switching off the outdoor unit's fan.
6. Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
7. Check that the air flow over the outdoor unit's coil is adequate and that the fan is running smoothly.
8. Check the superheat - refer charging procedure.
9. Check the supply air flow at each outlet.
10. Check condensate drains for free drainage and no leaks.

11. Check compressor compartment for oil stains indicating refrigerant leaks.
12. Touch up all outdoor unit paintwork damage to prevent corrosion.

OUTDOOR UNIT CONTROLLER (OUC)

The Outdoor Unit Controller (OUC) includes a temperature sensing head pressure control which enables the system to compensate for outdoor ambient temperatures below 20°C, and heating cycle above 15°C. The OUC also has features which protect against icing or overheating of coils, rapid cycling of the compressor and loss of refrigerant charge.

If the outdoor unit fans take some time to begin rotating when the system is powered on, or they don't appear to be rotating appropriately while the compressor is running, consult the OUC label on the electrical box. If necessary, refer to **temperzone** for further diagnostic information.

MAINTENANCE

Weekly For First Four Weeks

Check indoor unit air filters (if fitted) and vacuum or wash clean as necessary.

Six Monthly

1. Check the tightness of all fan and motor mountings.
2. Check the tightness of electrical connections
3. Check that fan motors are free running.
4. Check suction and discharge operating pressures.
5. Replace indoor unit air filters (if fitted).
6. Check condensate drains for free drainage.

Yearly

1. Check all refrigerant piping for chafing and vibration.
2. Check the operation of electric heaters if fitted.
3. Check air supply at all diffusers.
4. Check for excessive noise and vibration and correct as necessary.
5. Check for insulation and duct damage and repair as necessary.
6. Remove lint and dust accumulation from outdoor coil fins.
7. 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. 3552b dated 03/11. OSA 83/95 wiring revision D and J resp.

Pipe Length Capacity Loss

On Cooling Cycle Due to Pressure Drop

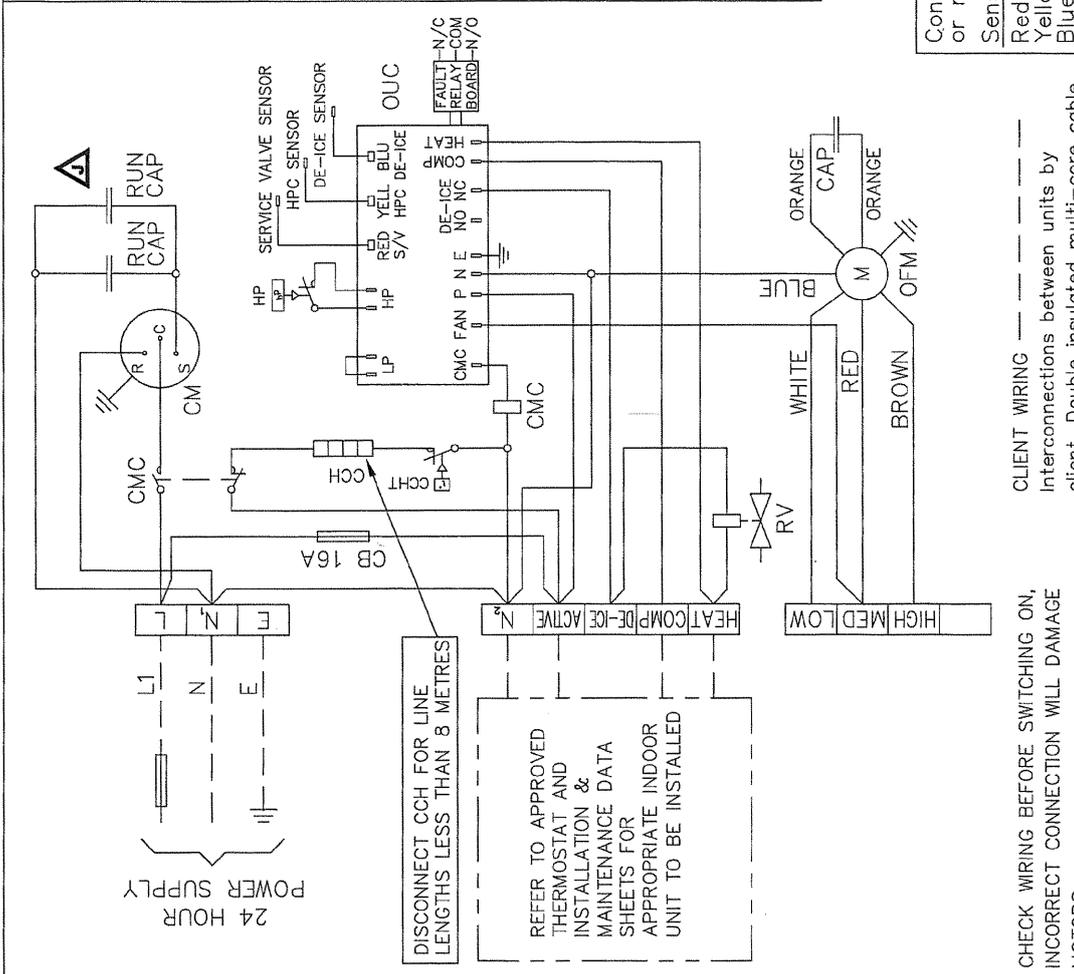
Note : Loss percentages are approximations only, due to piping variations. No allowance made for vertical piping.

Pipe Size (mm)		Equivalent Line Pipe Length (m)					Additional Pipe Length to allow per Bend		
Liquid	Suction	5	10	15	20	30	Suction Pipe Size OD	16 mm	19 mm
10	16	2 %	4 %	6 %	8 %	12 %	Long 90° Radius (2 x pipe dia.)	0.3 m	0.4 m
10	19	1 %	1.5 %	2.5 %	3.5 %	5 %			

OUTDOOR UNIT :- OSA 95RKSH	ISDL 95	ISDL 96	ISD 95	ISD 96	ISU 90
WITH INDOOR UNIT					
CAPACITIES - NET to AS/NZS 3823					
COOLING -	8.45	9.26	9.00	9.345	8.61
HEATING - REVERSE CYCLE	8.75	8.61	9.15	8.348	8.19
ELECTRICAL INPUT					
COOLING -	3.05	3.18	3.22	3.2	2.88
HEATING - REVERSE CYCLE	2.97	2.95	2.92	2.75	2.76
E.E.R. (COOLING)	2.76	2.912	2.795	2.92	3.04
ELECTRICAL					
SUPPLY REQUIRED 1PH 200-252V ~ 50Hz INCLUDING VOLTAGE FLUCTUATION LIMITS					
COMPRESSOR (1PH) RUN AMPS RATED CONDITIONS	A 11.7	11.7	11.8	11.8	11.7
COMPRESSOR (1PH) STARTING AMPS	A 40	40	40	40	40
COMPRESSOR CAPACITOR RUN	MFD	22.5	35		
INDOOR FAN MOTOR (1PH) FULL LOAD AMPS	A 1.42	1.42	1.5	1.5	0.7
INDOOR FAN MOTOR CAPACITOR	MFD	5	8	8	4
OUTDOOR FAN MOTOR (1PH) FULL LOAD AMPS	A 0.9	0.9	0.9	0.9	0.9
OUTDOOR FAN MOTOR CAPACITOR	MFD	5	5	5	5
RUNNING AMPS (TOTAL)	A 13.4	13.4	13.6	13.6	12.78
MAX. RUNNING AMPS (TOTAL)	A 19.1	19.1	19.2	19.2	18.4
WEIGHT - NETT OSA 95RKSH 85 kg					
REFRIGERANT - R410A					
UNIT PRECHARGED (10 METRE LINE LENGTH) 2.675 kg					
BASE CHARGE UNIT 2.225 kg PLUS 45 grams PER METRE LINE LENGTH					
BASED ON ø10 mm OD LIQUID LINE & ø16 mm OD GAS LINE					
COMPRESSOR TYPE: ROTARY					
OIL TYPE: POLYVINYL ETHER (PVE)					
ADD ADDITIONAL OIL 10ml PER METRE OVER 30 METRE LINE LENGTH					
CAPACITOR	CB				
CIRCUIT BREAKER	CCH				
CRANK CASE HEATER	CCHT				
CRANK CASE HEATER T/T/STAT	CM				
COMPRESSOR MOTOR	CMC				
COMPRESSOR CONTACTOR	HP				
HI PRESSURE CONTROL	LP				
LOW PRESSURE CONTROL	OFM				
OUTDOOR FAN MOTOR	OUC				
OUTDOOR UNIT CONTROLLER	RV				
REVERSING VALVE	SR				
START RELAY					

Title		OSA 95RKSH (OUC)	
Wiring Schematic		WIRING SCHEMATIC	
			
Drawn D.W.H	Date 02-03-07	Drawing No.	Revision
Aprvd Y.E		526-104-002	J

Programmed by	
PLOTTED	
27-09-12	
©temperzone ltd	
2012	
ASSY No.	
FINISH	
Mat'l	
DESCRIPTION	
No.	
DRG SIZE	
ECN	
DATE	
APRVD	
MODIFICATION	



Consult Outdoor Unit Controller label for further details, or refer to Temperzone for fault diagnosis information.

Sensor Locations

Red to service valve pipe pocket.
Yellow to coil return bend pocket.
Blue to bottom of coil in fins.

CLIENT WIRING --- --- --- --- ---
Interconnections between units by client. Double insulated multi-core cable.

CHECK WIRING BEFORE SWITCHING ON, INCORRECT CONNECTION WILL DAMAGE MOTORS

G	FAULT RELAY BOARD SHOWN	N241019-01-10	D.A.B
F	ISDL/ISD 96 DATA ADDED	N240230-11-08	D.A.B
E	WEIGHT WAS 86KG; PROTECTION WAS FUSE. DATA UPDATED, H ADDED TO TITLE	N226918-11-08	D.A.B
D	ADD DISCONNECT CCH NOTE	N234313-11-08	ROD
*J	Remove Start Relay & Start CAP	N310627-09-12	EBA
H	T/STAT FOR CCH ADDED	N272718-01-11	ROD
ISSUE	MODIFICATION		