

# OSA 125

## Split System Outdoor Unit

## Installation & Maintenance

### GENERAL

OSA 125 - A general designation for outdoor unit  
 OSA 125C - Outdoor unit, cooling only version  
 OSA 125R - Outdoor unit, reverse cycle version

This OSA 125 Outdoor Unit must be installed in accordance with all national and local safety codes.

### 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.

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 beneath the unit. These springs are not supplied with the unit.

#### Wall Mounting Option:

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

#### Drain

Install the unit with a positive fall to the rear to ensure condensate and/or rain water drains away freely through the drain holes provided. For a totally drip free installation mount the unit in a separate drain tray.

#### OPTIONAL FAN SPEED CONTROLLER

Fit a head pressure fan speed controller where cooling is required in below 20°C ambient conditions for long periods of time. An electronic HP Fan Speed Controller (4 amp) is available from **temperzone**.

### REFRIGERATION PIPING

#### General

The OSA 125 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 125 units have one flare and one brazed pipe connection.

#### Recommended Pipe Sizes

Suction pipe : 19 mm OD  
 Liquid pipe : 10 mm OD

#### Line Lengths

For line lengths in excess of 35 m, contact the manufacturer's nearest sales office for additional details on piping requirements.

#### Height Separation Limits

##### Reverse Cycle Systems

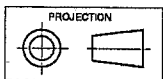
Outdoor Unit above Indoor Unit : 12 m  
 Outdoor Unit below Indoor Unit : 12 m

##### Cooling Only Systems

Outdoor Unit above Indoor Unit : 18 m  
 Outdoor Unit below Indoor Unit : 12 m

## Dimensions (mm)

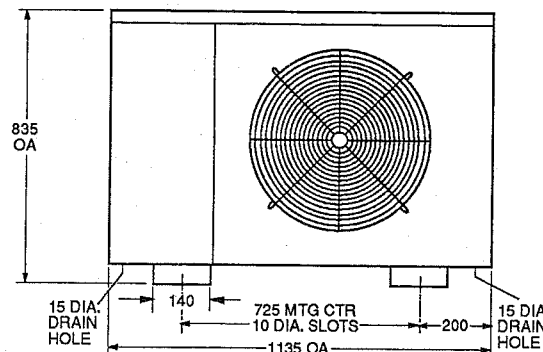
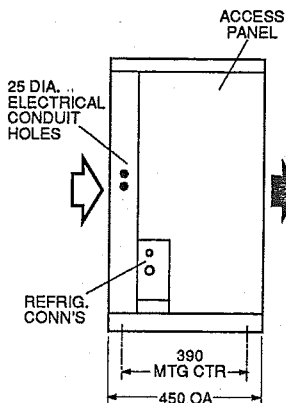
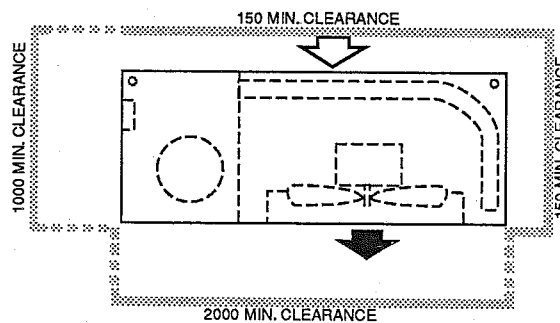
## OSA 125



Not to Scale

#### Net Weight

OSA 125C 104 kg  
 OSA 125R 108 kg



### Piping Design

Design pipework to prevent drainage of liquid refrigerant into the compressor during the off cycle, and to ensure oil return to the compressor.

### Vertical Risers

The gas riser should be trapped every 5 m 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.
2. Cut pipe with a pipe cutter ONLY.
3. Insulate the gas line and seal all insulation joints.
4. Bi-flow filter dryers may be fitted in the liquid line.
5. Include a process point in the interconnecting pipework.
6. Ensure open pipe ends are sealed until the final connection is made.
7. 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 3.2 kg of refrigerant HCFC-22 (R22) which is sufficient for up to 10 m of pipework between the indoor and

outdoor units. Add 35 g of HCFC-22 per metre above 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 7 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 with an indoor air temperature in the range 21° - 27°C and outdoor air temperature in the range 24° - 35°C. Alter charge up or down to establish correct superheat.

**WARNING:**

This unit is designed for use ONLY with the refrigerant HCFC-22. 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 25 m, Suniso 4GS oil (or similar) should be added to the refrigerant at the rate of 1/2 fluid ounce per metre (13 ml/m) of suction piping.

**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.**

*OSA 125R only* - It is recommended electricians run two spare wires between Outdoor Unit and Indoor Unit in case one, or both, of the following options becomes a requirement. **Note:** Leave the wires unconnected until required.

*Option 1* - Indoor Fan Off During De-Ice

*Option 2* - Electric Boost Heat.

Refer indoor unit's wiring diagram.

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 separate pamphlet for approved thermostats, or contact the manufacturer's nearest sales office.

**SYSTEM CHECK TESTS**

1. Check that all fan motors are free running.
2. Check for correct rotation of the compressor. If rotation is incorrect the compressor will not pump, be noisy, and will draw minimal current. To correct motor rotation, change the phasing at the main power terminal.
3. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
4. Check that the air filters, if any, have been correctly installed.
5. Check any supply air diffuser dampers are open.

**START UP PROCEDURE**

1. Check the supply voltage.
2. 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.
3. Fit gauges and measure the suction and discharge pressures.
4. Test the operation of the high pressure safety control by switching off the outdoor unit's fan.
5. Test the operation of the reversing valve by running the unit in both the heating and cooling mode (OSA 125R only).
6. Check that the air flow over the outdoor unit's coil is adequate and that the fan is running smoothly.
7. Check the superheat - refer charging procedure.
8. Check the supply air flow at each outlet.

**MAINTENANCE**

**Weekly For First Four Weeks**

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

**Six Monthly**

1. Check the tightness of all fan and motor mountings.
2. Check 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 drain for free drainage.

**Yearly**

1. Check for correct operation of all electrical equipment, i.e. H.P. and L.P. safety controls, anti-rapid cycle timer, compressor contactor and de-ice control (OSA 125R only).
2. Check all refrigerant piping for chafing and vibration.
3. Check the operation of electric heaters if fitted.
4. Check air supply at all diffusers.
5. Check for excessive noise and vibration and correct as necessary.
6. Check for insulation and duct damage and repair as necessary.
7. Remove lint and dust accumulation from outdoor coil fins.
8. 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.

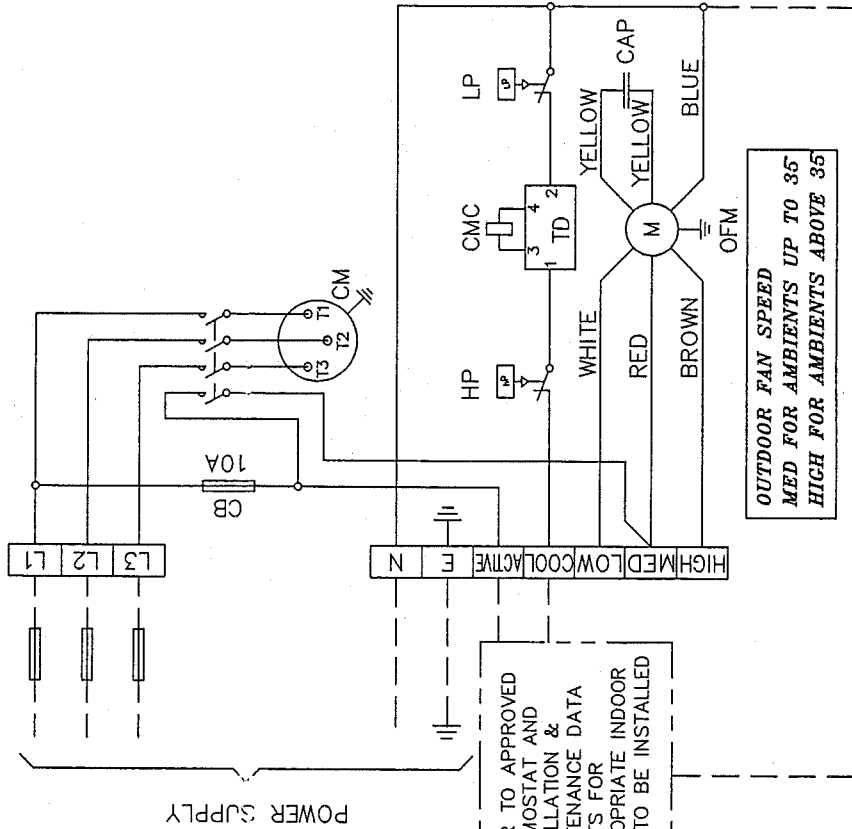
This pamphlet replaces the previous issue no. 1580 dated 08/98. Height separations.

**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	19 mm	22 mm
10	19	1.6 %	3.2 %	4.7 %	-	-	Large 90°Radius	0.43 m	0.46 m
10	22	0.8 %	1.6 %	2.4 %	3.2 %	4.7 %	Standard 90°Elbow	0.61 m	0.70 m

**IMPORTANT NOTE:**  
 THIS COMPRESSOR IS DIRECTIONAL.  
 ENSURE COMPRESSOR IS ROTATING IN CORRECT DIRECTION.  
 WRONG DIRECTION WILL CAUSE NOISY OPERATION  
 AND WILL NOT PUMP.  
 REVERSE TWO PHASES TO CHANGE DIRECTION.



REFER TO APPROVED  
 THERMOSTAT AND  
 INSTALLATION &  
 MAINTENANCE DATA  
 SHEETS FOR  
 APPROPRIATE INDOOR  
 UNIT TO BE INSTALLED

OUTDOOR FAN SPEED  
 MED FOR AMBIENTS UP TO 35°  
 HIGH FOR AMBIENTS ABOVE 35°

OUTDOOR UNIT :- OSA 125 C  
 WITH INDOOR UNIT  
 CAPACITIES - NOMINAL / AS1861.1(A)  
 COOLING - kW 12.5 12.2 12.3  
 ELECTRICAL INPUT @ 3PH 400V ~ 50Hz  
 COOLING - kW 4.26 4.13 3.6  
 E.E.R./C.O.P. (COOLING)  
 ELECTRICAL kW 10/2.93 10/2.95 11.5/3.4

SUPPLY REQUIRED 3PH 342-436V ~ 50Hz INCLUDING VOLTAGE FLUCTUATION LIMITS  
 COMPRESSOR (3PH) RUN AMPS RATED CONDITIONS A 6.0 6.0 6.0  
 COMPRESSOR (3PH) STARTING AMPS A 9.0 9.0 9.0  
 INDOOR FAN MOTOR (1PH) FULL LOAD AMPS A 5.7 0.7 X2 1.0  
 INDOOR FAN MOTOR CAPACITOR MFD 15 3.5 6  
 OUTDOOR FAN MOTOR (1PH) FULL LOAD AMPS A 1.1 1.1 1.1  
 OUTDOOR FAN MOTOR CAPACITOR MFD 5 5 5  
 RUNNING AMPS (TOTAL) 9.4/6/6/8/6/6.5/6.5/5.5  
 RECOMMENDED EXTERNAL FUSE SIZE A 25 25 25  
 RECOMMENDED EXTERNAL FUSE SIZE WITH OPTIONAL ELECTRIC HEAT A 25 25 25  
 WEIGHT - NETT OSA 125 C 104 Kg  
 REFRIGERANT - HCFC (R22)  
 UNIT PRECHARGED (10 METRE LINE LENGTH) 3.2 Kg  
 BASE CHARGE UNIT 2.85 Kg PLUS 35 grams PER METRE. LINE LENGTH  
 BASED ON ø9.5 mm OD LIQUID LINE & ø19 mm OD GAS LINE

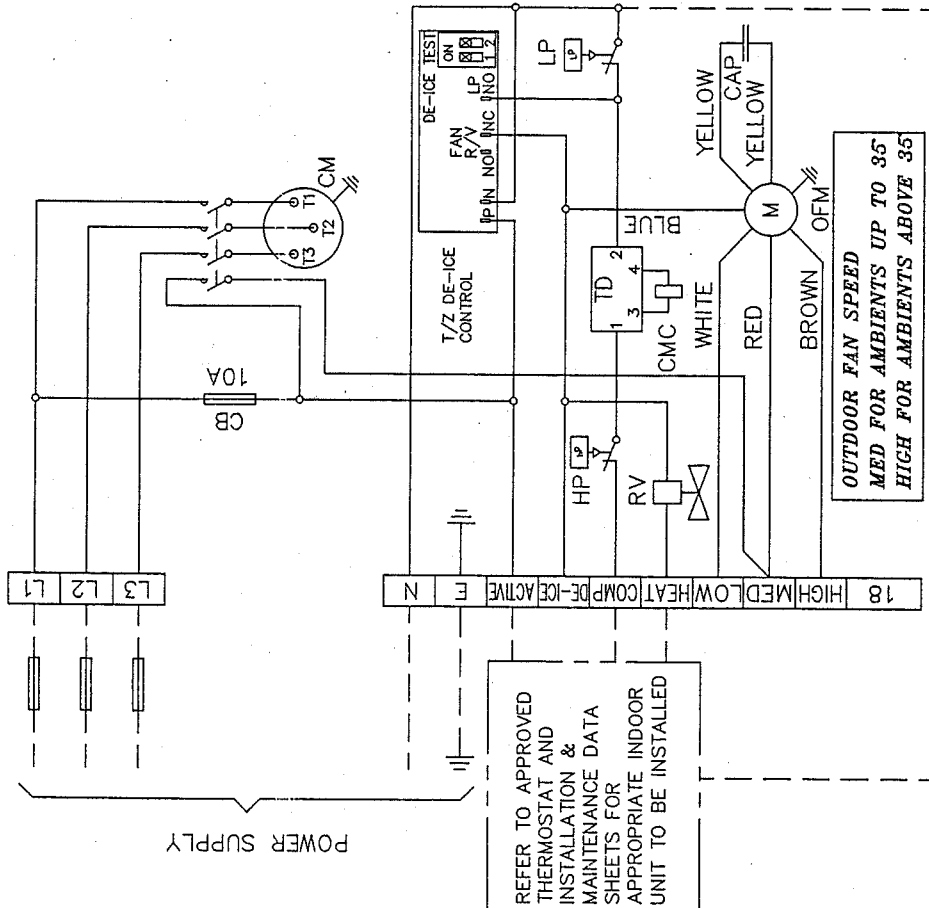
ABB	DESCRIPTION
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CM	COMPRESSOR MOTOR
CMC	COMPRESSOR CONTACTOR
HP	HI PRESSURE CONTROL
LP	LOW PRESSURE CONTROL
OFM	OUTDOOR FAN MOTOR
TD	TIME DELAY 6 MINS

NOTE:  
 CHECK WIRING BEFORE SWITCHING ON,  
 INCORRECT CONNECTION WILL DAMAGE  
 MOTORS  
 CLIENT WIRING --- --- ---  
 Interconnections between units by  
 client. Double insulated multi-core  
 cable.

Title		OSA 125 C WIRING SCHEMATIC	
Programmed by		temperzone	
Plotted	Date	Drawn	Revision
10-08-98	19-08-97	D.J.H.	No. 011-752-001
©temperzone Ltd 1998	Scale	Aprvd	B

ISSUE	MODIFICATION	EC/N	DATE	APPRVD	DRG SIZE	No.	DESCRIPTION	Mat'l	FINISH No.	ASSY No.
B	ISK125 DATA CHANGED UNIT RECHARGE WAS 3.2 KG BASE CHARGE WAS 2.85 KG PLUS 35 GRAMS PER METRE	572	07-08-98	D.J.H.						
A	ISK125 DATA ADDED IN LIEU OF_CSE_5_DATA	560	17-08-98	D.J.H.						

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 WRONG DIRECTION WILL CAUSE NOISY OPERATION  
 AND WILL NOT PUMP.  
 REVERSE TWO PHASES TO CHANGE DIRECTION.



REFER TO APPROVED THERMOSTAT AND INSTALLATION & MAINTENANCE DATA SHEETS FOR APPROPRIATE INDOOR UNIT TO BE INSTALLED

OUTDOOR FAN SPEED  
 MED FOR AMBIENTS UP TO 35  
 HIGH FOR AMBIENTS ABOVE 35

**NOTE: TESTING OF DE-ICE SWITCH POSITION**  
 SWITCH DIP SWITCH 1 OFF TO ALLOW REPEATED DE-ICE CYCLES WITHOUT A 33 MINUTE DELAY.  
 SWITCH DIP SWITCH 2 OFF TO FORCE A DE-ICE CYCLE.  
 ALWAYS RETURN BOTH SWITCHES TO 'ON' POSITION FOR NORMAL OPERATION.

CHECK WIRING BEFORE SWITCHING ON.  
 INCORRECT CONNECTION WILL DAMAGE MOTORS  
 CLIENT WIRING  
 Interconnections between units by client. Double insulated multi-core cable.

OUTDOOR UNIT :- OSA 125 R  
 WITH INDOOR UNIT  
 CAPACITIES - NOMINAL / ASI861.1(A)

COOLING -	KW	12.5	12.2	12.3
HEATING - REVERSE CYCLE	KW	12.2	12.2	12.3
ELECTRICAL INPUT @ 3PH 400V ~ 50Hz				
COOLING -	KW	4.26	4.13	3.6
HEATING - REVERSE CYCLE	KW	3.9	3.8	3.5
E.E.R./C.O.P. (COOLING)	KW	10/2.93	10/2.95	11.5/3.4

SUPPLY REQUIRED 3PH 342-436V ~ 50Hz INCLUDING VOLTAGE FLUCTUATION LIMITS

COMPRESSOR (3PH) RUN AMPS RATED CONDITIONS	A	6.0	6.0	6.0
COMPRESSOR (3PH) STARTING AMPS	A	9.0	9.0	9.0
INDOOR FAN MOTOR (1PH) FULL LOAD AMPS	A	5.7	0.7 X2	1.0
INDOOR FAN MOTOR CAPACITOR	MFD	15	3.5	6
OUTDOOR FAN MOTOR (1PH) FULL LOAD AMPS	A	1.1	1.1	1.1
OUTDOOR FAN MOTOR CAPACITOR	MFD	5	5	5
RUNNING AMPS (TOTAL)		9.4/6/6	8/6/6	6.5/6.5/5.5
RECOMMENDED EXTERNAL FUSE SIZE	A	25	25	25
RECOMMENDED EXTERNAL FUSE SIZE WITH OPTIONAL ELECTRIC HEAT	A	25	25	25
WEIGHT - NETT		OSA 125 R	108 Kg	
REFRIGERANT - HCFC (R22)				
UNIT PRECHARGED (10 METRE LINE LENGTH)		3.2 Kg		
BASE CHARGE UNIT 2.85 Kg PLUS 35 grams PER METRE. LINE LENGTH BASED ON Ø9.5 mm OD LIQUID LINE & Ø19 mm OD GAS LINE				

ABB	DESCRIPTION
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CM	COMPRESSOR MOTOR
CMC	COMPRESSOR CONTACTOR
HP	HI PRESSURE CONTROL
LP	LOW PRESSURE CONTROL
OFM	OUTDOOR FAN MOTOR
RV	REVERSING VALVE
TD	TIME DELAY 6 MINS

Title		OSA 125 R WIRING SCHEMATIC	
Programmed by		temperzone	
Plotted		07-08-98	
Drawn D.J.H.		Date 19-08-97	Drawing No. 011-753-001
Scale		Aprvd	Revision C

ISSUE	MODIFICATION	EC/N	DATE	APRVD
C	ISK 125 DATA CHANGED	572	07-08-98	D.J.H.
B	UNIT PRECHARGE WAS 3.35 NOW 3.2 ISK BASE CHARGE WAS 3.0 NOW 2.85 ISK 125 DATA ADDED IN LIEU OF CSF 5 DATA	560	17-06-98	D.J.H.
A	DE-ICE WITH DIP SWITCH ADDED		05-02-98	D.J.H.

Mat.J	FINISH	ASSY
		No.
		Ino.