

OPA 1370RKTMO1-P (c/w Plug fan)

Packaged Reverse Cycle R410A Air Cooled Air Conditioner

Installation & Maintenance

GENERAL

This OPA 1370RKTMO Outdoor Unit must be installed in accordance with all national and local safety codes.

REFRIGERATION SYSTEM

General

The OPA 1370 has four independent refrigeration circuits and four compressors to provide the flexibility and economy of four stage operation, i.e. utilising one to four circuits as conditions vary, plus the advantage of staggered starting.

Each refrigeration system has been charged with HFC-410A (R410A) refrigerant; refer wiring diagram specification table for amount. Tapping points are provided to measure discharge and suction operating pressures.

Compressors

The compressors are directional scroll type. The compressor lubricant is polyol ester oil (POE). Note, this oil absorbs moisture quickly if exposed to open air. On commissioning, the compressors must be checked for correct rotation (refer Start Up Procedure). A time delay prevents simultaneous starting of the compressors.

ECONOMISER (Option)

If the outdoor air temperature or heat content preferably, is below that of the return air the fresh air damper opens and the return air damper closes to provide the first stage of cooling. A spill air facility in the building may be necessary for when the return air damper is closed. The fresh air damper should return to minimum setting and the return air damper open before compressors are allowed to operate to provide further cooling.

INSTALLATION

Positioning

Refer to dimension diagrams for minimum clearances. If multiple units are to be placed side-by-side then allow at least 2 m between coil faces.

Mounting

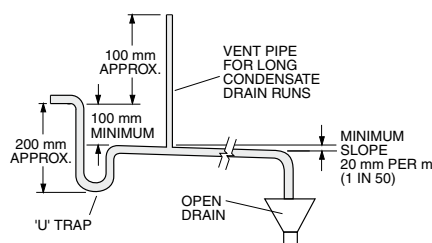
The unit should be fastened to a firm flat horizontal base using the holes supplied in the mounting channels.

When the unit is being installed on a roof it is recommended that the unit is installed on a substantial structure with anti-vibration mounts or pads.

Flexible duct connections are recommended between the supply and return ducts and the unit.

Condensate Drain

The condensate drain should be 'U' trapped outside the unit. The trap should have a vertical height of at least 100 mm. The drain should have a slope of at least 1 in 50 and must not be piped to a level above the unit drain pipe.



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 unit.

Note: DO NOT USE REWIRABLE FUSES.

The OPA 1370 is provided with a 24V AC control circuit for a thermostat, on/off switch and/or time clock.

The control transformer 240V primary voltage is used for countries with 230-240V power supply. For countries with supply voltages 200-220V, change the primary voltage on the transformer to 208V.

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.

A 24 hour power supply to the control circuit is required, otherwise the warranty is void.

SETTING SUPPLY AIR FLOW

Consult OPA 1370 Technical Data pamphlet at www.temperzone.biz for details of airflow/duct static pressure, if required.

If the indoor air returning to the unit is regularly expected to be above 50%RH, then the coil face velocity should be limited to be 2.5 m/s or less (refer Air Handling graph in Technical Data pamphlet).

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Select a fan speed that avoids water carry-over problems.

In a free blow or low resistance application, beware of exceeding the fan motor's full load amp limit (refer wiring diagram).

INDOOR FAN SPEED

The fan speed is continuously variable via the 0-10V DC control signal applied between terminals 'FAN GND' and '0-10V'.

Once the maximum design air flow has been set, a variable fan speed can be controlled as follows by applying an external variable 0-10V DC control voltage to '0-10V' terminal. Connect 0V reference to 'FAN GND'.

CHECK TESTS

1. Leave the on/off switch in the off position and close the mains isolating switch. A four hour delay period is required to allow the crankcase heaters to drive any liquid refrigerant out of the compressor oil.
2. Check that all the shipping bolts on the back of the compressor frame have been removed and that the compressor is secure on its mounts.
3. Check that all fan motors are free running.
4. Check that the thermostat is correctly wired to the unit and is set at the desired temperature.
5. Check that the air filters have been correctly installed if fitted.
6. Check air diffuser dampers are open if appropriate.

START UP PROCEDURE

After the four hour delay for the crankcase heater has expired, use the supplied Commissioning Sheet (Form NS 228) to record results when completing the following 'Start-up' procedure. A *UC6 Service Interface* tool is supplied to read, pressures, superheat and its set-point, compressor amps etc.

1. Select a sensible Fan speed (or Auto Fan mode), operating cycle (cool or heat), and room temperature set point, depending on the time of year, such that the compressor will start and run at a high capacity.
2. Turn ON the thermostat / External controller. Wait for the compressors to start.
3. Compressors fitted are directional. Check for correct rotation. 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. If changing the phasing, check the indoor air fan then runs in the correct direction also.
3. Measure the current draw on each phase to the compressor motors and measure the current draw of each fan motor. Check all readings against the specified values in the wiring diagram.

- Use the *UC6 Service Interface* tool to check operating pressures and status. If the *UC6 Service Interface* is not available, fit gauges and measure the suction and discharge pressures of both refrigeration circuits.
- Check that the outdoor air fan motors are running smoothly and drawing less than the full load amps specified.
- Test the operation of the reversing valve by running the unit in both the heating and cooling mode.
- Check the supply air flow at each outlet.
- Touch up any paintwork damage to prevent corrosion.

UNIT CONTROLLER (UC6)

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. The UC regulates the superheat of the refrigeration system by controlling the position of an electronic expansion valve (EEV). 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 and the speed will vary either smoothly, or in steps, in order to protect against excessively low or high head pressure.

Refer to UC6 Controller label on the unit for operation & fault diagnostics information. Many operating status conditions can be determined, without gauges, simply by using the *UC6 Service Interface* graphical display supplied with the unit.

MAINTENANCE

Monthly

- Check 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.

Six Monthly

- Check the tightness of electrical connections.

- Check the tightness of all fans and motor mountings.
- Check suction and discharge operating pressures. (Using the *UC6 Service Interface* avoids fitting and removing gauges with consequential refrigerant loss.)
- Replace indoor air filters (if fitted).
- Check condensate drain for free drainage.

Yearly

- Check all refrigerant piping for chafing and vibration.
- Check the operation of electric heaters, if fitted.
- 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 any paintwork damage to prevent corrosion.

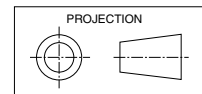
NOTE

The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.

DIMENSIONS (mm)

OPA 1370RKTM01-P – Horizontal Supply & Return Air

OPA 1370RKTM-P

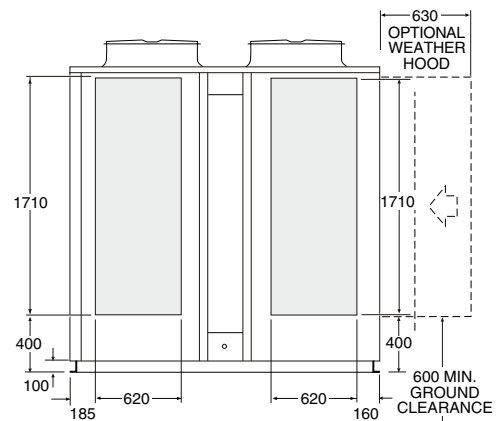
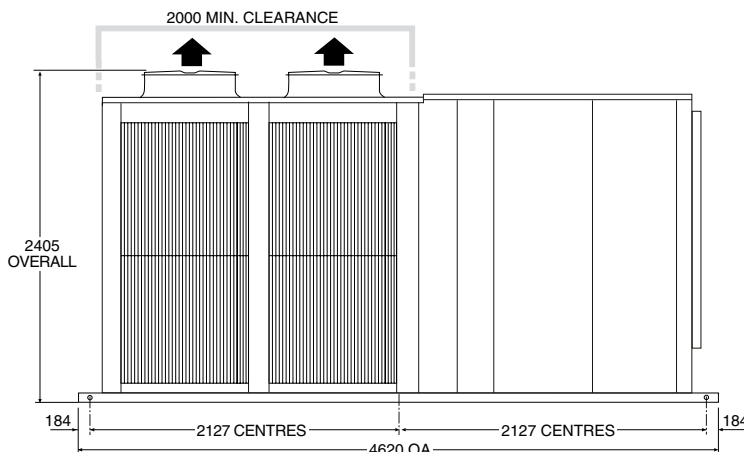
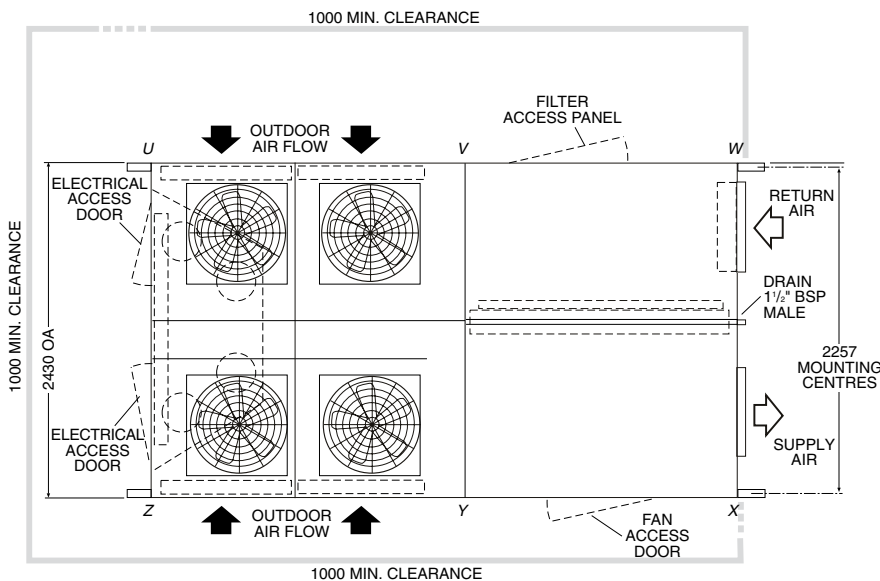


Not to Scale

POINT LOADS (kg)					
U	V	W	X	Y	Z
393	317	243	358	349	340

Net Weight 2000 kg

Note : A 2 m clearance is required above the exhaust air fans



Options

CAPACITIES – NET to AS/NZS 3823	OPA 1370RKTM-P
COOLING –	kW 127.7
HEATING – REVERSE CYCLE	kW 108
ELECTRICAL INPUT	
COOLING –	kW 39
HEATING – REVERSE CYCLE	kW 30
E.E.R. (COOLING)	kW/kW 3.270
A.E.E.R. (COOLING)	kW/kW 3.200
ELECTRICAL	
SUPPLY REQUIRED 3Ph 342-436V ~ 50Hz	
INCLUDING VOLTAGE FLUCTUATION LIMITS	
COMPRESSOR 1 (3Ph) RUN AMPS RATED CONDITIONS A/Ph	15
COMPRESSOR 2 (3Ph) RUN AMPS RATED CONDITIONS A/Ph	15
COMPRESSOR 3 (3Ph) RUN AMPS RATED CONDITIONS A/Ph	15
COMPRESSOR 4 (3Ph) RUN AMPS RATED CONDITIONS A/Ph	15
INDOOR FAN MOTOR (3Ph) FULL LOAD AMPS	kW 1.9 x 4
INDOOR FAN MOTOR (1Ph) FULL LOAD AMPS	A 3.1 x 4
OUTDOOR FAN MOTOR (1Ph) FULL LOAD AMPS	A 2.95 x 4
OUTDOOR MOTOR CAPACITOR	MFD 14 x 4
RUNNING AMPS (TOTAL)	A/Ph 72/71/77
RECOMMENDED EXTERNAL PROTECTION	A/Ph 125
WEIGHT-NET OPA 1370RKT	Kg 2000
REFRIGERANT – R410A	Kg / SYSTEM 8.5
COMPRESSOR TYPE :	SCROLL
OIL TYPE :	P.O.E.
CONTROL CIRCUIT BREAKER	4A
INDOOR FAN MOTOR CIRCUIT BREAKER	10A x 2
INDOOR FAN MOTOR OVERLOAD SETTING	N/A
COMPRESSOR CIRCUIT BREAKER	32A x 4
COMPRESSOR OVERLOAD SETTING	22A x 4
RESIDUAL CURRENT CIRCUIT BREAKER RATING	10A/30mA
24VOLT CIRCUIT BREAKER	2A
OUTDOOR FAN 1 & 2 CIRCUIT BREAKER	10A
OUTDOOR FAN 3 & 4 CIRCUIT BREAKER	10A

CLIENT WIRING
 NOTE: CHECK WIRING BEFORE SWITCHING ON.
 INCORRECT CONNECTION WILL DAMAGE MOTORS.

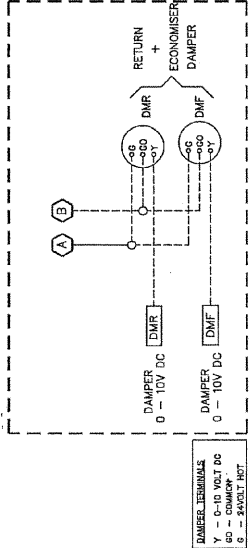
NOTE: CONTROL TRANSFORMER 240V PRIMARY VOLTAGE IS USED FOR COUNTRIES WITH 230-240V SUPPLY. FOR COUNTRIES WITH SUPPLY VOLTAGE 200-220V CHANGE PRIMARY VOLTAGE TO 208 ON TRANSFORMER

24 hour power required for correct rotation. If rotation incorrect, compressor/s will not pump. Be sure terminal current to correct rotation, reverse two phases

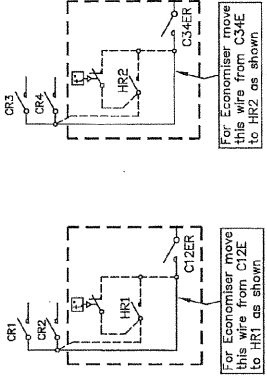
IMPORTANT NOTE:
 Compressors fitted with fan motors. Check for correct rotation. If rotation incorrect, compressor/s will not pump. Be sure terminal current to correct rotation, reverse two phases

PRESSURE CONNECTIONS:
 Black: + Terminal
 White: Mid Terminal
 Green: - Terminal

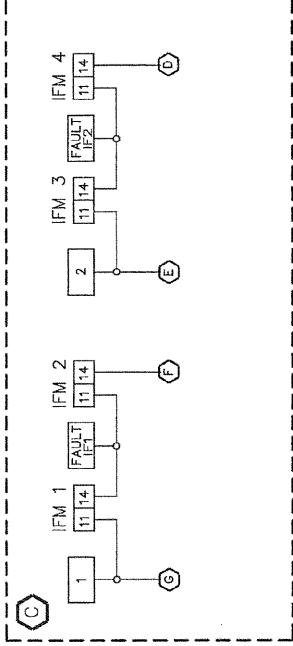
ISSUE	MODIFICATION	ECK	DATE	APRVD



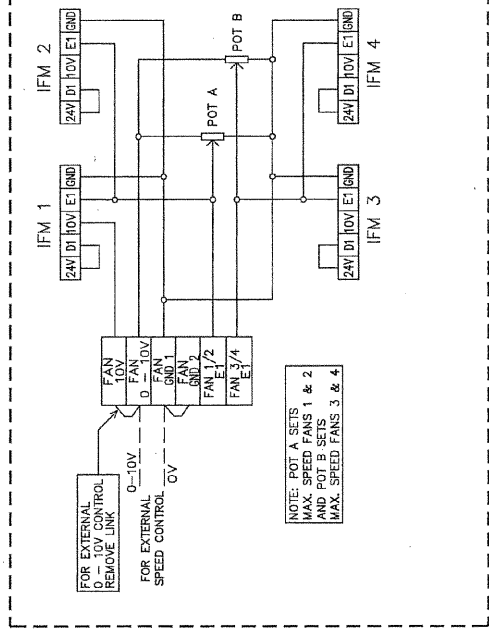
ECONOMISER OPTION DAMPER MOTOR



ECONOMISER OPTION THERMOSTAT



FAULT CIRCUIT



INDOOR FAN MOTOR CIRCUIT

DMF	DAMPER MOTOR FRESH AIR
DMR	DAMPER MOTOR RETURN AIR
IFC	INDOOR FAN CONTACTOR
IFM	INDOOR FAN MOTOR
POT	POTENTIOMETER
?	OPTION LINK REFER PAGE 1

REFER TO WEBSITE
 www.temperzone.biz
 FOR UP TO DATE INFORMATION

Title OPA 1370RKTM-P
 WIRING SCHEMATIC



PLOTTED
 23-05-12

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Drawn KTT	Date 04-05-12	Revision
Scale	As per	291-000-115
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