



## Air Cooled Packaged Units Technical Data

---

OPA 1370, OPA 2000

---

Cooling Capacity  
137kW - 193kW

Heating Capacity  
135kW - 213kW

# Air Cooled Packaged Units

## Contents



<b>OPA 1370, 2000</b>	<b>3</b>	<b>OPA 1370 ECO OPTION</b>	<b>6</b>
General	3	<b>PERFORMANCE DATA</b>	<b>7</b>
Applications	4	Cooling Capacity (kW)	7
Air Flow Selection	4	Indoor Air Flow Correction Factors @ nominal conditions	7
Features	4	Heating Capacity (kW)	7
Refrigerant R410A	4	Air Handling	8
Economy	4	Sound Levels	9
Efficiency	4	Sound Power Levels (SWL) - Radiated	9
Performance	4	Sound Pressure Levels (SPL)	9
Quiet	4	Sound Power Levels (SWL) - Supply Air Outlet	9
Insulation	4	<b>DIMENSIONS (mm)</b>	<b>10</b>
Durable	4	<b>SPECIFICATIONS</b>	<b>13</b>
Self Diagnostics	4		
Control Option	4		
Configurations	5		
Optional Equipment	5		
Safety Features	5		
Compressor	5		
Refrigeration System	5		
Wiring	5		
Economiser Option	5		

# Air Cooled Packaged Units

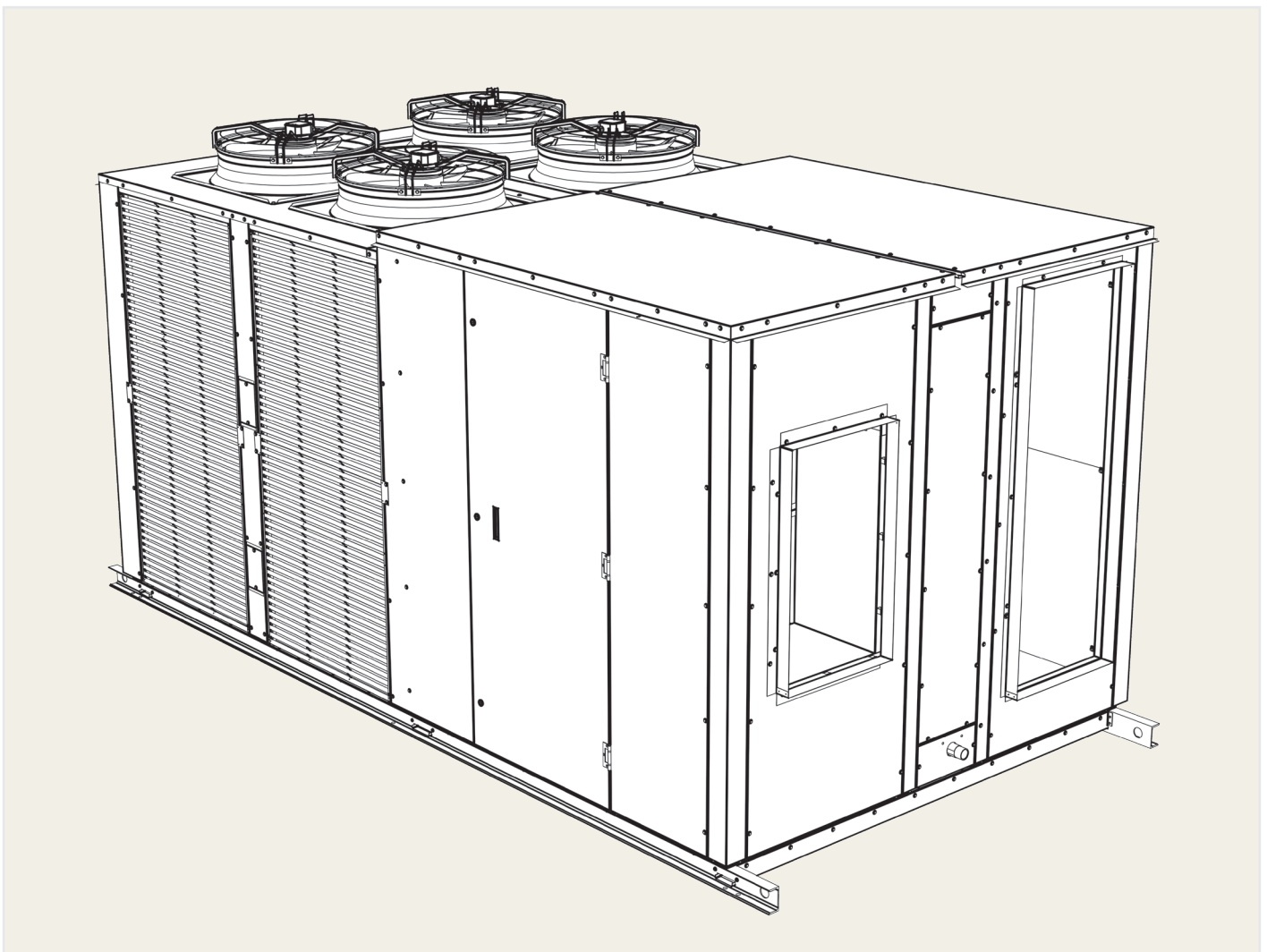
OPA 1370, 2000



Reverse Cycle (heat pump) packaged roof top A/C

Complies with AS/NZS 3823 specified conditions

Designed and tested to operate at 50°C ambient in cooling mode and at -10°C in heating mode



# Air Cooled Packaged Units

## OPA 1370, 2000



### Applications

Specifically developed for air conditioning of commercial premises i.e. retail warehouses, supermarkets, shopping malls, auditoriums and restaurants

### AIR FLOW SELECTION

If air returning to the indoor coil is regularly expected to be above 50% relative humidity then the coil face velocity should be limited to 2.5m/s or less (refer air flow graph page 8)

Consideration must be given to selecting a airflow and coil face velocity that avoids water carry - over problems i.e. in high humidity (tropical/subtropical) conditions or when heavily moisture laden fresh air is introduced

Applications using complete or high proportion of fresh air should be discussed with a Temperzone sales engineer to establish the correct selection of unit

### FEATURES

#### Refrigerant R410A

R410A used which is deemed to have zero ozone depletion potential

#### Economy

The units have 4 independent refrigeration circuits to provide the flexibility & economy of 4 stage operation i.e. utilizing 1 to 4 circuits as conditions vary plus staggered starting

An economiser option is available to lower operating costs during the cooling cycle

#### Efficiency

Heat exchange coils incorporate inner grooved (rifled) tube for superior heat transfer

The indoor coil is interlaced for efficient part load performance

#### Performance

An adjustable pulley is fitted on the indoor fan motor to allow for easy adjusting of the airflow during air balancing & commissioning

Plug Fans / EC Motors are available as a custom option. These allow the airflow to be controlled / adjusted using a 0-10VDC signal (by others) or using the Service Interface tool to select the correct airflow. This can be very useful when adjusting fan speed during

#### Commissioning & Air Balancing

A variable speed head pressure control is used, ensuring the condenser airflow is suited to the pressures within the refrigerant circuit. This also allows for reliable operation in Cooling Mode at ambients below 20°C, and Heating mode above 15°C

The inclusion of electronic expansion valves (EEVs) enables optimum performance over a wide range of conditions.

#### Quiet

Generous use of insulation ensures a quiet unit

#### Insulation

Closed cell foam insulation is used in indoor air section to ensure no particles in air stream. The insulation is foil faced & meets fire test standards AS1530.3 (1989) & BS 476 parts 6 & 7

#### Durable

The cabinet and drain tray are constructed from high grade galvanized steel-polyester powdered coated (Grey) for all weather protection. External fasteners are stainless steel.

Heat exchange coils comprise aluminium plate fins on mechanically expanded rifled copper tube.

Outdoor coil fins are epoxy coated for extra protection in corrosive environments ie salt laden sea air

Outdoor air coil protection guards are supplied.

Fan motor bearings are sealed for life so as not to incur regular maintenance

#### Self Diagnosis

The units controller (UC6) has a 7 segment LED display to indicate faults & running conditions. Many operating status conditions (including history) can be accessed without gauges by using the optional UC6 service interface graphical display

#### Control Option

The UC6 controller is BMS compatible with multi unit control possible – either via digital and analogue signals or via modbus (refer to Temperzone for details)

# Air Cooled Packaged Units

## OPA 1370, 2000



### CONFIGURATIONS

The units are supplied as standard as left hand supply air (as facing the supply air spigot), with right hand available as an option, also, we can supply alternative location for of the supply air and return air openings as per the chart below

#### Spigot Position

Models	Supply Air				Return Air			
	Front	Top	Side	Bottom	Front	Top	Side	Bottom
OPA 1370	Std	Opt	Opt	Opt	Std	Opt	Opt	Opt
OPA 2000	Std	Opt	Opt	Opt	Std	Opt	Opt	Opt

### OPTIONAL EQUIPMENT

1. Filters rated to AS 1324.1:2001
2. Factory fitted economiser -includes dampers, weatherhood
3. Adjustable fresh air damper & weather hood
4. Electronic control systems (available by arrangement)
5. UC6 service interface tool
6. OPA 1370 Viking controller-multi stage
7. OPA 1370 Digital compressor to replace one of the four compressors for closer temperature control
8. OPA 1370 EC plug fan (supply air).

### SAFETY FEATURES

1. HP & loss of refrigerant protection
2. Anti rapid cycle timer internal overload for compressor protection
3. Circuit breaker control circuits
4. Time & temperature controlled electronic de-ice switch prevents icing up of the outdoor coil during heating cycle
5. Frost protection on cooling cycle
6. Sensor fault indication
7. Crankcase heater prevents liquid refrigerant condensing in the compressors during the "off" cycle
8. Compressor minimum run time to ensure oil return
9. 24v control circuit
10. Phase rotation protection device
11. External power isolation switch

### COMPRESSOR

Each high efficiency scroll type compressor is hermetically sealed quiet running and supported on rubber mounts to minimize vibration

### REFRIGERATION SYSTEM

Factory charged with HFC-410A (R410A) refrigerant. Electronic expansion devices control the flow of refrigerant

### WIRING

The electrical supply required (including voltage fluctuation limits) is 3 phase 400-415V ac 50Hz with neutral & earth

The units control panel is fully wired ready to accept the main power supply

### ECONOMISER OPTION

If outdoor air content or temperature is below that of the return air, the fresh air damper opens & the return air damper closes to provide the first stage of cooling. The compressors will then operate to provide more cooling if required. A alternate way of exhausting air may be required when operating on 100% fresh air

# Air Cooled Packaged Units

## OPA 1370



### OPA 1370 ECO OPTION

The OPA 1370RKTMG-P model with 1st stage digital compressor and EC plug fans has the following advantages:

#### Efficient

Each plug fan incorporates a high efficiency EC motor (significantly better than belt drive centrifugal fans).

#### Performance

The plug fan version uses a backward curved plug fan which enables fine tuning of the indoor unit to match higher static pressure supply air requirements, and a wide range of indoor air flows.

These EC motor fans have a fully integrated speed control that enables soft starting.

Fan speed can be stepped to your own requirements or continuously variable using a 0-10V DC control signal.

#### Close Temperature Control

Use of a variable capacity compressor (digital) on the first stage of four compressor operation enables greater fine tuning of room temperature.

#### Quiet

Each plug fan motor can vary from zero to full speed. This allows slow ramp up with no sudden noise change.

The motor can be controlled to have the best air flow for the ducting and requirements. A large aperture supply spigot reduces exit velocities and therefore less noise down ductwork.

#### Low Maintenance

Commissioning and maintenance costs are reduced through use of a fan that doesn't require a pulley and belt adjustment or changes like traditional fans.

#### Soft Starting

EC motors are soft starting and therefore have none of the problems associated with high rush in current.

#### Control Option

Fixed and stable air flows can be achieved through use of different pressure transducer and controller (not included) to compensate for varying duct static caused by dirty filters or modulating dampers.

Commissioning is also made easier. The system is set up for the EC motor to be controlled variably by a 0-10V DC signal that can be supplied either by a BMS system or the optional Viking controller (which can also control economiser dampers).

# Air Cooled Packaged Units

## Performance Data



### COOLING CAPACITY (KW)

Total = Total Capacity (kW).  
 Sens. = Sensible Capacity (kW).  
 E.A.T. = Entering Air Temperature.  
 ○ = Nominal Capacity (kW).

**Note:** Capacities are **gross** and do not include allowance for fan motor heat loss. Capacities are for close coupled systems. Interconnecting pipework will reduce capacity.

See below for Indoor Air Flow Correction factors

Models	Indoor Fan	Indoor coil		Outdoor coil entering air temperature °C D.B.											
		E.A.T.		23		27		31		35		39		43	
		D.B. °C	W.B. °C	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
OPA 1370	7500	21	15	134	106	133	106	129	104	123	101	115	95	105	88
		23	17	142	104	140	104	136	102	130	99	122	94	112	87
		27	19	149	119	147	119	143	117	137	114	129	108	119	101
		31	21	156	141	154	141	150	139	144	135	136	129	126	121
OPA 2000	9500	21	15	189	149	187	149	181	147	173	142	162	134	147	124
		23	17	199	146	197	146	191	143	183	139	172	132	157	122
		27	19	209	167	207	167	201	165	193	160	181	152	167	142
		31	21	219	198	217	198	211	195	203	190	192	181	177	170

### INDOOR AIR FLOW CORRECTION FACTORS @ NOMINAL CONDITIONS

#### Indoor Air Flow (%)

	-20%	-10%	Rated	+10%
Total Capacity	0.95	0.975	1.0	1.025
Sensible Capacity	0.89	0.950	1.0	1.050

### HEATING CAPACITY (KW)

G = Gross Heating Capacity kW, based on nominal air flow.  
 N = Net Heating Capacity kW allowing for average defrost.  
 ○ = Nominal Capacity (kW).

Models	Indoor Entering Air Temp. °C	Outdoor coil entering air temperature °C D.B.															
		-5		-3		-1		1		3		5		7		9	
		D.B.	G	N.	G	N.	G	N.	G	N.	G	N.	G	N.	G	N.	
OPA 1370	15	99	87	105	105	111	111	117	117	122	122	128	128	134	134	139	139
	20	98	86	104	104	109	109	115	115	121	121	126	126	132	132	138	138
	25	95	84	101	101	106	101	112	112	118	118	123	123	129	129	135	135
OPA 2000	15	160	140	170	139	179	141	188	150	197	169	206	201	215	215	224	224
	20	158	139	167	137	176	139	186	148	195	168	204	200	213	213	222	222
	25	153	135	162	133	171	135	180	144	189	164	199	196	208	208	217	217

# Air Cooled Packaged Units

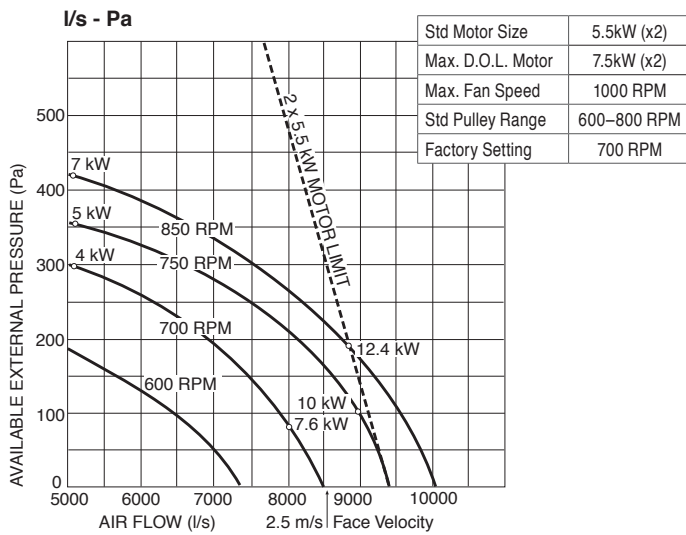
## Performance Data



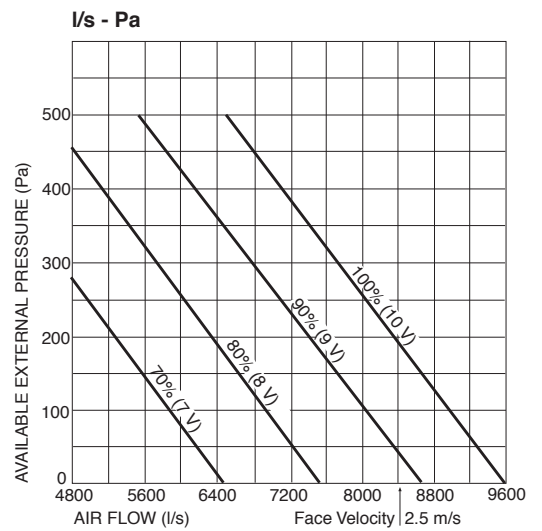
### AIR HANDLING

**Note:** Airflows are for a dry coil. Reduce airflow by 5% in high moisture removal conditions. In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer back page). As filters are optional, the fan air flows given are for units installed without filters. Refer figure 16 for filter pressure drop.

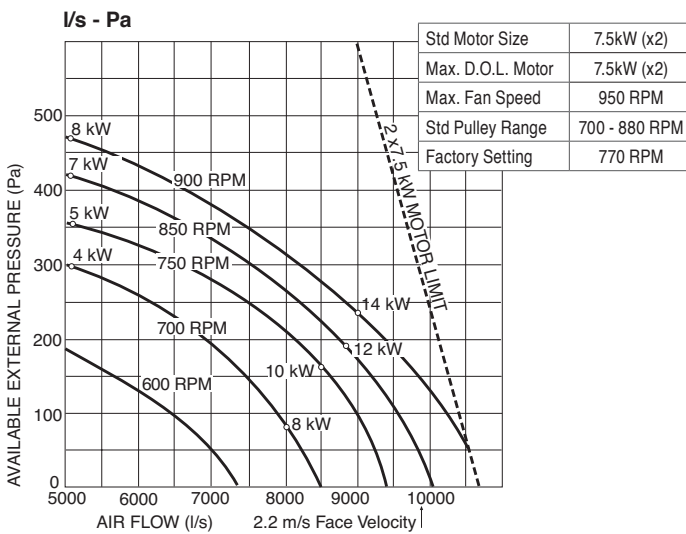
#### OPA 1370



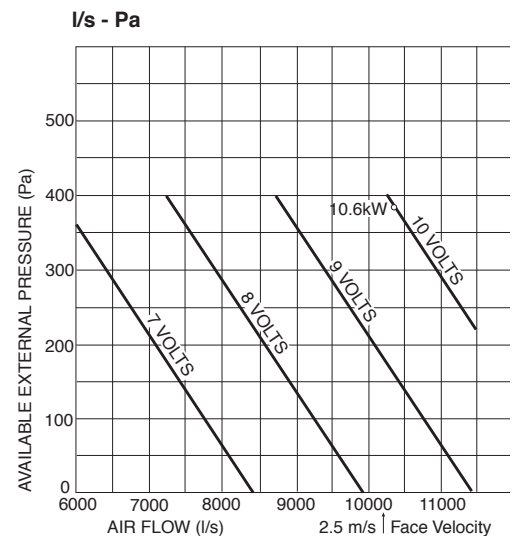
#### OPA 1370 Eco (Plug Fan Option)



#### OPA 2000



#### OPA 2000 (Plug Fan Option)





# Air Cooled Packaged Units

## Performance Data



### SOUND LEVELS

#### Sound Power Levels (SWL) - Radiated

Measured in decibels re 1 picowatt, at nominal airflow.

Models	OUTDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	HIGH	86	84	83	84	81	78	73
OPA 2000	HIGH	78	88	73	75	74	67	60

#### Sound Pressure Levels (SPL)

Measured in decibels re 20  $\mu$ Pa, at nominal airflow.

Models	OUTDOOR FAN SPEED	SPL dB(A) @ 3m	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	HIGH	70	68	67	68	65	62	57
OPA 2000	HIGH	62	66	57	59	58	51	44

#### Sound Power Levels (SWL) - Supply Air Outlet

Test Conditions: BS 848 PT2 1985.

Installation Type A (free inlet and outlet).

Direct method of measurement (reverberant room).

Measured in decibels re 1 picowatt.

Models	INDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	750 RPM	87	85	86	85	82	79	75
	800 RPM	93	91	92	91	89	85	81
OPA 2000	800 RPM	89	87	88	87	84	81	77
	850 RPM	99	93	94	93	90	87	83

# Air Cooled Packaged Units

## Performance Data



### SOUND LEVELS - PLUG FAN OPTION

#### Sound Power Levels (SWL) - Radiated

Measured in decibels re 1 picowatt, at nominal airflow.

Models	OUTDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	HIGH	84	94	83	80	78	75	68
OPA 2000	HIGH	88	93	85	85	83	79	75

#### Sound Pressure Levels (SPL)

Measured in decibels re 20  $\mu$ Pa, at nominal airflow.

Models	OUTDOOR FAN SPEED	SPL dB(A) @ 3m	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	HIGH	66	76	65	62	60	57	50
OPA 2000	HIGH	70	75	67	67	65	61	57

#### Sound Power Levels (SWL) - Supply Air Outlet

**Test Conditions:** BS 848 PT2 1985.  
Installation Type A (free inlet and outlet).

Direct method of measurement (reverberant room).  
Measured in decibels re 1 picowatt.

Models	INDOOR FAN AIRFLOW	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 1370	7500	86	69	77	81	82	77	73
OPA 2000	9500	89	80	88	87	80	82	82

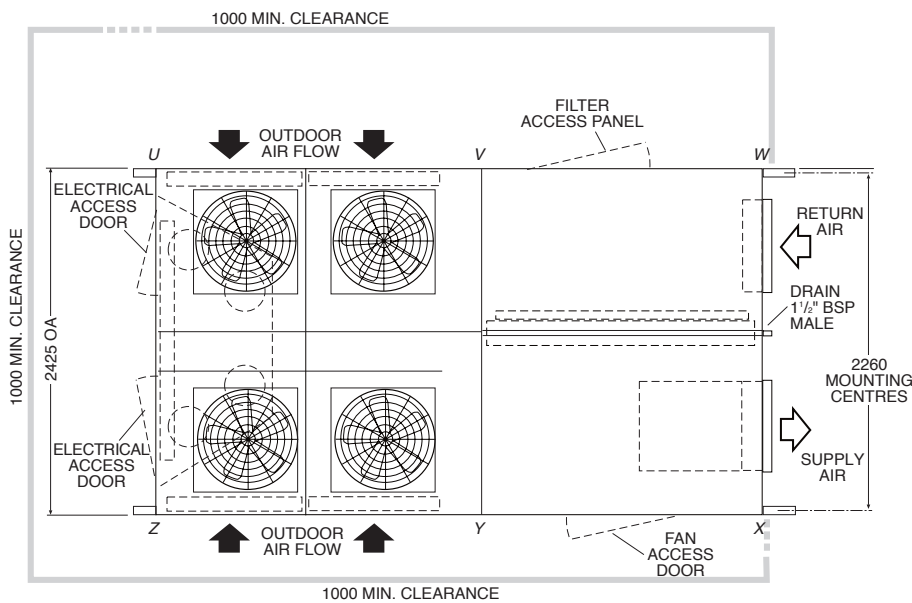
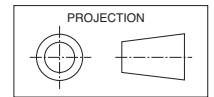
# Air Cooled Packaged Units

## Dimensions (in mm)



**FIG. 1 HORIZONTAL SUPPLY & RETURN AIR - OPA 1370**

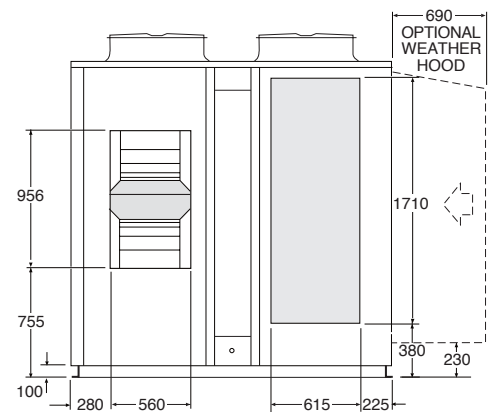
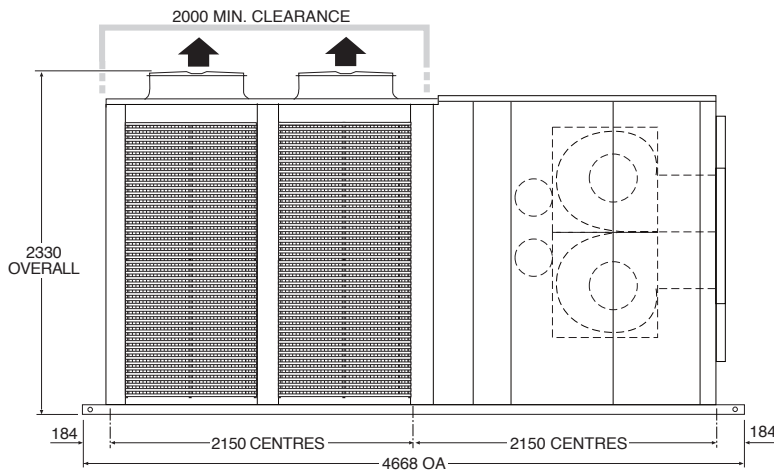
Not to Scale



**POINT LOAD (kg)**

U	V	W	X	Y	Z
430	347	262	406	419	433

**Note:** Opposite Hand version also available, i.e. OPA 1370RKTM10



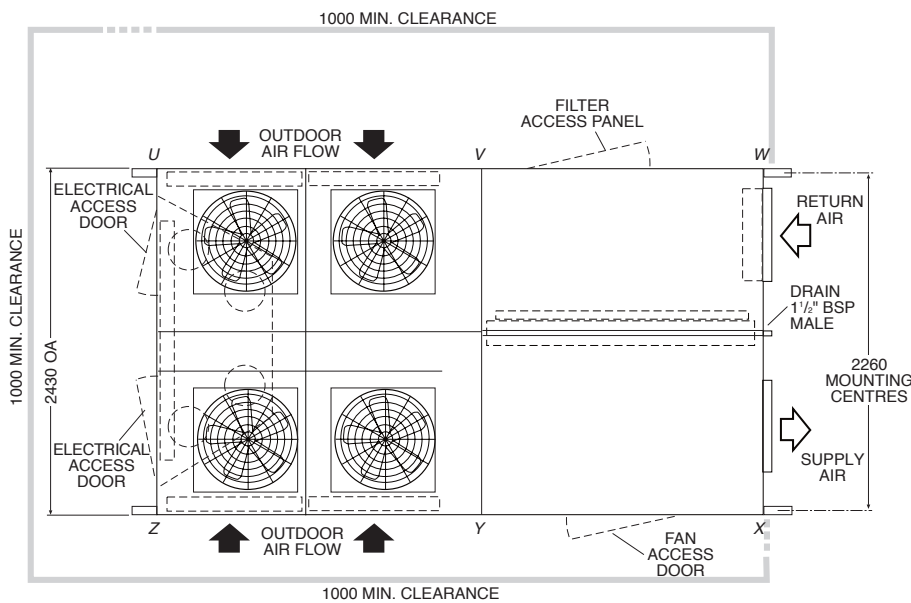
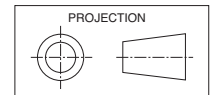
# Air Cooled Packaged Units

## Dimensions (mm)



**FIG. 2 HORIZONTAL SUPPLY & RETURN AIR - OPA 1370 ECO - PLUG FAN OPTION**

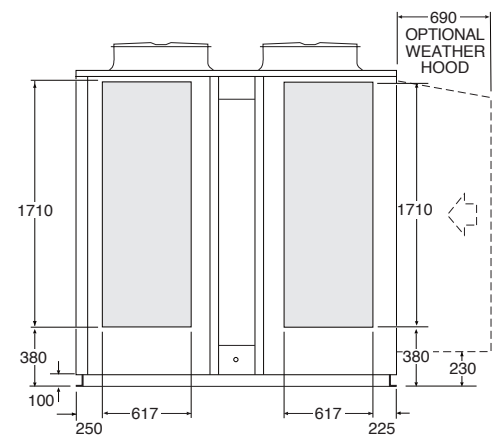
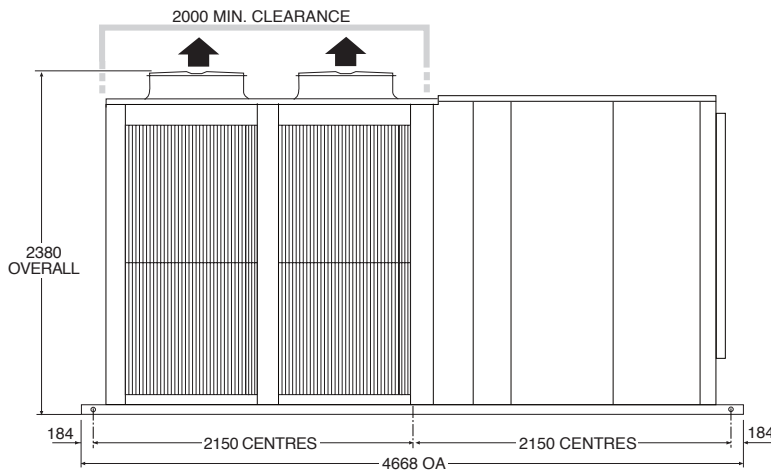
Not to Scale



**POINT LOAD (kg)**

U	V	W	X	Y	Z
430	347	262	406	419	433

**Note:** Opposite Hand version also available, i.e. OPA 1370RK TM10



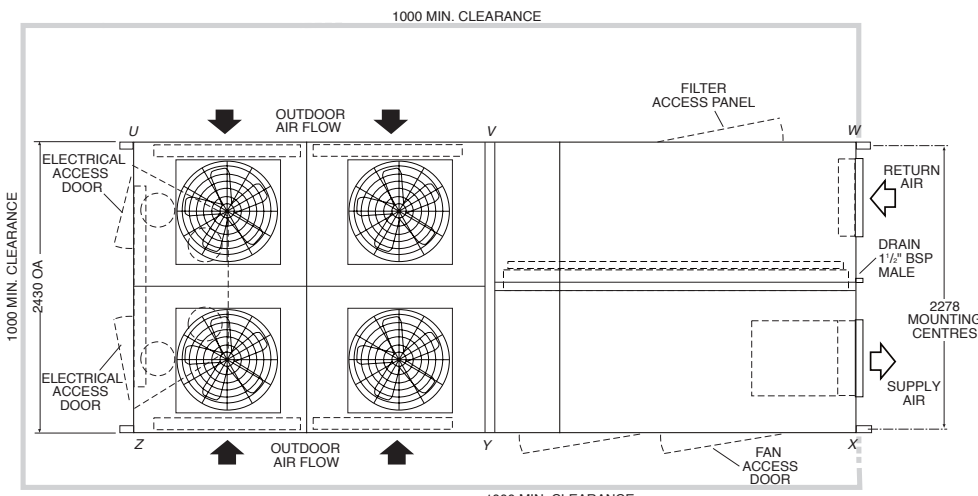
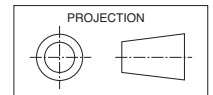
# Air Cooled Packaged Units

## Dimensions (mm)



**FIG. 3 HORIZONTAL SUPPLY & RETURN AIR - OPA 2000**

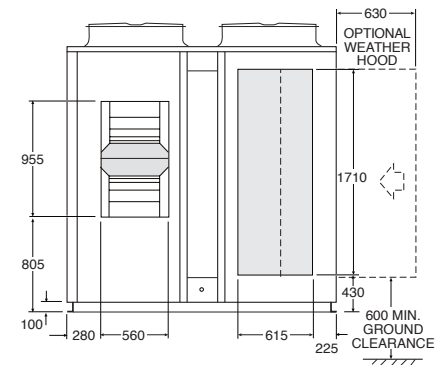
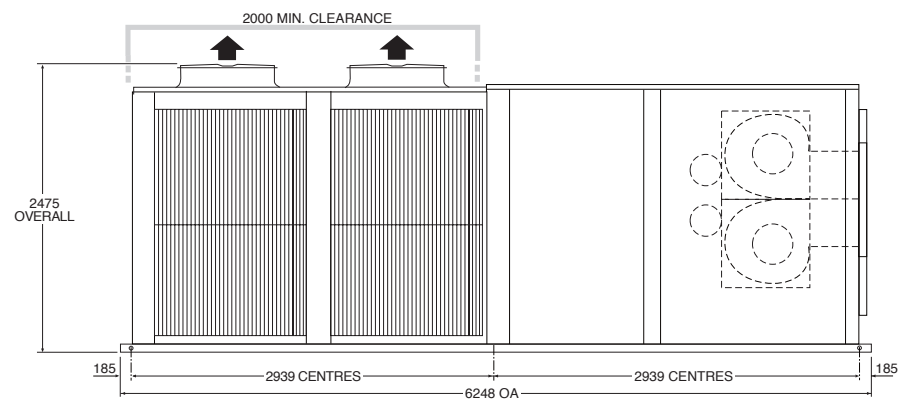
Not to Scale



**POINT LOAD (kg)**

U	V	W	X	Y	Z
544	474	415	507	543	587

**Note:** Opposite Hand version also available, i.e. OPA 2000RKT10



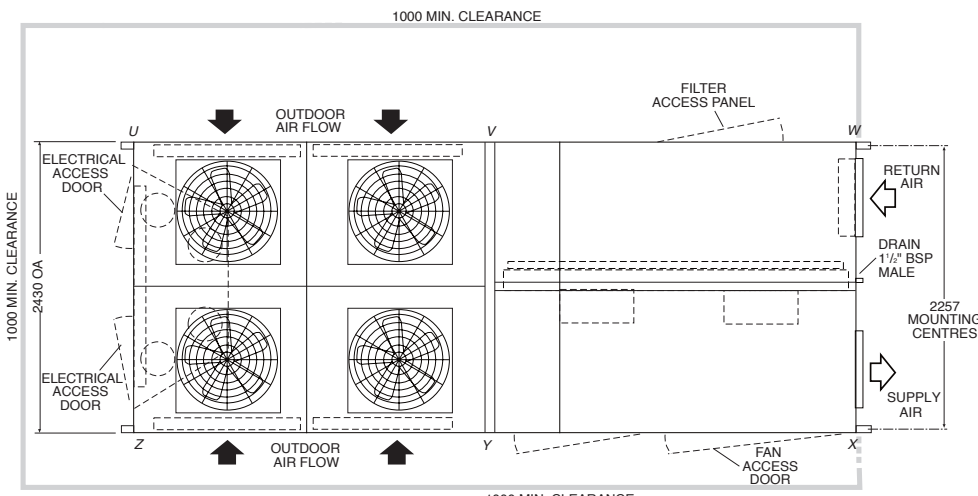
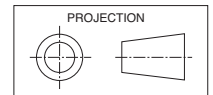
# Air Cooled Packaged Units

## Dimensions (mm)



**FIG. 4 HORIZONTAL SUPPLY & RETURN AIR - OPA 2000 - PLUG FAN OPTION**

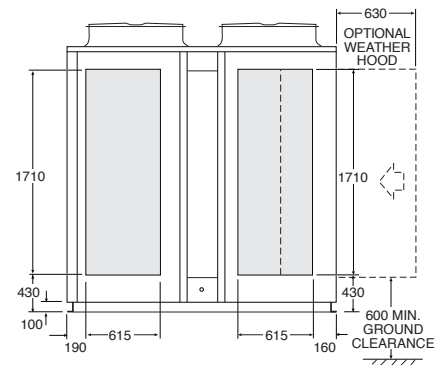
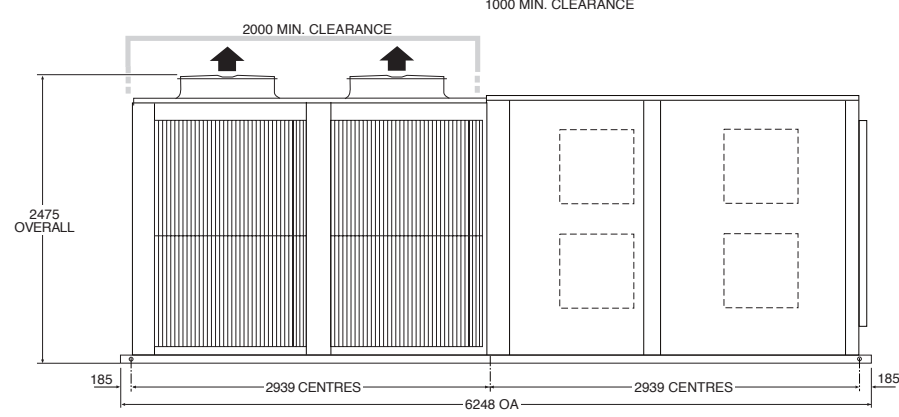
Not to Scale



**POINT LOAD (kg)**

U	V	W	X	Y	Z
544	474	415	507	543	587

**Note:** Opposite Hand version also available, i.e. OPA 2000RKT10



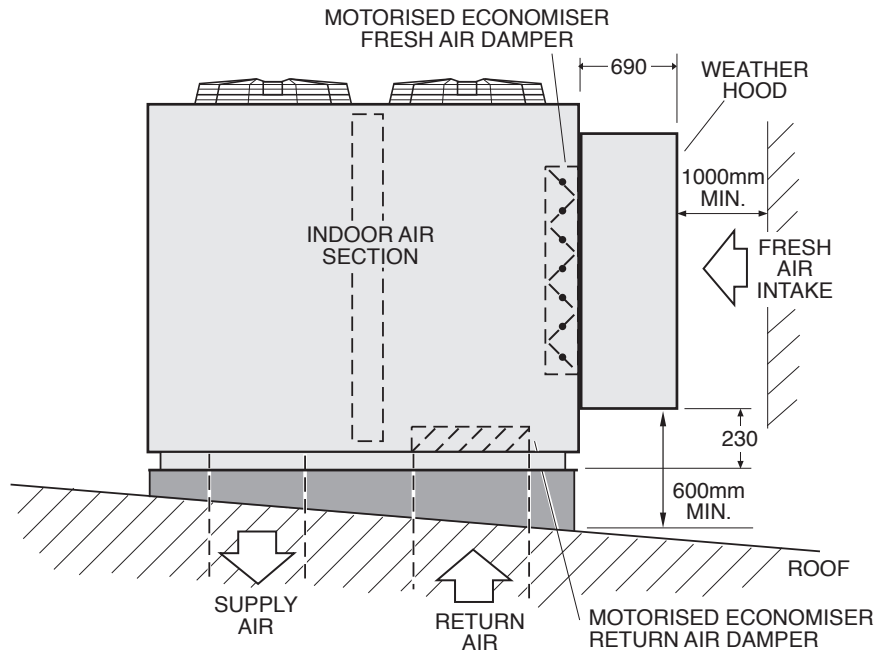
# Air Cooled Packaged Units

## Dimensions (mm)

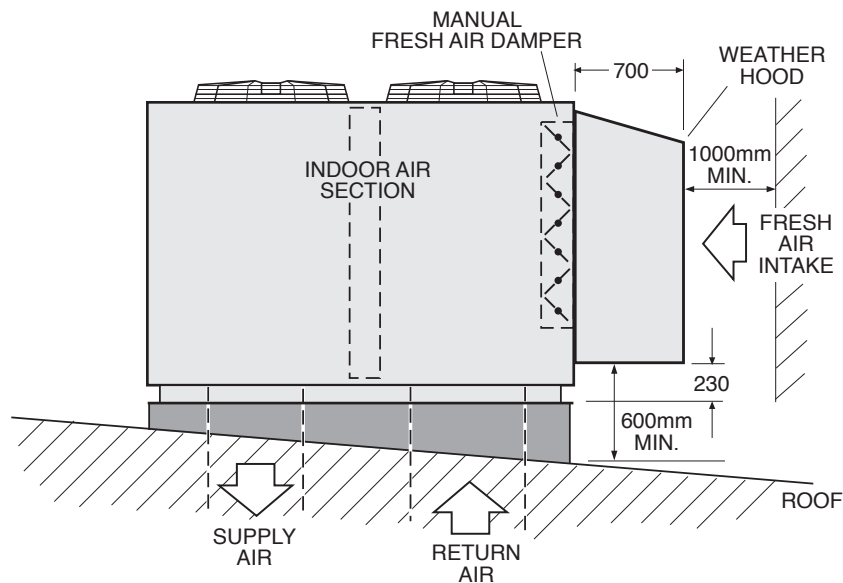


**FIG. 3 ECONOMISER & FRESH AIR INTAKE OPTIONS**

### Economiser



### Fresh Air Intake only



# Air Cooled Packaged Units

## Specifications



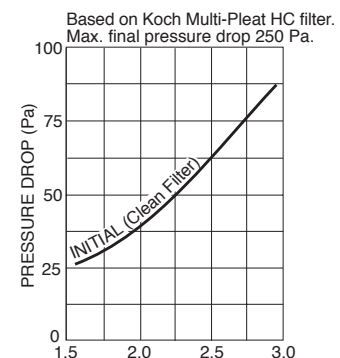
Model		OPA 1370	OPA 1370 Eco Option *4	OPA 2000
<b>System</b>				
Cooling Capacity *1	kW	137	13.7-137	193
Net Capacity	kW	130	134	184
Heating Capacity *2	kW	135	132	213
EER / AEER (cooling)		3.16 / 3.15	3.55 / 3.54	2.81 / 2.80
COP / ACOP (heating)		4.02 / 4.00	4.39 / 4.37	3.55 / 3.54
Air Flow *3	l/s	7500	7500	9,500
Power Source		3 phase 400 V a.c. 50 Hz		
Indoor Fan Full Load Amps	A	11.2 (x2)	2.5 (x4)	14.4 (x2)
Running Amps (Total System)	A/ph.	75 / 83 / 83	65 / 73 / 73	102 / 110 / 110
Max. Running Amps (Total System)	A/ph.	102/111/111	96 / 105 / 105	153 / 162 / 162
<b>Finish</b>				
		grey polyester powder coat		
<b>Weight</b>				
Net Weight	kg	2297	2297	3070
Shipping Weight (approx.)		2477	2477	3220

### Notes:

- \*1 Nominal Cooling Capacity at AS/NZS 3823 conditions:  
 - Indoor Entering Air Temperature 27°C D.B., 19°C W.B.;  
 - Outdoor Entering Air Temperature 35°C D.B.  
 Subtract indoor fan power to calculate Net Capacity.
- \*2 Heating Capacity at AS/NZS 3823 conditions:  
 - Indoor Entering Air Temp. 21°C D.B.;  
 - Outdoor Entering Air Temp. 7°C D.B., 6°C W.B.
- \*3 Supply air flow at Nominal Cooling Capacity conditions stated above.
- \*4 Complete with plug fans and 1st stage digital compressor for closer temperature control.



### OPTIONAL FILTERS





---

www.temperzone.biz

---

**AUCKLAND**

**Head Office**

38 Tidal Rd, Mangere, N.Z.  
Private Bag 93303, Otahuhu,  
NEW ZEALAND.

Email [sales@temperzone.co.nz](mailto:sales@temperzone.co.nz)

Phone (09) 279 5250

Fax (09) 275 5637

**SYDNEY**

**Head Office**

14 Carnegie Place, Blacktown,  
NSW 2148  
PO Box 8064, Seven Hills West,  
NSW 2147, AUSTRALIA.

Email [sales@temperzone.com.au](mailto:sales@temperzone.com.au)

Phone (02) 8822 - 5700

Fax (02) 8822 - 5711

**NEWCASTLE**

Phone (02) 4962 - 1155

Fax (02) 4961 - 5101

**LAUNCESTON**

Phone (03) 6331 - 4209

Fax (03) 6333 - 0224

**WELLINGTON**

Phone (04) 569 3262

Fax (04) 566 6249

**ADELAIDE**

Phone (08) 8115 - 2111

Fax (08) 8115 - 2118

**JAKARTA**

Phone +62 (21) 2963 4983

Fax +62 (21) 2963 4984

**CHRISTCHURCH**

Phone (03) 379 3216

Fax (03) 379 5956

**MELBOURNE**

Phone (03) 8769 - 7600

Fax (03) 8769 - 7601

**SINGAPORE**

Phone +65 6733 4292

Fax +65 6235 7180

**BRISBANE**

Phone (07) 3308 - 8333 or  
1800 - 897 - 253

Fax (07) 3308 - 8330

**SHANGHAI**

Phone +86 (21) 5648 2078

**PERTH**

Phone (08) 6399 - 5900

Fax (08) 6399 - 5932



Available from