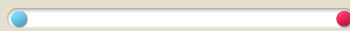




Air Cooled Packaged Units Technical Data

OPA 465, OPA 550, OPA 705 (Standard)



Cooling Capacity
44.4kW - 68.6kW

Heating Capacity
41.3kW - 66.4kW

Air Cooled Packaged units

Contents



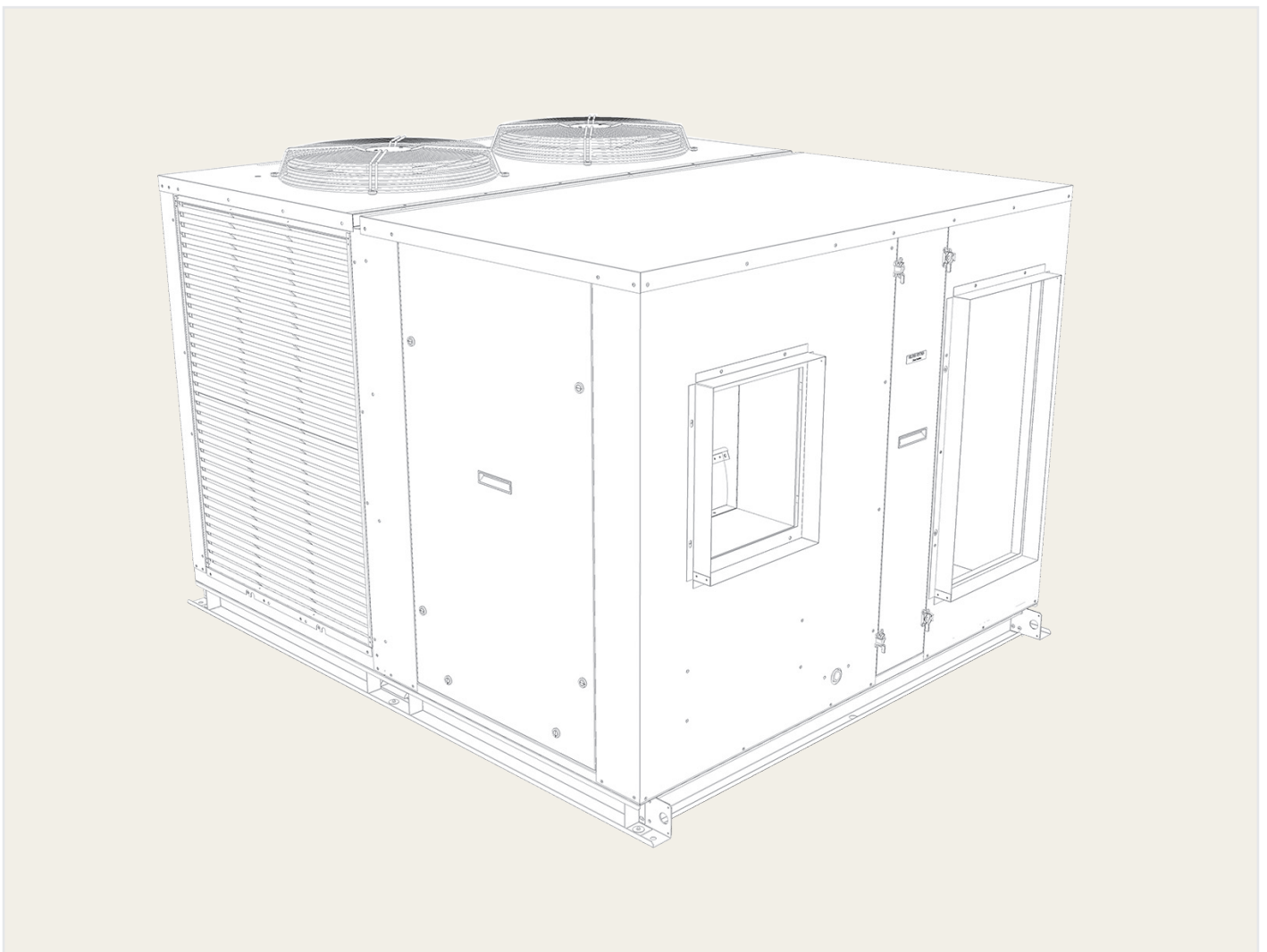
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Air Cooled Packaged units

OPA 465 - 705 Standard



Packaged rooftop HVAC units provide the flexibility and performance demanded in open plan commercial environments. Key benefits are noise isolation from occupied areas, ease of fresh air integration, and the reliability and durability inherent in a factory assembled packaged system. The OPA 465–705 range efficiently delivers controlled indoor environments from -15°C to $+52^{\circ}\text{C}$ ambient conditions.



Air Cooled Packaged units

OPA 465 - 705 Standard



Applications

Specifically developed for air conditioning of commercial premises i.e. 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 fan curves page 8).

Consideration must be given to selecting an 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

General

These Standard units have a conventional PSC motor/belt drive fan and staged fixed speed compressors (refer p.16 for models).

An **ECO version** with EC plug fan and variable speed compressor technology (digital) is also available - refer to Temperzone.

Refrigerant R410A

R410A used which has zero ozone depletion potential.

Economy

The units have 2 independent refrigeration circuits to provide the flexibility & economy of 2 stage operation i.e. utilizing 1 or 2 circuits as conditions vary, plus staggered starting.

An economiser option is available to comply with the National Construction Code (Aust.).

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 belt drive indoor fan motor to allow for adjusting of the airflow during air balancing and commissioning.

Head pressure control technology ensures appropriate condenser pressures are maintained, through the control of airflow.

Quiet

Extensive use of insulation ensures a quiet unit.

Insulation

Closed cell foam insulation is used in indoor air section to ensure no particles in the air stream. The insulation is foil faced & meets fire test standards AS1530.3 (1999) & BS 476 parts 6 & 7.

Air Cooled Packaged units

OPA 465 - 705 Standard



Durable

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

Heat exchange coils comprise aluminium plate fins on mechanically expanded rifled copper tube. Outdoor and indoor coil fins are epoxy coated for extra protection in corrosive environments i.e. salt laden sea air. Coil protection guards protect against hail, accidental damage or vandalism.

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

Easy Access

These packaged outdoor units are typically installed on a rooftop, where maintenance access is relatively easy during operating hours.

Self Diagnosis

Each unit controller (UC8) has a display of LEDs to indicate faults & running conditions. A common fault indicator is included for interface to external systems.

Control Options

The systems' UC8 controller is BMS compatible with multi-unit control possible – either via digital and analogue signals or via Modbus/485. A BACnet/IP option is available.

OPTIONAL EQUIPMENT

1. TZT-100 thermostat.
2. Filters rated to AS1324.1.2001 - disposable or washable.
3. Factory fitted Economiser -includes dampers, fresh air cowl (not available in Australia).
4. Electronic control systems (available by arrangement) for temperature and economy cycle.
5. Factory fitted adjustable fresh air damper and cowl (NZ only).
6. High static condenser fans for situations where there is external resistance from ducting the outside air, eg plant rooms.
7. Interface to BACnet/IP networks.
8. Opposite hand supply and return air configuration.

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

COMPRESSORS

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

WIRING

The electrical supply required is 3 phase 400V ac 50Hz.

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

ECONOMISER OPTION

The factory fitted Economizer Damper Option is supplied with Drive Open / Drive Closed damper motors. Temperzone can supply and fit controls to manage the operation of the Economy Cycle, using either temperature or enthalpy to control the operation of the dampers. For the best result, discuss with your Temperzone Sales Engineer.

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.

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 465	2400	21	15	43.8	33.3	43.3	33.3	41.9	32.6	40.0	31.5	37.3	29.8	34.1	27.5
		23	17	46.1	32.6	45.5	32.6	44.4	32.0	42.3	30.9	39.8	29.5	36.4	27.3
		27	19	48.4	37.4	47.8	37.3	46.7	36.8	44.4	35.7	42.1	33.9	38.7	31.7
		31	21	50.9	44.1	50.3	44.1	49.0	43.6	47.1	42.3	44.4	40.5	41.2	37.9
OPA 550	2500	21	15	53.1	37.9	52.4	37.9	50.8	37.1	48.5	35.8	45.3	33.9	41.3	31.2
		23	17	55.9	37.1	55.2	37.1	53.8	36.4	51.3	35.2	48.3	33.5	44.1	31.0
		27	19	58.6	42.6	58.0	42.5	56.6	41.8	53.8	40.6	51.0	38.5	46.9	36.0
		31	21	61.7	50.2	61.0	50.2	59.3	49.6	57.0	48.1	53.8	46.0	49.9	43.1
OPA 705	3600	21	15	67.7	50.3	66.8	50.3	64.8	49.2	61.8	47.5	57.7	45.1	52.7	41.5
		23	17	71.2	49.2	70.4	49.2	68.6	48.4	65.4	46.7	61.5	44.5	56.2	41.2
		27	19	74.8	56.5	73.9	56.4	72.1	55.6	68.6	53.9	65.1	51.1	59.8	47.8
		31	21	78.6	66.6	77.7	66.6	75.7	65.8	72.7	63.8	68.6	61.1	63.6	57.2

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

Air Cooled Packaged units

Performance Data



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	
Unit	D.B.	G	N	G	N.	G	N	G	N	G	N	G	N	G	N	G	N
OPA 465	15	31.1	27.3	32.9	26.9	34.7	27.3	36.4	29.1	38.2	32.9	40.0	39.1	41.8	41.8	43.6	43.6
	20	30.7	26.9	32.4	26.6	34.2	27.0	36.0	28.8	37.8	32.5	39.5	38.8	41.3	41.3	43.1	43.1
	25	29.7	26.1	31.5	25.8	33.2	26.2	35.0	28.0	36.8	31.7	38.6	38.0	40.3	40.3	42.1	42.1
OPA 550	15	34.7	37.3	41.9	34.3	44.2	34.8	46.4	37.1	48.7	41.8	50.9	49.8	53.2	53.2	55.5	55.5
	20	39.1	34.3	41.3	33.8	43.6	34.4	45.8	36.6	48.1	41.4	50.4	49.4	52.6	52.6	54.9	54.9
	25	37.8	33.3	40.1	32.9	42.3	33.4	44.6	35.6	46.9	40.4	49.1	48.4	51.4	51.4	53.6	53.6
OPA 705	15	50.0	43.8	52.9	43.3	55.7	44.0	58.6	46.8	61.5	52.8	64.3	62.9	67.2	67.2	70.0	70.0
	20	49.3	43.3	52.2	42.7	55.0	43.4	57.9	46.2	60.7	52.2	63.6	62.3	66.4	66.4	69.3	69.3
	25	47.7	42.0	50.6	41.5	53.4	42.1	56.3	45.0	59.1	51.0	62.0	61.1	64.9	64.9	67.7	67.7

Air Cooled Packaged units

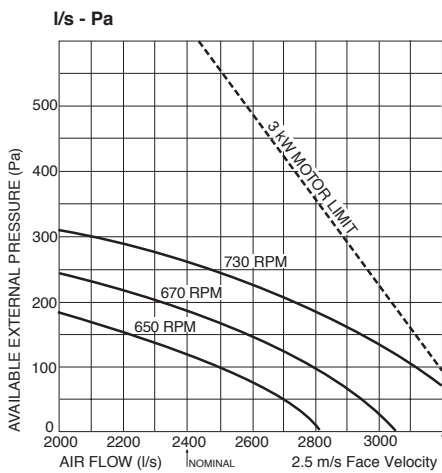
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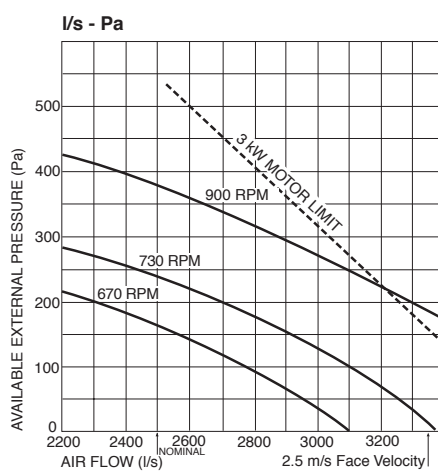
AIR HANDLING

Note: Airflows are for a dry coil. Reduce airflow by 10% for wet coil conditions. In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer to page 12). As filters are optional, the fan air flows given are for units installed without filters.

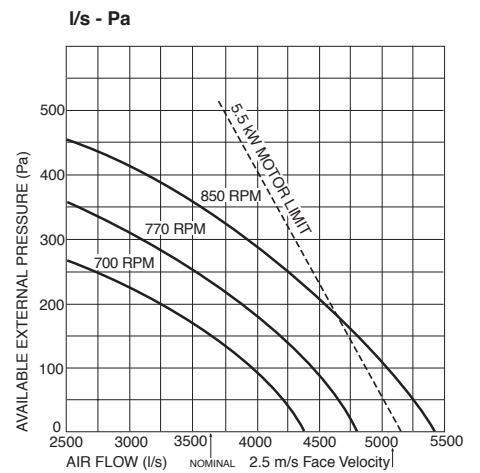
OPA 465RKT B



OPA 550RKT B

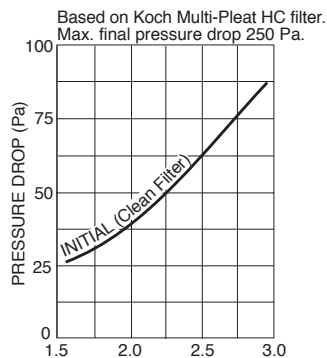


OPA 705RKT B



Model :		OPA 465	OPA 550	OPA 705
Std Motor Size	kW	3	3	5.5
Max. D.O.L. Motor	kW	4	4	7.5
Max. Fan Speed	RPM	850	950	1000
Std Pulley Range	RPM	610-765	690-875	780-970
Factory Setting	RPM	685	785	825

OPTIONAL FILTERS - Pressure Drop



Air Cooled Packaged units

Performance Data



SOUND LEVELS - OUTDOOR

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 465	HIGH	84	85	80	80	79	77	69
OPA 550	HIGH	81	91	80	77	75	72	65
OPA 705	HIGH	79	90	75	74	73	71	65

Sound Pressure Levels (SPL)

Measured in decibels re 20 μ Pa, at nominal airflow.

Models	OUTDOOR FAN SPEED	SPL @ 3m dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 465	HIGH	68	69	64	64	63	61	53
OPA 550	HIGH	65	75	64	61	59	56	49
OPA 705	HIGH	63	74	59	58	57	55	49

SOUND LEVELS - INDOOR - BELT DRIVE FAN

Sound Power Levels (SWL) - Supply Air Outlet

Test Conditions: BS 848.2 : 2004.

Installation Type A (free inlet and outlet).

Direct method of measurement (reverberant room).

Measured in decibels re 1 picowatt.

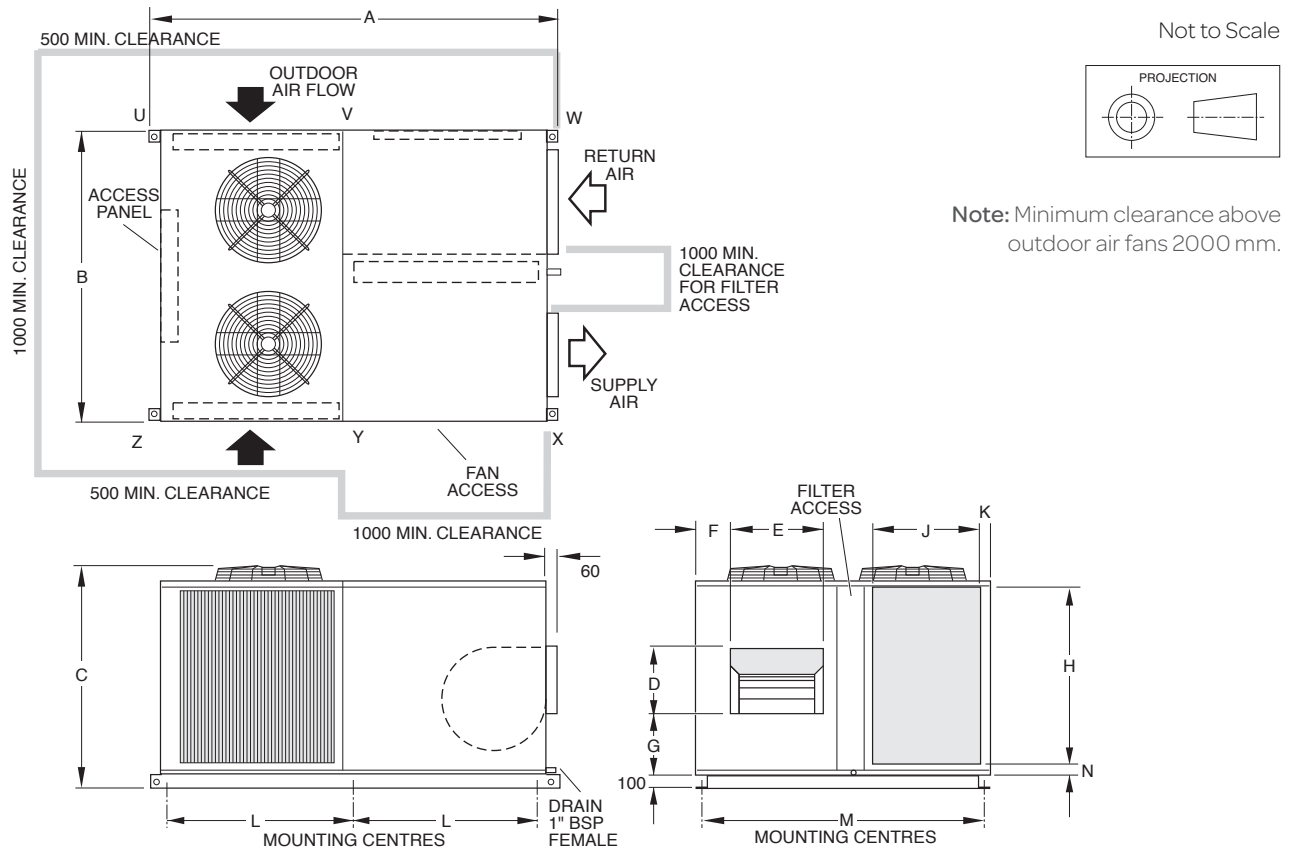
Models	INDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1K	2K	4K
OPA 465	750 PRM	83	79	79	78	79	76	75
OPA 550	680 RPM	79	86	79	79	73	69	63
OPA 705	750 RPM	81	80	81	78	78	76	73

Air Cooled Packaged units

Dimensions (mm)



OPA *RKTB - HORIZONTAL SUPPLY & RETURN AIR



MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N
OPA 465	2344	1949	1634	532	444	195	586	957	500	130	1080	1880	210
OPA 550	2344	1949	1793	535	483	190	544	957	500	130	1078	1879	210
OPA 705	2907	2149	1859	484	562	237	613	1200	599	132	1364	2078	263

POINT LOAD (kg)

Model	U	V	W	X	Y	Z
OPA 465	141	126	111	143	147	150
OPA 550	158	141	126	157	158	159
OPA 705	198	175	152	201	201	199

Note:

OPA 705 model has four outdoor air fans.
Refer to Temperzone for opposite hand version dimensions.

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

Air Cooled Packaged units

Dimensions (mm)



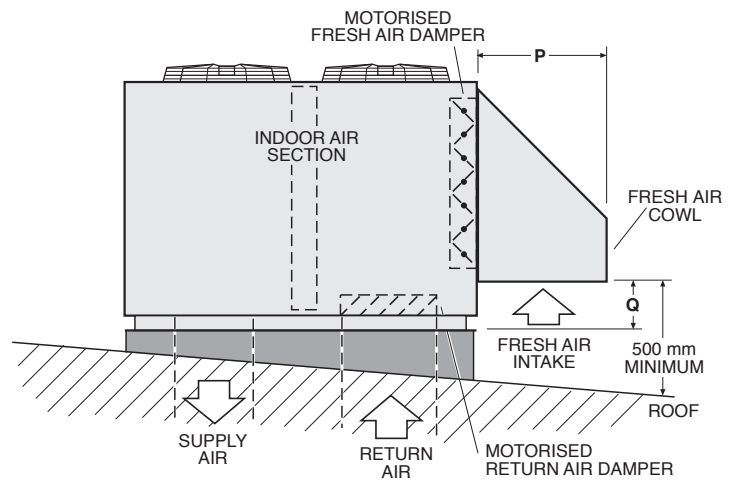
OPTIONS

Economiser Fresh Air Cowl *

MODEL	P	Q
OPA 465	730	335
OPA 550	730	335
OPA 705	880	310

* Not an option in Australia

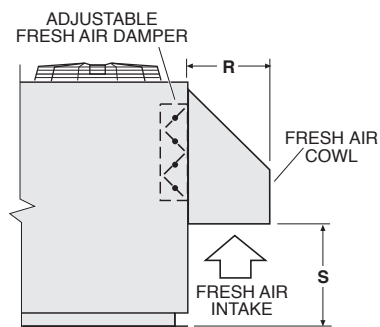
Downward discharge model shown here. Same cowl dimensions apply to horizontal discharge model.



Fresh Air Cowl *

MODEL	R	S
OPA 465	430	785
OPA 550	430	785
OPA 705	435	810

* Not an option in Australia



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

Air Cooled Packaged units

Specifications



Standard Model (Non-ECO)		OPA 465	OPA 550	OPA 705
System				
Nominal Cooling Capacity * ¹	kW	44.4	53.8	68.6
Net Cooling Capacity (MEPS)	kW	42.5	52.0	66.0
Heating Capacity * ²	kW	41.3	52.6	66.4
EER / AEER (cooling) * ⁴		2.93 / 2.92	2.92 / 2.91	3.20 / 3.18
COP / ACOP (heating) * ⁴		3.41 / 3.39	3.17 / 3.15	3.49 / 3.47
Air Flow * ³	l/s	2400	2500	3600
Power Source	3 phase 400 V a.c. 50 Hz			
Controller	UC8 (x2)			
Compressors	twin fixed speed compressors			
Indoor Air Fan Type	belt drive, forward curved			
Indoor Fan Full Load Amps	A/ph	6	7.4	10
Running Amps (Total Sys.) * ¹		23 / 29 / 23	25 / 34 / 26	38 / 45 / 39
Max. Running Amps (Total Sys.)		31 / 37 / 31	37 / 45 / 37	48 / 56 / 49
Finish				
Exterior	grey polyester powder coat			
Weight (kg)				
Net Weight		819	899	1126
Shipping Weight (approx.)		905	960	1188

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.
 Net Cooling Capacity at AS/NZS 3823 includes an allowance for indoor fan motor heat loss.

*² Heating Capacity at AS/NZS 3823 conditions:
 - Indoor Entering Air Temperature 21°C D.B.;
 - Outdoor Entering Air Temperature 7°C D.B., 6°C W.B.

*³ Supply air flow at Nominal Cooling Capacity conditions stated above.

Materials and specifications are subject to change without notice due to the manufacturer's ongoing research and development programme.

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