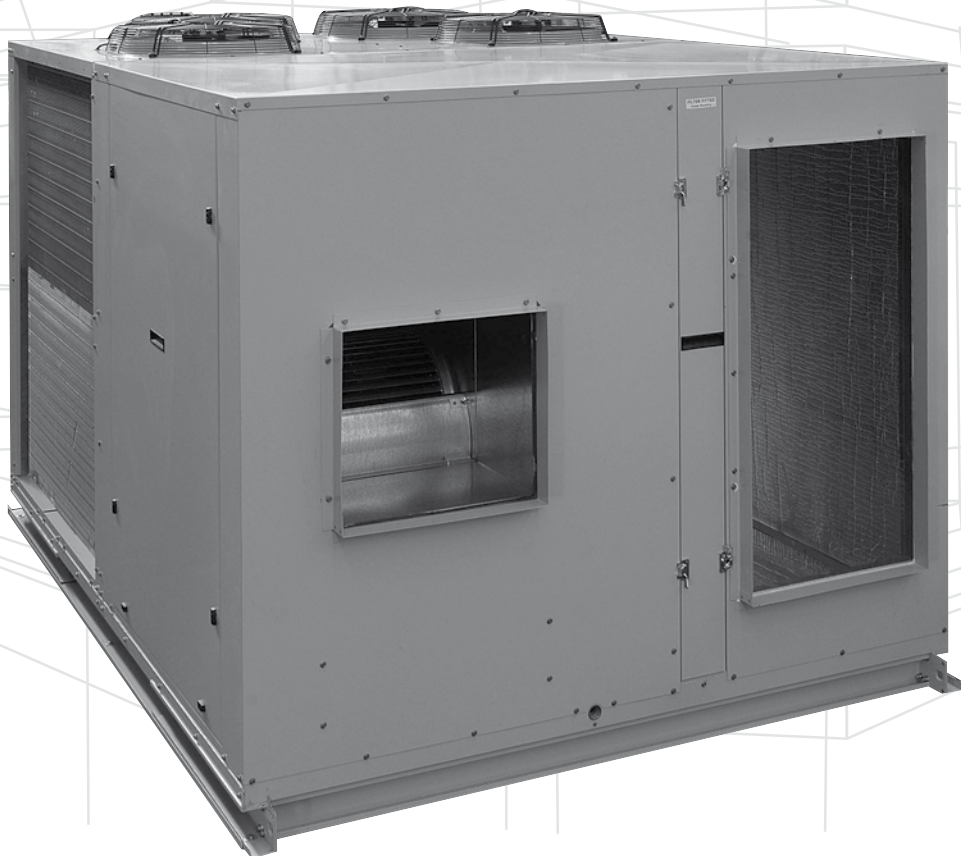


**Ducted Three Phase  
Packaged Air Conditioners**

**Technical Data**  
**OPA 430 – 960**

**R410A**

Twin System Enables Staging  
Extra Long Life  
Epoxy Coated Outdoor Coil



**Nominal Cooling Capacity**  
**43 kW – 96 kW**

## OPA 430, 530, 650, 850, 960 - DUCTED PACKAGED ROOF TOP AIR CONDITIONER

### GENERAL

This OPA Series is a range of reverse cycle (heat pump) packaged roof top air conditioners designed and developed to comply with and exceed AS/NZS 3823 specified conditions (i.e. guaranteed cooling cycle performance at 43°C outdoor temperature).

### APPLICATIONS

These units have been specifically developed for air conditioning of commercial premises, e.g. banks, supermarkets, shopping malls, food outlets, auditoriums and restaurants.

### Air Flow Selection

If the air returning to the indoor coil 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 Flow graph; 2.5 m/s is clearly marked).

High humidity levels can occur in tropical or subtropical conditions, and/or when heavily moisture laden fresh air is introduced. Consideration must always be given to selecting an air flow and face velocity that avoids water carry-over problems.

Applications using full or high proportions of fresh air should be referred to your nearest **temperzone** sales office to establish the correct selection of units.

### FEATURES

**Refrigerant R410A.** Each system uses refrigerant R410A which is deemed to have zero ozone depletion potential.

**Economy.** Each OPA unit has two independent refrigeration circuits to provide the flexibility and economy of two stage operation, i.e. utilising one or two circuits as conditions vary, plus the advantage of staggered starting. An economiser option is available to lower operating costs further during the cooling cycle.

**Efficient.** Heat exchange coils incorporate inner grooved (rifled) tube for better heat transfer. The indoor air coil is interlaced for efficient part load performance.

**Performance.** An adjustable pulley on the indoor air fan motor enables fine tuning to match the supply air requirements.

**Quiet.** The unit's generous insulation ensures a quiet unit.

**Durable.** The cabinet and drain tray are constructed from high grade galvanised steel - polyester powder coated (colour Grey) for increased durability. External fasteners are stainless steel. Heat exchange coils comprise aluminium plate fins on mechanically expanded rifled copper tube. The outdoor coil fins are epoxy coated for extra protection in corrosive environments, e.g. salt laden sea air. Fan motor bearings are sealed for life so as not to incur regular maintenance.

**Insulation.** Closed cell foam insulation has been used in the indoor air section to ensure no particles are introduced into the air stream. The insulation is foil faced and meets fire test standards AS 1530.3 (1989) and BS 476 parts 6 & 7.

**Self Diagnostics.** Each system includes a controller (OUC) that has a display of LEDs to indicate faults and running conditions. A non-specific fault indicator is included for interface to external systems.

### CONFIGURATIONS

Two standard versions are available for each model:

1. Horizontal supply/return air with box mounting channel (OPA\*RKTBH),
2. Downward supply/return air with box mounting channel (OPA\*RKTBU).

### STANDARD EQUIPMENT

Indoor Air Section:

1. Coil - interlaced circuits
2. Fan - forward curved centrifugal
3. Fan motor - belt drive, variable speed pulley
4. Drain tray - sloping, powder coated
5. Supply & return air spigots

Outdoor Air Section

1. Compressor (x2)
2. Coil (x2)
3. Fans - propeller
4. Fan motors - direct drive
5. Fan guards
6. High/low pressure switches
7. Accurator expansion devices
8. Circuit breaker control
9. 24V control circuit
10. External current overloads on compressors
11. Compressor crankcase heaters.
12. Reversing valves (x2)
13. Outdoor Unit Controller (x2)
14. Fault indicating auxiliary relay board (x2).

### OPTIONAL EQUIPMENT

1. Filters (rated EU4).
2. Economiser (factory fitted) - includes dampers, weatherhood.
3. Adjustable fresh air damper and weatherhood.
4. Outdoor air coil protection guards.
5. TZE-701 thermostat.
6. Electronic control systems - available by special arrangement.

### SAFETY FEATURES

1. HP and loss of refrigerant protection.
2. Anti-rapid cycle timer and internal overload for compressor protection.
3. Circuit breaker control circuits.
4. Time-and-temperature controlled electronic de-ice 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. Phase rotation protection device.
10. 24V control circuit

### COMPRESSOR

Each high efficiency scroll type compressor is hermetically sealed and supported on rubber mounts to minimise vibration.

### REFRIGERATION SYSTEM

The OPA units are factory charged with HFC-410A (R410A) refrigerant.

### WIRING

The electrical supply required (including voltage fluctuation limits) is: 3 phase 342-436 V a.c. 50 Hz with neutral and earth. The units control panel is fully wired ready to accept the main power supply.

### ECONOMISER OPTION

If the outdoor air heat content or temperature 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. The compressor(s) will then operate to provide more cooling if required.

The manufacturer operates a quality management system that conforms to AS/NZS ISO 9001:2000.

**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. For fan motor heat loss refer to Air Handling graphs.

MODEL	INDOOR FAN		INDOOR COIL E.A.T.		OUTDOOR COIL ENTERING AIR TEMPERATURE °C D.B.											
	SPEED	AIR I/s	W.B. °C	D.B. °C	23		27		31		35		39		43	
					Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.	Total	Sens.
OPA 430	HIGH	2300	15	21	41.8	31.7	40.6	31.6	39.4	31.1	38.2	30.6	37.0	30.2	35.6	29.4
			17	23	43.9	32.3	43.0	31.6	41.8	31.1	40.6	30.6	39.4	30.2	38.2	29.6
			19	27	46.8	36.8	45.4	36.4	44.2	35.7	43.0	35.7	41.8	35.2	40.3	34.7
			21	31	49.5	41.8	48.0	41.2	46.8	40.8	45.6	40.5	44.2	40.1	42.7	39.5
OPA 530	HIGH	2500	15	21	51.5	39.1	50.0	38.9	48.6	38.4	47.1	37.7	45.6	37.1	43.8	36.2
			17	23	54.1	39.8	53.0	38.9	51.5	38.4	50.0	37.7	48.6	37.2	47.1	36.5
			19	27	57.7	45.3	55.9	44.9	54.5	44.0	53.0	44.0	51.5	43.4	49.7	42.8
			21	31	61.0	51.5	59.2	50.8	57.7	50.2	56.2	49.9	54.5	49.4	52.7	48.7
OPA 650	HIGH	3500	15	21	62.8	47.7	61.0	47.5	59.2	46.8	57.4	46.0	55.6	45.3	53.4	44.2
			17	23	65.9	48.5	64.6	47.5	62.8	46.8	61.0	46.0	59.2	45.3	57.4	44.5
			19	27	70.3	55.2	68.2	54.7	66.4	53.7	64.6	53.6	62.8	52.9	60.6	52.2
			21	31	74.3	62.7	72.2	61.9	70.4	61.2	68.5	60.9	66.4	60.2	64.2	59.4
OPA 850	HIGH	4200	15	21	82.7	62.8	80.3	62.5	78.0	61.6	75.6	60.6	73.2	59.7	70.4	58.2
			17	23	86.8	63.9	85.1	62.5	82.7	61.6	80.3	60.6	78.0	59.7	75.6	58.6
			19	27	92.6	72.8	89.8	72.1	87.5	70.7	85.1	70.6	82.7	69.6	79.8	68.7
			21	31	97.9	82.6	95.1	81.6	92.7	80.7	90.3	80.2	87.5	79.3	84.6	78.3
OPA 960	HIGH	5200	15	21	93.3	70.8	90.6	70.5	87.9	69.5	85.3	68.4	82.6	67.3	79.4	65.7
			17	23	97.9	72.1	96.0	70.5	93.3	69.5	90.6	68.4	87.9	67.3	85.3	66.1
			19	27	104.5	82.1	101.3	81.3	98.7	79.8	96.0	79.7	93.3	78.6	90.1	77.5
			21	31	110.4	93.2	107.2	92.0	104.5	91.0	101.9	90.4	98.7	89.4	95.4	88.3

**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)

MODEL	INDOOR ENTERING AIR TEMP. °C D.B.	OUTDOOR COIL ENTERING AIR TEMPERATURE (E.A.T.) °C D.B.															
		-5		-3		-1		1		3		5		7		9	
		G	N	G	N	G	N	G	N	G	N	G	N	G	N	G	N
OPA 430	15	29.0	25.4	31.4	27.0	33.6	27.7	35.8	28.3	37.9	28.6	40.7	31.6	43.4	33.8	45.5	45.5
	20	28.5	24.9	30.8	26.5	32.9	27.2	35.1	27.7	37.2	28.1	40.0	29.2	42.5	33.2	44.6	44.6
	25	27.4	24.0	29.7	25.5	31.7	26.2	33.8	26.7	35.8	27.0	38.5	28.1	40.9	31.9	43.0	43.0
OPA 530	15	37.9	33.1	41.0	35.2	43.8	36.1	46.6	36.8	49.4	37.3	53.1	41.3	56.5	44.1	59.3	59.3
	20	37.1	32.5	40.2	34.5	42.9	35.4	45.7	36.1	48.5	36.6	52.1	38.0	55.4	43.2	58.2	58.2
	25	35.7	31.3	38.7	33.3	41.3	34.1	44.0	34.8	46.7	35.2	50.1	36.6	53.4	41.6	56.0	56.0
OPA 650	15	41.6	36.4	45.0	38.7	48.1	39.7	51.2	40.5	54.4	41.0	58.4	45.3	62.1	48.5	65.2	65.2
	20	40.8	35.7	44.2	38.0	47.2	38.9	50.2	39.7	53.3	40.2	57.2	41.8	60.9	47.5	63.9	63.9
	25	39.3	34.4	42.5	36.6	45.5	37.5	48.4	38.2	51.3	38.7	55.1	40.2	58.6	45.7	61.6	61.6
OPA 850	15	57.1	49.9	61.7	53.1	66.0	54.5	70.3	55.5	74.5	56.3	80.1	62.2	85.2	66.4	89.4	89.4
	20	55.9	49.0	60.5	52.1	64.7	53.4	68.9	54.4	73.1	55.2	78.5	57.3	83.5	65.1	87.7	87.7
	25	53.9	47.1	58.3	50.1	62.3	51.4	66.3	52.4	70.4	53.1	75.6	55.2	80.4	62.7	84.4	84.4
OPA 960	15	61.5	53.8	66.6	57.2	71.1	58.7	75.7	59.8	80.3	60.6	86.3	67.0	91.8	71.6	96.4	96.4
	20	60.3	52.8	65.3	56.1	69.8	57.5	74.3	58.7	78.8	59.5	84.6	61.8	90.0	70.2	94.5	94.5
	25	58.1	50.8	62.8	54.0	67.2	55.4	71.5	56.5	75.8	57.3	81.5	59.5	86.7	67.6	91.0	91.0

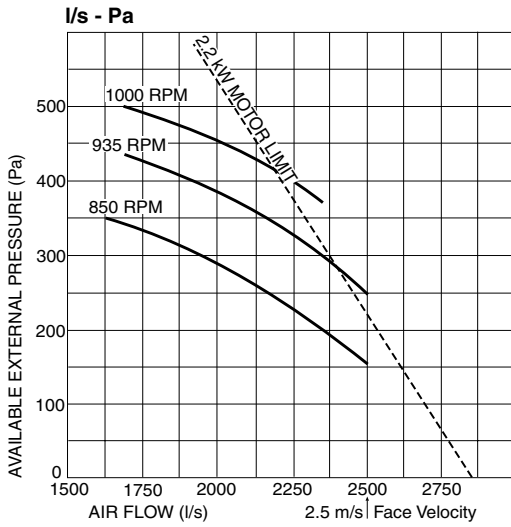
## PERFORMANCE DATA

## AIR HANDLING

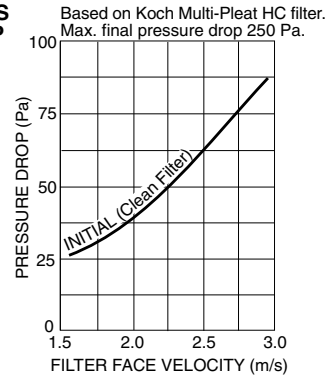
**Note:** Airflows are for a dry coil. Reduce airflow by 5% in high moisture removal conditions. In a free blow or low resistance application, beware of exceeding indoor fan motor's full load amp limit (refer back page). As filters are optional, the fan air flows given are for units installed without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

Model :	OPA 430	OPA 530	OPA 650	OPA 850	OPA 960
Std Motor Size kW	2.2	3	4	5.5	7.5
Max. D.O.L. Motor kW	3.0	4	4	7.5	7.5
Max. Fan Speed RPM	1400	900	1000	950	1000
Std Pulley Range RPM	850-1000	750-900	850-1000	600-750	780-970
Factory Setting RPM	925	830	925	680	825

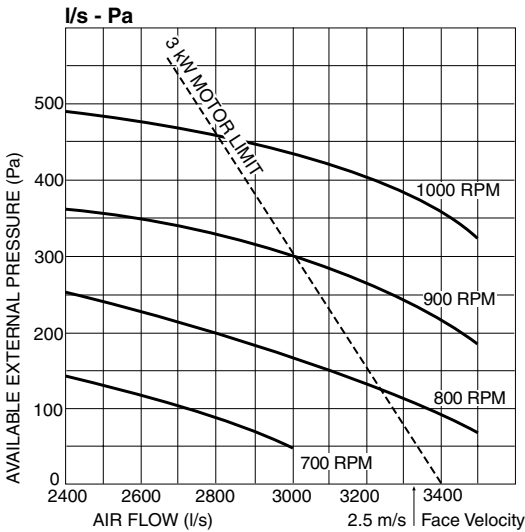
### OPA 430



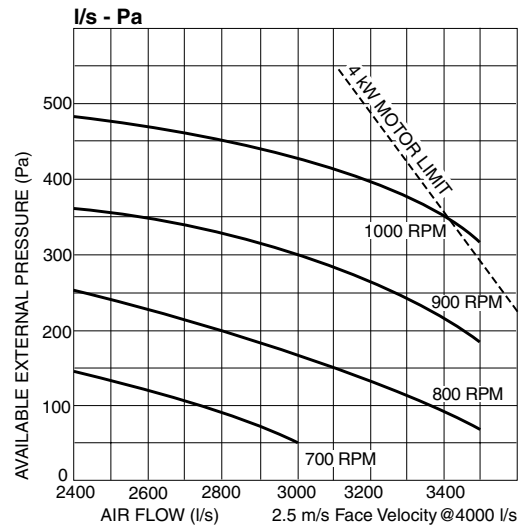
### OPTIONAL FILTERS - PRESSURE DROP



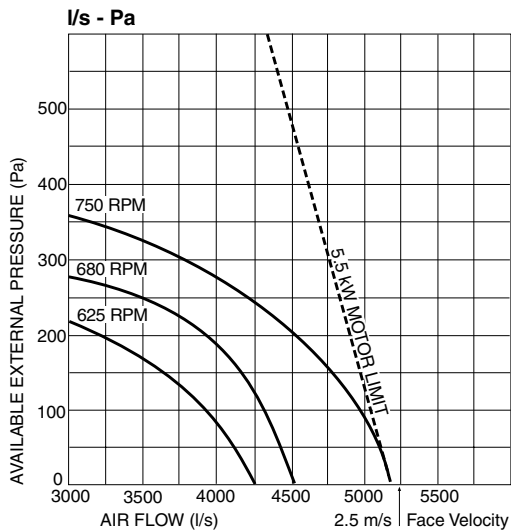
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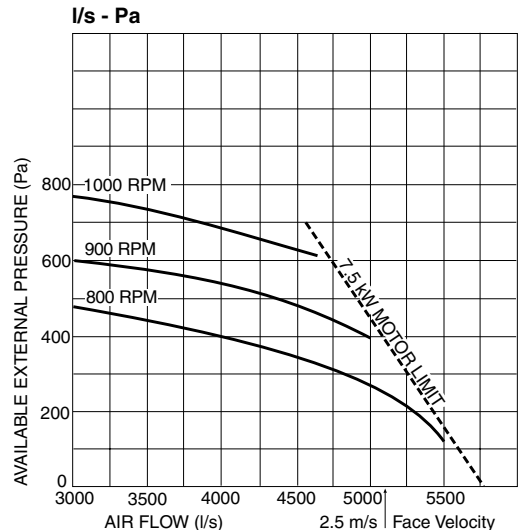
### OPA 650



### OPA 850



### OPA 960



## PERFORMANCE DATA

### SOUND LEVELS

#### RADIATED

#### Sound Power Levels (SWL)

Measured in decibels re 1 picowatt.

MODEL	OUTDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS (SWL) dB					
OPA 430	HIGH	78	84	78	76	74	69	61
OPA 530	HIGH	82	85	80	80	79	77	69
OPA 650	HIGH	82	85	80	80	79	77	69
OPA 850	HIGH	84	82	81	82	79	76	71
OPA 960	HIGH	85	78	77	80	81	79	77

#### Sound Pressure Levels (SPL)

Measured in decibels re 20 µPa.

MODEL	OUTDOOR FAN SPEED	SPL @ 3 m dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND PRESSURE LEVELS (SPL) dB					
OPA 430	HIGH	62	68	62	60	58	54	47
OPA 530	HIGH	66	69	64	64	63	61	53
OPA 650	HIGH	66	69	64	64	63	61	53
OPA 850	HIGH	66	64	63	64	61	58	53
OPA 960	HIGH	67	73	66	64	62	57	49

#### Sound Power Levels (SWL)

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.

#### SUPPLY AIR OUTLET

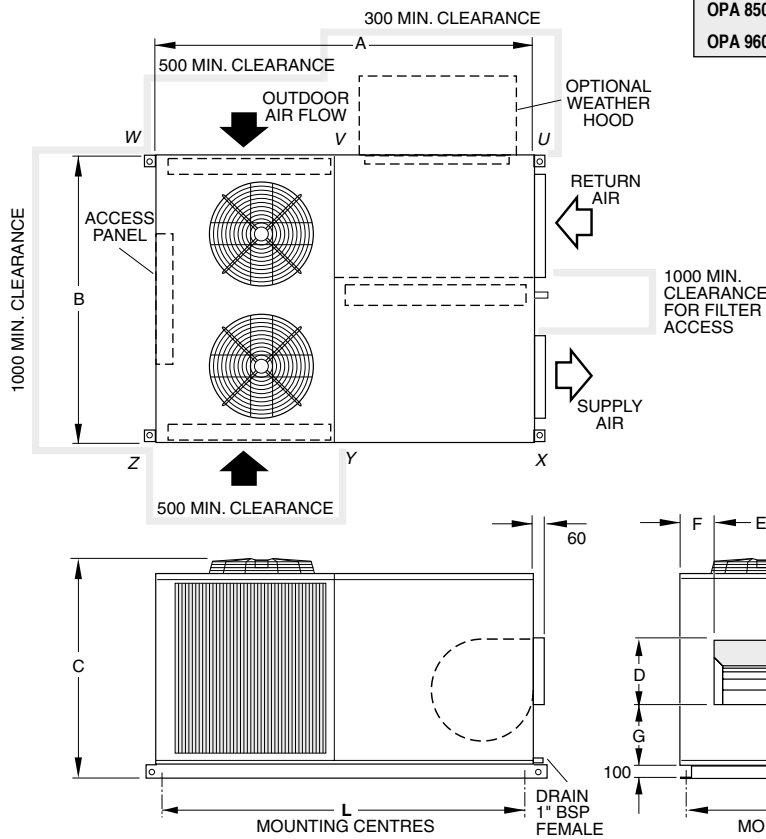
MODEL	INDOOR FAN SPEED	SWL dB(A)	OCTAVE BAND FREQUENCY Hz					
			125	250	500	1 k	2 k	4 k
			SOUND POWER LEVELS (SWL) dB					
OPA 430	935 RPM	85	79	77	79	81	78	77
OPA 530	750 RPM	84	83	81	79	79	78	76
	900 RPM	85	83	82	79	80	78	76
OPA 650	800 RPM	84	83	81	79	79	78	76
	1000 RPM	89	86	84	82	84	83	81
OPA 850	750 RPM	84	82	83	82	79	76	72
	800 RPM	90	88	89	88	86	82	78
OPA 960	800 RPM	86	84	85	84	81	78	74
	850 RPM	92	90	91	90	87	84	80

**DIMENSIONS (mm)**

Not to Scale

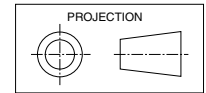
**Fig. 1 Horizontal Supply & Return Air**  
**OPA \*RKTBH**

MODEL	A	B	C	D	E	F	G	H	J	K	L	M	N
OPA 430	1670	1590	1460	405	375	200	570	772	420	125	1605	1519	315
OPA 530	2225	1950	1605	401	473	220	570	955	497	130	2160	1879	260
OPA 650	2225	1950	1860	405	473	220	570	955	497	135	2160	1879	385
OPA 850	2790	2150	1860	479	558	235	615	1200	596	130	2727	2079	266
OPA 960	2790	2150	1860	479	558	235	615	1200	596	130	2727	2079	266



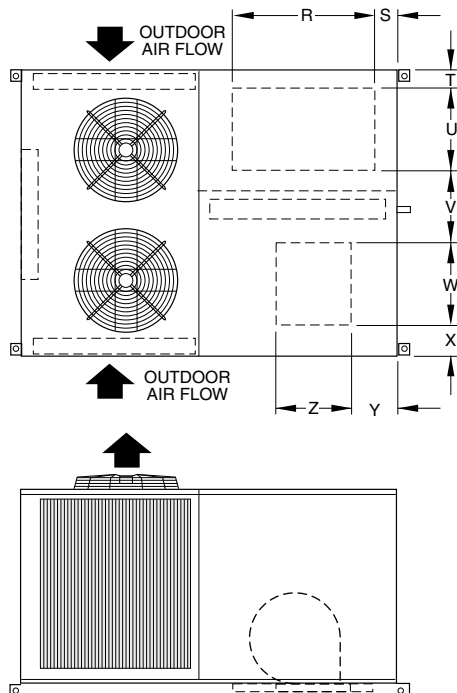
MODEL	POINT LOADS (kg)					
	U	V	W	X	Y	Z
OPA 430	90	90	98	99	99	108
OPA 530	115	115	125	133	133	144
OPA 650	135	135	146	154	154	166
OPA 850	172	172	184	207	207	221
OPA 960	183	183	195	220	219	235

**Note:**  
The OPA 850, 960 models have four outdoor air fans.  
OPA 430 has low profile fans.



**Fig. 2 Downward Supply Air & Return Air**  
**OPA \*RKTBU**

MODEL	R	S	T	U	V	W	X	Y	Z
OPA 430	745	105	240	365	430	330	225	210	400
OPA 530	930	120	205	475	565	470	225	305	405
OPA 650	930	120	210	475	560	470	225	305	405
OPA 850	1165	160	220	575	545	567	235	415	475
OPA 960	1165	160	220	575	545	567	235	415	475



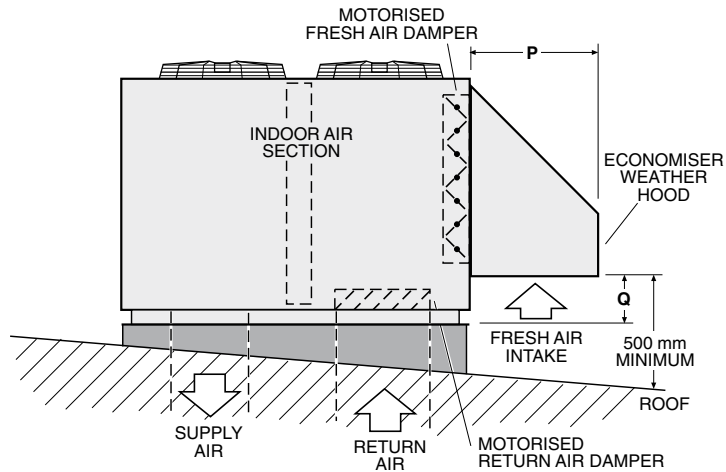
**Note:**  
The OPA 850, 960 models have four outdoor air fans. Refer to Fig.1 for overall dimensions.

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

**Fig. 3 Economiser Option**

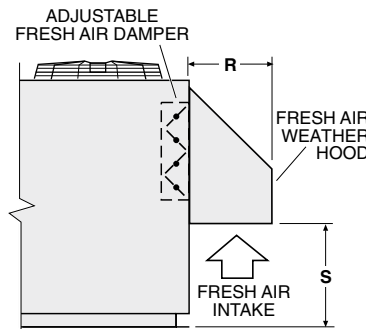
MODEL	P	Q
OPA 430	585	445
OPA 530	735	305
OPA 650	735	560
OPA 850	875	310
OPA 960	875	310

Dimensions (mm)



**Fig. 4 Fresh Air Damper Option**

MODEL	R	S
OPA 430	335	895
OPA 530	435	755
OPA 650	435	1005
OPA 850	430	810
OPA 960	430	810



**Nomenclature**

e.g. **O P A 5 3 0 R K T B H - C Z**

<i>Series</i>	<i>Size</i>	<i>Type</i>	<i>Options</i>
<p><b>O</b> - Outdoor  <b>P</b> - Packaged  <b>A</b> - Air Cooled</p>	<p>Divide by 10 to get approx. nominal Capacity in kilowatts</p>	<p><b>R</b> - Reverse cycle  <b>K</b> - Refrigerant R410A  <b>T</b> - Three phase power supply  <b>B</b> - Twin compressor system (twin circuit)  <b>H</b> - Horizontal discharge supply air fan  <b>U</b> - Downward discharge supply air fan</p>	<p><b>C</b> - Fresh Air  <b>Z</b> - Economiser</p>



## SPECIFICATIONS

Model		OPA 430	OPA 530	OPA 650	OPA 850	OPA 960
Cooling Capacity *1	kW	43.0	53.0	64.6	85.1	96.0
Heating Capacity *2	kW	42.5	55.4	60.9	83.5	90.0
E.E.R. (Cooling)		2.91	2.80	2.75	3.04	2.80
Air Flow *3	l/s	2300	2500	3500	4200	5200
Power Source *4		3 phase 342 - 436 V a.c. 50 Hz				
Indoor Fan Full Load Amps	A/ph.	4.9	6.5	8.6	10.3	13.8
Running Amps (Total System)	A/ph.	30 / 27 / 27	40 / 35 / 35	40	47.5	55
Recommended External Fuse	A/ph.	50	80	80	100	120
Finish		Grey polyester powder coat				
Net Weight	kg	583	766	890	1162	1233
Shipping Weight	kg	638	807	922	1243	1304

### 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 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.

\*4 Power source includes voltage limits.

### NOTE

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



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