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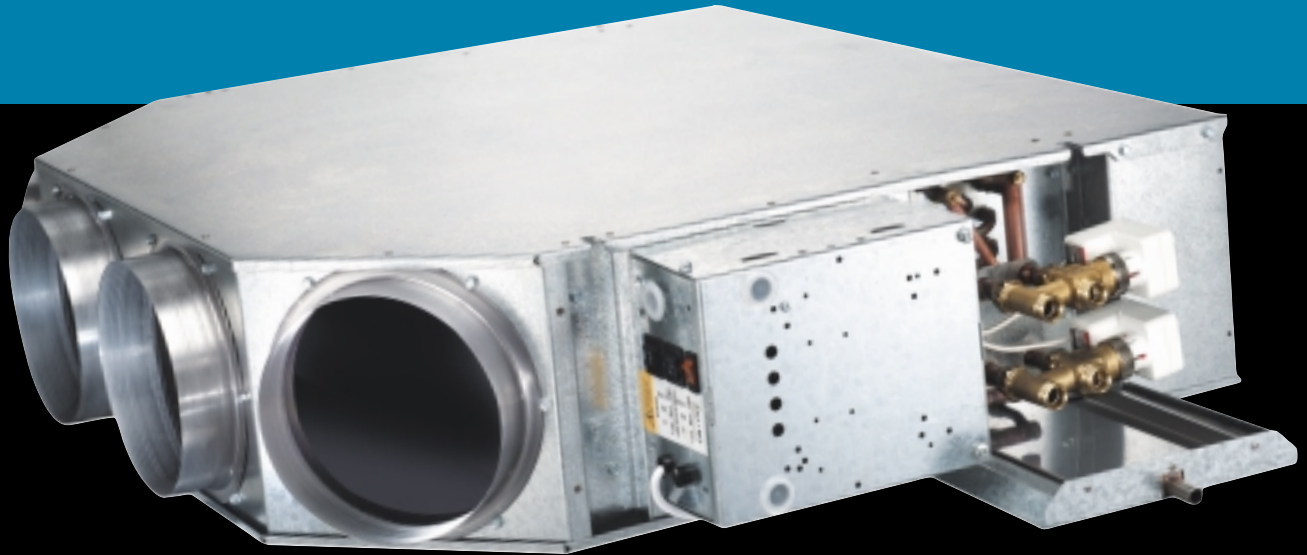
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**SUPPLY & SERVICE**

Free technical, installation and sales advice is available from the Quartz Fan Coil Department

As part of the policy of continuous product improvement Quartz Limited reserves the right to alter specifications without notice.  
All sales made by Quartz Limited are made only upon the Company's Conditions of Sales, a copy of which may be obtained on request.

*Quartz*



# FAN COILS



**A RANGE OF HORIZONTAL  
WATERSIDE AND AIRSIDE  
CONTROL UNITS**

**Leading The Way In Fan Coil Technology**

# QUARTZ

## The Company

### INTRODUCTION

Quartz is the market leader in fan coil development and production and is certified by the British Standards Institution to BS EN ISO 9001. All Quartz units are tested and approved by recognised bodies, i.e. BSRIA, E.A. Technology, SRL, and Southampton University.

Quartz was the first to bring to the trade stainless steel drain trays (patented design ensuring condensate drainage under all conditions), discharge plenums with 45° mitred corners eliminating requirements for 90° bends, unique extended surface filter giving four times the life of a standard arrangement, anti - resonance laminated steel fan decks and fine speed adjustment - all as standard equipment.

#### WE LEAD WHILE OTHERS FOLLOW !!!

Quartz is a Public Limited Company, which is part of the Smith's Group of companies. As such we offer inter - group technical resource, national sales team and national maintenance / technical team coverage.

Based on the South Coast our centre of excellence includes applications, technical, design and development teams.

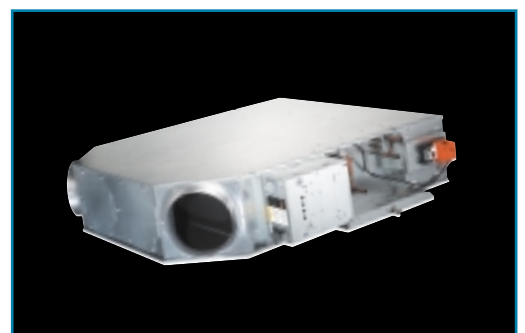
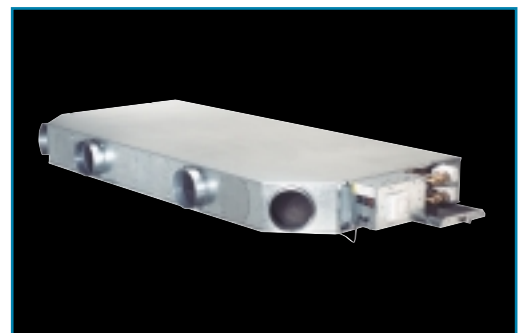
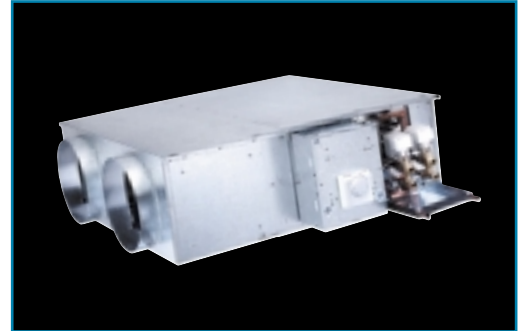
Quartz now offer a full range of Chillers and Air Handling Units to compliment the range.

Our centrally located dedicated manufacturing plant with its multi - production lines, including fast response line, is ideally located for national distribution.

Our recently refurbished new manufacturing premises are now equipped with state of the art manufacturing procedures and equipment. Production facility tours are welcomed by prior arrangement. Quartz also offer an in-house acoustic testing facility.

Achieved through close attention to market needs, design detail and material specification, Quartz have utilised their strong positioning, vast experience and high volume production to deliver quality at competitive prices.

Innovative design and outstanding build quality means that your project is in safe hands - leading the way in Fan Coil, Air Handling and Chiller technology.



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# SAPPHIRE

## Waterside Control Fan Coil Units

### INTRODUCTION

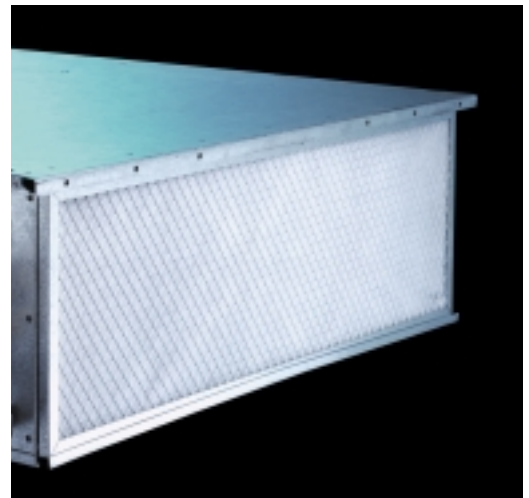
The Quartz SAPPHIRE Series is a very versatile, high power fan coil unit that meets some very demanding heating and cooling requirements, providing discreet, effective and reliable climate control.

This product is the result of an original dependable design now coupled to an extensive development programme supported by customer research.

The popular tried and trusted SAPPHIRE now includes the latest features to lead the way in Fan Coil units

- Greater selection of units with the use of high quality, high output, counter flow multi row coil options to ensure optimum performance for all cooling and heating parameters
- A very compact low energy consumption motor that compliments low noise levels with high performance coils. A true thoroughbred amongst Fan Coil units
- High quality casings in Horizontal configurations this range is flexible from intake to discharge, but offers most options as standard. Suitable for rectangular or circular spigots up to 250mm diameter
- SAPPHIRE incorporates Class 'O' fire rated thermal and acoustic insulation. Quiet in use – room occupants will appreciate the very low sound levels
- 24 speed settings over a wide range of voltages. This level of adjustment facility ensures easy and accurate commissioning using the standard three speeds and fine adjustment

SAPPHIRE Fan Coil units continue to lead the way in Fan Coil waterside control technology. This household name in units has been blazing a trail for almost a decade. The latest developments will ensure this continues for the next decade.



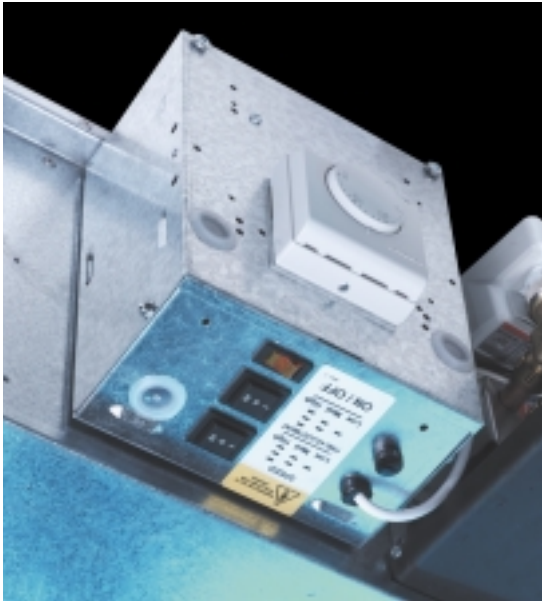
#### FILTERS

EU2 pad and frame filters are fitted as standard. Options include metal mesh and EU3.

#### STANDARD FLUSH PANELLED, EXTRA RIGID CASINGS

High quality 1.2mm galvanised steel casing with wide ranging flexibility. Alternative spigot arrangements in various sizes and layouts offer greater versatility for site ducting arrangements.

Units incorporated acoustically lined discharge plenums as standard while fresh air spigots and inlet plenums are offered as customer options. Class 'O' fire retardant insulation is employed throughout for greater thermal and acoustic efficiency.

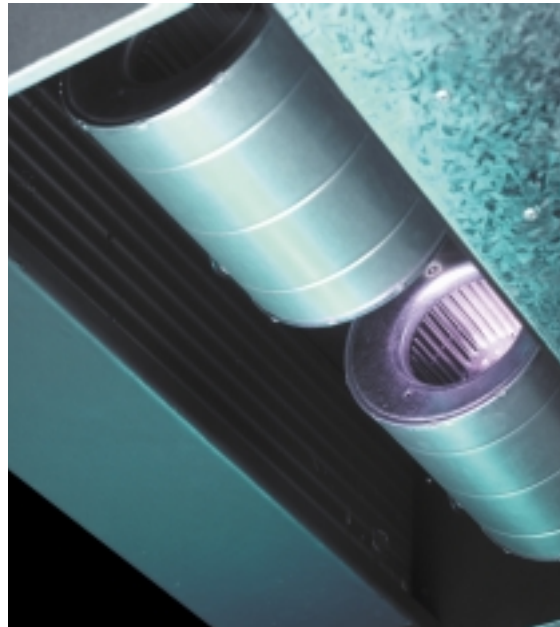
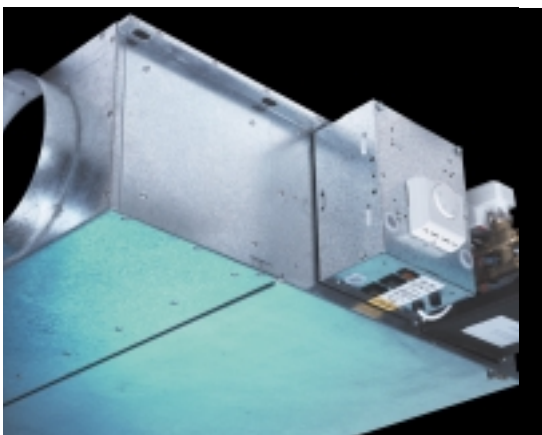


### STANDARD EASY ACCESS PROTECTED CONTROL ENCLOSURE

A new easy access enclosure has been developed to afford better protection to any type of temperature controller, including a fully enclosed option for discreet control fitment.

The new design incorporates an auto transformer with eight tapings and a variable neutral providing 24 speed settings over a wide range of voltages. The subsequent adjustment facility ensuring easy and accurate commissioning using only the standard three speed and fine adjustment switches incorporated into the enclosure.

Further standard features include a screened 24V, 50 VA fused control output, an easily accessible mains protection fuse, an illuminated on/off switch and a 2m low smoke and fume flying lead.



### STANDARD HIGH PERFORMANCE FANS

Compact, external rotor motor fans are fitted as standard giving high outputs at low noise with greater reliability. Thermal overload cutouts are integral in the motor windings for added protection and peace of mind.



### COILS

High quality, high output, counter - flowed coils are fitted, with four and five row options to ensure optimum performance whatever the cooling or heating medium parameters. Each coil is fitted with easily accessible vents and drains as standard.

# SAPPHIRE SPECIFICATION

## CASING

Unit casings shall be manufactured from 1.2mm galvanised sheet steel with 1.6mm fan decks. The construction shall produce a flush external finish with no sharp edges and give unhindered access to filters, controls and circular duct connections. Reinforced slotted mounting points shall be incorporated to facilitate fitting of drop rods or mounting bolts within the overall casing width. An integral, multi-outlet, acoustically lined discharge plenum shall be incorporated into the casing with circular steel spigots. All permanent fixings shall be rivetted and all removable items shall be retained via setscrews and captive nuts.

## ACCESS

Access to fans/motors shall be via insulated bottom panels with 'keyhole' slots retained by M6 setscrews into captive nutserts. Access panels shall be structurally rigid and form a positive seal against atmospheric pressure.

## FANS

Fans shall be double inlet, double width, direct drive centrifugal type with high efficiency, low noise, forward curved, multiblade galvanised sheet steel impellers housed within galvanised or synthetically treated steel scrolls. Motor/impeller assemblies shall be statically and dynamically balanced in two planes in accordance with BS5265, Part 1, 1979 to G2.5. Fans shall be mounted separately on fan decks to facilitate easy individual removal.

## MOTORS

Motors shall be permanent split capacitor external rotor, totally enclosed high efficiency type with a power factor of 0.9 or better. Bearings shall be sealed for life, maintenance free ball race type with a minimum life expectancy of 50,000 hrs, under normal operating conditions. Auto re-setting thermal contactors shall be incorporated into the windings to ensure overload protection. Insulation shall be to Class 'B' with enclosure to IP44 and electrical supply shall be 230V 1ph. 50Hz.

## TRANSFORMERS

Speed control shall be by means of multi-tapped auto transformer with twenty four outputs, plus a screened 24v, 50vA control output. Selected outputs shall be pre-wired to panel mounted selector switches giving three main speed selections with three 'fine adjustment' settings on each for accurate commissioning of air volumes. The control panel shall include an integral mains protection fuse and a 24V control fuse.

## FILTERS

Filters shall be EU2 or EU3 continuous filament media to Eurovent 4/5 with F1 fire resistance to DIN 53438, with a dust holding capacity of 400g/m<sup>2</sup>, pad and frame type. (Metal mesh filters are available as an option). Filters on units *without* return air plenums shall be removable from the open inlet and via a bottom access panel on units *with* return air plenums.

## COILS

Coils shall be manufactured from seamless copper tube, mechanically expanded into aluminium fins having die formed collars to obtain maximum contact providing optimised heat transfer. Circuits shall be designed to ensure optimisation of output, while preventing air locking and allowing free draining. Vents and drains shall be fitted with easily accessible slotted/hexagonal plugs. Testing shall be by dry air under water to 20 bar, and valve assemblies by hydraulic pressure to manufacturers maximum recommended operating pressure. A plate shall be fitted to support the complete valve assembly and connecting pipework.

## CONDENSATE TRAY

Condensate trays shall be one - piece welded, insulated galvanised steel with fall to drain. The drain connection shall be 15mm copper tube suitable for push-on or compression fittings. An epoxy resin based paint shall be applied to the internal surfaces to offer corrosion resistance and trays shall be externally insulated with faced 3mm vapour barrier foam.

## INSULATION

Unit casings shall be lined with 90kg/m<sup>3</sup>, CFC & HFC free, class 'O' open cell expanded foam for both thermal and acoustic insulation, having a maximum thermal conductivity of 0.045 W/mk, fully complying with London Borough and CAA airport flammability and toxicity requirements. The adhesive is a modified acrylic, light and ageing resistant synthetic resin with high temperature tolerance.

## CONTROL ENCLOSURE

A ventilated, easy access enclosure, with recessed control mounting and hinged/removable cover, shall be fitted on the pipework connection side of the casing and shall incorporate the auto transformer, illuminated on/off switch, three speed and fine adjustment control switches plus a 2.0m flying lead for connection to adjacent mains spur. The enclosure shall be wired in accordance with current I.E.E. regulations, maintain full earth continuity and be capable of accommodating most current major manufacturers typical fan coil temperature controllers.

## CONTROL METHOD

Temperature control shall be by means of modulating 4-port diverting valves and actuators operating via stand alone, (analogue), or D.D.C. controller and room or return air sensor.

Due to our policy of continuous research and development, all information is subject to change without notice.

# SAPPHIRE ACOUSTIC DATA

All sound data ascertained at 30Pa. external resistance

Sound Power Level  
(SWL) dB ref. 10<sup>-12</sup> w

MODEL	SPEED	INLET/CASING RADIATED						Hz.	DISCHARGE					
		125	250	500	1k	2k	4k		125	250	500	1k	2k	4k
SPR 1	1	48	45	41	37	29	21		46	41	26	21	20	19
	2	49	46	42	38	30	22		47	42	28	23	22	21
	3	52	49	45	41	33	25		50	45	30	25	24	21
	4	56	54	49	48	42	36		52	48	35	31	29	22
	5	58	56	51	50	45	40		54	52	36	34	33	25
	6	59	58	54	53	48	43		56	54	37	35	35	27
SPR 2	1	49	46	42	38	30	22		46	42	27	23	20	20
	2	50	47	43	40	32	26		48	43	34	31	28	24
	3	54	50	46	44	39	33		50	42	35	31	30	24
	4	57	54	50	48	43	36		52	49	36	33	31	26
	5	59	56	52	50	46	42		54	51	38	35	33	27
	6	60	59	55	56	52	45		56	54	39	37	36	32
SPR 3	1	49	47	44	40	33	23		46	43	34	27	21	19
	2	50	48	45	41	35	26		47	45	37	29	23	20
	3	53	51	48	45	40	34		50	48	41	32	25	21
	4	56	54	51	48	44	38		53	50	42	33	28	22
	5	57	56	53	51	46	42		55	53	46	36	30	25
	6	59	58	56	54	49	44		57	55	47	38	32	28
SPR 4	1	49	48	45	41	34	23		45	43	35	28	22	19
	2	49	49	47	43	35	25		46	45	36	29	23	20
	3	53	52	50	46	40	33		50	48	39	32	25	20
	4	55	55	53	50	45	37		53	51	41	34	26	21
	5	58	57	56	53	48	41		56	54	44	38	30	24
	6	60	60	57	55	50	45		58	56	47	41	34	26
SPR 5	1	50	49	44	40	33	23		45	42	35	27	18	18
	2	52	51	46	42	35	25		47	44	37	29	20	20
	3	55	54	49	45	38	28		50	47	40	31	21	20
	4	56	56	52	48	43	34		52	50	42	32	22	21
	5	58	58	55	51	47	36		55	53	45	35	26	23
	6	60	59	56	53	49	43		57	57	48	39	32	25
SPR 6	1	51	49	44	40	33	22		46	42	36	27	19	19
	2	53	51	46	43	36	26		48	44	38	30	21	22
	3	55	55	50	46	40	30		51	48	40	33	24	24
	4	57	56	52	50	45	38		53	50	42	35	26	26
	5	59	58	55	52	50	40		56	54	45	36	28	27
	6	61	60	58	55	50	44		58	55	48	40	33	28
SPR 7	1	50	49	44	41	34	23		46	44	36	28	20	18
	2	51	51	46	43	36	28		48	46	38	30	22	19
	3	54	54	50	46	42	35		52	49	40	32	24	20
	4	56	56	53	50	44	37		55	51	41	33	25	20
	5	58	57	55	52	47	39		56	54	45	37	29	23
	6	60	59	57	54	49	43		57	56	47	39	33	25

The SWLs published here have been obtained under independent testing in a reverberant chamber to BS4196, Part 1: 1991.  
**For units operating on secondary chilled water an allowance of +1 or 2 dB may need to be added to the NR values due to the fact that units selected will be larger, relative to output, for a given room size.**  
**For accurate assessment please consult our Technical Sales Department.**

**Qualification of 'NR' predictions:**

The 'NR' guide figures quoted on page 4 are intended to show the levels which may be expected in a typical office environments provided the following apply: Room sizes are based on a cooling load of 120w/m<sup>2</sup> with a c.w. flow temp. of 6deg.C. Units must be correctly mounted onto a solid structure, using rubber washers, in a false ceiling not less than 300mm deep, with standard 'T' bar grid and fibreboard tiles. Rooms should be carpeted, with not more than 20% glazed area, or highly reflective surfaces. In open plan areas units should be mounted @ min. 6m centres and return air grilles should not be positioned directly below unit inlets. A minimum of 1m of non-noise regenerative flexible ducting should be used on each outlet spigot, sized to allow maximum velocity to maintain NR required.

The above should ensure the predicted NR levels are achieved @ 1.5m from the nearest grille, or diffuser, provided the grille boots are acoustically lined.

For accurate assessment it may be necessary to obtain confirmation from an acoustic specialist. In which case please refer to the adjacent sound power level or, alternatively we are able to offer specific acoustic modelling on request. In this event we would require full room/construction details for evaluation.

# SAPPHIRE MAX PERFORMANCE DATA (COOLING)

Cooling outputs based on: E.A.T.23°C db/16°C wb  
Air Volumes at 30Pa.ext.res.

Model	Spd.	A'flow (l/s)	CW									
			6/11		6/12		8/13		10/14		11/15	
			Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)
SPR 1	1	65	0.90	1.14	0.86	1.07	0.77	0.89	0.73	0.73	0.64	0.64
	2	85	1.16	1.45	1.09	1.33	0.98	1.12	0.94	0.94	0.83	0.83
	3	110	1.50	1.87	1.39	1.69	1.26	1.42	1.20	1.20	1.06	1.06
	4	135	1.79	2.20	1.65	1.96	1.50	1.68	1.43	1.43	1.26	1.26
	5	160	2.11	2.53	1.94	2.28	1.75	1.95	1.67	1.67	1.47	1.47
	6	175	2.23	2.71	2.06	2.42	1.88	2.10	1.80	1.80	1.58	1.58
SPR 2	1	70	1.01	1.24	1.01	1.31	0.91	1.08	0.87	0.87	0.76	0.76
	2	90	1.25	1.58	1.19	1.48	1.07	1.22	1.02	1.02	0.89	0.89
	3	130	1.76	2.20	1.63	1.99	1.49	1.68	1.42	1.42	1.25	1.25
	4	165	2.23	2.78	2.05	2.46	1.86	2.11	1.79	1.79	1.57	1.57
	5	180	2.39	2.98	2.18	2.63	1.99	2.26	1.92	1.92	1.68	1.68
	6	200	2.61	3.22	2.38	2.84	2.17	2.44	2.07	2.07	1.81	1.81
SPR 3	1	85	1.18	1.52	1.12	1.41	1.01	1.17	0.96	0.96	0.85	0.85
	2	125	1.70	2.12	1.58	1.92	1.43	1.62	1.36	1.36	1.20	1.20
	3	165	2.21	2.76	2.03	2.44	1.84	2.09	1.77	1.77	1.55	1.55
	4	225	2.89	3.56	2.65	3.15	2.43	2.72	2.33	2.33	2.03	2.03
	5	270	3.40	4.14	3.14	3.68	2.85	3.19	2.73	2.73	2.40	2.40
	6	285	3.56	4.27	3.28	3.85	2.99	3.34	2.86	2.86	2.52	2.52
SPR 4	1	105	1.51	1.85	1.51	1.85	1.42	1.73	1.37	1.37	1.18	1.18
	2	165	2.45	3.06	2.29	2.89	2.06	2.42	1.99	1.99	1.72	1.72
	3	240	3.45	4.24	3.33	4.20	3.00	3.52	2.90	2.90	2.51	2.51
	4	310	4.45	5.46	4.23	5.27	3.81	4.41	3.65	3.65	3.18	3.18
	5	370	4.70	5.49	4.97	6.11	4.47	5.11	4.21	4.21	3.73	3.73
	6	420	5.00	5.73	5.47	6.73	4.90	5.60	4.61	4.61	4.09	4.09
SPR 5	1	150	2.15	2.64	2.15	2.64	1.97	2.38	1.92	1.92	1.65	1.65
	2	200	2.87	3.52	2.82	3.56	2.54	2.98	2.46	2.46	2.13	2.13
	3	250	3.59	4.41	3.48	4.40	3.13	3.68	3.03	3.03	2.61	2.61
	4	320	4.60	5.65	4.50	5.76	4.07	4.77	3.93	3.93	3.40	3.40
	5	380	5.45	6.69	5.28	6.67	4.75	5.56	4.55	4.55	3.96	3.96
	6	430	6.00	7.28	5.90	7.35	5.29	6.13	5.05	5.05	4.41	4.41
SPR 6	1	165	2.38	2.93	2.28	2.94	2.05	2.45	1.99	1.99	1.72	1.72
	2	245	3.43	4.17	3.12	3.85	2.85	3.27	2.74	2.74	2.39	2.39
	3	310	4.33	5.25	3.95	4.81	3.58	4.11	3.45	3.45	2.99	2.99
	4	400	5.62	6.84	5.19	6.39	4.72	5.40	4.52	4.52	3.94	3.94
	5	450	6.24	7.55	5.79	7.04	5.23	5.99	5.01	5.01	4.38	4.38
	6	520	7.01	8.37	6.56	7.98	5.97	6.75	5.67	5.67	5.00	5.00
SPR 7	1	175	2.46	2.99	2.29	2.87	2.07	2.40	2.00	2.00	1.73	1.73
	2	260	3.46	4.11	3.15	3.79	2.87	3.25	2.78	2.78	2.42	2.42
	3	340	4.54	5.40	4.11	4.94	3.76	4.26	3.63	3.63	3.17	3.17
	4	430	5.73	6.81	5.24	6.30	4.78	5.41	4.59	4.59	4.03	4.03
	5	500	6.53	7.71	6.04	7.16	5.50	6.15	5.25	5.25	4.61	4.61
	6	550	7.13	8.39	6.63	7.87	5.96	6.67	5.68	5.68	5.00	5.00

# SAPPHIRE MAX PERFORMANCE DATA (HEATING)

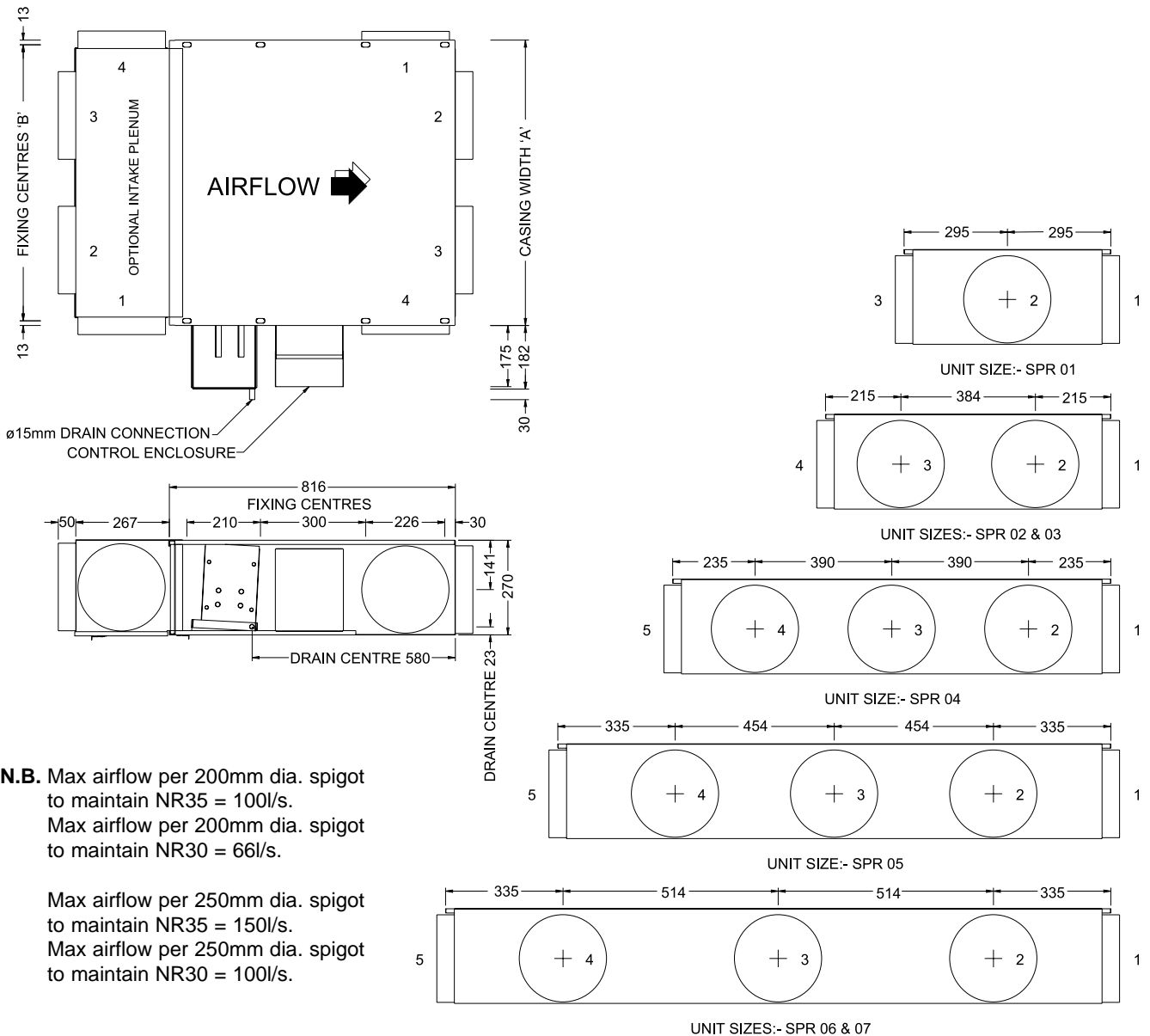
Heating outputs based on: E.A.T.20°C  
Air Volumes at 30Pa.ext.res.

Model	Spd.	A'flow (ls)	LPHW			ELECTRICAL DATA			
			82/71 output (kW)	60/50 output (kW)	50/40 output (kW)	input (watts)	FLC (Amps)	S.C. (Amps)	N.R. Guide
SPR 1	1	65	1.06	0.56	0.34	44	0.30	0.90	28
	2	85	1.30	0.71	0.41	55	0.34	1.02	30
	3	110	1.60	0.91	0.49	75	0.41	1.23	33
	4	135	1.80	1.04	0.55	97	0.51	1.53	35
	5	160	1.97	1.15	0.61	122	0.60	1.80	38
	6	175	2.07	1.21	0.65	151	0.70	2.10	40
SPR 2	1	70	1.42	0.82	0.48	44	0.30	0.90	28
	2	90	1.57	0.92	0.54	55	0.34	1.02	30
	3	130	2.08	1.23	0.75	82	0.45	1.35	33
	4	165	2.44	1.49	0.95	113	0.56	1.68	35
	5	180	2.64	1.56	1.01	132	0.64	1.92	38
	6	200	2.74	1.65	1.09	161	0.73	2.19	40
SPR 3	1	85	1.56	0.91	0.54	50	0.45	1.35	28
	2	125	2.09	1.24	0.76	77	0.55	1.65	30
	3	165	2.54	1.54	1.00	111	0.68	2.04	33
	4	225	3.04	1.84	1.24	149	0.83	2.49	35
	5	270	3.44	1.96	1.38	194	1.02	3.06	38
	6	285	3.54	2.04	1.42	211	1.07	3.21	40
SPR 4	1	105	2.39	1.32	0.74	75	0.68	2.04	28
	2	165	2.68	1.70	0.91	101	0.76	2.28	30
	3	240	3.98	2.28	1.30	166	1.02	3.06	33
	4	310	4.68	2.68	1.58	224	1.24	3.72	35
	5	370	5.18	2.98	1.88	291	1.53	4.59	38
	6	420	5.58	3.28	2.08	339	1.69	5.07	40
SPR 5	1	150	3.30	1.99	1.16	101	0.76	2.28	28
	2	200	3.80	2.32	1.40	133	0.90	2.70	30
	3	250	4.60	2.70	1.75	166	1.02	3.06	33
	4	320	5.60	3.30	2.20	224	1.24	3.72	35
	5	380	6.20	3.70	2.50	291	1.53	4.59	38
	6	430	6.70	4.00	2.70	339	1.69	5.07	40
SPR 6	1	165	3.72	2.28	1.41	107	0.90	2.70	28
	2	245	4.72	2.62	1.75	155	1.09	3.27	30
	3	310	5.32	3.22	2.12	197	1.28	3.84	33
	4	400	6.62	3.92	2.72	270	1.57	4.71	35
	5	450	7.12	4.22	2.82	299	1.66	4.98	38
	6	520	7.72	4.62	3.12	388	2.04	6.12	40
SPR 7	1	175	3.92	2.36	1.48	105	1.03	3.09	28
	2	260	4.42	2.82	1.92	194	1.36	4.08	30
	3	340	5.92	3.52	2.42	221	1.50	4.50	33
	4	430	7.12	4.22	2.92	276	1.70	5.10	35
	5	500	7.72	4.62	3.12	373	2.07	6.21	38
	6	550	8.22	4.92	3.32	411	2.26	6.78	40

# SAPPHIRE DIMENSIONAL INFORMATION

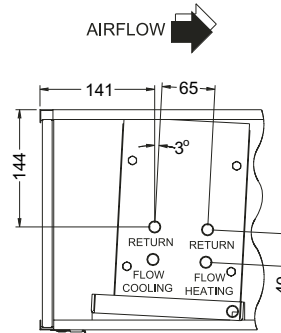
Unit Model	Dim 'A'	Dim 'B'	Available Spigot Positions	Circular Spigot Options
SPR 1	590	564	1-2-3	200-250
SPR 2	814	788	1-2-3-4	200-250
SPR 3	814	788	1-2-3-4	200-250
SPR 4	1250	1224	1-2-3-4-5	200-250
SPR 5	1578	1552	1-2-3-4-5	200-250
SPR 6	1898	1872	1-2-3-4-5	200-250
SPR 7	1898	1872	1-2-3-4-5	200-250

All handings viewed in direction of airflow (eg. Unit illustrated below = R.H. connections)

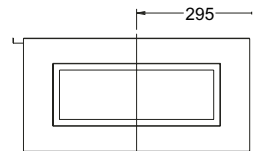
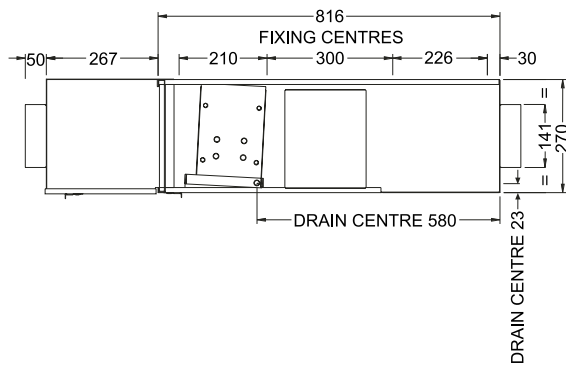
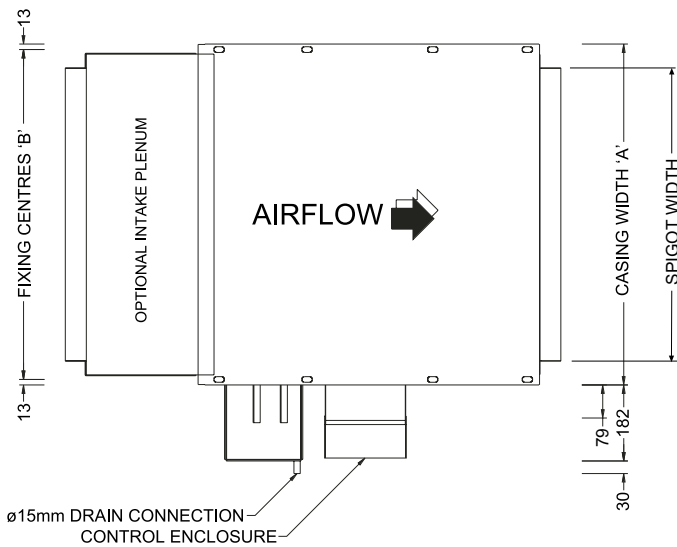


# SAPPHIRE COIL AND SPIGOT CONNECTION DETAILS

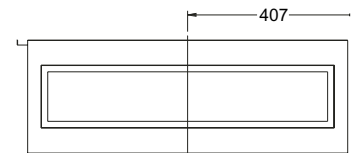
Unit Model	Rectangular Spigot Width
SPR 1	400
SPR 2	700
SPR 3	700
SPR 4	900
SPR 5	950
SPR 6	1000
SPR 7	1000



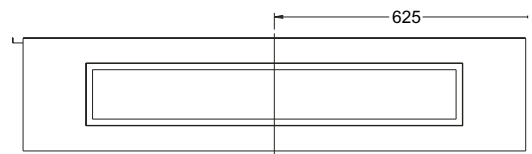
COIL CONNECTION DETAIL



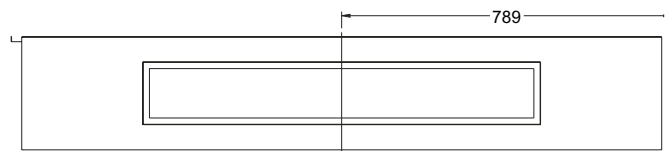
UNIT SIZE:- SPR 01



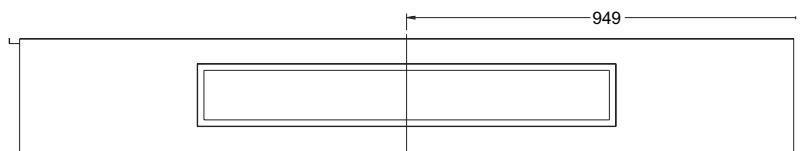
UNIT SIZES:- SPR 02 & 03



UNIT SIZE:- SPR 04



UNIT SIZE:- SPR 05



UNIT SIZES:- SPR 06 & 07

# AMBER

## Horizontal Waterside Control



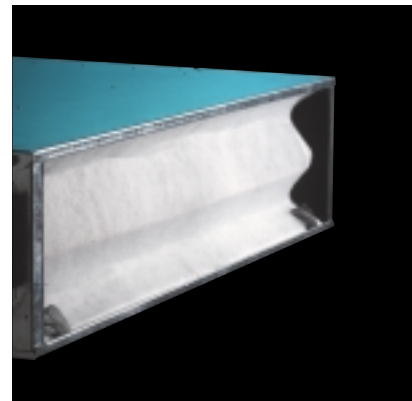
## INTRODUCTION

The Quartz AMBER series is a very compact, high power fan coil unit that meets some very exacting heating and cooling requirements, providing discreet, effective climate control.

It is the result of an innovative design and development programme supported by customer feedback.

AMBER features a flush panelled, extra rigid casing and a stainless steel 'free flow' drain pan.

- Quiet in use - room occupants will appreciate the very low sound levels. AMBER utilises Class 'O' fire rated thermal and acoustic insulation.
- Low maintenance filter - an innovative new filter arrangement means greatly extended service intervals. Servicing costs are reduced, disruption minimised - benefiting everyone.
- A very compact low energy consumption motor that combines low noise levels and high performance with carefully matched coils. Excellent performance characteristics and reduced running costs are the result.
- Easier and safer installation with reinforced, slotted mounting points and interchangeable spigots/blanking plates. Innovative space saving plenums allow for easy duct fixing.
- Protected, easy access control enclosure with illuminated on/off switch, plus three speed and fine adjustment setting giving multiple speed selections.
- External resistances up to 100Pa.



### STANDARD LOW MAINTENANCE FILTER

By increasing the filter media area this exciting new feature has the effect of reducing the resistance to airflow by at least 80%. This means that filter service periods can be extended by up to 6 times that of a normal filter.

### STANDARD FIRE RATED INSULATION

The standard acoustic and thermal insulation is CFC and HFC free, class 'O' fire rated and complies with London Borough and CAA airport flammability and toxicity requirements.

### STANDARD HIGH OUTPUT 'OPTIMISED' COMPONENTS

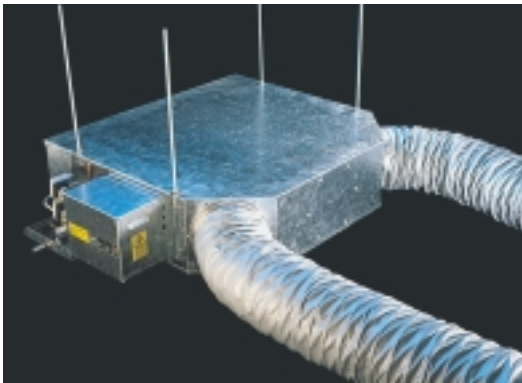
From the high efficiency, compact, external rotor motor fans, and the carefully matched coils, to the new, low resistance filter we have taken a fresh look at every facet of the design and component selection to ensure that each complements the other.

Optimisation means we can offer the most cost effective solutions at all times.

## STANDARD FLUSH PANELLED, EXTRA RIGID CASING

Providing more space internally - allowing better air inlet conditions to the fan(s). Larger filters can be accommodated, reducing maintenance cost and power consumption.

Recessed mounting points provide greater safety in handling/installing units. Greater rigidity assures higher resistance to damage/deformity and reduces resonance and noise breakout - resulting in one of the quietest units available today!



## STANDARD SPACE SAVING PLENUM

The new 'mitred' plenum design offers both forward or sideways directional discharge without the need for expensive, and space consuming 90° pressed bends. Savings can be made in terms of ceiling void areas as well as cost.

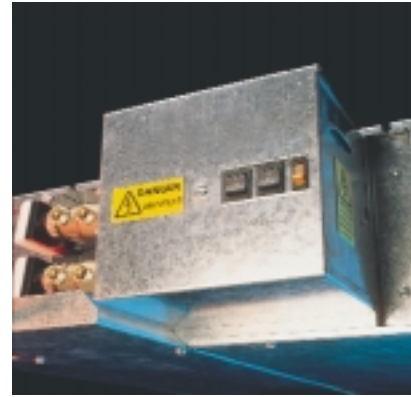
On units with return air plenums the benefits are doubled.

Spigots have been designed to be removable by simply loosening the retaining screws and they can be easily interchanged with the insulated blanking plates in a matter of moments.

## STANDARD 24 SPEED AUTO TRANSFORMER SPEED CONTROL

The transformer has 24 speed settings over a wide range of voltages, including both coarse and fine adjustment, giving almost infinite control of output to ensure easy and accurate commissioning.

A 24v, 50vA screened control output is also provided, eliminating the need for separate control transformers.



## STANDARD EASY ACCESS PROTECTED CONTROL ENCLOSURE

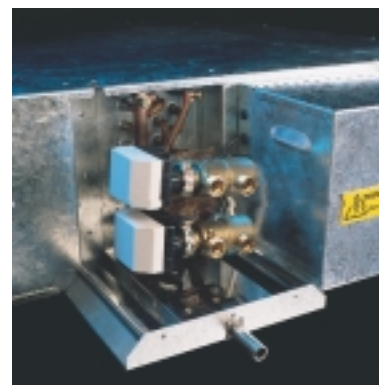
The easy access control enclosure has been designed to give full protection to any fitted temperature controller during transit/installation.

## STANDARD HIGH PERFORMANCE FANS

Compact, high performance, external rotor motor fans are fitted as standard with 'thermal contactors' built in to the windings to give complete peace of mind.

The benefits of using components of the very highest quality are never more evident than they are in the case of fans.

Their use allows far lower noise levels and higher outputs than contemporary units, with the advantages of reliability and compactness.



## STANDARD STAINLESS STEEL REMOVABLE DRAIN PAN

The new 'free flow' stainless steel drain pan, (patents pending), greatly increases the longevity and makes cleaning easier.

# AMBER SPECIFICATION

## CASING

Unit casings shall be manufactured from 1.2mm galvanised sheet steel with 2.1mm laminated steel fan decks. The construction shall produce a flush external finish with no sharp edges and giving unhindered access to filters, controls and circular duct connections. Reinforced slotted mounting points with retaining detail shall be incorporated to facilitate fitting of drop rods or mounting bolts within the overall casing width. An integral, mitred, multi-outlet, acoustically lined discharge plenum shall be incorporated into the casing with easily interchangeable spun steel spigots and insulated blanking plates retained by 'Taptite' setscrews into threaded collars. All permanent fixings shall be rivetted and all removable items shall be retained via setscrews and captive nuts.

## ACCESS

Access to fans/motors shall be via insulated bottom panels with 'keyhole' slots, retained by M6 setscrews into captive 'nutserts'. Access panels shall be structurally rigid and form a positive seal against atmospheric pressure.

## FANS

Fans shall be double inlet, double width, direct drive centrifugal type with high efficiency, low noise, forward curved, multiblade galvanised sheet steel impellers housed within galvanised or synthetically treated steel scrolls. Motor/impeller assemblies shall be statically and dynamically balanced in two planes in accordance with BS5265, Part 1, 1979 to G2.5. Fans shall be mounted separately on fan decks to facilitate easy individual removal. Fan decks shall be easily removable for major overhaul or upgrading if required.

## MOTORS

Motors shall be permanent split capacitor external rotor, totally enclosed high efficiency type with a power factor of 0.9 or better. Bearings shall be sealed for life, maintenance free ball race type with a minimum life expectancy of 50,000 hrs, under normal operating conditions. Auto resetting thermal contactors shall be incorporated into the windings to ensure overload protection. Insulation shall be to Class 'B' with enclosure to IP44 and electrical supply shall be 230V 1ph. 50Hz.

## TRANSFORMERS

Speed control shall be by means of multi-tapped auto transformer with twenty four outputs, plus a screened 24v, 50vA control output. Selected outputs shall be pre-wired to panel mounted selector switches giving three main speed selections with three 'fine adjustment' settings on each for accurate commissioning of air volumes. The control panel shall include an integral mains protection fuse and a 24V control output fuse as standard.

## FILTERS

Filters shall be EU2 or EU3 continuous filament EXTENDED SURFACE media to Eurovent 4/5 with F1 fire resistance to DIN 53438, with a dust holding capacity of 400g/m<sup>2</sup>, with wire supporting frame. (Standard pad and

frame and metal mesh filters are available as options). Filters on units without return air plenums shall be removable from the open inlet and via a bottom access panel on units with return air plenums.

## COILS

Coils shall be manufactured from seamless copper tube, mechanically expanded into aluminium fins having die formed collars to obtain maximum contact providing optimised heat transfer. Circuits shall be designed to ensure optimisation of output with correct contra flow, while preventing air locking and allowing free draining. Vents and drains shall be fitted with easily accessible slotted/hexagonal plugs. Testing shall be by dry air under water to 30 bar, and valve assemblies by hydraulic pressure to manufacturers maximum recommended operating pressure. A plate shall be fitted to support the complete valve assembly and connecting pipework.

## CONDENSATE TRAY

Condensate trays shall be one - piece welded, insulated stainless steel with fall to drain and extended pressure equalisation void to enable free draining end connection, and shall be easily removable for inspection and cleaning without disturbing connecting pipework. A stainless steel baffle shall be fitted to prevent air bypass underneath the coil.

## INSULATION

Unit casings shall be lined with 90kg/m<sup>3</sup>, CFC & HFC free, Class 'O' open cell expanded foam for both thermal and acoustic insulation, having a maximum thermal conductivity of 0.045 W/mk, fully complying with London Borough and CAA airport flammability and toxicity requirements. The adhesive is a modified acrylic, light and ageing resistant synthetic resin with high temperature tolerance.

## CONTROL ENCLOSURE

A ventilated, easy access enclosure, with recessed control mounting and hinged/removable cover, shall be fitted on the pipework connection side of the casing and shall incorporate the auto transformer, illuminated on/off switch, three speed and fine adjustment control switches plus a 2m flying lead for connection to adjacent fused mains spur. The enclosure shall be wired in accordance with current I.E.E. regulations (BS 7671), maintain full earth continuity and be capable of accommodating all current major manufacturers typical fan coil temperature controllers.

## CONTROL METHOD

Temperature control shall be by means of modulating 4-port diverting valves and actuators operating via stand alone, (analogue), or D.D.C. controller and room or return air sensor.

Due to our policy of continuous research and development, all information is subject to change without notice.

# AMBER ACOUSTIC DATA

Sound Power Level  
(SWL) dB ref. 10<sup>-12</sup> w

All sound data ascertained at 30Pa. external resistance

MODEL	SPEED	INLET/CASE RADIATED						Hz.	DISCHARGE					
		125	250	500	1K	2K	4K		125	250	500	1K	2K	4K
AMB 1	1	47	43	41	35	29	26		40	29	20	18	15	14
	2	51	49	47	42	35	28		43	33	23	20	18	16
	3	52	51	50	44	37	30		45	37	27	24	22	20
	4	55	53	52	48	40	31		48	39	31	29	27	22
	5	57	56	55	52	45	39		51	42	33	32	30	29
	6	58	58	56	55	49	46		53	46	36	34	32	31
AMB 2	1	48	44	42	35	28	24		42	31	21	17	13	12
	2	51	49	47	41	34	27		44	36	26	23	19	17
	3	52	51	50	45	38	31		46	37	27	25	21	18
	4	55	54	53	50	43	37		49	40	31	30	26	19
	5	57	56	55	54	48	45		52	47	35	33	28	27
	6	59	60	57	56	52	47		54	51	40	35	31	30
AMB 3	1	48	44	42	36	30	25		42	32	22	18	15	13
	2	51	48	46	40	32	26		43	35	26	24	20	18
	3	52	50	49	44	34	28		45	36	27	26	22	20
	4	55	53	52	49	42	36		48	39	30	29	25	21
	5	56	55	54	53	46	44		51	46	34	32	29	26
	6	60	59	57	55	51	46		55	52	40	36	33	32
AMB 4	1	48	43	41	34	30	21		42	30	23	22	17	15
	2	53	51	46	39	32	24		45	34	26	24	20	18
	3	55	52	51	47	40	32		46	37	28	27	25	20
	4	58	55	54	50	44	35		50	41	32	31	30	24
	5	60	58	56	52	47	40		52	43	34	33	32	26
	6	62	62	58	56	52	46		56	48	40	38	36	32
AMB 5	1	48	43	41	33	30	20		41	30	24	23	20	18
	2	53	51	46	38	31	23		44	33	27	26	21	20
	3	56	52	50	44	38	30		45	37	29	28	26	22
	4	57	56	55	48	45	36		51	42	33	32	31	25
	5	58	59	56	50	46	38		52	43	35	34	33	27
	6	63	62	58	55	52	45		56	49	39	38	36	32
AMB 6	1	50	48	44	39	34	26		44	39	28	24	22	20
	2	54	52	49	43	38	30		48	43	33	28	25	22
	3	55	54	51	45	39	32		49	45	35	30	26	24
	4	56	57	54	49	44	37		51	47	37	32	27	25
	5	58	59	56	52	46	41		53	49	38	33	30	27
	6	60	61	59	54	49	44		55	52	40	34	32	29
AMB 7	1	50	48	44	39	33	26		44	39	28	24	22	20
	2	53	52	49	42	38	31		47	43	33	28	25	22
	3	54	54	51	45	39	32		49	45	35	31	26	25
	4	56	57	54	49	44	37		51	48	37	32	27	25
	5	59	59	56	51	45	40		54	50	38	34	32	30
	6	61	61	59	54	50	44		56	53	41	36	34	32
AMB 8	1	51	49	45	40	35	27		45	40	29	25	23	21
	2	55	53	50	44	39	31		49	44	34	29	26	23
	3	55	55	52	46	40	33		50	46	36	31	27	25
	4	57	58	55	50	45	38		52	48	38	33	28	26
	5	59	60	57	53	47	42		54	50	39	34	31	28
	6	61	62	60	55	50	45		56	53	41	35	33	30

Qualification of N.R. predictions:

The N.R. guide figures quoted on output data page are intended to show the levels which may be expected in a typical office environment provided the following apply: Room sizes are based on a cooling load of 120w/m<sup>2</sup> with a c.w. flow temp. of 6deg.C. Units must be correctly mounted onto a solid structure, using drop rods attached to mounting points provided, in a false ceiling not less than 300mm deep, with standard 'T' bar grid and 10mm fibreboard tiles. Rooms should be carpeted, have not more than 20% glazing, or highly reflective surfaces. In open plan areas units should be mounted not less than 6m apart and return-air grilles should not be mounted directly below, or adjacent to unit inlets. 1m of non noise regenerative flexible duct should be fitted to each outlet spigot sized to maintain required N.R. level. i.e. 1.5m/s at NR25, 2m/s at NR30, 3m/s at NR35 and 4m/s at NR40

The foregoing should ensure the 'guide' N.R. levels are met when measured at 1.5m from the nearest grille, provided the grille plenums are correctly sized and insulated.

\* For units operating on secondary chilled water an allowance of +1 or 2 dB may need to be added to the NR values due to the fact that units selected will be larger, relative to output, for a given room size.

**For accurate assessment please consult our Technical Sales Department.**

# AMBER MAX PERFORMANCE DATA (COOLING)

Max Performance Data (cooling)  
Cooling outputs based on: E.A.T.23°C db/16°C wb  
Air Volumes at 30Pa.ext.res.

		CW										
		6/11		6/12		8/13		10/14		11/15		
Model	Spd.	A'flow (l/s)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)
AMB 1	1	55	0.80	0.98	0.80	0.98	0.77	0.90	0.72	0.72	0.65	0.65
	2	100	1.50	1.77	1.37	1.63	1.27	1.44	1.20	1.20	1.06	1.06
	3	120	1.71	2.08	1.59	1.88	1.49	1.76	1.40	1.40	1.26	1.26
	4	160	2.21	2.65	2.05	2.39	1.93	2.14	1.80	1.80	1.62	1.62
	5	170	2.30	2.72	2.17	2.53	2.04	2.26	1.92	1.92	1.72	1.72
	6	180	2.34	2.73	2.28	2.65	2.15	2.38	2.00	2.00	1.81	1.81
AMB 2	1	70	1.01	1.24	1.01	1.24	0.98	1.15	0.92	0.92	0.83	0.83
	2	115	1.67	2.04	1.60	1.93	1.49	1.69	1.42	1.42	1.27	1.27
	3	145	2.10	2.57	1.95	2.32	1.83	2.06	1.73	1.73	1.54	1.54
	4	180	2.55	3.10	2.36	2.77	2.21	2.48	2.10	2.10	1.90	1.90
	5	210	2.93	3.54	2.70	3.16	2.55	2.84	2.40	2.40	2.15	2.15
	6	225	3.12	3.76	2.88	3.36	2.72	3.02	2.60	2.60	2.30	2.30
AMB 3	1	75	1.09	1.33	1.09	1.33	1.08	1.28	1.00	1.00	0.92	0.92
	2	120	1.74	2.13	1.74	2.13	1.72	2.04	1.64	1.64	1.46	1.46
	3	150	2.17	2.66	2.17	2.66	2.10	2.47	2.00	2.00	1.80	1.80
	4	190	2.75	3.37	2.75	3.37	2.62	3.05	2.50	2.50	2.20	2.20
	5	215	3.12	3.81	3.12	3.81	2.94	3.42	2.80	2.80	2.50	2.50
	6	235	3.40	4.17	3.40	4.17	3.20	3.70	3.00	3.00	2.70	2.70
AMB 4	1	100	1.45	1.77	1.45	1.77	1.43	1.70	1.35	1.35	1.20	1.20
	2	180	2.61	3.19	2.61	3.19	2.50	2.91	2.32	2.32	2.10	2.10
	3	225	3.26	3.99	3.26	3.99	3.07	3.57	2.95	2.95	2.60	2.60
	4	300	4.29	5.23	3.98	4.70	3.74	4.20	3.55	3.55	3.20	3.20
	5	350	4.92	5.95	4.59	5.40	4.31	4.82	4.10	4.10	3.65	3.65
	6	420	5.26	6.05	5.43	6.36	5.07	5.64	4.70	4.70	4.25	4.25
AMB 5	1	105	1.52	1.86	1.52	1.86	1.47	1.73	1.40	1.40	1.25	1.25
	2	185	2.68	3.28	2.68	3.28	2.51	2.91	2.45	2.45	2.14	2.14
	3	230	3.33	4.08	3.30	4.03	3.08	3.55	3.00	3.00	2.61	2.61
	4	320	4.64	5.68	4.49	5.43	4.19	4.78	4.00	4.00	3.58	3.58
	5	360	5.07	6.15	5.00	6.02	4.65	5.28	4.40	4.40	4.00	4.00
	6	440	6.08	7.31	5.75	6.71	5.31	5.90	5.00	5.00	4.50	4.50
AMB 6	1	130	1.88	2.31	1.88	2.31	1.82	2.14	1.70	1.70	1.55	1.55
	2	210	3.03	3.70	3.03	3.70	2.83	3.26	2.70	2.70	2.41	2.41
	3	260	3.77	4.61	3.72	4.53	3.47	3.99	3.32	3.32	3.00	3.00
	4	330	4.69	5.69	4.62	5.58	4.31	4.91	4.10	4.10	3.70	3.70
	5	375	5.27	6.37	5.18	6.23	4.83	5.47	4.40	4.40	4.10	4.10
	6	450	6.20	7.43	5.83	6.80	5.42	6.02	5.10	5.10	4.60	4.60
AMB 7	1	140	2.03	2.48	2.03	2.48	1.94	2.27	1.90	1.90	1.67	1.67
	2	215	3.12	3.81	3.12	3.81	2.93	3.40	2.82	2.82	2.50	2.50
	3	270	3.91	4.79	3.89	4.76	3.63	4.19	3.51	3.51	3.10	3.10
	4	340	4.93	6.03	4.87	5.93	4.54	5.22	4.40	4.40	3.86	3.86
	5	390	5.65	6.92	5.51	6.69	5.14	5.88	5.00	5.00	4.40	4.40
	6	460	6.56	7.99	6.40	7.52	5.96	6.77	5.60	5.60	5.00	5.00
AMB 8	1	150	2.17	2.66	2.17	2.66	2.08	2.43	2.00	2.00	1.80	1.80
	2	250	3.62	4.43	3.62	4.43	3.38	3.90	3.30	3.30	2.90	2.90
	3	320	4.64	5.68	4.59	5.60	4.28	4.93	4.10	4.10	3.65	3.65
	4	420	6.08	7.43	5.89	7.13	5.49	6.27	5.20	5.20	4.70	4.70
	5	470	6.69	8.14	6.53	7.86	6.08	6.90	5.75	5.75	5.15	5.15
	6	550	7.65	9.23	7.28	8.54	6.74	7.53	6.40	6.40	5.86	5.86

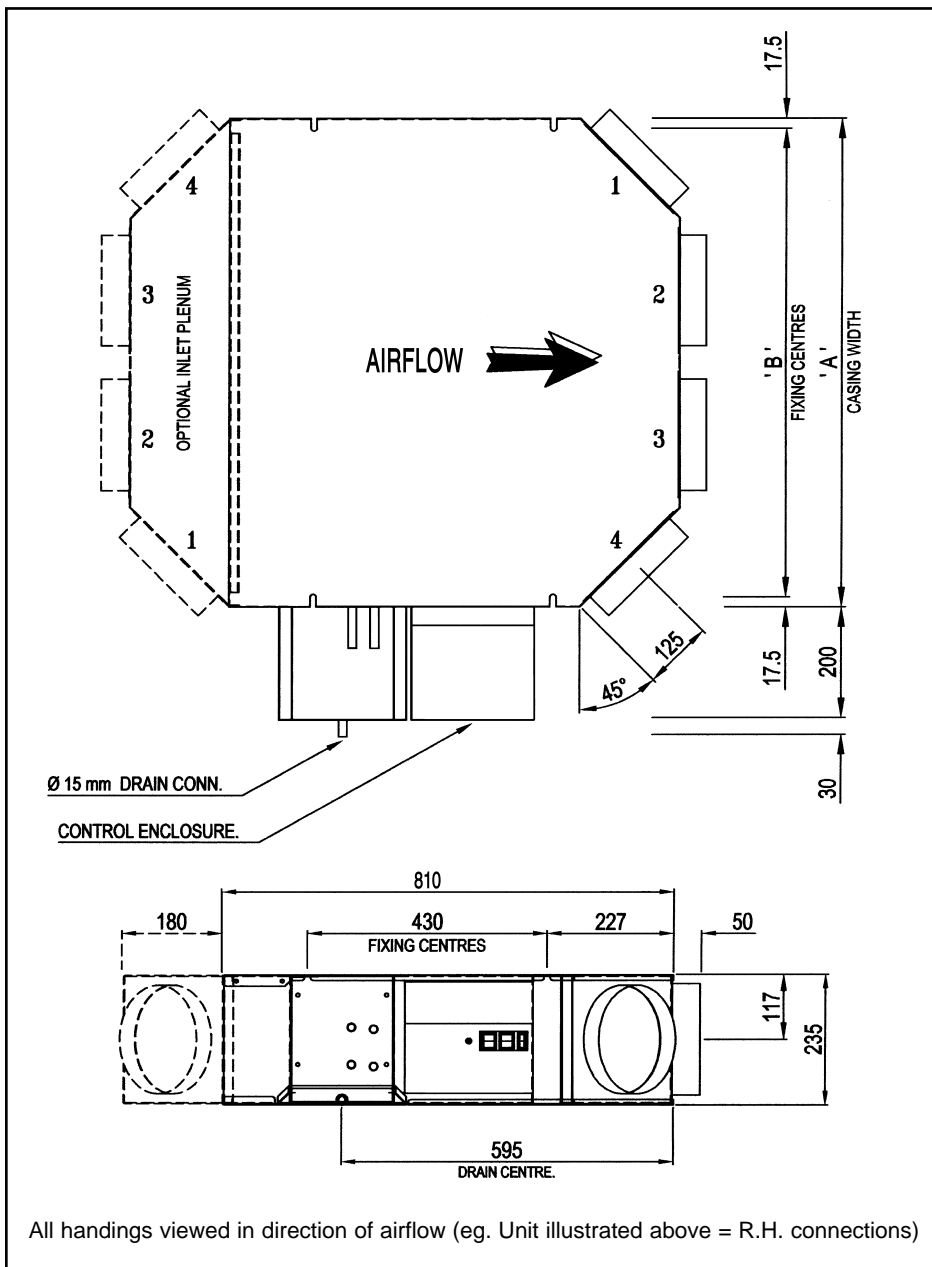
# AMBER MAX PERFORMANCE DATA (HEATING)

Max Performance Data (heating)  
Heating outputs based on: E.A.T.20°C  
Air Volumes at 30Pa.ext.res.

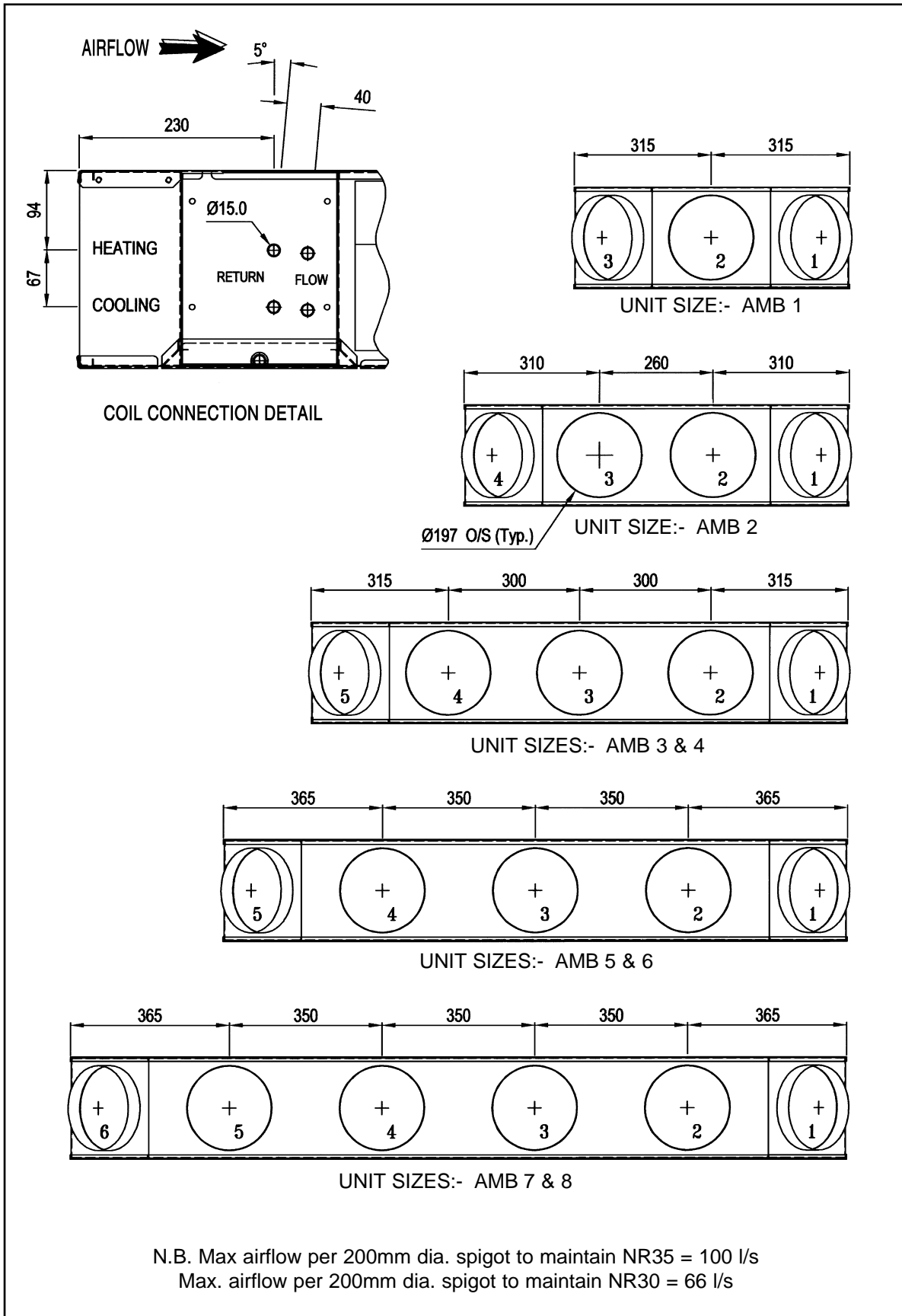
Model	Spd.	A'flow (ls)	LPHW			ELECTRICAL DATA			
			82/71 output (kW)	60/50 output (kW)	50/40 output (kW)	input (watts)	FLC (Amps)	S.C. (Amps)	N.R. Guide
AMB 1	1	55	1.17	0.59	0.35	45	0.40	1.20	25
	2	100	1.68	0.94	0.46	63	0.50	1.50	30
	3	120	1.86	1.06	0.50	78	0.52	1.56	32
	4	160	2.19	1.24	0.59	93	0.57	1.71	35
	5	170	2.27	1.29	0.61	98	0.59	1.77	37
	6	180	2.35	1.33	0.64	118	0.65	1.95	40
AMB 2	1	70	1.58	0.91	0.50	52	0.45	1.35	25
	2	115	2.19	1.29	0.73	83	0.55	1.65	30
	3	145	2.54	1.49	0.90	97	0.58	1.74	32
	4	180	2.88	1.68	1.07	125	0.65	1.95	35
	5	210	3.14	1.83	1.20	146	0.74	2.22	37
	6	225	3.27	1.90	1.26	177	0.80	2.40	40
AMB 3	1	75	1.73	1.03	0.61	53	0.47	1.41	25
	2	120	2.68	1.61	1.06	84	0.57	1.71	30
	3	150	3.05	1.82	1.24	100	0.61	1.83	32
	4	190	3.53	2.10	1.43	132	0.70	2.10	35
	5	215	3.83	2.28	1.54	153	0.75	2.25	37
	6	235	4.04	2.40	1.63	194	0.84	2.52	40
AMB 4	1	100	2.30	1.37	0.87	65	0.68	2.04	25
	2	180	3.41	2.03	1.38	125	0.96	2.88	30
	3	225	3.95	2.35	1.59	156	1.08	3.24	32
	4	300	4.63	2.75	1.85	196	1.18	3.54	35
	5	350	5.07	3.01	2.02	236	1.30	3.90	37
	6	420	5.65	3.34	2.25	262	1.38	4.14	40
AMB 5	1	105	2.35	1.23	0.67	72	0.76	2.28	25
	2	185	3.60	2.10	0.96	125	0.96	2.88	30
	3	230	4.12	2.39	1.14	156	1.08	3.24	32
	4	320	5.01	2.90	1.57	196	1.18	3.54	35
	5	360	5.35	3.10	1.77	236	1.30	3.90	37
	6	440	6.01	3.47	2.15	262	1.38	4.14	40
AMB 6	1	130	2.90	1.61	0.78	98	1.08	3.24	25
	2	210	3.89	2.26	1.05	136	1.23	3.69	30
	3	260	4.46	2.59	1.29	175	1.35	4.03	32
	4	330	5.09	2.95	1.62	218	1.55	4.65	35
	5	375	5.48	3.17	1.84	264	1.71	5.13	37
	6	450	6.09	3.52	2.20	294	1.77	5.31	40
AMB 7	1	140	3.18	1.85	0.94	108	1.14	3.42	25
	2	215	4.40	2.59	1.46	159	1.29	3.87	30
	3	270	5.05	2.97	1.81	189	1.44	4.32	32
	4	340	5.86	3.44	2.24	248	1.65	4.95	35
	5	390	6.31	3.70	2.47	280	1.74	5.22	37
	6	460	6.93	4.06	2.70	352	1.95	5.85	40
AMB 8	1	150	3.40	2.00	1.02	120	1.40	4.20	25
	2	250	4.82	2.84	1.68	198	1.72	5.16	30
	3	320	5.63	3.31	2.11	250	1.92	5.76	32
	4	420	6.58	3.86	2.57	290	2.08	6.24	35
	5	470	7.01	4.11	2.73	330	2.20	6.60	37
	6	550	7.69	4.50	2.98	373	2.32	6.96	40

# AMBER DIMENSIONAL INFORMATION

Unit Model	Dim 'A'	Dim 'B'	Weight (approx Kg)	Spigot Options
AMB 1	630	595	37	1-2-3
AMB 2	880	845	45	1-2-3-4
AMB 3	1230	1195	55	1-2-3-4-5
AMB 4	1230	1195	60	1-2-3-4-5
AMB 5	1430	1395	70	1-2-3-4-5
AMB 6	1430	1395	75	1-2-3-4-5
AMB 7	1780	1745	85	1-2-3-4-5-
AMB 8	1780	1745	90	1-2-3-4-5-6



# AMBER COIL AND SPIGOT CONNECTION DETAILS



# AMETHYST

## Waterside Control Fan Coil Units

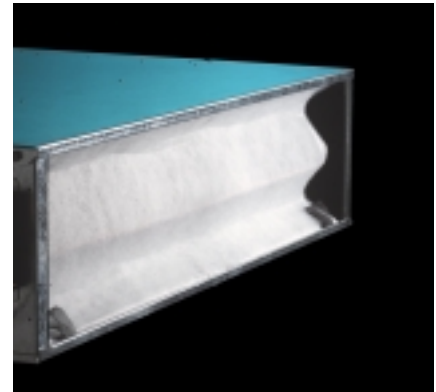


## INTRODUCTION

The Quartz AMETHYST Series is a 175 deep thinline version of the very successful Amber range of ceiling mounted horizontal fan coil units.

The AMETHYST features a flush panelled, extra rigid casing and a stainless steel 'free flow' drain pan.

- Quiet in use - room occupants will appreciate the very low sound levels. AMETHYST utilises Class 'O' fire rated thermal and acoustic insulation.
- Low maintenance filter - an innovative new filter arrangement means greatly extended service intervals. Servicing costs are reduced, disruption minimised - benefiting everyone.
- An ultra compact low energy consumption motor that combines low noise levels and high performance with carefully matched coils. Excellent performance characteristics and reduced running costs are the result.
- Easier and safer installation with reinforced, slotted mounting points and interchangeable spigots/blanking plates. Innovative space saving plenums allow for easy duct fixing.
- Protected, easy access control enclosure with illuminated on/off switch, plus three speed and fine adjustment setting giving multiple speed selections.
- External resistances up to 100Pa.



### STANDARD LOW MAINTENANCE FILTER

By increasing the filter media area this exciting new feature has the effect of reducing the resistance to airflow by at least 80%. This means that filter service periods can be extended by up to 6 times that of a normal filter.

### STANDARD FIRE RATED INSULATION

The standard acoustic and thermal insulation is CFC and HFC free, class 'O' fire rated and complies with London Borough and CAA airport flammability and toxicity requirements.

### STANDARD HIGH OUTPUT 'OPTIMISED' COMPONENTS

From the high efficiency, compact, external rotor motor fans, and the carefully matched coils, to the new, low resistance filter we have taken a fresh look at every facet of the design and component selection to ensure that each complements the other.

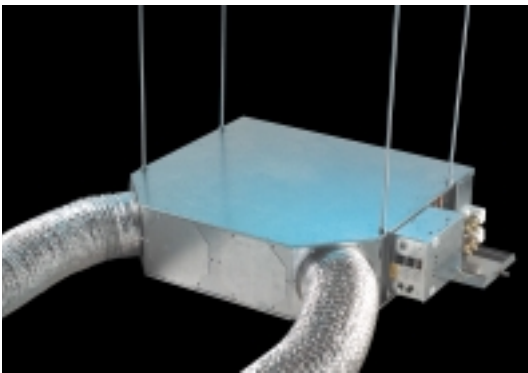
Optimisation means we can offer the most cost effective solutions at all times.

## STANDARD FLUSH PANELLED, EXTRA RIGID CASING

Providing more space internally - allowing better air inlet conditions to the fan(s). Larger filters can be accommodated, reducing maintenance cost and power consumption.

Recessed mounting points provide greater safety in handling/installing units.

Greater rigidity assures higher resistance to damage/deformity and reduces resonance and noise breakout - resulting in one of the quietest units available today!



## STANDARD SPACE SAVING PLENUM

The new 'mitred' plenum design offers both forward or sideways directional discharge without the need for expensive, and space consuming 90° pressed bends. Savings can be made in terms of ceiling void areas as well as cost.

On units with return air plenums the benefits are doubled.

Spigots have been designed to be removable by simply loosening the retaining screws and they can be easily interchanged with the insulated blanking plates in a matter of moments.

## STANDARD 24 SPEED AUTO TRANSFORMER SPEED CONTROL

The transformer has 24 speed settings over a wide range of voltages, including both coarse and fine adjustment, giving almost infinite control of output to ensure easy and accurate commissioning.

A 24v, 50vA screened control output is also provided, eliminating the need for separate control transformers.



## STANDARD EASY ACCESS PROTECTED CONTROL ENCLOSURE

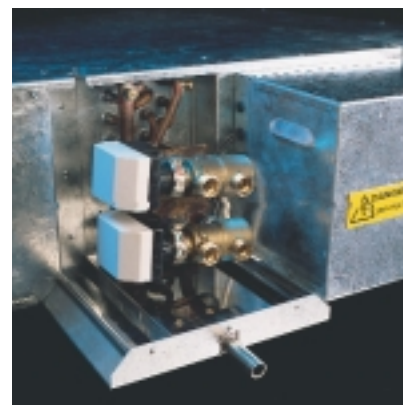
The easy access control enclosure has been designed to give full protection to any fitted temperature controller during transit/installation.

## STANDARD HIGH PERFORMANCE FANS

Compact, high performance, external rotor motor fans are fitted as standard with 'thermal contactors' built in to the windings to give complete peace of mind.

The benefits of using components of the very highest quality are never more evident than they are in the case of fans.

Their use allows far lower noise levels and higher outputs than contemporary units, with the advantages of reliability and compactness.



## STANDARD STAINLESS STEEL REMOVABLE DRAIN PAN

The new 'free flow' stainless steel drain pan, (patents pending), greatly increases the longevity and makes cleaning easier.

# AMETHYST SPECIFICATION

## CASING

Unit casings shall be manufactured from 1.2mm galvanised sheet steel with 2.1mm laminated steel fan decks. The construction shall produce a flush external finish with no sharp edges and giving unhindered access to filters, controls and circular duct connections. Reinforced slotted mounting points with retaining detail shall be incorporated to facilitate fitting of drop rods or mounting bolts within the overall casing width. An integral, mitred, multi-outlet, acoustically lined discharge plenum shall be incorporated into the casing with easily interchangeable spun steel spigots and insulated blanking plates retained by 'Taptite' setscrews into threaded collars. All permanent fixings shall be rivetted and all removable items shall be retained via setscrews and captive nuts.

## ACCESS

Access to fans/motors shall be via insulated bottom panels with 'keyhole' slots, retained by M6 setscrews into captive 'nutserts'. Access panels shall be structurally rigid and form a positive seal against atmospheric pressure.

## FANS

Fans shall be single inlet, single width, direct drive centrifugal type with high efficiency, low noise, forward curved, multiblade galvanised sheet steel impellers housed within galvanised or synthetically treated steel scrolls. Motor/impeller assemblies shall be statically and dynamically balanced in two planes in accordance with BS5265, Part 1, 1979 to G2.5. Fans shall be mounted separately on fan decks to facilitate easy individual removal. Fan decks shall be easily removable for major overhaul or upgrading if required.

## MOTORS

Motors shall be permanent split capacitor external rotor, totally enclosed high efficiency type with a power factor of 0.9 or better. Bearings shall be sealed for life, maintenance free ball race type with a minimum life expectancy of 50,000 hrs, under normal operating conditions. Auto re-setting thermal contactors shall be incorporated into the windings to ensure overload protection. Insulation shall be to Class 'B' with enclosure to IP44 and electrical supply shall be 230V 1ph. 50Hz.

## TRANSFORMERS

Speed control shall be by means of multi-tapped auto transformer with twenty four outputs, plus a screened 24v, 50VA control output. Selected outputs shall be pre-wired to panel mounted selector switches giving three main speed selections with three 'fine adjustment' settings on each for accurate commissioning of air volumes. The control panel shall include an integral mains protection fuse and a 24V control output fuse as standard.

## FILTERS

Filters shall be EU2 or EU3 continuous filament EXTENDED SURFACE media to Eurovent 4/5 with F1 fire resistance to

DIN 53438, with a dust holding capacity of 400g/m<sup>2</sup>, with wire supporting frame. (Standard pad and frame and metal mesh filters are available as options). Filters on units without return air plenums shall be removable from the open inlet and via a bottom access panel on units with return air plenums.

## COILS

Coils shall be manufactured from seamless copper tube, mechanically expanded into aluminium fins having die formed collars to obtain maximum contact providing optimised heat transfer. Circuits shall be designed to ensure optimisation of output with correct contra flow, while preventing air locking and allowing free draining. Vents and drains shall be fitted with easily accessible slotted/hexagonal plugs. Testing shall be by dry air under water to 30 bar, and valve assemblies by hydraulic pressure to manufacturers maximum recommended operating pressure. A plate shall be fitted to support the complete valve assembly and connecting pipework.

## CONDENSATE TRAY

Condensate trays shall be one - piece welded, insulated stainless steel with fall to drain and extended pressure equalisation void to enable free draining end connection, and shall be easily removable for inspection and cleaning without disturbing connecting pipework. A stainless steel baffle shall be fitted to prevent air bypass underneath the coil.

## INSULATION

Unit casings shall be lined with 90kg/m<sup>3</sup>, CFC & HFC free, Class 'O' open cell expanded foam for both thermal and acoustic insulation, having a maximum thermal conductivity of 0.045 W/mk, fully complying with London Borough and CAA airport flammability and toxicity requirements. The adhesive is a modified acrylic, light and ageing resistant synthetic resin with high temperature tolerance.

## CONTROL ENCLOSURE

A ventilated, easy access enclosure, with recessed control mounting and hinged/removable cover, shall be fitted on the pipework connection side of the casing and shall incorporate the auto transformer, illuminated on/off switch, three speed and fine adjustment control switches plus a 2m flying lead for connection to adjacent fused mains spur. The enclosure shall be wired in accordance with current I.E.E. regulations (BS 7671), maintain full earth continuity and be capable of accommodating all current major manufacturers typical fan coil temperature controllers.

## CONTROL METHOD

Temperature control shall be by means of modulating 4-port diverting valves and actuators operating via stand alone, (analogue), or D.D.C. controller and room or return air sensor.

Due to our policy of continuous research and development, all information is subject to change without notice.

# AMETHYST ACOUSTIC DATA

All sound data ascertained at 30Pa. external resistance

Sound Power Level  
(SWL) dB ref. 10<sup>-12</sup> w

MODEL	SPEED	INLET/CASING RADIATED						Hz.	DISCHARGE					
		125	250	500	1k	2k	4k		125	250	500	1k	2k	4k
AMT 1	1	39	38	39	34	29	19		40	32	25	22	19	15
	2	43	40	43	38	34	22		49	34	26	24	21	16
	3	50	45	48	44	40	30		51	36	26	24	22	17
	4	53	47	51	47	44	34		52	38	27	24	24	18
	5	53	51	54	52	48	40		54	43	30	29	28	23
	6	55	55	57	55	52	44		57	47	33	33	32	28
AMT 2	1	40	39	40	35	30	20		41	33	26	23	20	16
	2	44	41	44	39	35	23		50	35	27	25	22	17
	3	51	46	49	45	41	31		52	37	27	25	23	18
	4	54	48	52	48	45	35		53	39	28	25	25	19
	5	54	52	55	53	49	41		55	44	31	30	29	24
	6	56	56	58	56	53	45		58	48	34	34	33	29
AMT 3	1	42	40	42	38	33	25		41	33	27	24	20	17
	2	46	45	48	44	39	29		46	38	29	26	22	18
	3	49	48	51	47	43	34		49	41	30	27	26	21
	4	50	50	53	50	45	37		52	44	33	30	29	26
	5	56	55	56	54	50	43		57	48	35	33	33	30
	6	56	56	58	56	52	46		57	50	37	36	35	33
AMT 4	1	43	41	43	39	34	26		42	34	28	25	21	18
	2	47	46	48	45	40	30		47	39	30	27	23	20
	3	50	49	52	48	44	35		50	42	31	28	27	22
	4	51	51	54	51	46	38		53	45	34	31	30	27
	5	57	56	57	55	51	44		58	49	36	34	33	31
	6	57	57	58	57	53	47		57	51	38	37	36	34
AMT 5	1	48	42	42	37	31	22		43	35	30	20	16	15
	2	51	49	49	45	41	31		48	40	30	22	19	17
	3	52	52	52	49	45	36		51	44	31	24	23	20
	4	55	54	54	51	48	39		53	46	33	26	25	22
	5	59	56	56	53	50	42		56	48	34	28	27	25
	6	60	60	59	57	54	47		58	52	39	33	32	30

**Qualification of N.R. predictions:**

The N.R. guide figures quoted on output data page are intended to show the levels which may be expected in a typical office environment provided the following apply: Room sizes are based on a cooling load of 120w/m<sup>2</sup> with a c.w. flow temp. of 6deg.C. Units must be correctly mounted onto a solid structure, using drop rods attached to mounting points provided, in a false ceiling not less than 300mm deep, with standard 'T' bar grid and 10mm fibreboard tiles. Rooms should be carpeted, have not more than 20% glazing, or highly reflective surfaces. In open plan areas units should be mounted not less than 6m apart and return-air grilles should not be mounted directly below, or adjacent to unit inlets. 1m of non noise regenerative flexible duct should be fitted to each outlet spigot sized to maintain required N.R. level. i.e. 1.5m/s at NR25, 2m/s at NR30, 3m/s at NR35 and 4m/s at NR40.

The foregoing should ensure the 'guide' N.R. levels are met when measured at 1.5m from the nearest grille, provided the grille plenums are correctly sized and insulated.

\* For units operating on secondary chilled water an allowance of +1 or 2 dB may need to be added to the NR values due to the fact that units selected will be larger, relative to output, for a given room size.

**For accurate assessment please consult our Technical Sales Department.**

# AMETHYST MAX PERFORMANCE DATA (COOLING)

Cooling outputs based on: E.A.T.23°C db/16°C wb  
Air Volumes at 30Pa.ext.res.

Model	Spd.	CW										
		6/11		6/12		8/13		10/14		11/15		
		A'flow (l/s)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)
AMT 1	1	35	0.51	0.62	0.51	0.62	0.50	0.60	0.45	0.49	0.42	0.43
	2	70	1.01	1.23	1.01	1.23	0.94	1.08	0.86	0.92	0.79	0.79
	3	100	1.45	1.78	1.38	1.65	1.29	1.45	1.19	1.26	1.07	1.07
	4	120	1.74	2.13	1.62	1.92	1.52	1.71	1.41	1.49	1.27	1.27
	5	140	1.99	2.42	1.86	2.19	1.74	1.95	1.61	1.70	1.46	1.46
	6	170	2.25	2.65	2.21	2.59	2.08	2.31	1.92	2.03	1.73	1.73
AMT 2	1	40	0.58	0.71	0.58	0.70	0.56	0.66	0.51	0.55	0.46	0.48
	2	80	1.16	1.42	1.14	1.39	1.05	1.20	0.96	1.02	0.87	0.90
	3	110	1.57	1.90	1.47	1.74	1.37	1.54	1.26	1.34	1.14	1.18
	4	130	1.82	2.20	1.68	1.96	1.58	1.76	1.46	1.55	1.31	1.36
	5	150	2.08	2.50	1.92	2.24	1.79	1.98	1.67	1.77	1.50	1.56
	6	180	2.47	2.95	2.25	2.60	2.13	2.35	1.98	2.09	1.78	1.85
AMT 3	1	100	1.45	1.78	1.43	1.74	1.33	1.53	1.22	1.31	1.11	1.15
	2	150	2.18	2.67	2.03	2.41	1.91	2.15	1.76	1.87	1.60	1.66
	3	190	2.75	3.37	2.53	2.99	2.38	2.67	2.21	2.35	2.00	2.07
	4	200	2.88	3.52	2.66	3.14	2.51	2.81	2.32	2.46	2.10	2.18
	5	260	3.40	3.99	3.38	3.96	3.17	3.53	2.92	3.09	2.65	2.75
	6	300	3.60	4.11	3.85	4.49	3.61	4.00	3.28	3.47	3.00	3.12
AMT 4	1	120	1.74	2.13	1.70	2.06	1.56	1.77	1.43	1.53	1.30	1.35
	2	170	2.46	3.01	2.26	2.67	2.13	2.38	1.97	2.09	1.78	1.85
	3	210	3.00	3.65	2.74	3.21	2.59	2.89	2.42	2.56	2.17	2.25
	4	220	3.14	3.82	2.86	3.35	2.71	3.03	2.53	2.68	2.27	2.36
	5	280	3.94	4.77	3.61	4.22	3.42	3.80	3.17	3.36	2.85	2.96
	6	320	4.43	5.32	4.09	4.76	3.86	4.28	3.57	3.78	3.23	3.35
AMT 5	1	135	1.95	2.38	1.86	2.23	1.74	1.97	1.60	1.70	1.45	1.50
	2	200	2.87	3.50	2.62	3.08	2.47	2.76	2.30	2.44	2.07	2.15
	3	250	3.55	4.31	3.24	3.79	3.07	3.43	2.85	3.02	2.58	2.68
	4	280	3.94	4.77	3.61	4.22	3.41	3.80	3.17	3.36	2.85	2.96
	5	310	4.31	5.19	3.97	4.63	3.75	4.17	3.47	3.67	3.13	3.25
	6	380	4.95	5.80	4.80	5.56	4.52	5.00	4.14	4.37	3.77	3.92

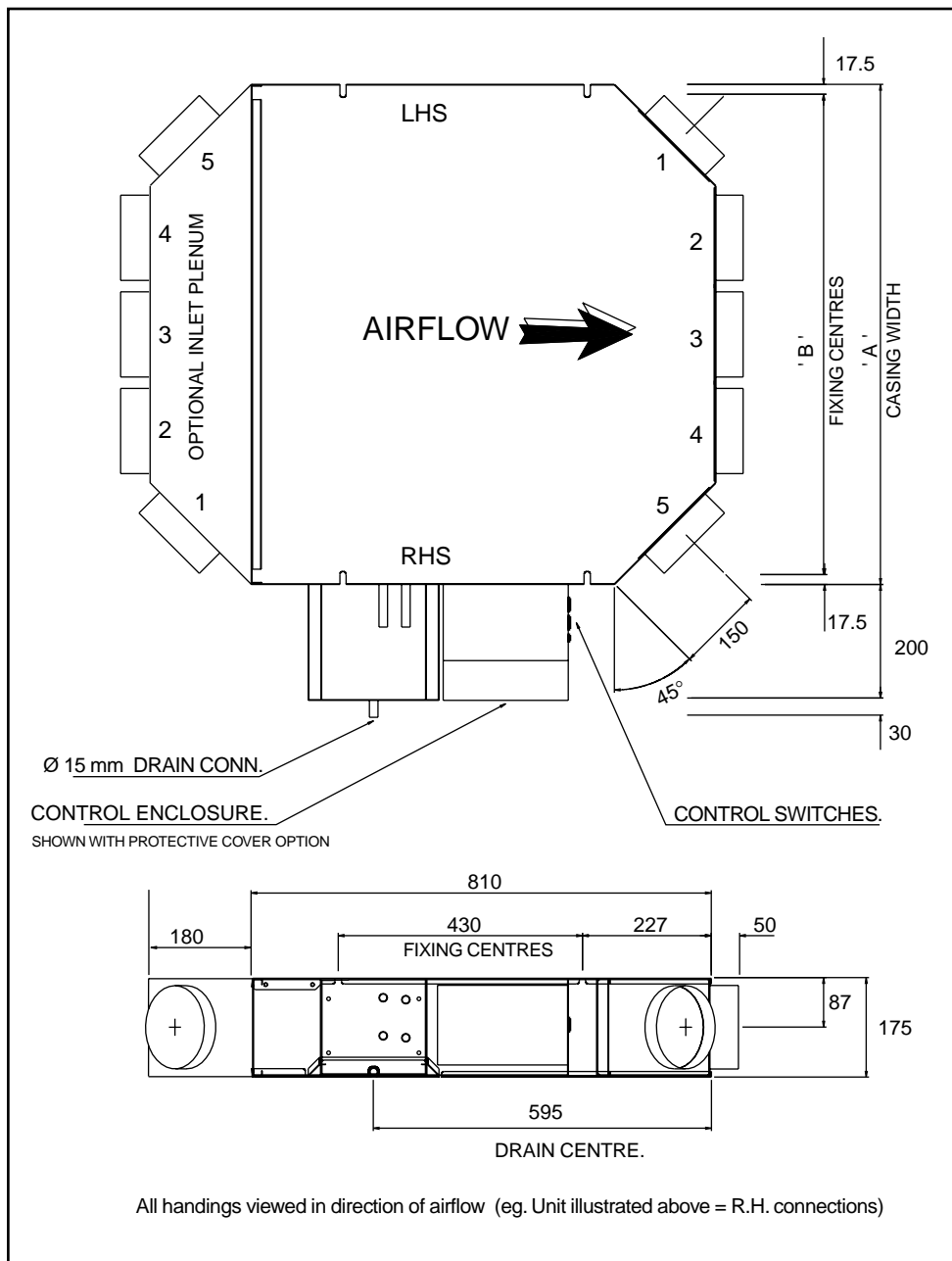
# AMETHYST MAX PERFORMANCE DATA (HEATING)

Heating outputs based on: E.A.T.20°C  
Air Volumes at 30Pa.ext.res.

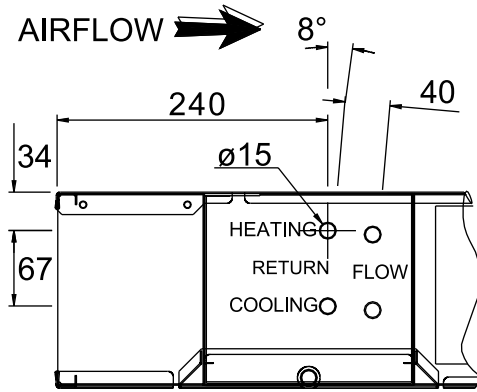
Model	Spd.	A'flow (ls)	LPHW			ELECTRICAL DATA			
			82/7 output (kW)	60/50 output (kW)	50/40 output (kW)	input (watts)	FLC (Amps)	S.C. (Amps)	N.R. Guide
AMT 1	1	35	0.80	0.55	0.34	42	0.45	1.35	25
	2	70	1.60	1.10	0.60	65	0.50	1.50	30
	3	100	2.30	1.35	0.80	80	0.52	1.56	33
	4	120	2.60	1.55	0.95	97	0.57	1.71	35
	5	140	2.80	1.70	1.10	125	0.62	1.86	37
	6	170	3.10	1.90	1.25	150	0.66	1.98	40
AMT 2	1	40	0.90	0.67	0.42	45	0.46	1.38	25
	2	80	1.80	1.41	0.90	65	0.50	1.50	30
	3	110	2.40	1.75	1.20	86	0.53	1.59	33
	4	130	2.90	1.95	1.32	102	0.58	1.74	35
	5	150	3.30	2.10	1.43	127	0.62	1.86	37
	6	180	4.00	2.35	1.62	155	0.66	1.98	40
AMT 3	1	100	2.20	1.60	0.77	90	0.92	2.76	25
	2	150	3.30	2.10	0.99	120	0.96	2.88	30
	3	190	4.20	2.50	1.23	147	1.02	3.06	33
	4	200	4.40	2.58	1.30	160	1.06	3.18	35
	5	260	5.10	2.95	1.60	218	1.18	3.54	37
	6	300	5.50	3.25	1.90	253	1.24	3.72	40
AMT 4	1	120	2.65	2.05	1.07	94	0.95	2.85	25
	2	170	3.75	2.55	1.45	126	1.00	3.00	30
	3	210	4.60	3.00	1.80	160	1.03	3.09	33
	4	220	4.80	3.06	1.90	180	1.10	3.30	35
	5	280	6.00	3.50	2.35	236	1.22	3.66	37
	6	320	6.50	3.80	2.55	262	1.25	3.75	40
AMT 5	1	135	2.95	2.25	1.22	123	1.34	4.02	25
	2	200	4.35	2.85	1.73	170	1.41	4.23	30
	3	250	5.50	3.25	2.15	211	1.52	4.56	33
	4	280	6.00	3.55	2.35	270	1.59	4.77	35
	5	310	6.40	3.75	2.51	274	1.66	4.98	37
	6	380	7.20	4.20	2.79	358	1.83	5.49	40

# AMETHYST DIMENSIONAL INFORMATION

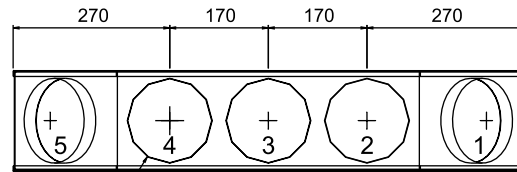
Unit Model	Dim 'A'	Dim 'B'	Weight (approx Kg)	Spigot Options
AMT 1	880	845	45	1-2-3-4-5
AMT 2	1230	1195	55	1-2-3-4-5
AMT 3	1430	1395	65	1-2-3-4-5-6
AMT 4	1780	1745	80	1-2-3-4-5-6-7-8
AMT 5	1780	1745	85	1-2-3-4-5-6-7-8



# AMETHYST COIL AND SPIGOT CONNECTION DETAILS

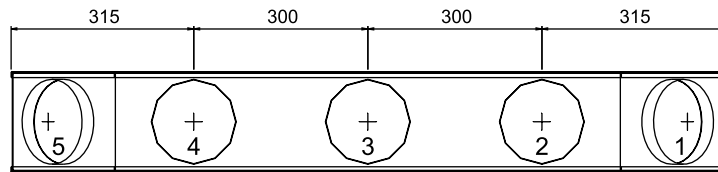


COIL CONNECTION DETAIL.

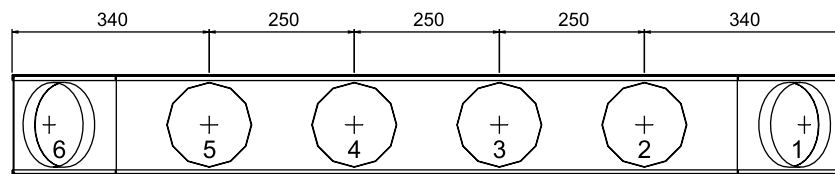


UNIT SIZE:- AMT 1

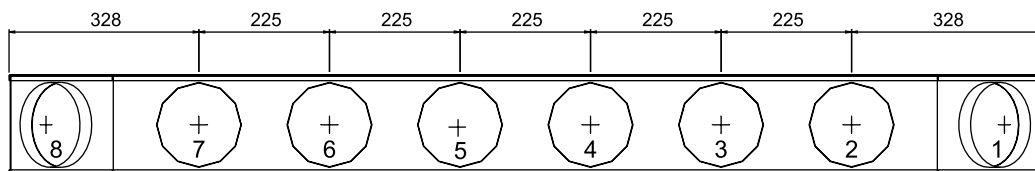
Ø147 O/S (Typ.)



UNIT SIZE:- AMT 2



UNIT SIZE:- AMT 3

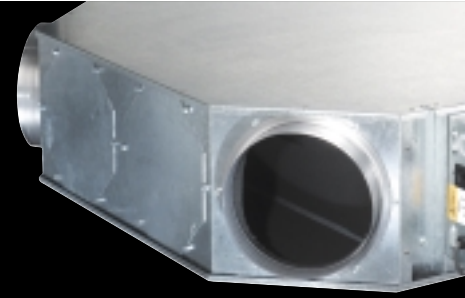


UNIT SIZES:- AMT 4 & 5

N.B. Max. airflow per 150mm dia. spigot to maintain NR35 = 50 l/s.  
 Max. airflow per 150mm dia. spigot to maintain NR30 = 35 l/s.

# DIAMOND

## Airside Control Fan Coil Units

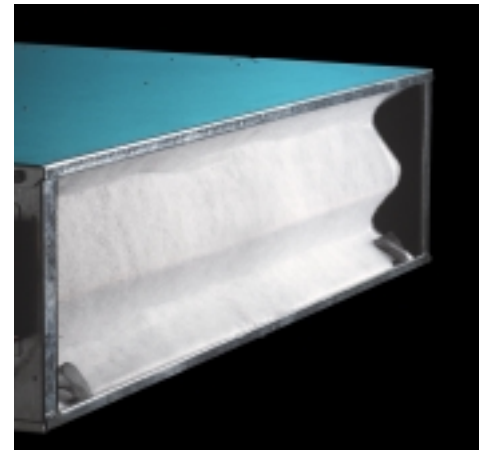


## INTRODUCTION

The Quartz DIAMOND Series is an ultra compact, high power fan coil that meets some very exacting heating and cooling requirements, providing discreet, effective climate control.

It is the result of an innovative design, a wide ranging development programme and intensive customer feedback. DIAMOND features a flush panelled, extra rigid casing and a stainless steel 'free flow' drain pan.

- Quiet in use - room occupants will appreciate the very low sound levels. DIAMOND utilises Class 'O' fire rated thermal and acoustic insulation.
- Low maintenance filter - an innovative new filter arrangement means greatly extended service intervals. Servicing costs are reduced, disruption minimised - benefiting everyone.
- A very compact low energy consumption motor that combines low noise levels and high performance with carefully matched coils. Excellent performance characteristics and reduced running costs are the result.
- Easier and safer installation with reinforced, slotted mounting points and interchangeable spigots/blanking plates. Innovative space saving plenums allow for easy duct fixing.
- Protected, easy access control enclosure with illuminated on/off switch, plus three speed and fine adjustment setting giving multiple speed selections.
- External resistances up to 100Pa.



### STANDARD LOW MAINTENANCE FILTER

By increasing the filter media area this exciting new feature has the effect of reducing the resistance to airflow by at least 80%. This means that filter service periods can be extended by up to 6 times that of a normal filter.

### STANDARD STAINLESS STEEL REMOVABLE DRAIN PAN

The new 'free flow' stainless steel drain pan, (patents pending), greatly increases the longevity and makes cleaning easier.

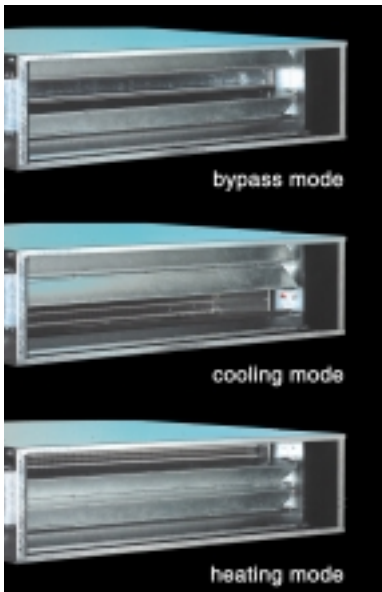
The design also incorporates an 'extended pressure equalisation void' for unhindered, continuous condensate drainage, even with dirty filters.

### STANDARD FLUSH PANELLED, EXTRA RIGID CASING

Providing more space internally – allowing better air inlet conditions to the fan(s). Larger filters can be accommodated, reducing maintenance costs and power consumption.

Recessed mounting points provide greater safety in handling/installing units.

Greater rigidity assures higher resistance to damage/deformity and reduces resonance and noise breakout – resulting in one of the quietest units available today!



### EXCLUSIVE HIGH EFFICIENCY AIRSIDE CONTROL (AIR PATH DIVERTER)

From the high efficiency, compact, external rotor motor fans to the carefully matched coils and the low resistance filter we have taken a fresh look at every facet of the component selection to ensure that each complements the other.

The new APD system enables noiseless transition from heating, through bypass to cooling with less than 2% heat pick up in dual water flow condition.



### STANDARD 24 SPEED AUTO TRANSFORMER SPEED CONTROL

The transformer has 24 speed settings over a wide range of voltages, including both coarse and fine adjustment, giving almost infinite control of output to ensure easy and accurate commissioning.

A 24v, 50vA screened control output is also provided, eliminating the need for separate control transformers.

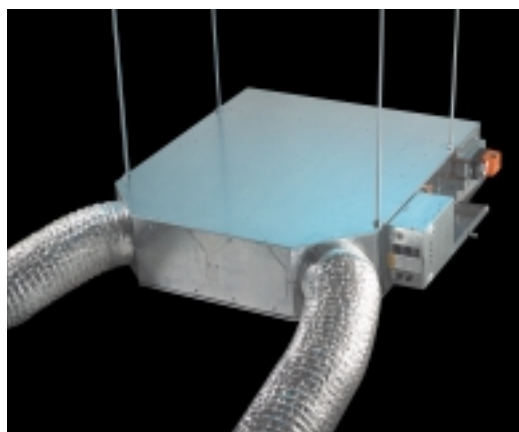
### STANDARD FIRE RATED INSULATION

The standard acoustic and thermal insulation is CFC and HFC free, class 'O' fire rated and complies with London Borough and CAA airport flammability and toxicity requirements.



### STANDARD EASY ACCESS PROTECTED CONTROL ENCLOSURE

The easy access control enclosure has been designed to give full protection to any fitted temperature controller during transit/installation.



### STANDARD SPACE SAVING PLENUM

The new 'mitred' plenum design offers both forward or sideways directional discharge without the need for expensive, and space consuming 90° pressed bends. Savings can be made in terms of ceiling void area as well as cost.

On units with return air plenums the benefits are doubled. Spigots have been designed to be removable by simply loosening the retaining screws and they can be easily interchanged with the insulated blanking plates in a matter of moments.

### STANDARD HIGH PERFORMANCE FANS

Compact, high performance, external rotor motor fans are fitted as standard with 'thermal contactors' built in to the windings to give complete peace of mind.

The benefits of using components of the very highest quality are never more evident than they are in the case of the fans.

Their use allows far lower noise levels and higher outputs than contemporary units, with the advantages of reliability and compactness.

# DIAMOND SPECIFICATION

## CASING

Unit castings shall be manufactured from 1.2mm galvanised sheet steel with 2.1mm laminated steel fan decks. The construction shall produce a flush external finish with no sharp edges and giving unhindered access to filters, controls and circular duct connections. Reinforced slotted mounting points with retaining detail shall be incorporated to facilitate fitting of drop rods or mounting bolts within the overall casing width. An integral, mitred, multi-outlet, acoustically lined discharge plenum shall be incorporated into the casing with easily interchangeable spun steel spigots and insulated blanking plates retained by 'Taptite' setscrews into threaded collars. All permanent fixings shall be rivetted and all removable items shall be retained via setscrews and captive nuts.

## ACCESS

Access to fans/motors shall be via insulated bottom panels with 'keyhole' slots, retained by M6 setscrews into captive 'nutserts'. Access panels shall be structurally rigid and form a positive seal against atmospheric pressure.

## FANS

Fans shall be double inlet, double width, direct drive centrifugal type with high efficiency, low noise, forward curved, multiblade galvanised sheet steel impellers housed within galvanised or synthetically treated steel scrolls. Motor/impeller assemblies shall be statically and dynamically balanced in two planes in accordance with BS5265, Part 1, 1979 to G2.5. Fans shall be mounted separately on fan decks to facilitate easy individual removal. Fan decks shall be easily removable for major overhaul or upgrading if required.

## MOTORS

Motors shall be permanent split capacitor external rotor, totally enclosed high efficiency type with a power factor of 0.9 or better. Bearings shall be sealed for life, maintenance free ball race type with a minimum life expectancy of 50,000 hrs, under normal operating conditions. Auto re-setting thermal contactors shall be incorporated into the windings to ensure overload protection. Insulation shall be to Class 'B' with enclosure to IP44 and electrical supply shall be 230V 1ph. 50Hz.

## TRANSFORMERS

Speed control shall be by means of multi-tapped auto transformer with twenty four outputs, plus a screened 24v, 50vA control output. Selected outputs shall be pre-wired to panel mounted selector switches giving three main speed selections with three 'fine adjustment' settings on each for accurate commissioning of air volumes.

## FILTERS

Filters shall be EU2 or EU3 continuous filament EXTENDED SURFACE media to Eurovent 4/5 with F1 fire resistance to DIN 53438, with a dust holding capacity of 400g/m<sup>2</sup>, with wire supporting frame. (Standard pad and frame and metal mesh filters are available as options). Filters shall be removable from the open inlet, or via a bottom access panel on units with return air plenums.

## COILS

Coils shall be manufactured from seamless copper tube, mechanically expanded into aluminium fins having die formed collars to obtain maximum contact providing optimised heat transfer. Circuits shall be designed to ensure optimisation of output with correct contra flow, while preventing air locking and allowing free draining. Vents and drains shall be fitted with

easily accessible slotted/hexagonal plugs. Testing shall be by dry air under water to 30 bar, and valve assemblies, by hydraulic test, to manufacturers maximum recommended operating pressure. A plate shall be fitted to support the complete valve assembly and connecting pipework.

## CONDENSATE TRAY

Condensate trays shall be one - piece welded, insulated stainless steel with fall to drain and extended pressure equalisation void to enable free draining end connection, and shall be easily removable for inspection and cleaning without disturbing connecting pipework. A stainless steel baffle shall be fitted to prevent air bypass underneath the coil.

## INSULATION

Unit castings shall be lined with 90kg/m<sup>3</sup>, CFC & HFC free, Class 'O' open cell expanded foam for both thermal and acoustic insulation, having a maximum thermal conductivity of 0.045 W/mk, fully complying with London Borough and CAA airport flammability and toxicity requirements. The adhesive is a modified acrylic, light and ageing resistant synthetic resin with high temperature tolerance.

## CONTROL ENCLOSURE

A ventilated, easy access enclosure, with recessed control mounting and hinged/removable cover, shall be fitted on the pipework connection side of the casing and shall incorporate the auto transformer, illuminated on/off switch, three speed and fine adjustment control switches plus a 2m flying lead for connection to adjacent fused mains spur. The enclosure shall be wired in accordance with current I.E.E. regulations (BS 7671), maintain full earth continuity and be capable of accommodating all current major manufacturers typical fan coil temperature controllers.

## CONTROL METHOD

Temperature control method shall be by means of an Air Path Diverter mechanism and will provide a fully modulating operation.

The two aerofoil diverters shall operate in sequence to allow air to pass through the cooling, heating or bypass zones as dictated by the control signal. A mechanical dead band shall be built into the bypass zone.

The diverters shall form a positive seal to ensure correct passage through the unit to minimise heat pickup and maintain maximum efficiency.

The operation of the blades shall be via a single rotary actuator mounted onto the diverter drive shafts. There shall be no exposed moving parts.

The Air Path Diverter shall maintain a constant air volume throughout its operation from full cooling, to full heating.

The phases of operation shall be as follows:

**FULL COOLING** --- Heating & Bypass sections fully closed.

**COOLING & BYPASS** --- Heating fully closed, bypass partially open.

**FULL BYPASS** --- Cooling and Heating fully closed.

**BYPASS AND HEATING** --- Cooling fully closed, bypass partially open.

**FULL HEATING** --- Cooling & bypass fully closed.

Due to our policy of continuous research and development, all information is subject to change without notice.

# DIAMOND ACOUSTIC DATA

Sound power (SWL) dB ref. 10<sup>-12</sup>w

MODEL	SPEED	INLET/CASE RADIATED							DISCHARGE					
		125	250	500	1K	2K	4K	Hz.	125	250	500	1K	2K	4K
DMD 1	1	42	35	35	29	22	17		40	29	16	16	15	14
	2	48	45	43	39	34	26		46	37	24	25	22	18
	3	52	48	45	43	37	30		48	40	26	29	28	22
	4	54	49	47	45	40	35		50	42	28	32	31	26
	5	55	52	49	47	43	38		51	44	31	32	30	28
	6	57	54	51	49	45	40		54	46	32	34	34	31
DMD 2	1	43	36	36	30	23	18		42	30	16	17	16	16
	2	49	46	44	40	35	27		48	39	26	27	24	20
	3	54	49	46	44	39	33		50	42	28	31	30	24
	4	55	50	48	47	43	37		52	44	30	34	33	28
	5	56	53	50	48	44	39		53	46	32	34	33	29
	6	58	56	53	51	47	42		56	48	34	37	36	32
DMD 3	1	43	37	36	30	24	20		42	32	18	18	17	16
	2	50	47	45	41	36	28		49	40	27	27	25	20
	3	54	50	47	45	40	34		51	43	29	31	30	24
	4	56	51	50	48	44	38		53	45	31	34	33	29
	5	57	54	51	49	45	40		54	47	33	34	33	30
	6	59	57	54	52	48	43		57	49	34	38	37	33
DMD 4	1	46	43	41	35	28	20		44	36	29	28	23	20
	2	51	49	46	41	36	28		48	42	36	37	30	25
	3	54	51	48	44	38	31		49	43	37	36	33	29
	4	58	55	52	49	43	37		52	46	39	39	36	31
	5	59	57	53	51	45	40		54	48	40	40	38	33
	6	61	58	55	53	47	42		56	50	42	42	40	36
DMD 5	1	47	44	42	36	29	20		45	37	30	29	24	21
	2	52	50	47	42	37	29		49	43	37	37	31	26
	3	55	52	49	45	39	32		50	44	38	37	34	30
	4	58	56	53	50	44	38		53	47	40	39	37	32
	5	60	58	54	52	46	41		55	49	41	40	39	34
	6	62	59	56	54	48	43		57	51	43	42	41	35
DMD 6	1	49	47	43	37	30	22		43	39	31	31	26	21
	2	51	49	47	42	37	29		47	41	33	33	30	23
	3	55	54	52	47	42	36		51	46	37	36	32	27
	4	57	56	54	50	45	38		52	48	39	38	34	29
	5	59	58	55	52	47	42		55	50	41	40	36	32
	6	61	60	58	55	50	46		57	54	42	41	37	33
DMD 7	1	50	48	44	38	31	23		44	40	32	31	27	22
	2	52	50	48	43	38	30		48	42	34	34	31	24
	3	56	55	53	48	43	37		52	47	38	37	33	28
	4	58	57	55	51	46	39		53	49	40	39	35	30
	5	60	59	56	53	48	43		56	51	42	41	37	33
	6	61	61	59	56	51	47		58	55	43	42	38	34
DMD 8	1	52	50	46	40	33	25		46	42	34	33	29	23
	2	54	52	50	45	40	32		50	44	36	36	33	26
	3	58	57	55	50	45	39		54	49	40	39	35	30
	4	60	59	57	53	48	41		55	51	42	41	37	32
	5	61	61	59	55	49	44		58	53	44	43	39	35
	6	62	62	60	58	53	49		60	57	45	44	40	36

Qualification of 'NR' predictions: The 'NR' guide figures quoted on page 5 are intended to show the levels which may be expected in typical office environments provided the following apply:-

Room sizes are based on 120w/m<sup>2</sup> cooling load with c.w. entering temp. of 6°C.

Units must be correctly mounted onto a solid structure, using rubber washers, in a false-ceiling not less than 300mm deep, with standard 'T' bar grid and 3/8" fibreboard tiles. Rooms should be carpeted, with not more than 20% glazed area or highly reflective surfaces. In open plan areas units should be mounted @ min. 3m centres and return air grilles should not be positioned directly below unit inlets. A minimum of 1m of non-noise regenerative flexible ducting should be used on each spigot outlet, sized to allow a maximum of 3m/s air velocity to maintain NR35. The above should ensure the predicted NR levels are achieved @ 1.5m from the nearest grille, or diffuser, provided the grille boots are acoustically lined. For accurate assessment it may be necessary to obtain confirmation from an acoustic specialist. In which case please refer to the adjacent sound power level chart or, alternatively we are able to offer specific acoustic modelling on request. In this event we would require full room/ construction details for evaluation.

The SWLs published here have been obtained under independent tests in a reverberant chamber to BS4196, Part 1: 1991. Full reports are available on request.

\*For units operating on secondary chilled water an allowance of +1 or 2 dB may need to be added to the NR values due to the fact that units selected will be larger, relative to output, for a given room size.

**For accurate assessment please consult our Technical Sales Department.**

# DIAMOND

## MAX PERFORMANCE DATA (COOLING)

Cooling outputs based on: E.A.T.23°C db/16°Cwb  
Air Volumes at 30Pa.ext.res.

Model	Spd.	A'flow (l/s)	CW									
			6/11		6/12		8/13		10/14		11/15	
			Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)	Sens. (kW)	Tot. (kW)
DMD 1	1	55	0.80	0.98	0.80	0.97	0.77	0.89	0.71	0.71	0.65	0.65
	2	100	1.45	1.78	1.36	1.62	1.27	1.43	1.19	1.19	1.07	1.07
	3	120	1.71	2.08	1.59	1.87	1.48	1.65	1.40	1.40	1.26	1.26
	4	150	2.09	2.52	1.94	2.26	1.82	2.02	1.71	1.71	1.54	1.54
	5	160	2.22	2.67	2.05	2.39	1.94	2.16	1.82	1.82	1.63	1.63
	6	170	2.34	2.80	2.17	2.53	2.04	2.26	1.93	1.93	1.73	1.73
DMD 2	1	65	0.94	1.15	0.94	1.15	0.91	1.07	0.85	0.85	0.77	0.77
	2	110	1.60	1.96	1.51	1.81	1.41	1.59	1.32	1.32	1.19	1.19
	3	140	2.00	2.43	1.88	2.23	1.76	1.98	1.66	1.66	1.49	1.49
	4	170	2.38	2.87	2.24	2.63	2.09	2.33	1.96	1.96	1.77	1.77
	5	180	2.51	3.02	2.35	2.76	2.20	2.45	2.05	2.05	1.86	1.86
	6	220	3.01	3.60	2.75	3.17	2.61	2.89	2.47	2.47	2.21	2.21
DMD 3	1	75	1.09	1.34	1.09	1.33	1.06	1.24	1.00	1.00	0.89	0.89
	2	120	1.74	2.13	1.74	2.13	1.58	1.80	1.49	1.49	1.36	1.36
	3	145	2.01	2.57	2.01	2.42	1.85	2.09	1.73	1.73	1.55	1.55
	4	180	2.60	3.18	2.38	2.80	2.24	2.51	2.12	2.12	1.90	1.90
	5	200	2.87	3.50	2.62	3.08	2.47	2.76	2.34	2.34	2.10	2.10
	6	225	3.20	3.88	2.91	3.40	2.75	3.07	2.61	2.61	2.33	2.33
DMD 4	1	100	1.45	1.78	1.45	1.77	1.36	1.57	1.29	1.29	1.15	1.15
	2	180	2.60	3.18	2.39	2.82	2.24	2.51	2.11	2.11	1.90	1.90
	3	230	3.26	3.95	2.97	3.47	2.81	3.12	2.66	2.66	2.38	2.38
	4	265	3.70	4.47	3.38	3.93	3.20	3.55	3.04	3.04	2.72	2.72
	5	285	4.00	4.87	3.62	4.21	3.43	3.80	3.25	3.25	2.91	2.91
	6	300	4.17	5.00	3.80	4.41	3.60	3.99	3.42	3.42	3.06	3.06
DMD 5	1	110	1.60	1.96	1.60	1.96	1.52	1.78	1.43	1.43	1.31	1.31
	2	190	2.75	3.37	2.66	3.21	2.49	2.84	2.34	2.34	2.11	2.11
	3	240	3.59	4.47	3.32	3.99	3.12	3.54	2.94	2.94	2.64	2.64
	4	275	4.00	4.91	3.76	4.49	3.54	4.05	3.33	3.33	3.00	3.00
	5	295	4.29	5.26	4.02	4.79	3.77	4.26	3.55	3.55	3.20	3.20
	6	320	4.62	5.65	4.33	5.15	4.06	4.58	3.82	3.82	3.44	3.44
DMD 6	1	125	1.81	2.22	1.81	2.22	1.71	1.98	1.60	1.60	1.46	1.46
	2	220	3.18	3.89	3.05	3.67	2.87	3.26	2.70	2.70	2.43	2.43
	3	290	4.20	5.14	3.95	4.71	3.71	4.19	3.50	3.50	3.24	3.24
	4	325	4.70	5.75	4.40	5.23	4.12	4.64	3.87	3.87	3.50	3.50
	5	365	5.24	6.39	4.90	5.80	4.58	5.15	4.30	4.30	3.88	3.88
	6	425	6.02	7.31	5.64	6.65	5.25	5.87	4.95	4.95	4.45	4.45
DMD 7	1	135	1.95	2.38	1.95	2.38	1.92	2.27	1.79	1.79	1.62	1.62
	2	235	3.40	4.16	3.40	4.16	3.23	3.75	3.03	3.03	2.73	2.73
	3	300	4.35	5.33	4.35	5.33	4.10	4.75	3.84	3.84	3.47	3.47
	4	340	4.90	6.00	4.92	6.02	4.60	5.31	4.32	4.32	3.90	3.90
	5	380	5.50	6.73	5.50	6.73	5.10	5.87	4.78	4.78	4.32	4.32
	6	450	6.00	7.09	6.40	7.78	5.95	6.81	5.55	5.55	5.05	5.05
DMD 8	1	145	2.10	2.57	2.10	2.57	2.07	2.44	1.92	1.92	1.74	1.74
	2	250	3.62	4.43	3.63	4.45	3.43	3.98	3.22	3.22	2.90	2.90
	3	340	4.90	5.99	4.90	5.99	4.63	5.34	4.32	4.32	3.90	3.90
	4	380	5.50	6.73	5.50	6.73	5.10	5.87	4.78	4.78	4.32	4.32
	5	450	6.00	7.09	6.40	7.78	5.95	6.81	5.55	5.55	5.05	5.05
	6	520	6.85	8.06	7.28	8.79	6.70	7.58	6.10	6.10	5.69	5.69

ALL OUTPUTS SHOWN ARE NET COOLING AND HEATING WITH COLD AND HOT WATER  
IN OPERATION SIMULTANEOUSLY AND INCLUDE MOTOR HEAT LOSS.

# DIAMOND

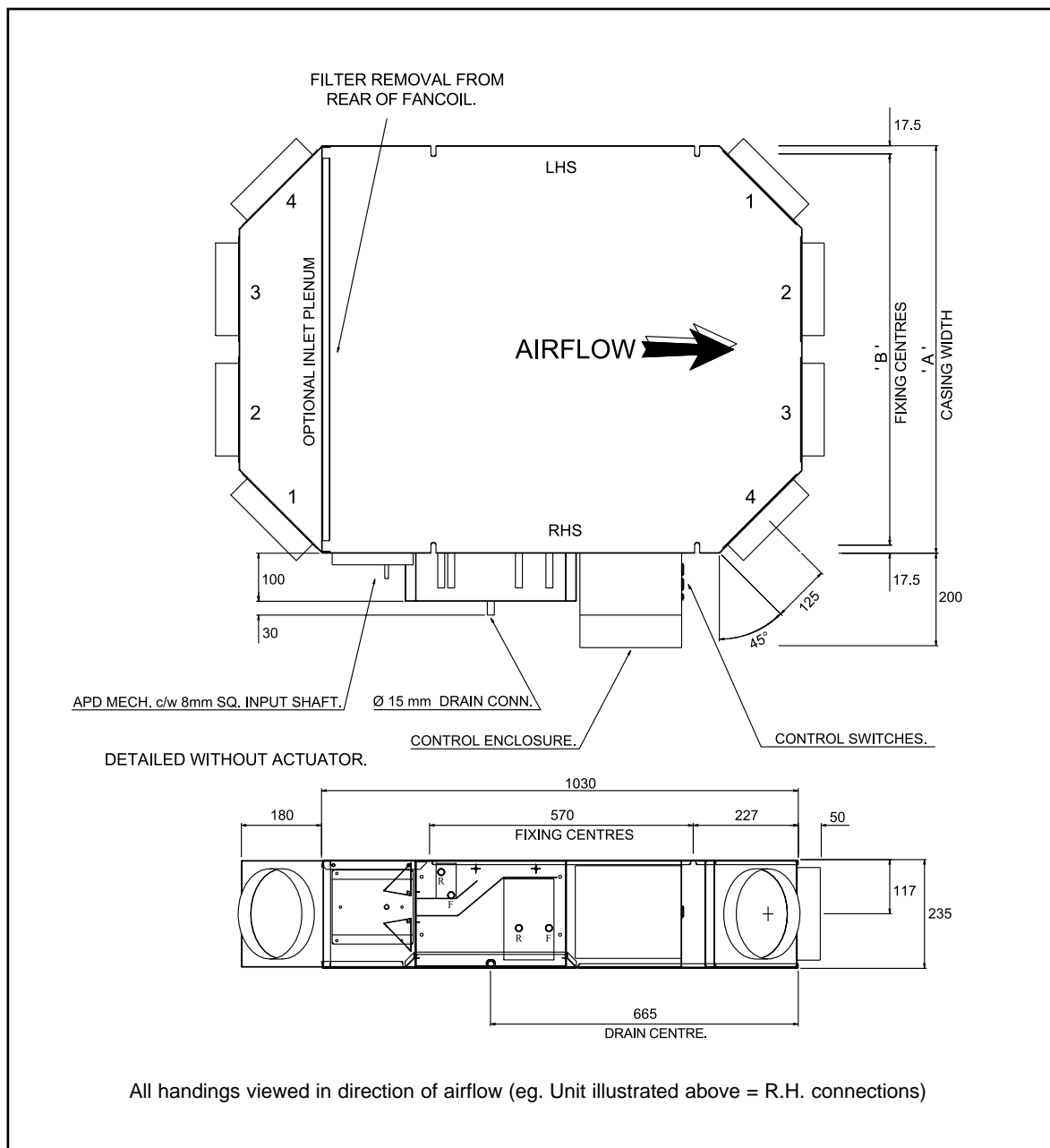
## MAX PERFORMANCE DATA (HEATING)

Heating outputs based on: E.A.T.20°C  
Air Volumes at 30Pa.ext.res.

Model	Spd.	A'flow (ls)	LPHW			ELECTRICAL DATA			
			82/71	60/50	50/40	output (kW)	output (kW)	output (kW)	input (watts)
DMD 1	1	55	1.19	0.59	0.34	45	0.40	1.20	25
	2	100	1.70	0.94	0.45	63	0.50	1.50	30
	3	120	1.90	1.06	0.45	78	0.52	1.56	33
	4	150	2.16	1.22	0.56	93	0.57	1.71	35
	5	160	2.25	1.27	0.58	98	0.59	1.77	37
	6	170	2.33	1.31	0.61	118	0.65	1.95	40
DMD 2	1	65	1.53	0.90	0.49	52	0.45	1.35	25
	2	110	2.17	1.28	0.71	83	0.55	1.65	30
	3	140	2.55	1.48	0.88	97	0.58	1.74	33
	4	170	2.85	1.66	1.03	125	0.65	1.95	35
	5	180	2.92	1.70	1.08	146	0.74	2.22	37
	6	220	3.28	1.90	1.26	177	0.80	2.40	40
DMD 3	1	75	1.75	0.83	0.52	53	0.47	1.41	25
	2	120	2.63	1.35	0.67	84	0.57	1.71	30
	3	145	2.93	1.57	0.71	100	0.61	1.83	33
	4	180	3.30	1.87	0.79	132	0.70	2.10	35
	5	200	3.60	2.05	0.84	153	0.75	2.25	37
	6	225	3.85	2.20	0.89	194	0.84	2.52	40
DMD 4	1	100	2.35	1.17	0.63	65	0.68	2.04	25
	2	180	3.35	1.87	0.79	125	0.96	2.88	30
	3	230	3.87	2.23	0.90	156	1.08	3.24	33
	4	265	4.20	2.40	1.00	196	1.18	3.54	35
	5	285	4.40	2.50	1.04	236	1.30	3.90	37
	6	300	4.55	2.57	1.06	262	1.38	4.14	40
DMD 5	1	110	2.65	1.40	0.71	72	0.76	2.28	25
	2	190	3.75	2.18	0.97	130	1.00	3.00	30
	3	240	4.36	2.53	1.20	160	1.10	3.30	33
	4	275	4.66	2.70	1.35	200	1.20	3.60	35
	5	295	4.86	2.80	1.45	240	1.34	4.02	37
	6	320	5.10	2.95	1.58	270	1.42	4.26	40
DMD 6	1	125	2.90	1.60	0.76	100	1.10	3.30	25
	2	220	4.10	2.40	1.10	140	1.30	3.90	30
	3	290	4.80	2.80	1.40	180	1.42	4.26	33
	4	325	5.15	3.00	1.60	220	1.60	4.80	35
	5	365	5.50	3.17	1.80	270	1.76	5.28	37
	6	425	6.05	3.47	2.15	300	1.83	5.49	40
DMD 7	1	135	3.30	1.92	0.95	108	1.14	3.42	25
	2	235	4.75	2.80	1.60	159	1.29	3.87	30
	3	300	5.55	3.28	2.05	189	1.44	4.32	33
	4	340	5.95	3.50	2.27	248	1.65	4.95	35
	5	380	6.35	3.70	2.45	280	1.74	5.22	37
	6	450	7.00	4.10	2.70	320	1.90	5.70	40
DMD 8	1	145	3.52	2.08	1.05	124	1.50	4.50	25
	2	250	4.95	2.90	1.70	205	1.78	5.34	30
	3	340	5.75	3.38	2.27	260	2.10	6.30	33
	4	380	6.35	3.70	2.45	300	2.15	6.45	35
	5	450	7.00	4.10	2.70	335	2.40	7.20	37
	6	520	7.60	4.45	2.95	380	2.65	7.95	40

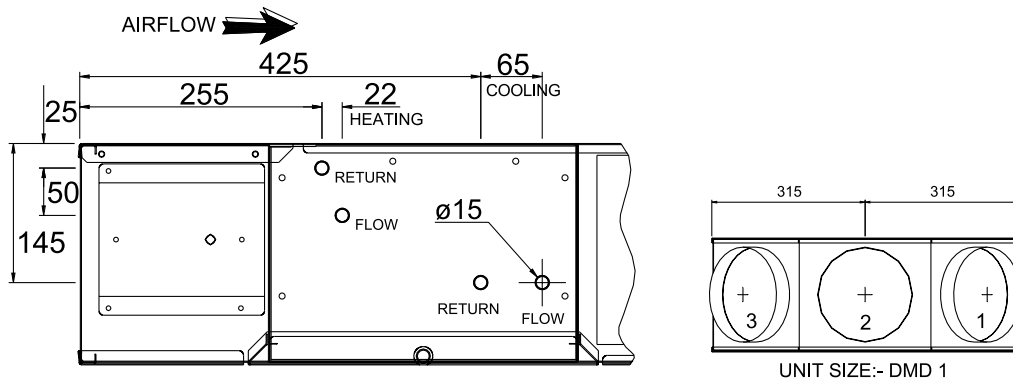
# DIAMOND DIMENSIONAL INFORMATION

Unit Model	Dim 'A'	Dim 'B'	Weight (approx Kg)	Spigot Options
DMD 1	630	595	45	1-2-3
DMD 2	880	845	53	1-2-3-4
DMD 3	1230	1195	65	1-2-3-4-5
DMD 4	1230	1195	70	1-2-3-4-5
DMD 5	1430	1395	82	1-2-3-4-5
DMD 6	1430	1395	87	1-2-3-4-5
DMD 7	1780	1745	100	1-2-3-4-5-6
DMD 8	1780	1745	105	1-2-3-4-5-6

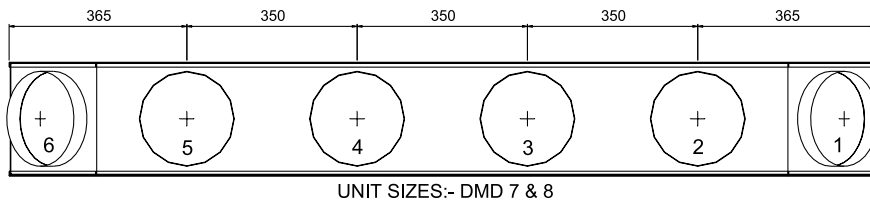
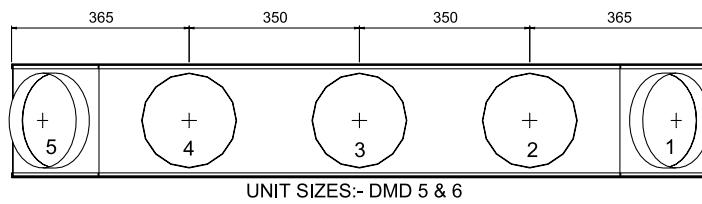
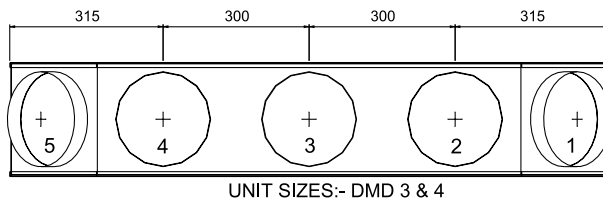
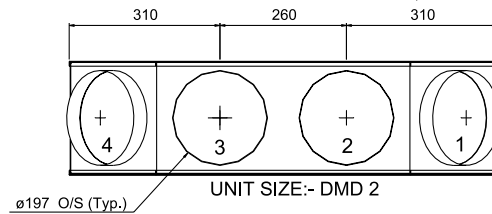


All handings viewed in direction of airflow (eg. Unit illustrated above = R.H. connections)

# DIAMOND COIL AND SPIGOT CONNECTION DETAILS



COIL CONNECTION DETAIL.



N.B. Max. airflow per 200mm dia. spigot to maintain NR35 = 100 l/s.  
 Max. airflow per 200mm dia. spigot to maintain NR30 = 66 l/s.