

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 90o 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 27 SPEED AUTO TRANSFORMER SPEED CONTROL

The transformer has 27 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 STAINLESS STEEL REMOVABLE DRAIN PAN

The new patented 'free flow' stainless steel drain pan, greatly increases the longevity and makes cleaning easier.

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.

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 riveted 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 seven 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/m², 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 both 3 and 10 bars. 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/m³, 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.

Electrical Heating Spec

Open wire elements have been selected for their excellent heat transfer characteristics due to maximum element surface area contact with the air. As a result of low thermal mass, the open wire elements inherently exhibit very low residual heat retention. This eliminates the need for the fan to run on after switching off the heater battery in order to dissipate residual heat. The heater batteries are fitted with thermal cutouts to provide protection from overheating.

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

Acoustic Data

All sound data ascertained at 30Pa. external resistance

Sound Power Level (SWL) dB ref. 10^{-12} w

INLET/CASING RADIATED									DISCHARGE					
MODEL	Spd	125	250	500	1k	2k	4k	Hz.	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 the 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/m² with a c.w. flow temp. of 6°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.

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)	
AMT 1	1	35	0.60	0.82	0.58	0.79	0.51	0.65	0.47	0.47	0.41	0.41	
	2	70	1.02	1.31	0.96	1.20	0.86	1.00	0.77	0.77	0.69	0.69	
	3	100	1.46	1.84	1.35	1.66	1.22	1.40	1.08	1.08	0.97	0.97	
	4	120	1.73	2.19	1.60	1.96	1.44	1.66	1.29	1.29	1.15	1.15	
	5	140	1.97	2.46	1.82	2.22	1.64	1.86	1.46	1.46	1.30	1.30	
	6	170	2.32	2.86	2.16	2.60	1.95	2.19	1.73	1.73	1.54	1.54	
AMT 2	1	40	0.71	0.99	0.70	0.97	0.62	0.80	0.58	0.58	0.49	0.49	
	2	80	1.20	1.53	1.13	1.43	1.02	1.18	0.91	0.91	0.82	0.82	
	3	110	1.59	2.01	1.48	1.82	1.33	1.53	1.19	1.19	1.07	1.07	
	4	130	1.87	2.37	1.73	2.11	1.56	1.78	1.40	1.40	1.25	1.25	
	5	150	2.16	2.73	1.98	2.41	1.79	2.04	1.60	1.60	1.43	1.43	
	6	180	2.56	3.24	2.35	2.86	2.13	2.42	1.90	1.90	1.69	1.69	
AMT 3	1	100	1.50	1.95	1.41	1.78	1.27	1.47	1.12	1.12	1.01	1.01	
	2	150	2.24	2.87	2.08	2.60	1.87	2.17	1.67	1.67	1.49	1.49	
	3	190	2.84	3.64	2.65	3.31	2.38	2.77	2.11	2.11	1.89	1.89	
	4	200	2.97	3.81	2.78	3.47	2.49	2.90	2.21	2.21	1.98	1.98	
	5	260	3.66	4.63	3.48	4.30	3.12	3.59	2.77	2.77	2.48	2.48	
	6	300	4.12	5.08	3.95	4.82	3.52	4.00	3.10	3.10	2.80	2.80	
AMT 4	1	120	1.80	2.33	1.70	2.12	1.52	1.77	1.36	1.36	1.22	1.22	
	2	170	2.51	3.22	2.31	2.85	2.09	2.41	1.87	1.87	1.67	1.67	
	3	210	3.10	3.97	2.86	3.53	2.59	2.97	2.31	2.31	2.06	2.06	
	4	220	3.24	4.16	2.99	3.69	2.70	3.11	2.41	2.41	2.15	2.15	
	5	280	4.07	5.15	3.77	4.65	3.39	3.90	3.01	3.01	2.69	2.69	
	6	320	4.53	5.73	4.26	5.20	3.83	4.36	3.39	3.39	3.04	3.04	
AMT 5	1	135	1.99	2.54	1.85	2.29	1.66	1.93	1.48	1.48	1.33	1.33	
	2	200	2.94	3.77	2.70	3.34	2.45	2.81	2.18	2.18	1.94	1.94	
	3	250	3.68	4.72	3.42	4.22	3.08	3.54	2.73	2.73	2.44	2.44	
	4	280	4.04	5.12	3.74	4.62	3.36	3.87	2.98	2.98	2.66	2.66	
	5	310	4.41	5.58	4.13	5.04	3.71	4.22	3.28	3.28	2.94	2.94	
	6	380	5.17	6.38	4.92	5.99	4.40	5.00	3.89	3.89	3.49	3.49	

Max Performance Data (Heating)

ELECTRICAL HEATING OPTION ON APPLICATION

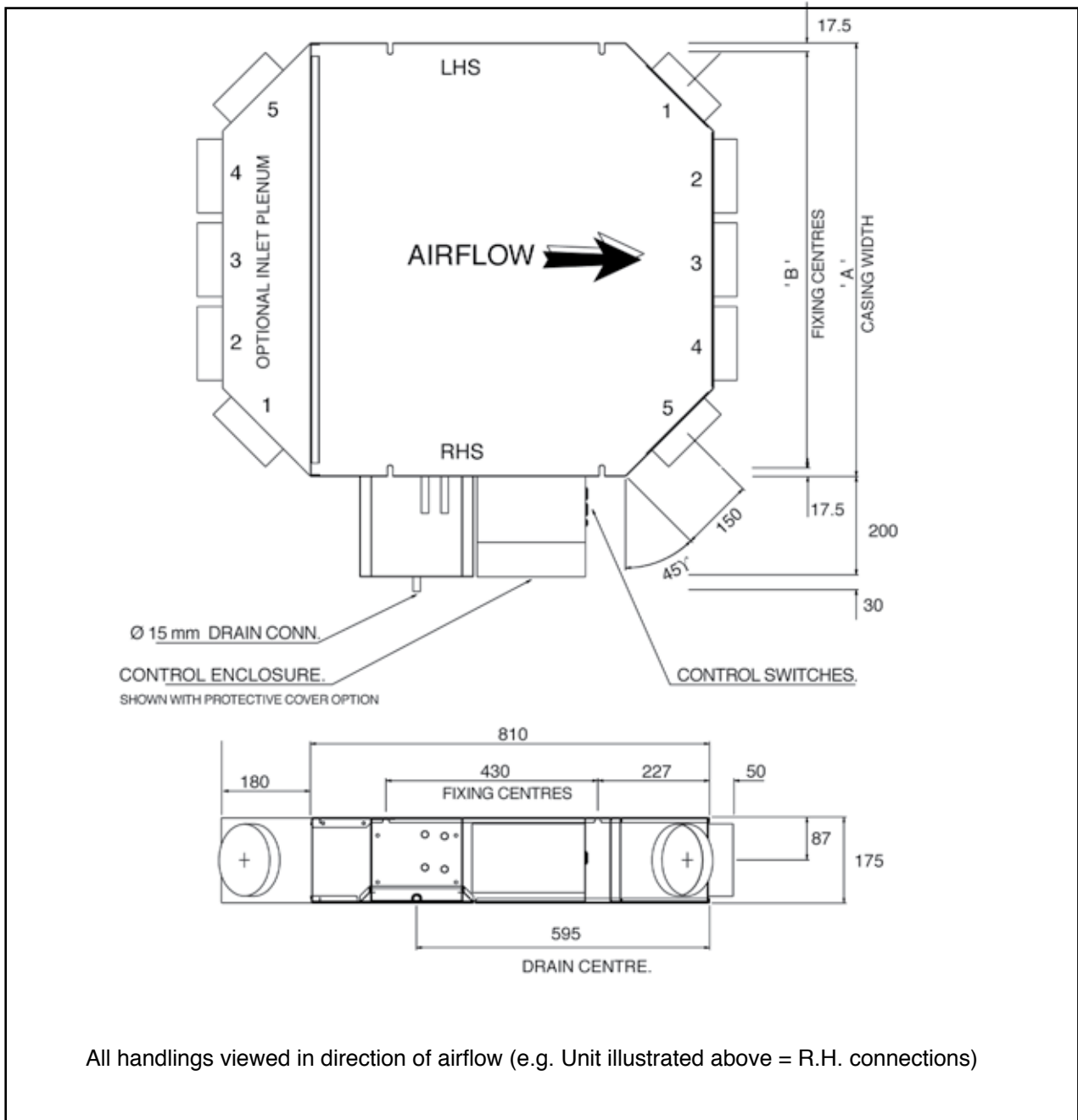
Max Performance Data (heating)
 Heating outputs based on: E.A.T. 20°C
 Air Volumes at 30Pa.ext.res.

			LPHW			ELECTRICAL DATA			
			82/71	60/50	50/40	Input	FLC	S.C.	N.R.
MODEL	Spd	A'flow (ls)	Output (kW)	Output (kW)	Output (kW)	(watts)	(Amps)	(Amps)	Guide
AMT 1	1	35	1.34	0.79	0.49	42	0.45	1.35	25
	2	70	1.81	1.09	0.67	65	0.50	1.50	30
	3	100	2.42	1.44	0.94	80	0.52	1.56	33
	4	120	2.77	1.65	1.11	97	0.57	1.71	35
	5	140	2.97	1.84	1.23	125	0.62	1.86	37
	6	170	3.37	2.04	1.39	150	0.66	1.98	40
AMT 2	1	40	1.82	1.11	0.73	45	0.46	1.38	25
	2	80	2.26	1.37	0.90	65	0.50	1.50	30
	3	110	2.85	1.72	1.19	86	0.53	1.59	33
	4	130	3.25	1.97	1.36	102	0.58	1.74	35
	5	150	3.65	2.21	1.53	127	0.62	1.86	37
	6	180	4.15	2.52	1.74	155	0.66	1.98	40
AMT 3	1	100	2.70	1.55	0.88	90	0.92	2.76	25
	2	150	3.68	2.20	1.26	120	0.96	2.88	30
	3	190	4.49	2.67	1.63	147	1.02	3.06	33
	4	200	4.59	2.77	1.72	160	1.06	3.18	35
	5	260	5.39	3.18	2.12	218	1.18	3.54	37
	6	300	5.89	3.48	2.29	253	1.24	3.72	40
AMT 4	1	120	3.37	2.03	1.21	94	0.95	2.85	25
	2	170	4.24	2.60	1.65	126	1.00	3.00	30
	3	210	5.04	3.08	2.04	160	1.03	3.09	33
	4	220	5.24	3.14	2.14	180	1.10	3.30	35
	5	280	6.24	3.74	2.59	236	1.22	3.66	37
	6	320	6.84	4.14	2.74	262	1.25	3.75	40
AMT 5	1	135	3.62	2.18	1.32	123	1.34	4.02	25
	2	200	4.84	2.96	1.95	170	1.41	4.23	30
	3	250	5.84	3.54	2.42	211	1.52	4.56	33
	4	280	6.24	3.74	2.59	270	1.59	4.77	35
	5	310	6.64	4.04	2.74	274	1.66	4.98	37
	6	380	7.64	4.54	3.04	358	1.83	5.49	40

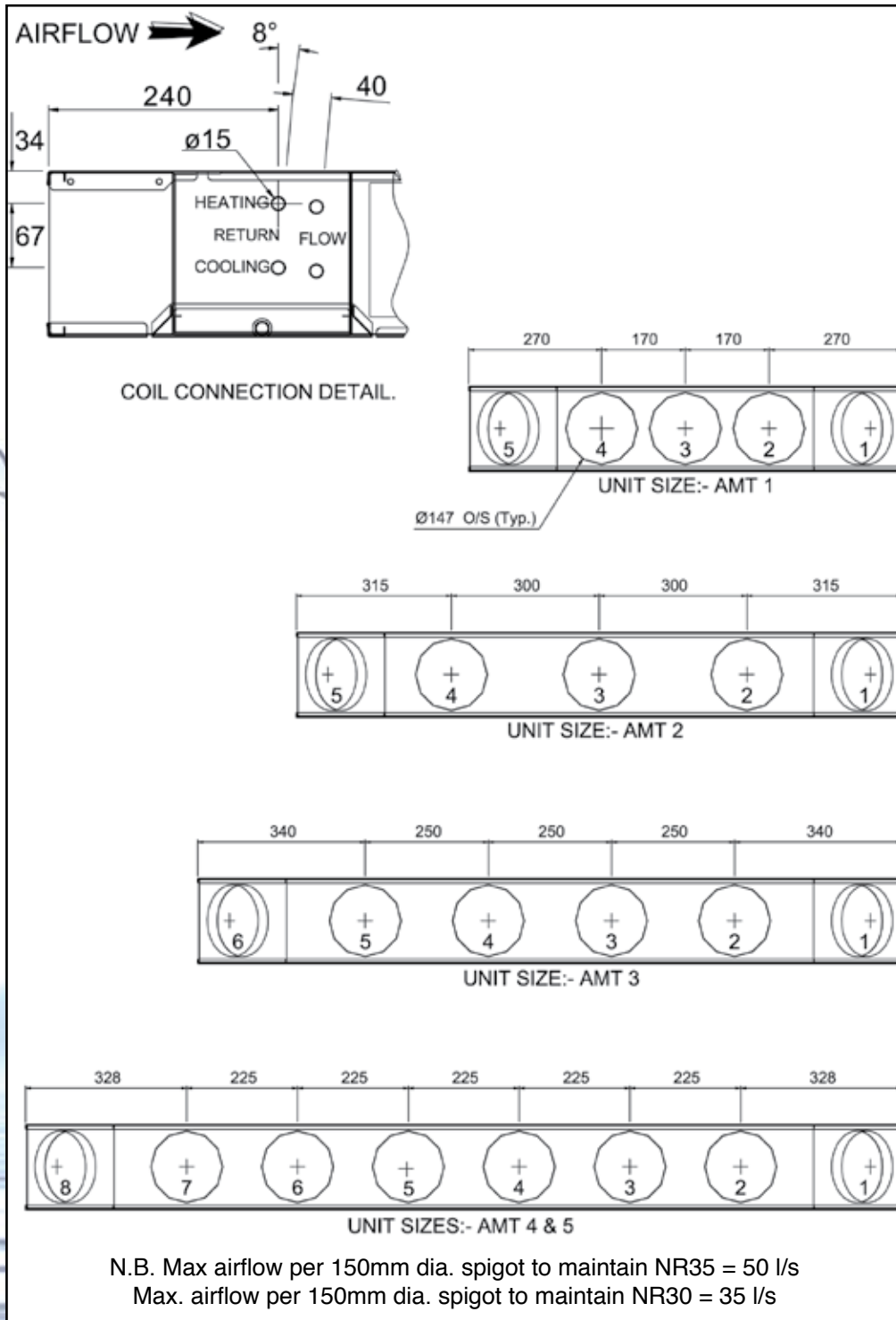
Dimensional Information

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

Option for Square Plenum (Unit length increased by 30mm)



Coil and Spigot Connection Details



For full design information, reference should be made to the technical manual. We reserve the right to alter designs and specifications at any time without notification.

Approved to
BS EN ISO 14001:2004



Certificate No. EMS 91502

Approved to
BS EN ISO 9001:2000



Certificate No. FM 671



Part No: 06617654-04

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