A C P AIRCONDITIONING

CONSORT 2000

A FLEXIBLE

APPROACH

TO AIR HANDLING UNITS

INTRODUCTION

A C P Airconditioning has a fully equipped factory in Star Road, Partridge Green in West Sussex.

The engineering and shop floor staff have many years combined experience in the manufacture of central station air handling units.

This catalogue is designed to illustrate our basic construction method and provide dimensional details of a range of standard AHU's for system designers and installers. For maximum flexibility of plant layout, we offer a selection of THREE cross-section profiles: TALL, STANDARD or FLAT.

In addition to this standard range, we can supply AHU's to special construction specification or custom engineered to suit site requirements.

AIRFLOW RANGE

This catalogue gives a quick selection method and basic information on the ACP Range for air flows between 0.6 and 10m3/s. All large AHU's are custom designed - consult ACP with details.

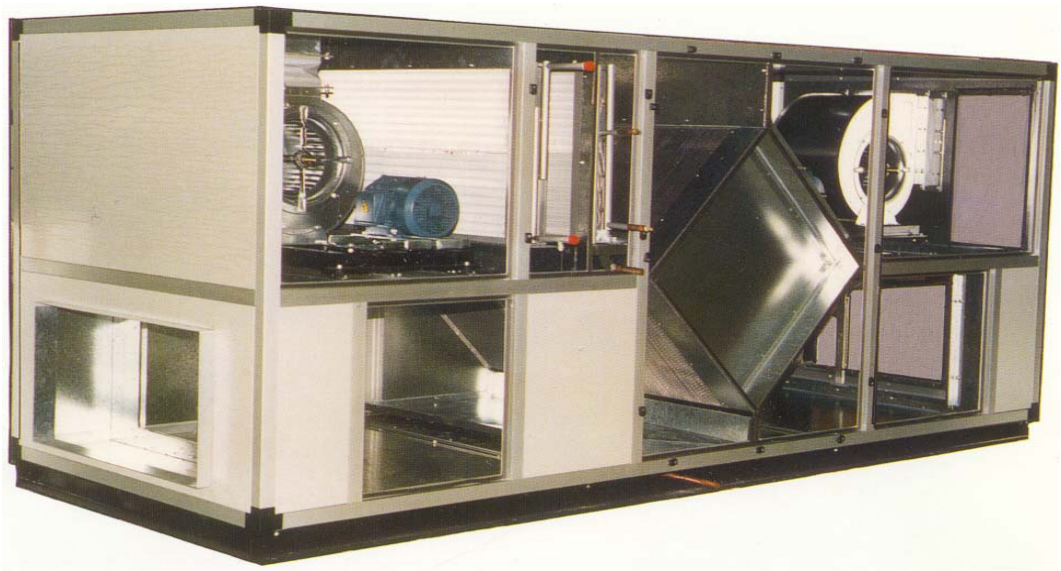
For air flows up to 1m3/s we produce the FSU range of small fans (see leaflet ACP-4).

We also manufacture the LPU range of low profile units with air flows up to 1.2m3/s principally for ceiling void application (see leaflet ACP-3).

APPLICATIONS

Typical applications for ACP air handling units are:

* Offices and commercial property.
* Factories and industrial.
* Recreation centres with swimming pools.
* Hospitals (incorporating theatres and general wards).



Typical AHU for internal location with side panels removed. Unit is in 'double stacked' configuration to accommodate plate exchanger, and with supply and extract fan units.

SPECIAL PRODUCTS AVAILABLE

ACP Airconditioning manufacture a wide range of equipment custom built to meet a variety of customer requirements. These include air handling units, water and air-side fan coil units, special air/water cooled DX packages, all types of split systems and heat rejection equipment.

ACP Airconditioning also undertake site surveys, off loading, positioning and assembly of plant and refrigeration pipework and electrical installation.

Our general brochure ACP-1 gives full details of the company's method of operation, with manufacturing and sitework services available.

MODEL SELECTION

The basic AHU cross-section may be determined from Tables 1 and 2 overleaf. The AHU length is then derived from the summation of individual component length as listed on pages 8 and 9.

Three options - TALL - STANDARD -FLAT - for the cross-section profiles of each AHU size are available.

Proceed as follows:

i) Plot the air volume flow rate (m3/s) on Table 1. Draw line horizontally to the left to determine Size Number.
ii) Refer to Table 2 below to select TALL, STANDARD or FLAT cross section AHU as preferred for selected Size Number.
iii) For overall AHU height add dimension of standard base frame height and slope roof (if applicable). These dimensions are listed in Table 2.
iv) To obtain overall AHU length add lengths of each component for selected Size Number from Table 3 on Pages 8 and 9.

N.B. All standard AHU's are designed for draw-through component arrangement, but ACP recommend that humidifiers and HEPA filters be positioned downstream of the fan. For AHU with downstream component(s), a discharge plenum must be fitted after the fan.

GUIDELINES FOR COIL FACE VELOCITY

Optimum velocity depends on actual operating air velocity, psychrometric conditions and heat transfer media temperatures. (For special requirements consult ACP).

For general air conditioning and ventilation applications we suggest the following GUIDELINES:

Cooling coil, no eliminators 100% fresh air	Maximum 2.0m/s
Cooling coil, no eliminators max 20% fresh air	Maximum 2.3m/s
Cooling coil with eliminators fitted	Maximum 3.0m/s
Heating coil only (or no fluid coil fitted)	Maximum 3.5m/s

SELECTION NOTES

a) For practical and economic reasons, AHU's are generally constructed in sections containing multiple components. As a guide, section lengths are usually between 2000 and 3500mm long. (Check quotation details).
b) It may be possible to reduce overall AHU length from Table 3 data, depending on detail and sequence of components. (Consult ACP with full details).
c) All AHU's can be supplied in minimum section lengths or broken down form, when necessary. Advise ACP - extra costs may be involved.
d) The base frame heights listed in Table 2 are minimum standard. Higher frames can be supplied to allow greater depth for external drain traps.

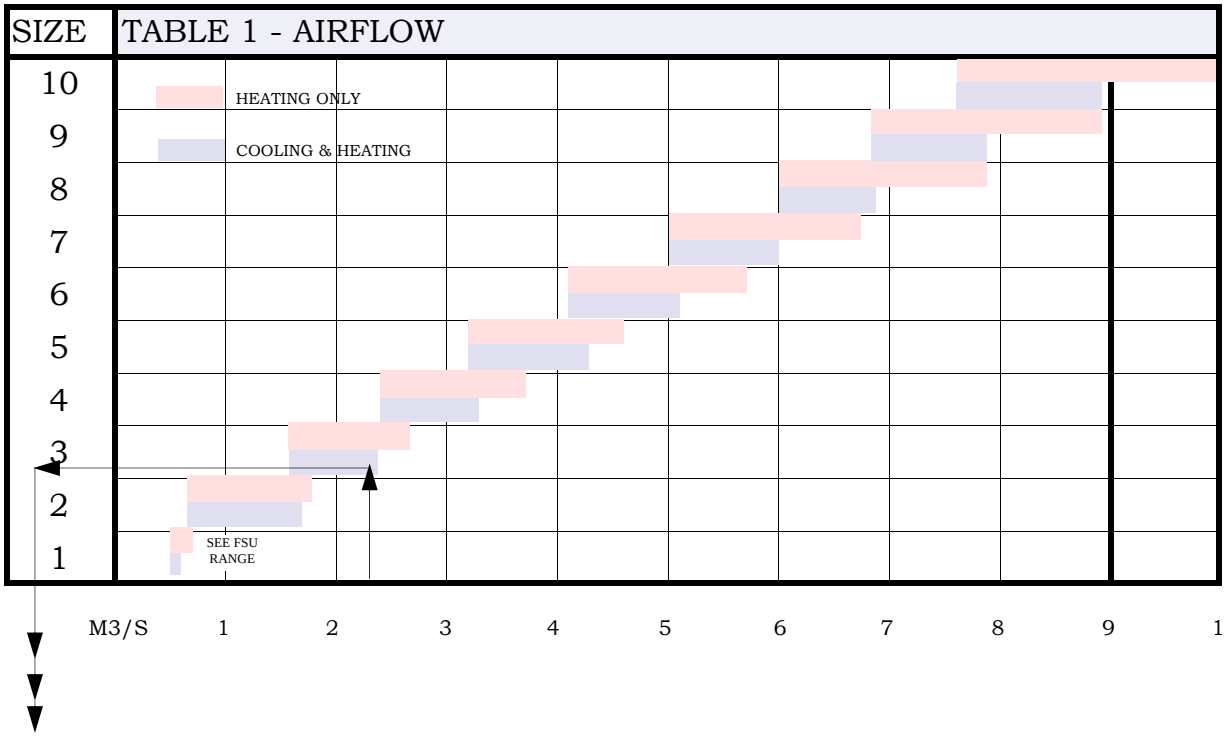
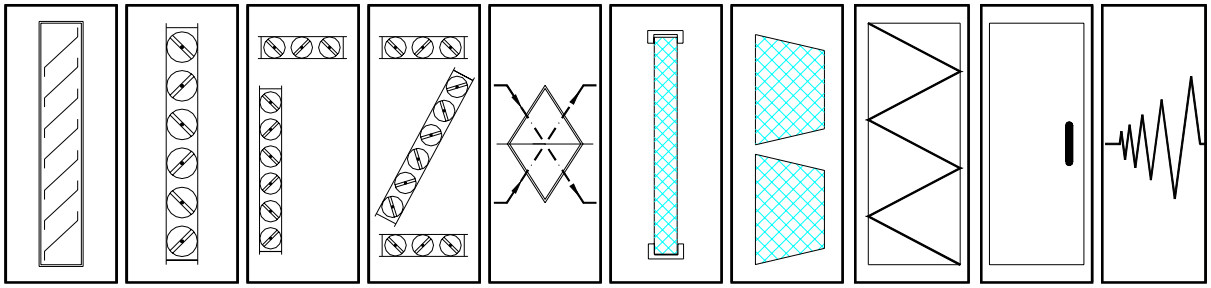


TABLE 2 - CABINET CROSS SECTIONS

SIZE	TALL		STANDARD		FLAT		BASE FRAME	SLOPED ROOF
	H	W	H	W	H	W	H1	H
1	925	650	775	750	625	900	50	75
2	1325	900	1075	1100	825	1400	50	75
3	1425	1100	1225	1300	975	1650	75	75
4	1625	1250	1375	1500	1025	1950	75	75
5	1775	1400	1425	1750	1125	2250	75	75
6	1925	1550	1525	1900	1225	2500	100	100
7	2025	1750	1625	2100	1375	2550	100	100
8	2325	1750	1725	2250	1375	2900	100	100
9	2225	1950	1875	2300	1525	2900	100	100
10	2475	1950	1975	2500	1525	3500	100	100

ADD BASE FRAME HEIGHT (H1) TO ALL AHU'S



1 2 3 4 5 6 7 8 9 10

TABLE 3 - COMPONENT LENGTHS

L	AHU SIZE		1	2	3	4	5	6	7	8	9	10
1	WEATHER LOUVRE		100	100	100	100	100	100	100	100	100	100
2	DAMPER	(a)	300	300	300	300	300	300	300	300	300	300
3	SINGLE-MIXING BOX		550	600	700	750	800	800	850	900	950	1000
4	DOUBLE MIXING BOX		1100	1200	1400	1500	1600	1600	1700	1800	1900	2000
5	PLATE EXCHANGER	(b)	1000	1200	1450	1550	1700	2000	2300	2300	2600	2600
6	PANEL FILTER		200	200	200	200	200	200	200	200	200	200
7	BAG FILTER (NOM)	(c)	650	650	650	650	650	650	650	650	650	650
8	CARBON FILTER	(d)										
9	ACCESS SECTION		450	450	500	500	500	600	600	600	600	600
10	SILENCER	(e)										

Notes on Table above:

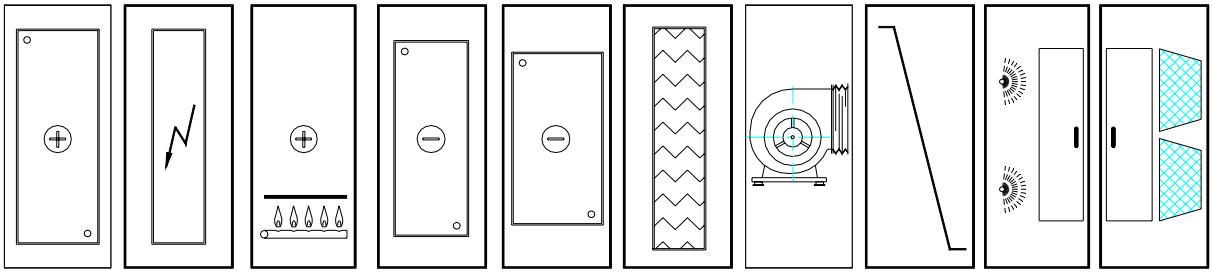
(a) Dampers usually fixed outside the cabinet on internally located AHU's. For externally located AHU's, dampers are fitted internally with weather louvres on air intake/discharge.

(b) Plate exchanger requires double cabinet height.

(c) Bag filter section length is for 580mm long bags. For shorter/longer bags adjust section length by length difference.

(d) Carbon filter section length dependent on application, efficiency, dwell time and other design details. Consult ACP.

(e) Section length equal to selected silencer. Lengths normally multiples of 300mm.



11 12 13 14 15 16 17 18 19 20

TABLE 3 - COMPONENT LENGTHS

L	AHU SIZE	1	2	3	4	5	6	7	8	9	10
11	HEATER COIL (1/2 R)	300	300	300	300	300	300	300	300	300	300
12	ELECTRIC HEATER	400	400	450	450	500	500	500	500	500	500
13	GAS HEATER (INDIRECT) (f)		850	850	850	1250	1250	1450	1450	1450	1450
14	COOLING COIL (2/6R)	450	450	450	450	450	450	450	450	450	450
15	COOLING COIL (8/10R)	800	800	800	800	800	800	800	800	800	800
16	ELIMINATORS	150	150	150	150	150	150	150	150	150	150
17	FAN CABINET (g)	900	1250	1400	1550	1600	1650	1750	1850	2000	2100
18	DISCHARGE PLENUM	300	450	600	700	750	850	900	900	1000	1000
19	HUMIDIFIER/ACCESS (h)	1200	1200	1200	1200	1200	1200	1200	1200	1200	1200
20	HEPA FILTER/ACCESS (i)	1050	1050	1050	1050	1050	1050	1050	1050	1050	1050

Notes on Table above:

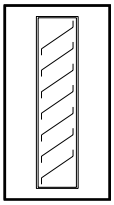
(f) Indirect gas heater section length based on 20°C air temperature rise. Flue projects above and/or to the side of the cabinet.

(g) Fan section with EXTERNAL motor and drive requires base frame for motor(s) extended one side or top of cabinet.

(h) Humidifier valve/generator unit located on the outside of the cabinet for internal AHU (in recessed compartment on external AHU).

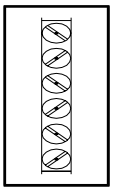
(i) HEPA filter section may require larger cross-section depending on efficiency and type.

COMPONENT SPECIFICATION



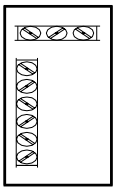
WEATHER LOUVRE: With mesh screen. Self finish anodised aluminium.

EXTRAS: Paint finish to specified colour.



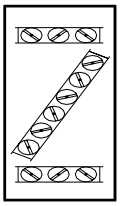
DAMPER: Opposed blade aerofoil section blades with synthetic bearings and suitable for motorisation by others, or supplied with manual quadrant. Synthetic edge seals are standard.

EXTRAS: Specified actuator fitted, wired or unwired.



SINGLE MIXING BOX: Fitted with two dampers, top, bottom or side, for motorisation by others or manual quadrant.

EXTRAS: Specified actuator fitted, wired or unwired.



DOUBLE MIXING BOX: Fitted with three dampers for motorisation by others. Exhaust/Fresh Air dampers on side, top or bottom.

EXTRAS: Specified actuator fitted, wired and unwired. For external AHU's weather louvres fitted on exhaust and fresh air openings.

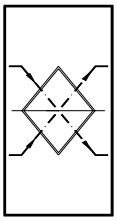
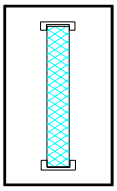


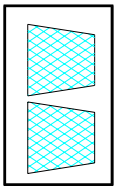
PLATE EXCHANGER: Aluminium plates with angle frame within casing. Drain tray fitted on exhaust side.

EXTRAS: Epoxy finish, stainless steel or specified construction. Face and by-pass opposed blade dampers fitted for motorisation by others, or with fitted actuator.



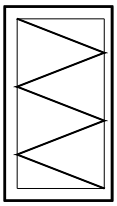
PANEL FILTER: Fitted with flat bank of 50mm thick disposable cells arranged for side withdrawal. Minimum efficiency EU2 to Eurovent 4/5.

EXTRAS: Manometer, Pressure Gauge, Differential Pressure Switch.

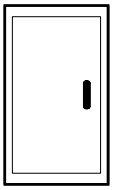


BAG FILTER: Fitted with flat bank of disposable cells for side withdrawal. Maximum efficiency EU9 to Eurovent 4/5. Standard length 580mm or as specified.

EXTRAS: Manometer, Pressure Gauge, Differential Pressure Switch.



CARBON FILTER: All carbon filter units are specially designed for each application, depending on gases to be removed, efficiency and dwell time required. Cabinets lengths normally between 1000 and 2000mm.

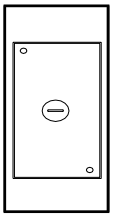


ACCESS SECTION: Hinged or lift off double skin door with grab handle and quick release fasteners.

EXTRAS: Specified locks, bulkhead light, porthole.

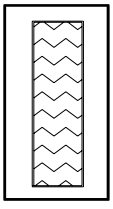
SILENCER: Fitted with acoustic splitter of mineral wool in galvanised steel end caps and perforated airway facings. Length as specified but normally multiples of 300mm.

EXTRAS: Melinex facing. Specified materials or finishes.



HEATING AND COOLING COILS: Manufactured from drawn copper tube expanded into collars of aluminium plate type fins. Primary tubes brazed into copper headers with tailpipes projecting from casing. Tube plates galvanised steel. Cooling coils provided with treated steel drain sloped to side drain connection. Maximum coil height without intermediate drain pan is 900mm.

EXTRAS: Copper, electro-tinned copper or coated fins, stainless steel tube plates and drain trays, baretube frostcoils.

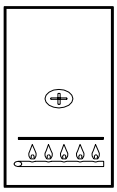


ELIMINATORS: 3 break type of extruded plastic arranged to drain into cooling coil tray.

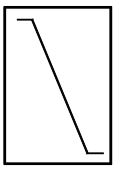
EXTRAS: Aluminium, galvanised or stainless steel, construction.

ELECTRIC HEATER BATTERY: Galvanised steel frame supporting multiple sheathed rod elements. Left unwired in terminal box. Auto-reset cut-out thermostat fitted.

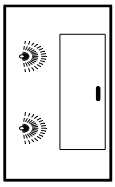
EXTRAS: Terminal boxes, contactors and controls fitted.



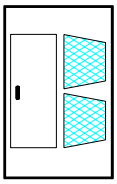
GAS FIRED HEATER: Indirect type with burner, flues and vents. Modulating gas valve fitted with safety controls. (The heater module is built in casing but flue extension to outside).



DISCHARGE PLENUM: Section fitted with diffuser baffle.

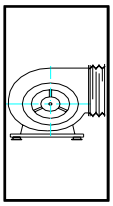


HUMIDIFIER: Section with proprietary direct steam or electric self generating humidifier fitted. Unit fitted to outside of casing with manifold fitted across air stream. Access door and drain pan fitted.



HEPA FILTER: Flat bank of cells with specified efficiency with special seals. Access section for front withdrawal.

EXTRAS: Manometer, pressure gauge, differential pressure switch.



FAN CABINET: The fan to be double inlet, double width centrifugal type with forward or backward curved impellers. The fan shaft and impeller are statically and dynamically balanced as one unit. Fan and motor are mounted on a common steel raft set on neoprene anti-vibration mounts within the cabinet. A flexible connection is fitted between the fan discharge and the cabinet panel. The fan shall be belt driven with wedge or cogged belts rated for continuous duty.

The motor shall be positioned on an adjustable tool operated slide base which permits belt tensioning and replacement whilst maintaining pulley alignment. As standard, the motor shall be T.E.F.V. foot mounted type with IP54 ingress protection suitable for 415v/3ph/50hz electrical supply and left unwired.

EXTRAS: Multiple speed or special motors, running and standby motors, mesh steel belt drive guard, motor wired to terminal box or isolator on casing, special fans, treatments, accessories.

External motor: Base frame extended to site motor with guarded drive from fan shaft extended through the cabinet. Spring A/V mounts, Drive guards.

COMPONENT WEIGHTS (KG)											
L	**AHU SIZE**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	WEATHER LOUVRE C/W MESH	23	41	53	65	77	96	111	125	135	148
2	DAMPER (SHUT OFF OR CONTROL)	37	57	71	84	98	126	133	150	158	185
3	SINGLE MIXING BOX (2 DAMPERS)	56	94	158	161	195	247	276	315	344	412
4	DOUBLE MIXING BOX (3 DAMPERS)	103	170	239	289	350	400	495	567	617	739
5	PLATE EXCHANGER (+ OR - DAMPERS)	196	338	472	568	708	1066	1315	1384	1644	1875
6	PANEL FILTER (FLAT BANK)	24	36	44	52	60	77	81	91	96	111
7	BAG FILTER (NOMINAL 550mml)	66	94	112	129	146	187	197	215	224	258
8	CARBON FILTER (1)										
9	ACCESS SECTION	42	57	75	85	96	145	154	167	172	195
10	SILENCER 300L (2)	48	78	100	122	141	176	180	209	236	265
11	HEATER COIL (1 or 2 ROWS)	45	80	109	136	166	205	234	267	292	330
12	ELECTRIC HEATER BATTERY	50	77	100	120	143	187	205	232	240	278
13	GAS FIRED HEATER (INDIRECT)		209	257	321	450	515	726	756	768	825
14	COOLING COIL (2 TO 6 ROWS)	76	141	195	246	304	375	430	491	543	611
15	COOLING COIL (8 TO 10 ROWS)	125	243	345	441	551	677	783	897	996	1124
16	ELIMINATORS	23	38	48	58	64	90	95	106	115	135
17	FAN CABINET (DIDW CENTRIFUGAL)	143	259	350	437	540	688	815	898	1028	1155
18	DISCHARGE PLENUM c/w DIFFUSER	30	64	100	130	158	223	250	272	311	354
19	HUMIDIFIER c/w ACCESS	123	179	237	260	286	345	400	430	443	490
20	HEPA FILTER c/w FRONT ACCESS	115	224	281	337	397	511	543	603	644	756

CAUTION: This information is intended as a rough guide to weights of standard AHU's for outline floor loading, transport or cranage purposes.

Certified weight for a particular AHU is only issued after completion of full design engineering.

Notes: For externally located AHU's add 15% to total.

Coil section weights are for aluminium fins. Add 80% for copper fins.

(1) Weight entirely dependent on grade, dwell time and application. Consult ACP.

(2) Weight shown is for 300mm long silencer. For longer silencer multiply weight in proportion to length.

CONSTRUCTION SPECIFICATION

FRAMEWORK: Each AHU or AHU section is fabricated with a framework of 20, 30 or 50mm extruded aluminium boxed section with die cast aluminium or nylon corner joints and accessories.

EXTRAS: Anodised finish, nylon corners and accessories, extended for valve compartment, bulkhead light wired to outside switch, enclosure for control panel, enclosure with integral controls/wiring, internal walkway (for large units).

PANELS: The frame is clad with 25mm thick double skinned insulated panels, which fit into the rebated edges of the corner or intermediate section, to form a continuous flush surface.

Minimum metal thickness is 0.9mm and outer skin is plasticised steel sheet. Inner skin is self-finished galvanised steel sheet. Standard colour finish is 'Merlin grey' to BS4800 18 B 25.

Alternative colour finishes, range of acoustic constructions high density board, perforated inner skin, septum plates, thicker panel skins, etc.All panels are sealed against framework with neoprene rubber gasket.
On 50mm framing, a tubular rubber gasket can be mechanically fitted to a preformed groove in the section for extra quality seal.

EXTRAS: 50mm panel thickness, increased metal skin thickness, range of alternative colour finishes, range of acoustic constructions high density board, perforated inner skin, septum plates, thicker panel skin, etc.

ACCESS PANELS: Panels secured in place by tool operated turn locks. (A single half turn latches the panel and then applies pre-set compressive pull-up).
Complete with pull-off grips or grab handles (depending on panel size).

EXTRAS: Lift off doors, hinged doors, tool operated lockable handle, key operated lockable handle, double handle with internal release, inspection windows, electrical interlock switches fitted.

INSULATION: 25mm thick mineral wool slab having a minimum density of 45kg/m3.

EXTRAS: Higher density.

BASES: Each AHU (or AHU section) is normally fitted underneath with a fully welded rolled steel channel base frame. (Standard heights are indicated in Table 2).

After fabrication the base is cleaned, primed and finished in black hammerite paint.

N.B The base is designed to enable the AHU to be moved around on site by forklift, and for sling lifting.

EXTRAS: Integral extruded aluminium frame, extended for high level drop rods, higher for drain traps, welded lifting lugs, hot dip galvanised after manufacture.

EXTERNAL AHU: Fitted with sloped weather roof overhung all round as standard. All fixed panels mastic sealed in place and additional gasketting used on removable panels.

EXTRAS: External frame for valve compartment, recessed compartment for controls etc, guttering and down pipes.

The requirements of a DW 142 pressure test can be covered to classes A and B as standard. Classes C and D are possible with additional treatment. Compliance with this test procedure must be notified to us at enquiry stage and due allowance identified by us within our quotation.