



Weatherproof Small Air Handlers & Extract Fan Units

0.05m³/sec to 3.0m³/sec

Many design options

Discreet Appearance

Built to last



Ventilation for the Nation

WEATHERMASTER DESIGN FEATURES



INTRODUCTION

For both supply air and extract units there is a big choice of design options available.

You decide the combination of options you want. VES can build it.

The latest CAD design and automated manufacturing machinery ensure consistent quality and quick deliveries, even for the "specials".

Our sales engineers can advise on the noise levels that will be achieved from our standard silencers both within the conditioned space and at a given distance from the Weathermaster unit. Should the required NR level not be met with a standard silencer we will select an extended silencer to suit.

All units are completely corrosion proof, the cases being manufactured from galvanised sheet steel, then polyester powder coated and baked at high temperature, providing an attractive and durable finish.

There are four case sizes with fourteen fan options.



Silencers designed to fit directly onto unit.



Removable top provides easy access to all components.



DESIGN FEATURES

- ◆ Single skinned, double skinned or acoustically lined case.
- ◆ Double inlet centrifugal fans with high temperature thermal cut-out protection.
- ◆ All units have removable lid for easy maintenance access to components.
- ◆ Fitted silencers.
- ◆ All fans speed controllable.
- ◆ Matching control panels.
- ◆ All units tested in accordance with BS 848.
- ◆ All equipment manufactured under ISO 9001 quality management system.



Electric heater with top terminal box.



OPTIONS

- ◆ Hot water or electric heaters.
- ◆ Inlet damper.
- ◆ Frost heater.
- ◆ Standard panel filters and bag filters to grades G4, F5 and F6.
- ◆ Cooling coil.



Motorised damper.



DEFINING MODEL NUMBERS

Select the unit size from the fan curves and combine it into the following model types.

- WM - E Supply unit with electric heater.
- WM - W Supply unit with hot water heater.
- WS Supply unit with filter but no heater.
- WE Extract unit.

Additional features are easy to specify:-

- Double skinned case, add suffix / DS
- Single skinned acoustically lined case, add suffix / AL
- Electric frost heater, add suffix / FCE
- Hot water frost heater, add suffix / FCW
- Damper, add suffix / D
- Bag filter, G4: / BF 4
F5: / BF 5
F6: / BF 6

- Chilled water cooling coil, add suffix / CC
- DX cooling coil, add suffix / DX
- Spigots both ends, add suffix / SP

Example:

Supply unit WM 215 with electric heater, damper and F5 bag filter, specify model WM 215 - E / BF5 / D, and state kw rating and no. of steps for EHB.



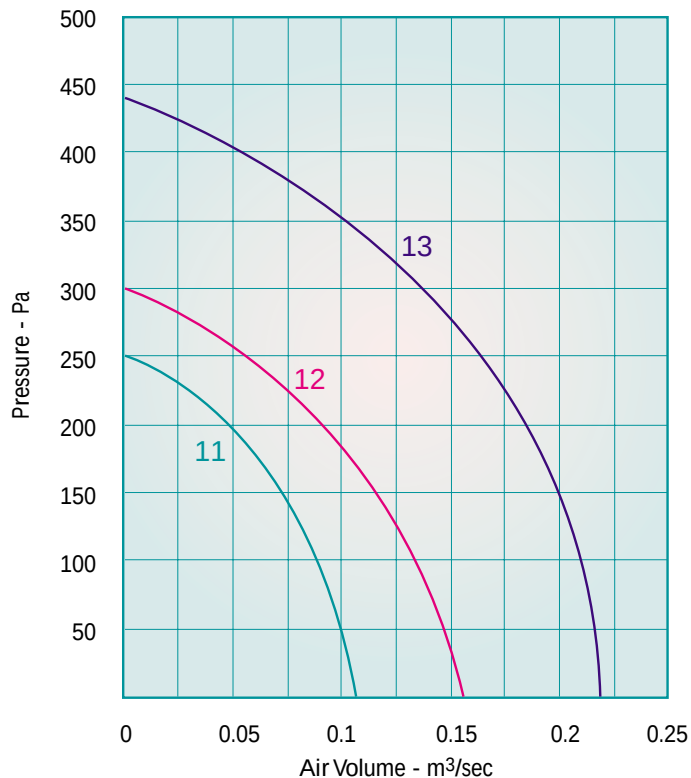
Unit with hot water coil.



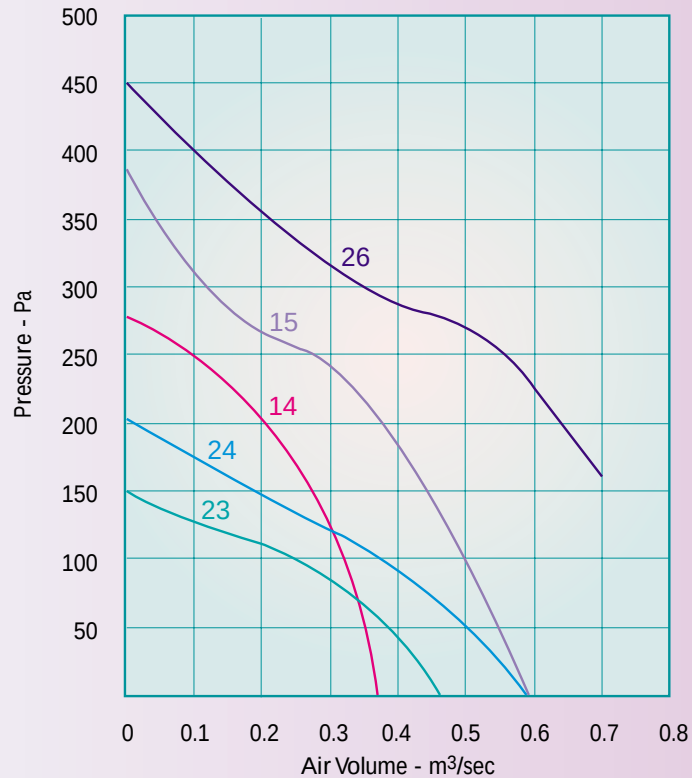
WE Extract unit with outlet cowl.

SUPPLY UNITS - FAN CURVES

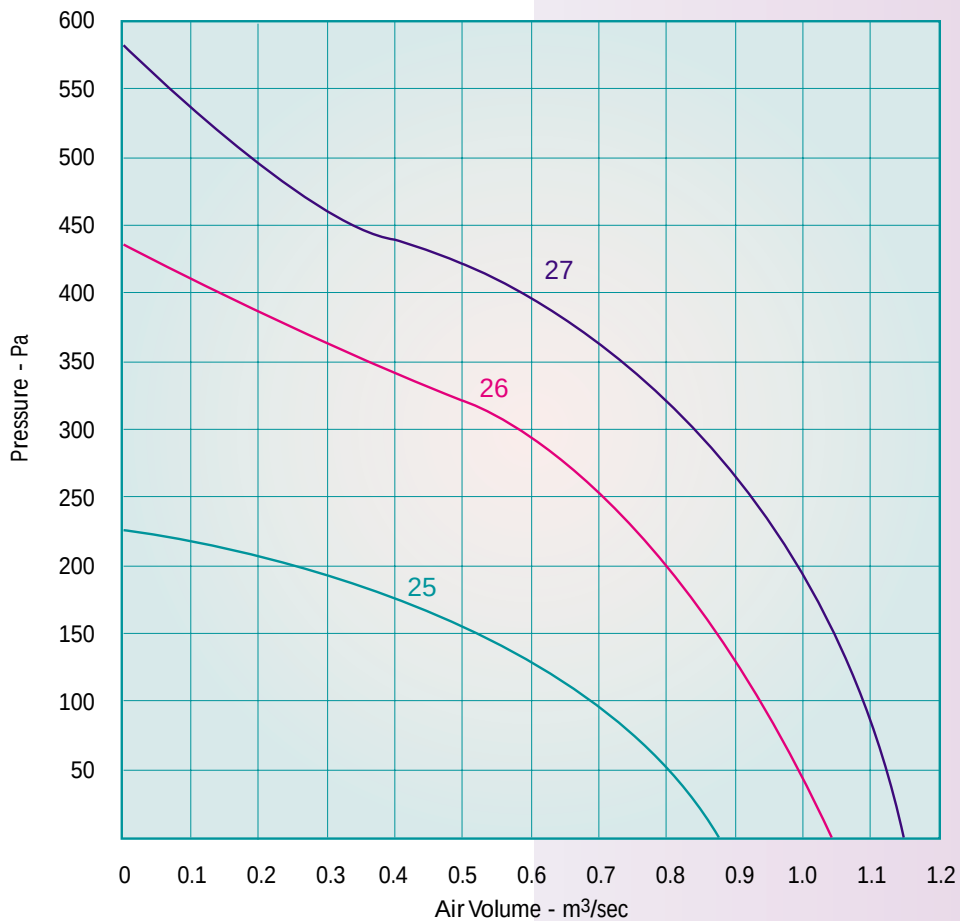
SUPPLY UNIT - WM1



SUPPLY UNIT - WM2



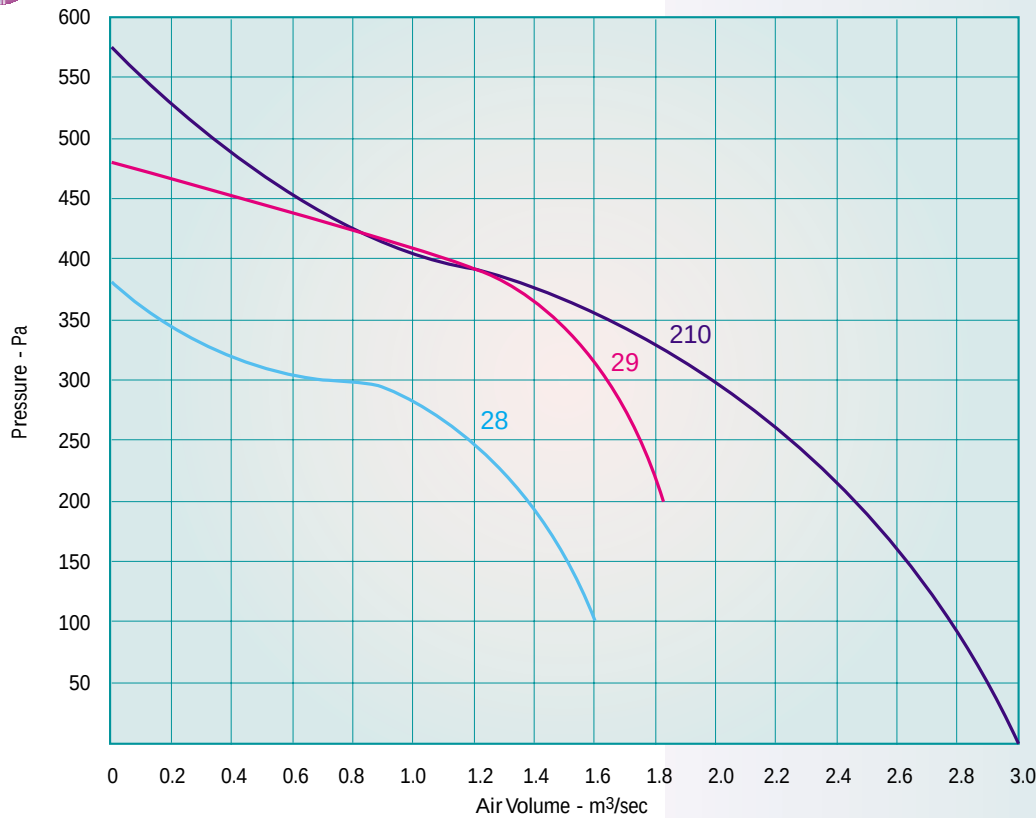
SUPPLY UNIT - WM3



SUPPLY UNITS FAN CURVES



SUPPLY UNIT - WM4



The size 428 single phase fan must have at least 100Pa operating pressure and the size 429 single phase at least 200Pa operating pressure.

If the system resistance is likely to be lower than this an iris damper must be fitted to the fan.

UNIT PERFORMANCE - COMPONENT RESISTANCES

Supply units have been tested with a standard filter and LPHW heating coil. With an electric heater there will be slightly more pressure available at the duty point. Add the resistance to air flow of any optional extra components you require to your external resistance when selecting unit. Electric frost heaters have negligible resistance to air flow. Hot water frost coil resistance will not exceed 10Pa. Silencer resistances - See Page 15.

Weathermaster Case Size	Air Volume m3/sec	Bag Filters			Cooling Coils [†]	
		G4*	F5	F6	4 row	6 row
1	0.15	10	22	34	42	62
	0.20	20	40	60	75	110
	0.25	27	62	94	N/A	N/A
2	0.35	12	18	21	45	66
	0.45	20	29	35	75	110
	0.55	29	44	52	N/A	N/A
3	0.60	12	27	42	58	86
	0.80	21	48	75	N/A	N/A
	1.00	33	75	117	N/A	N/A
4	1.50	21	37	57	65	96
	1.75	25	51	79	89	130
	2.00	30	65	101	N/A	N/A



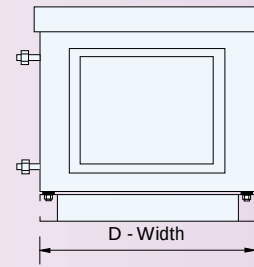
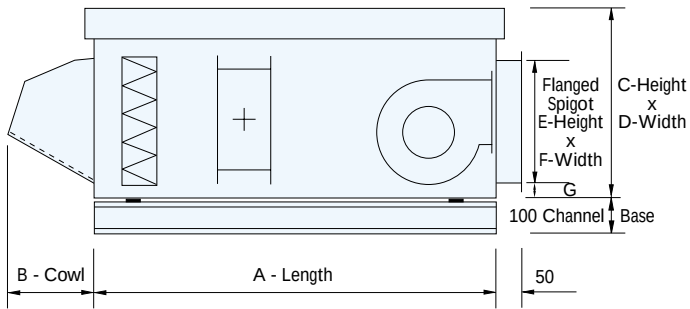
Notes:

* When selecting an G4 bag filter instead of a standard panel filter, there is no need to allow for the bag filter resistance as it is similar to the panel.

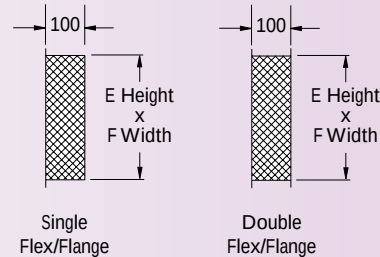
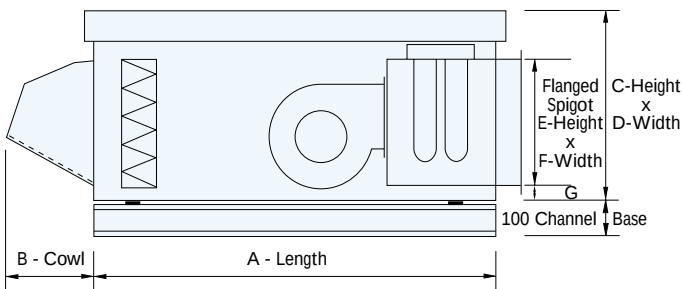
[†] The cooling coil is stated as not available when the face velocity exceeds 2.5m/sec. Select next size of case. The cooling coil resistance figures are a guide only, all coils are individually selected.

WM SUPPLY UNITS - DIMENSIONS

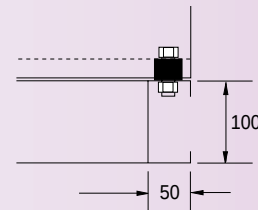
WM-W UNIT WITH HOT WATER HEATER AND INLET COWL



WM-E UNIT WITH ELECTRIC HEATER AND INLET COWL



20mm Mez flanges are fitted to size 1, 2 and 3 units, 30mm Mez flanges fitted to size 4 unit.



Channel base and A.V. mount detail for size 1, 2 and 3 units. A.V.'s not required with size 4 unit.

Access to fan, filter and electric heater is via removable top. Hot water coil connections available left or right hand side.

Note:
WM 1-3 require external A.V. mounts and flexible connections. WM 4 fan is fully vibration isolated within case.

WM Model	Dimensions - mm							Weights - kg		
	A	B	C	D	E	F	G	Single Skinned	Double Skinned	Channel Base
1	700	200	350	600	250	500	38	35	45	6
2	1000	300	575	650	450	550	50	63	83	8
3	1250	350	625	800	500	700	50	83	108	10
4	1500	350	1000	1000	750	900	112.5	182	224	12

REPLACEMENT FILTERS

Model	Filter Size	Number per unit	VES Part Number
1	400x250x25	1	WMDF 100
2	550x450x50	1	WMDF 200
3	700x500x100	1	WMDF 300
4	725x450x100	2	WMDF 400

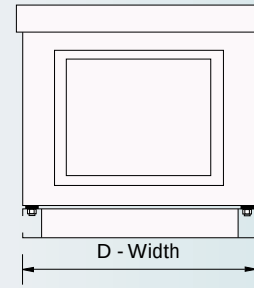
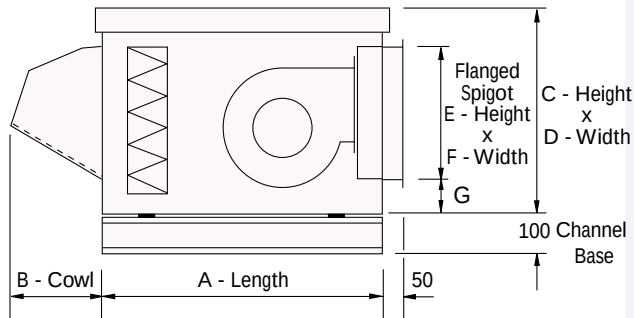
Coil Connection Sizes

WM 1	3/4" BSP
WM 2	1" BSP
WM 3	1 1/4" BSP
WM 4	1 1/2" BSP

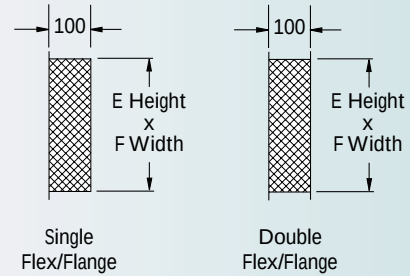
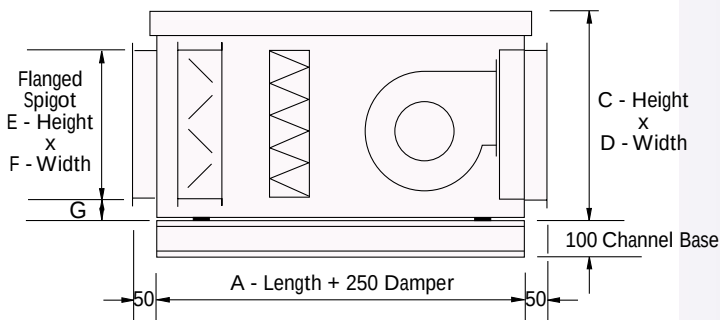
WS SUPPLY UNITS - DIMENSIONS



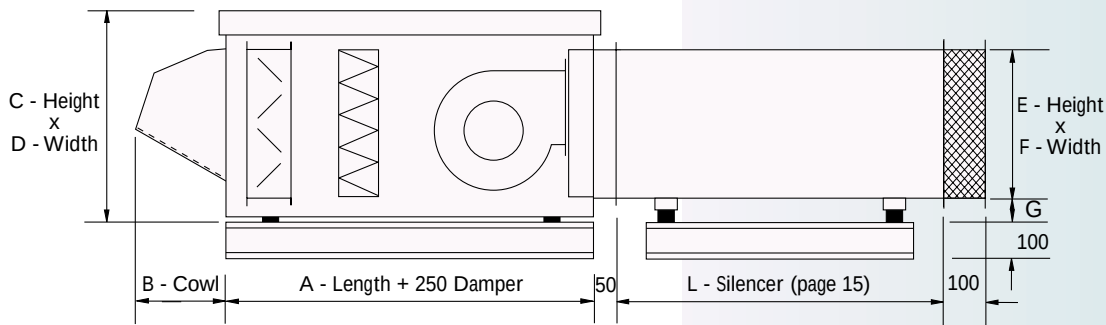
WS SUPPLY UNIT WITH FILTER AND INLET COWL



WS/D/SP SUPPLY UNIT WITH FILTER, DAMPER AND INLET SPIGOT



WS/D SUPPLY UNIT WITH FILTER, DAMPER AND INLET COWL



WS Model	Dimensions - mm							Weights - kg			
	A	B	C	D	E	F	G	Single Skinned	Double Skinned	Extra for Damper	Channel Base
1	450	200	325	600	250	500	38	22	29	10	6
2	650	300	550	650	450	550	50	45	56	14	7
3	800	350	600	800	500	700	50	57	71	17	8
4	1100	350	975	1000	750	900	112.5	134	164	32	11

WEATHERMASTER ELECTRIC HEATERS



To calculate the size of heater output required:

$$\begin{array}{ccccccccc} \text{Air} & & & & & & & & \\ \text{volume} & \times & \text{Constant} & \times & \text{Temperature} & = & \text{Heat} \\ \text{m}^3/\text{sec} & \times & 1.21 & \times & \text{difference} & = & \text{output} \\ & & & & \Delta T^{\circ}\text{C} & & \text{kW} \end{array}$$



The maximum size of electric heater each unit can accommodate is as follows:

WM1-E, 7.5kW WM2-E, 18.0kW WM3-E, 27.0kW WM4-E, 54kW



ELECTRIC HEATER SIZES & STEPS

230 Volt single phase steps						
kW Rating	Number of available steps					
	1	2	3	4	5	6
0.50	✓					
1.00	✓	✓				
1.25	✓					
1.50	✓		✓			
2.00	✓	✓		✓		
2.50	✓	✓			✓	
3.00	✓	✓	✓			✓
3.75	✓		✓			
4.00	✓	✓	✓	✓		
4.50	✓	✓	✓			
5.00	✓	✓	✓	✓	✓	
6.00	✓	✓	✓	✓		✓
7.50	✓	✓	✓		✓	✓
8.00	✓	✓	✓	✓	✓	✓
9.00	✓	✓	✓	✓		✓
10.00	✓	✓	✓	✓	✓	✓
12.00	✓	✓	✓	✓		✓
15.00	✓	✓	✓	✓	✓	✓
18.00	✓	✓	✓	✓		✓
20.00	✓	✓	✓	✓	✓	✓
24.00	✓	✓	✓	✓		✓
30.00	✓	✓	✓	✓	✓	✓

415 Volt three phase steps (star)						
kW Rating	Number of available steps					
	1	2	3	4	5	6
1.50	✓					
3.00	✓	✓				
3.75	✓					
4.50	✓		✓			
5.00	✓					
6.00	✓	✓		✓		
7.50	✓	✓			✓	
9.00	✓	✓	✓			✓
10.00	✓	✓				
11.25	✓		✓			
12.00	✓	✓	✓	✓		
13.50	✓	✓	✓			
15.00	✓	✓	✓	✓	✓	
18.00	✓	✓	✓	✓	✓	✓
20.00	✓	✓		✓	✓	
22.50	✓	✓	✓		✓	✓
24.00	✓	✓	✓	✓		✓
27.00	✓	✓	✓	✓		✓
30.00	✓	✓	✓	✓	✓	✓
36.00	✓	✓	✓	✓		✓
45.00	✓	✓	✓	✓	✓	✓
54.00	✓	✓	✓	✓		✓

WEATHERMASTER HOT WATER HEATERS



PERFORMANCE DATA

Based on EAT -5°C.

Low Pressure Hot Water LPHW 82/71°C.

VES Technical Department can advise coil data for other conditions.

Weather Master Model	Air Volume m ³ /sec	Leaving Air Temperature °C	kW Output	Water Flow Rate L/sec	Water Pressure Drop KPa
1	0.05	30	2.17	0.047	1.0
	0.10	30	4.33	0.094	2.0
	0.15	28	6.13	0.133	4.0
	0.20	25	7.43	0.161	5.0
	0.25	22	8.35	0.182	6.0
2	0.20	30	8.66	0.188	2.0
	0.25	30	10.83	0.235	2.0
	0.35	30	15.16	0.329	4.0
	0.45	25	16.71	0.363	5.0
	0.55	25	20.42	0.444	7.0
3	0.30	30	13.00	0.282	1.0
	0.40	30	17.33	0.376	2.0
	0.60	28	24.50	0.532	3.0
	0.80	25	29.70	0.645	4.0
	1.00	22	33.42	0.726	5.0
	1.20	20	37.13	0.807	6.0
4	0.60	30	25.32	0.551	2.0
	1.00	30	42.21	0.919	4.0
	1.40	30	59.08	1.287	5.0
	1.80	25	65.11	1.418	6.0
	2.20	23	74.27	1.618	7.0



Coil Connection Sizes

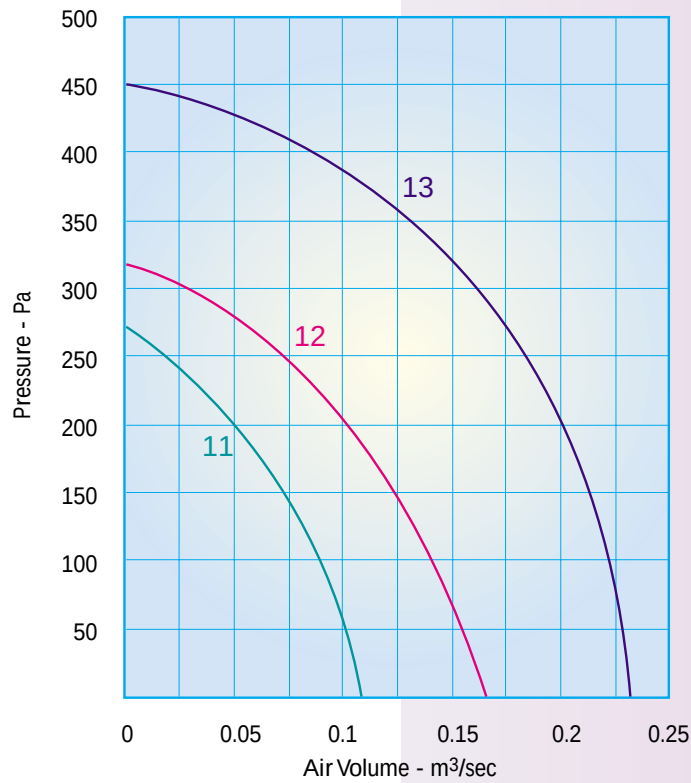
WM 1	3/4" BSP
WM 2	1" BSP
WM 3	1 1/4" BSP
WM 4	1 1/2" BSP

VES can supply control valve and actuator to match the LPHW coil if required.

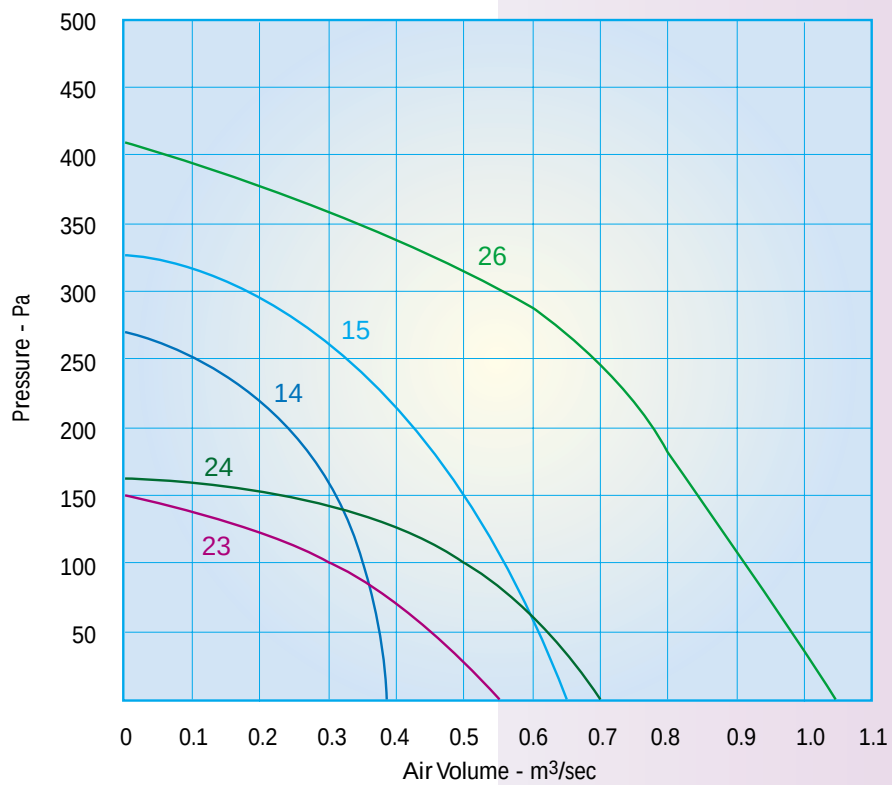
EXTRACT UNITS - FAN CURVES



EXTRACT UNIT - WE1



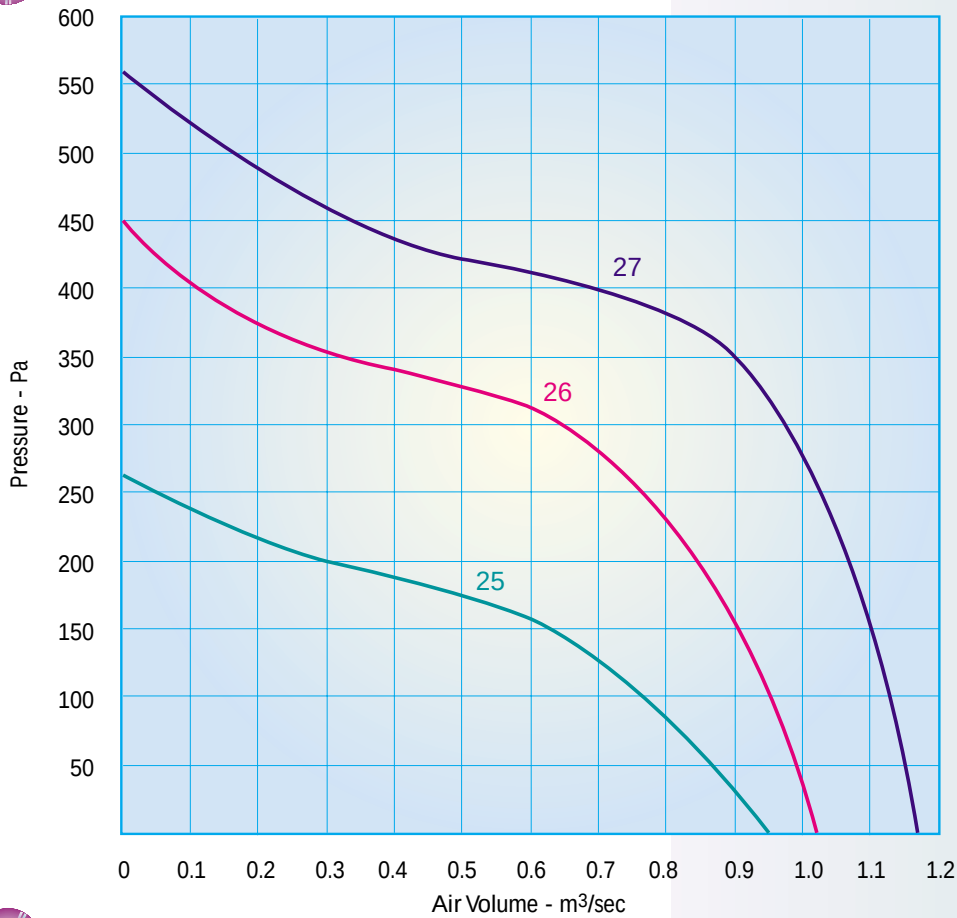
EXTRACT UNIT - WE2



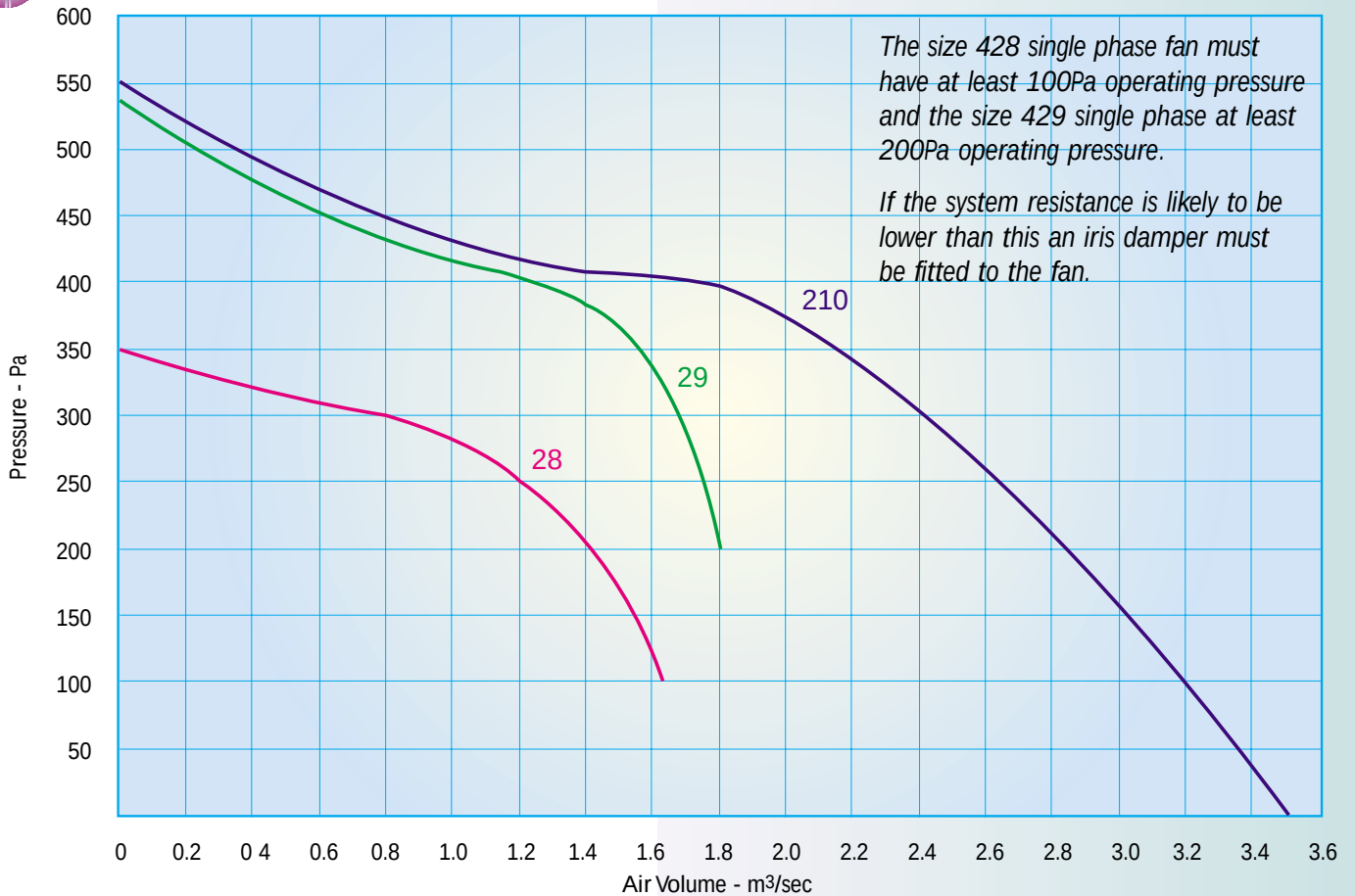
EXTRACT UNITS - FAN CURVES



EXTRACT UNIT - WE3

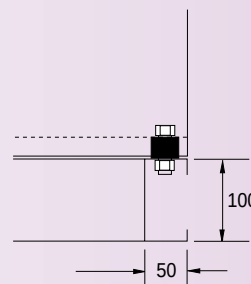
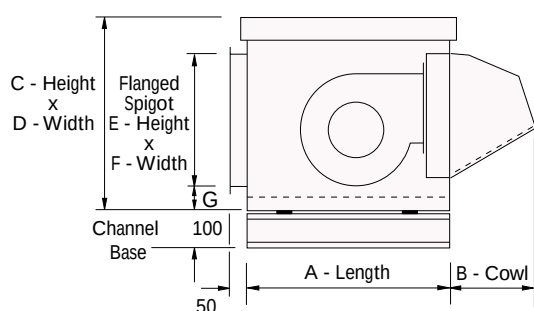


EXTRACT UNIT - WE4



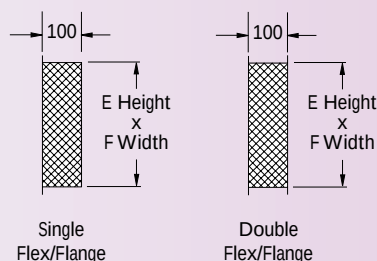
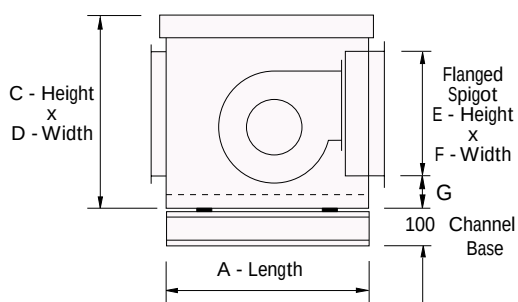
WE EXTRACT UNITS - DIMENSIONS

WE/C STANDARD EXTRACT UNIT, WITH OUTLET COWL

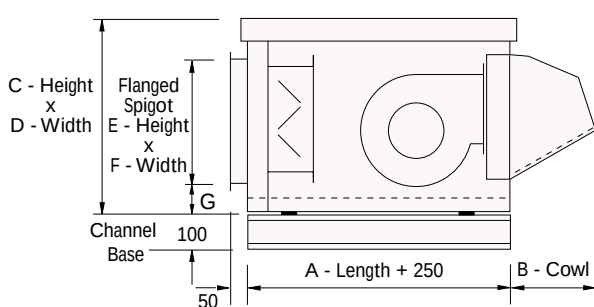


Channel base and A.V. mount detail.

WE/SP STANDARD EXTRACT UNIT, WITH SPIGOTS BOTH ENDS



WE/D EXTRACT UNIT, WITH DAMPER AND OUTLET COWL



Damper fitted with hand locking quadrant or suitable for motorising. 230 volt or 24 volt actuator available.

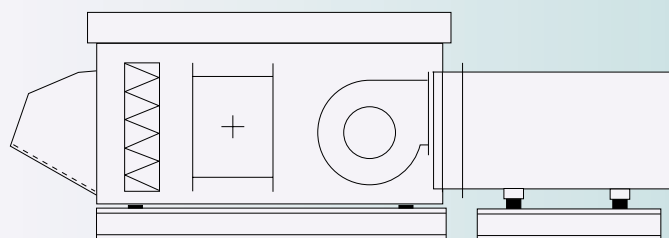
	Dimensions - mm							Weights - kg			
WE Model	A	B	C	D	E	F	G	Single Skinned	Double Skinned	Extra for Damper	Channel Base
1	400	200	325	600	250	500	38	20	26	10	5
2	575	300	550	650	450	550	50	40	50	14	6
3	700	350	600	800	500	700	50	50	63	17	7
4	950	350	975	1000	750	900	112.5	116	142	32	9

OPTIONS AVAILABLE

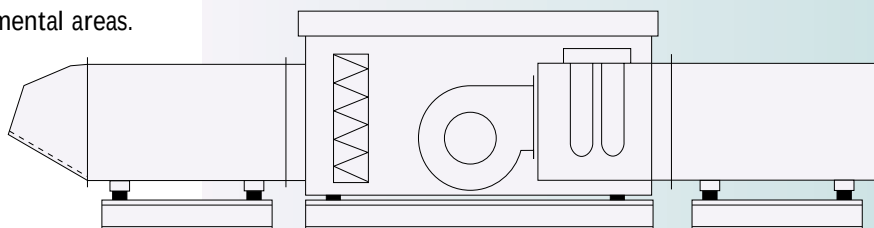


FITTED SILENCERS

- * Supply silencers to meet your room NR level requirements.



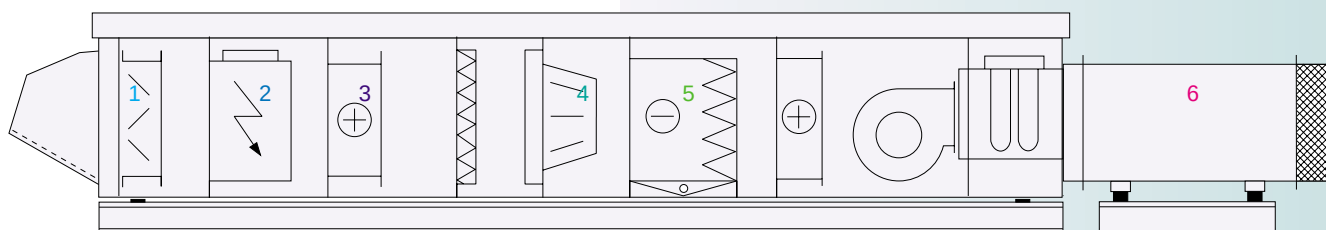
- * Inlet silencers for sensitive environmental areas.



- * Unit case can be double skinned or acoustically lined internally to minimise noise breakout.



OTHER SECTIONS AVAILABLE



1. Inlet damper, suitable for motorising or hand operation.
2. Electric frost heater.
3. Hot water frost heater.
4. Bag filter, grades G4, F5, and F6 available. F5 and F6 bag filters are front loading and have optional prefilter.
5. Cooling coil, DX or chilled water. Boxed and insulated construction with fitted moisture eliminator as standard.
6. Non-standard length silencers to achieve required NR levels.

Section Lengths - mm (add to standard unit)

WM Model	Inlet Damper	Electric Frost Heater	Water Frost Heater	G4 Bag	F5 Bag	F6 Bag	Cooling Coil 4 Row	Cooling Coil 6 Row
1	250	450	250	200	550	750	650	725
2	250	450	250	200	700	950	650	725
3	250	450	250	350	700	950	650	725
4	250	450	250	350	700	950	650	725

Section Weights - kg (add to standard unit)*

Inlet damper	Frost heater	G4 Bag	F5 Bag	F6 Bag	Cooling Coil 4 Row	Cooling Coil 6 Row
10	11	9	25	34	42	49
14	14	10	35	46	55	66
17	16	19	38	52	63	79
32	30	32	64	86	109	131

* Includes channel base.

WEATHERMASTER ELECTRICAL DETAILS

WEATHERMASTER Model WM, WS, WE	VES Fan Ref	Motor Input Watts	FLC amps max	Speed RPM	Speed Regulator	
					Electronic	Transformer
111	AL 121	109	0.45	1510	-	T1
112	AL 221	181	0.74	1540	-	T1
113	AL 321	325	1.37	1800	V20	T4
214	AL 441	405	1.80	1280	V20	T4
215	AL 541	720	3.30	1380	V65	T4
223	GZ 361	320	1.42	920	-	T1
224	GZ 461	508	2.36	900	V65	T4
226	GZ 641	1310	5.71	1380	V65	T8
325	GZ 561	714	3.20	900	V65	T4
326	GZ 641	1510	6.65	1380	V65	T8
327	GZ 741	1820	7.90	1380	-	T8
428 - 1	GZ 861	1860	8.60	900	-	T8
428 - 3	GZ 863	894	3.50	860	SC 310	-
429 - 1	GZ 961	2960	9.20	850	-	T12
429 - 3	GZ 963	1610	6.30	850	SC 310	-
4210 - 3	GZ 1063	2020	7.90	850	SC 310	-

Speed Regulator Model	Dimensions - mm		
	Width	Height	Depth
V20	90	150	45
V65	95	145	50
T1	120	190	65
T4	120	200	100
T8	160	230	120
T12	190	250	130
SC 310	223	320	110



V20



V65



SC310



T1



T8

CONTROL PANELS FOR WEATHERMASTER UNITS

All control panels include fan and heater switches, neon indicators, door isolator, temperature set point adjustment between 0-40°C, 10 metres of cable with a duct or room sensor. Electric heater panels include fan run-on timer and thermal cutout connection. Hot water panels include a frost stat. All that is required on site is to wire between panel and fans, heater and sensor. Refer to Power Station Control Panel leaflet for full details.



HOT WATER HEATER UNITS

Model CPW1 Fully modulating heating control with 0-10 volt signal output. VES can also supply valve and actuator to match coil duty.



CPE2



CPE6



ELECTRIC HEATER UNITS

Model CPE1 Single step heating for up to 3.0kW.

Model CPE2 Low cost control for up to 6.0kW in two 1 phase steps.

Model CPE4 Up to 12.0kW in 4 steps of control.

Model CPE6 Up to 18.0kW of heater output in 6 steps of control.

Model CPE9 Up to 27.0kW in 9 steps of control.

Non-standard control panels built to order. Refer to Power Station Control Panels brochure, or contact Sales Office to discuss requirements.

WEATHERMASTER SOUND LEVELS

Model WM WS, WE	SPL *dBA	Sound Power Level Spectrum dB re 10 ⁻¹² w PWL							
		Centre Frequency - Hz							
		63	125	250	500	1K	2K	4K	8K
111	54	73	64	59	59	66	65	64	64
112	57	72	65	59	63	70	68	67	66
113	61	76	74	69	70	73	70	69	69
214	58	75	72	68	63	70	67	66	67
215	67	78	77	76	76	79	77	75	77
223	47	69	66	59	58	58	56	54	50
224	58	69	70	64	69	69	57	65	61
226	64	75	76	70	72	75	75	73	67
325	58	71	70	64	68	69	57	66	60
326	64	75	76	70	72	75	75	73	67
327	62	73	75	68	72	74	73	70	65
428-1	64	76	77	70	72	72	71	70	64
428-3	64	76	77	70	72	72	71	70	64
429-1	64	75	76	71	74	74	75	73	68
429-3	64	75	76	71	74	74	75	73	68
4210-3	71	83	84	80	81	82	81	79	72

* At 3 metres from outlet, free field.

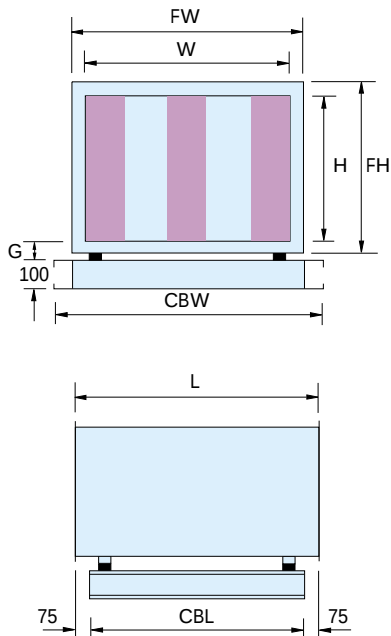


SILENCERS

Designed to fit directly to the inlet and outlet of the Weathermaster range, will also accept inlet and outlet cowls.

Silencer Model	To fit Size	Dimensions - mm								Weight kg
		W	H	L	FW	FH	G	CBW	CBL	
WA 100	1	500	250	1000	540	290	38	600	850	25
WA 200	2	550	450	1000	590	490	50	650	850	34
WA 300	3	700	500	1000	740	540	50	800	850	50
WA 400	4	900	750	1200	960	810	112.5	1000	1050	72

Channel base, feet and A.V.'s allows silencer to align with Weathermaster units.



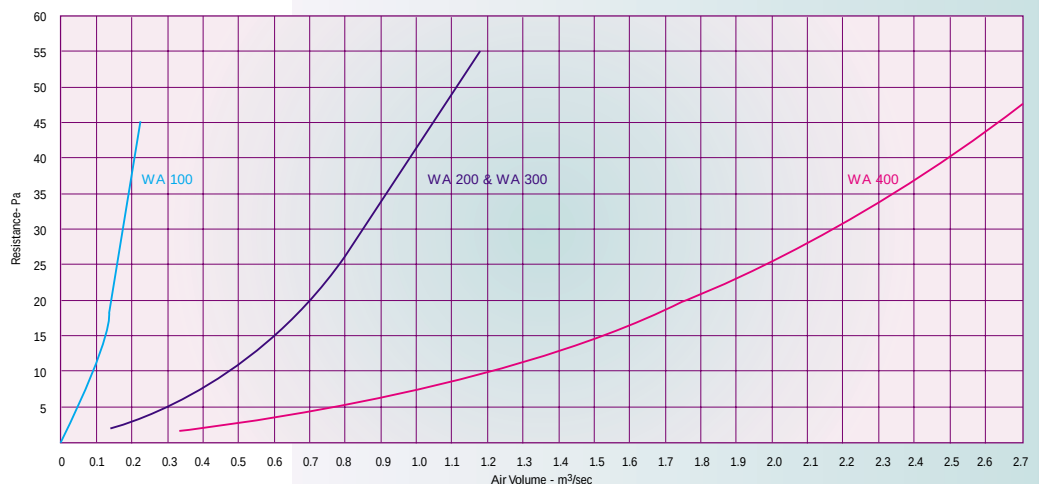
ATTENUATION

Insertion Loss, dB.

Model	Centre Frequency - Hz							
	63	125	250	500	1K	2K	4K	8K
WA 100	4	8	14	28	36	36	28	22
WA 200	4	7	13	25	32	32	23	18
WA 300	4	8	14	28	36	35	28	22
WA 400	5	5	16	30	39	39	31	26



SILENCER AIR PRESSURE LOSS



SPECIFICATION



Quality Standards

VES are members of the British Standards Institution, operating a quality management system in accordance with BS EN ISO 9001, certificate no. Q5375. All units tested to BS 848 Part 1.



CASE

The Weathermaster cases are rigidly constructed using galvanised sheet steel, single skinned as standard. Units with heater have a 25mm thick polyurethane foam lining from the heater onwards. An acoustic lining of flame retardant acoustic foam is optional, as is double skinned internal panelling with mineral fibre slab infill. All units are externally finished in polyester powder coat, standard colour light grey to BS 00A05. The cases have Mez flanges to outlet. The unit top is secured with four stainless steel lever clip fasteners and is easily removed, providing access to fan, filter and heater. The standard anti-vibration mounts are rubber compression type, designed to fit between unit and channel base. The flexible connections are PVC coated polyether.



FANS

Forward curved centrifugal fans multi-vane, double inlet double width, direct driven by hub mounted motors. The motors in all fans are fitted with high temperature automatic cut-out protection. All fans can be speed controlled using VES speed regulators.



Filters

Weathermaster supply units case size 1 & 2 contain a filter panel of continuously spun glass fibre filament, non-hydroscopic, with a dust arrestance of 84% to G3. The supply units case size 3 & 4 contain pleated synthetic filters grade G4. Where bag filters are specified, grade G4 are fitted in slide-in channels, and grades F5 and F6 front loading and clipped into frame, and provided with standard prefilters as described above.



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VES reserve the right to amend product specifications and details without notice.

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ISO 9001-2000
Cert. No. Q5375



HEATER - ELECTRIC

Electric heater batteries consist of sheathed elements mounted in removable terminal boxes and fitted into galvanised mild steel ducts. For control purposes they are split into a number of required stages. Safety cut-outs are fitted. Fan over-run timers should always be incorporated into the control system where electric heaters are used. We also recommend the fitting of an airflow pressure switch.



HEATER - HOT WATER

The standard low pressure hot water heating coils consist of two rows of copper tubes mechanically expanded into plate type aluminium fins. The headers and return bends are also copper and the connections are standard BSP fittings. Frost coils have one row of copper tubes with fins spaced at 6mm.

All heating coils are subjected to an air under water test of 17 bar. Neither a coil drain nor an air vent is fitted and should be installed on the adjacent connecting pipework.



DAMPERS

Inlet dampers are opposed blade aerofoil section, with rubber edge seals in an extruded aluminium frame, supplied with hand locking quadrant or suitable for motorising. VES can supply fitted damper actuator for 230 volt or 24 volt supply if required.



COOLING COILS

Selected to provide exact duty requirements, cooling coils are available for chilled water and DX applications. Copper tubes with aluminium fins, vinyl coated and copper fins also available. All cooling coils are of fully boxed and insulated construction and have integral moisture eliminators as standard. Drain pan has threaded drain connection. All chilled water cooling coils subjected to an air under water pressure test at 17 bar, and DX coils a pressure test at 24 bar.



SILENCERS

The standard WA Silencers are designed to fit straight on to the Weathermaster unit on both the inlet and outlet. The splitters and side liners are non-combustible resin bonded mineral fibre slab, faced with bonded glass tissue to prevent erosion of the attenuating material. The splitters are supported with galvanised sheet steel frames, and the silencer case is galvanised sheet steel of lock formed construction, terminating in proprietary duct flanges. The silencers have cases manufactured in galvanised sheet steel, with an optional external finish in polyester powder coat paint colour light grey to BS 00 A05.