Max®

BESPOKE MODULAR AIR HANDLING UNITS

Variable sizes available with 25mm or 50mm construction

Low energy / high efficiency fans

Specific Fan Power to achieve L2 Building Regulations

Variety of control options to suit application

MAX

25mm double skinned case construction, plantroom or weatherproof, flat or stacked. EC fans with integrated control, cross flow heat exchanger with optional controls and heating types.

Refer to page 8.

- Suitable for many applications
- Unlimited range of duties
- High efficiency heat recovery
- Weatherproof and plantroom units available
- Flatpacked or sectioned

VES MAX AIR HANDLING UNITS
part of a complete range of innovative, flexible products from the HVAC experts

max® bespoke

VES Better air for the built environment

max® bespoke

Why choose VES

VES has been supplying products for the HVAC industry for over 40 years, and have the in-depth knowledge and resources to provide solutions to all ventilation related requirements. We are a substantial British manufacturing company with over 250 employees, several factories plus a regional base in the north of England, and sales engineers located throughout the UK.

Complete range of products

The product range encompasses all types of ventilation products, including those required for commercial, industrial, public and domestic buildings. The emphasis is on low energy products and sophisticated controls to meet the requirements of the Building Regulations.

The range extends from a small bathroom extract fan up to a mighty central station air handling unit. There are specialist heat recovery units, high temperature fans for kitchen hood extract; duct, wall, ceiling and roof units; low noise products, silencers and fitted controls.

High quality, flexible solutions

VES operates a quality assurance system to ISO 9001, monitored by the BSI. The air movement products are tested in house to BS 848: Part 1, and submitted for external testing and approval when necessary.

VES specialise in bespoke designs for ventilation units, and whatever the issue, be it space, noise, temperature etc, can provide a design solution to meet the requirements of the project.

Superior customer service

From the moment we receive your enquiry to delivery and beyond, we have the people in place to give excellent customer service. The VES after sales service covers the whole of the UK and is among the best in the industry.

Experience and expertise

VES employs a range of experts in disciplines including air movement, noise control, air conditioning, controls, electrics and product refurbishment, and we have key staff who have worked at VES for many years.

Manufactured in the UK

VES has over 12000m² of manufacturing and stores space, and has state of the art sheet metalworking equipment, plus a large powder coating plant. VES also has a substantial controls department, and makes components such as dampers and electric heaters in-house. This not only provides employment for local people, but also many suppliers around the UK.

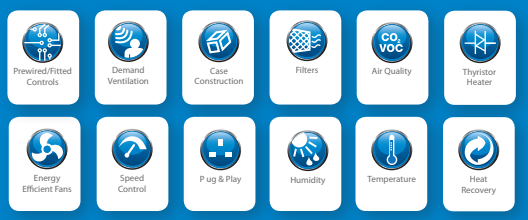
VES
Better air for the built environment

Max

As a successful brand name in the HVAC industry for over two decades, the Max range of versatile bespoke air handling units continue to develop. Available with 25mm or 50mm construction, in 50 standard case sizes, Max units offer a selection of supply, extract and heat recovery permutations, to meet a vast range of requirements and applications. Manufactured in controlled conditions at VES factories, incorporating the latest industry standard components, sourced from market leading specialists, ensuring finished quality is to the highest standard. For full product specification please visit **www.ves.co.uk/information-centre**

max® bespoke

BlueSense® Intelligent Control



Energy Saving

Intelligent Controls enhance performance whilst saving energy and money

BlueSense® Intelligent Control

Max Features and Benefits

Energy Saving

Meet regulations, minimise noise and maximise performance.

Energy saving packages combine intelligent controls technology, products and services.

Various Components

Heat Recovery solutions can provide great energy savings for customers. As well as high efficiency filtration, all forms of heating and cooling are supplied as standard with a Max unit.

Robust Construction

Excellent build quality ensures minimal noise breakout, low SFPs and air tight performance.

Energy Efficient
Energy efficient units with low SFPs to help achieve L2 Building Regulations. Units are fully tested to BS 848: Part 1 (airside performance) and DIN 45635-38 (acoustic performance).

High Performance Fans
Max units incorporate the latest fan technology solutions.
- Plug fans.
- Belt drive fans.
- Direct drive fans.
- EC fans.

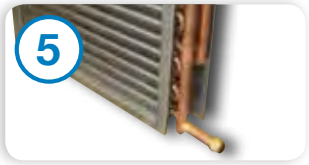
Integrated Controls
BlueSense energy saving packages combine intelligent technologies with energy saving products, services and engineering expertise.

BlueSense
Intelligent Control

Complete Ventilation Package
VES offer the expertise, products and services to provide a complete ventilation package including heat recovery unit, integrated controls and site assistance, providing peace of mind through reliable products and expert knowledge.

Filtration
A wide range of high efficiency filtration allows precise environmental control.
- Panel filter.
- Bag filter.
- Rigid filter.
- Specialist application filters ie Carbon, Grease, HEPA.

Heat Recovery
Energy savings can be achieved with a heat recovery solution.
- Crossflow plate heat exchanger.
- Heatwheel, constant and variable speed.
- Runaround system including pumpset.
- Mixing box, 2 or 3 way.



Heating
All typical forms of heating can be supplied as standard with a Max unit.
- Electric heater batteries, with modulating Thyristor control.
- Hot water coils.
- Steam.
- Gas.
- Reverse cycle Heatpump.

Cooling
Close control of supply air condition is achievable with cooling options.
- Chilled water.
- Direct expansion.
- Reverse cycle Heatpump.

Attenuation
- Various Silencer options designed and manufactured to suit noise levels required by application.
- Duct mounted, Bolt on or Built in.
- Removable splitter option to enable cleaning.
- Various infill and material types to suit site requirements.

Inlet/Outlet Sections
Designed to order, connections to suit demanding site requirements.
- Various size spigots.
- Various flange options.
- Louvres and cowls.
- Insect mesh and Bird Guards.
- Dampers, Inlet / Outlet.

Construction
Double skinned cases, available in plantroom or weatherproof, flat or stacked configuration. All units built with an aluminium tubular frame, and galvanised steel sheet panels, with resin bonded mineral wool slab infill.

Powdercoat Options
External units supplied with sloping roof, channel base, inlet and exhaust cowls. Max units are polyester powder coated to Signal Grey to RAL7004, at the VES factory. Alternative colours and powder coated internal units are also available.

Pre-wired Controls

Max unit with integral controls

+

Advanced multi application Inverter

+

Sensor options

=

BlueSense
Intelligent Control

The sign of energy saving products, services and expertise

For more information refer to page 38-41.

Easy Selection

VES Max range provides bespoke heat recovery units to suit a variety of applications.

With over 40 years' experience in manufacturing and design, VES bespoke air handlings units can meet customers specific requirements and provide a low cost, energy efficient solution to any application.

max bespoke

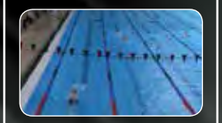
BlueSense® Intelligent Control

Max Attributes
Page 6

- Design
- Technology
- Testing
- Bespoke Applications

Construction and Manufacturing Standards
Page 7

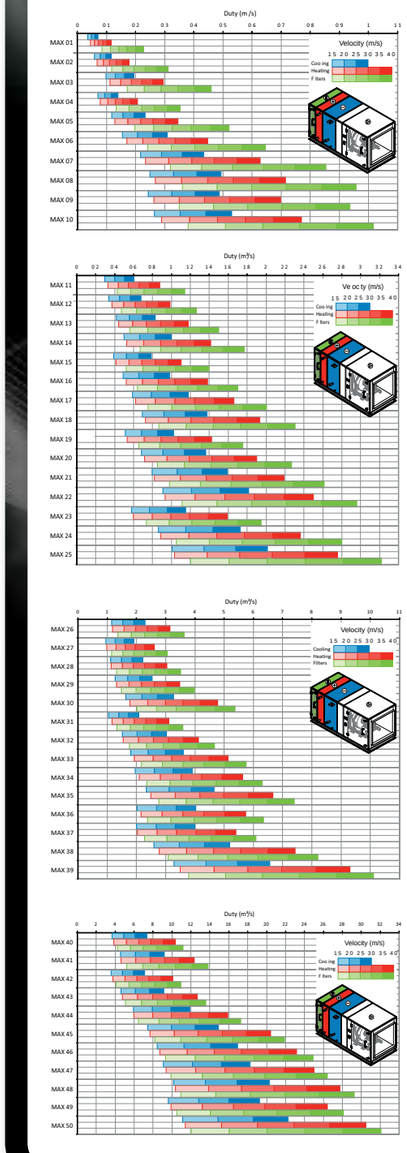
Market Sectors and Case Studies
Page 42



- Leisure Centres / Swimming Pools
- Theatres / Cinemas
- Healthcare
- Catering
- Retail Outlets
- Restaurants / Kitchens
- Local Authorities / Emergency Services

1 Specify your unit
Pages 8-11

Select your unit from a range of technical data.

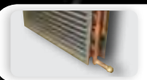


2 Choose from a range of Components
Pages 12-37

Fans
Pages 12-13

Filtration
Pages 14-15

Heat Recovery
Pages 16-21



Heating
Pages 22-25

Cooling
Pages 26-27

Inlet/Outlet Sections
Pages 28-29

Humidification / Dehumidification
Pages 30-31

Weight Calculation
Pages 32-33

Acoustic Information and Silencers
Pages 34-37

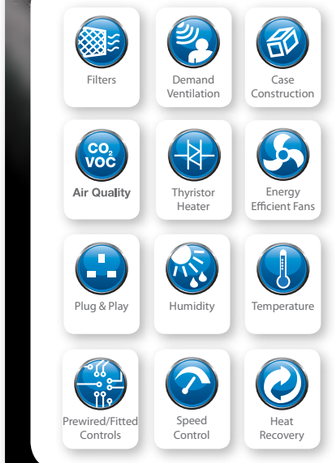
This is not an exhaustive list, many other options are available as site specific conditions require. Please contact the sales office for more details.

3 Add and specify Controls packages
Pages 38-41

Include BlueSense integrated controls to take advantage of energy saving demand ventilation, as well as many additional benefits.

Variety of control features:

- Local control or user interface options.
- Real time efficiency and energy usage calculations.
- Demand ventilation and optimised start up.
- Automatic airflow commissioning.
- Variety of heating options.
- Remote communication (Modbus®, BACnet®).

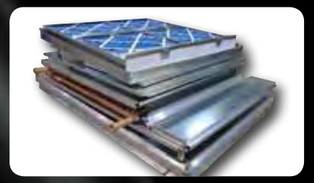


Energy monitoring is an effective way of highlighting areas for potential savings, whilst providing a key indicator to ongoing energy consumption. **Refer to pages 38-41.**

BlueSense® Intelligent Control

4 Select additional services
Page 43

- Flatpacking



- Case Study: Flatpack

- Offloading and Positioning
- Site Assistance

- Commissioning
- Spares and Maintenance

Max AHU Attributes

Design

VES draws from a wide range of sources to achieve the most practical and best designs for bespoke HVAC applications. Over 40 years experience, blended with professional staff, qualified in modern methods, successfully combines established “know how” with access to current technology, materials and processes. Using the very latest selection and quoting software, which interfaces directly with design packages and automated manufacturing, will provide a quick turnaround from enquiry through approved design to delivered equipment.

Technology

In a constantly changing industry, VES is quick to incorporate the latest technology in components and manufacturing methods, ensuring that the quality, efficiency and value of all VES products are maintained at the highest level. Utilising the latest energy monitoring and reporting methods from industry leading manufacturers such as Siemens Building Technology closed-loop control systems ensures peak efficiency and reduced running costs. Speed control and demand sensor packages allow duty to match occupancy and zone conditioning. Using a range of open communication protocols with BMS interfaces enables VES products to fit into new and existing HVAC systems.

Testing

VES has both internal state of the art facilities for testing and calibrating its products, and access to external prestigious specialist services such as the BSRIA and Ziehl-Abegg InVent technology centre. Air movement, acoustic and electrical safety and performance are assessed to the latest industry standards to ensure compliance with appropriate standards. Data published by VES is therefore accurate and authenticated.

Bespoke Applications

A comprehensive list of sensitive and challenging applications such as hospitals, old or listed buildings, controlled manufacturing environments and leisure centres with swimming pools can be accommodated. VES can supply solutions for HTM specification, low acoustic or thermal breakout, high corrosion protection, high external pressure and extreme ambient temperature. Together with specialist controls, also designed and manufactured at VES, very little is beyond the range of a Max unit.

Construction

- VES Max units are available in 50 standard case sizes. 25mm construction on sizes 1 to 39 to BS EN 1886. 50mm construction on sizes 1 to 50 to BS EN 1886. Bespoke sizes are also available.
- Extruded aluminium framework with aluminium corner joints.
- Flush fitting galvanised steel double skinned panels.
- High grade sealing gaskets.
- Optional illuminated chambers with viewing ports.
- Mineral wool infill offered as standard, with the option of other specialist infill for thermal and acoustic sensitive applications, see page 35 for case insertion loss.
- Plantroom and weatherproof types.
- Multiple airflow and unit configurations.
- Units can be supplied in sections with joining brackets fitted to ease on-site assembly.
- External units are powdercoated finished to signal grey, RAL7004 *(other colours available)*, at the VES factory.
- Internal and other alternative powdercoating options available.
- Sizes 1 to 8 Mounting brackets fitted as standard.
- Sizes 9 to 50 Channel base fitted as standard.
- Flat, mono pitched or dual roofs available.

Components shown throughout brochure are part of a composite case.

Please specify the number of sections you require the unit to be manufactured in.

Manufacturing Standards

Case Construction

VES Max unit manufacturing processes are carried out in accordance with Ventilation For Buildings BS EN 1886 Mechanical performance and BS EN 13053 Rating and Performance together with other appropriate industry standards and when required, specialist standards for dedicated applications.

The Max tubular frame and double skinned panel construction has been formally tested to BS EN 1886 standard for mechanical performance which includes Strength, leakage, filter bypass and thermal properties. The table below shows the achieved grades for section of the test.

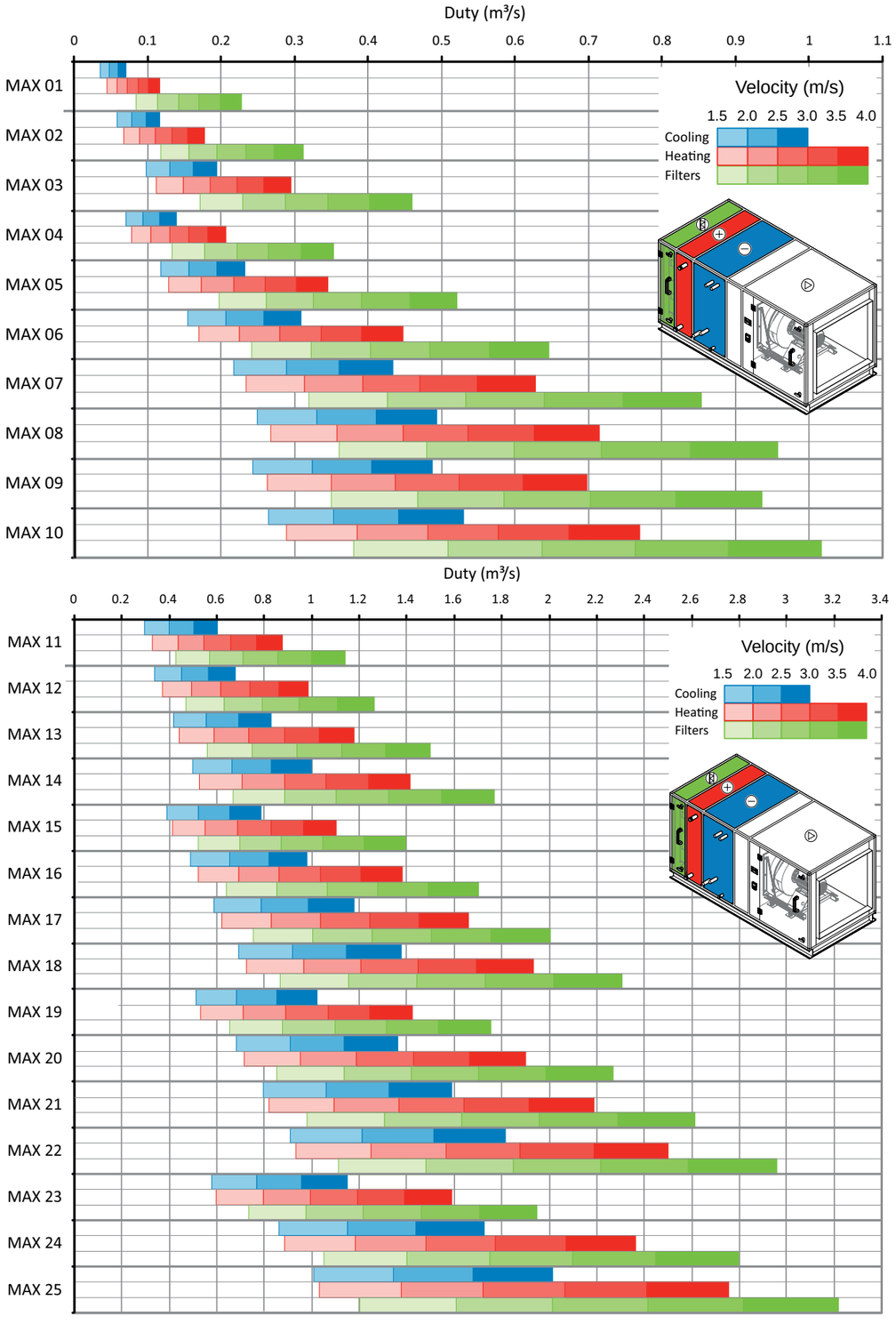
	25mm Construction	50mm Construction
Panel and frame deflection	D1	D1
Case air leakage	L2	L2
Filters bypass leakage	F9	F9
Thermal bridging	TB5	TB5
Thermal transmittance	T5	T5

Note: Units can be manufactured to achieve TB3 on request.

Max Coding Structure

Product	Size		Construction		Configuration		
MAX	01 to 50	/	A	25mm	/ P Plantroom	/	S
			B	50mm	W Weatherproof		
			C	25mm Customised	SW Stacked Weatherproof		
			D	50mm Customised	FW Flat Weatherproof		
					SP Stacked Plantroom		
					FP Flat Plantroom		

Product Selection



Note: Heating velocities are based on water heating coils. Velocities across other forms of heating will vary.

Product: MAX
Size: 01 to 25

The charts opposite, listing each Max unit size against air volume, illustrates the relationship between air velocity, and the potential use of heating (water) cooling and filters.
A unit size can be selected depending on the intended components, where a combination of components is required then the lowest figure, ie cooling before heating, heating before filter, should be used.
Please note, these are for guidance only, final unit size will depend on the parameters and selection of components. Please contact the VES sales office on +44 (0)8448 15 60 60 for more details.

Sizes	25mm		50mm	
MAX Model	Width	Height	Width	Height
01	400	350	450	400
02	500	350	550	400
03	500	450	550	500
04	550	350	600	400
05	550	450	600	500
06	650	450	700	500
07	650	550	700	600
08	650	600	700	650
09	700	550	750	600
10	750	550	800	600

Airflow (m^3/s) Based on Velocity of					
1.5m/s through heating coil	2.0m/s through heating coil	2.5m/s through heating coil	3.0m/s through heating coil	3.0m/s through cooling coil	3.0m/s through filter
0.04	0.06	0.07	0.09	0.07	0.17
0.07	0.09	0.11	0.13	0.12	0.23
0.11	0.15	0.18	0.22	0.19	0.34
0.08	0.10	0.13	0.16	0.14	0.26
0.13	0.17	0.22	0.26	0.23	0.39
0.17	0.22	0.28	0.34	0.31	0.48
0.23	0.31	0.39	0.47	0.42	0.64
0.27	0.36	0.45	0.54	0.49	0.72
0.26	0.35	0.44	0.52	0.48	0.70
0.29	0.38	0.48	0.58	0.52	0.76

Sizes	25mm		50mm	
MAX Model	Width	Height	Width	Height
11	750	600	800	650
12	750	650	800	700
13	800	700	850	750
14	800	800	850	850
15	900	600	950	650
16	900	700	950	750
17	900	800	950	850
18	900	900	950	950
19	1000	650	1050	700
20	1000	800	1050	850
21	1000	900	1050	950
22	1000	1000	1050	1050
23	1200	600	1250	650
24	1200	800	1250	850
25	1200	900	1250	950

Airflow (m^3/s) Based on Velocity of					
1.5m/s through heating coil	2.0m/s through heating coil	2.5m/s through heating coil	3.0m/s through heating coil	3.0m/s through cooling coil	3.0m/s through filter
0.33	0.44	0.55	0.66	0.60	0.86
0.37	0.49	0.62	0.74	0.66	0.95
0.44	0.59	0.74	0.88	0.83	1.13
0.53	0.71	0.88	1.06	0.91	1.33
0.41	0.55	0.69	0.83	0.69	1.05
0.52	0.69	0.86	1.04	0.88	1.28
0.62	0.83	1.04	1.24	1.08	1.50
0.73	0.97	1.21	1.45	1.28	1.73
0.53	0.71	0.89	1.07	0.91	1.32
0.71	0.95	1.19	1.43	1.25	1.70
0.82	1.09	1.37	1.64	1.48	1.96
0.94	1.25	1.57	1.88	1.70	2.22
0.60	0.80	0.99	1.19	1.01	1.46
0.89	1.18	1.48	1.78	1.58	2.10
1.03	1.38	1.72	2.07	1.87	2.42

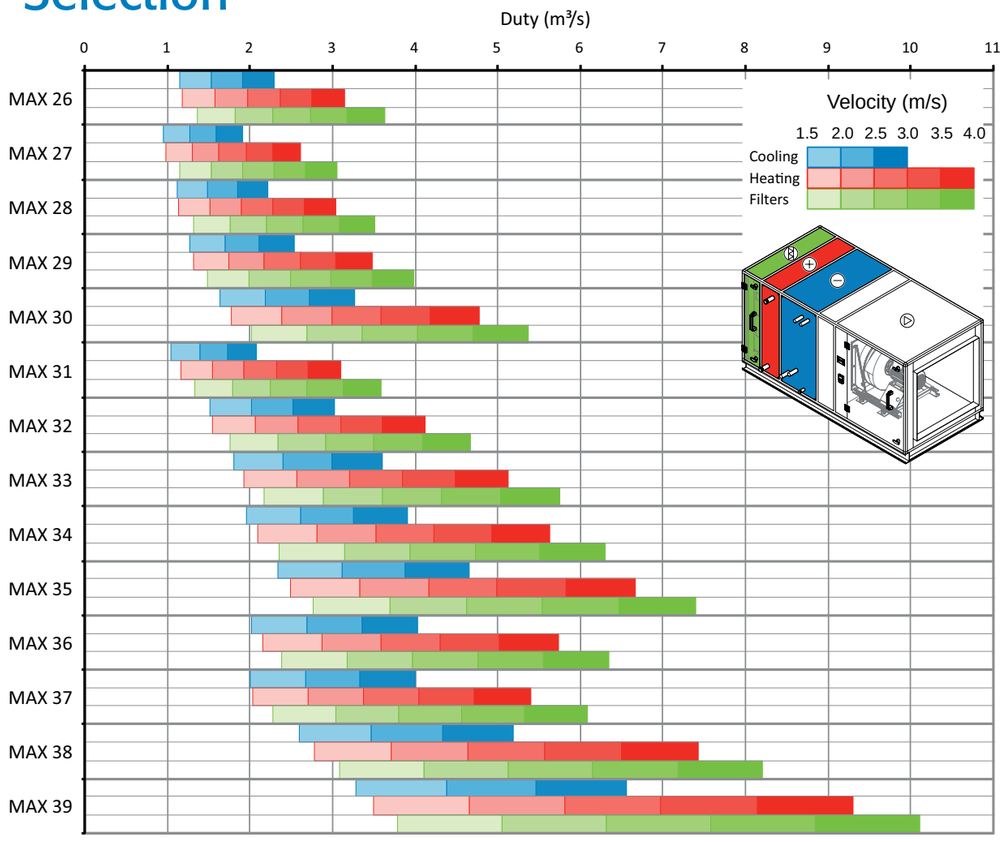
All dimensions are in mm

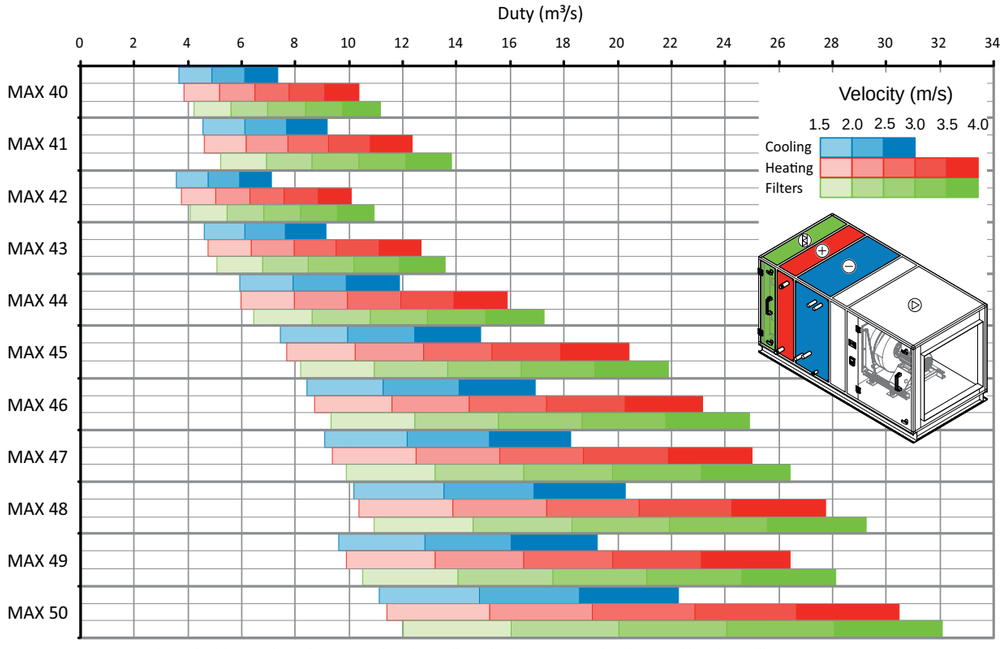
Max sizes 1-8 are fitted with Drop Rod mounting brackets as standard, Max sizes 9-50 are fitted with a 100mm channel base as standard. Alternative sizes and mounting options available on request.
Weather lids are between 75 – 150mm high dependent on unit size and configuration, alternative sizes available on request.
Refer to page 32 and 33 for weight calculation.

Energy Efficiency Rating

With the selection of the most efficient components available, Max units can be rated to the European Energy Efficiency classification.
Using the specialist Max design software which is configured with the appropriate formulae to account for air velocity, pressure losses, fan electrical power, and recovery efficiency, Max units can be issued with a rating based on the European standard BS EN 13053.
It must be noted that the most practical component selection, in varied climatical conditions may not result in the perceived best energy efficient rating.
VES quotes can be supplied with an energy rating for the selected unit.

Product Selection





Note: Heating velocities are based on water heating coils. Velocities across other forms of heating will vary.
Duties over 27m³/s can be achieved using multiple fan arrangements.

Product: MAX
Size: 26 to 50

The charts opposite, listing each Max unit size against air volume, illustrates the relationship between air velocity, and the potential use of heating (water), cooling and filters.
A unit size can be selected depending on the intended components, where a combination of components is required then the lowest figure, ie cooling before heating, heating before filter, should be used.
Please note, these are for guidance only, final unit size will depend on the parameters and selection of components. Please contact the VES sales office on +44 (0)8448 15 60 60 for more details.

Sizes	25mm		50mm	
MAX Model	Width	Height	Width	Height
26	1200	1000	1250	1050
27	1300	800	1350	850
28	1300	900	1350	950
29	1300	1000	1350	1050
30	1300	1300	1350	1350
31	1500	800	1550	850
32	1500	1000	1550	1050
33	1500	1200	1550	1250
34	1500	1300	1550	1350
35	1500	1500	1550	1550
36	1650	1200	1700	1250
37	1900	1000	1950	1050
38	1900	1300	1950	1350
39	2000	1500	2050	1550

Sizes	50mm	
MAX Model	Width	Height
40	2050	1700
41	2050	2050
42	2550	1350
43	2550	1650
44	2550	2050
45	2550	2550
46	2850	2550
47	3050	2550
48	3350	2550
49	3650	2550
50	3650	2550

All dimensions are in mm

Airflow (m³/s) Based on Velocity of					
1.5m/s through heating coil	2.0m/s through heating coil	2.5m/s through heating coil	3.0m/s through heating coil	3.0m/s through cooling coil	3.0m/s through filter
1.18	1.58	1.97	2.37	2.16	2.73
0.98	1.31	1.63	1.96	1.75	2.30
1.14	1.52	1.90	2.28	2.07	2.64
1.30	1.74	2.17	2.61	2.39	2.99
1.79	2.39	2.99	3.59	3.28	4.04
1.16	1.55	1.94	2.32	2.09	2.69
1.55	2.07	2.58	3.10	2.85	3.51
1.92	2.56	3.20	3.84	3.56	4.32
2.11	2.82	3.52	4.23	3.92	4.73
2.50	3.33	4.16	5.00	4.67	5.55
2.15	2.87	3.58	4.30	3.99	4.77
2.03	2.70	3.38	4.05	3.76	4.57
2.79	3.71	4.64	5.57	5.20	6.16
3.49	4.65	5.82	6.98	6.57	7.59

Airflow (m³/s) Based on Velocity of					
1.5m/s through heating coil	2.0m/s through heating coil	2.5m/s through heating coil	3.0m/s through heating coil	3.0m/s through cooling coil	3.0m/s through filter
3.89	5.19	6.48	7.78	7.36	8.37
4.63	6.17	7.71	9.25	9.20	10.38
3.79	5.06	6.32	7.58	7.12	8.21
4.77	6.36	7.95	9.53	9.11	10.20
5.96	7.95	9.93	11.92	11.87	12.95
7.66	10.22	12.77	15.33	14.92	16.43
8.69	11.59	14.49	17.89	16.93	18.69
9.38	12.50	15.63	18.76	18.27	19.82
10.41	13.88	17.35	20.81	20.28	21.95
9.91	13.21	16.52	19.82	19.25	21.11
11.44	15.25	19.06	22.87	22.29	24.07

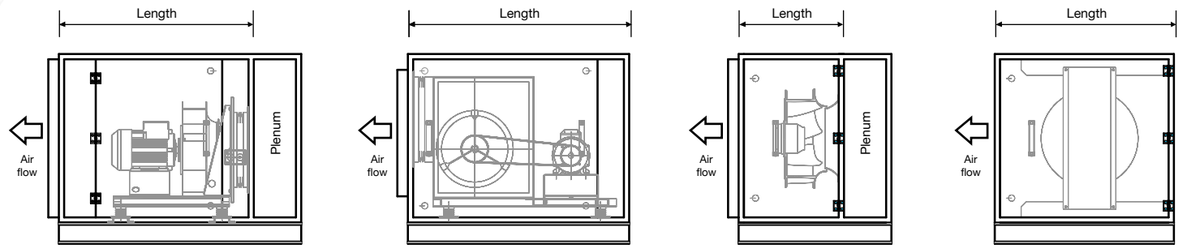
Max sizes 1-8 are fitted with Drop Rod mounting brackets as standard, Max sizes 9-50 are fitted with a 100mm channel base as standard. Alternative sizes and mounting options available on request.
Weather lids are between 75 – 150mm high dependent on unit size and configuration, alternative sizes available on request.
Refer to page 32 and 33 for weight calculation.

Energy Efficiency Rating

With the selection of the most efficient components available, Max units can be rated to the European Energy Efficiency classification.
Using the specialist Max design software which is configured with the appropriate formulae to account for air velocity, pressure losses, fan electrical power, and recovery efficiency, Max units can be issued with a rating based on the European standard BS EN 13053.
It must be noted that the most practical component selection, in varied climatical conditions may not result in the perceived best energy efficient rating.
VES quotes can be supplied with an energy rating for the selected unit.

Fans

- Max units are selected with either plug, belt or direct driven fans.
- Priority is given to selecting the best possible efficiency and lowest specific fan powers.
- Motors are suitable for inverter speed control and are available with the current IE options.
- EC (Electronically Commutated) motors are also available.
- Pre-wiring to isolators or fitted control panels are available.
- Fan motor assemblies are fully vibration islolated.
- Run and standby, and duplex arrangements available.
- Motors out of air stream.



Due to the bespoke nature of Max units Specific fan powers (SFPs) will vary. Please contact the Sales office for unit SFPs as these are calculated based on Airflow, external pressure and components selected.

Plenums will be fitted where necessary. Please contact the VES Sales Office for dimensions of HTM fan sections.

MAX Model	Plug Fan Section		Direct Drive Rotor Motor Section				Belt Drive Fan Section					
			Vertical		Side		Standard		Top or Bottom Outlet		Additional Standby Motor	
	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight
01	*	*	250	5	475	5	Belt Drive Fans are not available on this range of sizes					
02			250	5	475	5						
03	775	25	300	5	600	7						
04	*	*	250	5	475	5						
05	775	25	300	5	600	7						
06	775	25	300	10	600	7						
07	775	35	400	10	700	10	825	35	850	35	425	10
08	775	35	400	10	700	10	825	35	850	35	425	10
09	775	35	400	10	700	10	825	35	850	35	425	10
10	775	35	400	10	700	10	825	35	850	35	425	10
11	775	35	400	10	700	10	825	40	850	35	425	10
12	875	40	400	10	700	10	825	50	950	45	425	15
13	875	45	400	15	800	15	900	50	950	45	425	15
14	925	60	400	15	800	15	975	55	975	50	425	15
15	775	35	400	10	700	10	825	40	850	35	425	10
16	875	45	400	15	800	15	900	50	950	45	425	15
17	925	60	400	15	800	15	975	60	1025	50	425	20
18	925	70	450	25	975	25	1025	65	1075	60	425	25
19	875	40	400	10	700	10	900	50	950	45	425	15
20	925	60	400	15	800	15	975	60	1025	50	425	20
21	925	70	450	25	975	25	1025	65	1075	60	425	25
22	1025	80	450	25	975	25	1050	75	1150	65	425	25
23	775	35	400	15	700	15	825	40	850	35	425	10
24	925	65	400	20	800	20	975	60	1025	50	425	20
25	925	75	450	25	975	25	1025	65	1075	60	425	25

* Plug fans are not available on this range of sizes.

All dimensions are approximate and in mm
All weights are approximate and in kg

MAX Model	Plug Fan Section		Direct Drive Rotor Motor Section				Belt Drive Fan Section					
			Vertical		Side		Standard		Top or Bottom Outlet		Additional Standby Motor	
	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight
26	1025	80	450	25	975	30	1050	75	1150	65	425	25
27	925	65	450	25	975	25	975	60	1025	50	425	20
28	925	75	450	25	975	25	1025	65	1075	60	425	25
29	1025	80	450	30	975	30	1050	75	1150	65	425	25
30	1175	115	Direct Drive Rotor Motors are not available on this range of sizes				1275	190	1400	175	475	50
31	925	65					975	60	1025	50	425	20
32	1025	85					1050	80	1150	65	425	25
33	1175	115					1200	140	1300	125	425	40
34	1175	115					1275	190	1400	175	475	50
35	1375	295					1350	235	1475	215	475	65
36	1175	115					1200	140	1300	125	425	40
37	1025	85					1050	80	1150	65	425	25
38	1175	120					1275	195	1400	175	425	50
39	1375	300					1350	240	1475	215	425	65
40	1425	305					1600	385	1725	355	475	80
41	1675	490					1800	555	1975	525	575	150
42	1225	125					1325	200	1450	175	475	50
43	1425	310					1600	390	1725	355	475	80
44	1675	500					1800	560	1975	525	575	150
45	1675	510					2125	640	2375	590	575	170
46	1675	515					2125	645	2375	590	575	170
47	1675	520					2125	645	2375	590	575	170
48	1675	525					2125	655	2375	590	575	170
49	1675	525					1950	635	2175	570	575	180
50	1675	530					2125	660	2375	590	475	170

All dimensions are approximate and in mm
All weights are approximate and in kg

Please note direct drive rotor motors are only suitable for low pressure applications for more information please contact the VES sales office.

Direct Drive Fans

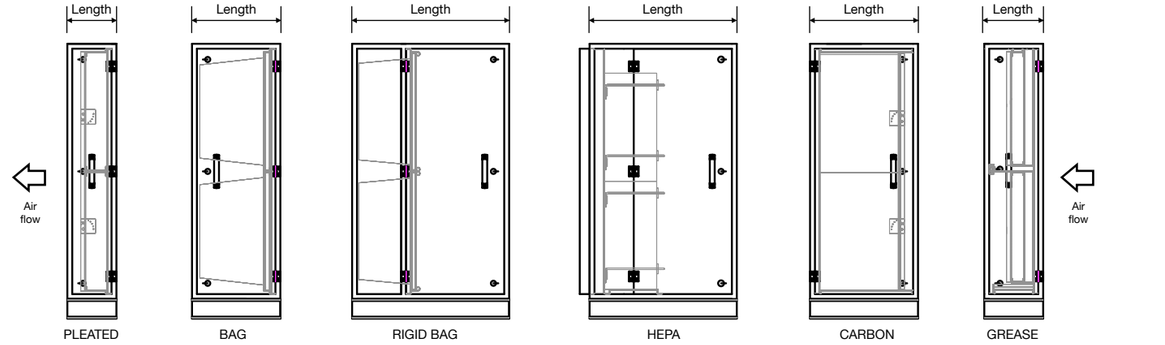
- Integrated inlet ring designed for optimum air flow, made of galvanised steelsheet with measuring device for determination of flow rate.
- Instant and accurate measuring of the air volume, right at the fan. There will be no need for duct traverse. Each unit is fitted with pressure tapping connections on the outside of the case, these are piped inside the unit to provide an accurate differential static pressure (Pdiff) across the fan.
- Air volume may be measured on site using a micro manometer or directly by VES factory fitted intelligent control module.
- Plug and EC fans are ErP 2015 compliant.

Belt Drive Fans

- Fans are centrifugal, multivane type, D.I.D.W., with forward or backward curved impeller.
- The fans are supplied with pre-greased sealed for life ball bearings.
- The fan and motor are connected by vee belt drive, pre aligned and tensioned at the VES works. The fan and motor are mounted on a common base frame, which is fully isolated from the case with spring anti vibration mounts and flexible connection to the fan outlet.
- Motors can be external to airstream and connected to an extended shaft fan with bearing and drive also outside of the unit. In this situation the fan, motor and case are rigidly coupled, with the anti-vibration mounts and flexible connection external to unit.

Filtration

- Pleated Filter up to grade F8.
- Bag Filter up to grade F8.
- Rigid Pleated Filter up to grade F8.
- Rigid Bag Filter up to F9.
- HEPA Filter up to grade H14.
- Carbon Filters to suit application.
- Grease Filters, mesh or baffle to suit application.
- Other specialist filters available.
- Filter pressure monitoring devices available.



MAX Model	Pleated		Bag						Rigid Bag		HEPA		Carbon		Grease	
			8" filter		16" filter		30" filter									
	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight
01	250	2	450	2	500	2	825	2	Rigid bag filters are not available on this range of sizes		700	10	450	20	250	5
02	250	5	450	5	500	5	825	5			700	12	450	25	250	5
03	250	5	450	5	500	5	825	5			700	15	450	40	250	5
04	250	5	450	5	500	5	825	5			700	12	450	30	250	5
05	250	5	450	5	500	5	825	5			700	17	450	45	250	5
06	250	5	450	5	500	5	825	5			700	20	450	50	250	7
07	250	5	450	5	500	7	825	7			700	27	450	65	250	7
08	250	5	450	5	500	7	825	7			700	30	450	75	250	7
09	250	7	450	5	500	7	825	7	700	7	700	30	450	70	250	7
10	250	7	450	7	500	7	825	7	700	25	700	30	450	80	250	10
11	250	7	450	7	500	7	825	10	700	12	700	40	450	85	250	10
12	250	7	450	7	500	7	825	10	700	12	700	45	450	95	250	10
13	250	7	450	7	500	10	825	10	700	12	700	50	450	115	250	12
14	250	10	450	10	500	15	825	15	700	15	700	45	450	125	250	15
15	250	7	450	10	500	10	825	10	700	15	700	50	450	105	250	12
16	250	7	450	10	500	10	825	15	700	15	700	45	450	130	250	12
17	250	10	450	10	500	10	825	15	700	15	700	50	450	140	250	15
18	250	12	450	15	500	15	825	15	700	20	700	60	450	165	250	17
19	250	7	450	10	500	10	825	15	700	15	700	65	450	130	250	12
20	250	12	450	15	500	15	825	20	700	20	700	75	450	160	250	17
21	250	12	450	15	500	15	825	20	700	25	700	80	450	185	250	20
22	250	12	450	10	500	15	825	15	700	25	700	55	450	210	250	20
23	250	10	450	10	500	10	825	20	700	15	700	75	450	145	250	15
24	250	12	450	15	500	15	825	20	700	25	700	90	450	195	250	20
25	250	15	450	15	500	20	825	25	700	25	700	100	450	225	250	25

All dimensions are approximate and in mm
All weights are approximate and in kg

MAX Model	Pleated		Bag						Rigid Bag		HEPA		Carbon		Grease	
			8" filter		16" filter		30" filter									
	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight
26	250	15	450	15	500	20	825	20	700	30	700	85	450	255	250	25
27	250	15	450	15	500	20	825	25	700	30	700	95	450	210	250	25
28	250	15	450	15	500	20	825	25	700	30	700	105	450	245	250	25
29	250	15	450	20	500	20	825	30	700	30	700	140	450	275	250	30
30	250	17	450	20	500	25	825	25	875	45	700	95	450	375	250	35
31	250	15	450	20	500	20	825	30	875	30	700	120	450	235	250	25
32	250	17	450	20	500	25	825	25	875	40	700	145	450	310	250	30
33	250	20	450	25	500	30	825	35	875	40	700	160	450	385	250	35
34	250	20	450	25	500	30	825	35	800	45	700	195	450	420	250	40
35	250	30	450	30	500	35	825	40	800	50	700	165	450	515	250	45
36	250	25	450	25	500	30	825	35	800	40	700	160	450	425	250	40
37	250	25	450	25	500	30	825	35	800	45	700	210	450	410	250	40
38	250	25	450	30	500	35	825	45	825	60	700	260	450	560	250	50
39	250	35	450	40	500	45	825	55	825	75	700	285	450	685	250	60
40	250	35	450	40	500	50	825	60	875	85	700	340	450	760	250	65
41	250	45	450	50	500	60	825	75	875	105	700	280	450	910	250	75
42	250	35	450	40	500	45	825	55	875	80	700	345	450	740	250	60
43	250	45	450	50	500	60	825	70	875	105	700	445	450	915	250	80
44	250	55	450	60	500	75	825	90	875	130	700	550	450	1205	250	95
45	250	60	450	70	500	85	825	110	950	165	700	580	450	1475	250	120
46	250	70	450	80	500	95	825	120	950	185	700	635	450	1545	250	130
47	250	75	450	85	500	105	825	130	950	200	700	690	450	1695	250	140
48	250	80	450	95	500	115	825	140	950	210	700	690	450	1850	250	150
49	250	80	450	90	500	110	825	135	950	185	700	690	450	1850	250	150
50	250	85	450	100	500	120	825	155	950	240	700	760	450	2035	250	165

All dimensions are approximate and in mm
All weights are approximate and in kg

Grade	Pre Filter Required	Filter Type	Typical Application
G4	No	P	General office areas
F6	Primary	P, B & RB	Hotels, shopping centres, theatres, conference centres & computer rooms
F7	Primary	P, B & RB	Clean rooms, pharmaceutical, laboratory and medical fields
F8	Primary	P, B & RB	Final filtration for research and manufacturing applications in the electronics, optical pharmaceutical, laboratory and medical fields
F9	Primary	B & RB	
H10	Primary & Secondary	RB & HEPA	
H11	Primary & Secondary	HEPA	
H12	Primary & Secondary	HEPA	
H13	Primary & Secondary	HEPA	
H14	Primary & Secondary	HEPA	
	Primary & Secondary	CARBON	Absorption of odours and low toxicity gases for airports, museums, kitchens, hospitals and clean rooms
		GREASE	Generally used within kitchen extract systems to prevent grease from getting into the extract system

Typical Filter Application Chart - P= Panel, B= Bag, RB = Rigid Bag

Filters

- Panel filters available as clip in or slide in.
- Bag filters will either be mounted in channels for side withdrawal or clipped into purpose made frames for grade F6 and above
- All filters will have been subject to the Eurovent 4/5 (BS6540 Part 1) test procedure
- Filters are available with metal frames on request
- Viewing portholes and bulkhead lights are available as optional extras.

Components shown throughout brochure are part of a composite case. Please specify the number of sections you require the unit to be manufactured in. When Filters of grade F7 and above are fitted as front withdrawal and require an access section. Please contact the Sales office for special configurations. Panel filter sections having more than four filters wide must have a minimum of 550mm to enable the filters to be reached This only applies where panel filters only are fitted i.e. no bag filters. Where rigid filters are used an access section is needed prior to the section to allow for fitting the filters.

Pressure and Airflow Gauges

- Model M8 has a range of 0-200Pa, the M15 range is 0-375Pa.
- Fitted Magnahelic gauges available in ranges up to 750 Pa.
- Fitted Mininahelic gauges available in ranges up to 500 Pa.
- Fitted pressure transducer for modulated fan and filter monitoring.
- Fitted pressure switches for up to 500 Pa.

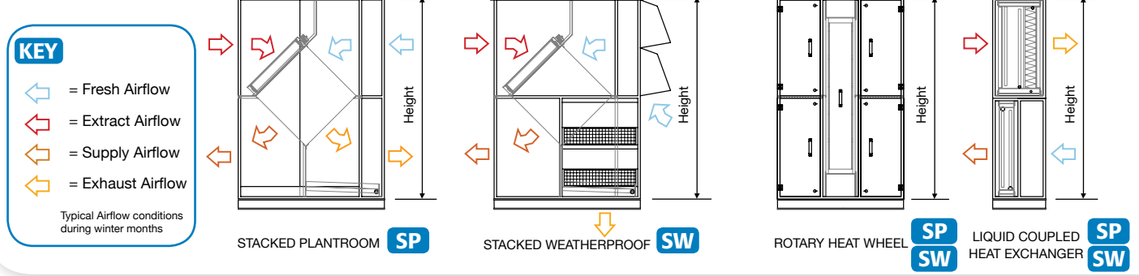
Heat Recovery

- Cross Flow Plate Heat Exchanger.
  - Single Plate Heat Exchanger. Efficiency up to 65%.
  - Double Plate Heat Exchanger. Efficiency up to 80%.
  - Counter Flow Heat Exchangers also available.
  - Optional Bypass with motorisation alternatives.
- Rotary Heat Wheel. Efficiency up to 75% and above.
  - Constant / Variable Speed Control.
  - Hygroscopic / Non-Hygroscopic.
- Liquid Coupled Heat Exchanger (Runaround Coil Systems). Efficiency up to 50%.
  - Pump set available.
- Mixing Box, two or three way. Refer to pages 18-21.
  - Optional motorisation. Efficiency dependent on local conditions.
- Protective coatings or materials to suit application.

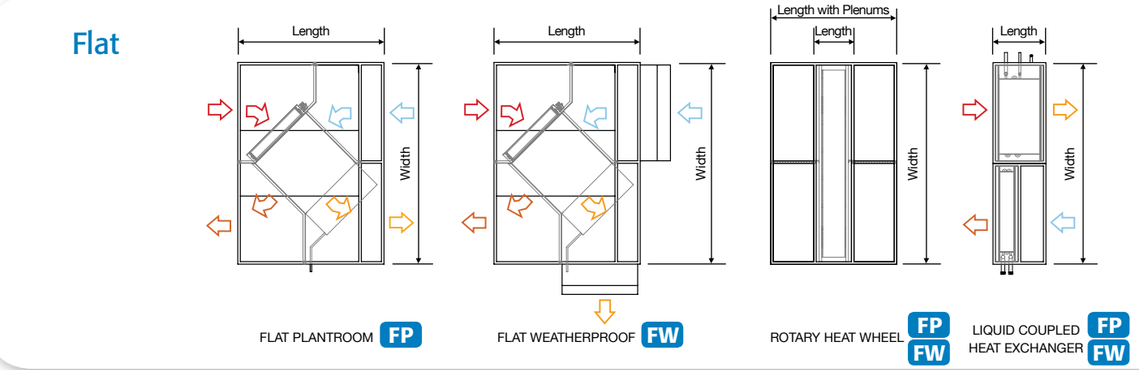
Product	Size	Construction	Configuration
MAX		/	/ SP / SW / FP / FW

Cross flow heat exchanger section lengths vary dependent on duty and efficiency requirements.
Plenums will be fitted where necessary. Please contact the VES Sales Office for recommended size.

Stacked



Flat



MAX Model	Cross Flow Plate Heat Exchanger								Rotory Heat Wheel				Liquid Coupled Heat Exchanger	
	Stacked				Flat				Length	Length with Plenums	Stacked	Flat		
	Length	Width	Height	Weight	Length	Width	Height	Weight			Weight	Weight	Length	Weight
01	675	400	700	12-15	675	800	350	10 - 12	450	1050	35	20	575	35
02	675	500	700	12-15	675-800	1000	350	12 - 15	450	1050	50	20	575	40
03	675	500	900	12-15	675-800	1000	450	15 - 20	450	1050	50	30	575	40
04	675	550	700	12-15	675-950	1100	350	10 - 15	450	1050	60	20	575	40
05	675	550	900	15-17	675-950	1100	450	15 - 25	450	1050	60	30	575	50
06	675	650	900	17-20	800-1100	1300	450	20 - 35	450	1050	75	35	575	50
07	675 - 950	650	1100	20-27	800-1100	1300	550	20 - 35	450	1050	75	50	575	55
08	675 - 950	650	1200	20-30	800-1100	1300	600	17 - 27	450	1050	75	55	575	60
09	675 -950	700	1100	22-40	950-225	1400	550	27 - 45	450	1050	85	50	575	65
10	675 - 950	750	1100	25-40	1100-1375	1500	550	37 - 55	450	1050	105	50	575	65
11	675 - 950	750	1200	25-40	1100-1375	1500	600	40 - 55	450	1050	105	60	575	70
12	800 - 1100	750	1300	30-45	1100-1375	1500	650	40 - 55	450	1050	105	70	575	70
13	950 - 1225	800	1400	35-50	1100-1375	1600	700	40 - 50	450	1050	115	75	575	80
14	1100 - 1375	800	1600	45-65	1100-1375	1600	800	45 - 65	450	1050	115	95	575	85
15	675 - 950	900	1200	30-45	1225-1650	1800	600	45 - 70	450	1050	125	60	575	80
16	950 - 1225	900	1400	40-55	1225-1650	1800	700	45 - 70	450	1050	125	75	575	85
17	1100 - 1375	900	1600	45-65	1225-1650	1800	800	50 - 80	450	1050	125	95	575	100
18	1100- 1375	900	1800	55-85	1225-1650	1800	900	55 - 80	450	1050	125	120	575	105
19	800 - 1100	1000	1300	35-45	1225-1650	2000	650	40 - 55	450	1050	140	70	575	90
20	1100 - 1375	1000	1600	50-70	1225-1650	2000	800	55 - 85	450	1050	140	95	575	105
21	1100 - 1375	1000	1800	60-95	122-1650	2000	900	55 - 85	450	1050	140	120	575	120
22	1225 - 1650	1000	2000	60-95	1225-1650	2000	1000	60 - 95	450	1050	140	130	575	125
23	675 - 950	1200	1200	35-50	1650-2225	2400	600	60 - 95	450	1050	160	65	575	100
24	1100 - 1375	1200	1600	60-85	1650-2225	2400	800	80 - 130	450	1650	175	100	575	125
25	1100 - 1375	1200	1800	70-110	1650-2225	2400	900	85 - 130	450	1650	175	125	575	140

All dimensions are approximate and in mm
All weights are approximate and in kg

MAX Model	Cross Flow Plate Heat Exchanger								Rotory Heat Wheel				Liquid Coupled Heat Exchanger	
	Stacked				Flat				Length	Length with Plenums	Stacked	Flat		
	Length	Width	Height	Weight	Length	Width	Height	Weight			Weight	Weight	Length	Weight
26	1225 - 1650	1200	2000	70-110	1650 - 2225	2400	1000	95-145	450	1650	175	135	575	150
27	1100 - 1375	1300	1600	65-85	1950 - 2500	2600	800	100-150	450	1650	195	100	575	135
28	1100 - 1375	1300	1800	75-120	1950 - 2500	2600	900	110-165	450	1650	195	125	575	150
29	1225 - 1650	1300	2000	80-125	1950 - 2500	2600	1000	125-185	450	1650	195	135	575	160
30	1650 - 2225	1300	2600	130-215	1950 - 2500	2600	1300	170-260	450	1650	195	185	575	200
31	1100 - 1375	1500	1600	75-105	1950 - 2500	3000	800	110-165	450	1650	240	105	575	155
32	1225 - 1650	1500	2000	90-145	1950 - 2500	3000	1000	130-195	450	1650	240	140	575	185
33	1650 - 2225	1500	2400	125-200	1950 - 2500	3000	1200	135-200	450	1650	240	175	575	215
34	1650 - 2225	1500	2600	125-200	1950 - 2500	3000	1300	150-220	450	1650	240	190	575	230
35	1950- 2500	1500	3000	155-230	1950 - 2500	3000	1500	155-225	450	1650	240	230	575	265
36	1650 - 2225	1650	2400	150-245	1950 - 2500	3300	1200	145-215	450	1650	275	175	575	235
37	1225 - 1650	1900	2000	130-215	1950 - 2500	3800	1000	150-230	450	1650	325	145	575	230
38	1650 - 2225	1900	2600	170-275	1950 - 2500	3800	1300	160-235	450	1650	325	195	575	290
39	1950 -2500	2000	3000	270-415	1950 - 2500	4000	1500	205-300	450	1650	350	235	575	345
40	2000 - 2550	2050	1200	275-425	2000 - 2550	4100	1700	230-345	500	1700	350	270	625	380
41	2000 -2550	2050	3400	250-370	2000 - 2550	4100	2050	250-365	500	1700	350	360	625	450
42	1700 - 2275	2550	4100	255-425	2000 - 2550	5100	1350	195-285	500	1700	510	205	625	385
43	2000 - 2550	2550	2700	285-425	2000 - 2550	5100	1650	200-280	500	1700	510	265	625	470
44	2000 - 2550	2550	3300	300-445	2000 - 2550	5100	2050	260-370	500	1700	510	365	625	560
45	2000 - 2550	2550	4100	320-465	2000 - 2550	5100	2550	320-460	500	1700	510	515	625	665
46	2000 - 2550	2850	5100	360-520	2000 - 2550	5700	2550	335-475	500	1700	845	520	625	735
47	2000 - 2550	3050	5100	385-560	2000 - 2550	6100	2550	340-480	500	1700	945	525	625	775
48	2000 - 2550	3350	5100	425-615	2000 - 2550	6700	2550	355-495	500	1700	1105	525	625	835
49	2000 - 2550	3650	4500	460-675	2000 - 2550	7300	2250	325-450	500	1700	1270	435	625	815
50	2000 - 2550	3650	5100	475-690	2000 - 2550	7300	2550	365-505	500	1700	1270	530	625	900

All dimensions are approximate and in mm
All weights are approximate and in kg

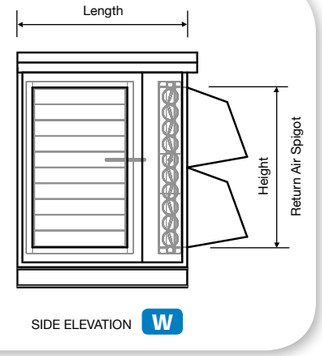
Two way Mixing Box

- The mixing box section is used to mix the exhaust air with fresh air.
- It consists of two or three sets of dampers whose operation is to control the mix ratio of fresh outside air and recalculated exhaust air in the supply air maintaining the supply airflow rate.
- Mixing the correct amount of cooler outside air with warmer return air can be used to approach the desired supply air temperature.

Product Size Construction Configuration

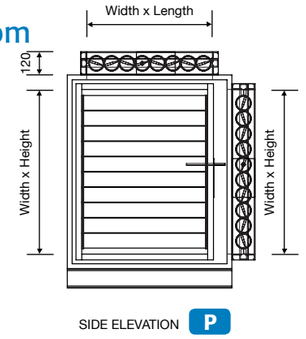
MAX ____ / ____ / W or P

Weatherproof



SIDE ELEVATION W

Plantroom



SIDE ELEVATION P

Please notify sales office of damper configuration and locations at time of ordering.

MAX Model	Weatherproof		Weatherproof Return Air Spigot		Plantroom		Plant Room Damper Sizes					
							End		Top		Side	
	Length	Weight	Width	Height	Length	Weight	Width	Height	Width	Length	Width	Height
1	475	5	150	150	275	7	200	200	200	125	125	200
2	525	7	250	150	300	7	300	200	300	150	150	200
3	500	7	250	250	300	7	300	300	300	150	150	300
4	550	7	300	150	325	7	350	200	350	175	175	200
5	525	7	300	250	325	10	350	300	350	175	175	300
6	575	10	400	250	375	10	450	300	450	225	225	300
7	575	10	400	350	350	10	450	400	450	200	200	400
8	550	10	400	400	350	10	450	450	450	200	200	450
9	600	10	450	350	375	12	500	400	500	225	225	400
10	600	12	500	350	400	12	550	400	550	250	250	400
11	600	12	500	400	400	12	550	450	550	250	250	450
12	600	12	500	450	400	12	550	500	550	250	250	500
13	625	15	550	500	425	15	600	550	600	275	275	550
14	625	15	550	600	425	15	600	650	600	275	275	650
15	675	15	650	400	450	15	700	450	700	300	300	450
16	650	15	650	500	450	17	700	550	700	300	300	550
17	650	20	650	600	450	20	700	650	700	300	300	650
18	675	20	650	700	475	17	700	750	700	325	325	750
19	700	20	750	450	500	20	700	500	800	350	350	500
20	700	20	750	600	500	20	800	650	800	350	350	650
21	700	20	750	700	500	22	800	750	800	350	350	750
22	700	20	750	800	500	20	800	850	800	350	350	850
23	800	20	950	400	575	25	1000	450	1000	425	425	450
24	775	25	950	600	575	25	1000	650	1000	425	425	650
25	775	25	950	700	575	25	1000	750	1000	425	425	750

All dimensions are approximate and in mm
All weights are approximate and in kg

MAX Model	Weatherproof		Weatherproof Return Air Spigot		Plantroom		Plant Room Damper Sizes					
							End		Top		Side	
	Length	Weight	Width	Height	Length	Weight	Width	Height	Width	Length	Width	Height
26	775	25	950	800	575	30	1000	850	1000	425	425	850
27	825	25	1050	600	600	25	1100	650	1100	450	450	650
28	800	25	1050	700	600	30	1100	750	1100	450	450	750
29	800	30	1050	800	600	30	1100	850	1100	450	450	850
30	825	35	1050	1100	625	40	1100	1150	1100	475	475	1150
31	900	35	1250	600	675	35	1300	650	1300	525	525	650
32	875	40	1250	800	675	40	1300	850	1300	525	525	850
33	875	40	1250	1000	675	45	1300	1050	1300	525	525	1050
34	875	45	1250	1100	675	50	1300	1150	1300	525	525	1150
35	875	50	1250	1300	700	50	1300	1350	1300	550	550	1350
36	925	45	1400	1000	725	50	1450	1050	1450	575	575	1050
37	1050	50	1650	800	825	50	1700	850	1700	675	675	850
38	1025	55	1650	1100	825	65	1700	1150	1700	675	675	1150
39	1050	75	1750	1300	850	75	1800	1350	1800	700	700	1350
40	1050	75	1750	1450	850	75	1800	1500	1800	700	700	1500
41	1075	85	1750	1800	875	85	1800	1850	1800	725	725	1850
42	1275	85	2250	1100	1050	95	2300	1150	2300	900	900	1150
43	1250	100	2250	1400	1050	105	2300	1450	2300	900	900	1450
44	1225	115	2250	1800	1025	120	2300	1850	2300	875	875	1850
45	1250	135	2250	2300	1050	140	2300	2350	2300	900	900	2350
46	1350	155	2550	2300	1150	155	2600	2350	2600	1000	1000	2350
47	1425	165	2750	2300	1225	165	2800	2350	2800	1075	1075	2350
48	1550	190	3050	2300	1325	195	3100	2350	3100	1175	1175	2350
49	1650	190	3350	2000	1450	195	3400	2050	3400	1300	1300	2050
50	1650	210	3350	2300	1450	215	3400	2350	3400	1300	1300	2350

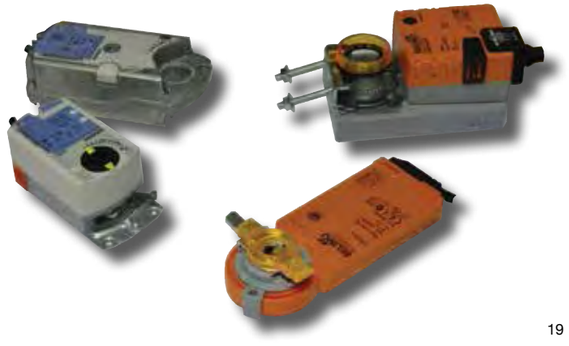
All dimensions are approximate and in mm
All weights are approximate and in kg

Dampers

- Inlet and mixing box dampers are opposed blade, aerofoil section, multi leaf type with rubber edge seals in an extruded aluminium section frame.
- The damper is normally supplied with an extended shaft suitable for motorising.
- Hand operated dampers available.
- Fire dampers and high grade low leakage stainless steel dampers are available.

Actuators

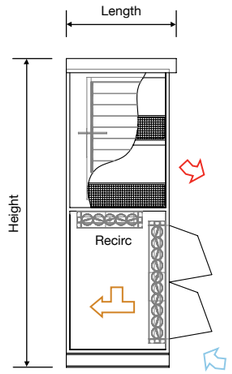
- Extensive range of actuators are available to operate on either 230V or 24V supply.
- Open/Close or modulating operation, quick or slow action with the option of spring return.
- Actuators can be supplied in a range of IP ratings to suite requirements.
- More than one damper actuator may be necessary on larger dampers.



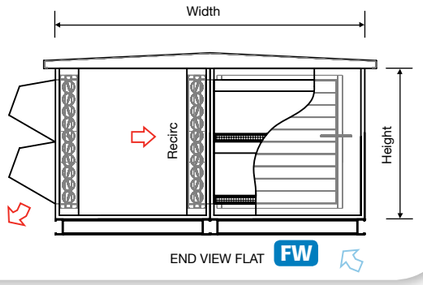
Three way Mixing Box

Weatherproof

Product: MAX | Size: ____ | Construction: ____ / ____ | Configuration: SW / FW



SIDE ELEVATION STACKED **SW**



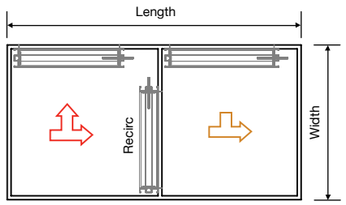
END VIEW FLAT **FW**

KEY

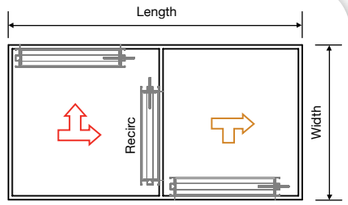
- = Fresh Airflow
- = Supply Airflow
- = Supply Airflow
- = Extract Airflow

Typical Airflow conditions during winter months

Inline



INLINE OPTION 1 PLAN VIEW WITH LID REMOVED **FW**



INLINE OPTION 2 PLAN VIEW WITH LID REMOVED **FW**

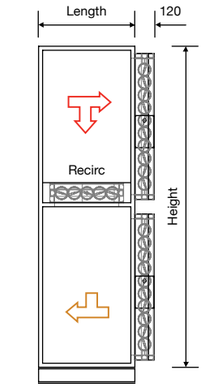
Please notify sales office of damper configuration and locations at time of ordering.

MAX Model	Weatherproof										Plantroom									
	Stacked			Flat			Length	Inline			Stacked			Flat			Length	Inline		
	Width	Height	Weight	Width	Height	Weight		Width	Length	Weight	Width	Height	Weight	Width	Height	Weight		Width	Length	Weight
01	400	700	7	800	350	7	475	400	800	10	400	700	10	800	350	10	275	400	700	10
02	500	700	10	1000	350	10	525	500	900	10	500	700	10	1000	350	10	300	500	775	10
03	500	900	10	1000	450	10	500	500	850	12	500	900	12	1000	450	10	300	500	750	12
04	550	700	10	1100	350	10	550	550	950	10	550	700	12	1100	350	10	325	550	825	12
05	550	900	12	1100	450	12	525	550	900	12	550	900	12	1100	450	12	325	550	800	12
06	650	900	12	1300	450	12	575	650	1000	15	650	900	15	1300	450	12	375	650	900	15
07	650	1100	15	1300	550	15	575	650	1000	15	650	1100	17	1300	550	15	350	650	875	17
08	650	1200	15	1300	600	15	550	650	950	17	650	1200	17	1300	600	15	350	650	850	17
09	700	1100	15	1400	550	15	600	700	1050	17	700	1100	17	1400	550	15	375	650	925	17
10	750	1100	15	1500	550	15	600	750	1050	17	750	1100	20	1500	550	17	400	700	950	17
11	750	1200	17	1500	600	17	600	750	1050	17	750	1200	20	1500	600	17	400	750	950	17
12	750	1300	17	1500	650	17	600	750	1050	20	750	1300	20	1500	650	17	400	750	950	20
13	800	1400	20	1600	700	20	625	800	1100	22	800	1400	22	1600	700	20	425	750	1000	22
14	800	1600	20	1600	800	20	625	800	1100	22	800	1600	25	1600	800	22	425	800	1000	25
15	900	1200	20	1800	600	17	675	900	1200	20	900	1200	22	1800	600	20	450	800	1075	20
16	900	1400	22	1800	700	20	650	900	1150	22	900	1400	25	1800	700	22	450	900	1050	22
17	900	1600	22	1800	800	22	650	900	1150	25	900	1600	27	1800	800	25	450	900	1050	25
18	900	1800	25	1800	900	25	675	900	1200	27	900	1800	30	1800	900	25	475	900	1100	30
19	1000	1300	22	2000	650	20	700	1000	1250	25	1000	1300	27	2000	650	22	500	900	1150	25
20	1000	1600	25	2000	800	25	700	1000	1250	30	1000	1600	30	2000	800	27	500	1000	1150	27
21	1000	1800	30	2000	900	30	700	1000	1250	30	1000	1800	32	2000	900	27	500	1000	1150	30
22	1000	2000	30	2000	1000	30	700	1000	1250	35	1000	2000	35	2000	1000	30	500	1000	1150	32
23	1200	1200	30	2400	600	25	800	1200	1450	25	1200	1200	30	2400	600	30	575	1200	1325	25
24	1200	1600	30	2400	800	30	775	1200	1400	30	1200	1600	40	2400	800	35	575	1200	1300	32
25	1200	1800	35	2400	900	30	775	1200	1400	35	1200	1800	40	2400	900	35	575	1200	1300	35

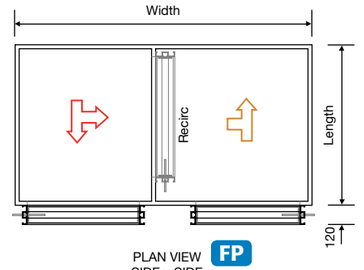
All dimensions are approximate and in mm
All weights are approximate and in kg

Plantroom

Product: MAX | Size: ____ | Construction: ____ / ____ | Configuration: SP / FP

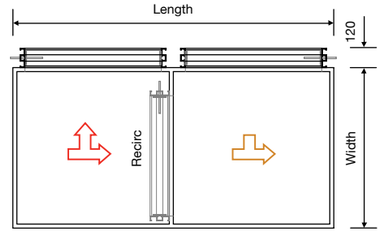


SIDE ELEVATION STACKED **SP**

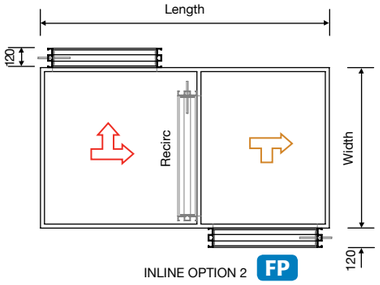


PLAN VIEW SIDE x SIDE **FP**

Inline



INLINE OPTION 1 **FP**



INLINE OPTION 2 **FP**

Please notify sales office of damper configuration and locations at time of ordering.

MAX Model	Weatherproof										Plantroom									
	Stacked			Flat			Length	Inline			Stacked			Flat			Length	Inline		
	Width	Height	Weight	Width	Height	Weight		Width	Length	Weight	Width	Height	Weight	Width	Height	Weight		Width	Length	Weight
26	1200	2000	35	2400	1000	35	775	1200	1400	40	1200	2000	45	2400	1000	35	575	1200	1300	40
27	1300	1600	35	2600	800	30	825	1300	1500	35	1300	1600	40	2600	800	35	600	1300	1375	35
28	1300	1800	35	2600	900	35	800	1300	1450	35	1300	1800	45	2600	900	35	600	1300	1350	40
29	1300	2000	40	2600	1000	35	800	1300	1450	40	1300	2000	45	2600	1000	40	600	1300	1350	40
30	1300	2600	45	2600	1300	45	825	1300	1450	50	1300	2600	60	2600	1300	50	625	1300	1350	55
31	1500	1600	45	3000	800	35	900	1500	1500	40	1500	1600	55	3000	800	45	675	1500	1400	40
32	1500	2000	50	3000	1000	45	875	1500	1650	45	1500	2000	60	3000	1000	50	675	1500	1525	45
33	1500	2400	55	3000	1200	50	875	1500	1600	55	1500	2400	70	3000	1200	55	675	1500	1500	55
34	1500	2600	55	3000	1300	55	875	1500	1600	60	1500	2600	80	3000	1300	60	675	1500	1500	65
35	1500	3000	65	3000	1500	65	875	1500	1600	75	1500	3000	85	3000	1500	70	700	1500	1525	75
36	1650	2400	60	3300	1200	55	925	1650	1700	60	1650	2400	75	3300	1200	60	725	1650	1600	60
37	1900	2000	65	3800	1000	50	1050	1900	1950	55	1900	2000	75	3800	1000	60	825	1900	1825	55
38	2000	2600	70	3800	1300	65	1025	2000	1950	70	2000	2600	100	3800	1300	80	850	2000	1800	80
39	2000	3000	90	4000	1500	85	1050	2050	2000	90	2050	3000	120	4000	1500	90	875	2050	1850	90
40	2050	3400	100	4100	1700	95	1050	2050	2400	100	2050	3400	125	4100	1700	100	1050	2050	1850	100
41	2050	4100	110	4100	2050	110	1075	2550	2350	115	2550	4100	145	4100	2050	110	1050	2550	1900	115
42	2550	2700	105	5100	1350	85	1275	2550	2300	90	2550	2700	150	5100	1350	115	1025	2550	2275	105
43	2550	3300	125	5100	1650	110	1250	2550	2350	115	2550	3300	170	5100	1650	130	1050	2550	2250	120
44	2550	4100	145	5100	2050	135	1225	2550	2300	145	2550	4100	195	5100	2050	145	1025	2550	2200	140
45	2550	5100	175	5100	2550	170	1250	2550	2350	180	2550	5100	235	5100	2550	175	1050	2550	2250	180
46	2850	5100	195	5700	2550	190	1350	2850	2550	200	2850	5100	260	5700	2550	195	1150	2850	2450	195
47	3050	5100	210	6100	2550	200	1425	3050	2700	210	3050	5100	280	6100	2550	210	1225	3050	2600	210
48	3350	5100	245	6700	2550	235	1550	3350	2950	245	3350	5100	315	6700	2550	245	1325	3350	2825	240
49	3650	4500	240	7300	2250	210	1650	3650	3150	220	3650	4500	305	7300	2250	245	1450	3650	3050	220
50	3650	5100	270	7300	2550	250	1650	3650	3650	260	3650	5100	345	7300	2550	275	1450	3650	3050	260

All dimensions are approximate and in mm
All weights are approximate and in kg

Heating

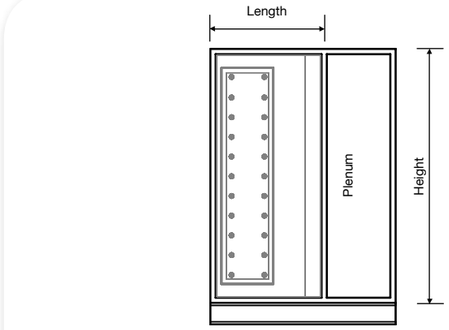
- Electric Heater Batteries.
  - Modulating Thyristor control.
  - Single or Three phase available.
  - Comprehensive safety features.
- Water Heater Batteries.
  - Low, Medium and High Pressure Hot Water.
  - Steam coils.
  - Valves and Actuators.
  - Protective coatings or materials to suit application.
- Reverse Cycle Heat Pump Coils.
- Pre-heating, Zonal or tempered options available.

Electric Heater

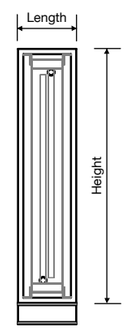
- The electric heater battery consists of sheathed elements mounted on removable plates and spaced evenly over the airflow.
- Draw through heaters such as frost heaters are fitted with low wattage elements. Main heaters require higher air velocity across the elements and are positioned after the fan in the blow-through configuration.
- The heater bank can be withdrawn for inspection and maintenance. A high temperature manually resettable thermal cut-out will be provided to switch off the heater via the control system in the event of airflow failure. For control purposes, the heater will be split into stages.
- When electric heater batteries are used, a fan run on timer must be incorporated into the control system to prevent excessive heat build up within AHU case and to prevent the thermal cut out operating.
- VES recommends that an airflow pressure switch is fitted to send a signal to controls to shut down the EHB in the event of airflow failure.

Water Heaters

- Heating coils for use with LPHW, MPHW, HPHW and Steam are constructed of copper tubes expanded mechanically into ribbed plate fins.
- The fins are spaced between 2mm and 6mm, depending on duty requirements.
- Coils for frost heating can be supplied with bare tubes if required.
- Fin material is aluminium as standard, with optional vinyl coating, copper or copper electro-tinned if required.
- MPHW, HPHW and Steam coils supplied with PN16 screw on flanges for silver soldering on site.
- Thermostat or sensor recommended for frost protection.



EHB



LPHW COIL

STEAM COIL

Plenums will be fitted where necessary, please contact the VES Sales Office for recommended size.

To calculate the size of heater power required:
Power = Air Volume x Constant x Temperature Rise
kW = m^3/s x 1.21 x △T°C

MAX Model	Electric Heater Batteries		Water Heater Batteries			
			LPHW Coil		MPHW, HPHW Steam Coil	
	Length	Weight	Length	Weight	Length	Weight
01	550	7	275	7	275	N /A
02	550	7	275	10	275	N /A
03	550	10	275	10	275	15
04	550	7	275	10	275	N /A
05	550	10	275	12	275	15
06	550	10	275	12	275	20
07	550	15	275	15	275	20
08	550	17	275	15	275	20
09	550	15	275	17	275	20
10	550	15	275	17	275	30
11	550	17	275	20	275	30
12	550	20	275	20	275	30
13	550	20	275	25	275	30
14	550	17	275	25	275	35
15	550	17	275	25	275	35
16	550	20	275	25	275	35
17	550	17	275	30	275	35
18	550	27	275	30	275	40
19	550	20	275	25	275	40
20	550	17	275	30	275	40
21	550	27	275	35	275	45
22	550	27	275	35	275	45
23	550	17	275	30	275	40
24	550	17	275	35	275	50
25	550	27	275	40	275	50

MAX Model	Electric Heater Batteries		Water Heater Batteries			
			LPHW Coil		MPHW, HPHW Steam Coil	
	Length	Weight	Length	Weight	Length	Weight
26	550	27	275	45	275	55
27	550	17	275	40	275	50
28	550	27	275	45	275	50
29	550	30	275	45	275	55
30	550	25	275	55	275	65
31	550	20	275	45	275	55
32	550	30	275	50	275	60
33	550	35	275	60	275	70
34	550	35	275	65	275	75
35	550	40	275	75	275	80
36	550	35	275	65	275	75
37	550	30	275	65	275	75
38	550	35	275	80	275	95
39	550	40	275	95	275	110
40	600	40	325	105	325	120
41	600	55	325	140	325	140
42	600	35	325	110	325	125
43	600	40	325	145	325	150
44	600	55	325	175	325	180
45	600	75	325	205	325	230
46	600	75	325	230	325	265
47	600	55	325	240	325	285
48	600	75	325	260	325	325
49	600	55	325	255	325	310
50	600	75	325	285	325	365

All dimensions are approximate and in mm
All weights are approximate and in kg

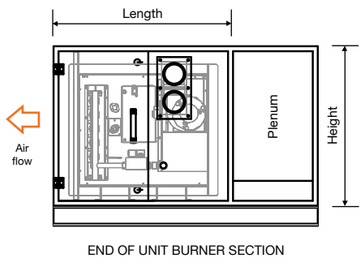
Components shown throughout brochure are part of a composite case.
Please specify the number of sections you require the unit to be manufactured in.

Heating

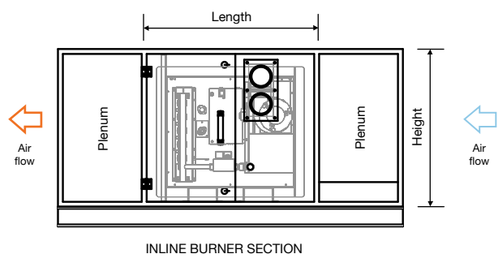
Gas Burners

- Indirect Gas Fired Burners.
  - Fully modulating.
  - Commissioning.
- The gas heater will be commissioned by an engineer once the installation is complete, the correct airflows achieved and commissioned.
- The duct work from the AHU after the gas burner must not include sharp transitions or bends that will prevent uniform airflow through the burner.
- Close temperature control - on/off, high/low or modulating.
- VES can advise you on gas consumption calculations, contact the sales office for details.
- Plantroom units are supplied with inlet combustion and exhaust flue spigots for conventional flueing.
- Weatherproof units are supplied with combustion hood and flue terminal with mesh guard.
- Burner sections can be supplied with burners in series or parallel for higher heating output.
- VES recommends that an airflow pressure switch is fitted to send a signal to controls to shut down the burner in the event of airflow failure.

Plantroom Gas Burners

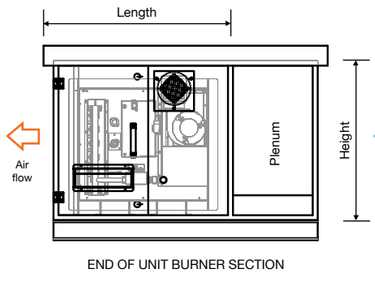


END OF UNIT BURNER SECTION

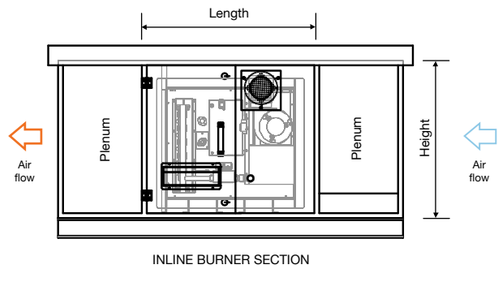


INLINE BURNER SECTION

Weatherproof Gas Burners



END OF UNIT BURNER SECTION



INLINE BURNER SECTION

Plenums will be fitted where necessary, please contact the VES sales office for recommended size.

If the burner section is not the final section within the AHU a plenum will be required on the air off side of the burner.

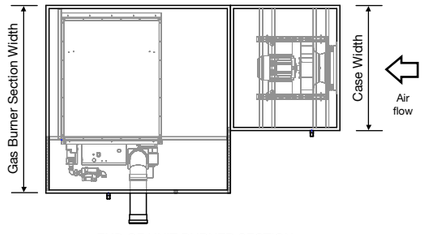
MAX Model	Plantroom				Weatherproof			
	Width	Height	Length	Weight	Width	Height	Length	Weight
01	Gas Burners are not available on this range of sizes							
02								
03								
04								
05								
06								
07								
08								
09								
10								
11								
12	1125	650	800	20	*	*	*	55
13	1225	700	975	20	1225	700	975	65
14	1225	800	850	53	1225	800	850	95
15	Gas Burners are not available on this range of sizes							
16	1325	700	975	20	1325	700	975	65
17	1325	800	850	53	1325	800	850	95
18	1325	900	850	100	1325	900	850	165
19	950	650	800	20	*			55
20	1425	800	1000	53	1425	800	1000	100
21	1425	900	1000	100	1425	900	1000	160
22	1425	1000	1000	120	1425	1000	1000	185
23	Gas Burners are not available on this range of sizes							
24	1725	800	600	53	1725	800	600	100
25	1725	900	600	100	1725	900	600	155

MAX Model	Plantroom				Weatherproof			
	Width	Height	Length	Weight	Width	Height	Length	Weight
26	1725	1000	600	120	1725	1000	600	180
27	1825	800	600	53	1825	800	600	100
28	1825	900	600	100	1825	900	600	155
29	1825	1000	600	120	1825	1000	600	180
30	1825	1300	600	149	1825	1300	600	220
31	2025	800	600	53	2025	800	600	100
32	2025	1000	600	120	2025	1000	600	180
33	2025	1200	600	149	2025	1200	600	215
34	2025	1300	600	149	2025	1300	600	220
35	2025	1500	600	220	2025	1500	625	310
36	2175	1200	600	110	2175	1200	600	215
37	2425	1000	600	80	2425	1000	600	180
38	2425	1300	600	110	2525	1300	600	180
39	2525	1500	625	200	1950	1500	625	310
40	1950	1700	650	200	2600	1700	650	315
41	2600	2050	675	265	2450	2050	650	390
42	2450	1350	650	110	2450	1350	650	220
43	2450	1650	650	200	2450	1650	650	315
44	2450	2050	675	265	2450	2050	675	390
45	3200	2550	775	300	3200	2550	775	455
46	2750	2550	775	300	2750	2550	775	455
47	2950	2550	775	300	2950	2550	775	455
48	3250	2550	775	300	3250	2550	775	455
49	3550	2550	775	300	3550	2550	775	445
50	3550	2550	775	300	3550	2550	775	455

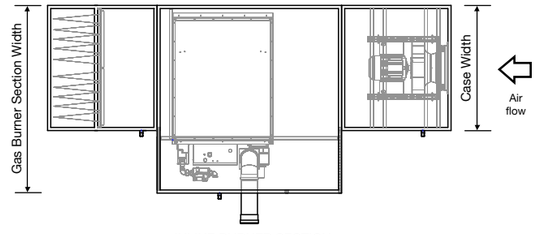
* Gas Burners are not available on this range of sizes.

All dimensions are approximate and in mm
All weights are approximate and in kg

Components shown throughout brochure are part of a composite case.
Please specify the number of sections you require the unit to be manufactured in.
Due to gas heater module sizes, the smaller air handling units are not available with gas fired heaters.



END OF UNIT BURNER SECTION



INLINE BURNER SECTION

Where the burner module is wider than the unit, the gas burner section will be wider than the rest of the AHU.
By using heat recovery the gas heater size can be greatly reduced. This may reduce AHU width.

Cooling Coils

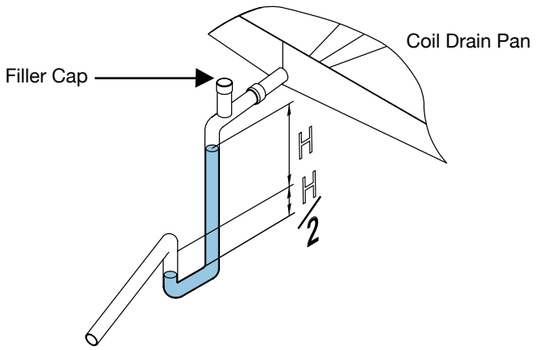
- Chilled Water.
  - Coils can be designed to suit Ethelyne or Propylene Glycol solutions.
- Direct Expansion (DX), Cooling mode only.
- Reverse Cycle Heat Pump, Cooling and Heating mode.
- Coils fitted with moisture eliminators on all horizontal airflow configurations.
- Fitted or removable drain pans available.
  - Stainless steel option.
- Protective coatings or materials to suit application.

- Coils are constructed of copper tubes expanded mechanically into ribbed plate fins.
- Fin material is aluminium as standard, with optional vinyl coating, copper or copper electro-tinned if required.
- The fins are spaced between 2mm and 6mm, depending on duty requirements.
- The standard coil case is galvanised sheet steel. Cooling coils have built in drain tray with end outlet. The coil case, including headers and return bends, is boxed and insulated to prevent condensation travel.
- Intermediate drain trays will be fitted in cooling coils above 1200mm high to prevent build-up of condensation water.
- Stainless steel drain pans available to specification.
- Air vents and drains are not fitted to water coil headers or connections, these are to be fitted by others in the adjoining pipework close to the unit. All cooling coil condensate drains to be trapped in accordane with detail below.

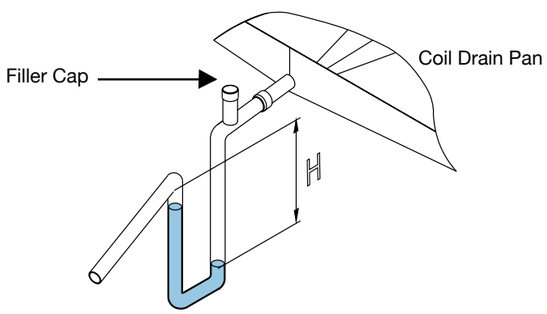
Cooling Coil Trapping

Correct trapping of the condensate drain line is essentialto prevent flooding back into drain pan, which results in water carry over into the AHU case.

Negative pressure drain trap for draw through coil

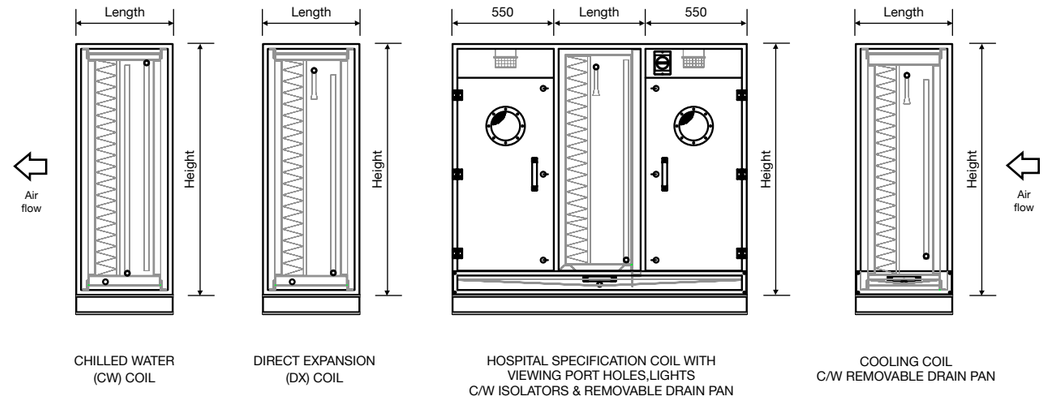


Positive pressure drain trap for blow through coil



DIM H = Total static pressure mm Wg + 25mm minimum

N.B. Do not allow traps to dry out: include adjacent water filling point.



CHILLED WATER (CW) COIL

DIRECT EXPANSION (DX) COIL

HOSPITAL SPECIFICATION COIL WITH VIEWING PORT HOLES,LIGHTS C/W ISOLATORS & REMOVABLE DRAIN PAN

COOLING COIL C/W REMOVABLE DRAIN PAN

MAX Model	Cooling Coil			
	Up to 4 Rows Including Elims		Up to 8 Rows Including Elims	
	Length	Weight	Length	Weight
01	575	25	725	30
02	575	30	725	35
03	575	30	725	40
04	575	30	725	35
05	575	35	725	40
06	575	35	725	50
07	575	40	725	55
08	575	45	725	60
09	575	45	725	60
10	575	45	725	65
11	575	50	725	70
12	575	50	725	75
13	575	55	725	80
14	575	60	725	90
15	575	55	725	80
16	575	60	725	90
17	575	70	725	105
18	575	75	725	115
19	575	65	725	95
20	575	75	725	115
21	575	85	725	125
22	575	90	725	140
23	575	70	725	105
24	575	90	725	135
25	575	100	725	155

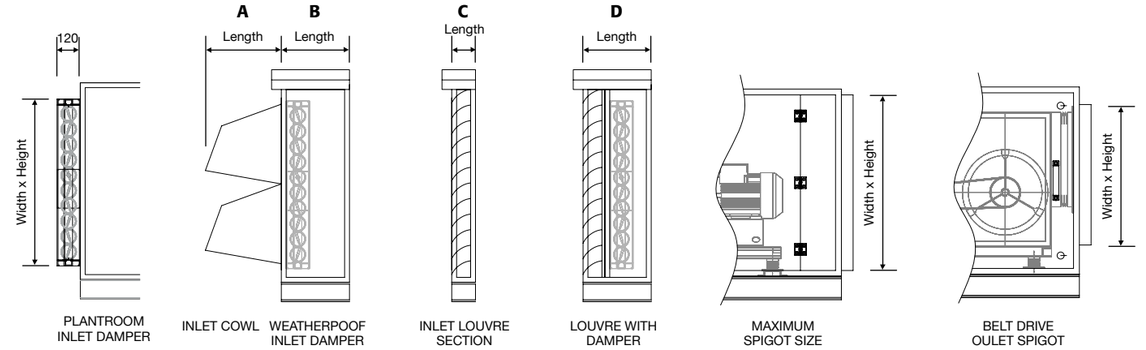
MAX Model	Cooling Coil			
	Up to 4 Rows Including Elims		Up to 8 Rows Including Elims	
	Length	Weight	Length	Weight
26	575	105	725	170
27	575	95	725	150
28	575	105	725	165
29	575	115	725	180
30	575	145	725	230
31	575	110	725	170
32	575	135	725	210
33	575	155	725	245
34	575	165	725	265
35	575	190	725	295
36	575	170	725	270
37	575	165	725	260
38	575	210	725	325
39	575	250	725	385
40	625	275	775	420
41	625	310	775	470
42	625	275	775	420
43	625	325	775	490
44	625	385	775	570
45	625	460	775	680
46	625	505	775	755
47	625	535	775	805
48	625	575	775	890
49	625	560	775	855
50	625	615	775	990

All dimensions are approximate and in mm
All weights are approximate and in kg

Components shown throughout brochure are part of a composite case.
Please specify the number of sections you require the unit to be manufactured in.
Please contact Sales office for full HTM unit design.
When units have cooling coils supplying air at 9°C or less the framework local and downstream of the coil must have additional insulation. Please contact the Sales office for selection.

Air Inlet / Outlet Sections

- Inlet / Outlet weather cowls or louvres for external units.
  - Bird mesh and insect screen alternatives.
- Spigot or damper options.
  - Spigots can be supplied with fitted flanges.
  - Dampers suitable for motorisation or hand operation.



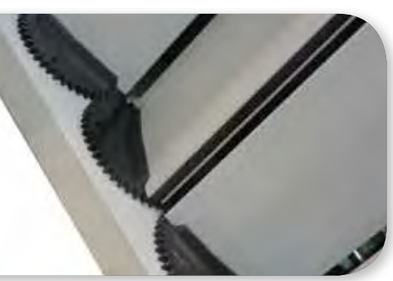
MAX Model	Plantroom Inlet Damper Sizes			Inlet Cowl A		Weatherproof Inlet Damper B		Inlet louvre Section C		Louvre with Damper D		Access Section	Maximum Spigot Size		Belt Drive Oulet Spigot	
	Width	Height	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight		Width	Height	Width	Height
01	275	200	5	300	2	300	2	150	2	400	5	450	350	300	200	200
02	375	200	5	300	5	300	5	150	2	400	7	450	450	300	300	300
03	375	300	5	350	5	300	5	150	5	400	10	450	450	400	300	300
04	425	200	5	350	5	300	5	150	5	400	10	450	500	300	300	300
05	425	300	5	350	5	300	5	150	5	400	10	450	500	400	300	300
06	525	300	7	350	5	300	5	150	5	400	10	450	600	400	300	300
07	525	400	7	400	7	300	5	150	7	400	12	450	600	500	400	400
08	525	450	7	400	7	300	7	150	7	400	15	450	600	550	400	400
09	575	400	7	400	7	300	7	150	7	400	15	450	650	500	400	400
10	625	400	7	400	7	300	7	150	7	400	15	450	700	500	400	400
11	625	450	7	400	7	300	7	150	7	400	15	450	700	550	400	400
12	625	500	10	350	10	300	7	150	7	400	15	450	700	600	500	500
13	675	550	10	300	10	300	7	150	10	400	17	450	750	650	500	500
14	675	650	10	300	10	300	10	150	10	400	20	450	750	750	500	500
15	775	450	10	400	10	300	7	150	10	400	17	450	850	550	500	500
16	775	550	10	300	10	300	10	150	10	400	20	450	850	650	500	500
17	775	650	12	300	12	300	10	150	12	400	22	450	850	750	600	600
18	775	750	12	300	12	300	10	150	12	400	22	450	850	850	600	600
19	875	500	10	300	10	300	10	150	10	400	20	450	950	600	500	500
20	875	650	12	300	12	300	10	150	12	400	22	450	950	750	600	600
21	875	750	15	300	12	300	12	150	15	400	27	450	950	850	700	700
22	850	850	15	300	15	300	12	150	17	400	30	450	950	950	700	700
23	1050	450	12	400	10	300	10	150	12	400	22	450	1150	550	600	600
24	1050	650	15	350	15	300	12	150	15	400	27	450	1150	750	700	700
25	1050	750	15	350	17	300	15	150	17	400	32	450	1150	850	700	700

All dimensions are approximate and in mm
All weights are approximate and in kg

MAX Model	Plantroom Inlet Damper Sizes			Inlet Cowl A		Weatherproof Inlet Damper B		Inlet louvre Section C		Louvre with Damper D		Access Section	Maximum Spigot Size		Belt Drive Oulet Spigot	
	Width	Height	Weight	Length	Weight	Length	Weight	Length	Weight	Length	Weight		Width	Height	Width	Height
26	1050	850	17	300	17	300	15	150	20	400	300	450	1150	950	800	800
27	1150	650	17	300	15	400	15	150	20	500	300	450	1250	750	700	700
28	1150	750	20	300	20	400	15	150	20	500	300	450	1250	850	800	800
29	1150	850	20	300	20	400	17	150	25	500	300	450	1250	950	800	800
30	1150	1150	30	350	25	400	20	150	30	500	350	450	1250	1250	900	900
31	1350	650	20	350	20	500	20	150	20	600	350	650	1450	750	800	800
32	1350	850	25	350	25	500	25	150	25	600	350	650	1450	950	900	900
33	1350	1050	30	350	30	500	25	150	30	600	350	650	1450	1150	1000	1000
34	1350	1150	35	350	30	500	30	150	35	600	350	650	1450	1250	1000	1000
35	1350	1350	40	400	35	500	35	150	40	600	400	650	1450	1450	1100	1100
36	1500	1050	30	400	25	500	30	150	35	600	400	650	1600	1150	1000	1000
37	1750	850	30	400	30	600	30	150	35	700	400	650	1850	950	1000	1000
38	1750	1150	45	350	35	600	35	150	40	700	350	650	1850	1250	1100	1100
39	1850	1350	50	400	55	600	45	150	50	700	400	650	1950	1450	1300	1300
40	1850	1500	55	400	60	650	50	200	55	750	400	700	1950	1600	1300	1300
41	1850	1850	60	450	70	650	60	200	65	750	450	700	1950	1950	1400	1400
42	2350	1150	55	450	60	650	45	200	55	750	450	700	2450	1250	1300	1300
43	2350	1450	70	450	65	650	60	200	65	750	450	700	2450	1550	1400	1400
44	2350	1850	80	450	80	650	75	200	85	750	450	700	2450	1950	1600	1600
45	2350	2350	100	450	95	650	95	200	105	750	450	700	2450	2450	1800	1800
46	2650	2350	110	450	105	650	105	200	120	750	450	700	2750	2450	2000	2000
47	2850	2350	115	450	110	650	115	200	125	750	450	700	2950	2450	2000	2000
48	3150	2350	125	450	115	650	125	200	140	750	450	700	3250	2450	2100	2100
49	3450	2050	115	450	110	650	110	200	135	750	450	700	3550	2150	2100	2100
50	3450	2350	135	450	120	650	135	200	150	750	450	700	3550	2450	2200	2200

All dimensions are approximate and in mm
All weights are approximate and in kg

Dampers



- Inlet and mixing box dampers are opposed blade, aerofoil section, multi leaf type with rubber edge seals in an extruded aluminium section frame.
- The damper is normally supplied with an extended shaft suitable for motorising.
- Hand operated dampers available.
- Fire dampers and high grade low leakage stainless steel dampers are available.

Actuators

- Extensive range of actuators are available to operate on either 230V or 24V supply.
- Open/Close or modulating operation, quick or slow action with the option of spring return.
- Actuators can be supplied in a range of IP ratings to suite requirements.
- More than one damper actuator may be necessary on larger dampers.

Humidification

Electrode boiler, direct steam and evaporative humidifiers are available.
Stainless steel or powder coated sheet steel drain pan is fitted within the unit.

Electrode / Resistive Element Boiler Humidifiers

- Large cylinders with galvanised steel or stainless steel electrodes and anti-scale filter with disposable and cleanable cylinders available.
- Suitable to operate on a wide range of waters including mains water and on/off or control.

Direct steam injection

- The cleanliness of Legionella free steam and ultra low noise levels.
- Few working parts giving minimal maintenance and simple construction in quality stainless steel.
- Small, compact and lightweight for easy low cost installation with rapid moisture absorption with minimal temperature rise.

Evaporative Humidifier/Cooler

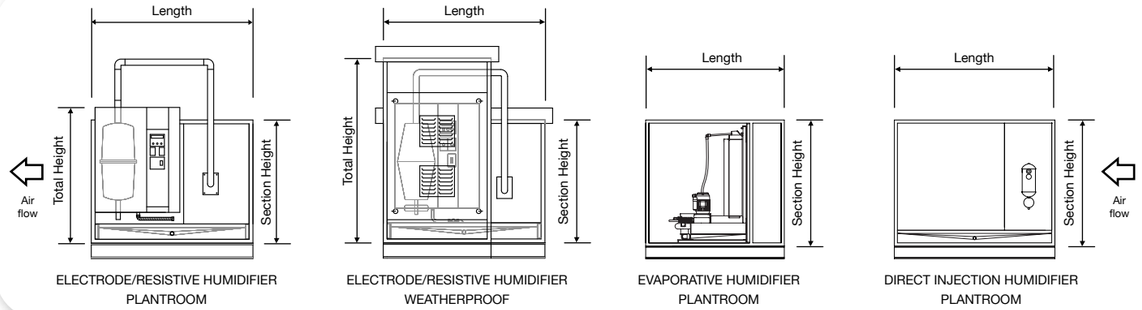
- Offering up to 12°C of cooling and a very economical alternative or supplement to mechanical chillers.
- As the air passes over the cool, wet surface of the evaporative matrix, there is a transfer of energy as the water evaporates.
- Evaporative cooling is not a substitute for air conditioning as there are still some instances where direct mechanical cooling is required. However, the free-cooling provided reduces the overheads of DX chiller units, as well as the benefit of humidification in winter when the air is cool and dry.

This is not an exhaustive list, many other options are available as site specific conditions require. Please contact the sales office for more details.

MAX Model	Section Height	Electrode and Resistive Boiler					Direct Injection		Evaporative	
		Length	Plantroom		Weatherproof		Length	Weight	Length	Weight
			Height	Weight	Height	Weight				
01	350	975	Units under 700mm high are not suitable for fitted electrode, resistive or evaporative humidifiers				975	10	650	*
02	350	975					975	10	650	*
03	450	975					975	10	650	*
04	350	975					975	10	650	*
05	450	975					975	10	650	*
06	450	975					975	10	650	*
07	550	1025					975	10	650	*
08	600	1025					975	10	650	*
09	550	1025					975	10	650	*
10	550	1025					975	10	650	*
11	600	1025					975	10	650	*
12	650	1025					975	10	650	*
13	700	1700	1267	75	1675	175	1250	12	650	*
14	800	1700	1267	75	1675	175	1250	12	650	75
15	600	1700	*	*	*	*	975	12	650	*
16	700	1700	1267	1675	80	175	1250	15	650	*
17	800	1700	1267	80	1675	175	1250	15	650	75
18	900	1700	1267	140	1675	235	1250	15	650	75
19	650	1700	*	*	*	*	975	12	650	*
20	800	1700	1267	140	1675	240	1250	25	650	90
21	900	1700	1267	140	1675	240	1250	25	650	95
22	1000	1700	1267	145	1675	240	1250	25	650	95
23	600	1700	*	*	*	*	975	25	650	*
24	800	1700	1267	145	1675	240	1250	27	650	95
25	900	1700	1267	145	1675	240	1250	27	650	95

*Units under 700mm high are not suitable for fitted electrode, resistive or evaporative humidifiers

All dimensions are approximate and in mm
All weights are approximate and in kg



If the unit is to be supplied without a channel base please add 100mm onto the total height of the unit.
Electrode / Resistive Humidifier modules have a depth of 350mm. Please add to the width of the case on plant room units with fitted humidifier.
Humidifier Weather proof enclosure depth is 500mm please add to width of case when humidifier is fitted on unit sizes 1 to 39.
Direct Steam humidifier module depth is 500mm please add to width of the case.
Please contact the Sales office for confirmation of unit sizes

MAX Model	Section Height	Electrode and Resistive Boiler					Direct Injection		Evaporative	
		Length	Plantroom		Weatherproof		Length	Weight	Length	Weight
			Height	Weight	Height	Weight				
26	1000	1700	1267	145	1675	240	1250	27	95	95
27	800	1700	1267	145	1675	245	1250	27	110	110
28	900	1700	1267	145	1675	245	1250	27	110	110
29	1000	1700	1267	210	1675	310	1250	27	110	110
30	1300	1700	1400	280	1675	318	975	25	130	130
31	800	1700	1267	150	1675	245	1500	45	110	110
32	1000	1700	1267	215	1675	310	1500	45	115	115
33	1200	1700	1300	280	1675	375	1500	45	125	125
34	1300	1700	1400	280	1675	375	1500	45	130	130
35	1500	1700	1600	280	1675	375	1500	45	135	135
36	1200	1700	1300	280	1675	375	1500	45	145	145
37	1000	1700	1100	285	1675	380	1500	45	115	115
38	1300	1700	1400	350	1675	445	1500	45	175	175
39	1500	1700	1600	415	1675	510	1500	50	180	180
40	1700	1700	1800	480	1800	580	1500	65	195	195
41	2050	1700	2150	545	2150	665	1500	70	210	210
42	1350	1700	1450	420	1450	505	1500	70	225	225
43	1650	1700	1750	550	1750	650	1500	70	245	245
44	2050	1700	2150	680	2150	800	1500	70	265	265
45	2550	1700	2650	875	2650	1015	1500	70	300	300
46	2550	1700	2650	945	2650	1085	1500	70	335	335
47	2550	1700	2650	1010	2650	1155	1500	75	340	340
48	2550	1700	2650	1145	2650	1285	1500	75	370	370
49	2250	1700	2350	1085	2350	1210	1500	80	350	350
50	2550	1700	2650	1215	2650	1355	1500	80	375	375

All dimensions are approximate and in mm
All weights are approximate and in kg

Dehumidification

The MAX range can be designed to provide dehumidification capabilities to control both temperature and humidity, through optimised design and component selection.

The system is able to respond to various combinations of temperature and humidity primarily by using an efficient Inverter driven DX system. If coupled with a re-heater and a humidifier the system is capable of achieving the desired indoor environment, in a variety of temperature and humidity conditions.

A comprehensive control system is required to adjust and optimise the various system components to achieve specification requirements. VES experience in mechanical design and controls will provide a very effective solution to control air quality as demonstrated at Wallop Defence Systems. Refer to page 42 for case study.

Weight Calculation

Weights shown throughout the catalogue are component weights only, therefore a weight for the case and where appropriate channel base and lids will need to be calculated from the table below.

Please note that all section lengths and weights are approximate and are sized based on a mid duty point for the size of unit. Please contact the VES sales office for more accurate dimension and weight information.

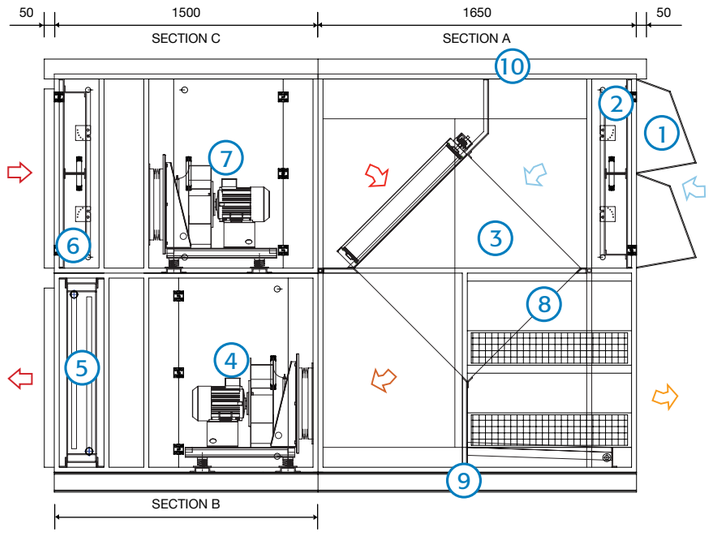
Weight Calculation Example

MAX20 Weatherproof 25mm tubes mineral wool infill

Case Components

(Refer to pages listed below for component weights)

1. Inlet Cowl (Pages 28-29)
2. Panel Filter (Pages 14-15)
3. Cross Flow Heat Exchanger (Pages 16-17)
4. Supply Fan (Pages 12-13)
5. LPHW Coil (Pages 26-27)
6. Panel Filter (Pages14-15)
7. Extract Fan (Pages 12-13)
8. Discharge Cowl (Pages 28-29)
9. Channel Base (Page 33)
10. Weather Lid (Page 33)



Section A
Case Weight 1.65m @ 85kg/m = 140kg
Components ①12kg + ②12kg + ③70kg + ⑧12kg
Channel Base Weight ⑨1.65m @ 14kg/m = 23kg
Weather Lid Weight ⑩1.7m @ 13kg/m = 22kg
Total section weight 140 + 23 + 22 + 12 + 12 + 70 + 12 = 291kg

Section B
Case Weight 1.5m @ 65kg/m = 98kg
Components ④60kg + ⑤30kg
Channel Base Weight ⑨1.5m @ 14kg/m = 21kg
Total section weight 98 + 21 + 30 + 60 = 209kg

Section C
Case Weight 1.5m @ 65kg/m = 98kg
Components ⑥12kg + ⑦ 60kg
Weather Lid Weight ⑩1.55m @ 13kg/m = 20kg
Total section weight 98 + 20 + 12 + 60 = 190kg

Section A 291 + Section B 209 + Section C 190 = TOTAL 692kg

Most components are single case sections, however heat exchanger sections are double height for stacked units or double width for flat units therefore require selection of either flat or stacked from the table opposite for correct weight calculations.

Flat side by side heat recovery units will need the weights for channel bases and lids to be doubled.
MW = Mineral Wool panel infill
PB = Heavy weight Plasterboard infill

MAX Model	Single Case				HX Case - Stacked				HX Case - Flat				Channel Base	Weather Lid
	Tube 25mm		Tube 50mm		Tube 25mm		Tube 50mm		Tube 25mm		Tube 50mm			
	MW kg/m	PB kg/m	MW kg/m	PB kg/m	MW kg/m	PB kg/m	MW kg/m	PB kg/m	MW kg/m	PB kg/m	MW kg/m	PB kg/m	kg/m	kg/m
01	35	45	45	60	45	65	65	85	50	75	70	95	9	8
02	35	55	50	65	50	75	70	95	55	85	75	105	9	9
03	40	60	55	75	55	85	75	105	60	90	80	115	9	9
04	40	55	55	70	50	75	70	95	60	90	80	115	10	9
05	40	60	55	75	55	90	80	110	65	95	85	120	10	9
06	45	65	60	80	60	95	85	115	70	110	95	135	11	10
07	50	70	65	85	65	100	85	120	70	110	90	130	11	10
08	50	75	65	90	65	105	85	130	70	110	90	135	11	10
09	50	75	65	90	65	105	85	125	70	115	95	140	12	11
10	50	75	70	95	65	105	85	130	75	120	100	145	12	11
11	55	80	70	95	70	110	90	135	75	125	100	145	12	11
12	55	80	70	100	70	115	90	140	75	125	100	145	12	11
13	55	90	75	105	75	125	95	145	80	130	100	155	12	11
14	60	95	80	110	80	135	100	155	80	135	105	155	12	11
15	60	90	75	105	75	120	95	145	85	140	110	165	12	12
16	60	95	80	110	80	130	100	150	85	140	110	165	12	12
17	65	100	80	115	85	140	105	160	90	145	110	170	12	12
18	65	105	85	120	90	150	110	170	90	150	115	175	12	12
19	60	95	80	115	80	130	100	155	95	150	120	180	14	13
20	65	105	85	120	85	145	105	165	95	155	115	180	14	13
21	70	110	90	125	95	155	115	180	100	165	120	190	14	13
22	75	115	90	135	95	165	120	185	100	165	120	190	14	13
23	70	105	90	125	85	135	110	165	105	175	135	205	15	15
24	75	115	95	135	95	155	115	180	110	180	130	205	15	15
25	75	120	95	140	100	165	120	190	110	185	135	210	15	15
26	80	125	100	145	105	175	125	200	110	190	135	215	15	15
27	75	120	95	140	95	160	120	185	115	190	140	220	15	16
28	80	125	100	145	100	170	125	195	115	195	145	225	15	16
29	85	130	105	150	105	180	130	205	120	200	140	225	15	16
30	90	145	110	165	125	210	145	235	125	210	145	235	15	16
31	85	130	105	150	100	170	125	195	125	210	155	240	18	18
32	90	140	110	165	110	190	135	215	130	220	155	250	18	18
33	95	150	115	150	125	210	145	235	130	225	155	255	18	18
34	95	155	120	165	130	220	150	245	135	235	160	260	18	18
35	100	165	125	175	140	240	165	270	140	240	165	270	18	18
36	100	160	120	180	125	220	150	245	140	245	165	270	19	19
37	100	165	125	190	125	210	150	240	155	265	185	295	21	22
38	110	180	135	200	140	240	165	270	160	275	185	305	21	22
39	120	195	145	220	155	265	180	295	170	295	195	325	33	23
40	145	225	175	255	180	300	215	340	190	320	230	360	33	23
41	155	240	185	270	200	335	240	380	200	340	240	380	33	23
42	155	235	190	270	175	290	215	330	215	360	260	405	38	27
43	160	250	190	280	190	320	230	360	220	370	265	420	37	27
44	170	265	200	300	215	365	255	410	235	395	275	440	37	27
45	180	290	215	325	245	415	290	465	250	420	295	470	37	27
46	190	305	225	340	255	435	300	485	270	455	315	505	40	30
47	195	315	230	350	260	445	310	495	280	475	330	530	41	32
48	205	330	240	370	270	460	320	515	300	510	350	565	44	35
49	205	335	245	370	260	445	305	495	310	525	365	585	46	38
50	210	350	250	385	280	475	330	530	320	540	375	605	46	38

All dimensions are approximate and in mm
All weights are approximate and in kg

Acoustic Information

Fan noise levels vary with size, speed, fan type, absorbed power and pressure generated. The following sound power levels are provided as a guide for each unit based on mid-duty point for Direct Drive and Belt Drive fans, with filter, heater, cooler and an external resistance between 150 and 350 Pa depending on unit size.
The VES sales office will provide an accurate sound spectrum for all units.

Power Level Guide

MAX Model		150 Pa External									
		1	2	3	4	5	6	7	8	9	10
Direct Drive	Plug	N/A	N/A	75	N/A	70	74	72	73	73	74
	Rotor Motor	70	69	78	69	78	80	76	76	76	76
Belt Drive	Forward Curved	N/A	N/A	N/A	N/A	N/A	N/A	75	77	75	76
	Backward Curved	N/A	N/A	N/A	N/A	N/A	N/A	82	84	80	81

MAX Model		250 Pa External									
		11	12	13	14	15	16	17	18	19	20
Direct Drive	Plug	79	79	79	80	80	79	80	81	79	80
	Rotor Motor	75	75	76	76	76	79	79	89	89	84
Belt Drive	Forward Curved	80	**79**	80	81	81	81	81	83	83	81
	Backward Curved	84	84	84	86	87	85	86	79	76	85

MAX Model		250 Pa External									
		21	22	23	24	25	26	27	28	29	30
Direct Drive	Plug	80	70	86	81	83	82	82	84	82	83
	Rotor Motor	87	N/A	95	88	86	86	85	86	86	86
Belt Drive	Forward Curved	83	85	88	84	84	86	85	85	85	90
	Backward Curved	85	85	76	85	86	86	85	86	86	N/A

MAX Model		250 Pa External									
		31	32	33	34	35	36	37	38	39	40
Direct Drive	Plug	85	84	84	84	83	85	88	87	86	88
	Rotor Motor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belt Drive	Forward Curved	88	87	89	90	93	88	**92**	89	90	94
	Backward Curved	N/A	N/A	N/A	N/A	94	88	94	90	90	90

MAX Model		350 Pa External									
		41	42	43	44	45	46	47	48	49	50
Direct Drive	Plug	85	88	93	89	92	95	96	98	97	100
	Rotor Motor	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Belt Drive	Forward Curved	97	95	94	96	99	98	97	99	98	100
	Backward Curved	95	97	95	96	99	101	97	96	98	97

Spectrum Correction

These corrections will give a sound power level spectrum in dB (re 10^{-12}wPWL).
To obtain the NR level within a conditioned space or at a given distance acoustic analysis calculations are necessary. VES engineers will be pleased to give advice on this and with any necessary silencer selections.

MAX Model	Centre Frequency Hz	63	125	250	500	1k	2k	4k	8k
Direct Drive	Plug	-12	-8	-5	-5	-10	-14	-19	-23
	Rotor Motor	-6	-3	-8	-10	-15	-17	-20	-18
Belt Drive	Forward Curved	-6	-7	-10	-12	-13	-15	-19	-23
	Backward Curved	-4	-6	-7	-9	-11	-15	-19	-23

Spectrum Calculation Example

To calculate the sound power level for a given unit take the dBW from the power Level Guide table on page 34 and subtract the Spectrum Correction.
The following worked example is for a Max size 20 fitted with direct drive plug.

Centre Frequency Hz	63	125	250	500	1k	2k	4k	8k
Fan dBW	80	80	80	80	80	80	80	80
Spectrum Correction	-12	-8	-5	-5	-10	-14	-19	-23
Resultant Sound Power Level	68	72	75	75	70	66	61	57

Casing Insertion Loss

A range of case and frame options are available to reduce noise breakout.

Construction	Centre Frequency Hz							
	63	125	250	500	1k	2k	4k	8k
25mm Standard Case	8	10	12	26	29	27	27	26
25mm Case with high density infill	9	11	14	28	29	28	28	28
25mm Case with high density infill & heavy weight infill	11	12	15	29	30	29	29	30
50mm Standard Case	13	17	18	35	39	39	38	38
50mm Case with 50% mineral wool & 50% high density infill	17	19	22	38	41	42	43	42
50mm Case with 50% mineral wool & 50% high density infill & heavy weight infill tubes	19	22	25	40	42	43	43	42

Note: Alternative case construction and infill available for further case insertion loss.

Case Breakout Example

To calculate the insertion loss for the AHU casework subtract the insertion loss from the Casing Insertion Loss table above from the Resultant Sound Power Level.
The following worked example is for casing breakout for a 50mm standard infill using the Resultant Sound Power Level from calculation example above.

Calculated Sound Power Level	68	72	75	75	70	66	61	57
Insertion Loss	-13	-17	-18	-35	-39	-39	-38	-38
Casing Breakout	55	55	57	40	31	27	23	19

Attenuation due to distance

Deduct 20 x log + 8 dB from noise at source.

When D = distance in metres
D ≤ 5m -4dB

∴ Attenuation at 12 metres is 30 dB.
This figure can be applied to each frequency band.

Rule of thumb - noise decreases at the rate of 6 dB per doubling of distance from a source.

3 metres	14 dB
6 metres	24 dB
12 metres	30 dB
24 metres	36 dB
48 metres	42 dB

Silencers

- Silencers designed and manufactured by VES to suit noise levels required by application.
- Duct mounted, bolt on or built in.
- Removable splitter option to enable cleaning.
- Various infill and material types to suit site requirements.
- Mitre bend options available.
- Cross talk attenuators.
- Cylindrical pod silencers and cleanable silencers also available.
- Internal and external powder coat finish available. (Galvanised finish supplied as standard)
- On site acoustic surveys available on request.

Silencer Specification

- VES silencers are manufactured with galvanised sheet steel case with correct airway/splitter ratio to produce the required NR level within the conditioned space.
- Splitters have a resin-bonded mineral wool slab infill of density 65kg/m^3, and faced with glass tissue, which is non-hygroscopic, rot proof and non-combustible.
- Polythene lining with perforated galvinised sheet steel facing can be supplied to splitter facings.
- VES silencers can be supplied suitable for fitting direct to MAX Air Handlers, or supplied for duct mounting.

Silencer Selection Guide

For normal systems where the room noise level required is not lower than NR35, the following rapid selection method can be used.

Difference Factor	Silencer Length
30-45	900 mm
46-50	1200 mm
51-55	1500 mm
56-60	1800 mm
61-65	2100 mm
66+	2400 mm

Select the silencer from the chart. It may be necessary to increase length of silencer to allow for set back spliters. Where silencers are to fit directly onto supply fan units, the above lengths are to be increased to allow for the plenum section of this silencer.

Silencer Length Calculation Example

To calculate the length of silencer required subtract the required NR level from the dBW (refer to Power Level Fan on page 34) this resultant figure will fall into one of the Difference factor bands above.

The following worked example is for a size 30 Max with the direct drive plug fan with a requirement for NR35

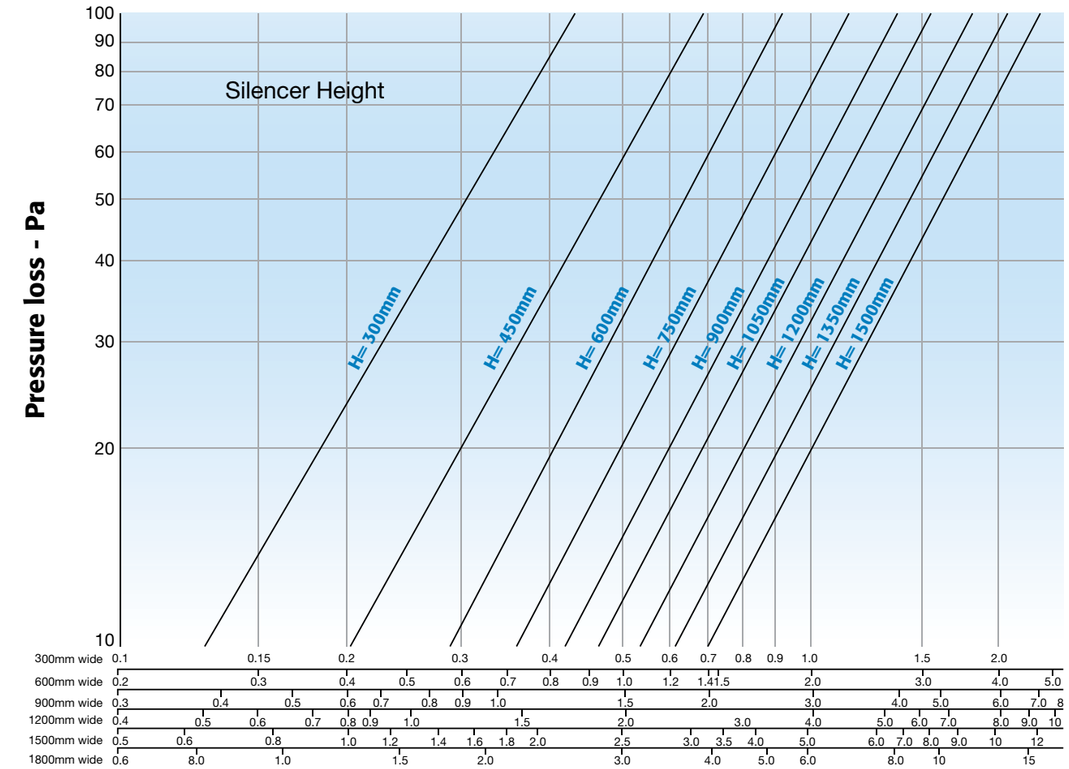
83 (from page 34) - 35 (required NR level) = 48

Difference factor of 48 falls into the 46-50 band (above) = 1200mm long silencer.

For special quiet rooms i.e., recording studios, bedrooms etc. A full design calculation procedure must be used.

Please contact VES Sales Office for full calculation.

Silencer Selection Guide



Silencer Pressure Drop Calculation Example

For a 900mm wide silencer x 600mm high with an airflow of 1.75m^3

Air Volume of 1.75m^3/s

Duct Width 90cm

Duct Height 60cm

Air Pressure Drop = 42 Pa

Where possible do not select a silencer above 50 Pa resistance to avoid noise regeneration within silencer.

Silencer Coding

Airway Size		Duct Width (cm)		Duct Height (cm)		Duct Length (cm)	Splitter Arangements			Construction	
VA4	4 Inch	90	-	60	-	150	P	Pointed	/	STD	Standard Glass Tissued Fibre
VA5	5 Inch						F	Full Length		PP	Polythene and Perforated
							S	Setback			

Max Controls

VES designs and manufactures all controls systems entirely in-house, this advantage ensures that the most efficient, lowest cost and highest quality packages are available.

Offering a unique combination of controls features and flexibility, tailored to an infinite variety of HVAC applications, VES software engineers are some of the best in the industry utilising the latest methods for energy management, sensor response, together with a range of building automation interfaces, all are standard features from VES controls.

Panels can be fitted & pre-wired directly to the AHU, or supplied loose to control one or more AHUs. If a control panel is not ordered, the unit can be supplied with a local isolator for easy site connection.

A variety of Intelligent speed control options are available, responding to internal or external sensors, offering energy efficiency demand ventilation and equipment longevity.

Energy

BlueSense Intelligent Control

BlueSense Intelligent Control

Energy saving packages combine intelligent technologies with energy saving products, services and engineering expertise.

Energy Control

Optional Integrated energy meter for actual energy consumption and saving calculations, this information is displayed real time on the user interface. The user can simply adjust between economy and comfort levels, with real energy saving feedback.

Control

Temperature

Accurate temperature control can be achieved through either supply or room/extract sensors and can incorporate supply air limitation to reduce the deviation in supply air temperature entering the space. The controlling sensor can be configured on site via the user interface.

User Interfaces

A variety of remote and panel mounted user interfaces are available to suit individual application requirements, from simple ON/OFF and temperature display to full parameter adjustment and commissioning.

Heating Options

Modulating Thyristor, LPHW, Gas and Steam options to accurately and efficiently control temperature. When incorporated with a VES control panel we will calculate the precise amount of heating demand required to effectively maintain setpoint.

Demand Ventilation

Significant energy savings can be made by effective demand ventilation control. Reducing fan speed, heating and cooling demands to suit current occupancy and ambient conditions.

Cooling Control

Effective cooling control is achievable with direct expansion, reverse cycle heatpump and chilled water cooling options. Cooling control options are easily integrated into VES control panels.

Special Features

Along with a wide range of standard options VES also offer special control features to suit application requirements, including close control, humidification, de-humidification, enthalpy and energy monitoring.

Post Installation

The post-installation commissioning by a VES controls specialist provides an essential service to ensure efficient operation of the equipment. This results in significant value to all parties by delivering a system that performs as specified, intended and paid for.

Warranty

Specify a BlueSense ventilation package when selecting an air handling unit from VES, which includes a factory fitted control panel and Post-Installation commissioning. This provides a 5 year warranty, affirming our long term commitment to operational performance, reliability and safety.

Pre-wired

On request, control panels can be pre-wired to the unit and factory commissioned. Quick change plug connectors between unit sections and electrical components can also be ordered. This service reduces onsite installation, giving the installer peace of mind from a complete ventilation package.

Building Integration

VES provides a number of communicating protocols including BACnet®, Modbus® and TREND®, allowing fast and simple integration of the HVAC controls onsite, no matter what the building automation and control system is. Information supplied by the VES packages can form an integral part of the intelligent building and automation system and can help reduce energy consumption of buildings.

Refer to VES Controls brochure for controls enquiry form. Alternatively visit www.ves.co.uk/products/controlsenquiry or call +44(0)8448 15 60 60 to order now.

Features of Intelligent Controls

- Prewired/Fitted Controls
- Demand Ventilation
- Case Construction
- Filters
- Air Quality
- Thyristor Heater
- Energy Efficient Fans
- Speed Control
- Plug & Play
- Humidity
- Temperature
- Heat Recovery

Energy Saving

Intelligent Controls enhance performance whilst saving energy and money.

BlueSense Intelligent Control

Pre-wired Controls

Max unit with integral controls

+

Advanced multi application Inverter

+

Sensor options

=

BlueSense Intelligent Control

The sign of energy saving products, services and expertise

For more information refer to page 40-41.

Controls packages for performance and efficiency

BlueSense Intelligent Control

Save energy and costs with BlueSense Controls

Demand ventilation solutions.

BlueSense philosophy combines intelligent control technologies with energy saving products, services and engineering expertise. BlueSense helps meet energy reduction commitments by optimising the equipment performance, improving energy efficiency, saving money and increasing equipment life expectancy.

BlueSense can be applied to a variety of projects and applications, providing efficient solutions whilst supporting design for best practice and sustainability.

BlueSense Features

- Inbuilt intelligent controls technology.
- Optimises performance and efficiency.
- Demand ventilation control improves air quality, reducing energy consumption and lowering operating costs.
- Combined CO_2 and VOC sensing technology with energy efficient speed control.
- Extending equipment life expectancy and reducing maintenance.
- Short term payback on capital expenditure.
- Extended warranty

Prewired/Fitted Controls — Factory fitted, pre-wired controls provide packaged solutions reducing the amount of onsite installation and commissioning.

Demand Ventilation — improves air quality, reduces energy consumption and lowers operating cost.

Energy Efficient Fans — and motors reduce energy consumption to help meet current and future Part L Regulations - Specific Fan Power SFP.

Speed Control — Energy efficient speed control forms an integral part of the demand ventilation philosophy.

Air Quality (VOC) — Combined CO_2 and VOC sensor provides demand ventilation information to regulate the required amount of airflow for varying occupancy levels.

'Plug & Play' — technology provides safe and easy customer connections whilst improving the efficiency of production and maintenance.

Energy Monitoring — is an effective way of highlighting area's for potential savings whilst providing a key indicator to ongoing energy consumption.

Filters — Efficient filtering with low pressure drops can significantly reduce the overall life cycle costs of the system, less filter changes and reduce energy consumption.

Thyristor Heater — Modulating Thyristor provides accurate and efficient temperate control.

Humidity — Digital control over humidity and temperature levels provides intelligent building solutions.

Heat Recovery — Heating and Cooling recovery reduces the amount of mechanical energy required to maintain system temperatures.

Temperature — Energy efficient temperature control increases occupancy comfort whilst reducing energy waste and saving money.

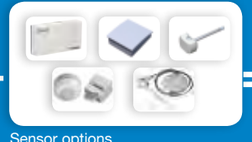
A BlueSense Example

Max unit with fitted sensor control and commissioning module for differential pressure air volume

+

Advanced multi application Inverter

+



Sensor options

= BlueSense Intelligent Control

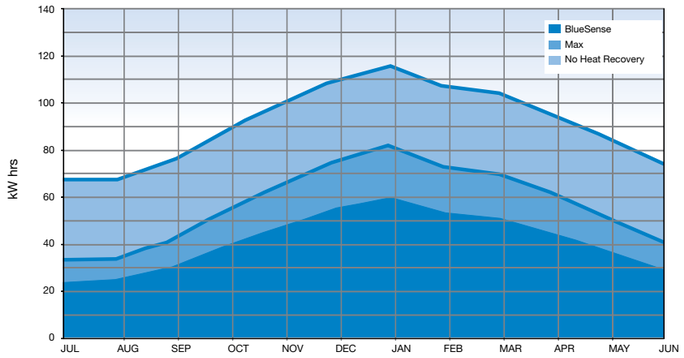
The sign of energy saving products, services and expertise

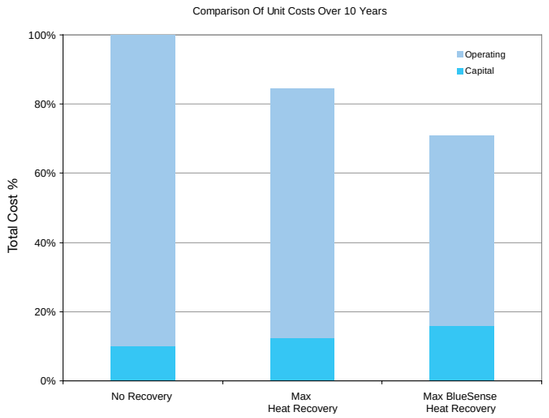
BlueSense Energy Savings

Energy Chart Life Cycle Costs

Energy comparisons for our products illustrate how they reduce energy demands whilst improving the environment and saving money.

The example below is for our Max ventilation units, it shows a typical office building, with an occupancy variation that results in an average 40% reduction in airflow requirement for 40% of the working day. The ventilation system operates from 8am till 6pm, Monday to Friday, with a ventilation rate of 1.2m³/s at 150Pa.





The heating requirement has been based upon the UK heating profile for an air temperature setpoint of 18.5 °C; the same heater size has been used for all comparisons.

Conclusion

Combining VES products with BlueSense technology will reduce the impact to the environment, minimise overall life cycle costs and payback period.

VES is experienced at discussing energy requirements with clients, our knowledge and technology can help to identify areas where savings can be made. VES can provide assistance for both new and existing buildings.

BlueSense Intelligent Control

BlueSense Includes an Extended Warranty

- 3 years with BlueSense packages.
- 5 years with BlueSense package and Post Installation Commissioning.

Please quote BlueSense with your order or contact our specialist sales team for further information. Call +44 (0)8448 15 60 60 or Email info@ves.co.uk

Market Sectors and Case Studies

VES has a reputation for supplying special units for challenging applications. Unconventional configurations are not unusual for the Max range, vertical, right-angled airflow and other irregular arrangements are possible, and a range of diverse components to provide a full specialist ventilation package.

Notable examples are:

- Leisure Centres / Swimming Pools
- Retail
- Theatres / Cinemas
- Education
- Restaurants / Kitchens
- Local Authorities / Emergency Services
- Healthcare
- Government and Armed Forces

Leisure and Swimming Pool Applications

Max units can be supplied with full protection to operate safey and efficiently for many years. Two large AHUs were supplied to the swimming pool at Millfield School in Somerset, England, with full protection against the chlorinated atmosphere.

Restaurant and Kitchen Applications

At the Help For Heroes, rehabilitation centre for injured service personnel in Tidworth UK, a dedicated kitchen supply and extract Max AHU was provided. VES supplied the full controls package to manage the system including a plasma air purifier, the unit was flatpacked into its difficult location.

Theatre and Cinema Applications

The tubular frame, double skin Max unit can be supplied with a range of optional infills and linings. For a specialist application, VES can analyse the noise parameters of a unit and its surroundings to select a combination of different grade infills and acoustic cladding to attenuate a specific sound harmonic or frequency. At the Waterloo IMAX film theatre in London, a low noise extract system was supplied and fitted by VES in the projector room.

Healthcare, HTM03 Applications

VES supplied a specialised Max AHU in June 2010 to the highly prestigious Centre for Reproductive Medicine facility at the Walsgrave Hospital in Coventry, England. Located in a sensitive area, the unit was manufactured to reduce noise breakout and eliminate airleakage. The unit was fitted with removable filter bulkheads to help reduce the footprint, and was designed to uphold air volume against F7 filters and additional HEPA filters in separate room grills giving a total resistance of 1200Pa.

Government and Armed Forces Applications

Wallop Defence Systems Limited (WDSL) is a global company producing pyrotechnics for the military environment. With an excellent reputation for performance, quality and safety and over 60 years of experience behind them, WDSL is a prime supplier to the UK MOD. In January 2010 Wallop Defence Systems built a brand new flare production facility within which VES manufactured and installed a ventilation system. VES also helped assist Wallop Defence Systems as they worked to modernise their production facilities with their newest state of the art production facility named the 'Vulcan'. The design requirement included full fresh air total loss system to each individual ATEX rated production booth with close control maintaining +/- 1°C and +/- 5% rh. VES produced 10 units with inbuilt controls, all communicating with the centralised boiler room control panel also installed by VES.

Flatpacking

Flat Packing

Flat pack installation of air handling units and other VES products can avoid disruption and result in substantial savings such as builders' costs, crane hire, road closure and out of business hours working. VES will re-assemble an air handling unit in situ where access is restricted.

Flatpack Case Study

In November 2011 VES manufactured and delivered a unit in flatpack form to the roof on the second floor of the HMV site in East Street, London. On the 23rd of November 2011 VES engineers returned and within one day installed the unit building it up in situ from its flatpack form. The process of this installation can be seen in the pictures displayed above. VES engineers then checked that all the joints and door seals were made airtight before leaving the premises at the end of the day.

Site Installation Assistance

Site Installation Assistance

Skilled and qualified VES site engineers can offer as much, or as little, assistance on site as is required. This may involve the provision of dedicated lifting equipment, assembling sections, or specialist site assistance for a new Max unit.

Offloading and Site Positioning

Site Assistance

Post Installation Commissioning

Post Install Check/Measure

Today's HVAC system must be energy efficient, satisfy stringent indoor air quality and comfort expectations, and still be designed and constructed within controlled budgets. Post-Installation Commissioning provides an essential service to ensure efficient operation of the equipment. This results in significant value to all parties by delivering a system that performs as specified, intended, and paid for. Benefits of Post-Installation Commissioning from VES offer managed start-up procedures, shorter handover transition, improved air quality and occupancy comfort. Further advantages include more efficient operation, reliability and reduced maintenance, whilst providing lower energy usage and operational cost.

Spares

Spares

VES holds stock, or can source parts, for most VES products dating back to the origins of the company and can locate spares and components for HVAC equipment by other manufacturers. A consumables reminder service and regular user discount are also available.

Maintenance

Maintenance

To help extend equipment operating life, VES offers varied maintenance agreements to suit location and budget. Essential maintenance for critical plant in hospitals, kitchens or process work can be completed to specific schedules, designed to minimise disruption and eliminate downtime.
When a VES Maintenance Agreement is purchased, the equipment warranty is extended, free of charge, up to a maximum of 5 years.

25mm Specification

MAX A & MAX C

1.1. General

A. Provide an air handling unit to meet the performance and configuration as indicated in the schedule and detail drawings. The air handling unit shall be tested to BS848 Part 1 and shall be of the MAX A & MAX C type as manufactured by VES Andover Ltd a company accredited with BS EN ISO 9001:2008.

B. The unit shall conform to the schedule regarding case construction, component layout & finish. The detail drawings shall be supplied for approval where indicated in the schedule.

1.2. Unit Construction

A. The unit shall be provided pre-assembled comprising of a rigidly constructed 25mm tubular aluminium case & double skinned galvanised sheet steel panels.

B. The unit shall be constructed to BS EN1886 standard & fully BSRIA tested for compliance to deflection rating class D1, leakage class L2 & thermal transmittance classes of T5 & TB5. Testing certificates shall be available on request.

C. The unit shall be supplied in multiple sections for transporting & site installation as indicated in the schedule & detail drawings. The unit shall be pre-drilled & gusseted for sectional re-assembly on-site by others as indicated in the detail drawings and O&M documentation.

D. The unit shall be available in a partially disassembled 'flat pack' form for ease of installation with awkward on-site access. Flat pack units shall be reassembled on-site by VES technical personnel as indicated in the schedule.

E. The unit shall be available in plantroom or weatherproof construction as indicated in the schedule and detail drawings. Weatherproof units shall have an extended pitched lid supplied fitted as standard.

F. The unit shall have component arrangement as indicated in the schedule & detail drawings.

G. The unit shall have plain rectangular duct spigots as standard. Flanges shall be fitted as indicated in the schedule & detail drawings.

H. The unit casework shall incorporate high quality leak resistant EPDM memory retaining clip-on gaskets on service & access panels

I. The unit casework shall be available with optional double-glazed inspection portholes supplied fitted as indicated in the schedule & detail drawings.

J. The case panels shall be filled with inert mineral wool infill as standard. The panels shall be available with optional heavyweight plasterboard infill as indicated in the schedule & detail drawings.

K. The case tubes shall be unfilled as standard. The tubes shall be available with optional heavy weight lead bead infill as indicated in the schedule & detail drawings.

L. Units shall have access as indicted in the schedule & detail drawings. Where unit access details are not supplied, the unit shall be handed LHS looking in direction of supply airflow as standard, to be confirmed by drawing approval.

M. Plantroom unit casework & spigots shall be supplied naturally finished in high quality galvanised steel as standard. Optional powdercoated colour as indicated in the schedule

1.2. Unit Construction

N. Weatherproof units shall be supplied powdercoated signal grey RAL7004 as standard. Alternative colour according to schedule.

O. The casework shall be available with internal epoxy powder coating suitable for coastal or corrosive environments as indicated in the schedule & detail drawings.

P. The unit shall be designed to be secured to a suitable base or support frame, ensuring the use of correct fixings for the application and taking into account individual section & overall unit weight as indicated in the schedule and detail drawings

1.3. Unit Base Frame

A. The unit shall be supplied as standard on a galvanised sheet steel channel base. The unit shall be available with optional drop rod mounting feet as indicated in the schedule & detail drawing.

B The frame shall be 100mm high as standard, height as indicated in the schedule & detail drawings.

C. The frame shall be available with optional lifting slots, suitable for use with strops or fork lifts. The frame with slots shall be a minimum of 125mm high.

D. The frame shall be finished to match the unit casework.

E. The frame shall be available with optional drop rod mounting holes.

1.4. Inlet/Outlet Cowls

A. Weatherproof unit casework shall be supplied with fresh air inlet & exhaust discharge cowls/ louvers where indicated in the schedule & detail drawing.

B. Cowls shall be single skinned galvanised sheet steel, finished to match the unit casework.

C. Cowls shall be available with optional flame retardant acoustic internal lining to ensure maximum thermal insulation and reduced noise transmission.

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50mm Specification

MAX B & MAX D

1.1. General

A. Provide an air handling unit to meet the performance and configuration as indicated in the schedule and detail drawings. The air handling unit shall be tested to BS848 Part 1 and shall be of the MAX B or MAX D type as manufactured by VES Andover Ltd a company accredited with BS EN ISO 9001:2008.

B. The unit shall conform to the schedule regarding case construction, component layout & finish. The detail drawings shall be supplied for approval where indicated in the schedule.

1.2. Unit Construction

A. The unit shall be provided pre-assembled comprising of a rigidly constructed 50mm tubular aluminium case & double skinned galvanised sheet steel panels

B. The unit shall be constructed to BS EN1886 standard & fully BSRIA tested for compliance to deflection rating class D1, leakage class L2 & thermal transmittance classes of T5 & TB5. Testing certificates shall be available on request.

C. The unit shall be supplied in multiple sections for transporting & site installation as indicated in the schedule & detail drawings. The unit shall be pre-drilled & gusseted for sectional re-assembly on-site by others as indicated in the detail drawings and O&M documentation.

D. The unit shall be available in a partially disassembled ‘flat pack’ form for ease of installation with awkward on-site access. Flat pack units shall be reassembled on-site by VES technical personnel as indicated in the schedule.

E. The unit shall be available in plantroom or weatherproof construction as indicated in the schedule and detail drawings. Weatherproof units shall have an extended pitched lid supplied fitted as standard.

F. The unit shall have component arrangement as indicated in the schedule & detail drawings.

G. The unit shall have plain rectangular duct spigots as standard. Flanges shall be fitted as indicated in the schedule & detail drawings.

H. The unit casework shall incorporate high quality leak resistant EPDM memory retaining clip-on gaskets on service & access panels.

I. The unit casework shall be available with optional double-glazed inspection portholes supplied fitted as indicated in the schedule & detail drawings.

J. The case panels shall be filled with inert mineral wool infill as standard. The panels shall be available with optional heavyweight plasterboard infill as indicated in the schedule & detail drawings.

K. The case tubes shall be unfilled as standard. The tubes shall be available with optional heavy weight lead bead infill as indicated in the schedule & detail drawings.

J. Units shall have access as indicted in the schedule & detail drawings. Where unit access details are not supplied, the unit shall be handed LHS looking in direction of supply airflow as standard, to be confirmed by drawing approval.

L. Plantroom unit casework & spigots shall be supplied naturally finished in high quality galvanised steel as standard. Optional powdercoated colour as indicated in the schedule.

M. Weatherproof units shall be supplied powdercoated signal grey RAL7004 as standard. Alternative colour according to schedule.

N. The casework shall be available with internal epoxy powder coating suitable for coastal or corrosive environments as indicated in the schedule & detail drawings.

O. The unit shall be designed to be secured to a suitable base or support frame, ensuring the use of correct fixings for the application and taking into account individual section & overall unit weight as indicated in the schedule and detail drawings.

1.3. Unit Base Frame

A. The unit shall be supplied as standard on a galvanised sheet steel channel base. The unit shall be available with optional drop rod mounting feet as indicated in the schedule & detail drawing.

B. The frame shall be 100mm high as standard, height as indicated in the schedule & detail drawings.

C. The frame shall be available with optional lifting slots, suitable for use with strops or fork lifts. The frame with slots shall be a minimum of 125mm high.

D. The frame shall be finished to match the unit casework.

E. The frame shall be available with optional drop rod mounting holes on units up to MAX 5.

1.4. Inlet/Outlet Cowls

A. Weatherproof unit casework shall be supplied with fresh air inlet & exhaust discharge cowls/ louvers where indicated in the schedule & detail drawing.

B Cowls shall be single skinned galvanised sheet steel, finished to match the unit casework.

C. Cowls shall be available with optional flame retardant acoustic internal lining to ensure maximum thermal insulation and reduced noise transmission.

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VES
Better air for the built environment

Max Model

Product	Unit Size	Construction	Type	Special
MAX	01	/A	/P	/S
	UP TO	/B	/W	
	50	/C	/FP	
		/D	/FW	
			/SP	
			/SW	

Product
MAX

Unit Size
01
to
50

Case
A=25mm
B=50mm
C=25mm Customised
D=50mm Customised

Unit Config
/P= Plantroom
/W=Weatherproof
/FP =Flat Plantroom
/FW =Flat Weatherproof
/SP=Stacked Plantroom
/SW=Stacked Weatherproof

Example Codes
Plantroom MAX 12/B/P/S
Weatherproof MAX 24/A/SP/S

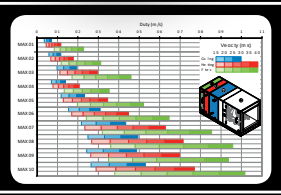
max bespoke®

Max
Step by Step Guide

Max
Bespoke AHUs

1 Specify your unit

Pages 8-11



2 Choose from a range of Components

Pages 12-37

- Fans
- Filtration
- Heat Recovery
- Heating
- Cooling
- Inlet/Outlet Sections
- Humidification / Dehumidification
- Attenuation

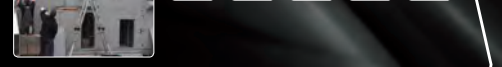
3 Add and specify Controls packages

Pages 38-41

BlueSense® Intelligent Control

4 Select Services

Page 43



For details on Max product codes please turn to the back of this flap.

Other products and services from the complete range of VES HVAC solutions:

Air Handling Units
- *Supply and extract, combined or separate.*
- *Heat recovery including crossflow plate heat exchangers, thermal wheels and run-around coils.*
- *Plantroom or weatherproof, flat or stacked.*
- *Fitted silencers, inverters and controls.*
- *Matching DX condensing units.*
- *Various case constructions including EN 1886 certified units.*

Duct Fans
- *In-line centrifugal, with forward or backward curved impellers.*
- *Round, axial and mixed flow fans.*
- *Fitted silencers available on all units.*
- *Manual and automatic speed controllers available.*

Twin Fans
- *For ceiling void, plantroom and weatherproof.*
- *Many models and configurations.*
- *Fitted auto-changeover system.*

Roof Extract Units
- *Three ranges for volume and pressure.*
- *Curb and soaker sheet bases.*

Wall and Ceiling Fans
- *All types for commercial, industrial and domestic premises.*

Kitchen Hood Extract Fans
- *Heavy duty high temperature fans for hot greasy air.*
- *Motors out of airstream.*
- *Single inlet fans, in-line and vertical jet roof units.*

Control Panels
- *Off the shelf and built to order panels.*
- *Air quality sensors and energy savers.*
- *Intelligent control software.*
- *A range of remotes including touch screen.*

Noise Control
- *Matching silencers available for all ventilation products.*
- *Silencers designed to meet noise criteria.*
- *Cleanable silencers.*
- *Weatherproof silencers.*

Specialist Site Services
- *Plant refurbishment.*
- *Energy saving upgrades.*
- *Noise reduction.*
- *Site surveys.*
- *Kitchen ventilation.*
- *AHU flat pack installation.*
- *Maintenance.*
- *Spares.*

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ISO 9001 Quality Management Q 05375

BSRIA

B&ES Building & Engineering Services Association

VES reserves the right to amend product specifications and details without notice

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