VMD Range

Features & Benefits

- **Performance range up to 1.4m³/s**
- **Motor Insulation Class F**
- **Anodised aluminium pentapost frame**
- **Double skinned panels**
- **Compact direct drive units**
- **Electric heater battery**
- **Built-in fan and heating controls**
- **Minimal site installation time**
- **1 Year Guarantee**

Features

The Mini Viking packaged small air handling units have been developed using feedback from installers through to the end user and benefit from tried and tested components; e.g. double skinned construction with plastisol outer panel, mineral wool insulation and galvanised steel inner panel.

This construction offers weather resistance and long life with a good thermal and acoustic performance. The materials can also be recycled.

Specification

Energy Considerations

Mini Viking Air Handling Units are designed with savings on potential energy consumption being a prime consideration. Low air resistance components are incorporated as standard, with high efficiency motors also available.

Model Range

Spanning a duty envelope of 0.1m³/s to 1.4m³/s, Mini Viking air handling units are available in eight direct drive.

Standard units comprise of direct drive fan, filter, electric heater battery and built-in pre-wired controls.

Construction

Framework is anodised aluminium with airtight door seals and manual door catches which can be tool locked in position.

Double inlet, forward curved centrifugal fans provide the lowest noise levels with sufficient performance for ducted systems. Impellers and motor impeller assemblies are dynamically balanced to minimise vibration. Motors are further resiliently mounted.

The motors in VMD1L, VMD1M, VMD2L, VMD2M & VMD3L are conventionally mounted permanent capacitor type with sealed for life ball bearings. Protection is IP44 with Class F insulation (50° ambient max.). VMD1H, VMD2H and VMD3H units have smooth and powerful outer rotor type motors. Note: all these direct driven fan/motor assemblies respond best to step transformer type speed control. This type of controller will maximise the service life of the motor.

Filters – Standard filters are EU4 pleated paper type 100mm deep. These have an efficiency equivalent to a standard grade bag filter and a better dust holding capacity than a fibre or foam filter. Special high grade bag filters can be supplied but they require an additional housing.

Electric Coils

Electric heaters are sheathed tube type with low surface loading for long life. They include a manual reset high temperature cut-out and are mounted at the fan discharge to protect filters and motors from excess heat. Fan and heating controls are built in and wired internally, reducing site installation time to a minimum. A standard customer interface terminal box is common to all units and provides for various external remote items such as supply fan speed control, time clock, set point adjustment, PIR sensor and room or duct sensor. A power isolator is also provided. Outputs for extract fan (starter built-in), shut off damper and signal input from a fire alarm are also provided. N.B. An additional relay PCB will be required for use with an air quality sensor.

Electric heater temperature control is by thyristor. This method enables the sensor to be mounted down stream of the heater in the supply airflow and can hold +/-1°C of the chosen setpoint. A 0-10V cooling output signal is also available which can be used as above.

Inlet damper and motor come complete with weatherproof motor cover, needing only wiring into main terminal box.

KEY	ELECTRICAL ARRANGEMENT FOR FAN & HEATER
	(240V) 1 Phase Fan / (240V) 1 Phase Heater
	(240V) 1 Phase Fan / (415V) 3 Phase Heater
	(415V) 3 Phase Fan / (415V) 3 Phase Heater

Direct Drive Supply Air Handling Units Quick Selection Chart

External Duct Resistance ~ Pa

	75	100	125	150	175	200	250	300	400	500
0.1	VMD1L	VMD1L	VMD1L	VMD1L	VMD1L	VMD1M	VMD1M			
0.15	VMD1L	VMD1L	VMD1L	VMD1L	VMD1M	VMD1M	VMD1M	VMD1H		
0.2	VMD1L	VMD1L	VMD1L	VMD1M	VMD1M	VMD1M	VMD1H			
0.25	VMD1L	VMD1M	VMD1M	VMD1M	VMD1M	VMD1M	VMD1H			
0.3	VMD1M	VMD1M	VMD1M	VMD1M	VMD1M	VMD1H	VMD2M			
0.35	VMD1M VMD1H	VMD1M VMD1H	VMD1M VMD1H	VMD1H VMD2L	VMD1H VMD2L	VMD1H VMD2L	VMD2M			
0.4	VMD1H VMD2L	VMD1H VMD2L	VMD1H VMD2L	VMD1H VMD2L	VMD1H	VMD2M	VMD2M	VMD2H		
0.45	VMD2L VMD2M	VMD2L VMD2M	VMD2L VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2H		
0.5	VMD2L VMD2M	VMD2L VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2H		
0.55	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2H		
0.6	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2H	VMD3H		
0.65	VMD2M	VMD2M	VMD2M	VMD2M	VMD2M	VMD2H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H
0.7	VMD2M	VMD2M	VMD2M	VMD2H	VMD2H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H
0.75	VMD2H	VMD2H	VMD2H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H
0.8	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H
0.85	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H	VMD3H
0.9	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H	VMD3H
1.0	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H	VMD3H
1.1	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3L VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H
1.2	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	
1.3	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H		
1.4	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H	VMD3H		

Model	Heater Duty (Kw)	Heater Phase (ph)	Built in Controller	Max. Amps (Total)
VMD1L	3 or 4.5	1	TC5t Thyristor	(3kW) 14A, (4.5kW) 20A
VMD1M	6 or 9	1	TC9 Thyristor	(6kW) 27A, (9kW) 40A
VMD1H	9 or 13.5	3	TC13 Thyristor	(9kW) 15A/ph, (13.5kW) 21A/ph
VMD2L	3, 6 or 9	1	TC9 Thyristor	(3kW) 15A, (6kW) 27A, (9kW) 40A
VMD2M	9 or 13.5	3	TC13 Thyristor	(9kW) 15A/ph, (13.5kW) 21A/ph
VMD2H	15, 18, or 22.5	3	TC13 Thyristor + Solid State Relay	(15kW) 25A/ph, (18kW) 29A/ph, (22.5kW) 35A/ph
VMD3L	18 or 27	3	TH28 Thyristor	(18kW) 28A/ph, (27kW) 40A/ph
VMD3H	27 or 36	3	TH36 Thyristor	(27kW) 42A/ph, (36kW) 55A/ph

VMD Mini Viking Range

Sound power levels dBW re 10^{-12}W (at full speed)

The dBA quoted is the mean A weighted sound pressure level measured at a distance of 3m with spherical sound level propagation. It is included for comparative purposes only and the mean sound level experienced will depend on the area being served.

	Fan Data											
	Speed	FLC	Output	Octave band mid frequency Hz								dBA
Stock Ref	(rpm)	(A)	(Watts)	63 Hz	125	250	500	1 K	2 K	4 K	8 K	@ 3m
VMD1L	860	1.0	75	53	51	44	42	39	35	27	20	40
VMD1M	1300	1.5	150	78	77	69	68	64	59	53	44	46
VMD1H	1380	2.0	300	79	80	72	70	66	63	56	47	48
VMD2L	900	2.0	250	75	72	69	66	64	58	52	42	54
VMD2M	1300	3.5	370	78	75	72	69	67	61	55	45	56
VMD2H	1380	3.6	550	79	80	74	72	69	64	57	48	57
VMD3L	900	6.5	750	77	80	78	77	75	71	67	56	66
VMD3H3*	1140	4.2/ph	1000	77	80	78	77	75	71	67	56	66
VMD3H5*	1400	4.2/ph	1500	80	83	81	80	78	74	70	59	68

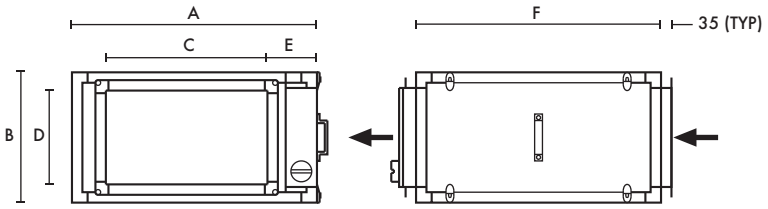
Silencer insertion loss (subtract from sound power levels)

	To Suit	Duct Dims. (mm)									
Stock Ref	Stock Ref	W	H	L	63 Hz	125	250	500	1 K	2 K	4 K	8 K
VMA53	VMD1	500	300	600	4	6	10	20	28	28	19	20
VMA54	VMD2	500	400	900	5	9	16	30	39	39	31	26
VMA75	VMD3	750	500	1200	6	12	23	40	51	51	41	29

Sound breakout from unit

Stock Ref	63 Hz	125	250	500	1 K	2 K	4 K	8 K
VMD1M	69	61	49	43	44	29	15	2
VMD2M	75	67	54	48	48	35	21	8
VMD3L	76	68	56	50	51	36	22	9

Dimensions (mm) - Standard fan, filter electric heater unit

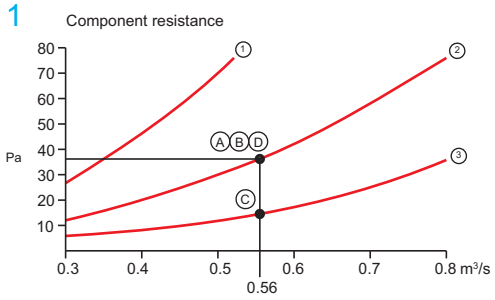


Unit Size	A	B	C	D	E	F	Weight (kg)
VMD1	750	400	500	300	150	750	44
VMD2	750	500	500	400	135	1000	75
VMD3	965	700	700	500	133	1200	170

VMD Mini Viking Range

VMD2 Supply Air Handling Unit - Selection Example

1



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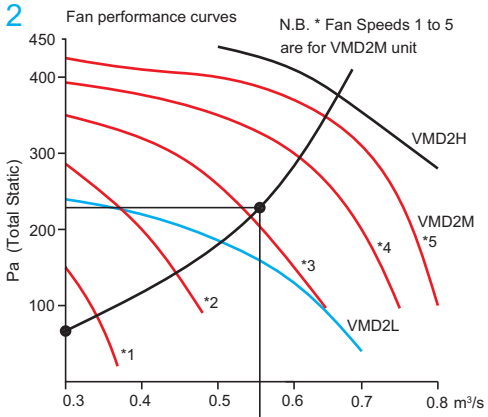

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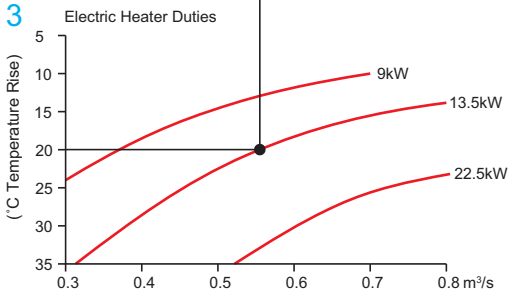


1
1. Deep cooling coil. High density electric heater.
2. EU4 filter (½ dirty). Standard electric heater. Weather louvre.
3. Clean filter. Silencer. Frost heater.

3 Plot this on fan chart and plot another point half the air volume and 25% of the static to draw in system resistance curve. You can now see that this system will give 0.51m³/s airflow using the quiet VMD2L unit or 0.68m³/s with the VMD2M at full speed (5). The ideal duty would be achieved using the VMD2M with speed controller (Speed 3).

Continue the fan airflow line to read off the ideal heater size.In this case a 13.5kW 3 phase heater will give a 20˚C rise, which is sufficient to temper input air from -1˚C to 19˚C.

2 **EXAMPLE**

An office area of 80m² by 2.5m high requires ventilating at 10 air changes per hour.
80 X 2.5 X 10 = 0.56m³/s

60 X 60

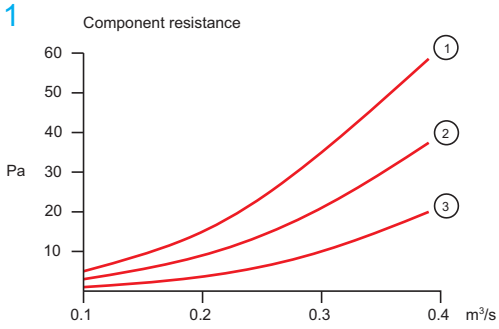
The input airflow requires filtering to a good standard (EU4) and electricity is the favoured winter heat source, controlled to minimise wasted energy.

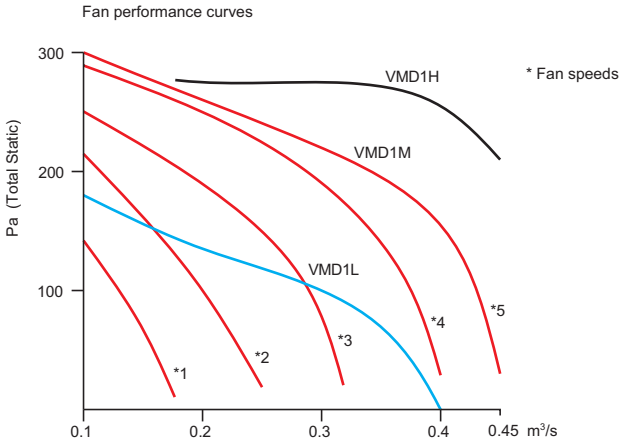
Using the top graph add the filter resistance (A) to the electric heater (B), silencer (C), weather louvre (D) and the external duct resistance (calculated from the duct layout)

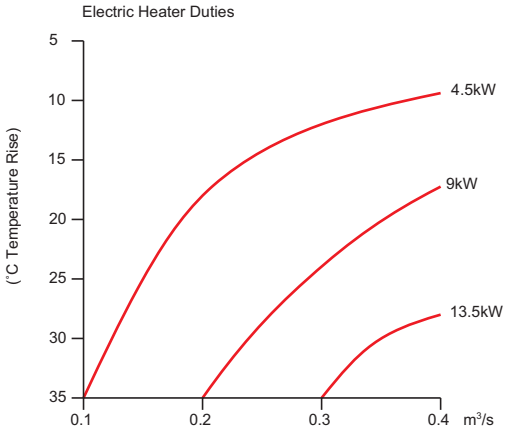
Pa	
A	35
B	35
C	35
D	13
EXT.	100
	218 Pa Total Static Pressure

VMD1 Supply Air Handling Unit - Selection Graphs

1



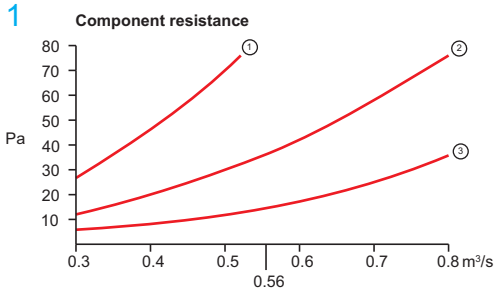


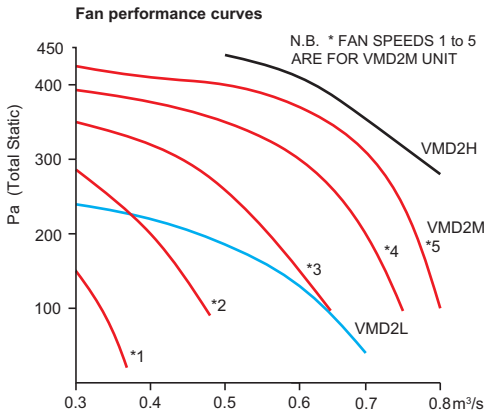


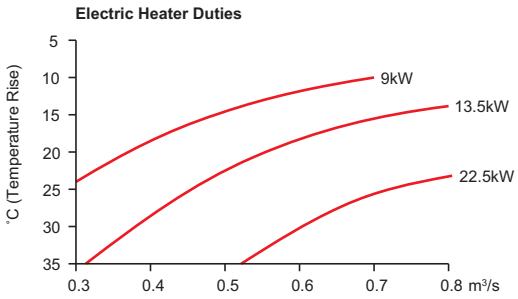
1
1. Deep cooling coil. High density electric heater.
2. EU4 filter (½ dirty). Standard electric heater. Weather louvre.
3. Clean filter. Silencer. Frost heater.

VMD2 Supply Air Handling Unit -Selection Graphs

1



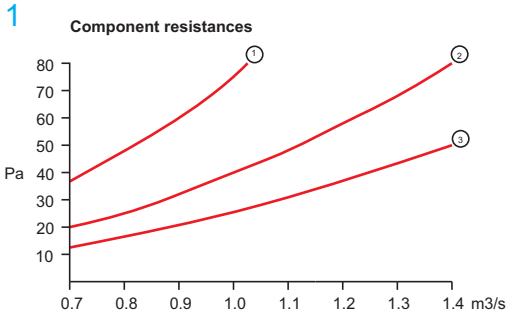


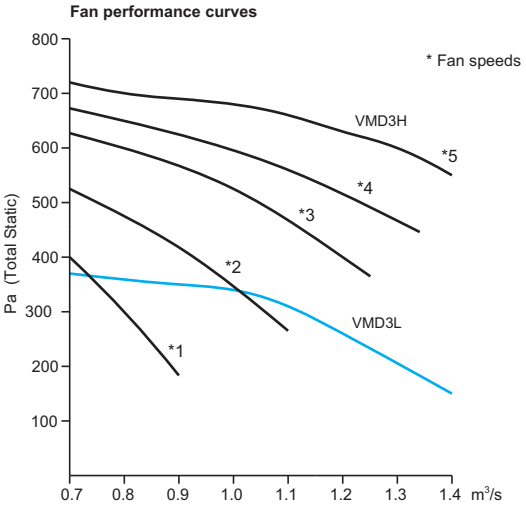


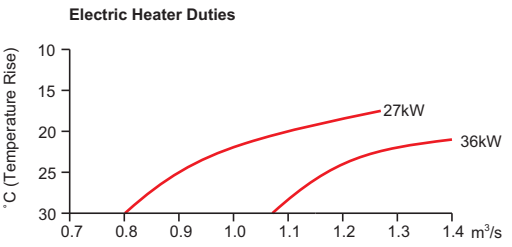
1
1. Deep cooling coil.
   High density electric heater.
2. EU4 filter (½ dirty).
   Standard electric heater.
   Weather louvre.
3. Clean filter.
   Silencer.
   Frost heater.

VMD3 Supply Air Handling Unit - Selection Graphs

1







1
1. Deep cooling coil.
   High density electric heater.
2. EU4 filter (½ dirty).
   Standard electric heater.
   Weather louvre.
3. Clean filter.
   Silencer.
   Frost heater.