

AIR HANDLERS LTD

Series VTI **Quiet** Cased Twin Extract Fan Unit



University of
Salford
MANCHESTER
Acoustic Testing Laboratory
College of Science & Technology

Engineering Solutions





The Company...

Air Handlers have been trading since May 1989, and have just celebrated 25 years in business in 2014. The Company operates from its 60,000 Sq Ft Factory in Salford Quays which was purpose built in the year 2000.

Product Development...

The Company is continually updating its products to take advantage of changing energy saving technologies, so the introduction of the VTI Range of extract units is based on changes in Fan technology, with the introduction of EC backward curved direct driven plug fans, with 0<10V speed control. Multi fan wall arrangements have been adopted to give higher performance with lower energy consumption.

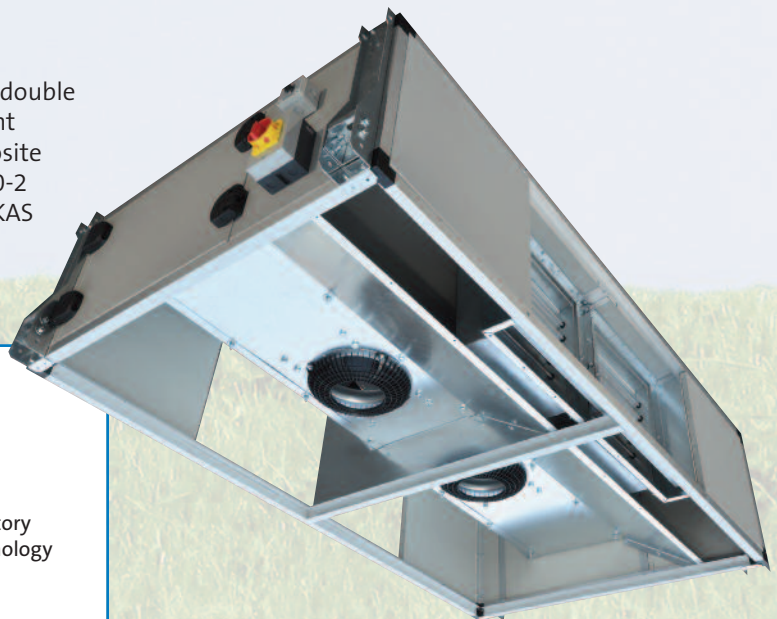
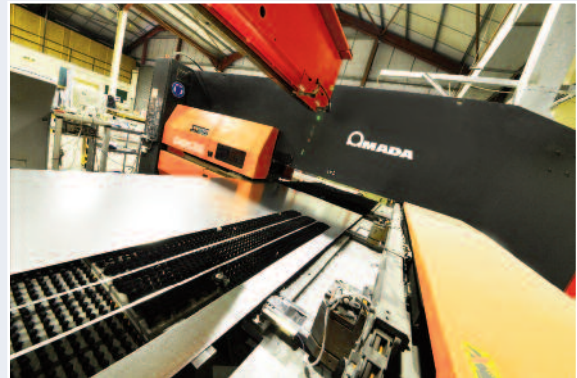
Compliance...

The VTI cased extract range has been developed to meet the specific fan power requirements of Building Regulations, and additionally to meet Building Bulletin 93 noise requirement for schools and places of learning.

Acoustic Performance...

Extensive acoustic testing of casework construction has been carried out at both the companies testing facilities, and Salford University Acoustic Testing Laboratory.

Acoustic tests were carried out on eleven double skin composite panel/frame systems, eight different triple and quadruple skin composite panel/frame systems, to BS. EN ISO 10140-2 (2010) which have all been certified as UKAS accredited.



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Fans...

Variable Twin Extract Units use duty and standby backward curved centrifugal plug type fans, direct driven by high efficiency EC motors.

This method of scroll free fan produces an optimal low loss flow of air through the impeller so there are no longer any drastic cross sectional changes.

Motors operate via a 0<10V DC output from the motor. This provides infinitely variable speed control.

Backward curved scroll free fans are quiet running with optimised airflow through the impeller, with significantly reduced tonal noise.



EC Plug Fan

Fan Inlet Flow grids

By fitting an inlet flow grid to the fans, it is possible to achieve significant noise reduction from the fan.

The noise reduction is predominantly low frequency decay (ie 63Hz, 125Hz, 250Hz), which can help offer significant power loss. This sound power loss is created by the reduction in turbulence hitting the rotating blades, with tonal frequency components, known as impellor noise or tonal noise.

Tonal noise consists of the blade-passing noise and its harmonics. The frequency of the blade passing noise can be calculated as the sum of the fan speed and the number of blades.

A flow-grid fitted to the inlet of the fans will significantly reduce the low frequency noise by generating disturbance. The vortex is split when impacting the grille as it is considerably weakened as it flows through the grille.

Sound pressure is reduced particularly the low frequency. The chart below indicates the power loss on octave bands.

Freg Hz	63	125	250	500	1K
Power loss db	-6	-10	-7.5	-8	-1



Flowgrids

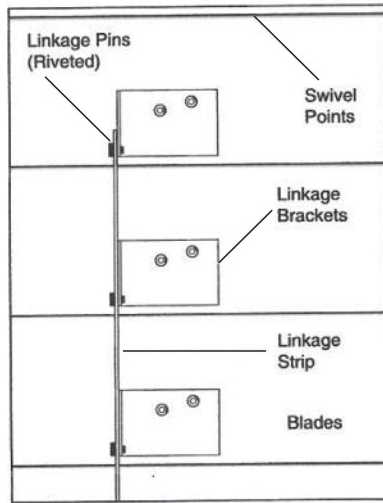
Duty and Standby Operations...

VTI Twin Cased Extract Units incorporate auto shutters to give duty and standby automatic changeover. Also this arrangement can provide duty sharing over a set time period.

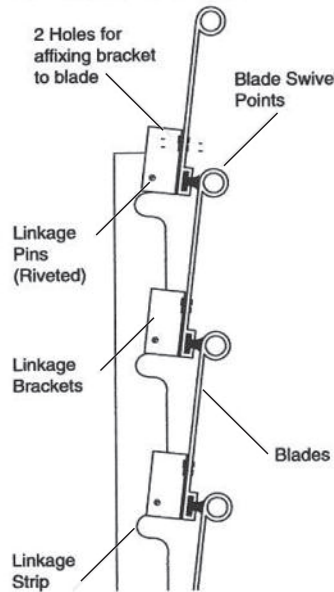
The auto shutters are built into the VTI Unit and are constructed from aluminium blade profile with blade edge brush seals. All auto shutters conform to HVCA specification DW144 Class A, B and C.



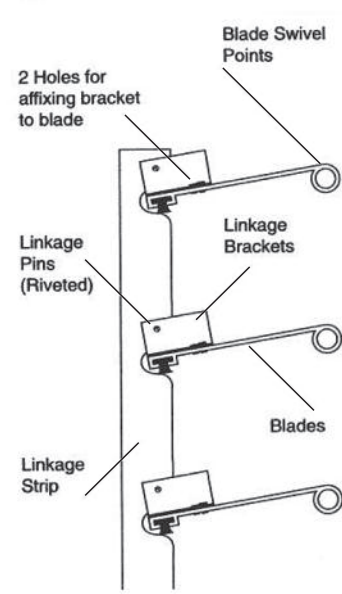
As standard, blades are linked as illustrated with galvanised mild steel connection bars, to control evenly the opening and closing of the blades.



BLADES CLOSED



BLADES OPEN



Casework...

Frames are constructed using insulated anodised aluminium pentapost with mechanical interference die cast corners.

Panels are constructed in three different thicknesses, 18mm, 25mm, 45mm. Their construction will be double, triple or quadruple skinned, depending on the sound insulation needed to achieve the room or area served noise requirement.

Weatherproofing...

All VTI twin cased extract units can be supplied as external weatherproof models and will have a discharge louvre cowl arrangement, together with a roof to prevent water penetration.

Mounting feet are provided on the base of the unit.

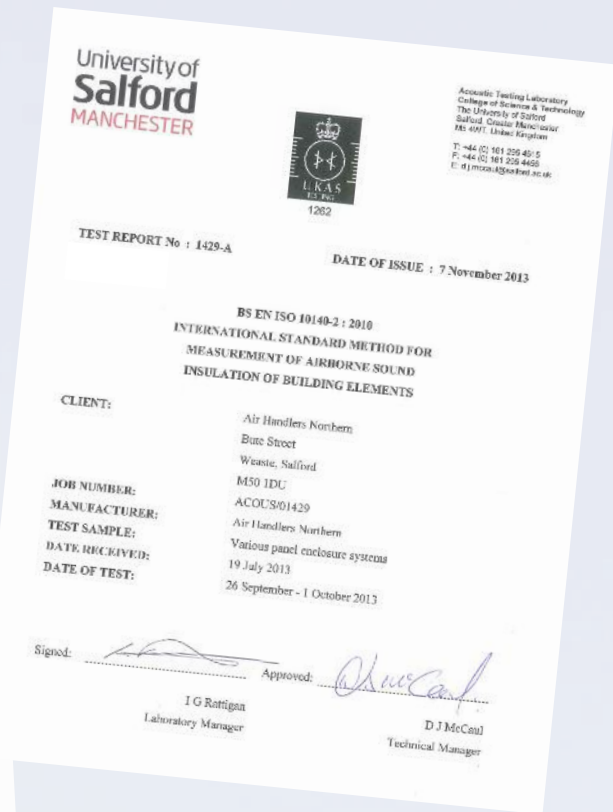
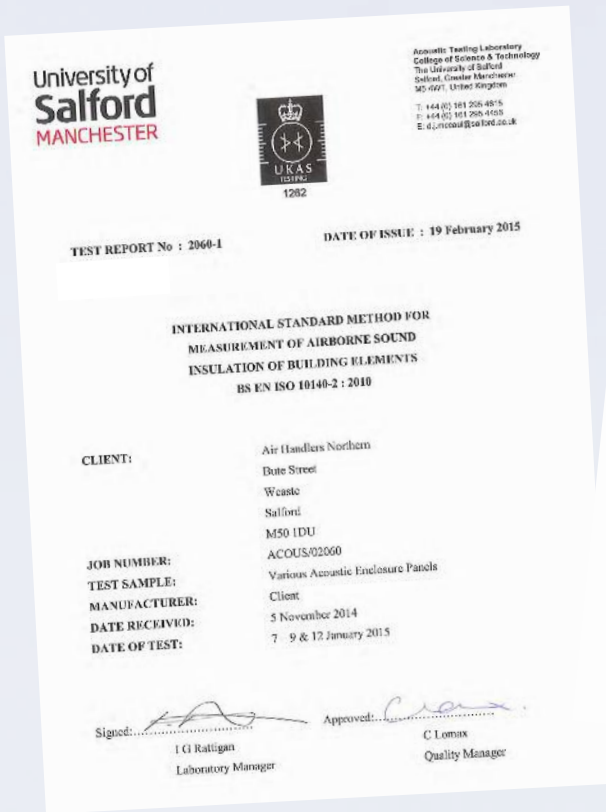
Casework Sound Reduction Options...

Casework Reference	Thickness	Type	OCTAVE BANDS							
			63	125	250	500	1K	2K	4K	8K
PB18	18mm	Double Skin	21	25.9	28.2	29.3	33.1	34.5	33.7	39.8
SPB18	18mm	Double Skin	21.6	24.9	27.9	28	34.8	35.5	33.6	39.2
PB25	25mm	Double Skin	20.4	23	22.9	23.3	33.6	37	37.7	45.5
SPB25	25mm	Double Skin	22.5	26.2	29.4	30	36.4	35.2	33.6	39.6
PB50	50mm	Double Skin	21.8	23.8	22.1	26	35.6	35.2	32	40.1
PBTSPB25	25mm	Triple Skin	23.8	26.6	29	30.6	36.7	35.6	33.3	40.1
ASQSPB50	50mm	Quadruple Skin	24.1	36.6	34.7	39.8	40.7	37.8	39.7	43.7

The above Sound Reduction Index values are based on UKAS approved tests being carried out on the frame and panels in line with that found in the VTI casing construction.

Certification...

All acoustic SRI tests are certified by Salford University Test Laboratories to BS EN ISO 10140-2(2010) – Report No’s 1429 & 2060.



Casework Breakout...

In partnership with Salford University Acoustic Testing Laboratory a range of composite acoustic panels have been designed and tested.

To obtain the true casework noise breakout, the frame and panel assembly has to be tested with a large enough area sample to give a true representation of a cased extract fan unit.

In practice the framework can leak sound which will flank the panels. Therefore the frame must be acoustically insulated to the same standard as the panels.



Test set up during testing programme



Assembling test frame and panels

MODEL VTI 100 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)													
	50	75	100	125	150	200	250	300	350	400	450	500	550	600
4V	294	266	237	190	143	-	-	-	-	-	-	-	-	-
6V	450	427	404	380	360	310	260	165	-	-	-	-	-	-
8V	615	590	570	550	530	510	475	435	400	340	285	190	-	-
10V	680	665	645	625	605	590	570	545	510	475	425	380	330	265

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)									
	50	100	150	200	250	300	400	500	600	700
4V	25	27	28	29	28	27	-	-	-	-
6V	37	40	44	46	50	52	50	45	-	-
8V	60	70	80	90	93	100	100	95	90	-
10V	80	90	100	110	120	125	130	125	120	110

Fan Reference	-	EC190/137	Control Voltage	-	0<10 Volts
Motor Power	-	137 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	0.9 Amps	Maximum Fan Speed	-	3800 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VTI Unit

Fan Speeds	Airflow (M ³ /Hr)														
	ESP	100	150	200	250	300	350	400	450	500	550	600	650	700	
50	60	60	61	62	64	66	68	69	71	73	75	77	78	Inlet	
	61	61	62	66	68	70	73	74	75	77	79	81	83	Outlet	
100	61	61	63	64	65	65	68	69	71	73	75	77	-	Inlet	
	62	62	64	66	69	70	73	74	75	77	79	81	-	Outlet	
150	62	62	63	64	66	67	68	69	72	72	76	76	-	Inlet	
	63	63	64	68	70	72	73	74	76	76	78	78	-	Outlet	
200	-	64	65	66	67	68	69	70	73	73	77	77	-	Inlet	
	-	67	68	69	71	73	74	75	77	77	80	80	-	Outlet	
250	-	65	66	67	67	68	79	70	74	74	77	-	-	Inlet	
	-	67	68	70	71	73	74	75	78	78	80	-	-	Outlet	
300	-	67	68	68	69	69	70	71	74	75	-	-	-	Inlet	
	-	68	69	69	71	72	75	76	78	80	-	-	-	Outlet	
350	71	71	72	72	72	72	72	74	74	-	-	-	-	Inlet	
	74	74	75	75	75	75	75	77	77	-	-	-	-	Outlet	
400	72	72	73	73	73	73	75	75	75	-	-	-	-	Inlet	
	75	75	76	76	76	76	77	77	77	-	-	-	-	Outlet	
450	72	73	74	74	73	73	75	75	-	-	-	-	-	Inlet	
	75	75	76	76	76	76	77	77	-	-	-	-	-	Outlet	
500	73	73	74	74	75	75	76	-	-	-	-	-	-	Inlet	
	76	76	76	76	77	77	78	-	-	-	-	-	-	Outlet	
550	74	74	75	75	76	76	-	-	-	-	-	-	-	Inlet	
	77	77	77	77	78	78	-	-	-	-	-	-	-	Outlet	
600	75	75	76	76	76	77	-	-	-	-	-	-	-	Inlet	
	78	78	79	79	79	80	-	-	-	-	-	-	-	Outlet	
650	76	76	-	-	-	-	-	-	-	-	-	-	-	Inlet	
	79	79	-	-	-	-	-	-	-	-	-	-	-	Outlet	

(Voltage) 4V / (Fan Speed) 1910 RPM 6V / 2670 RPM 8V / 3430 RPM 10V / 3800 RPM

MODEL VTI 200 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)											
	100	150	200	250	300	350	400	450	500	550	600	
4V	340	190	-	-	-	-	-	-	-	-	-	-
6V	570	520	475	370	190	-	-	-	-	-	-	-
8V	770	740	700	635	595	570	475	380	190	-	-	-
10V	884	855	810	760	720	675	625	570	475	380	190	-

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)													
	50	100	150	200	250	300	400	500	600	700	800	900	1000	
4V	25	30	35	40	45	50	45	40	-	-	-	-	-	
6V	40	43	50	51	60	62	65	60	55	50	-	-	-	
8V	60	80	90	94	100	110	114	120	122	110	100	90	-	
10V	88	100	115	120	130	140	151	159	165	152	140	130	120	

Fan Reference	-	EC220/163	Control Voltage	-	0<10 Volts
Motor Power	-	163 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	1.0 Amps	Maximum Fan Speed	-	3200 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VTI Unit

Fan Speeds	Airflow (M ³ /Hr)														
	ESP	100	150	200	250	300	350	400	500	600	700	800	900	950	
50		61	61	62	63	64	64	65	65	68	72	74	77	79	Inlet
		65	65	66	67	68	68	69	69	72	76	79	81	84	Outlet
100		62	62	63	63	61	62	64	66	69	71	75	77	-	Inlet
		65	65	66	67	63	66	69	70	73	75	79	81	-	Outlet
150		62	62	63	63	63	64	66	68	71	72	75	77	-	Inlet
		65	66	67	67	67	68	70	72	75	76	79	80	-	Outlet
200		62	62	63	63	64	65	66	67	70	74	75	-	-	Inlet
		65	66	67	67	67	68	70	71	74	78	79	-	-	Outlet
250		62	63	64	64	65	67	67	67	70	74	76	-	-	Inlet
		65	66	67	67	68	70	70	71	74	78	80	-	-	Outlet
300		63	64	65	65	66	68	68	70	72	74	-	-	-	Inlet
		66	67	68	68	70	71	71	73	75	78	-	-	-	Outlet
350		64	66	67	67	68	69	69	70	72	75	-	-	-	Inlet
		67	69	70	70	71	72	72	73	76	79	-	-	-	Outlet
400		66	67	68	68	69	70	70	70	72	-	-	-	-	Inlet
		69	70	71	71	72	73	73	73	76	-	-	-	-	Outlet
450		67	68	70	70	71	72	72	72	73	-	-	-	-	Inlet
		70	71	73	73	74	75	75	76	77	-	-	-	-	Outlet
500		68	69	71	71	72	73	73	75	-	-	-	-	-	Inlet
		71	72	73	73	74	75	75	77	-	-	-	-	-	Outlet
550		69	71	72	72	73	74	74	-	-	-	-	-	-	Inlet
		72	73	74	74	75	76	76	-	-	-	-	-	-	Outlet
600		70	72	73	-	-	-	-	-	-	-	-	-	-	Inlet
		73	74	75	-	-	-	-	-	-	-	-	-	-	Outlet

(Voltage) 4V / (Fan Speed) 1670 RPM 6V / 2290 RPM 8V / 2900 RPM 10V / 3200 RPM

MODEL VTI 300 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)												
	50	100	150	200	250	300	350	400	450	500	550	600	650
4V	1300	990	650	-	-	-	-	-	-	-	-	-	-
6V	1933	1745	1540	1300	1060	790	-	-	-	-	-	-	-
8V	2500	2355	2250	2040	1880	1710	1540	1330	1120	885	-	-	-
10V	2960	2790	2660	2375	2280	2120	1915	1740	1540	1330	1120	950	715

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)														
	600	700	800	900	1000	1100	1200	1400	1600	1800	2000	2250	2500	2750	3000
4V	100	100	100	100	100	100	100	100	-	-	-	-	-	-	-
6V	95	205	206	208	210	205	200	200	195	190	220	250	-	-	-
8V	-	370	374	377	380	390	400	400	395	390	360	340	330	370	400
10V	-	455	462	470	480	485	490	490	515	520	515	510	500	490	470

Fan Reference	-	EC310/390	Control Voltage	-	0<10 Volts
Motor Power	-	390 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	2.6 Amps	Maximum Fan Speed	-	2350 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VTI Unit

ESP(PA)	Airflow (M ³ /Hr)													
	650	750	850	950	1100	1300	1500	1750	2000	2250	2500	2750	3000	
50	54	55	55	56	56	56	64	65	67	69	71	72	74	Inlet
	58	59	59	60	60	63	67	69	71	74	76	77	79	Outlet
100	54	54	55	55	55	60	64	65	68	70	71	72	73	Inlet
	59	59	60	60	60	64	68	71	73	75	76	77	78	Outlet
150	55	57	60	62	63	65	67	68	70	73	74	76		Inlet
	61	62	64	66	67	69	71	72	74	77	78	79		Outlet
200	61	61	62	62	63	63	66	68	70	70	72			Inlet
	66	66	67	67	68	68	72	73	75	75	77			Outlet
250	63	64	65	65	66	68	69	70	72	72	73			Inlet
	67	68	69	69	70	73	74	75	77	78	79			Outlet
300	63	63	64	64	65	66	67	69	70	71				Inlet
	66	67	69	69	70	71	72	74	75	76				Outlet
350	65	66	67	67	68	68	69	70	70					Inlet
	70	72	73	73	74	74	75	76	76					Outlet
400	65	66	67	67	68	68	69	71						Inlet
	70	72	73	73	74	74	75	76						Outlet
450	67	67	68	68	69	69	70	71						Inlet
	71	72	73	73	73	74	75	76						Outlet
500	65	66	67	67	68	69	71							Inlet
	71	72	73	74	75	76	77							Outlet
550	65	67	68	70	70	72								Inlet
	71	73	74	76	76	78								Outlet
600	66	69	70	72										Inlet
	72	75	76	78										Outlet
650	70	72												Inlet
	76	78												Outlet

(Voltage) 4V / (Fan Speed) 1215 RPM 6V / 1665 RPM 8V / 2110 RPM 10V / 2350 RPM

MODEL VTI 400 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)											
	50	100	150	200	300	400	500	600	700	800	900	
4V	1565	1395	1200	1025	-	-	-	-	-	-	-	-
6V	2220	2115	1945	1805	1540	1160	685	-	-	-	-	-
8V	2705	2735	2660	2565	2290	1975	1710	1435	1120	685	-	-
10V	3230	3145	3080	2975	2765	2490	2250	1976	1740	1465	1200	-

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)												
	700	800	900	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250
4V	120	130	130	135	125	120	116	-	-	-	-	-	-
6V	250	260	260	270	270	270	265	260	250	240	-	-	-
8V	430	430	435	450	460	465	470	475	470	450	445	440	-
10V	600	630	650	660	670	680	690	700	705	700	685	670	650

Fan Reference	-	EC310/680	Control Voltage	-	0<10 Volts
Motor Power	-	680 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	4.3 Amps	Maximum Fan Speed	-	3000 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VTI Unit

Fan Speeds	ESP(PA)	Airflow (M ³ /Hr)													
		700	800	900	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	
50	63	63	64	64	64	65	66	70	73	76	78	80	81	Inlet	
	67	67	68	68	68	69	69	75	77	79	81	83	84	Outlet	
100	63	64	64	64	65	66	69	71	75	77	80	81	82	Inlet	
	67	68	68	68	69	69	72	74	78	80	82	83	84	Outlet	
150	64	64	64	65	65	67	69	70	72	75	78	80	82	Inlet	
	68	68	68	69	69	71	75	76	78	80	82	83	85	Outlet	
200	64	64	64	65	66	69	71	73	75	76	77	78	81	Inlet	
	68	68	68	69	70	73	76	78	79	81	84	85	82	Outlet	
250	64	64	64	66	70	73	77	78	78	79	80	82	80	Inlet	
	68	68	68	70	74	76	80	81	81	82	83	84	84	Outlet	
300	64	64	64	66	67	70	72	74	77	77	80	83	-	Inlet	
	68	68	68	70	71	74	76	78	80	80	82	84	-	Outlet	
350	66	66	67	67	68	72	74	75	78	81	83	-	-	Inlet	
	69	69	70	70	71	76	77	79	81	84	86	-	-	Outlet	
400	64	65	66	68	69	70	73	74	75	78	80	-	-	Inlet	
	68	69	70	71	72	74	76	77	78	81	83	-	-	Outlet	
450	66	68	70	72	73	74	75	78	79	-	-	-	-	Inlet	
	70	71	72	75	76	77	78	80	81	-	-	-	-	Outlet	
500	68	69	69	70	72	73	75	76	77	-	-	-	-	Inlet	
	71	72	73	74	75	76	78	79	80	-	-	-	-	Outlet	
550	68	69	70	72	73	74	74	76	78	-	-	-	-	Inlet	
	71	72	73	75	76	77	78	80	81	-	-	-	-	Outlet	
600	70	71	72	72	73	75	75	76	-	-	-	-	-	Inlet	
	75	76	77	77	78	79	79	80	-	-	-	-	-	Outlet	
650	69	70	72	73	73	76	77	78	-	-	-	-	-	Inlet	
	73	74	76	77	78	80	81	82	-	-	-	-	-	Outlet	
700	70	71	73	74	75	77	79	-	-	-	-	-	-	Inlet	
	73	75	76	77	78	80	83	-	-	-	-	-	-	Outlet	
800	73	74	76	76	77	79	-	-	-	-	-	-	-	Inlet	
	77	77	79	80	81	83	-	-	-	-	-	-	-	Outlet	
900	73	75	76	77	78	-	-	-	-	-	-	-	-	Inlet	
	76	78	80	82	83	-	-	-	-	-	-	-	-	Outlet	

(Voltage) 4V / (Fan Speed) 1535 RPM 6V / 2130 RPM 8V / 2700 RPM 10V / 3000 RPM

MODEL VTI 500 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)												
	50	100	150	200	250	300	350	400	450	500	550	600	650
4V	2550	1945	1275	-	-	-	-	-	-	-	-	-	-
6V	3790	3415	3015	2550	2075	1545	-	-	-	-	-	-	-
8V	4900	4620	4420	4000	3685	3350	3015	2605	2195	1730	-	-	-
10V	5810	5475	5215	4820	4545	4150	3750	3390	3015	2605	2200	1860	1395

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)														
	1200	1400	1600	1800	2000	2200	2400	2800	3200	3600	4000	4500	5000	5500	6000
4V	200	200	200	200	200	200	200	200	-	-	-	-	-	-	-
6V	190	410	412	416	420	410	400	400	390	380	440	500	-	-	-
8V	-	740	748	754	760	780	800	800	790	780	720	680	660	740	800
10V	-	910	924	940	960	970	1020	1030	1040	1030	1020	1000	980	960	940

Fan Reference	-	EC310/390/2F	Control Voltage	-	0<10 Volts
Motor Power	-	780 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	5.2 Amps	Maximum Fan Speed	-	2300 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VTI Unit

ESP(PA)	Airflow (M ³ /Hr)													
	1300	1500	1700	1900	2200	2600	3000	3500	4000	4500	5000	5500	6000	
50	57	58	58	59	59	59	67	68	70	72	74	75	77	Inlet
	61	62	62	63	63	66	70	72	74	77	79	80	82	Outlet
100	57	57	58	58	58	63	67	68	71	73	74	75	76	Inlet
	63	63	64	64	64	68	71	74	76	78	79	80	81	Outlet
150	58	60	63	64	65	68	70	71	73	76	77	79		Inlet
	64	65	67	69	70	72	74	75	77	80	81	82		Outlet
200	64	64	65	65	66	66	69	71	73	73	75			Inlet
	69	69	70	70	71	71	74	75	78	78	80			Outlet
250	66	67	68	68	69	71	72	73	75	75	76			Inlet
	70	71	72	72	73	76	77	78	80	81	82			Outlet
300	66	66	67	67	68	69	70	72	73	74				Inlet
	69	70	72	72	73	74	76	77	78	79				Outlet
350	68	69	70	70	71	71	72	73	73					Inlet
	73	75	75	76	77	77	78	79	79					Outlet
400	68	69	70	70	71	71	72	74						Inlet
	73	75	76	76	77	77	78	79						Outlet
450	70	70	71	71	72	72	73	74						Inlet
	74	75	76	76	76	77	78	79						Outlet
500	68	69	70	70	71	72	74							Inlet
	74	75	76	77	78	79	80							Outlet
550	68	70	71	73	73	75								Inlet
	74	76	77	79	79	81								Outlet
600	69	72	73	75										Inlet
	75	78	79	81										Outlet
650	73	75												Inlet
	79	81												Outlet

(Voltage) 4V / (Fan Speed) 1215 RPM 6V / 1665 RPM 8V / 2110 RPM 10V / 2350 RPM

MODEL VTI 600 Performance Selection Charts...

Air Flow Performance (M³/Hr)

Volts	External Resistance (PA)										
	50	100	150	200	300	400	500	600	700	800	900
4V	3075	2735	2345	2010	-	-	-	-	-	-	-
6V	4350	4150	3820	3540	3015	2270	1340	-	-	-	-
8V	5600	5365	5215	5030	4490	3875	3350	2812	2200	1340	-
10V	6330	6165	6035	5830	5420	4880	4415	3875	3405	2870	2345

Absorbed Power (Watts)

Volts	Airflow (M ³ /Hr)												
	1400	1600	1800	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500
4V	240	260	260	270	250	240	232	-	-	-	-	-	-
6V	500	520	520	540	540	540	530	520	500	480	-	-	-
8V	860	860	870	900	920	930	940	950	940	900	890	880	-
10V	1200	1260	1300	1320	1340	1360	1380	1400	1410	1400	1370	1340	1300

Fan Reference	-	EC310/680/2F	Control Voltage	-	0<10 Volts
Motor Power	-	1360 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	8.6 Amps	Maximum Fan Speed	-	3000 RPM

Sound Data - 4<10 Volts...

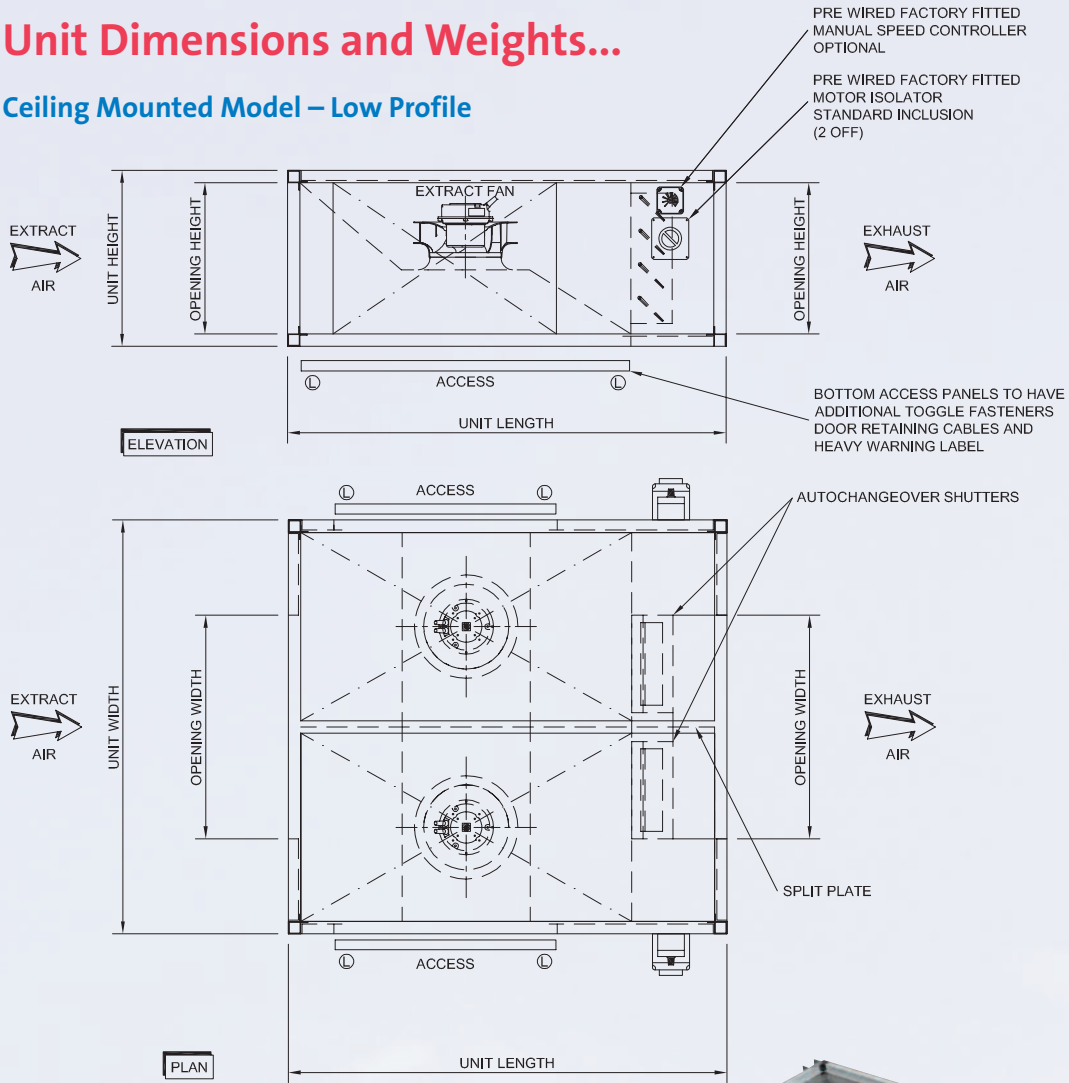
Ceiling mounted VTI Unit

Fan Speeds	ESP(PA)	Airflow (M ³ /Hr)													
		1400	1600	1800	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	
50	66	66	67	67	67	68	69	73	76	79	81	83	84	Inlet	
	70	70	71	71	71	72	72	78	80	82	84	86	87	Outlet	
100	66	67	67	67	68	69	72	74	78	80	83	84	85	Inlet	
	70	71	71	71	72	72	75	77	81	83	85	86	87	Outlet	
150	67	67	67	68	68	70	71	74	75	78	81	83	85	Inlet	
	71	71	71	72	72	74	78	79	81	83	85	86	88	Outlet	
200	67	67	67	68	69	72	74	76	78	79	80	81	84	Inlet	
	71	71	71	72	73	76	79	81	82	84	87	89	85	Outlet	
250	67	67	67	69	73	76	80	81	81	82	83	85	83	Inlet	
	71	71	71	73	77	79	83	84	84	85	86	87	87	Outlet	
300	67	67	67	69	70	73	75	77	80	80	83	86		Inlet	
	71	71	71	73	74	77	79	81	83	83	85	87		Outlet	
350	69	69	70	70	71	75	77	78	81	84	86			Inlet	
	72	72	73	73	74	79	80	82	84	87	89			Outlet	
400	67	68	69	71	72	73	76	77	78	81	83			Inlet	
	71	72	73	74	75	77	79	80	81	84	86			Outlet	
450	69	71	73	75	76	77	78	81	82					Inlet	
	73	74	75	78	79	80	81	83	84					Outlet	
500	71	72	72	73	75	76	78	79	80					Inlet	
	74	75	76	77	78	79	81	82	83					Outlet	
550	71	72	73	75	76	77	77	79	81					Inlet	
	74	75	76	78	79	80	81	83	84					Outlet	
600	73	74	75	75	76	78	78	79						Inlet	
	78	79	80	80	81	82	82	83						Outlet	
650	72	73	75	76	76	79	80	81						Inlet	
	76	77	79	80	81	83	84	85						Outlet	
700	73	74	76	77	78	80	82							Inlet	
	76	78	79	80	81	83	86							Outlet	
800	76	77	79	79	80	82								Inlet	
	80	80	82	83	84	86								Outlet	
900	76	78	79	80	81									Inlet	
	79	81	83	85	86									Outlet	

(Voltage) 4V / (Fan Speed) 1535 RPM 6V / 2130 RPM 8V / 2700 RPM 10V / 3000 RPM

Unit Dimensions and Weights...

Ceiling Mounted Model – Low Profile



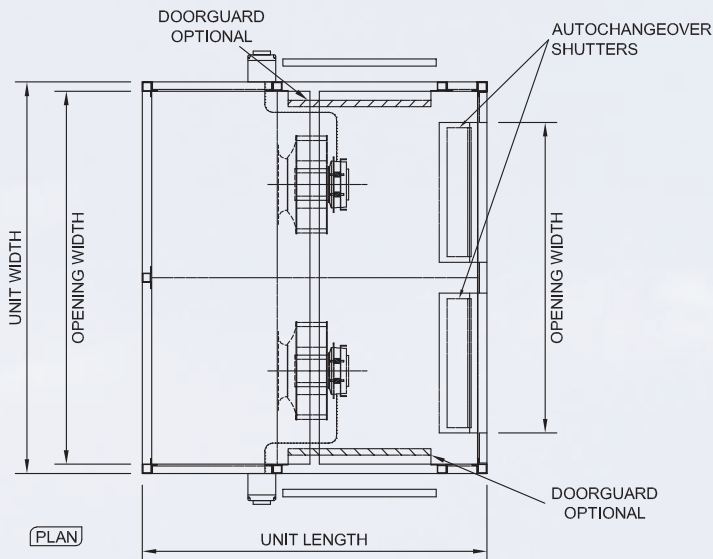
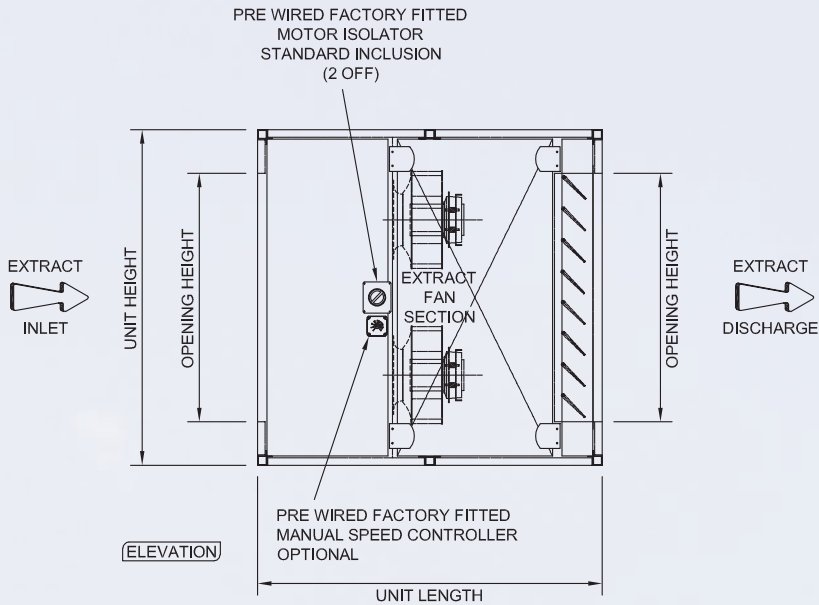
Casework Constructed from Double Skin Acoustic Insulated Galvanised Inner and Outer Skins

Dimensions & Weights

MODEL	Frame	Weight Kg	Opening W & H	Width	Height	Length
VTI100PB/CM/ISO	20/18	88	440 x 290	830	330	940
VTI100PB/CM/ISO	30/25	119	440 x 290	850	350	960
VTI100PB/CM/ISO	50/50	159	440 x 290	890	390	1000
VTI200PB/CM/ISO	20/18	114	540 x 365	980	405	1040
VTI200PB/CM/ISO	30/25	153	540 x 365	1000	425	1060
VTI200PB/CM/ISO	50/50	203	540 x 365	1040	465	1100
VTI300PB/CM/ISO	20/18	148	750 x 395	1340	435	1090
VTI300PB/CM/ISO	30/25	199	750 x 395	1360	455	1110
VTI300PB/CM/ISO	50/50	263	750 x 395	1400	495	1150
VTI400PB/CM/ISO	20/18	165	950 x 425	1540	465	1090
VTI400PB/CM/ISO	30/25	222	950 x 425	1560	485	1110
VTI400PB/CM/ISO	50/50	293	950 x 425	1600	525	1150

Plant Room Model – Floor or Ceiling Mounted...

VTI Plantroom Mounted

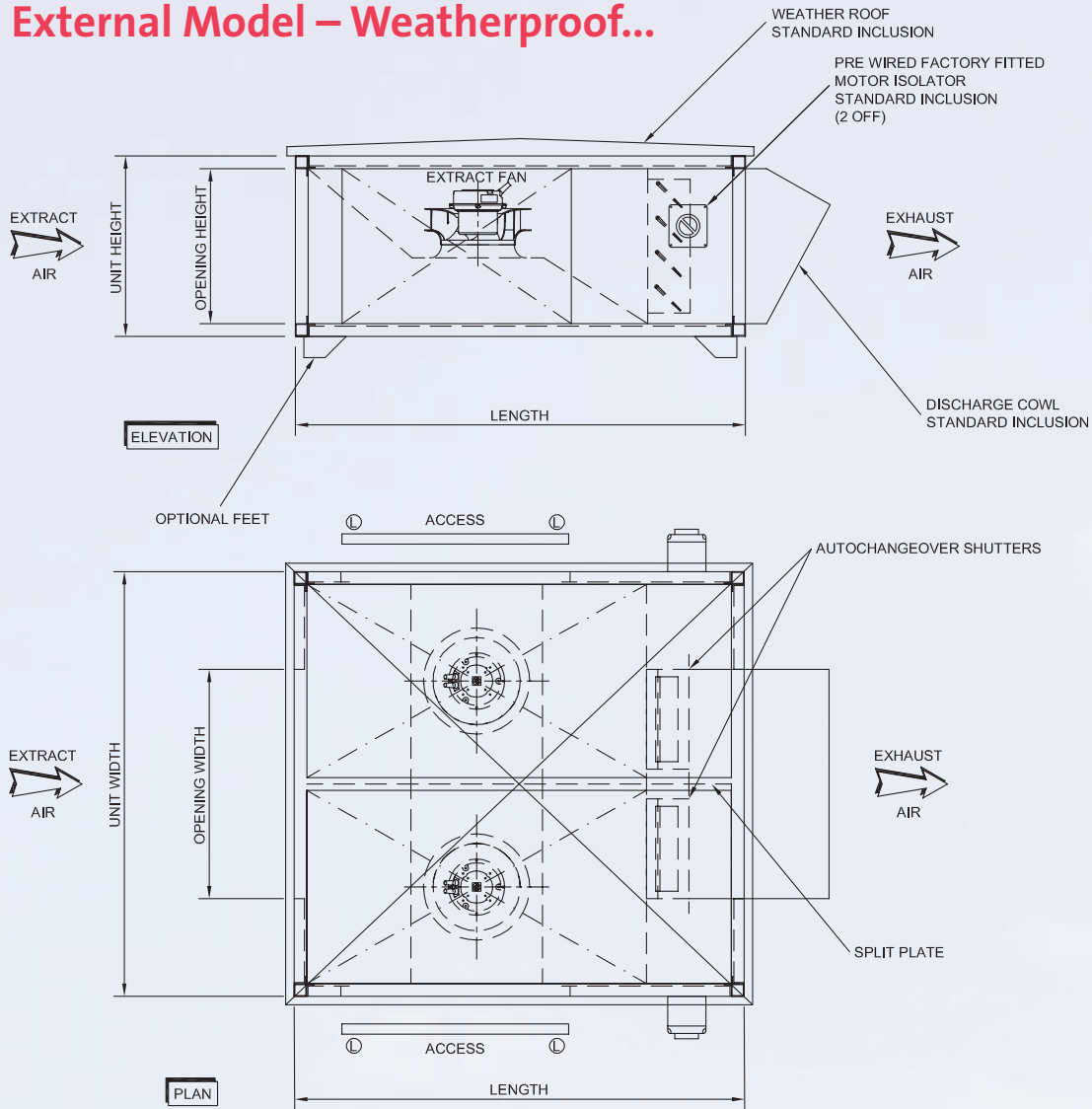


Casework Constructed from Double Skin Acoustic Insulated Galvanised Inner and Outer Skins

Dimensions & Weights

MODEL	Frame	Weight Kg	Opening W X H	Width	Height	Length
VTI500PB/ISO	30/25	262	1200 x 800	1260	1080	1110
VTI500PB/ISO	50/50	341	1200 x 800	1300	1120	1150
VTI600PB/CM/ISO	30/25	262	1200 x 1000	1260	1286	1110
VTI600PB/CM/ISO	50/50	341	1200 x 1000	1300	1320	1150

External Model – Weatherproof...



Casework Constructed from Double Skin Acoustic Insulated Plastisol Outer with Galvanised Sheet Steel Inner Skins



Dimensions & Weights

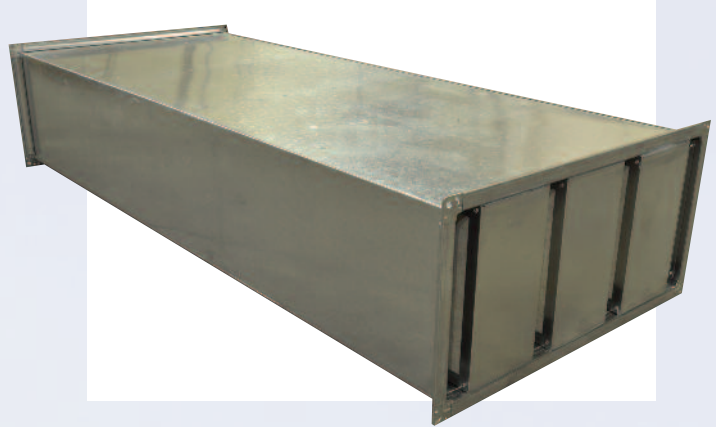
MODEL	Frame	Weight Kg	Opening W x H	Width	Height	Length
VTI100PB/CM/ISO	20/18	88	440 x 290	830	330	940
VTI100PB/CM/ISO	30/25	119	440 x 290	850	350	960
VTI100PB/CM/ISO	50/50	159	440 x 290	890	390	1000
VTI200PB/CM/ISO	20/18	114	540 x 365	980	405	1040
VTI200PB/CM/ISO	30/25	153	540 x 365	1000	425	1060
VTI200PB/CM/ISO	50/50	203	540 x 365	1040	465	1100
VTI300PB/CM/ISO	20/18	148	750 x 395	1340	435	1090
VTI300PB/CM/ISO	30/25	199	750 x 395	1360	455	1110
VTI300PB/CM/ISO	50/50	263	750 x 395	1400	495	1150
VTI400PB/CM/ISO	20/18	165	950 x 425	1540	465	1090
VTI400PB/CM/ISO	30/25	222	950 x 425	1560	485	1110
VTI400PB/CM/ISO	50/50	293	950 x 425	1600	525	1150
VTI500PB/ISO	30/25	262	1200 x 800	1260	1080	1110
VTI500PB/ISO	50/50	341	1200 x 800	1300	1120	1150
VTI600PB/ISO	30/25	262	1200 x 1000	1260	1286	1110
VTI600PB/ISO	50/50	341	1200 x 1000	1300	1320	1150

Attenuators...

Purpose designed bolt on duct style attenuators are available for internal ceiling and plant room models. They are specifically designed to bolt straight onto the inlet and outlet of the VTI cased extract unit and constructed from galvanised sheet steel.

In the case of weather proof external mounted models the system side inlet attenuator is also a bolt on arrangement, but constructed from a plastisol plastic coated sheet steel duct with 30mm mezz flanges.

All attenuators will contain acoustic absorbent splitters with low airway velocities, and pressure drops. The performance of the attenuators is detailed below.



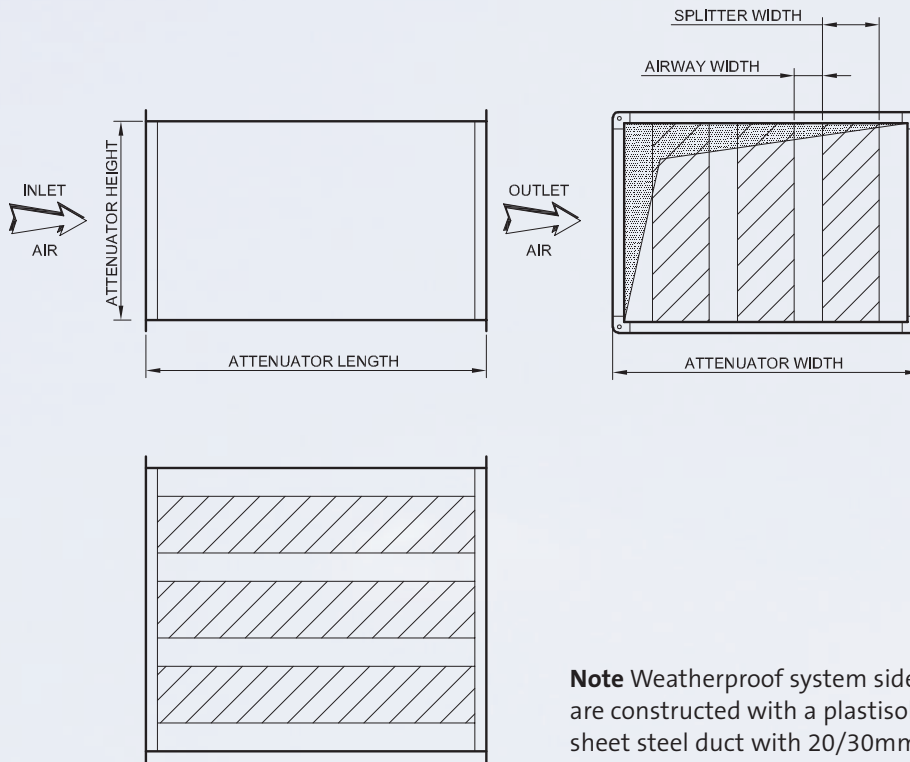
Attenuator Performance

Model	Insertion Loss db								
	Frequency Hz	63	125	250	500	1K	2K	4K	8K
VTI 100									
600 Long	-8	-15	-26	-35	-44	-44	-44	-44	-36
750 Long	-9	-17	-29	-42	-52	-55	-55	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55	-55
VTI 200									
600 Long	-7	-13	-24	-33	-42	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-51	-52
1200 Long	-11	-22	-38	-55	-55	-55	-55	-55	-55
VTI 300									
600 Long	-7	-13	-24	-33	-42	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-51	-52
1200 Long	-11	-23	-38	-55	-55	-55	-55	-55	-55
VTI 400									
600 Long	-7	-13	-24	-33	-42	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-51	-52
1200 Long	-11	-23	-38	-55	-55	-55	-55	-55	-55
VTI 500									
600 Long	-8	-15	-26	-35	-44	-44	-44	-44	-35
750 Long	-9	-17	-29	-42	-52	-52	-52	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55	-55
VTI 600									
600 Long	-8	-15	-26	-35	-44	-44	-44	-44	-35
750 Long	-9	-17	-29	-42	-52	-52	-52	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55	-55

Attenuator Dimensions and Weights...

Ceiling and Plantroom Models

MODEL	LENGTH							
	600mm		750mm		900mm		1200mm	
	W x H	Weight KG	W x H	Weight KG	W x H	Weight KG	W x H	Weight KG
VTI 100	440x290	19.5	440x290	21.8	440x290	24.1	440x290	27.4
VTI 200	540x365	21.4	540x365	24.5	540x365	27.6	540x365	33.9
VTI 300	750x395	26.5	750x395	30.5	750x395	34.5	750x395	42.5
VTI 400	950x425	32.8	950x425	37.9	950x425	43.3	950x425	53.3
VTI 500	1200x800	52.4	1200x800	61.6	1200x800	70.8	1200x800	89.2
VTI 600	1200x1000	60.8	1200x1000	71.3	1200x1000	81.9	1200x1000	102.9



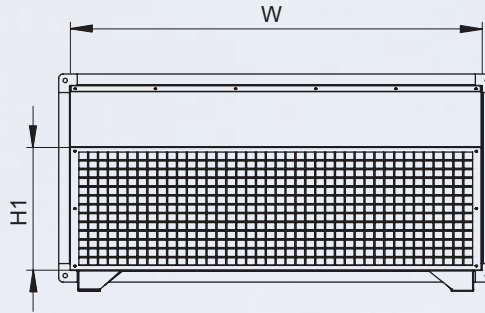
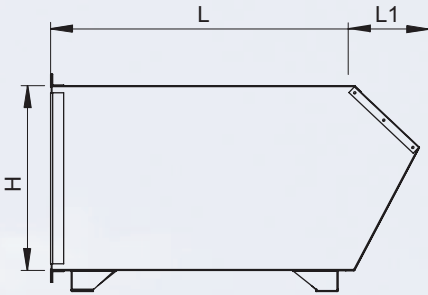
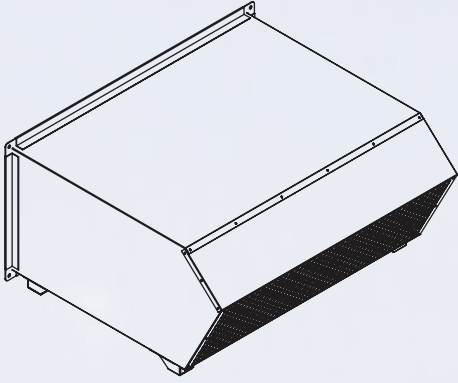
Note Weatherproof system side attenuators are constructed with a plastisol plastic coated sheet steel duct with 20/30mm mezz flanges.



Weatherproof Attenuators...

Weatherproof exhaust attenuators are provided as a bolt on addition to the VTI Cased Extract Unit. The casework is constructed from plastisol plastic coated sheet steel to match the casework of the VTI Unit.

Built into the attenuator casework is a discharge cowl as shown below. The exhaust air attenuator contains acoustic absorbent splitters with low airway velocities and pressure drops.



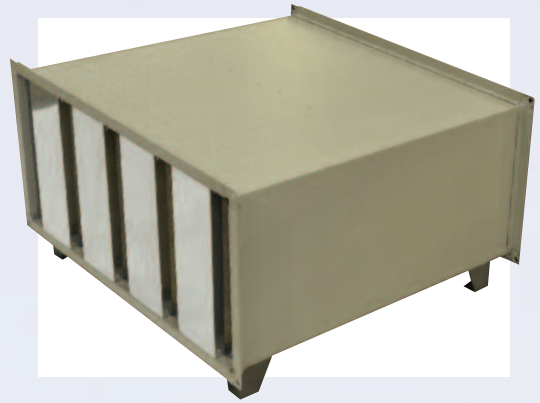
Dimensions & Weights

MODEL	Weight kg	W	H	H1	L	L1	Splitter Length
VTI 100	19.2	440	290	280	650	200	600
VTI 200	22.1	540	365	280	650	200	600
VTI 300	26.1	750	395	280	650	200	600
VTI 400	32.3	950	420	280	650	200	600
VTI 500	51.6	1200	800	660	650	300	600
VTI 600	59.9	1200	1000	860	650	400	600



Acoustic Performance

Freq Hz	63	125	250	500	1K	2K	4K	8K
VTI 100	-9	-17	-28	-38	-48	-48	-48	-38
VTI 200	-8	-15	-26	-36	-46	-46	-46	-36
VTI 300	-8	-15	-26	-36	-46	-46	-46	-36
VTI 400	-8	-15	-26	-36	-46	-46	-46	-36
VTI 500	-9	-17	-28	-38	-48	-48	-48	-38
VTI 600	-9	-17	-28	-38	-48	-48	-48	-38



Casework constructed from plastisol plastic coated sheet steel.

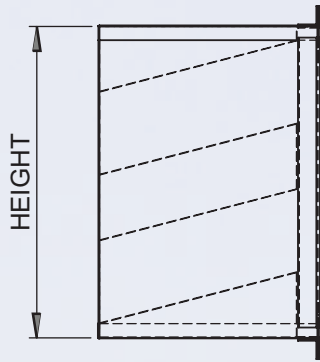


Acoustic Louvre...

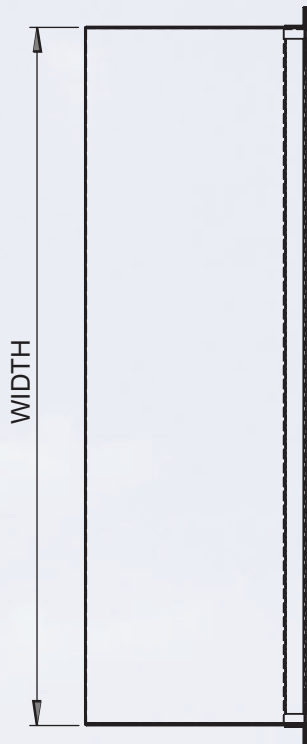
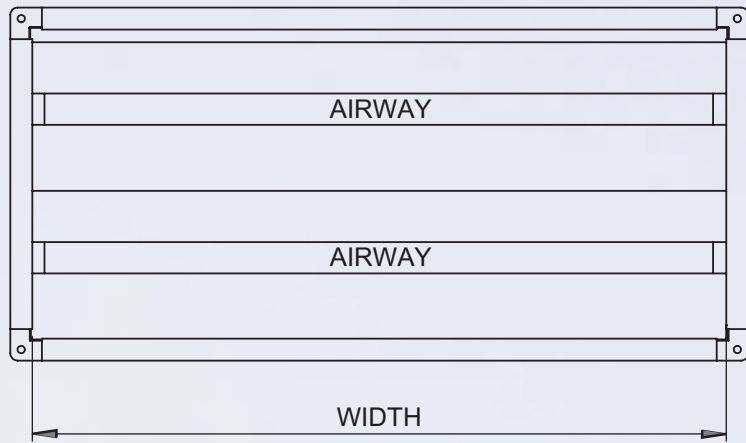
As an option to an Attenuator or Attenuator Cowl we have an Acoustic Louvre as an alternative method of reducing the discharge air noise on external mounted weatherproof VTI models.



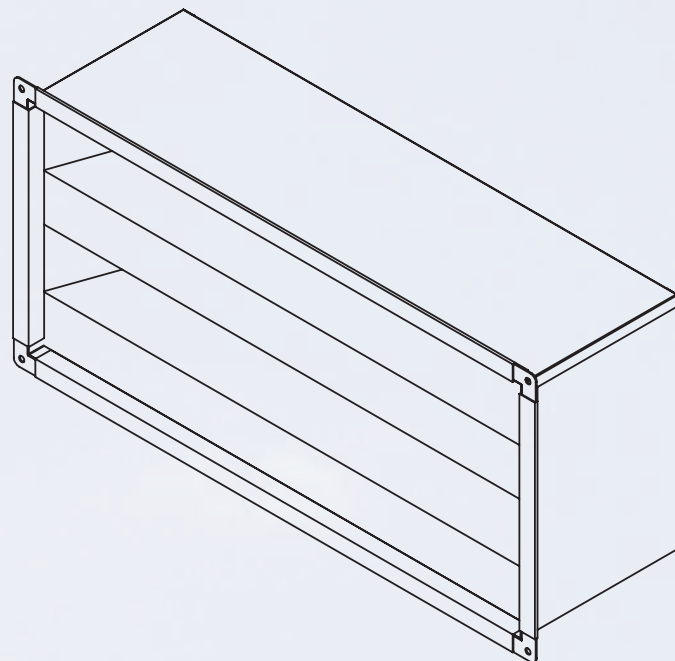
Dimensions & Weights



SIDE VIEW



PLAN VIEW



MODEL	Weight kg	Width	Height	Depth
VTI 100	9.3	440	290	300
VTI 200	11.3	540	365	300
VTI 300	16.9	750	395	300
VTI 400	23.1	950	420	300
VTI 500	34.4	1200	800	300
VTI 600	68.7	1200	1000	300

Acoustic Louvre Performance

Freq Hz	63	125	250	500	1K	2K	4K	8K
Sound Reduction Index db	-5	-6	-8	-11	-18	-24	-20	-16

To BS 2750/3-1980 (ISO1403-1978)

Casework constructed from plastisol plastic coated sheet steel.

Mounting Arrangements...

VTI cased extract units have a variety of mounting arrangements, which are outlined below.

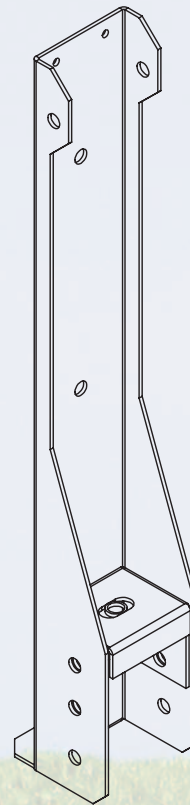
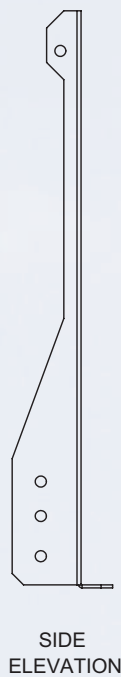
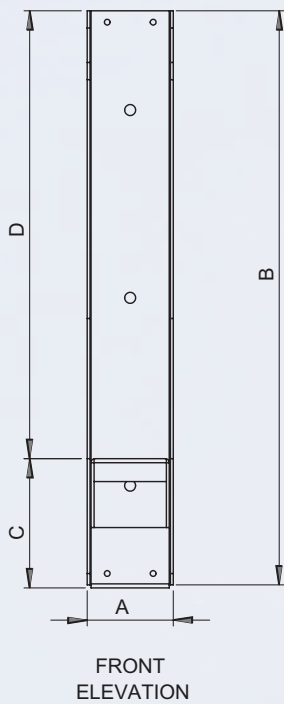
Suspension Brackets

Designed for use on internal ceiling mounted units, the brackets are contained within the depth of the extract unit casework for drop rod suspension.

The quantity of suspension brackets will depend on the size and weight of the VTI Unit including any attenuators attached. The minimum number of suspension brackets is given in the loading chart.

Suspension Bracket Loading Chart

Model	Qty Brackets/Unit	No of Additional Brackets per Attenuator			
		600L	750L	900L	1200L
VTI 100	4	2	2	2	2
VTI 200	4	2	2	2	2
VTI 300	4	2	2	2	2
VTI 400	4	2	2	2	2
VTI 500	4	2	2	2	2
VTI 600	4	2	2	2	2

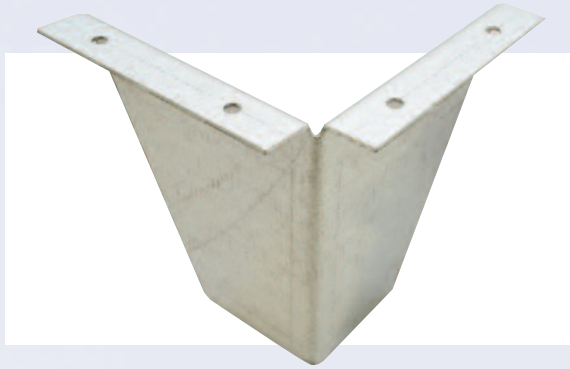


Constructed from galvanised sheet steel.

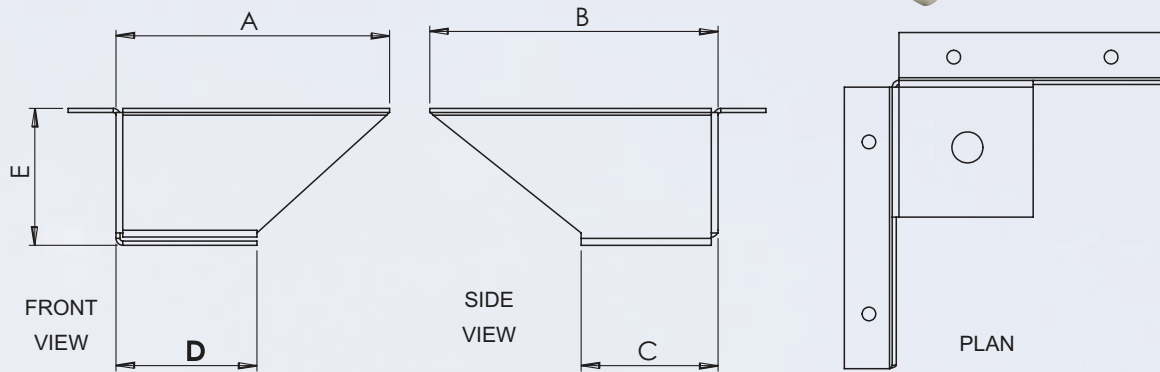
DIMENSIONS MM	A	B	C	D	E	F	G	H	Hole Size Slotted	Weight Each Kg
VTI 100	60	290	110	180	37.5	37.5	30	30	12.7 x 24	1.2
VTI 200	60	365	110	255	37.5	37.5	30	30	12.7 x 24	1.7
VTI 300	60	395	110	285	37.5	37.5	30	30	12.7 x 24	1.9
VTI 400	60	425	110	315	37.5	37.5	30	30	12.7 x 24	2.1
VTI 500	60	800	110	690	37.5	37.5	30	30	12.7 x 24	4.6
VTI 600	60	1,000	110	890	37.5	37.5	30	30	12.7 x 24	5.9

Mounting Feet

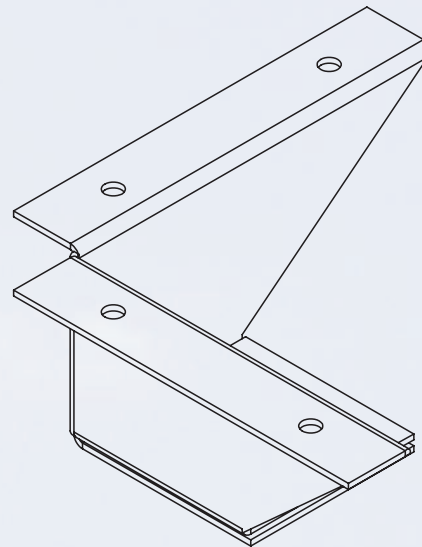
Mounting feet are designed for floor or roof mounted cased extract units and attenuators. Manufactured from powder coated sheet steel the mounting feet offer a stable mounting solution for plantroom and roof applications.



Dimensions and Weights



Type	A	B	C	D	E	Weight Kg
F50	100	100	50	50	50	0.177
F70	100	100	50	50	70	0.199
F80	100	100	50	50	80	0.210
F100	100	100	50	50	100	0.235



Base Frame

A 100mm high standard perimeter base frame option is available for all plantroom and roof mounted cased extract units. The base frame is constructed from galvanised sheet steel



Weather Roof

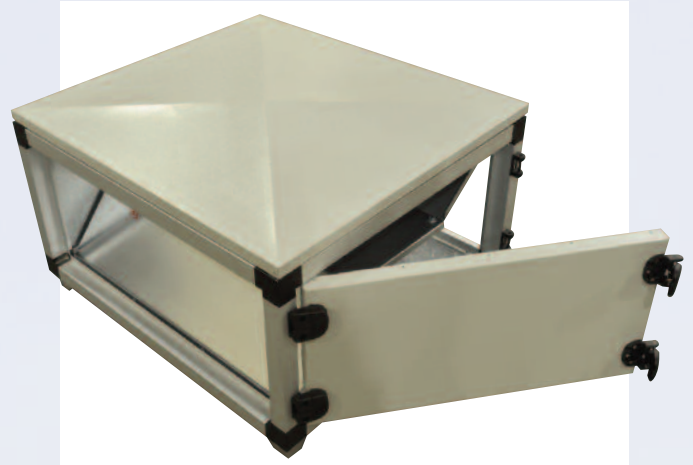
External mounted cased extract units are fitted with a four directional sloping roof.

The roof is constructed from sheet steel.

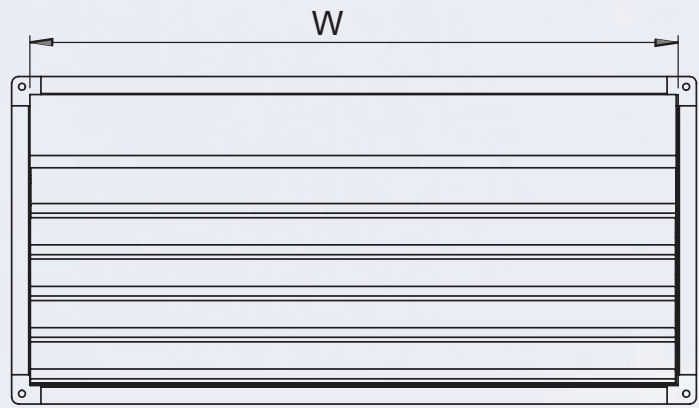
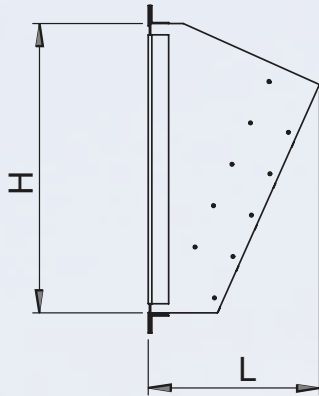


Standard Weather Cowl

Standard weather cowls contain louvre blades to give added weather protection. The cowls are constructed from plastisol plastic coated sheet steel.



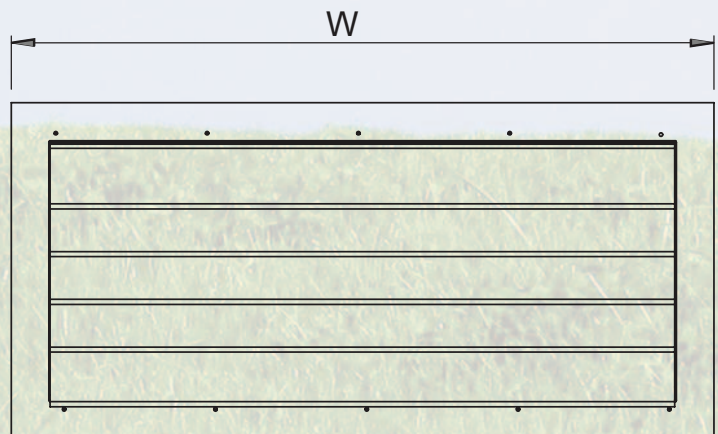
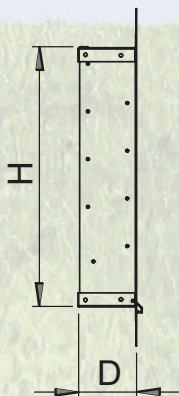
Type	Weight Kg	W	H	L
VTI 100	2.6	440	290	200
VTI 200	4.0	540	365	200
VTI 300	6.1	750	395	200
VTI 400	8.2	950	425	200
VTI 500	19.5	1200	800	200
VTI 600	24.4	1200	1000	200



Standard Louvre

Deep weather seal louvres are provided as standard on cased extract units, constructed from plastisol plastic coated sheet steel.

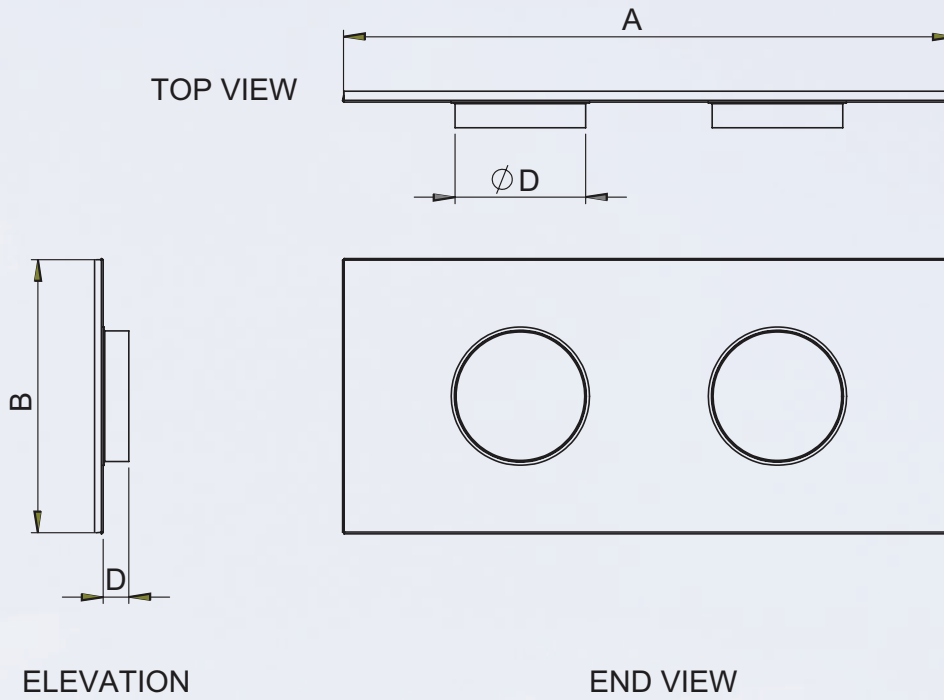
Type	Weight Kg	W	D	H
VTI 100	1.63	390	80	240
VTI 200	2.6	490	80	315
VTI 300	4.1	700	80	345
VTI 400	5.7	900	80	375
VTI 500	14.6	1150	80	750
VTI 600	18.4	1150	80	950



Circular Spigots and Plenum Spigot Box's

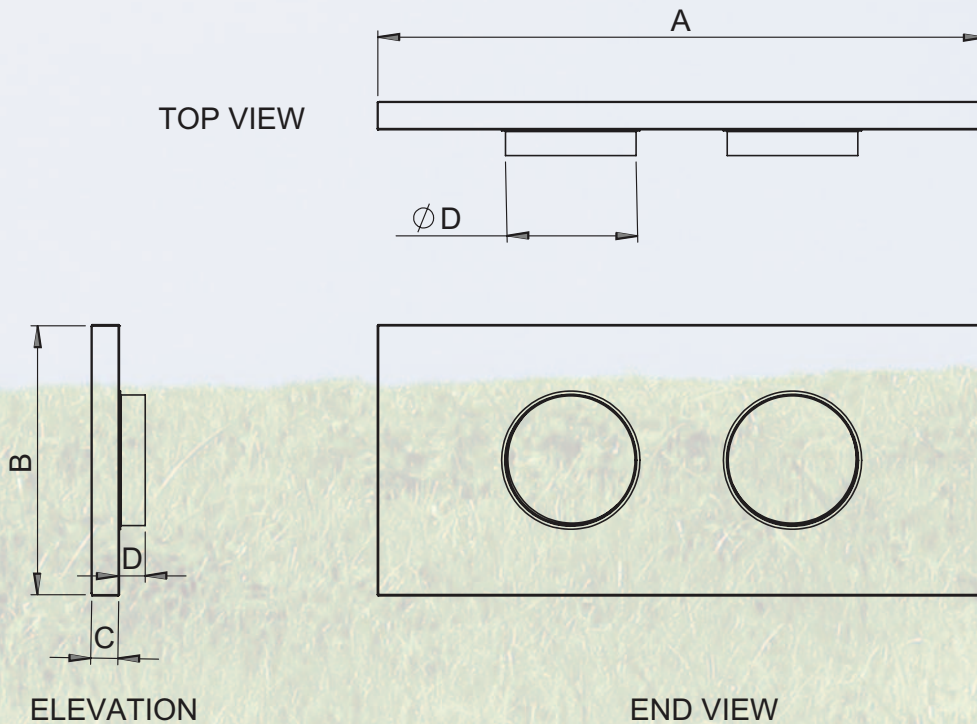
Circular spigot boxes are provided as an option, and constructed from galvanised sheet metal. Single spigot connection or multiple spigot connection plenum boxes proved the ideal solution for flexible ductwork air distribution.

Flat Circular Spigot Connection Plate



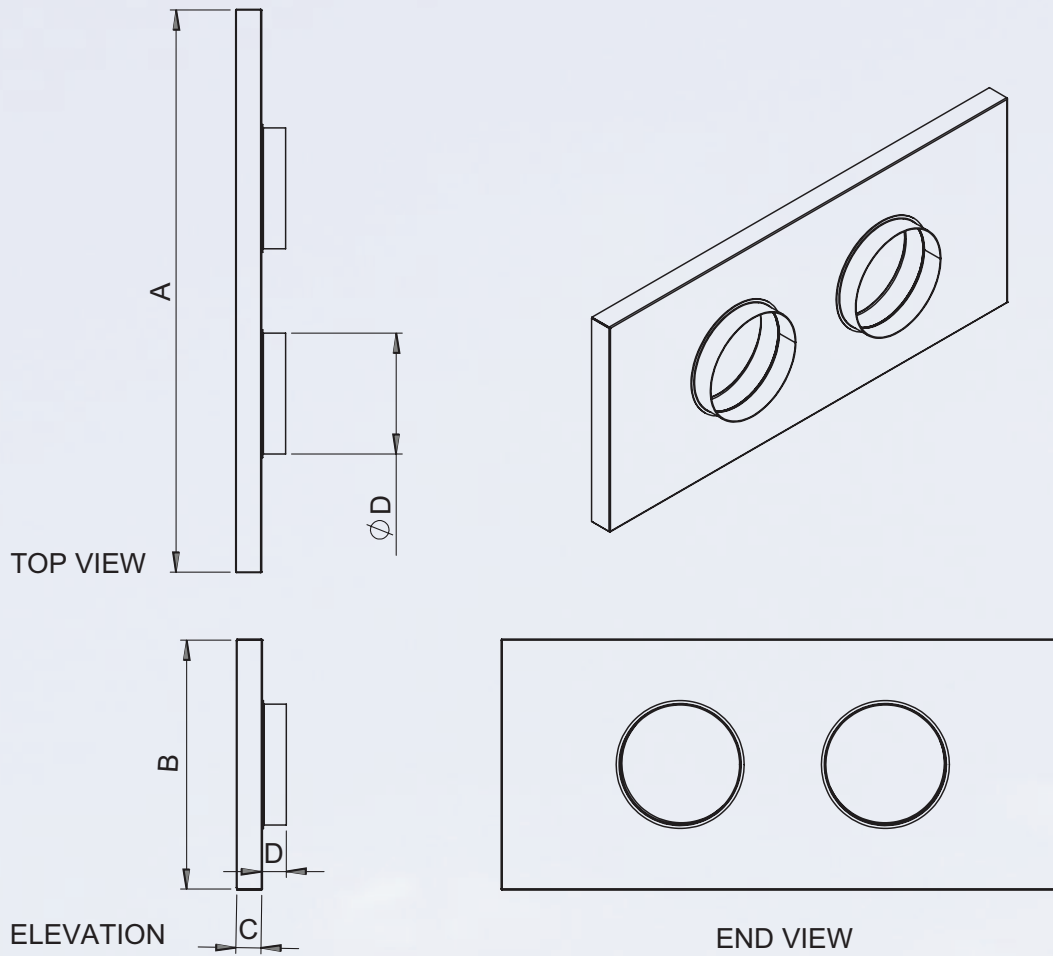
Acoustic Flat Circular Connection Plate

The acoustic flat circular spigot plate offers the same acoustic performance as the panels on the VTI Unit.



Flat Circular Connection Plates (Multi Spigots)

Multi flexible connection circular spigots are available for ceiling mounted VTI case extract units.



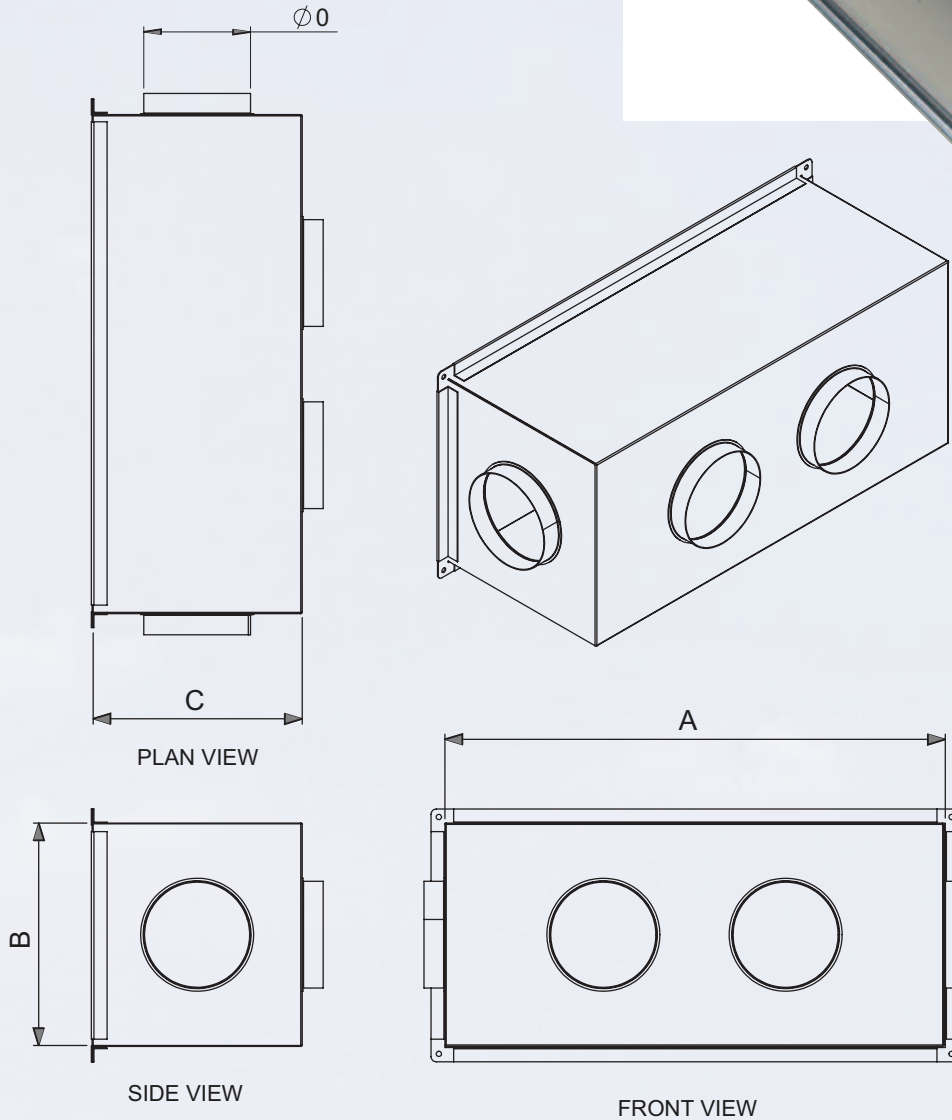
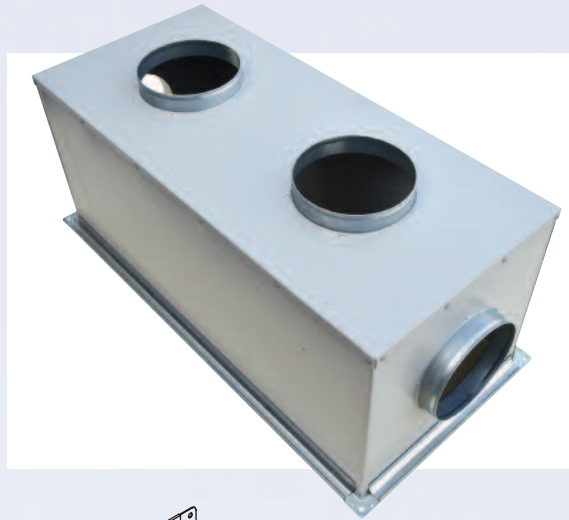
Dimensions and Weights Single and Multi Spigot Flat Plates

Model	A	B	C	D	Quantity of spigots			
					DIAØ	Weight kg	DIAØ	Weight kg
VTI 100/PB18	440	290	14	50	1x150mm	1.1	2x100mm	1.0
VTI 100/PB25	440	290	25	50	1x150mm	1.1	2x100mm	1.0
VTI 100/PB50	440	290	45	50	1x150mm	1.1	2x100mm	1.0
VTI 200/PB18	540	365	14	50	1x200mm	1.8	2x150mm	1.5
VTI 200/PB25	540	365	25	50	1x200mm	1.8	2x150mm	1.5
VTI 200/PB50	540	365	45	50	1x200mm	1.8	2x150mm	1.5
VTI 300/PB18	750	395	14	50	1x300mm	2.8	2x200mm	2.5
VTI 300/PB25	750	395	25	50	1x300mm	2.8	2x200mm	2.5
VTI 300/PB50	750	395	45	50	1x300mm	2.8	2x200mm	2.5
VTI 400/PB18	950	425	14	50	2x300mm	3.2	3x250mm	3.8
VTI 400/PB25	950	425	25	50	2x300mm	3.2	3x250mm	3.8
VTI 400/PB50	950	425	45	50	2x300mm	3.2	3x250mm	3.8
VTI 500/PB25	1200	800	25	50	1x600mm	10.2	-	-
VTI 500/PB50	1200	800	45	50	1x600mm	10.2	-	-
VTI 600/PB25	1200	1000	25	50	1x750mm	12.7	-	-
VTI 600/PB50	1200	1000	45	50	1x750mm	12.7	-	-

Multi-Spigot Acoustic Distribution Box

Acoustic distribution boxes are designed for flexible ductwork distribution, and constructed from the same frame and panel casework used for the VTI cased extract unit.

All ceiling mounted VTI extract units can have up to four flexi duct outlet spigots.



Ceiling Mounted VTI Multi Distribution Box Dimensions and Weights

Model	A	B	C	Quantity of Spigots					
				Two	Weight kg	Three	Weight kg	Four	Weight kg
VTI 100 PB18	440	300	290	150 ϕ	4.1	100 ϕ	4.1	100 ϕ	4.1
VTI 100 PB25	400	300	290	150 ϕ	4.6	100 ϕ	4.6	100 ϕ	4.4
VTI 100 PB50	440	300	290	150 ϕ	4.6	100 ϕ	4.6	100 ϕ	4.4
VTI 200 PB18	540	300	365	150 ϕ	5.1	100 ϕ	4.8	150 ϕ	4.9
VTI 200 PB25	540	300	365	150 ϕ	5.8	100 ϕ	5.4	150 ϕ	5.5
VTI 200 PB50	540	300	365	150 ϕ	5.8	100 ϕ	5.4	150 ϕ	5.5
VTI 300 PB18	750	400	395	200 ϕ	8.6	150 ϕ	8.1	200 ϕ	8.1
VTI 300 PB25	750	400	395	200 ϕ	9.3	150 ϕ	8.8	200 ϕ	8.8
VTI 300 PB50	750	400	395	200 ϕ	9.3	150 ϕ	8.8	200 ϕ	8.8
VTI 400 PB18	950	400	425	300 ϕ	9.8	200 ϕ	9.5	250 ϕ	9.5
VTI 400 PB25	950	400	425	300 ϕ	10.6	200 ϕ	10.2	250 ϕ	10.1
VTI 400 PB50	950	400	425	300 ϕ	10.6	200 ϕ	10.6	250 ϕ	10.1

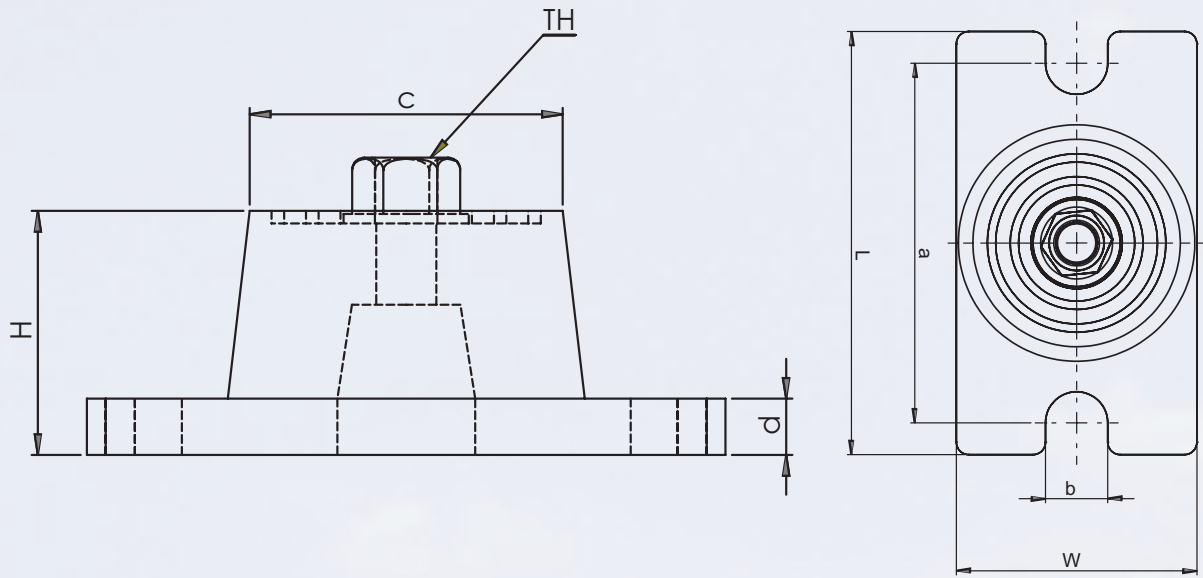
Vibration Control...

Floor mounted vibration control can be used in conjunction with a VTI cased extract incorporating a 100mm base frame as detailed below.

The application for this type of vibration isolation is where the cased extract unit is floor or steelwork mounted in a plantroom or mounted on a roof external to the building.

Type of Isolator

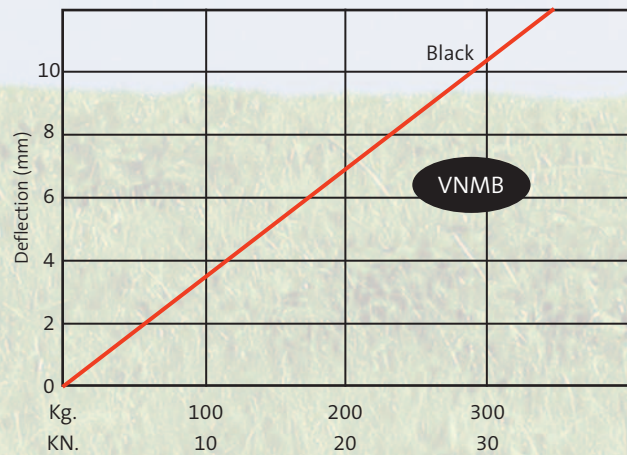
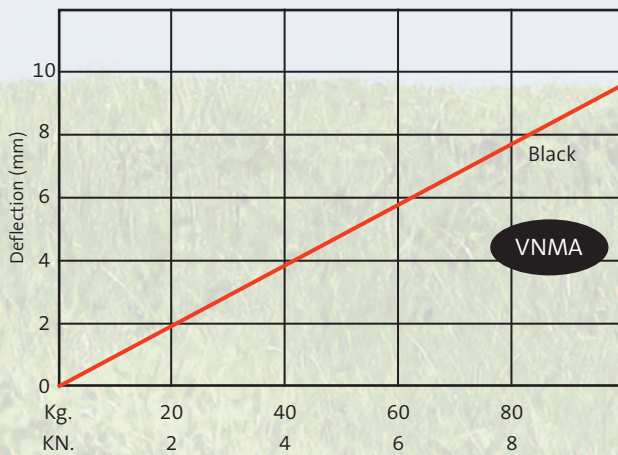
Neoprene turret anti vibration mounts are selected for this type of application, and have a maximum deflection of 14mm.



Load Selection Guide and Dimensions

Model	Rated Cap Kg	Rated Def mm	Colour Code	Duro Meter	Dimensions							Setting bolt
					L	W	H	a	b	c	d	
VNM-A	25-100	2.5-8.0	Black	60±5	80	41	37	65	11	30	6	M8xL25
VNM-B	100-300	9.0-14.0	Black	60±5	102	57	48	88	13	50	6	M10xL25

Load/Deflection Graphs



Specification

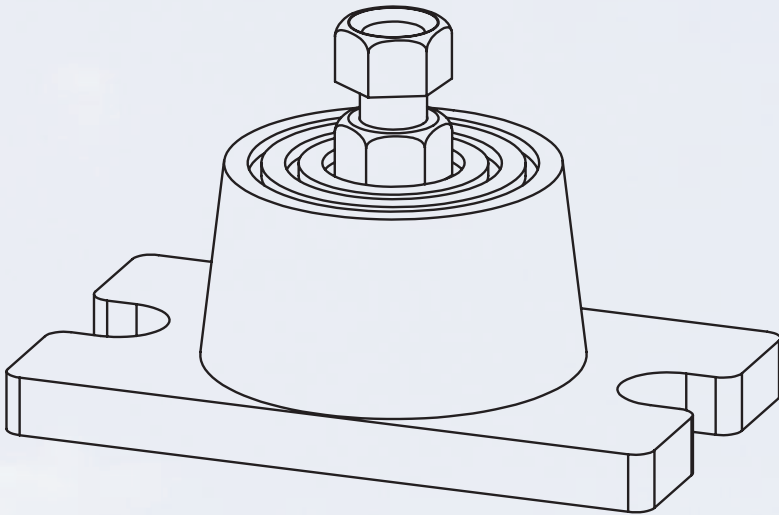
These mountings are used when high static deflection and simple installation are required and can be installed conveniently at low cost. It is not necessary to bolt these mountings to the floor on most installations. They can be placed under flat based equipment which have no bolt holes in much the same way as rubber vibration pads.

The rubber is loaded in both shear and compression to provide the desirable straight line Rubber-in Shear deflection curves as well as overloaded protection. Mountings are moulded in

one piece assembled with skid resistant rubber ridged base plates and circular rubber ridged tops which provide corrosion protection in severe corrosive conditions.

Oil resistant neoprene mountings are supplied as a standard. For special applications, natural rubber or other elastomers may be used.

The mountings shall be used on equipments such as small vent sets, close coupled pumps, A.H.U. Fans and small machinery.



Neoprene Physical Properties

Test Item	Unit	Result	Test Method	
Tensile Strength	Kg/cm ²	224		
Elongated Rate	%	580		
Durometer	Hs	60		
Test for Aging 100 + 1±°C 70 hrs	Tensile Strength Rate	%	-13.4	
	Elongated Change Rate	%	-21.5	
	Durometer Change	Hs	10	KS M6518-86
	Density: 50 ± 5	PPhm		
	Temperature: 70 ± 2	°C		
	Time: 22	hrs	No Cracks	
	Elongation: 25	%		
Compression Set (100 ± 2°Cx22 hrs)	—	21		

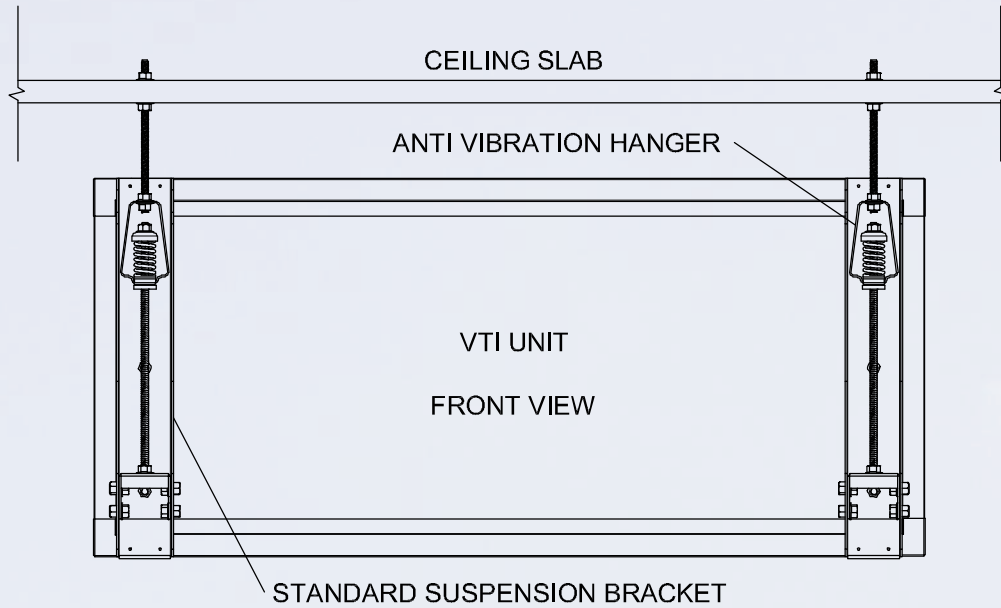
AV Mount Selection Chart (VTI Unit Only)

VTI MODEL	Mount Type	Quantity
VTI 100	VNM-A	4
VTI 200	VNM-A	4
VTI 300	VNM-A	4
VTI 400	VNM-A	4
VTI 500	VNM-B	4
VTI 600	VNM-B	4

Note Where accessories such as attenuators/cowls/acoustic louvres etc are supplied attached to the VTI cased extract units, please contact our sales office for Vibration Isolation Selections.

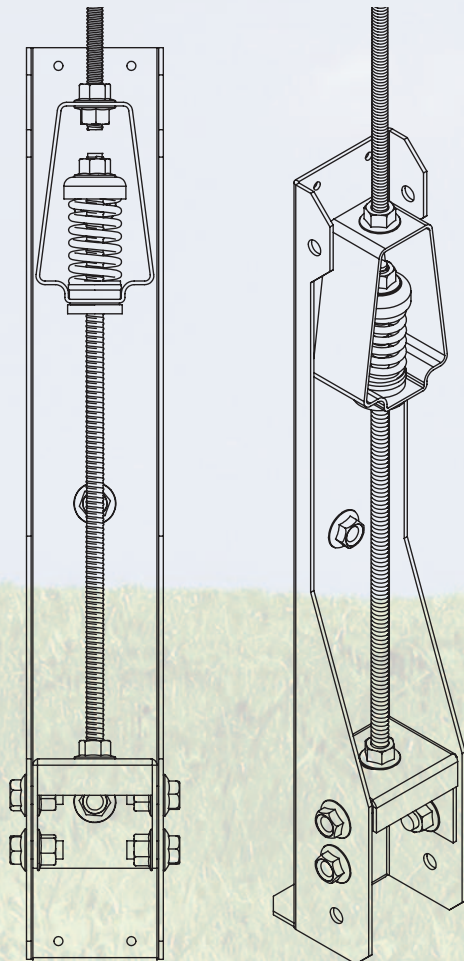
Vibration Control for Suspended VTI Units

Where VTI cased extract units are suspended from the ceiling slab etc, then we can provide a range of neoprene or spring anti vibration control hangers as detailed below.



Vibration Hangers with Suspension Brackets

The application for this type of vibration isolation is where the cased extract unit is suspended from the ceiling via drop rods.



Type of Isolator

Both neoprene and spring isolators can be selected with this application, depending on the degree of vibration isolation required.

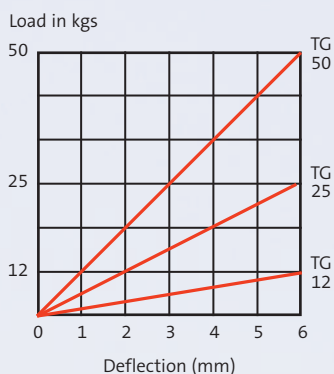
Open Rubber Hanger - Series TG

The TG series has different modules, each of which is indicated for a specific application, depending on the weight to be supported and the disturbance frequency it generates. The TG series is made from rubber. We recommend studying their physical analysis to check which is the most appropriate size, depending on the application.



The most important benefits of this product are its toughness, easy assembly and economy, which make them a favourite product of acoustic and air conditioning installation technicians.

Performance Curves



Physical Analysis

TG Vibration Absorbers

MODEL	Max load Kgs	Deflection mm	Frequency Hz
TG-12	12	6	7
TG-25	25	6	7
TG-50	50	6	7

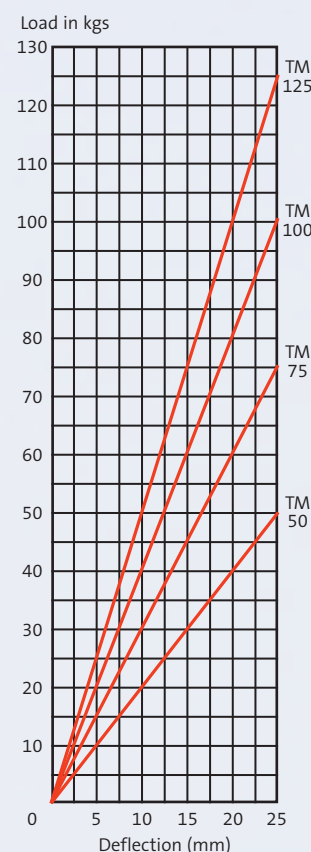
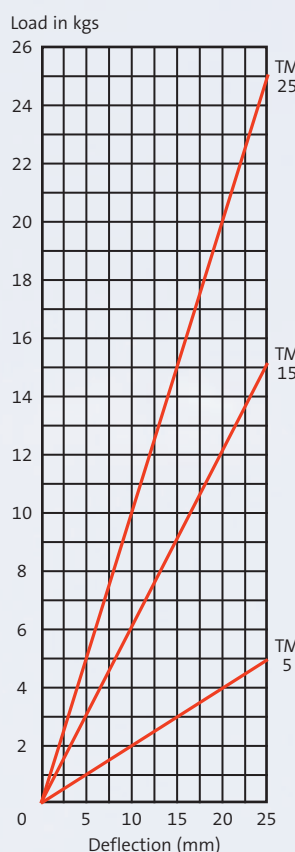
Open Spring Hanger - Series TM 5/25

The TM 5/125 Series are Metal Spring Isolators, ideal for suspending machinery from the ceiling or a metal structure. Highly suitable for very lightweight equipment situated in critical areas with a low cycle operating system (over 600 rpm).



4. Extremely secure Metal Casing, superior to other similar products, formed via a process of bending with one single connection point made with a bead of welding.

Performance Curves



Performance Curves Information

Components Description

1. Standardised, high resistance steel spring.
2. Cylindrical metal bushes, which protect the outside of the spring at its upper end. Because of its particular geometry, the attachment nut is connected the opposite way to the traditional system of similar products, providing maximum security.
3. Cylindrical rubber bushes for connecting the spring to the metal case preventing contact.
4. Extremely secure metal casing, superior to other similar products, formed via a process of bending and welding.

Physical Analysis

TM Spring Absorbers

Standardised Load at Minimum and Maximum Compression

MODEL	Min Load Kgs	Deflection mm	Max Load Kgs	Deflection mm	Stiffness Kgs/mms	Admissable Temporary Overload as a %
TM 5	2	10	5	25	0.2	10%
TM 15	6	10	15	25	0.6	10%
TM 25	10	10	25	25	1	10%
TM 50	20	10	50	25	2	10%
TM 75	30	10	75	25	3	10%
TM 100	40	10	100	25	4	10%
TM 125	50	10	125	25	5	10%

1. Working temperature range: -90°C to 200°C
2. Lateral to Axial Stiffness Ratio: 1
3. For studies requiring a maximum adjustment of the compression deflection and load: please consult our technical department.

Open Spring Hanger - Series TM 150/450

The TM150/450 comprises Metal Spring Isolators especially designed for suspending machinery and ductwork from the ceiling or from a metal structure. Highly suitable for all kinds of machinery with a low cycle operating system (above 600 rpm).



Performance Curves Information

Components Description

1. Standardised, high resistance steel spring.
2. Cylindrical metal bushes, which protect the outside of the spring at its upper end. Because of its particular geometry, the attachment nut is connected the opposite way to the traditional system of similar products, providing maximum security.
3. Cylindrical rubber bushes for connecting the spring to the metal case preventing contact.
4. Extremely secure metal casing, superior to other similar products, formed via a process of bending and welding.

Physical Analysis

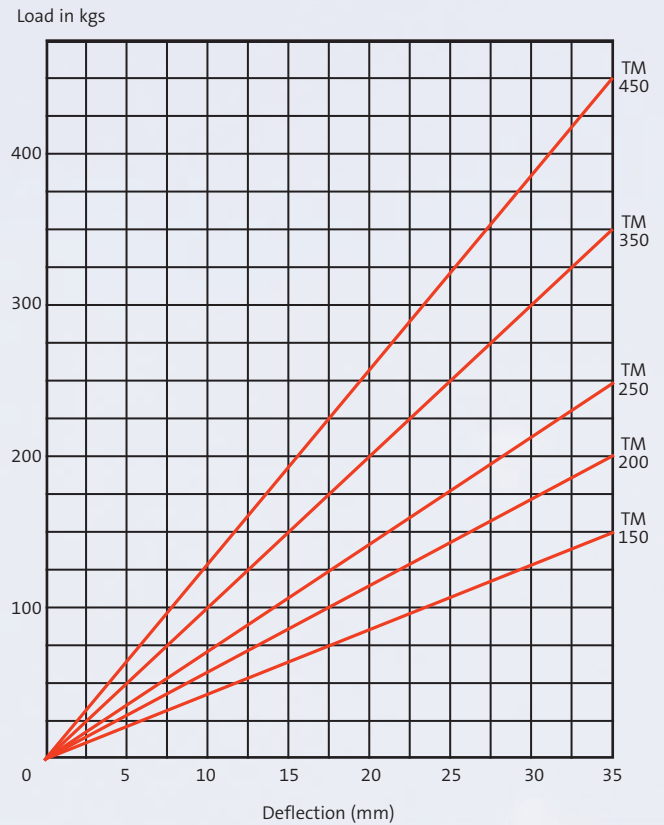
TM Spring Absorbers

Standardised Load at Minimum and Maximum Compression

MODEL	Min Load Kgs	Deflection mm	Max Load Kgs	Deflection mm	Stiffness Kgs/mms	Admissable Temporary Overload as a %
TM 150	64	15	150	35	4285	30%
TM 200	86	15	200	35	5714	25%
TM 250	107	15	250	35	7142	20%
TM 350	105	15	350	35	10000	14%
TM 450	193	15	450	35	12875	11%

1. Working temperature range: -90°C to 200°C
2. Lateral to Axial Stiffness Ratio: 1
3. For studies requiring a maximum adjustment of the compression deflection and load: please consult our technical department.

Performance Curves



AV Hanger Selection Chart (VTI Unit Only)

VTI MODEL	Mount Type		Quantity
	Neoprene	Spring	
VTI 100	TG 50	TM 50	4
VTI 200	-	TM 75	4
VTI 300	-	TM 100	4
VTI 400	-	TM 125	4
VTI 500	-	TM 125	4
VTI 600	-	TM 150	4

Note Where accessories such as attenuators/cowls/acoustic louvres etc are supplied attached to the VTI cased extract units, please contact our sales office for Vibration Isolation Selections.

Controls and Wiring...

The following Controls

All VTI twin cased extract units incorporate factory fitted and pre wired fan motor isolators.

Speed regulators 0<10 volt can be factory fitted and pre wired, or supplied as a loose item for remote location and wiring by others.

Auto change over panels incorporating a auto change over facility also duty sharing via a time device which can be set at the duration of the fan(s) running period.

The standard auto change over panel can be BMS controlled and incorporates speed regulation 0<10 volt facilities.

VARI-VOL

An autochangeover system incorporates a variable volume constant pressure arrangement to offer variable volume regulation via a system mounted pressure transducer.

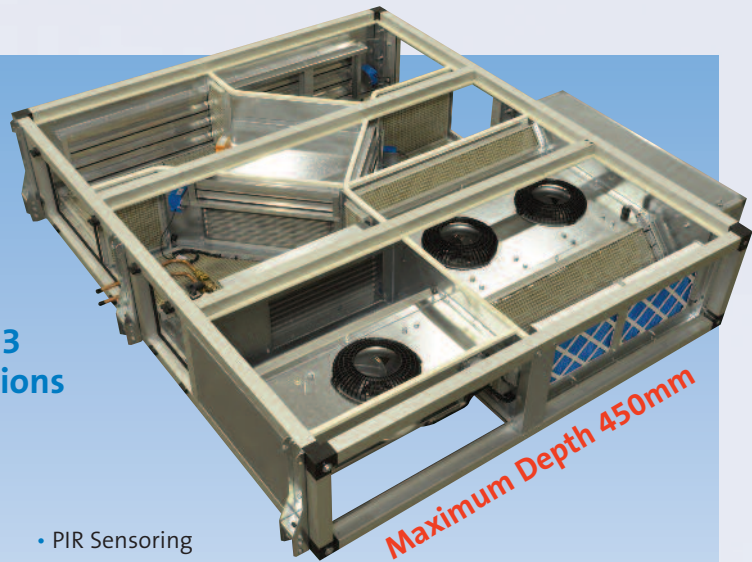
Please contact our sales office for further information.

Classvent Quiet

Low Noise Breakout with Optional Cooling to meet BB93 Feb 2015 and TM52 Specifications

Benefits

- TM 52 Compliant
- BB93 Feb 2015 Compliant
- Low Noise Boost for CO2 Control
- Trend Controllers Fitted
- Fully Integrated with BMS Time Scheduling and Fault Indication
- Reduced Volume with No Room Occupancy
- Manual Boost Override
- Room Minimum Setback Temperature
- Frost Protection
- Acoustic Internal Sound Absorbers
- High Sound Reduction Casework Tested to BS EN ISO 10140.2 (2010)
- PIR Sensing
- CO2 Sensing
- Low Speed Fans
- Tonal Noise Control
- Summer By Pass
- Cooling Coil Options
- High Efficiency Recuperators
- Attenuators Matched to Classvent
- Integral Multi Port Valve Unit with Balancing Terminal, Flushing By Pass, Fixed Orifice Commissioning Valve



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NO NEED FOR AN ADDITIONAL ACOUSTIC ENCLOSURE

Envirofresh 70 Quiet

Low Energy, Air Source Heat Pump System, Silenced with Acoustic Treatment as used in Hundreds of Projects



Benefits

- Meets TM52 for Schools
- Meets BB93 Feb 2015
- Renewable Energy Source
- BMS Controls Installed in Unit
- Factory Pre-Commissioned
- Heating and Cooling from One Source
- 50% Less CO² Production than a Gas Boiler
- Low Energy Consumption
- Reduced Site Installation Cost
- No External Condensing Units, Pipework or wiring
- Low Noise Emissions with Silenced Compressors
- High Specification UKAS Certified Low Breakout Casework
- No Loss of Heating Capacity at Low Temperatures
- Room Heating and Cooling available at Reduced Air Volumes
- Tempered Air Supply without Defrosting
- No Increase in Footprint over Standard AHUs
- More Pleasant External Appearance than Condensing Unit or Chiller Installations



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Product Range...

- Single Cased Extract Unit VSI
- Twin Fan Extract Units VTI and ITU
- Classvent Units
- Flat Series Void Units FPVU
- Packaged Void Units PVU
- Vertical Air Handling Units
- AH Series Modular AHU's
- IDG Series Indirect Gas Fired AHU's
- DG Series Direct Gas Fired AHU's
- HOSP Health Care Specification Hygiene AHU's
- AHW Welded Frame and Stainless Units
- TWHR Heat Reclaim AHU's containing Thermal Wheels
- AHR Heat Recovery AHU's containing Recuperators
- Freshcool Cooling only Packaged Units
- Envirofresh Packaged Heat Pump Units
- Attenuators and Anti-vibration Mounts
- Acoustic Enclosures and Screens
- Flat Pack Build and Refurbishment
- Planned Maintenance and Site Repairs

Other Associated Literature...

- Sound Advice for Ventilation Plant in Schools.
By David Pinchbeck
- Air Handling Units Acoustic Insulation Performance test Report
- BSRIA Envirofresh Performance Test Report



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