AIR HANDLERS LTD

Series VSI Quiet

Cased Extract Fan Units

UKAS TESTING
1262

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

Engineering Solutions

air HANDLERS

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 year 2000.

Product Development...

The Company is continually updating its products to comply with changing energy saving technologies, so the introduction of the VSI 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 VSI 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...

Fan Inlet Flow grids

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

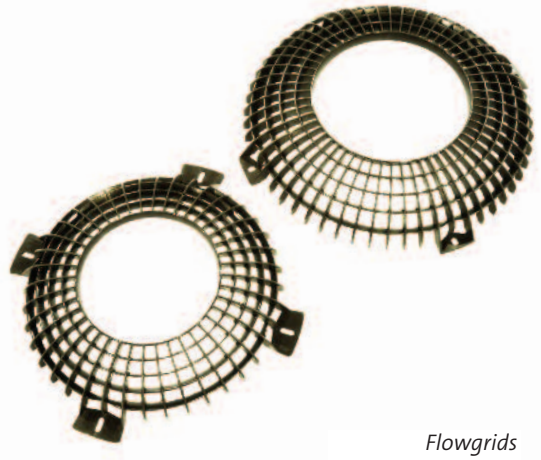
The noise reduction is predominantly low frequency decay (ie 63Hz, 125Hz, 250Hz), which can help offer significant power loss. This sound power loss is created by the reduction in turbulence hitting the rotating blades, with tonal frequency components, known as impellor noise or tonal noise.

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 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

Variable single in line extract units use 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, it provides infinitely variable, speed control.

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

E C Plug Fan

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 VSI cased extract units are available 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 VSI 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.

University of Salford MANCHESTER

UKAS 1282

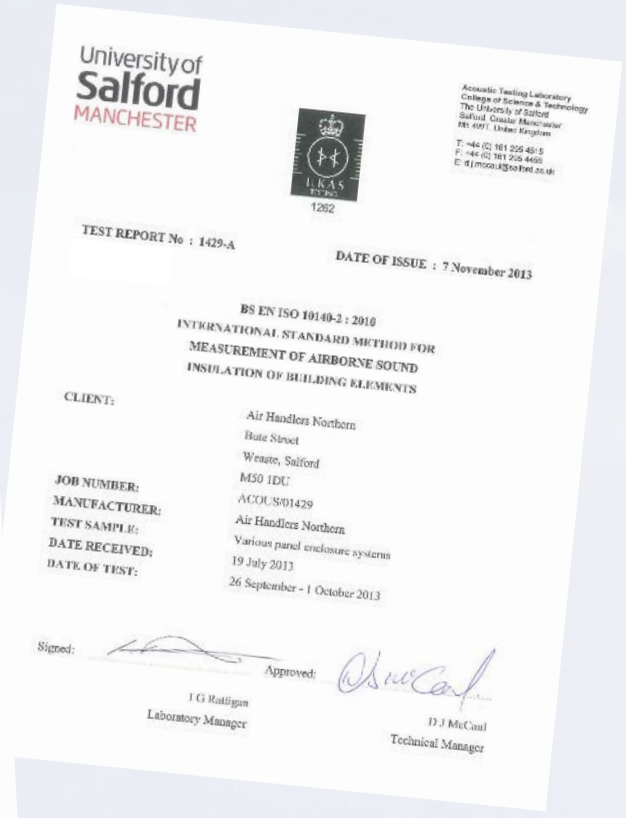
TEST REPORT No : 2060-1 DATE OF ISSUE : 19 February 2015

INTERNATIONAL STANDARD METHOD FOR MEASUREMENT OF AIRBORNE SOUND INSULATION OF BUILDING ELEMENTS BS EN ISO 10140-2 : 2010

CLIENT: Air Handlers Northern, Bute Street, Weaste, Salford, M50 1DU

JOB NUMBER: ACOUS/02060
TEST SAMPLE: Various Acoustic Enclosure Panels
MANUFACTURER: Client
DATE RECEIVED: 5 November 2014
DATE OF TEST: 7 – 9 & 12 January 2015

Signed: I G Rattigan, Laboratory Manager
Approved: C Lomax, Quality Manager



University of Salford MANCHESTER

UKAS 1282

TEST REPORT No : 1429-A DATE OF ISSUE : 7 November 2013

BS EN ISO 10140-2 : 2010
INTERNATIONAL STANDARD METHOD FOR MEASUREMENT OF AIRBORNE SOUND INSULATION OF BUILDING ELEMENTS

CLIENT: Air Handlers Northern, Bute Street, Weaste, Salford, M50 1DU

JOB NUMBER: ACOUS/01429
MANUFACTURER: Air Handlers Northern
TEST SAMPLE: Various panel enclosure systems
DATE RECEIVED: 19 July 2013
DATE OF TEST: 26 September - 1 October 2013

Signed: I G Rattigan, Laboratory Manager
Approved: D J McCaul, Technical Manager

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 casework.

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.

Assembling test frame and panels

Test set up during testing programme

MODEL VSI 100 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	75	100	125	150	200	250	300	350	400	450	500	550	600
4V	310	280	250	200	150	-	-	-	-	-	-	-	-	-
6V	475	450	425	400	380	325	275	175	-	-	-	-	-	-
8V	650	625	600	580	560	540	500	460	420	360	300	200	-	-
10V	720	700	680	660	640	620	600	575	540	500	450	400	350	280

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

Fan Speeds

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 VSI 200 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	100	150	200	250	300	350	400	450	500	550	600
4V	360	200	-	-	-	-	-	-	-	-	-
6V	600	550	500	390	200	-	-	-	-	-	-
8V	810	780	740	670	625	600	500	400	200	-	-
10V	930	900	850	800	760	710	660	600	500	400	200

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

Fan Speeds

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 VSI 300 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	250	300	350	400	450	500	550	600	650
4V	1370	1044	684	-	-	-	-	-	-	-	-	-	-
6V	2035	1835	1620	1370	1115	830	-	-	-	-	-	-	-
8V	2630	2480	2375	2150	1980	1800	1620	1400	1180	930	-	-	-
10V	3120	2940	2800	2590	2440	2230	2015	1830	1620	1400	1180	1000	750

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

ESP(PA)	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

Fan Speeds

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

MODEL VSI 400 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	300	400	500	600	700	800	900
4V	1650	1470	1260	1080	-	-	-	-	-	-	-
6V	2340	2230	2050	1900	1620	1220	720	-	-	-	-
8V	3060	2880	2800	2700	2410	2080	1800	1510	1180	720	-
10V	3400	3310	3240	3130	2910	2620	2370	2080	1830	1540	1260

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

Fan Speeds

ESP(PA)	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 VSI 500 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	250	300	350	400	450	500	550	600	650
4V	2685	2046	1340	-	-	-	-	-	-	-	-		
6V	3988	3596	3175	2685	2185	1627	-	-	-	-	-		
8V	5155	4861	4655	4214	3881	3528	3175	2744	2313	1823	-		
10V	6115	5762	5488	5076	4782	4371	3949	3567	3175	2744	2313	1960	1470

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

Fan Speeds

ESP(PA)	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 VSI 600 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	300	400	500	600	700	800	900
4V	3234	2881	2470	2117	-	-	-	-	-	-	-
6V	4586	4371	4018	3724	3175	2391	1411	-	-	-	-
8V	5998	5649	5488	5292	4724	4077	3528	2960	2313	1411	-
10V	6664	6488	6350	6135	5704	5135	4645	4077	3587	3018	2470

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	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 VSI Unit

Airflow (M3/Hr)

Fan Speeds

ESP(PA)	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

MODEL VSI 700 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	300	400	500	600	700	800	900
4V	4950	4410	3780	3240	-	-	-	-	-	-	-
6V	7020	6690	6150	5700	4860	3660	2160	-	-	-	-
8V	9180	8640	8400	8100	7230	6240	5400	4530	3540	2160	-
10V	10200	9930	9720	9390	8730	7860	7110	6240	5490	4620	3780

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	2100	2400	2700	3000	3750	4500	5250	6000	6750	7500	8250	9000	9750
4V	360	390	390	405	375	360	348	-	-	-	-	-	-
6V	750	780	780	810	810	810	795	780	750	-	-	-	-
8V	1290	1290	1305	1350	1380	1395	1410	1425	1410	1350	1335	1320	-
10V	1800	1890	1950	1980	2010	2040	2070	2100	2115	2100	2055	2010	1950

Fan Reference	-	EC310/680/3F	Control Voltage	-	0<10 Volts
Motor Power	-	2040 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	12.9 Amps	Maximum Fan Speed	-	3000 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VSI Unit

Airflow (M3/Hr)

Fan Speeds

ESP(PA)	2100	2400	2700	3000	3750	4500	5250	6000	6750	7500	8250	9000	9750	
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) 1535 RPM 6V / 2130 RPM 8V / 2700 RPM 10V / 3000 RPM

MODEL VSI 800 Performance Selection Charts...

Air Flow Performance (M3/Hr)

External Resistance (PA)

Volts	50	100	150	200	300	400	500	600	700	800	900
4V	6600	5880	5040	4320	-	-	-	-	-	-	-
6V	9360	8920	8200	7600	6480	4880	2880	-	-	-	-
8V	12240	11520	11200	10800	9640	8320	7200	6040	4720	2880	-
10V	13600	13240	12960	12520	11640	10480	9480	8320	7320	6160	5040

Absorbed Power (Watts)

Airflow (M3/Hr)

Volts	2800	3200	3600	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000
4V	480	520	520	540	500	480	464	-	-	-	-	-	-
6V	1000	1040	1040	1080	1080	1080	1060	1040	1000	960	-	-	-
8V	1720	1720	1740	1800	1840	1860	1880	1900	1880	1860	1780	1760	-
10V	2400	2520	2600	2640	2680	2720	2760	2800	2820	2800	2740	2680	2600

Fan Reference	-	EC310/680/4F	Control Voltage	-	0<10 Volts
Motor Power	-	2720 Watts	Electric Supply	-	240V/1/50Hz
Maximum Current	-	17.2 Amps	Maximum Fan Speed	-	3000 RPM

Sound Data - 4<10 Volts...

Ceiling mounted VSI Unit

Airflow (M3/Hr)

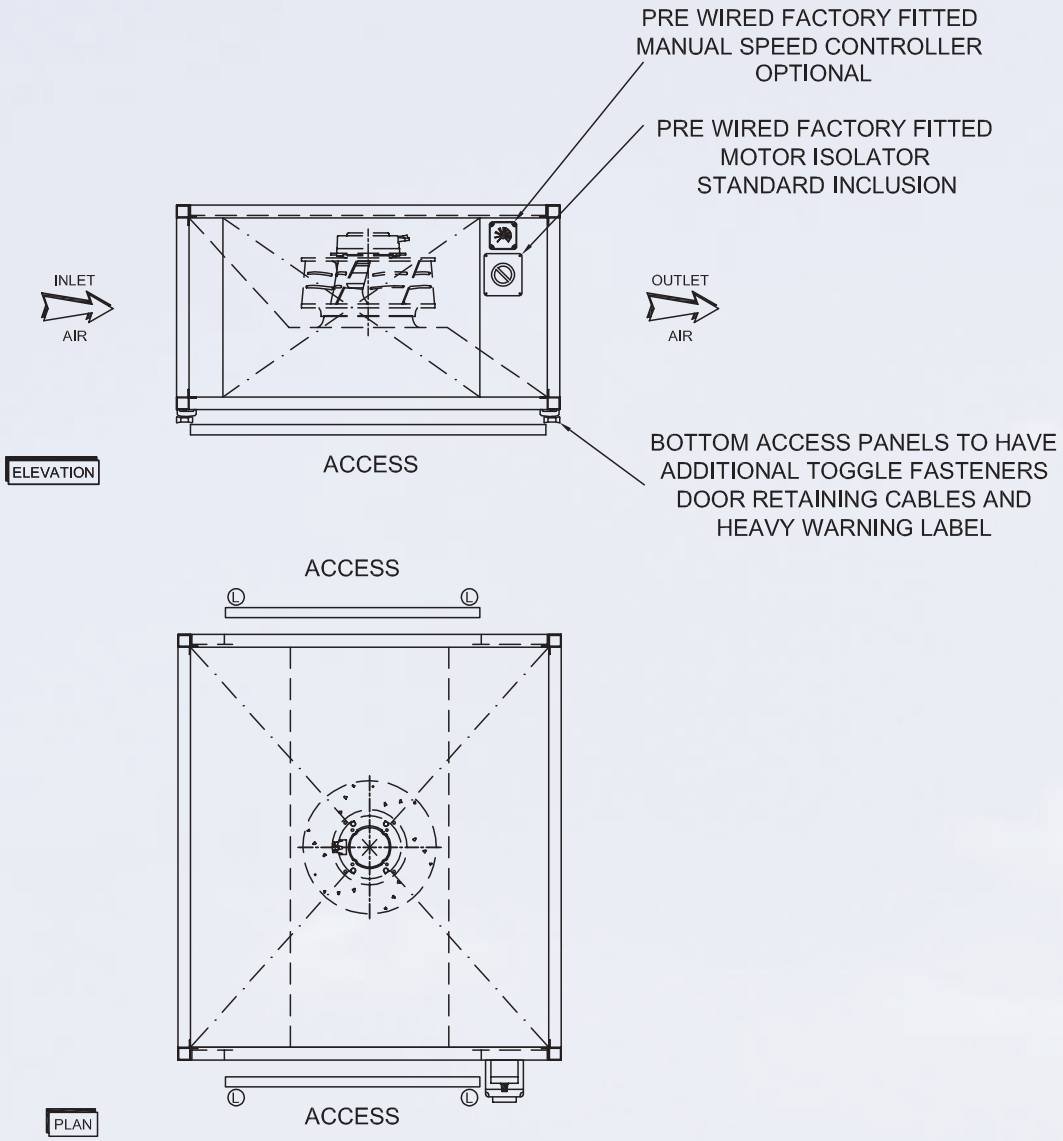
Fan Speeds

ESP(PA)	2800	3200	3600	4000	5000	6000	7000	8000	9000	10000	11000	12000	13000	
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



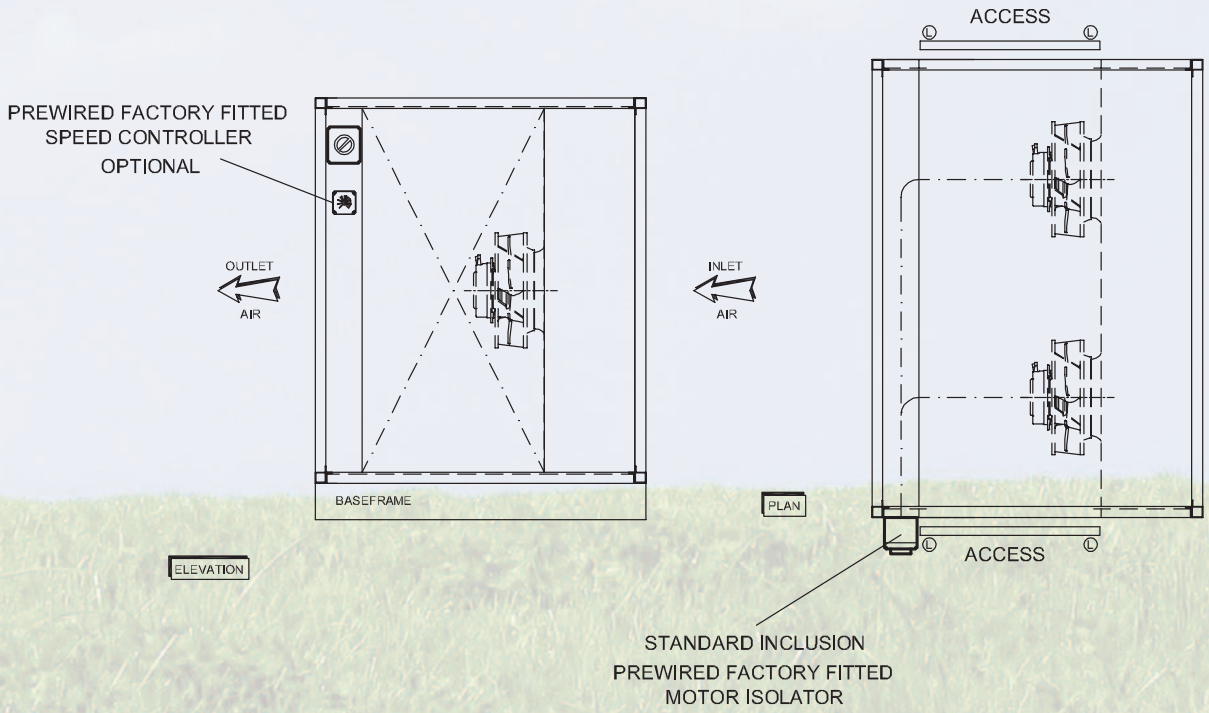
Casework Constructed from Double Skin Acoustic Insulated Galvanised Inner and Outer Skins

Dimensions & Weights

MODEL	Frame	Weight Kg	Width	Height	Length
VSI100PB/CM/ISO	20/18	30.8	480	330	740
VSI100PB/CM/ISO	30/25	40.0	500	350	760
VSI100PB/CM/ISO	50/50	61.0	540	390	800
VSI200PB/CM/ISO	20/18	40.6	580	405	840
VSI200PB/CM/ISO	30/25	53.4	600	425	860
VSI200PB/CM/ISO	50/50	80.6	640	465	900
VSI300PB/CM/ISO	20/18	57.2	790	435	890
VSI300PB/CM/ISO	30/25	73.6	810	455	910
VSI300PB/CM/ISO	50/50	107.7	850	495	950
VSI400PB/CM/ISO	20/18	66.2	990	465	890
VSI400PB/CM/ISO	30/25	85.3	1010	485	910
VSI400PB/CM/ISO	50/50	124.9	1050	525	950

Plant Room Model – Floor or Ceiling Mounted...

VSI Plantroom Mounted

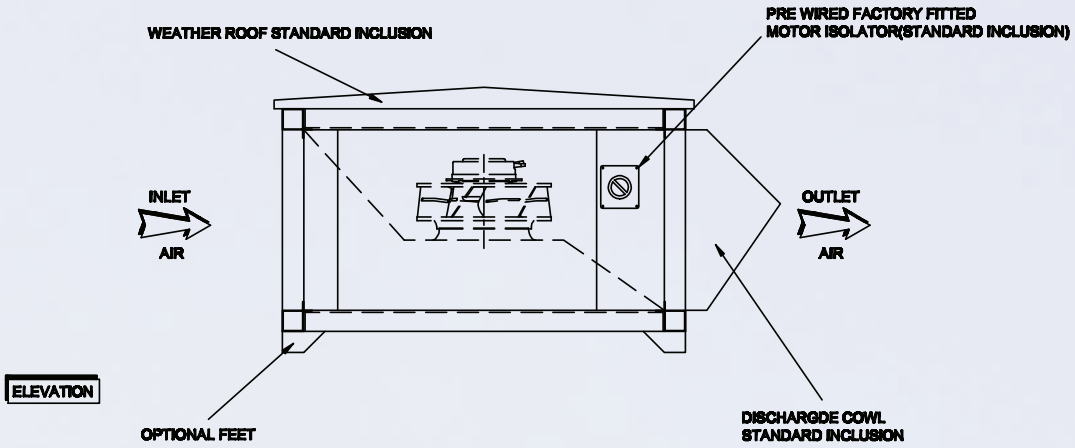


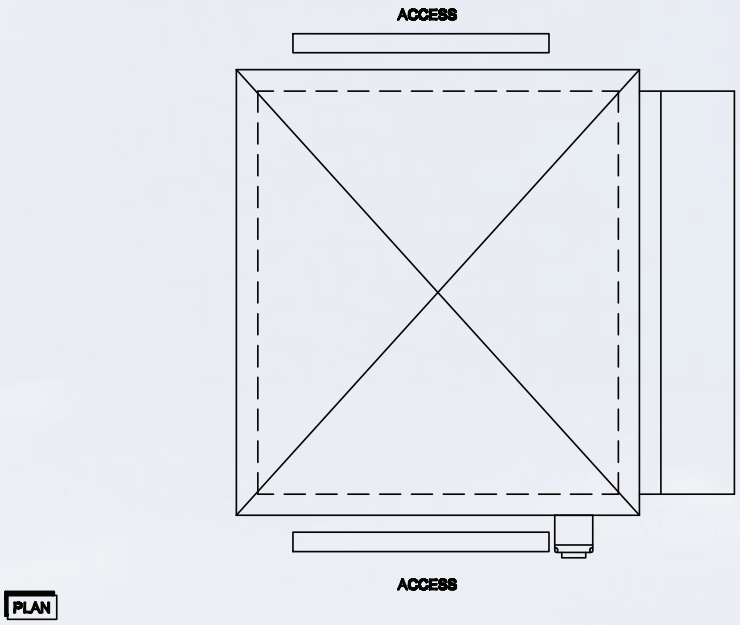
Casework Constructed from Double Skin Acoustic Insulated Galvanised Inner and Outer Skins

Dimensions & Weights

MODEL	Frame	Weight Kg	Width	Height	Length
VSI100PB/CM/ISO	20/18	30.8	480	330	740
VSI100PB/CM/ISO	30/25	40.0	500	350	760
VSI100PB/CM/ISO	50/50	61.0	540	390	800
VSI200PB/CM/ISO	20/18	40.6	580	405	840
VSI200PB/CM/ISO	30/25	53.4	600	425	860
VSI200PB/CM/ISO	50/50	80.6	640	465	900
VSI300PB/CM/ISO	20/18	57.2	790	435	890
VSI300PB/CM/ISO	30/25	73.6	810	455	910
VSI300PB/CM/ISO	50/50	107.7	850	495	950
VSI400PB/CM/ISO	20/18	66.2	990	465	890
VSI400PB/CM/ISO	30/25	85.3	1010	485	910
VSI400PB/CM/ISO	50/50	124.9	1050	525	950

External Model – Weather Proof...





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

Dimensions & Weights

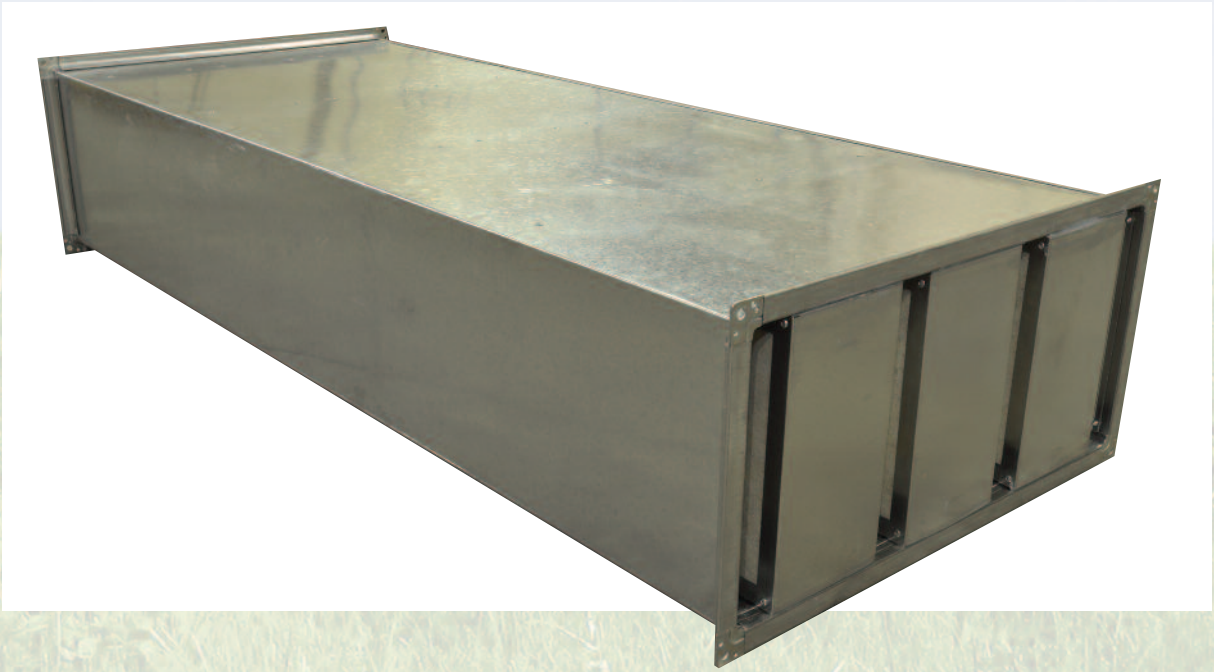
MODEL	Frame	Weight Kg	Width	Height	Length
VSI100PB/ISO	30/25	60.50	500	350	760
VSI100PB/ISO	50/50	69.50	540	390	800
VSI200PB/ISO	30/25	80.10	600	425	860
VSI200PB/ISO	50/50	90.70	640	465	900
VSI300PB/ISO	30/25	107.40	810	455	910
VSI300PB/ISO	50/50	119.10	850	495	950
VSI400PB/ISO	30/25	127.40	1010	485	910
VSI400PB/ISO	50/50	139.30	1050	525	950
VSI500PB/ISO	30/25	182.60	1260	860	910
VSI500PB/ISO	50/50	196.20	1300	900	950
VSI600PB/ISO	30/25	207.30	1260	1060	910
VSI600PB/ISO	50/50	222.80	1300	1100	950
VSI700PB/ISO	30/25	252.70	1460	1260	910
VSI700PB/ISO	50/50	276.40	1500	1300	950
VSI800PB/ISO	30/25	280.70	1660	1260	910
VSI800PB/ISO	50/50	304.50	1700	1300	950

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 VSI 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 are detailed opposite.



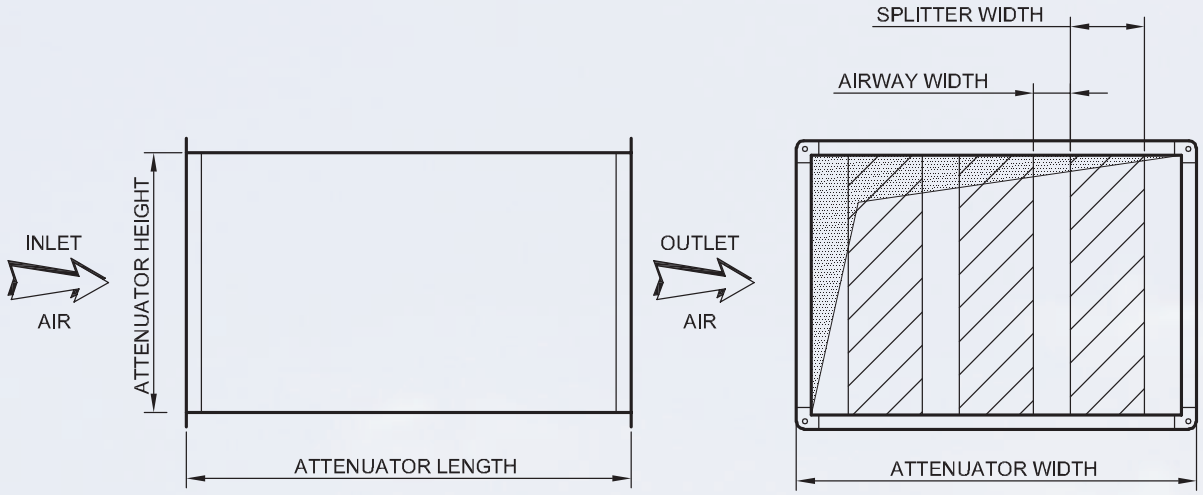
Attenuator Performance

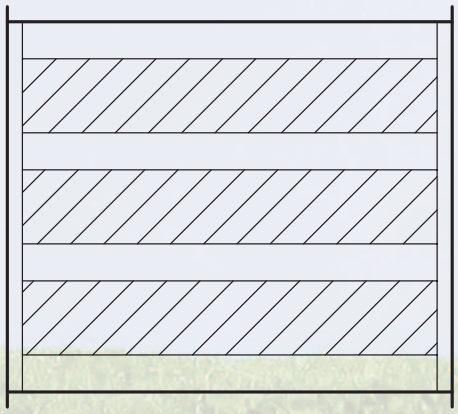
Model	Insertion Loss db							
Frequency Hz	**63**	**125**	**250**	**500**	**1K**	**2K**	**4K**	**8K**
VSI 100								
600 Long	-8	-15	-26	-35	-44	-44	-44	-36
750 Long	-9	-17	-29	-42	-52	-55	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55
VSI 200								
600 Long	-7	-13	-24	-33	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-52
1200 Long	-11	-22	-38	-55	-55	-55	-55	-55
VSI 300								
600 Long	-7	-13	-24	-33	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-52
1200 Long	-11	-23	-38	-55	-55	-55	-55	-55
VSI 400								
600 Long	-7	-13	-24	-33	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-43
900 Long	-9	-18	-29	-48	-52	-51	-51	-52
1200 Long	-11	-23	-38	-55	-55	-55	-55	-55
VSI 500								
600 Long	-8	-15	-26	-35	-44	-44	-44	-35
750 Long	-9	-17	-29	-42	-52	-52	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55
VSI 600								
600 Long	-8	-15	-26	-35	-44	-44	-44	-35
750 Long	-9	-17	-29	-42	-52	-52	-52	-45
900 Long	-10	-21	-31	-50	-55	-55	-55	-55
1200 Long	-12	-24	-40	-55	-55	-55	-55	-55
VSI 700								
600 Long	-7	-13	-24	-33	-42	-42	-42	-32
750 Long	-8	-15	-27	-40	-50	-50	-50	-50
900 Long	-9	-18	-29	-48	-52	-51	-51	-52
1200 Long	-11	-22	-38	-55	-55	-55	-55	-55
VSI 800								
600 Long	-7	-13	-24	-33	-42	-42	-42	-33
750 Long	-8	-15	-27	-40	-50	-50	-50	-50
900 Long	-9	-18	-29	-48	-52	-51	-51	-52
1200 Long	-11	-22	-38	-55	-55	-55	-55	-55

Attentuator 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
VSI 100	440x290	19.5	440x290	21.8	440x290	24.1	440x290	27.4
VSI 200	540x365	21.4	540x365	24.5	540x365	27.6	540x365	33.9
VSI 300	750x395	26.5	750x395	30.5	750x395	34.5	750x395	42.5
VSI 400	950x425	32.8	950x425	37.9	950x425	43.3	950x425	53.3
VSI 500	1200x800	52.4	1200x800	61.6	1200x800	70.8	1200x800	89.2
VSI 600	1200x1000	60.8	1200x1000	71.3	1200x1000	81.9	1200x1000	102.9
VSI 700	1400x1200	75.3	1400x1200	88.9	1400x1200	102.5	1400x1200	129.6
VSI 800	1600x1200	80.9	1600x1200	95.3	1600x1200	109.7	1600x1200	138.6



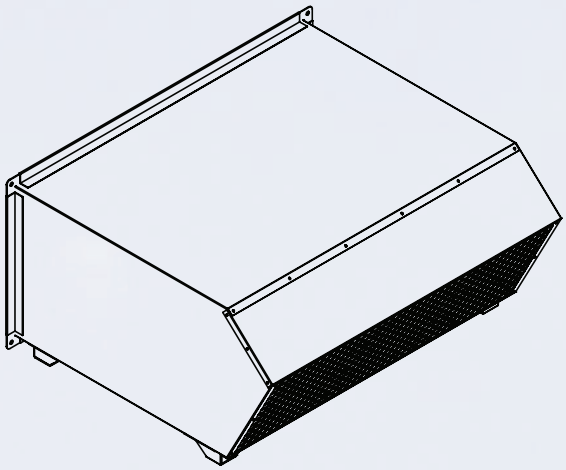


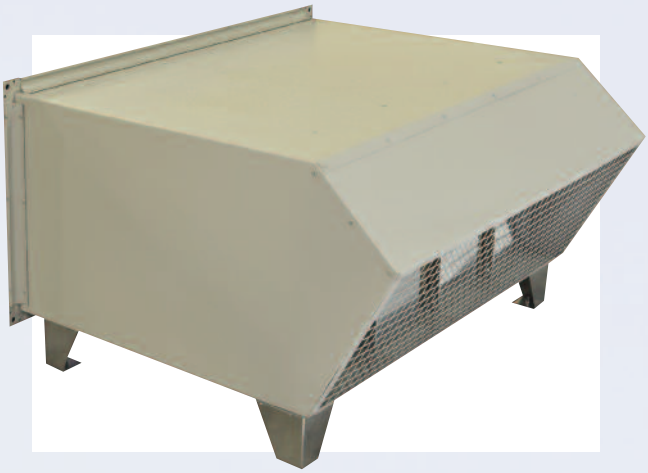
Note Weatherproof system side attenuators are constructed with a plastisol plastic coated sheet steel duct with 20/30mm mezz flanges.

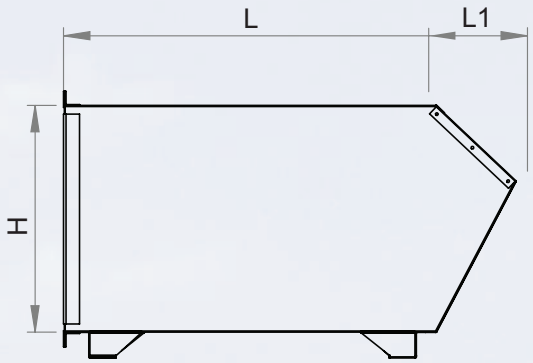
Weatherproof Attenuators...

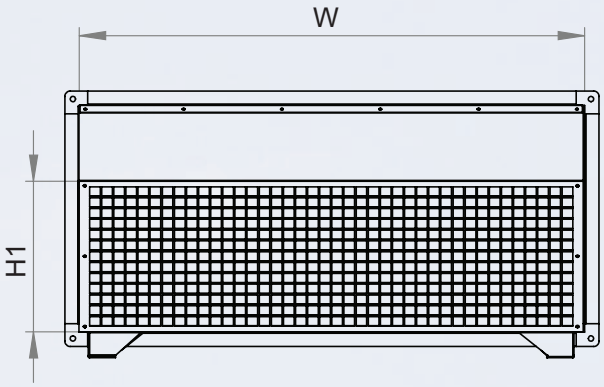
Weatherproof exhaust attenuators are provided as a bolt on addition to the VSI Cased Extract Unit. The casework is constructed from plastisol plastic coated sheet steel to match the casework of the VSI Unit.

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.







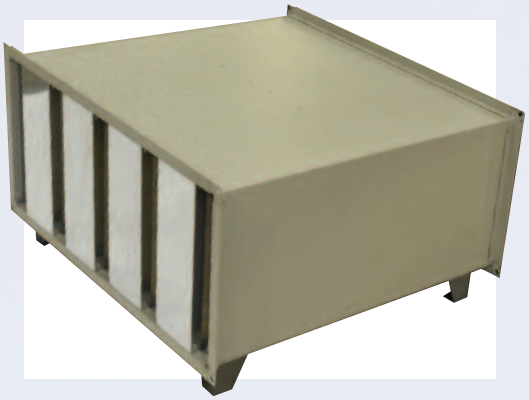


Dimensions & Weights

MODEL	Weight	W	H	H1	L	L1	Splitter Length
VSI 100	19.2	440	290	280	650	200	600
VSI 200	22.1	540	365	280	650	200	600
VSI 300	26.1	750	395	280	650	200	600
VSI 400	32.3	950	420	280	650	200	600
VSI 500	51.6	1200	800	660	650	300	600
VSI 600	59.9	1200	1000	860	650	400	600
VSI 700	74.2	1400	1200	1060	650	500	600
VSI 800	79.7	1600	1200	1060	650	500	600

Acoustic Performance

Freq Hz	63	125	250	500	1K	2K	4K	8K
VSI 100	-9	-17	-28	-38	-48	-48	-48	-38
VSI 200	-8	-15	-26	-36	-46	-46	-46	-36
VSI 300	-8	-15	-26	-36	-46	-46	-46	-36
VSI 400	-8	-15	-26	-36	-46	-46	-46	-36
VSI 500	-9	-17	-28	-38	-48	-48	-48	-38
VSI 600	-9	-17	-28	-38	-48	-48	-48	-38
VSI 700	-8	-15	-26	-36	-46	-46	-46	-38
VSI 800	-8	-15	-26	-36	-46	-46	-46	-38

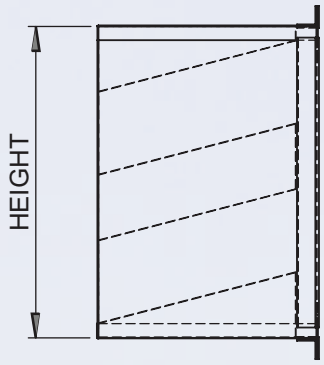


Casework constructed from plastisol plastic coated sheet steel.

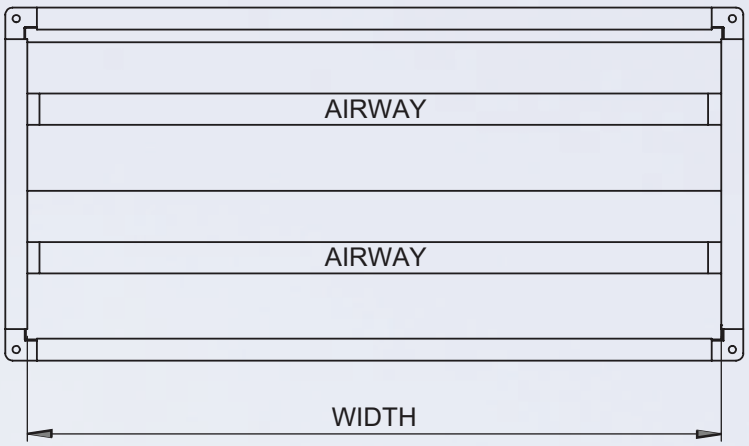
Acoustic Louvre...

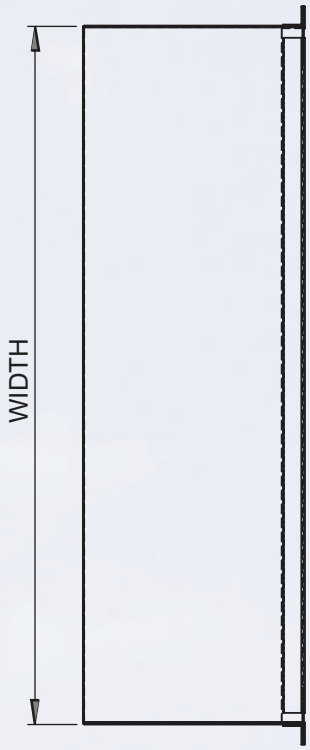
As an option to an Attenuator or Attenuator Cowl we have an Acoustic Louvre as an alternative method of reducing the discharge air noise on external mounted weatherproof VSI models.

Dimensions & Weights

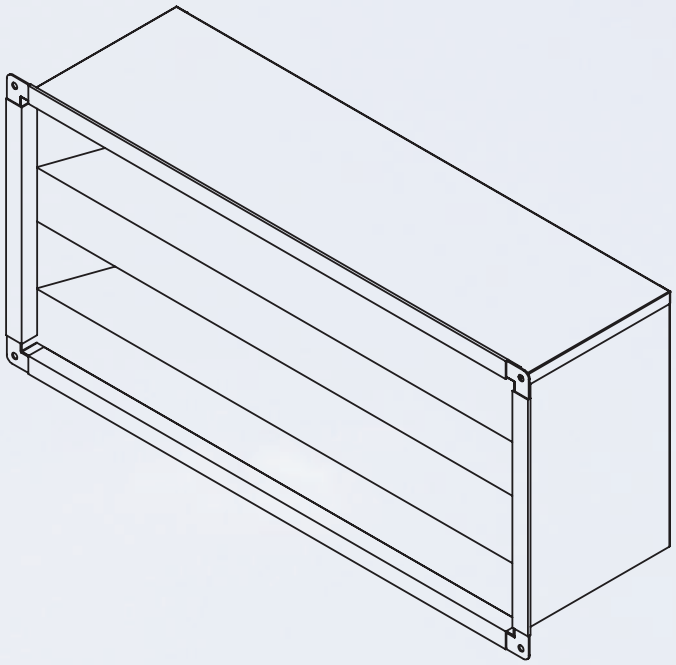


SIDE VIEW





PLAN VIEW



MODEL	Weight	Width	Height	Depth
VSI 100	9.3	440	290	300
VSI 200	11.3	540	365	300
VSI 300	16.9	750	395	300
VSI 400	23.1	950	420	300
VSI 500	34.4	1200	800	300
VSI 600	68.7	1200	1000	300
VSI 700	96.1	1400	1200	300
VSI 800	109.9	1600	1200	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...

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

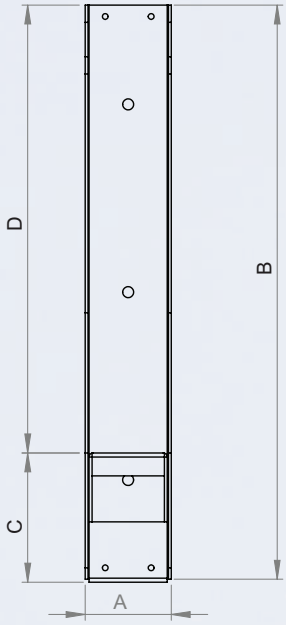
Suspension Brackets

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

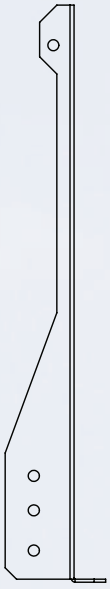
The quantity of suspension brackets will depend on the size and weight of the VSI Unit including any attenuators attached. The minimum number of suspension brackets is given in the loading chart.

Suspension Bracket Loading Chart

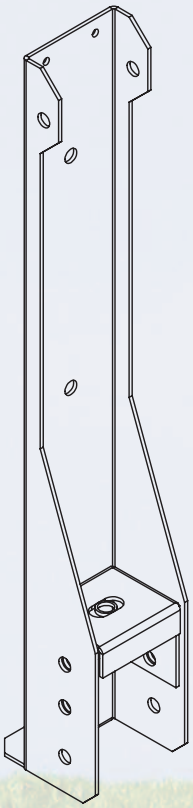
Model	Qty Brackets/Unit	No of Additional Brackets per Attenuator			
		600L	750L	900L	1200L
VSI 100	4	2	2	2	2
VSI 200	4	2	2	2	2
VSI 300	4	2	2	2	2
VSI 400	4	2	2	2	2
VSI 500	4	2	2	2	2
VSI 600	4	2	2	2	2
VSI 700	4	4	4	4	4
VSI 800	4	4	4	4	4



FRONT ELEVATION



SIDE ELEVATION



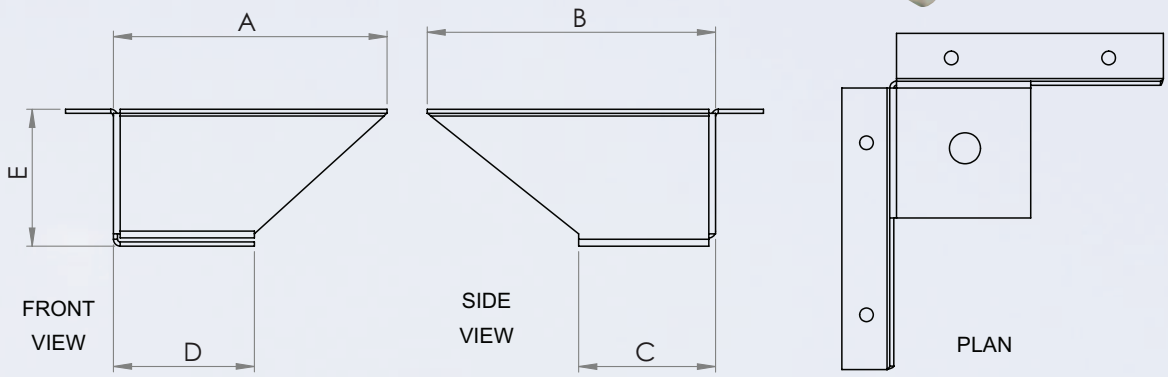
Constructed from galvanised sheet steel.

DIMENSIONS MM	A	B	C	D	E	F	G	H	Hole Size Slotted	Weight Each Kg
VSI 100	60	290	110	180	37.5	37.5	30	30	12.7 x 24	1.2
VSI 200	60	365	110	255	37.5	37.5	30	30	12.7 x 24	1.7
VSI 300	60	395	110	285	37.5	37.5	30	30	12.7 x 24	1.9
VSI 400	60	425	110	315	37.5	37.5	30	30	12.7 x 24	2.1
VSI 500	60	800	110	690	37.5	37.5	30	30	12.7 x 24	4.6
VSI 600	60	1,000	110	890	37.5	37.5	30	30	12.7 x 24	5.9
VSI 700	60	1,200	110	1,090	37.5	37.5	30	30	12.7 x 24	7.3
VSI 800	60	1,200	110	1,090	37.5	37.5	30	30	12.7 x 24	7.3

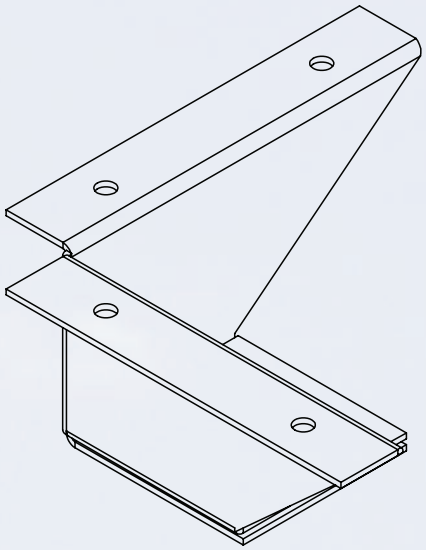
Mounting Feet

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

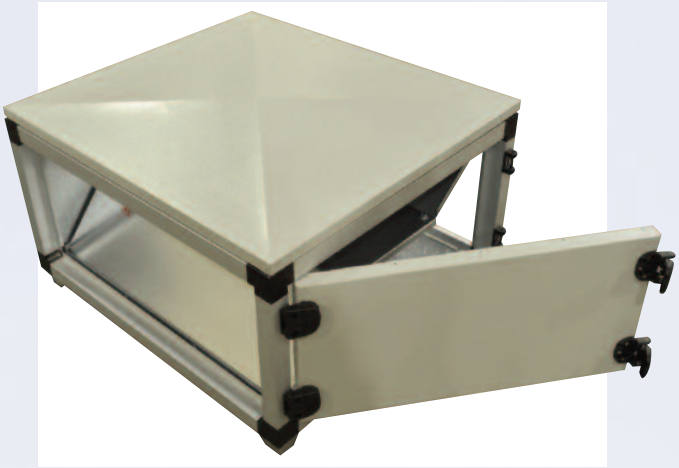
External mounted cased extract units are fitted with a four directional sloping roof with 25mm overhang

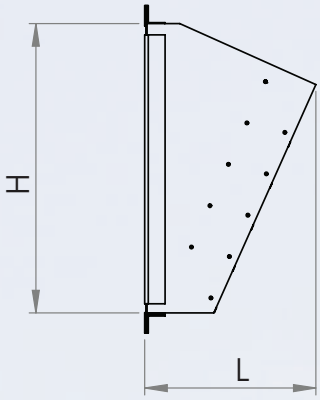
The roof is constructed from powder coated sheet steel.

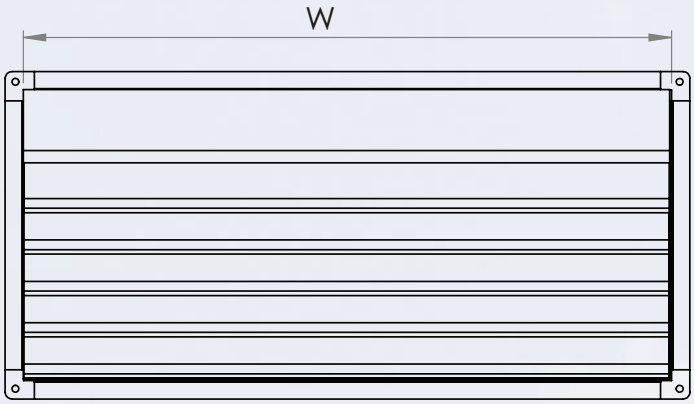
Standard Weather Cowl

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
VSI 100	2.6	440	290	200
VSI 200	4.0	540	365	200
VSI 300	6.1	750	395	200
VSI 400	8.2	950	425	200
VSI 500	19.5	1200	800	200
VSI 600	24.4	1200	1000	200
VSI 700	34.1	1400	1200	200
VSI 800	39	1600	1200	200



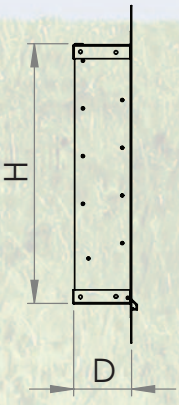


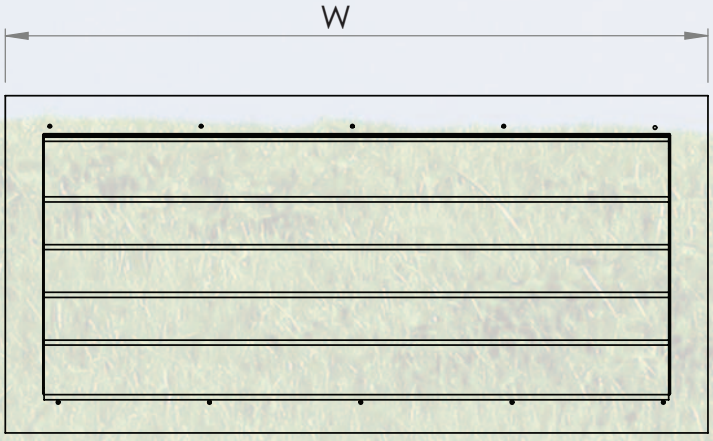


Standard Louvre

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
VSI 100	1.6 3	390	80	240
VSI 200	2.6	490	80	315
VSI 300	4.1	700	80	345
VSI 400	5.7	900	80	375
VSI 500	14.6	1150	80	750
VSI 600	18.4	1150	80	950
VSI 700	26.2	1350	80	1150
VSI 800	30.1	1550	80	1150

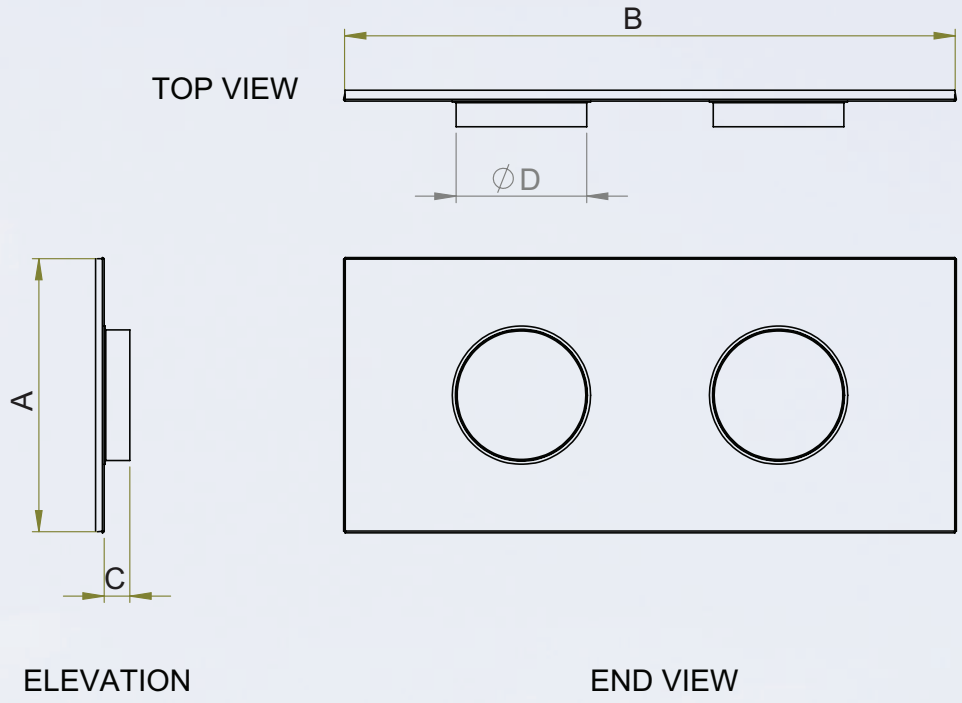




Circular Spigots and Plenum Spigot Box's

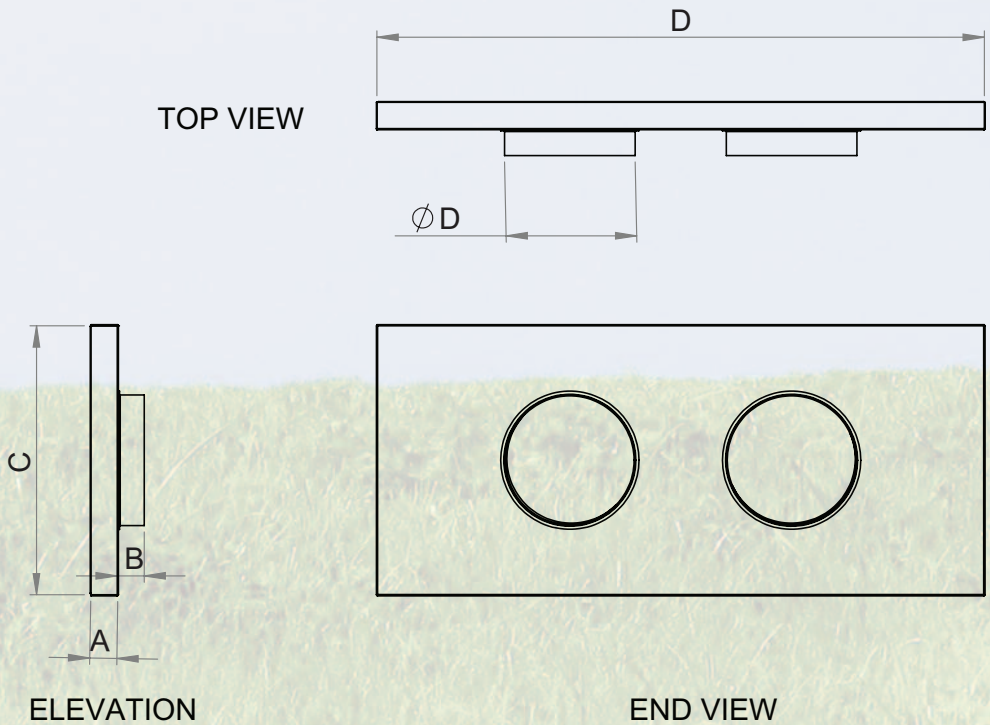
Circular spigot boxes are provided as an option, and constructed from galvanised sheet metal. Single spigot connection or multiple spigot connection plenum boxes proved the ideal solution for flexible ductwork air distribution.

Flat Circular Spigot Connection Plate



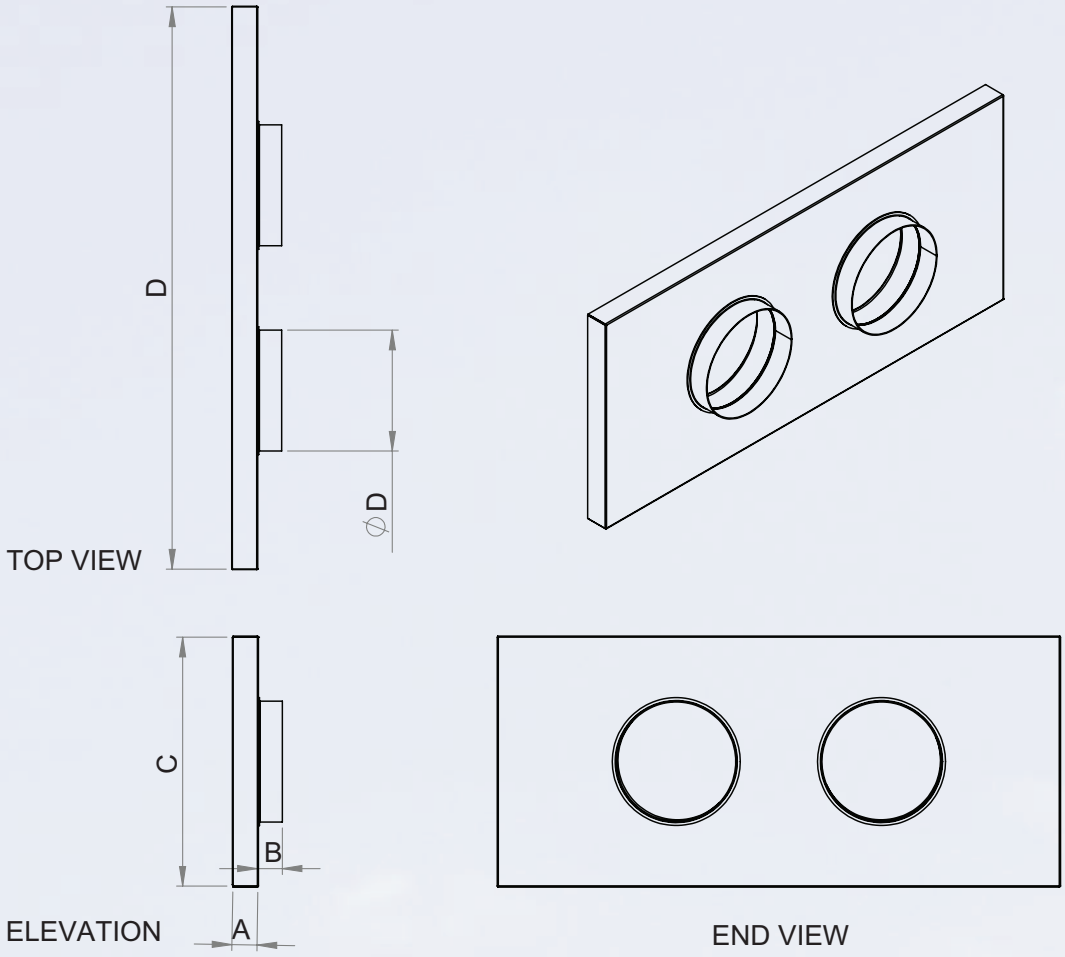
Acoustic Flat Circular Connection Plate

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



Flat Circular Connection Plates (Multi Spigots)

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



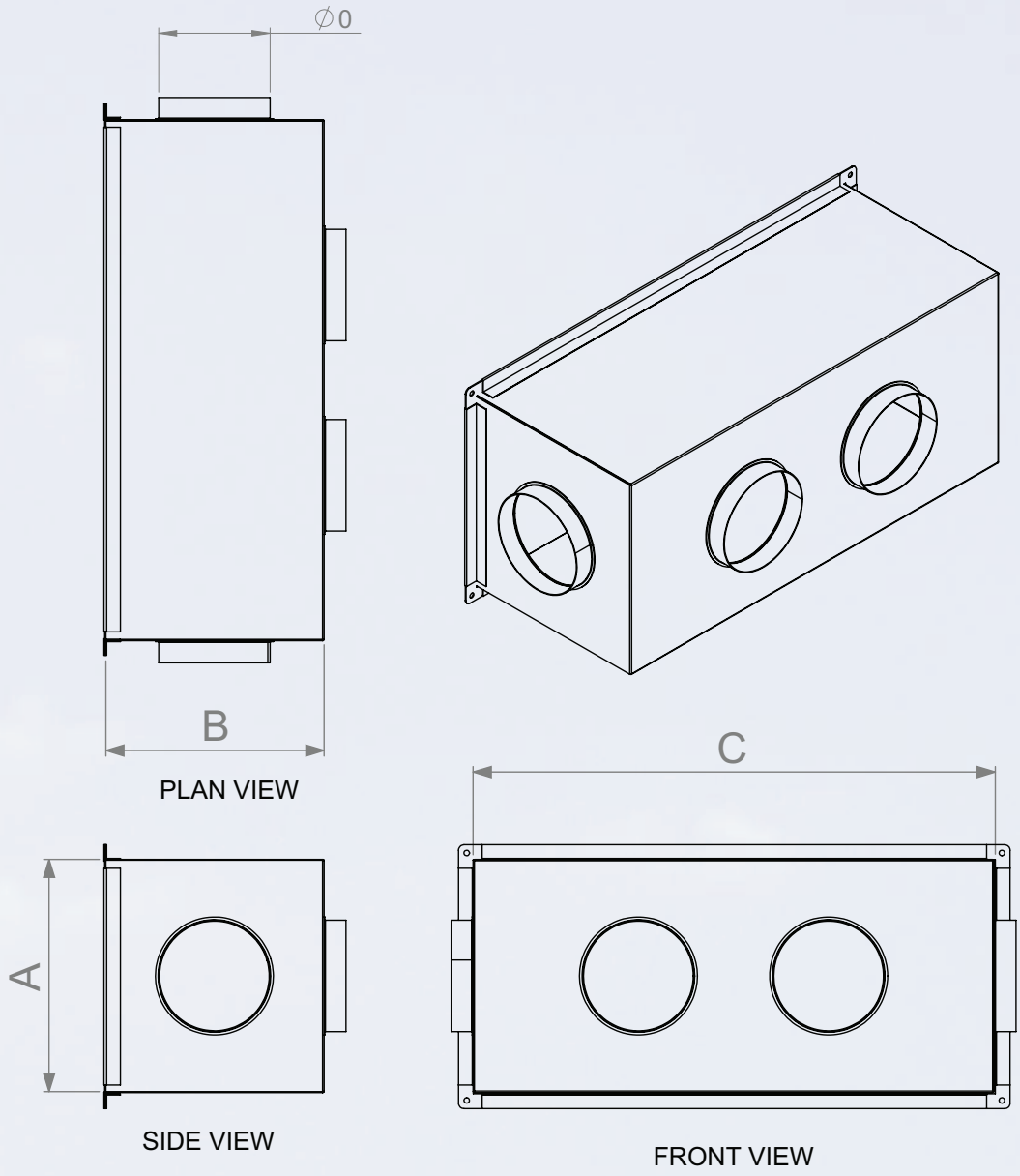
Dimensions and Weights Single and Multi Spigot Flat Plates

Model	A	B	C	D	Quantity of spigots			
					DIAØ	Weight	DIAØ	Weight
VSI 100/PB18	290	440	14	50	1x150mm	1.1	2x100mm	1.0
VSI 100/PB25	290	440	25	50	1x150mm	1.1	2x100mm	1.0
VSI 100/PB50	290	440	45	50	1x150mm	1.1	2x100mm	1.0
VSI 200/PB18	365	540	14	50	1x200mm	1.8	2x150mm	1.5
VSI 200/PB25	365	540	25	50	1x200mm	1.8	2x150mm	1.5
VSI 200/PB50	365	540	45	50	1x200mm	1.8	2x150mm	1.5
VSI 300/PB18	395	750	14	50	1x300mm	2.8	2x200mm	2.5
VSI 300/PB25	395	750	25	50	1x300mm	2.8	2x200mm	2.5
VSI 300/PB50	395	750	45	50	1x300mm	2.8	2x200mm	2.5
VSI 400/PB18	425	950	14	50	2x300mm	3.2	3x250mm	3.8
VSI 400/PB25	425	950	25	50	2x300mm	3.2	3x250mm	3.8
VSI 400/PB50	425	950	45	50	2x300mm	3.2	3x250mm	3.8
VSI 500/PB25	800	1200	25	50	1x600mm	10.2	-	
VSI 500/PB50	800	1200	45	50	1x600mm	10.2	-	
VSI 600/PB25	1000	1200	25	50	1x750mm	12.7	-	
VSI 600/PB50	1000	1200	45	50	1x750mm	12.7	-	
VSI 700/PB25	1200	1400	25	50	1x800mm	18.6	-	
VSI 700/PB50	1200	1400	45	50	1x800mm	18.6	-	
VSI 800/PB25	1200	1600	25	50	1x900mm	21.3	-	
VSI 800/PB50	1200	1600	45	50	1x900mm	21.3	-	

Multi-Spigot Acoustic Distribution Box

Distribution acoustic boxes are designed for flexible ductwork distribution, and constructed from the same frame & panel casework used for the VSI cased extract unit.

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



Ceiling Mounted VSI Multi Distribution Box Dimensions and Weights

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

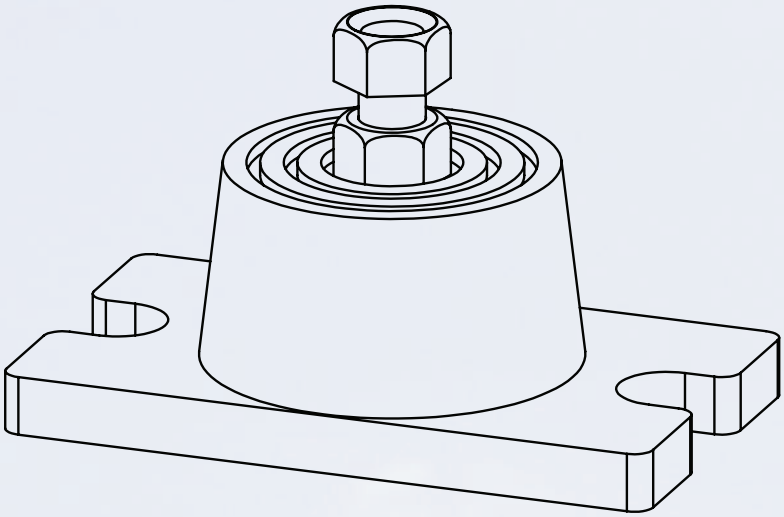
Vibration Control...

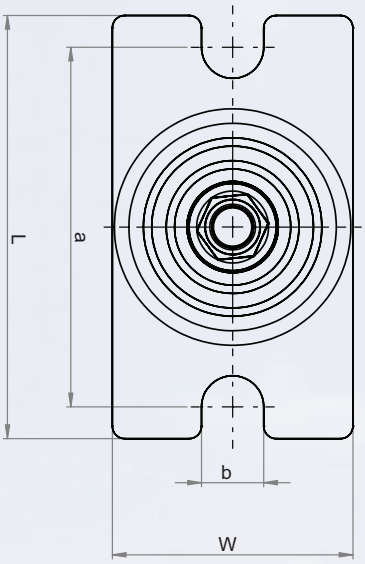
Floor mounted vibration control can be used in conjunction with a VSI cased extract incorporating a 100mm base frame as detailed below.

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.

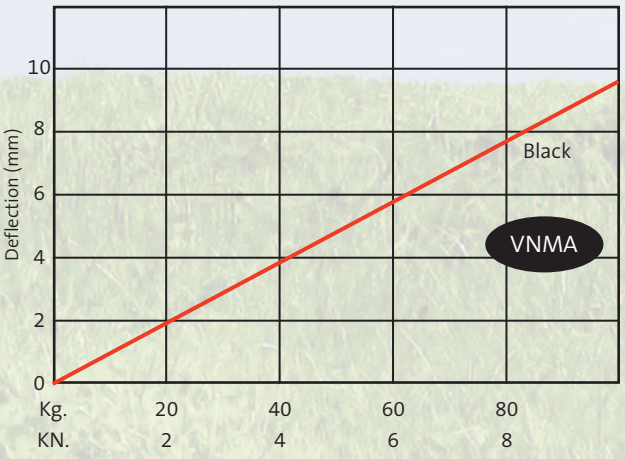


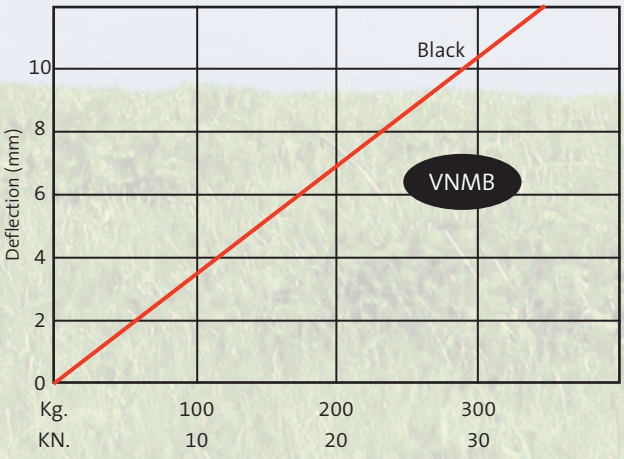


Load Selection Guide and Dimensions

Model	Rated Cap Kg	Rated Def mm	Colour Code	Duro Meter	Dimensions L	W	H	a	b	c	d	Setting bolt
VNM-A	25-100	2.5-8.0	Black		80	41	37	65	11	30	6	M8xL50
VNM-B	100-300	9.0-14.0	Black		102	57	48	88	13	50	6	M10xL50

Load/Deflection Graphs





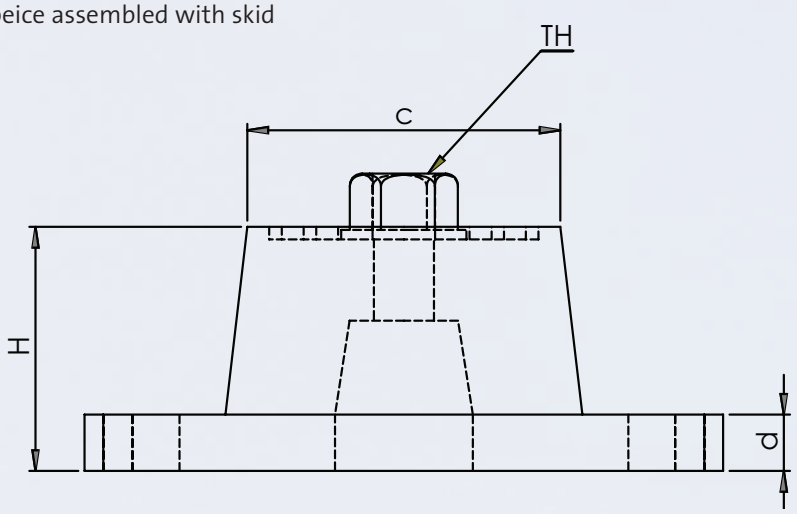
Specification

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 shall be moulded in one peice assembled with skid resistant rubber ridged base plates and circular rubber ridged tops which provide corrosion protection in severe corrosion protection in evere corrosive conditions.

Oil resistant neoprene mountings are supplied as a standard, but 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/cm2	224	
	Elongated Rate	%	580	
	Durometer	Hs	60	
Test for Aging	Tensile Strength Rate	%	-13.4	
100 + 1±˚C	Elongated Change Rate	%	-21.5	
70 hrs	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	

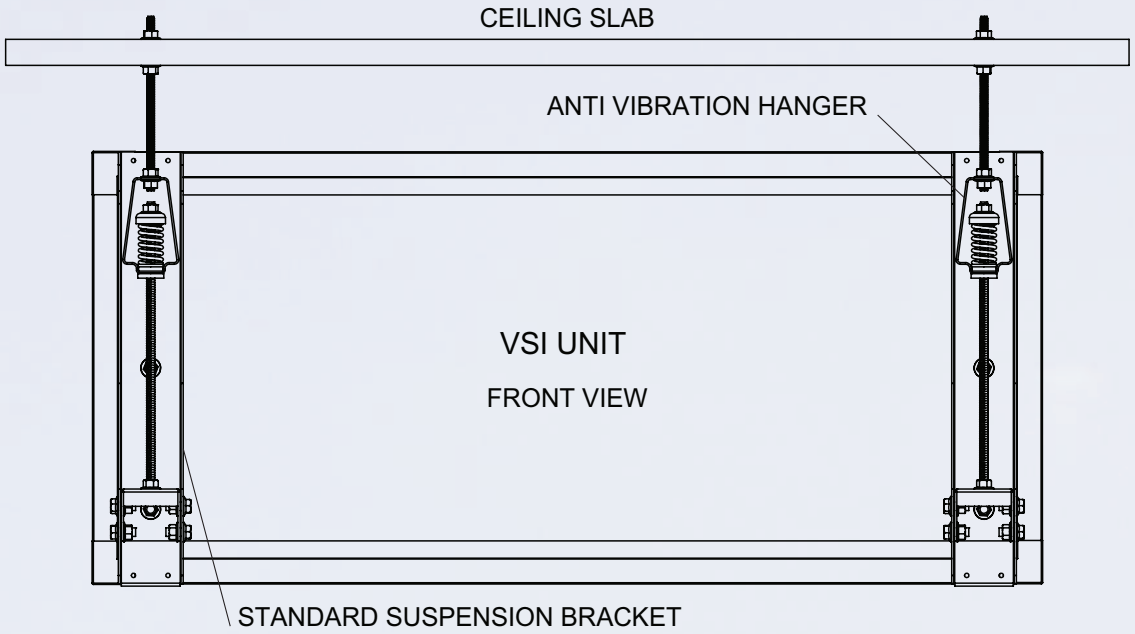
AV Mount Selection Chart (VSI Unit Only)

VSI MODEL	Mount Type	Quantity
VSI 100	VNM-A	4
VSI 200	VNM-A	4
VSI 300	VNM-A	4
VSI 400	VNM-A	4
VSI 500	VNM-B	4
VSI 600	VNM-B	4
VSI 700	VNM-B	4
VSI 800	VNM-B	4

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

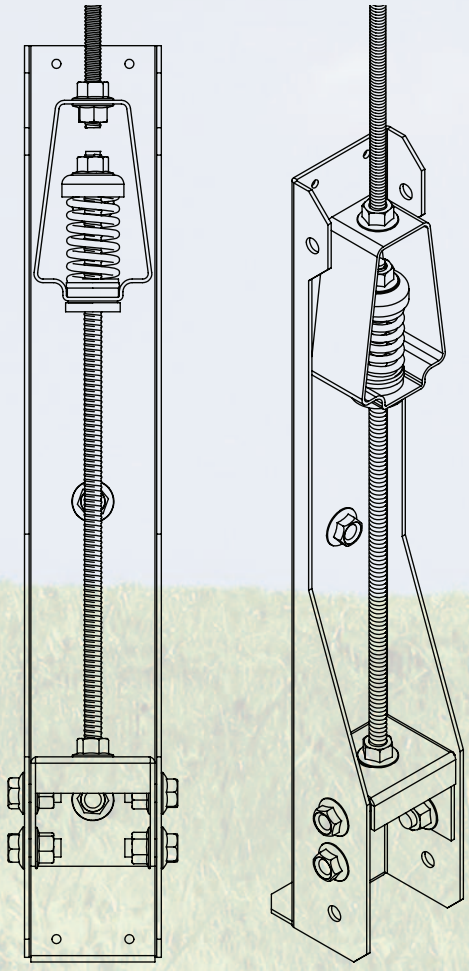
Vibration Control for Suspended VSI Units

Where VSI 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 Hangars with Suspension Brackets

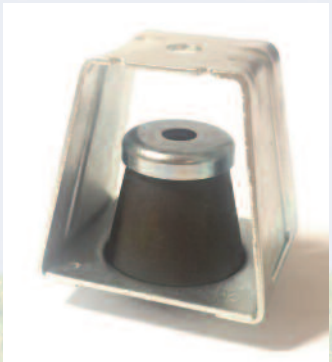
The application for this type of vibration isolation is where the cased extract unit is suspended from the ceiling via drop rods.



Type of Isolator

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

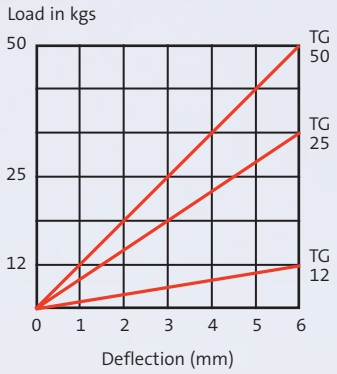
Open Rubber Hanger - Series TG



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 in 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 the favourite products of acoustic and air conditioning installation.

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

TPM Natural Requency

Deflection mm	3	9.1 Hz
Deflection mm	12	4.5 Hz

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).

Performance Curves Information

Components Description

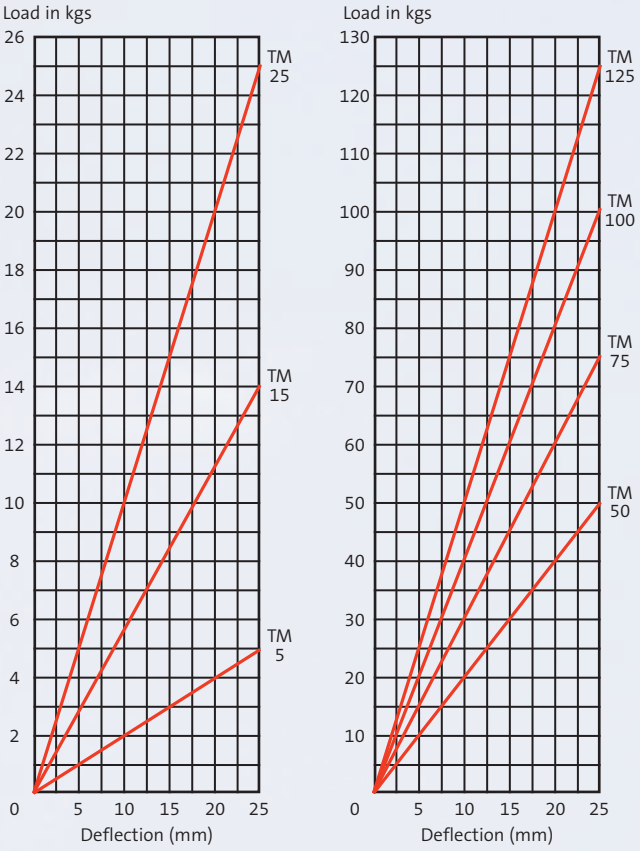
1. Standardised, High Resistance Steel Spring.

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. This provides maximum security.

3. Cylindrical Rubber Bushes for connecting the spring to the metal case, preventing contact with any of the meatal parts.

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



Physical Analysis

TPM 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 150/250

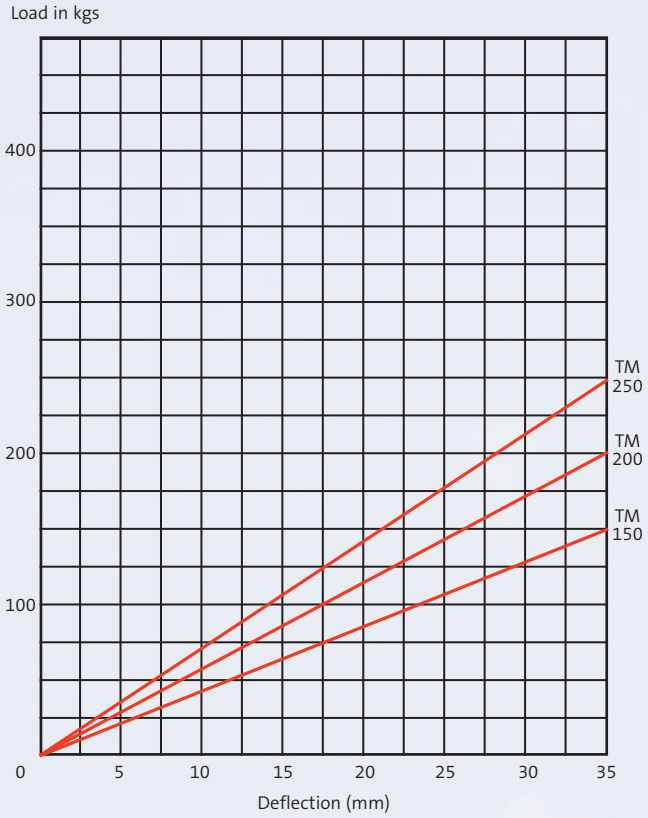
The TM150/250 comprises Metal Spring Insulators especially designed for suspending machinery and ductwork from the ceiling or from a metal structure. Highly suitable for all kinds of machinery with a low cycle operating system (above 600 rpm).

Performance Curves Information

Components Description

1. Standardised, high resistance steel spring.
2. Cylindrical metal bushes, which protects 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 products, formed via a process of bending and welding.

Performance Curves



Physical Analysis

TPM 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.

AV Hanger Selection Chart (VSI Unit Only)

VSI MODEL	Mount Type		Quantity
	Neoprene	Spring	
VSI 100	TG/TPM 50	TM 50	4
VSI 200	-	TM 75	4
VSI 300	-	TM 100	4
VSI 400	-	TM 125	4
VSI 500	-	TM 125	4
VSI 600	-	TM 150	4
VSI 700	-	TM 200	4
VSI 800	-	TM 250	4

Note Where accessories such as attenuators/cowls/acoustic louvres etc are supplied attached to the VSI cased extract units. Please contact our Sales Office for Vibration Hanger Isolation Selections.

Controls and Wiring...

The following Controls

All VSI Units incorporate a factory pre-wired fan motor isolator.

Speed regulators 0<10V can be provided as a loose item for remote locating and wiring by others, or factory fitted and prewired onto the casework of the VSI Unit.

Vari-vol system using constant pressure variable volume control, are included in this controls package with 0<10 V signal BMS interface for fan control and monitoring.

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 Sensoring
- CO2 Sensoring
- 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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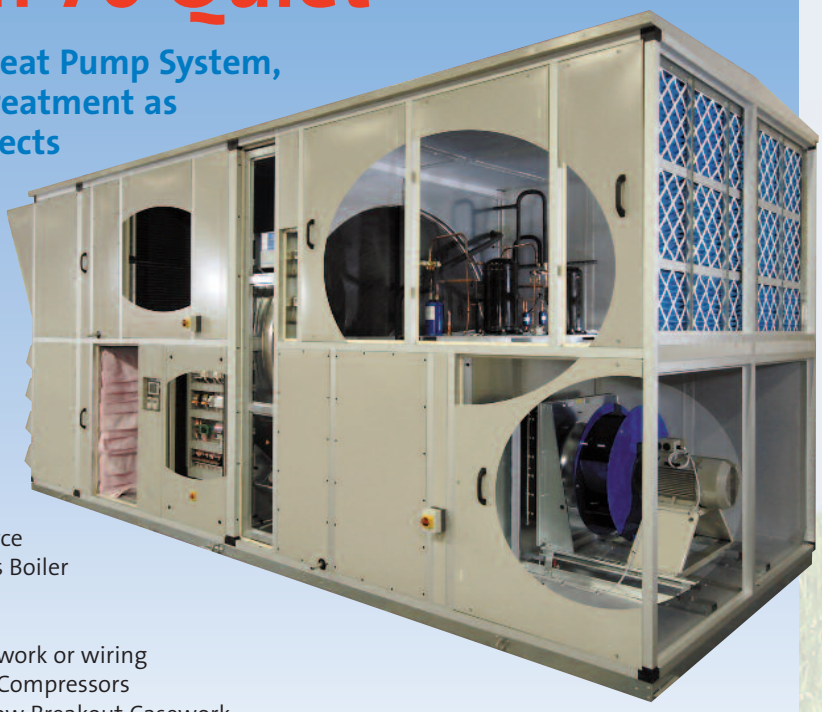
NO NEED FOR AN ADDITIONAL ACOUSTIC ENCLOSURE

Envirofresh 70 Quiet

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

Envirofresh 70 *Quiet*



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 CO^2 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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BSRIA

Product Range...

- 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
- Attentuators 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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