Acoustic data

Standard: BS EN 13141-7:2010

Ventilation for buildings. Performance testing of components/products for residential ventilation. Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings

Product **HRV1.65 Q Plus Eco**

		'A' Weighted Sound Power Levels dB re. 1pW								Overall	Overall	Casing
		Frequency Hz										Breakout
Speed		63	125	250	500	1k	2k	4k	8k	L_W	L_{WA}	dBA @ 3m
11l/s @ 1.5Pa (18%)	Induct Outlet	27	25	27	27	19	15	18	20	53	33	7
	Induct Inlet	27	25	23	19	14	14	18	20	53	31	
	Breakout	6	6	12	17	16	15	18	20	33	25	
32l/s @ 11Pa (29.7%)	Induct Outlet	35	46	45	47	42	33	22	20	65	52	15
	Induct Inlet	27	38	39	37	30	22	18	20	57	43	
	Breakout	17	15	26	28	25	18	18	20	44	32	
52l/s @ 28Pa (41.4%)	Induct Outlet	42	50	65	59	54	47	36	27	76	66	25
	Induct Inlet	30	47	59	48	41	35	25	26	70	60	
	Breakout	17	24	38	38	35	30	21	22	50	42	
63l/s @ 41Pa (53.1%)	Induct Outlet	44	53	64	61	59	52	42	34	76	67	31
	Induct Inlet	33	51	57	53	46	40	26	21	70	59	
	Breakout	19	34	46	42	41	35	24	20	57	49	
75l/s @ 52Pa (64.8%)	Induct Outlet	47	57	72	64	62	57	47	39	82	73	34
	Induct Inlet	38	52	65	55	49	45	31	23	75	65	
	Breakout	19	33	49	45	44	39	28	20	59	51	
88l/s @ 72Pa (76.5%)	Induct Outlet	49	57	72	68	66	61	51	44	83	74	38
	Induct Inlet	42	54	63	59	53	49	35	26	75	65	
	Breakout	26	37	52	49	47	43	32	21	63	55	
99l/s @ 95Pa (88.2%)	Induct Outlet	51	63	69	82	69	65	55	48	87	82	47
	Induct Inlet	43	56	64	68	56	52	39	31	78	70	
	Breakout	41	40	52	65	51	46	36	23	71	65	
99l/s @ 100Pa (100%)	Induct Outlet	51	65	70	84	69	65	55	48	89	84	47
	Induct Inlet	44	57	64	70	56	52	39	30	79	72	
	Breakout	41	40	51	64	52	46	36	22	71	64	

Measurements taken at full speed with a resistance of 100Pa, then at the stated percentage speed settings of the unit and corresponding reduced pressure

Inlet and outlet levels are Induct (BS EN 13141-7 clause 6.4.2 requirement), casing breakout is hemispherical - for spherical subtract 3dB

Titon acoustic data is independently tested at Sound Research Laboratories

Data is specifically tested for the Eco unit (100% bypass) - non bypass variants with deeper heat exchangers will offer lower acoustic levels

SRL report 80180-001-P1, 21/09/21

Acoustic data

Product **HRV1.65 Q Plus Eco**

		Sound Power Levels dB re. 1pW Frequency Hz								Overall L_W	Overall L_{WA}	Overall dBA @ 3m Hemispherical	Overall dBA @ 3m Spherical
Speed		63	125	250	500	1k	2k	4k	8k				
11l/s @ 1.5Pa (18%)	Open Outlet	35	28	29	27	18	14	17	21	37	28	10	7
	Open Inlet	35	28	25	19	13	13	17	21	36	25	7	4
	Breakout	32	22	21	20	16	14	17	21	33	25	7	4
32l/s @ 11Pa (29.7%)	Open Outlet	43	49	47	47	41	32	21	21	53	47	29	26
	Open Inlet	35	41	41	37	29	21	17	21	45	38	20	17
	Breakout	43	31	35	31	25	17	17	21	44	32	15	12
52l/s @ 28Pa (41.4%)	Open Outlet	50	53	67	59	53	46	35	28	68	61	43	40
	Open Inlet	38	50	61	48	40	34	24	27	62	53	36	33
	Breakout	43	40	47	41	35	29	20	23	50	42	25	22
63l/s @ 41Pa (53.1%)	Open Outlet	52	56	66	61	58	51	41	35	68	63	45	42
	Open Inlet	41	54	59	53	45	39	25	22	61	54	36	33
	Breakout	45	50	55	45	41	34	23	21	57	49	31	28
75l/s @ 52Pa (64.8%)	Open Outlet	55	60	74	64	61	56	46	40	75	68	50	47
	Open Inlet	46	55	67	55	48	44	30	24	67	59	42	39
	Breakout	45	49	58	48	44	38	27	21	59	51	34	31
88l/s @ 72Pa (76.5%)	Open Outlet	57	60	74	68	65	60	50	45	75	70	53	50
	Open Inlet	50	57	65	59	52	48	34	27	67	60	43	40
	Breakout	52	53	61	52	47	42	31	22	63	55	38	35
99l/s @ 95Pa (88.2%)	Open Outlet	59	66	71	82	68	64	54	49	83	79	62	59
	Open Inlet	51	59	66	68	55	51	38	32	71	66	49	46
	Breakout	67	56	61	68	51	45	35	24	71	65	47	44
99l/s @ 100Pa (100%)	Open Outlet	59	68	72	84	68	64	54	49	84	81	63	60
	Open Inlet	52	60	66	70	55	51	38	31	72	68	51	48
	Breakout	67	56	60	67	52	45	35	23	71	64	47	44

Measurements taken at full speed with a resistance of 100Pa, then at the stated percentage speed settings of the unit and corresponding reduced pressure

To enable simplified comparisons with other manufacturers data the above information is tested in accordance with BS EN 13141-7, the end reflection as defined in EN ISO 5135 for a 125mm (204x60mm) duct mounted flush with the wall, has been removed to provide an open outlet/open inlet sound power measurement (see page 1 of 2 for original data)

Figures shown are not 'A' weighted (other than the overall L_{WA}/dBA columns)

Titon acoustic data is independently tested at Sound Research Laboratories

Data is specifically tested for the Eco unit (100% bypass) - non bypass variants with deeper heat exchangers will offer lower acoustic levels

SRL report 80180-001-P1, 21/09/21

Acoustic Testing – Powered products

Acoustic testing of Titon mechanical ventilation products is measured in accordance with the following standards:-

CME – BS EN 13141-6 – "Ventilation for buildings. Performance testing of components/products for residential ventilation. Exhaust ventilation system packages used in a single dwelling"

MVHR – BS EN 13141-7 – "Ventilation for buildings. Performance testing of components/products for residential ventilation. Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings"

The results are presented in the following format which provides details of the acoustic performance of the unit at each of the standard speed settings.

The 'A' Weighted Sound Power Level in dB is an "in-duct" measurement for the Outlet and Inlet and are given across the frequency range from 125Hz to 8kHz.

The overall level is the logarithmic addition of the frequency bands to give a single figure, this is provided with and without 'A' weighting

The casing breakout is a sound pressure level at a distance of 3 meters, this figure is the lowest quoted and is usually stated in catalogue details. It is calculated from the Overall L_{WA} (sound power level) with a reduction to convert to the sound pressure at 3 meters.

Acoustic data

Titon®

Standard: BS EN 13141-7:2004

Product **HRV1 Qplus**

		'A' Weighted Sound Power Levels dB re. 1pW Frequency Hz							Overall	Overall	Casing Breakout
Speed		125	250	500	1k	2k	4k	8k	L_W	L_{WA}	dBA @ 3m
1	Outlet	31	32	36	24	16	18	22	49	39	9
	Inlet	26	24	29	18	16	18	22	43	32	
	Breakout	11	15	23	14	13	18	22	31	27	
2	Outlet	42	42	49	40	31	21	22	59	51	14
	Inlet	31	32	35	24	17	18	22	48	38	
	Breakout	16	21	29	19	15	18	22	37	31	
3	Outlet	45	46	50	55	37	27	23	63	57	16
	Inlet	33	36	36	31	20	18	22	51	41	
	Breakout	22	26	31	26	17	18	22	41	34	
4	Outlet	49	50	51	58	42	33	26	67	60	20
	Inlet	36	39	39	36	24	19	22	54	44	
	Breakout	23	28	35	31	20	19	22	43	37	
5	Outlet	51	53	54	56	46	38	30	69	60	23
	Inlet	39	42	41	39	28	20	22	57	47	
	Breakout	26	35	37	34	24	22	22	47	40	
6	Outlet	54	56	57	57	50	42	36	72	63	27
	Inlet	42	45	45	41	32	23	22	59	49	
	Breakout	28	33	44	36	28	24	22	50	45	
7	Outlet	58	59	60	60	54	46	41	75	66	32
	Inlet	44	47	49	45	37	27	23	62	53	
	Breakout	30	36	49	39	32	28	22	54	50	
8	Outlet	59	63	63	63	59	50	46	77	69	33
	Inlet	47	51	51	47	42	31	25	65	56	
	Breakout	32	38	49	42	37	32	24	55	51	

Measurements taken at full speed with a resistance of 50Pa, then at the nominal speed settings of the unit and corresponding pressure.
Inlet and outlet levels are Induct

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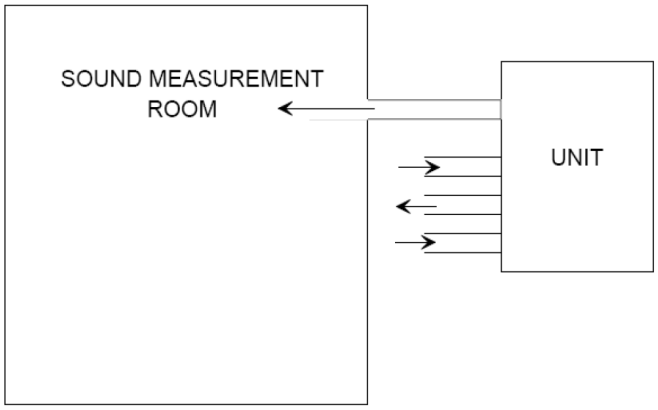
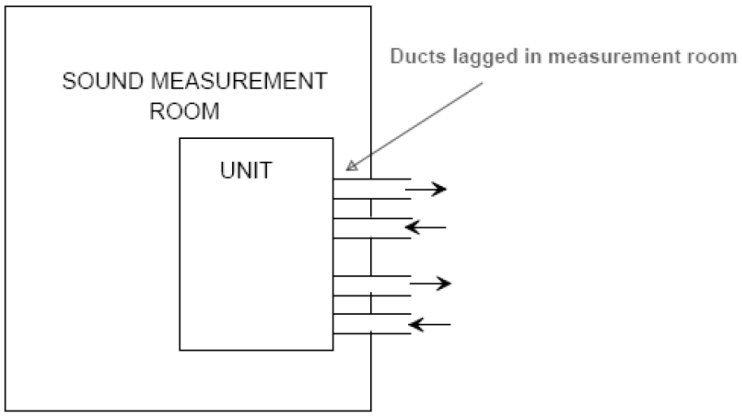
MVHR – Installation set up used during testing

In-duct sound power level measurement – the unit is installed with the outlet (or inlet) connected to the measurement room and

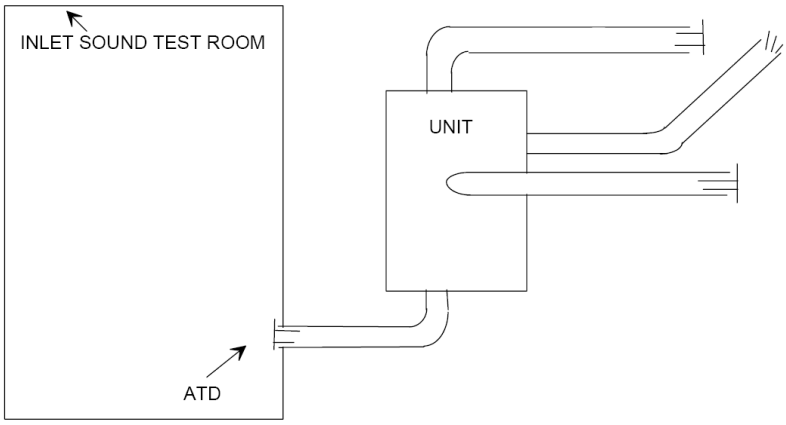


Casing breakout – the inlet and outlet ducts are connected to a separate room so the only noise measured is breakout from the casing

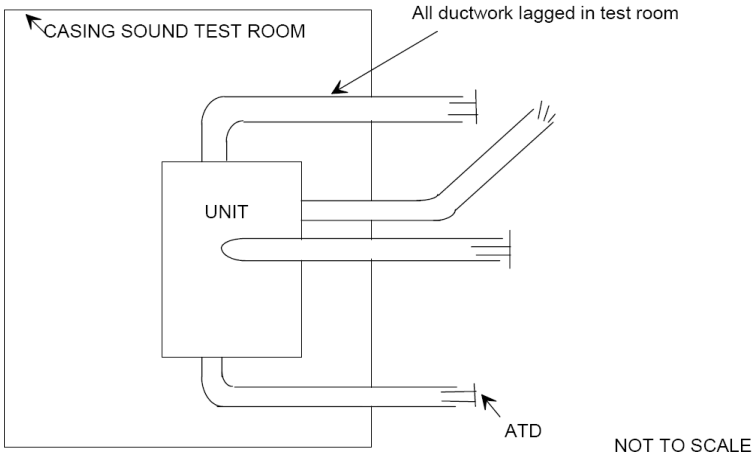


CME – Installation set up used during testing

Inlet sound power levels – all 3 inlets from the CME are fitted with a standard duct set up (as BS EN 13141-6, one is connected to the measuring room and the inlet sound power level recorded.
The three inlets connected with 90 degree bend, 0.5m duct, air terminal device
The single outlet connected with 0.5m duct, 45 degree bend, 2m duct, grille
All duct work 204 x 60mm plastic.



Casing breakout – the inlet and outlet ducts are connected to a separate room so the only noise measured is breakout from the casing



Glossary

Sound Power Level – is a measurement of the actual sound level created at the source, it is not therefore affected by the environment in which the product is installed. This will always be the highest levels quoted as no reductions have been applied for either the environment or distance from the source. Actual installed levels will therefore be significantly lower than these figures but they are useful from which to base any system calculations.

Sound Pressure Level – this must be quoted at a given distance and is dependant on both the distance from the source and environment (a hard walled reflective surface will have a higher level than a soft furnished room which absorbs more sound). Titon levels are given at a distance of 3m (which is commonly quoted) and are free field, hemispherical radiation.

Free field – An environment in which there are no reflective surfaces (useful to describe the sound pressure levels for comparative purposes)

Hemispherical radiation – Sound radiates from a source in all directions, where the product is mounted on a wall or ceiling some sound if reflected from this mounting face. The casing sound pressure levels are based on hemispherical radiation which will be slightly higher than spherical radiation.

'A'Weighting – this is a correction to the frequency bands to replicate the sensitivity of the human ear to different frequencies. The weighting can be removed from the octave bands if required, the corrections are given in the table below.

Frequency Hz	125	250	500	1000	2000	4000	8000
'A' Weighting	-16	-9	-3	0	1	1	-1

Octave band – sound is produced at various frequencies and is therefore measured across a range of frequency or Octave bands (as the above table). The figures can be combined to give an overall level using logarithmic addition.

In Duct levels – a measurement of sound that is taken inside the duct of a ventilation system, this is likely to be a higher level than a non ducted measurement.

Casing Breakout – a measurement of the sound that breaks out of the casing of a unit, the sound from the inlet and outlets of the unit does not form part of this measurement.