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 **HRV20 HE Q Plus Eco**

		'A' Weighted Sound Power Levels dB re. 1pW Frequency Hz								Overall L_W	Overall L_{WA}	Casing Breakout dBA @ 3m
Speed		63	125	250	500	1k	2k	4k	8k			
17l/s @ 2Pa (18%)	Induct Outlet	26	27	28	27	23	20	24	22	52	34	13
	Induct Inlet	22	23	23	22	17	18	24	22	49	31	
	Breakout	8	16	20	24	24	23	24	22	38	31	
39l/s @ 7Pa (30%)	Induct Outlet	34	46	47	44	40	37	28	23	65	51	20
	Induct Inlet	33	41	37	34	26	23	24	22	61	44	
	Breakout	13	31	30	34	29	24	24	23	49	38	
65l/s @ 18Pa (41%)	Induct Outlet	41	57	55	53	52	50	41	29	75	61	27
	Induct Inlet	28	47	46	43	37	34	27	23	64	51	
	Breakout	18	38	38	41	36	31	25	23	55	45	
94l/s @ 33Pa (53%)	Induct Outlet	46	55	62	67	59	58	50	40	77	69	35
	Induct Inlet	32	44	59	52	44	43	33	25	69	60	
	Breakout	23	35	48	49	43	38	29	23	59	52	
119l/s @ 51Pa (65%)	Induct Outlet	50	59	71	72	66	65	57	48	83	76	42
	Induct Inlet	37	47	63	58	50	49	39	29	73	64	
	Breakout	27	38	57	53	48	44	34	25	67	59	
147l/s @ 77Pa (77%)	Induct Outlet	54	62	77	75	72	70	62	53	88	80	44
	Induct Inlet	41	49	67	59	55	53	44	34	77	68	
	Breakout	31	41	59	57	53	49	40	29	69	62	
176l/s @ 97Pa (88%)	Induct Outlet	57	66	87	81	75	73	66	58	97	89	50
	Induct Inlet	50	51	74	68	57	56	48	39	84	75	
	Breakout	44	44	65	63	56	52	44	33	76	67	
178l/s @ 100Pa (100%)	Induct Outlet	57	65	87	80	75	73	67	58	96	88	49
	Induct Inlet	50	52	74	68	57	56	49	39	84	75	
	Breakout	43	44	63	62	56	52	44	33	75	66	

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

MD425b-01, SRL report C/24183/T01, 24/05/19

Acoustic data

Product **HRV20 HE 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				
17l/s @ 2Pa (18%)	Open Outlet	34	30	30	27	22	19	23	23	37	30	13	10
	Open Inlet	30	26	25	22	16	17	23	23	34	28	11	8
	Breakout	34	32	29	27	24	22	23	23	38	31	13	10
39l/s @ 7Pa (30%)	Open Outlet	42	49	49	44	39	36	27	24	53	46	28	25
	Open Inlet	41	44	39	34	25	22	23	23	47	36	19	16
	Breakout	39	47	39	37	29	23	23	24	49	38	20	17
65l/s @ 18Pa (41%)	Open Outlet	49	60	57	53	51	49	40	30	63	56	39	36
	Open Inlet	36	50	48	43	36	33	26	24	53	44	27	24
	Breakout	44	54	47	44	36	30	24	24	55	45	27	24
94l/s @ 33Pa (53%)	Open Outlet	54	58	64	67	58	57	49	41	70	66	49	46
	Open Inlet	40	47	61	52	43	42	32	26	61	54	37	34
	Breakout	49	51	57	52	43	37	28	24	59	52	35	32
119l/s @ 51Pa (65%)	Open Outlet	58	62	73	72	65	64	56	49	76	72	55	52
	Open Inlet	45	50	65	58	49	48	38	30	66	59	42	39
	Breakout	53	54	66	56	48	43	33	26	67	59	42	39
147l/s @ 77Pa (77%)	Open Outlet	62	65	79	75	71	69	61	54	81	77	59	56
	Open Inlet	49	52	69	59	54	52	43	35	70	63	45	42
	Breakout	57	57	68	60	53	48	39	30	69	62	44	41
176l/s @ 97Pa (88%)	Open Outlet	65	69	89	81	74	72	65	59	90	83	66	63
	Open Inlet	58	54	76	68	56	55	47	40	77	70	52	49
	Breakout	70	60	74	66	56	51	43	34	76	67	50	47
178l/s @ 100Pa (100%)	Open Outlet	65	68	89	80	74	72	66	59	90	83	65	62
	Open Inlet	58	55	76	68	56	55	48	40	77	70	52	49
	Breakout	69	60	72	65	56	51	43	34	75	66	49	46

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

MD425b-01, SRL report C/24183/T01, 24/05/19

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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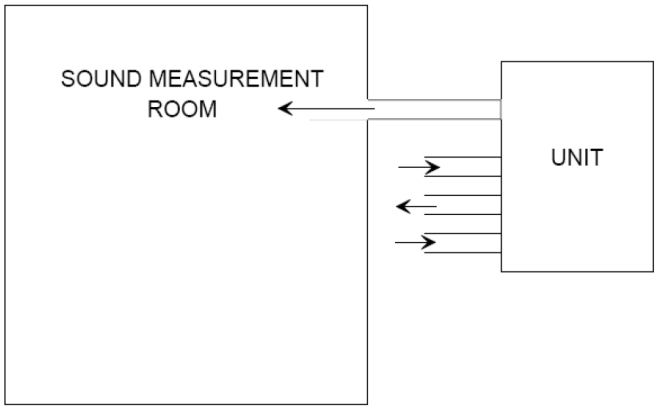
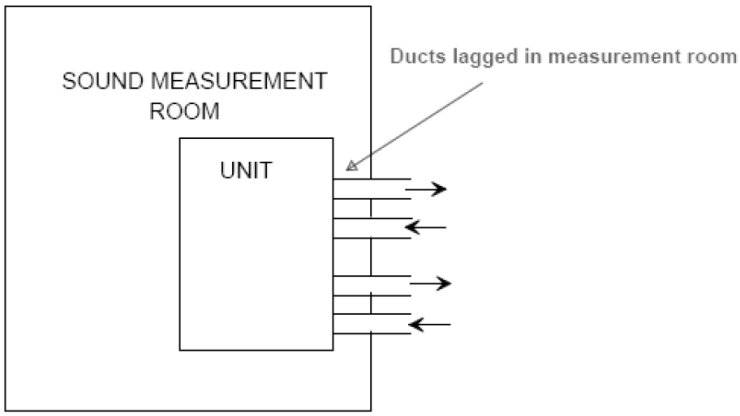
MVHR – Installation set up used during testing

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

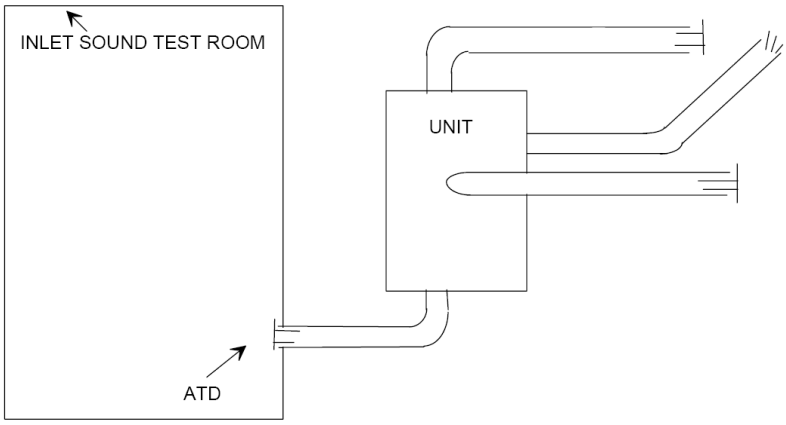


Casing breakout – the inlet and outlet ducts are connected to a separate room so the only noise measured is breakout from the casing

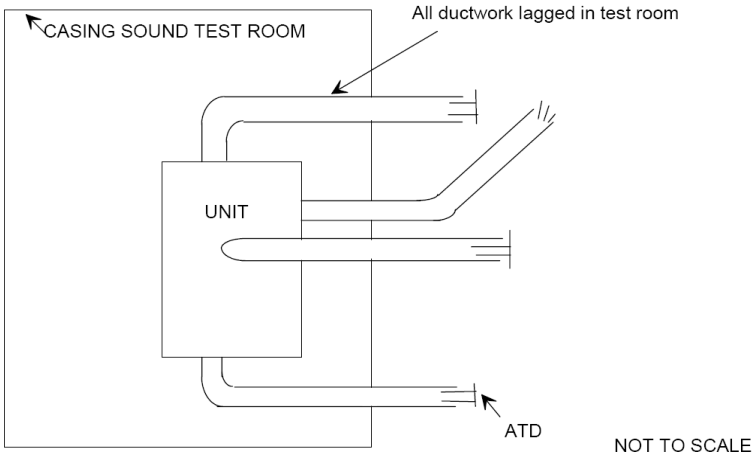


CME – Installation set up used during testing

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.