

To: Joshua Kilbride BECT

From: Patryk Rowinski

Project/File: Weldale Street, Reading – Phase 2

Date: 1 August 2025

Reference: Planning Condition 17 Discharge

Introduction

This technical note is prepared to discharge Planning Condition 17 imposed on the Weldale Street scheme. This relates to controlling noise emissions of mechanical plant serving the overall scheme. This Technical Note relates to noise emissions from the Phase 2 building only.

Design Criteria

Planning Condition 17

Plant noise limits relative to the existing background sound level have been included in Planning Condition 17:

“No mechanical plant shall be installed until a noise assessment of the proposed mechanical plant has been submitted and approved by this council. The assessment shall be carried out for in accordance with BS4141:2014 methodology. The predicted specific sound level ($L_{Aeq, Tr}$) as measured at point 1 metre external to sensitive facades shall be at least 10dB below the existing background sound level, $L_{A90, T}$ when all plant/ equipment (or any part of it) is in operation. The predicted rating level $L_{Ar, Tr}$ (specific sound level plus any adjustment for the characteristic features of the sound) as measured as a point 1 metre external to sensitive facades shall not exceed the existing background level, $L_{A90, T}$ when all plant/equipment (or any part of it) is in operation. The plant shall thereafter only be installed in accordance with the assessment.”

The condition requires that a plant noise assessment is submitted prior to installation of any plant and that plant noise specific levels ($L_{Aeq, Tr}$) are controlled to 10 dB below the existing background sound level, while the plant noise rating levels ($L_{Ar, Tr}$) are controlled to parity with background sound levels or below. Background sound levels were measured and reported in the Planning Noise Assessment (WDS-HYD-ZZ-XX-RP-Y-0000). However, the approach taken in the planning condition differs from the approach used in the planning report. Therefore, further analysis has been carried out on the measured background sound data.

BS 4142:2014+A1:2019

The standard method for assessing noise from commercial and industrial premises is British Standard BS 4142 “Method for rating and assessing industrial and commercial sound”. The standard is applicable for assessing noise affecting “dwellings or premises used for residential purposes”.

A BS 4142 assessment is made by determining the difference between the specific noise under consideration and the background sound level, as represented by the L_{A90} parameter, determined in the absence of the commercial sound. The L_{A90} parameter is defined as the level exceeded for 90% of the

Reference: Planning Condition 17 Discharge

measurement time. This parameter therefore excludes short duration noise events, such as individual vehicle movements, and represents the underlying continuous noise.

The commercial or industrial sound is assessed in terms of the equivalent continuous noise level, LAeq. The equivalent continuous noise level (LAeq) of the commercial or industrial sound, over the applicable assessment period, is known as the specific sound level.

A character correction penalty can be applied to the specific sound level where the commercial noise exhibits distinguishable tones, impulsiveness, intermittency or other characteristics which “are otherwise readily distinctive against the residual acoustic environment”.

The specific noise level with the character correction (if necessary) is known as rating level (LAr) and the difference between the background noise and the rating level is determined to make the BS 4142 assessment. The following is then considered:

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending on the context.”

The standard highlights the importance of considering the context in which a sound occurs. Factors including the absolute sound level, the character of the sound, the sensitivity of the receptor and the existing acoustic character of the area should be considered when assessing the noise impact. The use of the proposed premises for short term holiday rentals is also pertinent to the consideration of context.

The standard notes the need to consider absolute sound levels where background sound levels are low:

“For a given difference between the rating level and the background sound level, the magnitude of the overall impact might be greater for an acoustic environment where the residual sound level is high than for an acoustic environment where the residual sound level is low.
Where the background sound levels and rating level are low, absolute levels might be as, or more, relevant than margin by which the rating level exceeds the background. This is especially true at night.”

Data re-analysis

Re-analysis Methodology

Data recorded for the original survey in 2016 has been re-processed to allow for plant noise limits to be derived in line with BS 4142:2014 guidance. This comprises deriving the “typical” background sound level based on frequency distribution analysis of the measured integer background sound levels. This is in contrast to the lowest background sound levels used in the original Planning Noise Assessment for plant noise limit derivation.

The original assessment used the logging data measured at the long-term Position 1, while deriving a transfer function between concurrent measurements at Position 1 and short-term Position 2. Position 2 was deemed more representative of the noise climate experienced by the nearest sensitive receptors, but it was not possible to carry out long-term logging measurements there. The calculated transfer

Reference: Planning Condition 17 Discharge

function between the two positions was -13 dB; the same is applied to the re-analysed results to ensure that the noise climate at the nearest sensitive receptors is considered.

In context of BS 4142:2014, “typical” means most frequently occurring, unless another value may be considered more representative. In line with the guidance, typical values have been derived for various periods of the day, ie daytime (07.00 – 19.00 hours), evening (19.00 – 23.00 hours) and night time (23.00 – 07.00 hours).

Re-analysis Results

Table 1 shows the derived typical background sound levels for the three-day periods. Note that the data presented already includes the -13 dB transfer function. The originally identified sensitive receptors, as listed below, are still assumed to apply:

- Residential properties located on Stratheden Place to the West
- Existing apartments located on the northeast corner of the development site
- Residential properties located on Chatham Street to the South.

Table 1. Derived Plant Noise Limits

Receptor	Day period	Typical background sound level (dB L_{A90})	Therefore plant noise specific level limit, 10 dB below background (dB L_{Aeq})	Therefore plant noise rating level limit, parity with background (dB L_{Ar})
Nearest sensitive receptors	Day (07:00 to 19:00)	53	43	53
	Evening (19:00 to 23:00)	51	41	51
	Night (23:00 to 07:00)	39	30	39

Where the 10 dB below background requirement would have put the plant noise specific level limit below 30 dB L_{Aeq} , an absolute limit of 30 dB L_{Aeq} has instead been set. This follows BS 4142:2014 guidance regarding low sound level, which states that “Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”

The proposed absolute limit of 30 dB L_{Aeq} is considered to still protect amenity while not placing undue restrictions on the scheme developer. For reference, an external rating level of 30 dB L_{Aeq} at a building’s façade would translate to roughly 21 dB L_{Aeq} internal level assuming 9 dB sound reduction provided by an open window. Noise levels of this magnitude are well within the internal guidance limits described in BS 8233:2014, and are in fact unlikely to be audible. The use of absolute limits in this instance is therefore considered appropriate.

The noise limits above are ‘free-field’ levels at any height above ground and 1.0m from the nearest noise sensitive property façade. They apply to the overall cumulative operation of building services plant without any specific tone or character.

Reference: Planning Condition 17 Discharge

Assessment Methodology

Calculations of plant noise emissions have been carried out following the methodology set out in BS 4142:2014, CIBSE Guide B4 and SRL Noise Control in Building Services. These take the apartments northeast of the site as the nearest sensitive receptor due to proximity and exposure to plant. Ductborne noise calculations were carried out based on the final MEP engineer's drawings, while distances to the receptor were taken from scaled architect's drawings.

The plant featured on the scheme comprises MVHR units to apartments and some amenity areas, extract fans to BOH areas, and VRF condensers serving amenity areas. Source noise data for each unit is set out in the following section. Note that only plant units thought to affect the apartments to the northeast of the building are considered. As such, not considered are any units on the west or outer south façade of the building.

Plant Noise Source Data

All datasheets are provided in Appendix A. Note that the MVHR unit data provided on the manufacturer's datasheets is for open duct rather than in-duct; therefore, all the data include a spectral correction for the difference between the two. This has been advised by the manufacturer and is shown in Table 2's first row.

Table 2. Plant Source Noise Data

Unit type	Location	Source	Sound Power Level in Octave Band Centre Frequency, Hz (dB L _w)						
			63	125	250	500	1000	2000	4000
MVHR	1B J1	correction	20	15	9	5	2	1	0
		intake	63	55	45	33	26	18	16
		exhaust	69	61	50	41	33	27	18
	2B K1	intake	66	59	49	37	31	22	16
		exhaust	73	65	55	47	39	33	23
	3B B1	intake	65	58	47	36	29	20	16
		exhaust	71	64	53	45	37	31	21
	1B F1M	intake	62	54	43	32	25	17	16
		exhaust	68	60	49	40	32	25	16
	1B G1	intake	61	54	43	32	25	17	16
		exhaust	68	60	48	39	31	24	16
	1B D1	intake	61	54	43	32	25	17	16
		exhaust	68	60	48	39	31	24	16
	1B J1M	intake	62	54	43	32	25	17	16
		exhaust	68	60	48	40	31	25	16
	1B K1	intake	62	55	44	33	26	17	16
		exhaust	69	61	49	40	32	26	17
	2B H1	intake	65	58	47	36	29	20	16
exhaust		72	64	53	45	37	31	21	

Reference: Planning Condition 17 Discharge

Unit type	Location	Source	Sound Power Level in Octave Band Centre Frequency, Hz (dB Lw)						
			63	125	250	500	1000	2000	4000
	2B J1	intake	64	56	46	35	28	19	16
		exhaust	70	63	52	43	35	29	20
	1B E1	intake	62	54	43	32	25	17	16
		exhaust	68	60	48	40	31	25	16
	2B L1	intake	63	56	46	34	27	19	16
		exhaust	70	62	51	43	35	28	19
	2B L1M	intake	64	57	47	35	28	20	16
		exhaust	71	63	52	44	36	30	20
	2B L1V	intake	64	57	47	35	29	20	16
		exhaust	71	63	53	44	36	30	21
	2B M1	intake	65	58	48	37	30	21	16
		exhaust	72	64	54	46	38	32	22
	2B N1	intake	65	58	47	36	29	21	16
		exhaust	72	64	53	45	37	31	21
	1B F1	intake	63	55	45	33	26	18	16
		exhaust	69	61	50	41	33	27	18
	3B C1	intake	65	58	48	36	30	21	16
		exhaust	72	64	54	46	38	32	22
	1B G1M	intake	62	55	44	33	26	17	16
		exhaust	69	61	50	41	33	26	18
	Games Room	intake	57	49	46	43	47	43	35
		exhaust	64	59	63	62	65	68	63
	Media Room	intake	59	65	61	61	57	62	57
		exhaust	64	75	71	71	70	68	65
	Garden Room	intake	42	46	48	50	47	40	34
		exhaust	47	43	41	43	39	31	28
Extract fan LGF bin store		exhaust	86	86	68	65	59	57	52
VRF	LFG car park	exhaust	*	66	60	59	57	52	51

The datasheet for the VRF units did not include a Sound Power Level value at 63Hz. However, the path to the receptor from these units' locations is long and complicated and their contribution is therefore negligible.

Table 3 lists the in-duct attenuators provisioned within the MEP design.

Reference: Planning Condition 17 Discharge

Table 3. Attenuator Specifications

Unit type	Location	Path	Insertion Loss in Octave Band Centre Frequency, Hz (dB L _w)						
			63	125	250	500	1000	2000	4000
MVHR	All residential units	all paths	3	4	12	16	17	18	19
	Games Room	intake	0	3	7	16	22	20	13
		exhaust	0	3	7	16	22	20	13
	Media Room	intake	0	1	4	10	12	7	4
		exhaust	3	9	14	22	30	30	27
	Garden Room	all paths	N/A						
Extract fan LGF bin store		exhaust	5	15	24	35	39	39	37

Assessment Results

The calculated specific noise level at the nearest sensitive receptor is given in Table 4. A summary of the calculations is presented in Appendix B.

Table 4. Cumulative Noise Level at Nearest Sensitive Receptor

Location	Specific Noise Level in Octave Band Centre Frequency, Hz (dB L _p)							
	63	125	250	500	1000	2000	4000	dB(A)
Apartments northeast of site	49	32	20	18	16	11	10	26

Adopting the worst-case, nighttime noise limit, the BS 4142 assessment is presented in Table 5.

Table 5. BS 4142 Plant Noise Assessment Table

Results	Noise Level	Commentary
Measured Background Sound Level (L _{A90})	39 dB	Nighttime typical L _{A90} levels at measurement location
Planning Condition 17 Plant Noise Rating Limit (L _{Ar})	30 dB	As per Table 1
Planning Condition 17 Plant Noise Specific Level Limit (L _{Aeq})	39 dB	As per Table 1
Specific Sound Level (L _{Aeq})	26 dB	Levels predicted at the worst-case receptor.
Rating Level (L _{Ar})	26 dB	No character correction is deemed to apply as noise from the ASHPs is expected to be relatively steady and broadband.
Excess of Rating Level over Background Sound level (dB)	-13 dB	The assessment indicates a low impact.
Excess of Rating Level over Plant Noise Rating limit	-4 dB	The plant meets the planning condition criteria.

Reference: Planning Condition 17 Discharge

Conclusion

Calculations indicate that the current design, including the specified mitigation measures, meet both of the requirements of Planning Condition 17. Therefore, the Condition may be discharged.

Best regards,

Stantec Hydrock Limited

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Reference: Planning Condition 17 Discharge

Appendix A Plant Datasheets



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email: info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a

Flat type 1B J1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 27 l/s at 42 Pa
Actual duty: 94 l/s at 504 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (28.81%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.312 kW
Specific Fan Power: 3.3 W/(l/s)

Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (28.81%)

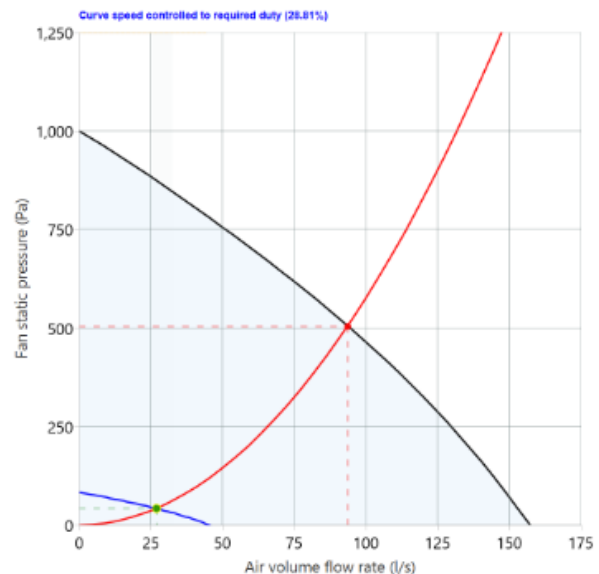
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	44	41	40	30	21	<16	<16	<16	<16
Open Inlet (Intake & Extract)	43	40	36	28	24	17	<16	<16	
Open Outlet (Supply & Exhaust)	49	46	41	36	31	26	18	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

Nuair, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuair.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

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Project: n/a

Flat type 2B K1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 35 l/s at 68 Pa

Actual duty: 95 l/s at 499 Pa

Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (36.98%):

Motor Input Power: 0.016 kW

Specific Fan Power: 0.5 W/(l/s)

Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.313 kW

Specific Fan Power: 3.3 W/(l/s)

Maximum Fan Speed: 4,120 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.34 kW

Motor current (flc): 2.8 A

Motor starting current (sc): 2.8 A

Max. operating temp: 40°C

Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (36.98%)

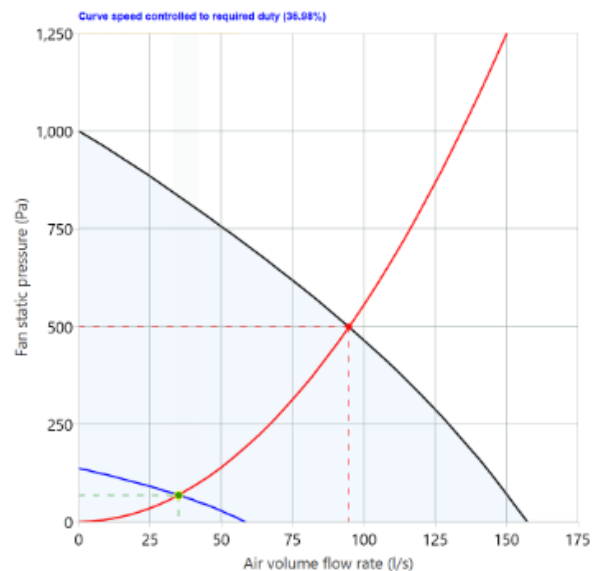
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	49	44	43	34	26	21	<16	<16	20
Open Inlet (Intake & Extract)	46	44	40	32	29	21	<16	<16	
Open Outlet (Supply & Exhaust)	53	50	46	42	37	32	23	18	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

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Project: n/a
Location: Flat type 3B B1

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 37 l/s at 51 Pa
Actual duty: 106 l/s at 422 Pa
Actual at required flow: 37 l/s at 824 Pa

When speed controlled to required duty (34.81%):

Motor Input Power: 0.013 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 2.094 m/s

At full speed:

Motor Input Power: 0.317 kW
Specific Fan Power: 3.0 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

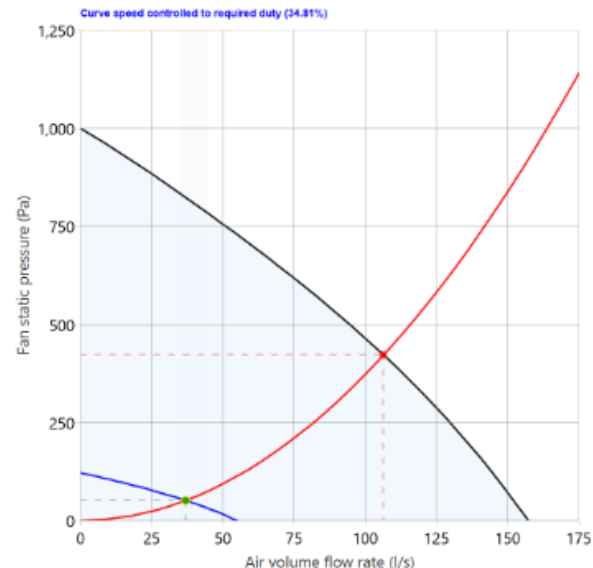
Noise calculated speed controlled to required duty (34.81%)

Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	47	43	42	33	24	19	<16	<16	18
Open Inlet (Intake & Extract)	45	43	38	31	27	19	<16	<16	
Open Outlet (Supply & Exhaust)	51	49	44	40	35	30	21	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

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Project: n/a

Flat type 1B F1M

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 27 l/s at 31 Pa
Actual duty: 103 l/s at 449 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (26.31%):

Motor Input Power: **0.01 kW**
Specific Fan Power: **0.4 W/(l/s)**
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.316 kW
Specific Fan Power: 3.1 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (26.31%)

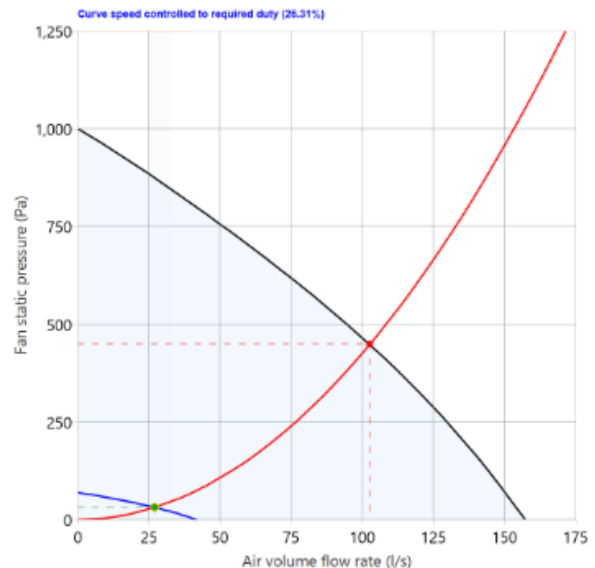
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Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a

Flat type 1B G1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 27 l/s at 26 Pa
Actual duty: 108 l/s at 414 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (25.11%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.318 kW
Specific Fan Power: 3.0 W/(l/s)

Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (25.11%)

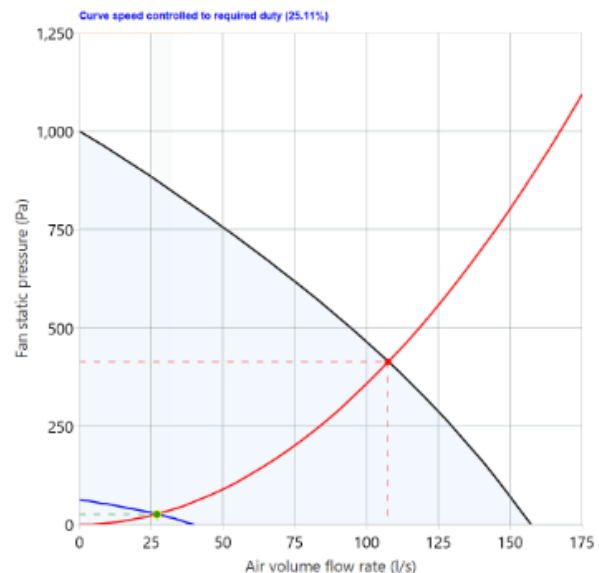
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	42	40	38	28	19	<16	<16	<16	<16
Open Inlet (Intake & Extract)	41	39	34	27	23	<16	<16	<16	
Open Outlet (Supply & Exhaust)	48	45	39	34	29	23	<16	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge

SUMMARY FAN DATA SHEET

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This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a Flat type 1B D1
Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 27 l/s at 27 Pa
Actual duty: 107 l/s at 420 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (25.33%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.317 kW
Specific Fan Power: 3.0 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

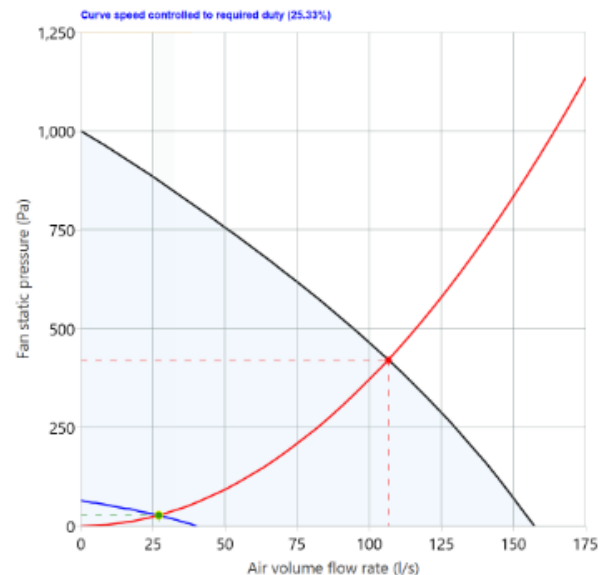
Noise calculated speed controlled to required duty (25.33%)

Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	42	40	38	28	19	<16	<16	<16	<16
Open Inlet (Intake & Extract)	41	39	34	27	23	<16	<16	<16	
Open Outlet (Supply & Exhaust)	48	45	39	34	29	23	<16	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



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Project: n/a

Flat type 1B J1M

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 27 l/s at 29 Pa
Actual duty: 104 l/s at 435 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (25.85%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.317 kW
Specific Fan Power: 3.0 W/(l/s)

Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (25.85%)

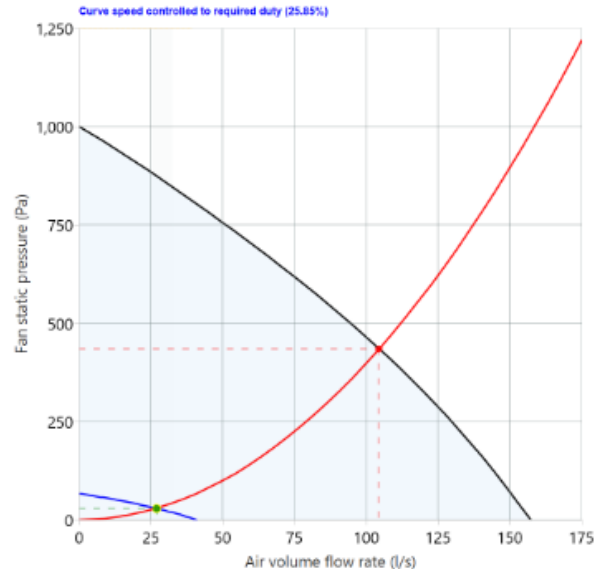
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	43	40	39	28	20	<16	<16	<16	<16
Open Inlet (Intake & Extract)	42	39	34	27	23	<16	<16	<16	
Open Outlet (Supply & Exhaust)	48	45	39	35	29	24	16	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

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Project: n/a

Location:

Flat type 1B K1

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 27 l/s at 35 Pa
Actual duty: 99 l/s at 471 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (27.29%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.314 kW
Specific Fan Power: 3.2 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (27.29%)

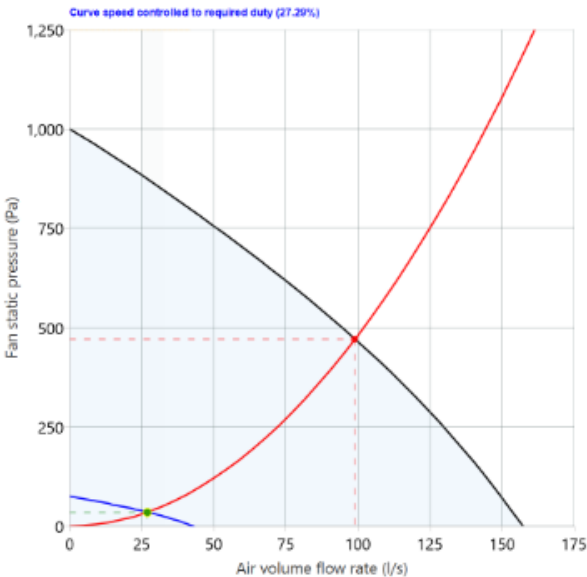
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	43	40	39	29	20	<16	<16	<16	<16
Open Inlet (Intake & Extract)	42	40	35	28	24	<16	<16	<16	
Open Outlet (Supply & Exhaust)	49	46	40	35	30	25	17	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

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UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

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Project: n/a

Flat type 2B H1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 35 l/s at 55 Pa
Actual duty: 101 l/s at 457 Pa
Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (34.63%):

Motor Input Power: 0.013 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.315 kW
Specific Fan Power: 3.1 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (34.63%)

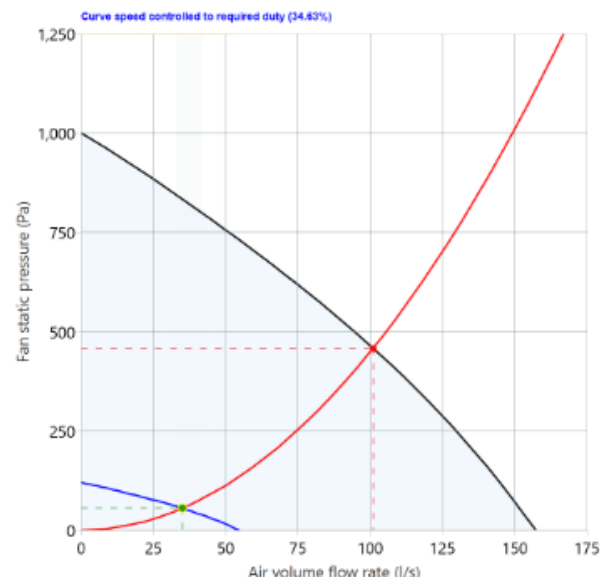
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	47	43	42	33	25	19	<16	<16	18
Open Inlet (Intake & Extract)	45	43	38	31	27	19	<16	<16	
Open Outlet (Supply & Exhaust)	52	49	44	40	35	30	21	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



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This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a

Location:

Flat type 2B J1

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 44 Pa
Actual duty: 108 l/s at 416 Pa
Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (32.55%):

Motor Input Power: 0.011 kW

Specific Fan Power: 0.3 W/(l/s)

Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.318 kW

Specific Fan Power: 3.0 W/(l/s)

Maximum Fan Speed: 4,120 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.34 kW

Motor current (flc): 2.8 A

Motor starting current (sc): 2.8 A

Max. operating temp: 40°C

Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (32.55%)

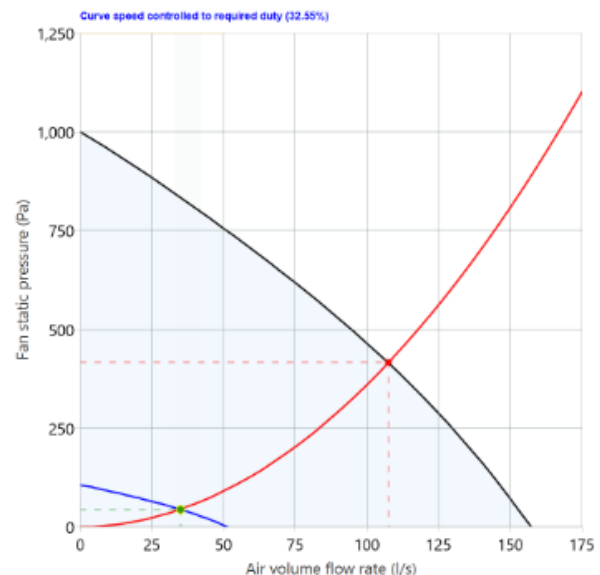
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	46	42	41	31	23	17	<16	<16	17
Open Inlet (Intake & Extract)	44	41	37	30	26	18	<16	<16	
Open Outlet (Supply & Exhaust)	50	48	43	38	33	28	20	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

Reference: Planning Condition 17 Discharge



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Project: n/a

Location:

Flat type 1B E1

Performance Chart

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: **MRXBOXAB-ECO5-SW**

Required duty: 27 l/s at 28 Pa
Actual duty: 106 l/s at 430 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (25.55%):

Motor Input Power: **0.01 kW**
Specific Fan Power: **0.4 W/(l/s)**
Velocity at required duty: **1.528 m/s**

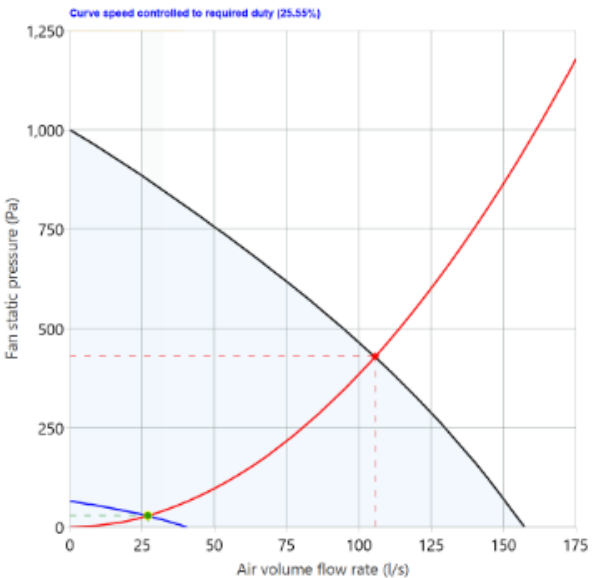
At full speed:

Motor Input Power: **0.317 kW**
Specific Fan Power: **3.0 W/(l/s)**

Maximum Fan Speed: **4,120 RPM**
Electrical Supply: **230V, 1 Phase, 50 Hz**
Nominal Motor Rating: **0.34 kW**
Motor current (flc): **2.8 A**
Motor starting current (sc): **2.8 A**

Max. operating temp: **40°C**
Weight: **25 kg**

Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (25.55%)

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	43	40	38	28	19	<16	<16	<16	<16
Open Inlet (Intake & Extract)	42	39	34	27	23	<16	<16	<16	<16
Open Outlet (Supply & Exhaust)	48	45	39	35	29	24	<16	<16	<16

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



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Project: n/a
Location:

Flat type 2B L1

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 41 Pa
Actual duty: 109 l/s at 401 Pa
Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (32%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.3 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.318 kW
Specific Fan Power: 2.9 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (32%)

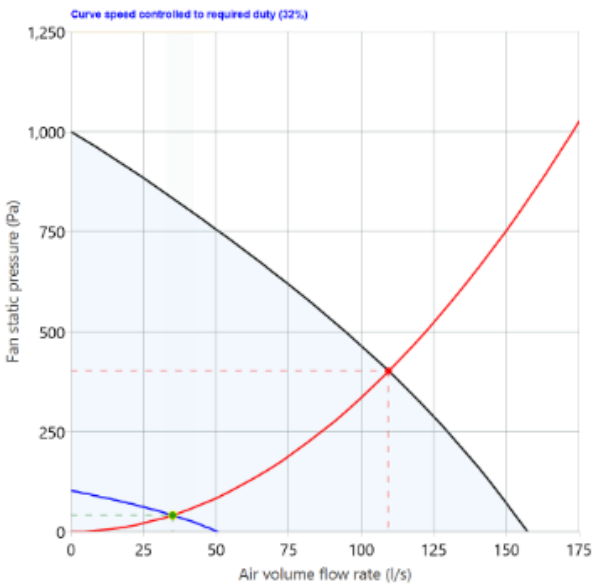
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	45	42	41	31	22	17	<16	<16	17
Open Inlet (Intake & Extract)	43	41	37	29	25	18	<16	<16	
Open Outlet (Supply & Exhaust)	50	47	42	38	33	27	19	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge

SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a
Location:

Flat type 2B L1M

Performance Chart

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 49 Pa
Actual duty: 104 l/s at 438 Pa
Actual at required flow: 35 l/s at 835 Pa

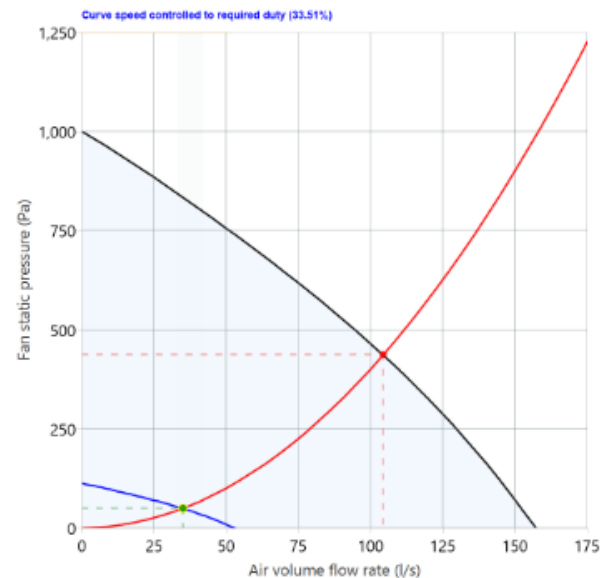
When speed controlled to required duty (33.51%):

Motor Input Power: 0.012 kW
Specific Fan Power: 0.3 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.317 kW
Specific Fan Power: 3.0 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (33.51%)

Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	46	43	42	32	24	18	<16	<16	17
Open Inlet (Intake & Extract)	44	42	38	30	26	19	<16	<16	
Open Outlet (Supply & Exhaust)	51	48	43	39	34	29	20	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

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This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a
Location:

Flat type 2B L1V

Performance Chart

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 50 Pa
Actual duty: 104 l/s at 441 Pa
Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (33.71%):

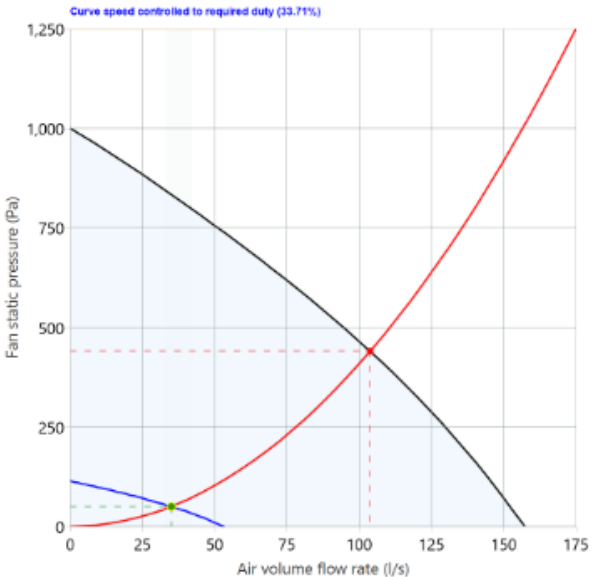
Motor Input Power: 0.012 kW
Specific Fan Power: 0.3 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.316 kW
Specific Fan Power: 3.0 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (33.71%)

Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	47	43	42	32	24	18	<16	<16	18
Open Inlet (Intake & Extract)	44	42	38	30	27	19	<16	<16	
Open Outlet (Supply & Exhaust)	51	48	44	39	34	29	21	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

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This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a
Location:

Flat type 2B M1

Performance Chart

Technical Data

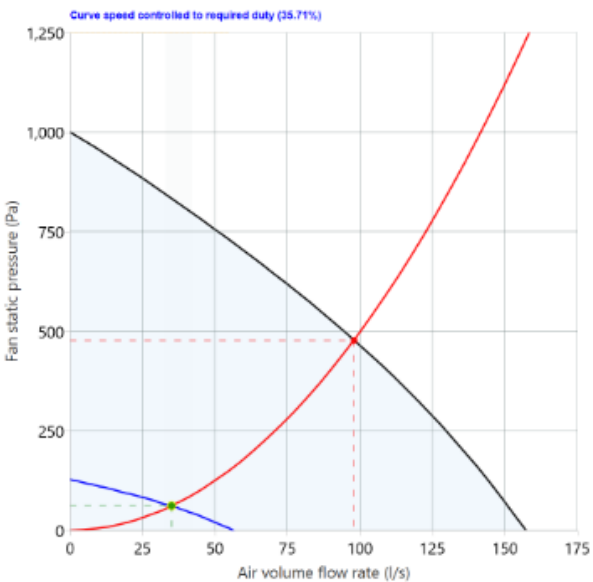
MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 61 Pa
Actual duty: 98 l/s at 477 Pa
Actual at required flow: 35 l/s at 835 Pa

When speed controlled to required duty (35.71%):
Motor Input Power: 0.014 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:
Motor Input Power: 0.314 kW
Specific Fan Power: 3.2 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.
Noise calculated speed controlled to required duty (35.71%)

Sound Power Levels re 1 pWatts (Hz):	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	48	44	43	33	25	20	<16	<16	19
Open Inlet (Intake & Extract)	45	43	39	32	28	20	<16	<16	
Open Outlet (Supply & Exhaust)	52	49	45	41	36	31	22	17	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.
The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.
The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.
The unit shall be suitable for 150mm circular ducting.
The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.
Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.
The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge

SUMMARY FAN DATA SHEET

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Project: n/a

Location:

Flat type 2B N1

Performance Chart

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 35 l/s at 56 Pa
Actual duty: 100 l/s at 460 Pa
Actual at required flow: 35 l/s at 835 Pa

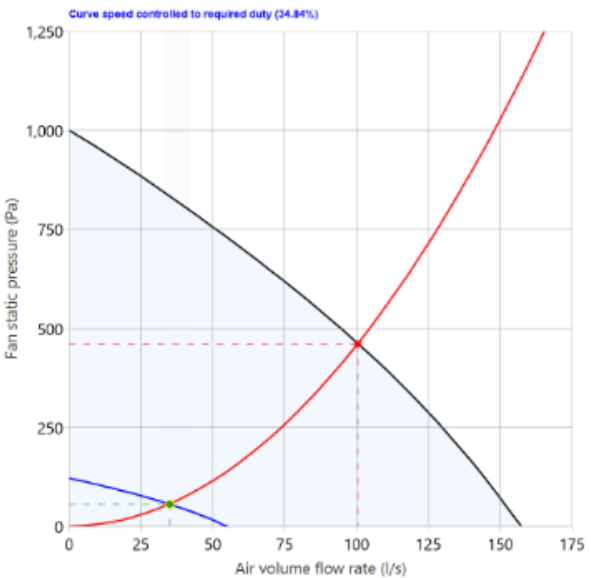
When speed controlled to required duty (34.84%):

Motor Input Power: 0.013 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.981 m/s

At full speed:

Motor Input Power: 0.315 kW
Specific Fan Power: 3.1 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg
Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.
Noise calculated speed controlled to required duty (34.84%)

Sound Power Levels re 1 pWatts (Hz):	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	47	43	42	33	25	19	<16	<16	18
Open Inlet (Intake & Extract)	45	43	38	31	27	20	<16	<16	
Open Outlet (Supply & Exhaust)	52	49	44	40	35	30	21	16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
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This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a

Flat type 1B F1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 27 l/s at 42 Pa
Actual duty: 94 l/s at 504 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (28.81%):

Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.312 kW
Specific Fan Power: 3.3 W/(l/s)

Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

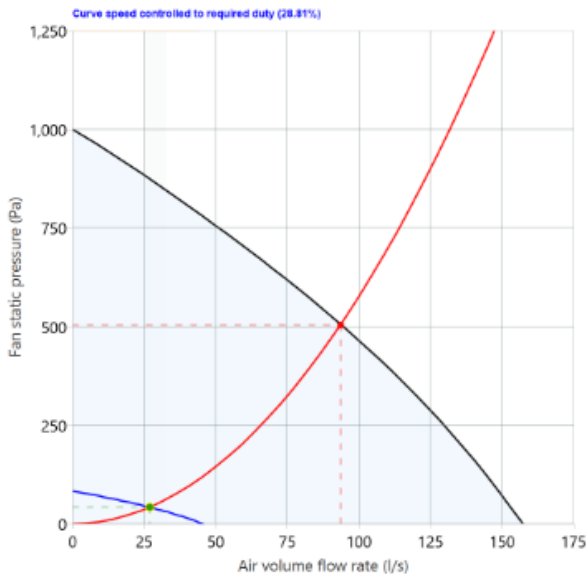
Noise calculated speed controlled to required duty (28.81%)

Sound Power Levels re 1 pWatts (Hz):									
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	44	41	40	30	21	<16	<16	<16	<16
Open Inlet (Intake & Extract)	43	40	36	28	24	17	<16	<16	
Open Outlet (Supply & Exhaust)	49	46	41	36	31	26	18	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

Reference: Planning Condition 17 Discharge



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UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 17 Jun 2024 11:37 using software version 5.8.4583.0

Project: n/a

Flat type 3B C1

Location:

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox

Fan Code: MRXBOXAB-ECO5-SW

Required duty: 37 l/s at 56 Pa
Actual duty: 104 l/s at 442 Pa
Actual at required flow: 37 l/s at 824 Pa

When speed controlled to required duty (35.63%):

Motor Input Power: 0.014 kW

Specific Fan Power: 0.4 W/(l/s)

Velocity at required duty: 2.094 m/s

At full speed:

Motor Input Power: 0.316 kW

Specific Fan Power: 3.0 W/(l/s)

Maximum Fan Speed: 4,120 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.34 kW

Motor current (flc): 2.8 A

Motor starting current (sc): 2.8 A

Max. operating temp: 40°C

Weight: 25 kg

Starting currents are nominal.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (35.63%)

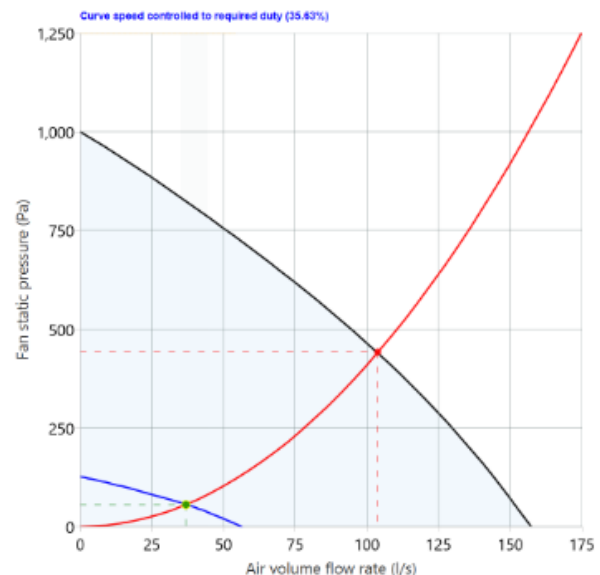
Sound Power Levels re 1 pWatts (Hz):

Hz	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	48	44	43	33	25	20	<16	<16	19
Open Inlet (Intake & Extract)	45	43	39	31	28	20	<16	<16	
Open Outlet (Supply & Exhaust)	52	49	45	41	36	31	22	16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

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Project: n/a

Location:

Flat type 1B G1M

Performance Chart

Technical Data

MRXBOX-ECO - Wall Mounted Multi Room Xbox
Fan Code: MRXBOXAB-ECO5-SW

Required duty: 27 l/s at 40 Pa
Actual duty: 95 l/s at 499 Pa
Actual at required flow: 27 l/s at 875 Pa

When speed controlled to required duty (28.35%):

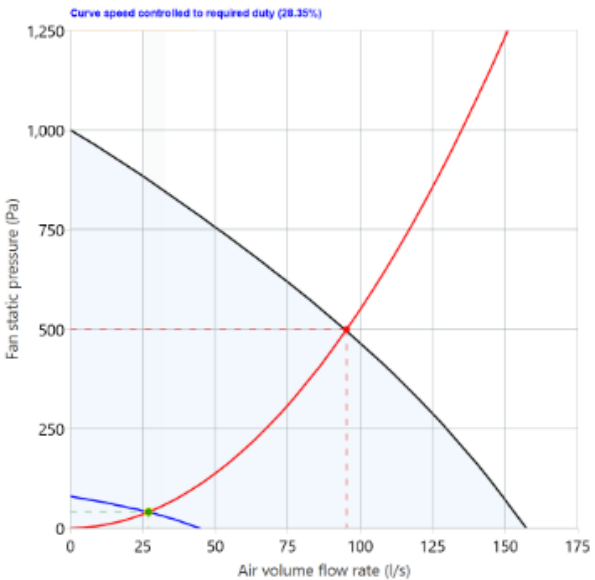
Motor Input Power: 0.01 kW
Specific Fan Power: 0.4 W/(l/s)
Velocity at required duty: 1.528 m/s

At full speed:

Motor Input Power: 0.313 kW
Specific Fan Power: 3.3 W/(l/s)
Maximum Fan Speed: 4,120 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.34 kW
Motor current (flc): 2.8 A
Motor starting current (sc): 2.8 A

Max. operating temp: 40°C
Weight: 25 kg

Starting currents are nominal.



Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (28.35%)

Sound Power Levels re 1 pWatts (Hz):	63	125	250	500	1k	2k	4k	8k	dBA
Breakout	44	41	40	30	21	<16	<16	<16	<16
Open Inlet (Intake & Extract)	42	40	35	28	24	16	<16	<16	
Open Outlet (Supply & Exhaust)	49	46	41	36	31	25	18	<16	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Additional Notes

Specification

The unit shall be fully insulated providing excellent thermal and acoustic characteristics and shall be complete with a multi plate counter flow high efficiency heat exchanger block, with a thermal efficiency of up to 95%. The heat exchanger shall be protected by filters on fresh air inlet and system extract. The heat exchanger and filters shall be accessible via the front access panel, enabling quick and easy maintenance.

The unit shall have low energy, high efficiency EC fan/motor assemblies with sealed for life bearings, the impellers shall be backward curved centrifugal type. The motors shall be suitable for an ambient temperature of 40°C.

The unit shall be supplied complete with a condensate drip tray and 21.5mm drain connection.

The unit shall be suitable for 150mm circular ducting.

The breakout noise level and power requirements shall be as detailed by the unit manufacturer and in accordance with the ventilation equipment schedule.

Bypass operation can be manually overridden via an external switch in colder months so the unit continually recovers heat.

The unit shall be offered with a five year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuair International Sales office for further details.

Reference: Planning Condition 17 Discharge



CAD COMPACT

5153136600 - CAD-COMPACT 500 ADVANCED N8

Project: Weldale Street, Reading Phase 2 - Landlords Fans (rev. 1 (76)) - Reference: MVHR/03 100 l/s @ 120 Pa

Acoustic data

Games Room

Supply - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
57	49	46	43	47	43	35	31	50	Outdoor air
63	58	63	61	65	67	62	57	71	Supply

Supply - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
11	13	17	19	27	24	15	9	30	Outdoor air
16	22	33	38	44	48	43	35	51	Supply

Extract - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
59	50	47	43	48	44	35	31	50	Extract
64	59	63	62	65	68	63	58	72	Exhaust

Extract - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
12	13	17	19	27	24	15	10	30	Extract
18	22	34	38	45	48	43	36	51	Exhaust

Surrounding - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
75	60	53	46	40	43	42	35	53	Surrounding

Surrounding - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
28	24	24	22	20	23	23	13	33	Surrounding

Sound pressure at 3m. 33 dB(A), isolated source / spherical field (Q=1)

Reference: Planning Condition 17 Discharge



CAD COMPACT

5153136800 - CAD-COMPACT 1300 ADVANCED N8

Project: Weldale Street, Reading Phase 2 - Landlords Fans (rev. 1 (76)) - Reference: MVHR/04 300 l/s @ 150 Pa

Acoustic data

Media Room

Supply - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
59	65	61	61	57	62	57	48	66	Outdoor air
64	75	72	71	70	69	65	55	75	Supply

Supply - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
12	29	32	37	37	43	38	27	46	Outdoor air
17	38	42	47	50	49	46	34	55	Supply

Extract - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
58	65	61	60	57	62	57	48	66	Extract
64	75	71	71	70	68	65	55	75	Exhaust

Extract - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
11	28	32	36	36	42	37	26	45	Extract
17	38	42	47	49	49	45	33	54	Exhaust

Surrounding - Lw

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
64	68	63	56	59	56	53	44	64	Surrounding

Surrounding - LpA @ 3m

63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz	8000Hz	dB(A)	
17	31	34	33	38	37	33	22	43	Surrounding

Sound pressure at 3m. 43 dB(A), isolated source / spherical field (Q=1)

Reference: Planning Condition 17 Discharge

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Tech Support Tel: 0844 856 0590

Industrial
Sales Tel: 0844 856 0594
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Vent-Axia®

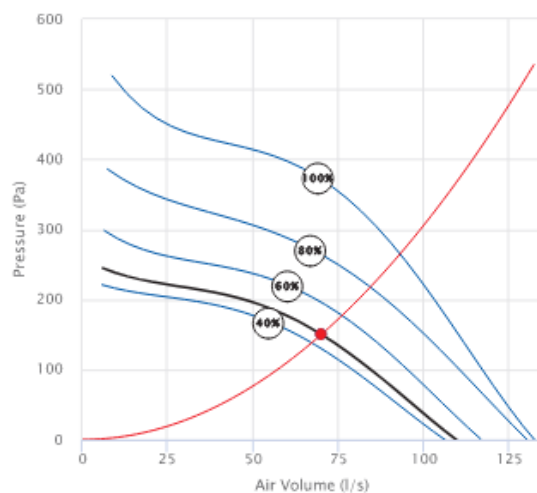
Product Information

Heat Recovery - Horizontal - Integra Plus EC Ducted MVHR Unit

Garden Room



Performance Chart



Technical Information

Customer Reference	mvr 0,5
Requested Duty	70 l/s @ 150 Pa
Actual Duty	70 l/s @ 150 Pa
Stock Reference	437666ECA
Product Type	Heat Recovery - Horizontal
Product Range	Heat Recovery - Horizontal
Casing	
Airstream Temperature	0 - 0°C
Specific Fan Power	1.1
Selection Speed	46%
dBA	21 dBA @ 3m
Warranty	

Electrical Information

Motor Rating	0.17
Selection Power	0.08
Supply Voltage	220-240V/1/50Hz
Full Load Current	0.00 A
Starting Current	0.00 A
Starting Method	
Motor Poles	-

Sound Information at Duty Point

	63	125	250	500	1k	2k	4k	8k	Total	dB A @ 3m
Extract	47	43	41	43	39	31	28	32	51	26
Supply	42	46	48	50	47	40	34	34	55	30
Breakout	45	44	41	40	37	30	28	31	49	21

Sound Power Level Spectra dB (re 10^{-12} Watts)

For ducted units, sound power is given as In Duct with end reflections added.

Stated dB(A) levels at 3m with spherical propagation at a reference level of 2×10^{-12} Pa

Reference: Planning Condition 17 Discharge



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk
UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497
Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 25 Feb 2025 15:03 using software version 5.8.4600.0

Project: 23/12982/COM

WELDALE STREET PHASE 2
Location: EF BG 03

LGF Bin Store

Technical Data

DE - DAVE Extract Fans

Fan Code: **DE4H-ES**
Installation Manual Links: 611280
Required duty: 0.21 m³/s at 150 Pa
Actual duty: 0.367 m³/s at 459 Pa
Actual at required flow: 0.21 m³/s at 776 Pa
When speed controlled to required duty (57.19%):
Motor Input Power: 0.099 kW
Specific Fan Power: 0.5 W/(l/s)
Velocity at required duty: 4.278 m/s
At full speed:
Motor Input Power: 0.528 kW
Specific Fan Power: 1.4 W/(l/s)
Maximum Fan Speed: 3,700 RPM
Electrical Supply: 230V, 1 Phase, 50 Hz
Nominal Motor Rating: 0.49 kW
Motor current (flc): 3.3 A
Motor starting current (sc): 3.3 A
Max. operating temp: 60°C
Weight: 40 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (57.19%)

Sound Power Levels re 1 pWatts (Hz):

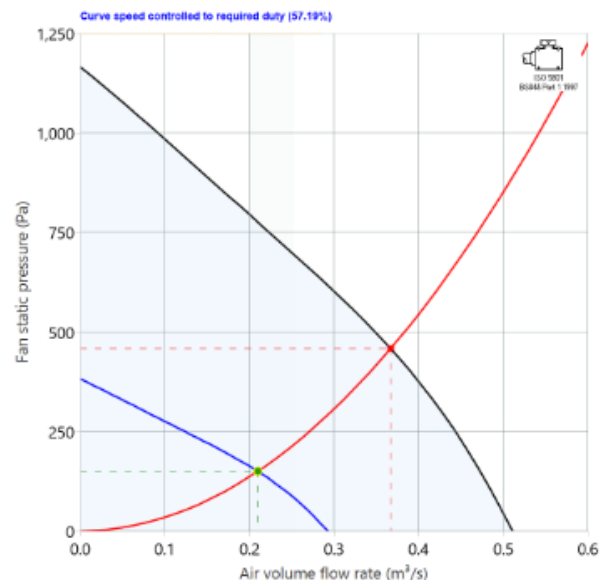
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	77	75	62	69	56	55	51	58	
Induct Outlet	86	86	68	65	59	57	52	53	
Breakout	62	60	49	48	37	33	26	24	31
For 100% speed:	+4	+5	+7	+9	+13	+13	+13	+13	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFCH25 Hi-temp flexible connector
CFCH25 - Hi-temp flexible connector
Weight: 0.5 kg

Specification

Dave high performance extract fan, standard case with patented 'Floating fan' construction. Single skin, with infill panels and manufactured from heavy gauge, corrosion resistant Magnelis steel. The unit is suitable for internal or external mounting, in any orientation and incorporates a full length top or bottom access panel. The fan impeller and EC motors are selected to provide optimum performance and energy efficiency conforming to Part L regulations. Units are suitable for operation in ambient temperatures of up to 60°C (sizes 1-5), 40°C (sizes 6-7) and are Class L2 leakage. The unit shall be controlled by an integrated Ecosmart control mounted externally to the case. The fans shall have the following energy saving and operational functions integrally installed with in it, all components will be pre-wired and fitted by the manufacturer:

- Integral Frequency inverter/speed controller.
- Integral adjustable run-on timer.
- Maximum and minimum speed adjustment/setting (trickle and boost).
- Volt free run & failure/status indication.
- 0-10V BMS interface for remote operation.
- Multiple low voltage sockets for interconnection of sensors or fans.
- Background ventilation/trickle enable switch.

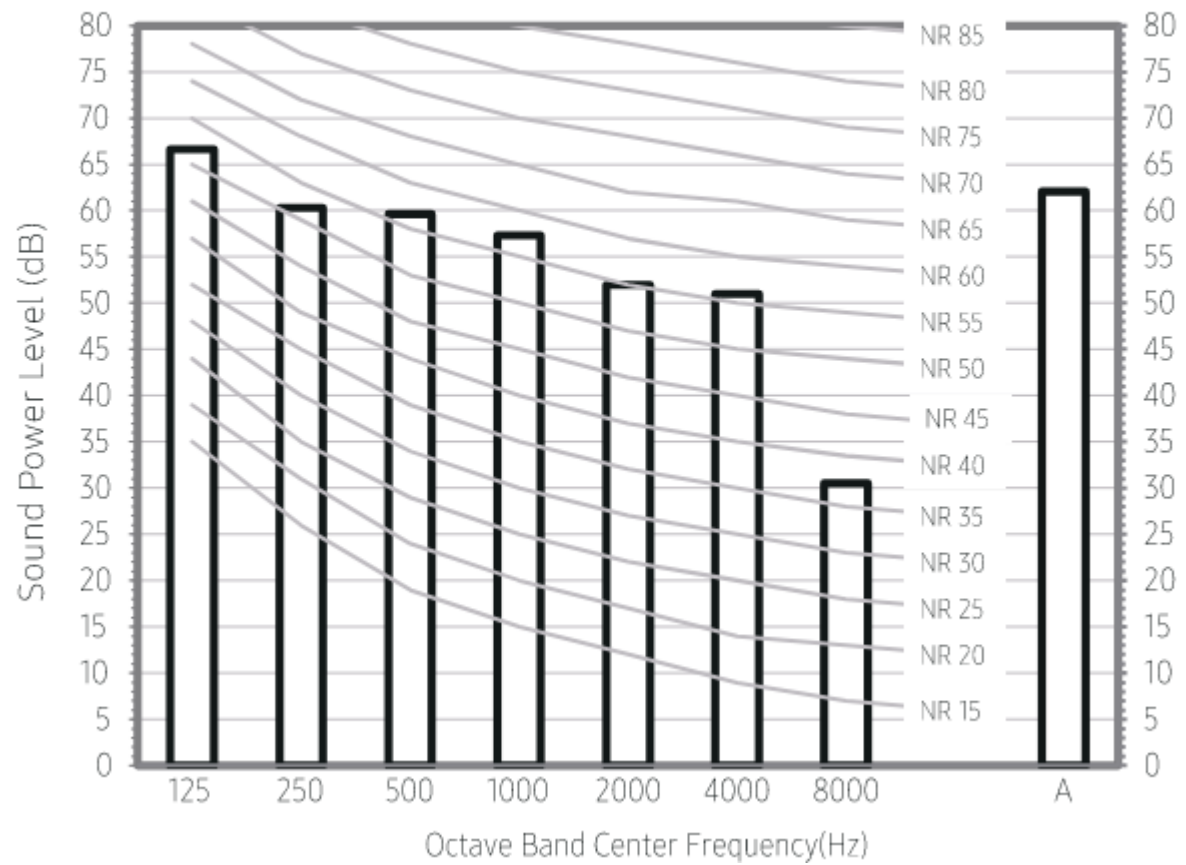
The unit is supplied with circular spigots and set of four mounting brackets. The Fan unit shall have a 5 year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

CFCH25

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 400°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

Reference: Planning Condition 17 Discharge

1) AE050RXYDEG/EU



Reference: Planning Condition 17 Discharge

Appendix B Calculation Results

						TOTAL AT RECEPTOR:	49.4	31.7	19.9	17.8	15.5	11.2	9.8	25.5	
							2.0	3.0	4.0	5.0	6.0	7.0	8.0		
29 July 2025							Octave Band Centre Frequency, Hz								
flat type	duct	floor	horizontal distance (m)	vertical distance (m)	total distance (m)	distance correction	line of sight?	63	125	250	500	1000	2000	4000	dB(A)
2B L1M	intake	-1	13	15	19.85	26.0	n	-1.4	-3.7	-15.8	-25.6	-32.1	-41.2	-46.9	-17.4
2B L1M	exhaust	-1	15.5	15	21.57	26.7	n	4.4	1.0	-12.0	-17.6	-24.1	-30.2	-40.9	-12.3
2B L1M	intake	0	13	12	17.69	25.0	n	-0.4	-2.7	-14.8	-24.6	-31.1	-40.2	-45.9	-16.4
2B L1M	exhaust	0	15.5	12	19.60	25.8	n	5.3	1.9	-11.1	-16.7	-23.2	-29.3	-40.0	-11.4
2B M1	intake	0	25.4	12	28.09	29.0	n	-4.4	-6.9	-18.8	-27.2	-32.7	-41.8	-47.5	-20.3
2B M1	exhaust	0	29	12	31.38	29.9	n	1.5	-2.0	-13.9	-19.2	-25.7	-31.8	-42.5	-14.7
2B L1M	intake	0	31.6	12	33.80	30.6	y	4.0	-8.3	-20.4	-30.2	-36.7	-45.8	-51.5	-19.3
2B L1M	exhaust	0	32.3	12	34.46	30.7	y	10.4	-3.0	-16.0	-21.6	-28.1	-34.2	-44.9	-13.3
1B E1	intake	0	34.1	12	36.15	31.2	y	0.5	-13.0	-25.9	-34.4	-39.9	-48.0	-49.7	-23.4
1B E1	exhaust	0	36.1	12	38.04	31.6	y	6.8	-6.6	-20.7	-26.4	-34.9	-42.0	-52.7	-17.1
1B F1	intake	0	42.6	12	44.26	32.9	y	0.7	-12.6	-24.7	-34.5	-40.0	-48.1	-50.8	-23.0
1B F1	exhaust	0	39.7	12	41.47	32.4	y	17.2	7.9	-2.2	-10.0	-14.5	-23.6	-36.3	-3.4
2B L1M	intake	1	13	9	15.81	24.0	n	0.6	-1.7	-13.8	-23.6	-30.1	-39.2	-44.9	-15.4
2B L1M	exhaust	1	15.5	9	17.92	25.1	n	6.0	2.6	-10.4	-16.0	-22.5	-28.6	-39.3	-10.7
2B M1	intake	1	25.4	9	26.95	28.6	n	-4.0	-6.5	-18.4	-26.8	-32.3	-41.4	-47.1	-19.9
2B M1	exhaust	1	29	9	30.36	29.6	n	1.8	-1.7	-13.6	-18.9	-25.4	-31.5	-42.2	-14.4
2B L1M	intake	1	31.6	9	32.86	30.3	y	4.3	-8.0	-20.1	-29.9	-36.4	-45.5	-51.2	-19.0
2B L1M	exhaust	1	32.3	9	33.53	30.5	y	10.6	-2.8	-15.8	-21.4	-27.9	-34.0	-44.7	-13.1
1B E1	intake	1	34.1	9	35.27	30.9	y	0.8	-12.7	-25.6	-34.1	-39.6	-47.7	-49.4	-23.1
1B E1	exhaust	1	36.1	9	37.20	31.4	y	7.0	-6.4	-20.5	-26.2	-34.7	-41.8	-52.5	-16.9
1B F1	intake	1	42.6	9	43.54	32.8	y	0.8	-12.5	-24.6	-34.4	-39.9	-48.0	-50.7	-22.9
1B F1	exhaust	1	39.7	9	40.71	32.2	y	17.4	8.1	-2.0	-9.8	-14.3	-23.4	-36.1	-3.2
1B J1M	intake	1	44.8	9	45.70	33.2	y	-0.7	-14.0	-27.1	-35.9	-41.4	-49.5	-51.2	-24.5
1B J1M	exhaust	1	47	9	47.85	33.6	y	3.9	-9.6	-23.5	-28.8	-36.3	-42.4	-52.1	-19.9
1B J1M	intake	1	48.3	9	49.13	33.8	y	-1.3	-14.6	-27.7	-36.5	-42.0	-50.1	-51.8	-25.1
1B J1M	exhaust	1	46.3	9	47.17	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1	intake	1	42.5	9	43.44	32.8	y	0.6	-12.7	-24.8	-34.5	-40.0	-48.1	-50.8	-23.1
1B J1	exhaust	1	44.1	9	45.01	33.1	y	5.6	-7.9	-20.8	-27.2	-33.7	-39.8	-49.5	-18.1
2B N1	intake	1	41.5	9	42.46	32.6	y	3.4	-8.9	-22.0	-31.0	-36.5	-44.6	-50.3	-20.0
2B N1	exhaust	1	40.1	9	41.10	32.3	y	9.1	-4.5	-17.3	-22.6	-29.1	-35.2	-45.9	-14.6
2B L1M	intake	2	13	6	14.32	23.1	n	1.5	-0.8	-12.9	-22.7	-29.2	-38.3	-44.0	-14.5
2B L1M	exhaust	2	15.5	6	16.62	24.4	n	6.7	3.3	-9.7	-15.3	-21.8	-27.9	-38.6	-10.0
2B M1	intake	2	25.4	6	26.10	28.3	n	-3.7	-6.2	-18.1	-26.5	-32.0	-41.1	-46.8	-19.6
2B M1	exhaust	2	29	6	29.61	29.4	n	2.0	-1.5	-13.4	-18.7	-25.2	-31.3	-42.0	-14.2
2B L1M	intake	2	31.6	6	32.16	30.1	y	4.5	-7.8	-19.9	-29.7	-36.2	-45.3	-51.0	-18.8
2B L1M	exhaust	2	32.3	6	32.85	30.3	y	10.8	-2.6	-15.6	-21.2	-27.7	-33.8	-44.5	-12.9
1B E1	intake	2	34.1	6	34.62	30.8	y	0.9	-12.6	-25.5	-34.0	-39.5	-47.6	-49.3	-23.0
1B E1	exhaust	2	36.1	6	36.60	31.3	y	7.1	-6.3	-20.4	-26.1	-34.6	-41.7	-52.4	-16.8
1B F1	intake	2	42.6	6	43.02	32.7	y	0.9	-12.4	-24.5	-34.3	-39.8	-47.9	-50.6	-22.8
1B F1	exhaust	2	39.7	6	40.15	32.1	y	17.5	8.2	-1.9	-9.7	-14.2	-23.3	-36.0	-3.1
1B J1M	intake	2	44.8	6	45.20	33.1	y	-0.6	-13.9	-27.0	-35.8	-41.3	-49.4	-51.1	-24.4
1B J1M	exhaust	2	47	6	47.38	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1M	intake	2	48.3	6	48.67	33.7	y	-1.2	-14.5	-27.6	-36.4	-41.9	-50.0	-51.7	-25.0
1B J1M	exhaust	2	46.3	6	46.69	33.4	y	4.1	-9.4	-23.3	-28.6	-36.1	-42.2	-51.9	-19.7
1B J1	intake	2	42.5	6	42.92	32.7	y	0.7	-12.6	-24.7	-34.4	-39.9	-48.0	-50.7	-23.0
1B J1	exhaust	2	44.1	6	44.51	33.0	y	5.7	-7.8	-20.7	-27.1	-33.6	-39.7	-49.4	-18.0
2B N1	intake	2	41.5	6	41.93	32.5	y	3.5	-8.8	-21.9	-30.9	-36.4	-44.5	-50.2	-19.9
2B N1	exhaust	2	40.1	6	40.55	32.2	y	9.2	-4.4	-17.2	-22.5	-29.0	-35.1	-45.8	-14.5
2B L1M	intake	3	13	3	13.34	22.5	n	2.1	-0.2	-12.3	-22.1	-28.6	-37.7	-43.4	-13.9
2B L1M	exhaust	3	15.5	3	15.79	24.0	n	7.1	3.7	-9.3	-14.9	-21.4	-27.5	-38.2	-9.6
2B M1	intake	3	25.4	3	25.58	28.2	n	-3.6	-6.1	-18.0	-26.4	-31.9	-41.0	-46.7	-19.5
2B M1	exhaust	3	29	3	29.15	29.3	n	2.1	-1.4	-13.3	-18.6	-25.1	-31.2	-41.9	-14.1
2B L1M	intake	3	31.6	3	31.74	30.0	y	4.6	-7.7	-19.8	-29.6	-36.1	-45.2	-50.9	-18.7
2B L1M	exhaust	3	32.3	3	32.44	30.2	y	10.9	-2.5	-15.5	-21.1	-27.6	-33.7	-44.4	-12.8
1B E1	intake	3	34.1	3	34.23	30.7	y	1.0	-12.5	-25.4	-33.9	-39.4	-47.5	-49.2	-22.9
1B E1	exhaust	3	36.1	3	36.22	31.2	y	7.2	-6.2	-20.3	-26.0	-34.5	-41.6	-52.3	-16.7
1B F1	intake	3	42.6	3	42.71	32.6	y	1.0	-12.3	-24.4	-34.2	-39.7	-47.8	-50.5	-22.7
1B F1	exhaust	3	39.7	3	39.81	32.0	y	17.6	8.3	-1.8	-9.6	-14.1	-23.2	-35.9	-3.0
1B J1M	intake	3	44.8	3	44.90	33.0	y	-0.5	-13.8	-26.9	-35.7	-41.2	-49.3	-51.0	-24.3
1B J1M	exhaust	3	47	3	47.10	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1M	intake	3	48.3	3	48.39	33.7	y	-1.2	-14.5	-27.6	-36.4	-41.9	-50.0	-51.7	-25.0
1B J1M	exhaust	3	46.3	3	46.40	33.3	y	4.2	-9.3	-23.2	-28.5	-36.0	-42.1	-51.8	-19.6
1B J1	intake	3	42.5	3	42.61	32.6	y	0.8	-12.5	-24.6	-34.3	-39.8	-47.9	-50.6	-22.9
1B J1	exhaust	3	44.1	3	44.20	32.9	y	5.8	-7.7	-20.6	-27.0	-33.5	-39.6	-49.3	-17.9
2B N1	intake	3	41.5	3	41.61	32.4	y	3.6	-8.7	-21.8	-30.8	-36.3	-44.4	-50.1	-19.8
2B N1	exhaust	3	40.1	3	40.21	32.1	y	9.3	-4.3	-17.1	-22.4	-28.9	-35.0	-45.7	-14.4
2B L1M	intake	4	31.6	0	31.60	30.0	y	4.6	-7.7	-19.8	-29.6	-36.1	-45.2	-50.9	-18.7
2B L1M	exhaust	4	32.3	0	32.30	30.2	y	10.9	-2.5	-15.5	-21.1	-27.6	-33.7	-44.4	-12.8
1B E1	intake	4	34.1	0	34.10	30.7	y	1.0	-12.5	-25.4	-33.9	-39.4	-47.5	-49.2	-22.9
1B E1	exhaust	4	36.1	0	36.10	31.2	y	7.2	-6.2	-20.3	-26.0	-34.5	-41.6	-52.3	-16.7
1B F1	intake	4	42.6	0	42.60	32.6	y	1.0	-12.3	-24.4	-34.2	-39.7	-47.8	-50.5	-22.7
1B F1	exhaust	4	39.7	0	39.70	32.0	y	17.6	8.3	-1.8	-9.6	-14.1	-23.2	-35.9	-3.0
1B J1M	intake	4	44.8	0	44.80	33.0	y	-0.5	-13.8	-26.9	-35.7	-41.2	-49.3	-51.0	-24.3
1B J1M	exhaust	4	47	0	47.00	33.4	y	4.1	-9.4	-23.3	-28.6	-36.1	-42.2	-51.9	-19.7
1B J1M	intake	4	48.3	0	48.30	33.7	y	-1.2	-14.5	-27.6	-36.4	-41.9	-50.0	-51.7	-25.0
1B J1M	exhaust	4	46.3	0	46.30	33.3	y	4.2	-9.3	-23.2	-28.5	-36.0	-42.1	-51.8	-19.6
1B J1	intake	4	42.5	0	42.50	32.6	y	0.8	-12.5	-24.6	-34.3	-39.8	-47.9	-50.6	-22.9
1B J1	exhaust	4	44.1	0	44.10	32.9	y	5.8	-7.7	-20.6	-27.0	-33.5	-39.6	-49.3	-17.9
2B N1	intake	4	41.5	0	41.50	32.4	y	3.6	-8.7	-21.8	-30.8	-36.3	-44.4	-50.1	-19.8
2B N1	exhaust	4	40.1	0	40.10	32.1	y	9.3	-4.3	-17.1	-22.4	-28.9	-35.0	-45.7	-14.4

Reference: Planning Condition 17 Discharge

TOTAL AT RECEPTOR:								49.4	31.7	19.9	17.8	15.5	11.2	9.8	25.5
								2.0	3.0	4.0	5.0	6.0	7.0	8.0	
29 July 2025								Octave Band Centre Frequency, Hz							
flat type	duct	floor	horizontal distance (m)	vertical distance (m)	total distance (m)	distance correction	line of sight?	63	125	250	500	1000	2000	4000	dB(A)
2B L1M	intake	5	31.6	3	31.74	30.0	y	4.6	-7.7	-19.8	-29.6	-36.1	-45.2	-50.9	-18.7
2B L1M	exhaust	5	32.3	3	32.44	30.2	y	10.9	-2.5	-15.5	-21.1	-27.6	-33.7	-44.4	-12.8
1B E1	intake	5	34.1	3	34.23	30.7	y	1.0	-12.5	-25.4	-33.9	-39.4	-47.5	-49.2	-22.9
1B E1	exhaust	5	36.1	3	36.22	31.2	y	7.2	-6.2	-20.3	-26.0	-34.5	-41.6	-52.3	-16.7
1B F1	intake	5	42.6	3	42.71	32.6	y	1.0	-12.3	-24.4	-34.2	-39.7	-47.8	-50.5	-22.7
1B F1	exhaust	5	39.7	3	39.81	32.0	y	17.6	8.3	-1.8	-9.6	-14.1	-23.2	-35.9	-3.0
1B J1M	intake	5	44.8	3	44.90	33.0	y	-0.5	-13.8	-26.9	-35.7	-41.2	-49.3	-51.0	-24.3
1B J1M	exhaust	5	47	3	47.10	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1M	intake	5	48.3	3	48.39	33.7	y	-1.2	-14.5	-27.6	-36.4	-41.9	-50.0	-51.7	-25.0
1B J1M	exhaust	5	46.3	3	46.40	33.3	y	4.2	-9.3	-23.2	-28.5	-36.0	-42.1	-51.8	-19.6
1B J1	intake	5	42.5	3	42.61	32.6	y	0.8	-12.5	-24.6	-34.3	-39.8	-47.9	-50.6	-22.9
1B J1	exhaust	5	44.1	3	44.20	32.9	y	5.8	-7.7	-20.6	-27.0	-33.5	-39.6	-49.3	-17.9
2B N1	intake	5	41.5	3	41.61	32.4	y	3.6	-8.7	-21.8	-30.8	-36.3	-44.4	-50.1	-19.8
2B N1	exhaust	5	40.1	3	40.21	32.1	y	9.3	-4.3	-17.1	-22.4	-28.9	-35.0	-45.7	-14.4
2B L1M	intake	6	31.6	6	32.16	30.1	y	4.5	-7.8	-19.9	-29.7	-36.2	-45.3	-51.0	-18.8
2B L1M	exhaust	6	32.3	6	32.85	30.3	y	10.8	-2.6	-15.6	-21.2	-27.7	-33.8	-44.5	-12.9
1B E1	intake	6	34.1	6	34.62	30.8	y	0.9	-12.6	-25.5	-34.0	-39.5	-47.6	-49.3	-23.0
1B E1	exhaust	6	36.1	6	36.60	31.3	y	7.1	-6.3	-20.4	-26.1	-34.6	-41.7	-52.4	-16.8
1B F1	intake	6	42.6	6	43.02	32.7	y	0.9	-12.4	-24.5	-34.3	-39.8	-47.9	-50.6	-22.8
1B F1	exhaust	6	39.7	6	40.15	32.1	y	17.5	8.2	-1.9	-9.7	-14.2	-23.3	-36.0	-3.1
1B J1M	intake	6	44.8	6	45.20	33.1	y	-0.6	-13.9	-27.0	-35.8	-41.3	-49.4	-51.1	-24.4
1B J1M	exhaust	6	47	6	47.38	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1M	intake	6	48.3	6	48.67	33.7	y	-1.2	-14.5	-27.6	-36.4	-41.9	-50.0	-51.7	-25.0
1B J1M	exhaust	6	46.3	6	46.69	33.4	y	4.1	-9.4	-23.3	-28.6	-36.1	-42.2	-51.9	-19.7
1B J1	intake	6	42.5	6	42.92	32.7	y	0.7	-12.6	-24.7	-34.4	-39.9	-48.0	-50.7	-23.0
1B J1	exhaust	6	44.1	6	44.51	33.0	y	5.7	-7.8	-20.7	-27.1	-33.6	-39.7	-49.4	-18.0
2B N1	intake	6	41.5	6	41.93	32.5	y	3.5	-8.8	-21.9	-30.9	-36.4	-44.5	-50.2	-19.9
2B N1	exhaust	6	40.1	6	40.55	32.2	y	9.2	-4.4	-17.2	-22.5	-29.0	-35.1	-45.8	-14.5
1B G1M	intake	7	31.3	9	32.57	30.3	y	2.4	-9.9	-23.1	-31.9	-37.4	-46.5	-48.2	-21.1
1B G1M	exhaust	7	32.4	9	33.63	30.5	y	8.4	-5.1	-18.0	-24.5	-31.0	-38.1	-46.8	-15.4
1B E1	intake	7	34.1	9	35.27	30.9	y	0.8	-12.7	-25.6	-34.1	-39.6	-47.7	-49.4	-23.1
1B E1	exhaust	7	36.1	9	37.20	31.4	y	7.0	-6.4	-20.5	-26.2	-34.7	-41.8	-52.5	-16.9
1B F1	intake	7	42.6	9	43.54	32.8	y	0.8	-12.5	-24.6	-34.4	-39.9	-48.0	-50.7	-22.9
1B F1	exhaust	7	39.7	9	40.71	32.2	y	17.4	8.1	-2.0	-9.8	-14.3	-23.4	-36.1	-3.2
1B J1M	intake	7	44.8	9	45.70	33.2	y	-0.7	-14.0	-27.1	-35.9	-41.4	-49.5	-51.2	-24.5
1B J1M	exhaust	7	47	9	47.85	33.6	y	3.9	-9.6	-23.5	-28.8	-36.3	-42.4	-52.1	-19.9
1B J1M	intake	7	48.3	9	49.13	33.8	y	-1.3	-14.6	-27.7	-36.5	-42.0	-50.1	-51.8	-25.1
1B J1M	exhaust	7	46.3	9	47.17	33.5	y	4.0	-9.5	-23.4	-28.7	-36.2	-42.3	-52.0	-19.8
1B J1	intake	7	42.5	9	43.44	32.8	y	0.6	-12.7	-24.8	-34.5	-40.0	-48.1	-50.8	-23.1
1B J1	exhaust	7	44.1	9	45.01	33.1	y	5.6	-7.9	-20.8	-27.2	-33.7	-39.8	-49.5	-18.1
2B N1	intake	7	41.5	9	42.46	32.6	y	3.4	-8.9	-22.0	-31.0	-36.5	-44.6	-50.3	-20.0
2B N1	exhaust	7	40.1	9	41.10	32.3	y	9.1	-4.5	-17.3	-22.6	-29.1	-35.2	-45.9	-14.6
1B G1M	intake	8	31.3	12	33.52	30.5	y	2.2	-10.1	-23.3	-32.1	-37.6	-46.7	-48.4	-21.3
1B G1M	exhaust	8	32.4	12	34.55	30.8	y	8.1	-5.4	-18.3	-24.8	-31.3	-38.4	-47.1	-15.7
1B E1	intake	8	34.1	12	36.15	31.2	y	0.5	-13.0	-25.9	-34.4	-39.9	-48.0	-49.7	-23.4
1B E1	exhaust	8	36.1	12	38.04	31.6	y	6.8	-6.6	-20.7	-26.4	-34.9	-42.0	-52.7	-17.1
1B F1	intake	8	42.6	12	44.26	32.9	y	0.7	-12.6	-24.7	-34.5	-40.0	-48.1	-50.8	-23.0
1B F1	exhaust	8	39.7	12	41.47	32.4	y	17.2	7.9	-2.2	-10.0	-14.5	-23.6	-36.3	-3.4
1B J1M	intake	8	44.8	12	46.38	33.3	y	-0.8	-14.1	-27.2	-36.0	-41.5	-49.6	-51.3	-24.6
1B J1M	exhaust	8	47	12	48.51	33.7	y	3.8	-9.7	-23.6	-28.9	-36.4	-42.5	-52.2	-20.0
1B J1M	intake	8	48.3	12	49.77	33.9	y	-1.4	-14.7	-27.8	-36.6	-42.1	-50.2	-51.9	-25.2
1B J1M	exhaust	8	46.3	12	47.83	33.6	y	3.9	-9.6	-23.5	-28.8	-36.3	-42.4	-52.1	-19.9
1B J1	intake	8	42.5	12	44.16	32.9	y	0.5	-12.8	-24.9	-34.6	-40.1	-48.2	-50.9	-23.2
1B J1	exhaust	8	44.1	12	45.70	33.2	y	5.5	-8.0	-20.9	-27.3	-33.8	-39.9	-49.6	-18.2
2B N1	intake	8	41.5	12	43.20	32.7	y	3.3	-9.0	-22.1	-31.1	-36.6	-44.7	-50.4	-20.1
2B N1	exhaust	8	40.1	12	41.86	32.4	y	9.0	-4.6	-17.4	-22.7	-29.2	-35.3	-46.0	-14.7
1B J1M	intake	9	48.3	15	50.58	34.1	y	-1.6	-14.9	-28.0	-36.8	-42.3	-50.4	-52.1	-25.4
1B J1M	exhaust	9	46.3	15	48.67	33.7	y	3.8	-9.7	-23.6	-28.9	-36.4	-42.5	-52.2	-20.0
1B J1	intake	9	42.5	15	45.07	33.1	y	0.3	-13.0	-25.1	-34.8	-40.3	-48.4	-51.1	-23.4
1B J1	exhaust	9	44.1	15	46.58	33.4	y	5.3	-8.2	-21.1	-27.5	-34.0	-40.1	-49.8	-18.4
2B N1	intake	9	41.5	15	44.13	32.9	y	3.1	-9.2	-22.3	-31.3	-36.8	-44.9	-50.6	-20.3
2B N1	exhaust	9	40.1	15	42.81	32.6	y	8.8	-4.8	-17.6	-22.9	-29.4	-35.5	-46.2	-14.9
EF.BG03	exhaust	-1	9.4	15	17.70	25	y	49.3	30.2	3.7	-9.8	-18.8	-20.3	-23.3	23.6
Samsung VR	exhaust	-1	45.8	15	48.19	33.7	n	-45.6	20.4	14.4	13.4	11.4	6.4	5.4	16.1
Samsung VR	exhaust	-1	45.8	15	48.19	33.7	n	-45.6	20.4	14.4	13.4	11.4	6.4	5.4	16.1
Samsung VR	exhaust	-1	103.3	15	104.38	40.4	n	-52.3	13.7	7.7	6.7	4.7	-0.3	-1.3	9.4
Samsung VR	exhaust	-1	103.3	15	104.38	40.4	n	-52.3	13.7	7.7	6.7	4.7	-0.3	-1.3	9.4
MVHR3	intake	0	43.8	12	45.41	33.1	y	9.0	-10.0	-14.5	-25.4	-29.9	-34.4	-39.8	-15.3
MVHR3	exhaust	0	45.3	12	46.86	33.4	y	17.3	1.6	3.8	-5.8	-11.3	-8.8	-11.1	-0.2
MVHR4	intake	0	40.6	12	42.34	32.5	y	16.3	13.6	9.3	1.7	-5.8	2.7	-0.6	8.1
MVHR4	exhaust	0	41.9	12	43.58	32.8	y	17.9	15.3	9.0	2.0	-6.5	-8.0	-8.0	5.4
MVHR5	intake	0	38.7	12	40.52	32.2	y	0.7	-2.8	1.2	3.6	1.1	-5.4	-12.7	4.8
MVHR5	exhaust	0	39.4	12	41.19	32.3	y	5.5	-6.1	-6.1	-3.7	-9.2	-18.7	-25.0	-4.0