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Noise Report

Assessment of noise from proposed installation of kitchen extraction unit and air conditioning unit at the rear of Eastern Touch Restaurant, 2-4, Station Approach, East Boldon.

Report number 25-51-1131

Prepared for:

Mr. Mujib Rahman,
c/o Eastern Touch,
2-4, Station Approach,
East Boldon.
NE36 0AB

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Signature:	[redacted]	Signature:	[redacted]

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1	Issued	MJ	19/8/2025
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Contents

1 Summary 4
2 Writer's qualifications 4
3 Source being assessed 5
4 Subjective Impressions 7
5 The existing context 7
6 Measurement location 7
7 Sound measuring system 7
8 Weather conditions 7
9 Reference time intervals 8
10 Background sound level 8
11 Specific sound level – extract fan 8
12 Specific sound level – air conditioning unit 10
13 Rating level 11
14 Excess of rating level over background 11
15 Conclusions 11
Appendix A – Equipment data sheets 12
Appendix B - Glossary of acoustic terms 16

1 Summary

1.1.1 This report sets out the findings of a noise assessment at the rear of Eastern Touch Restaurant at 2-4, Station Approach, East Boldon, in support of a planning application. The application is for the proposed installation of a kitchen extraction unit on the flat roof at the rear of the property.

1.1.2 The assessment also considers the impact of an air conditioning unit (A/C unit).

1.1.3 The assessment has been carried out with reference to section 11 of the Tyneside Validation Checklist 2024.

1.1.4 Section 11 requires that an acoustic assessment be carried out for applications where development may create additional noise. The appropriate reference document for this application is BS4142:2014.

1.1.5 This report addresses the requirements, and is based upon noise measurements in the vicinity of the site.

1.1.6 The report concludes that noise emitted from the proposed equipment, when assessed in accordance with BS4142:2014, will be 2 dB below the background sound level when fitted with the attenuators specified in this report, and the A/C unit is relocated to the recommended location.

1.1.7 Such a level is unlikely to cause a nuisance or loss of amenity to local residents.

1.1.8 On that basis I see no reasons to object to the proposal on the grounds of noise.

1.1.9 The report follows the format given in section 12 of BS4142:2014.

2 Writer's qualifications

2.1.1 This report has been compiled by Mr. M. Johnson, who has over 25 years experience in acoustics. His academic and professional qualifications include:

- MSc in Acoustics, vibration and noise control.
- BEng (hons) in Building Services Engineering.
- Corporate membership of the Institute of Acoustics.
- Corporate membership of the Chartered Institution of Building Services Engineers.
- Registered with the Engineering Council as a Chartered Engineer.

3 Source being assessed

3.1.1 The noise source being assessed consists of a kitchen extract system and an A/C unit to be located on the roof at the rear of 2-4, Station Approach, East Boldon.

3.1.2 The system will remove heat and odours from the cooking area, and will discharge to atmosphere at a height of approximately 1.5m above the roof level.

3.1.3 The equipment is expected to operate between the hours of 18:00 and 23:00, daily.

3.1.4 A location plan is shown in Figure 1. A side elevation and plan are shown in Figure 2, and Figure 3 respectively.

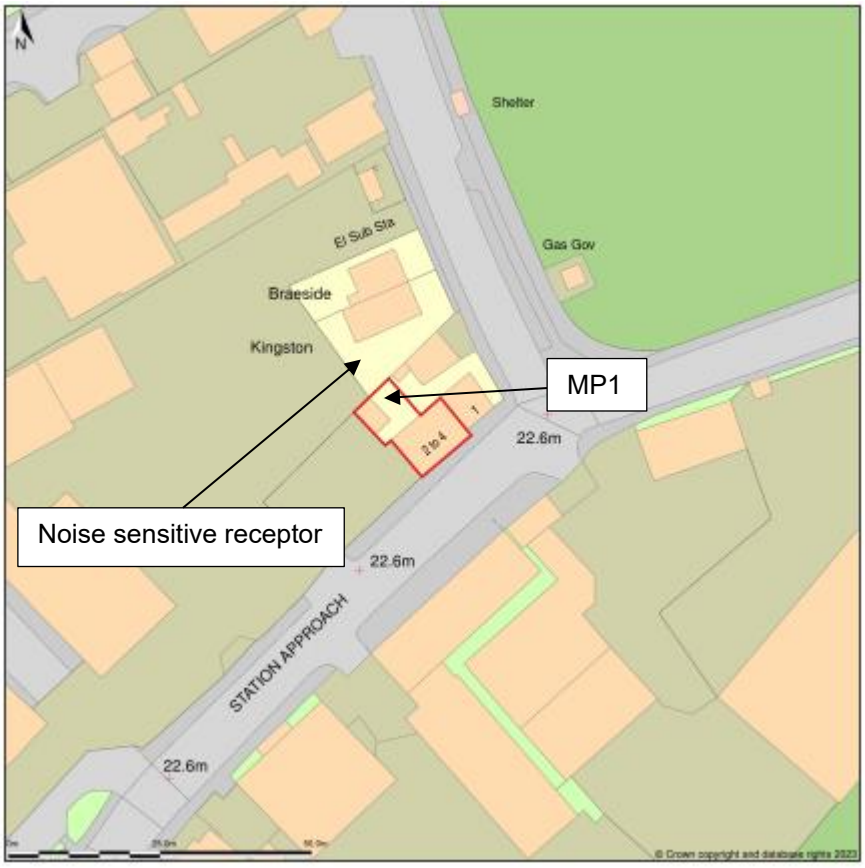


Figure 1: Location plan (after Rowman Partner Planning & Design Services)

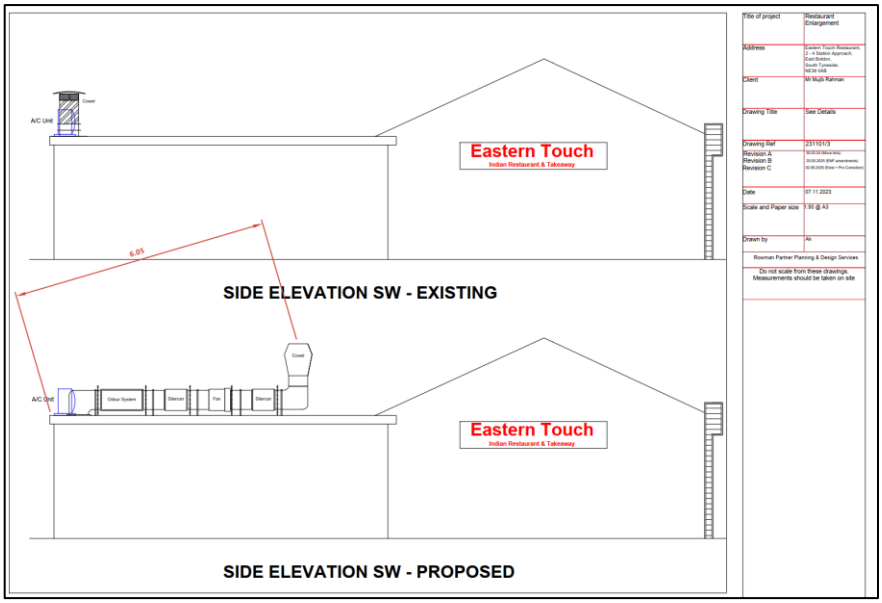


Figure 2: Side elevation (after Rowman Partner Planning & Design Services)

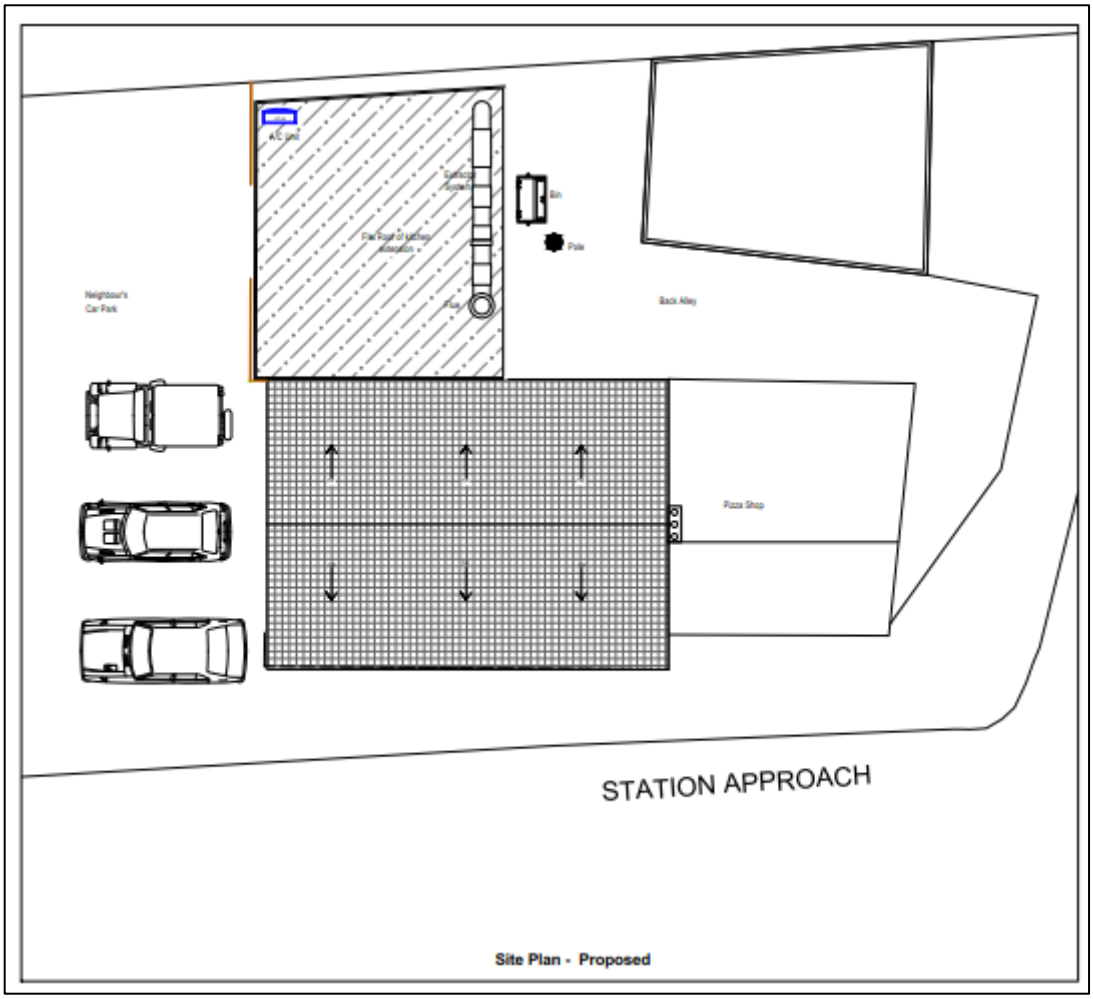


Figure 3: Plan view (after Rowman Partner Planning & Design Services)

4 Subjective Impressions

4.1.1 From a subjective viewpoint, the proposed location of the extraction system is approximately 6m from the boundary of a residential dwelling.

4.1.2 The residual sound level is affected by road and railway traffic.

5 The existing context

5.1.1 The existing context is that of introducing a new noise source to an area of mixed commercial/industrial use, and residential properties.

5.1.2 The nearest noise sensitive receptor has been identified as “Kingston”, a residential dwelling on Cleadon Lane.

6 Measurement location

6.1.1 Residual sound measurements were made at MP1, as shown in Figure 1.

6.1.2 The microphone was positioned at a height of 1.5 m above ground level.

6.1.3 MP1 is representative of the noise-sensitive receptor.

7 Sound measuring system

7.1.1 The sound measuring system consisted of the items detailed in Table 1:

Equipment	Type	Serial number
Svantek 957	Type-1 sound analyser	21899

Table 1: Sound measuring systems

7.1.2 The sound analyser was checked before and after use, using an acoustic calibrator.

7.1.3 The acoustic calibrator has an output of 94 dB (re: $2x10^{-5}$ Pa) at 1 kHz.

7.1.4 The sound analyser showed a reading of 94 dBA, both before and after use. This indicates that the sound analyser was reading correctly.

8 Weather conditions

8.1.1 The weather conditions during the measurement period were:

Wind speed:	0 m/s;
Wind direction:	Not applicable;
Precipitation:	Zero;
Fog;	Zero;
Ground condition:	Dry;
Temperature:	Approximately 18 °Celsius;

Cloud cover: 25%;

Date of measurements: Tuesday 12 August, 2025.

Note: Environmental noise measurements can be affected by air movement, temperature, cloud cover, and fog. The effects of the above climatic conditions were minimal, if not zero.

9 Reference time intervals

9.1.1 The reference time interval is 1-hour for daytime operation, and 15-minutes for night-time operation, according to BS4142:2014.

10 Background sound level

10.1.1 Measurements from the residual sound survey are presented in Table 2.

Time	L_{Aeq} (dB)	L_{A90} (dB)
22:56 - 23:26	46	34

Table 2: Residual sound levels

10.1.2 The L_{A90} is the sound level prevailing for 90% of the time, which is generally used as an indicator of background sound level.

11 Specific sound level – extract fan

11.1.1 The equipment to be installed comprises a Woods 45 MaXfan Compac, and a Danfoss OP-MSBM012DPW05G A/C unit.

11.1.2 The fan will discharge vertically to the atmosphere via two duct attenuators in series (type CP03 - C*P - 0450 -2D) and jet cowl.

11.1.3 This means that the fan must be fitted with two attenuators in series on the discharge side.

11.1.4 The first attenuator is a type CP03 - C*P - 0450 -2D to be installed immediately after the fan. This attenuator has a central pod.

11.1.5 In addition, a second attenuator type CP03 – C* - 0450 – 1D is to be installed downstream of the first attenuator. The second attenuator should be installed such that there is a space of at least 900mm between the first attenuator and second attenuator. This will require that the turning section and cowl be moved farther towards the junction of the flat roof and sloping roof to accommodate the increased length. This would also move the outlet farther away from the noise-sensitive receptor.

11.1.6 A third attenuator, type CP03 – C* - 0450 – 2D is to be installed on the inlet side of the fan.

11.1.7 It is recommended that the fan casing is lagged with a 10kg/m2 polymeric barrier sandwiched between two layers of acoustic foam. This can be supplied by:

AGS Acoustic Materials, 16-18 Digby Drive, Melton Mowbray.

https://www.agsacousticmaterials.co.uk/store/NO-NOISE-Multi-Purpose-Premium-Laminate-p99488319

11.1.8 The installer is advised to check that the equipment specified is compatible with the fan and duct system.

11.1.9 The vertical discharge assists in dispersing odours, and in terms of acoustics it focuses the sound vertically upwards, thus making it less of an impact.

11.1.10 The specific sound level has been determined by calculation from the manufacturers published data.

11.1.11 Adjustments were necessary to correct for end reflection, geometric divergence, and directivity.

11.1.12 The geometric divergence correction has been applied by adding -20Log(7.5) -11 to correct for the fact that the noise source will be 7.5 m from the noise sensitive receptor. The correction is -29 dB.

11.1.13 The directivity correction is applied according to the octave band frequency.

11.1.14 The calculation steps are presented in Table 3.

Octave band (Hz)	Fan L_w	End ref	Attenuator	Directivity	Geometric divergence	L_p at NSR
63	79	-10	-5	0.5	-29	36
125	81	-6	-10	0	-29	36
250	88	-2	-18	-1.5	-29	38
500	82	0	-22	-4.5	-29	27
1	81	0	-29	-12	-29	11
2	80	0	-29	-20	-29	2
4	79	0	-25	-20	-29	5
8	77	0	-20	-20	-29	8
A	91					31 dB

Table 3: Calculation of specific sound level

12 Specific sound level – air conditioning unit

12.1.1 The air conditioning unit is a Danfoss OP-MSBM012DPW05G which, according to the manufacturer emits a sound pressure level of 52 dBA at 1m.

12.1.2 The correction for diversity, based on an assumed on/off ratio of 50% is -3 dB.

12.1.3 Therefore, the specific sound pressure level at the boundary is 49 $L_{Aeq,Tr}$.

12.1.4 This is too high and requires remedial action.

12.1.5 The recommended remedial action would be to re-locate the air conditioning unit to the opposite end of the flat roof such that it would be as far from the boundary of the nearest noise-sensitive property as possible, see Figure 4.

12.1.6 The impact of this would be two-fold, firstly the attenuation due to the increased distance would be beneficial (-17.5 dB), and secondly there would be no direct line of sight, which would provide an additional 8 dB attenuation due to the barrier effect.

12.1.7 Under these circumstances the specific sound pressure level would be 23.5 dB $L_{Aeq,Tr}$.

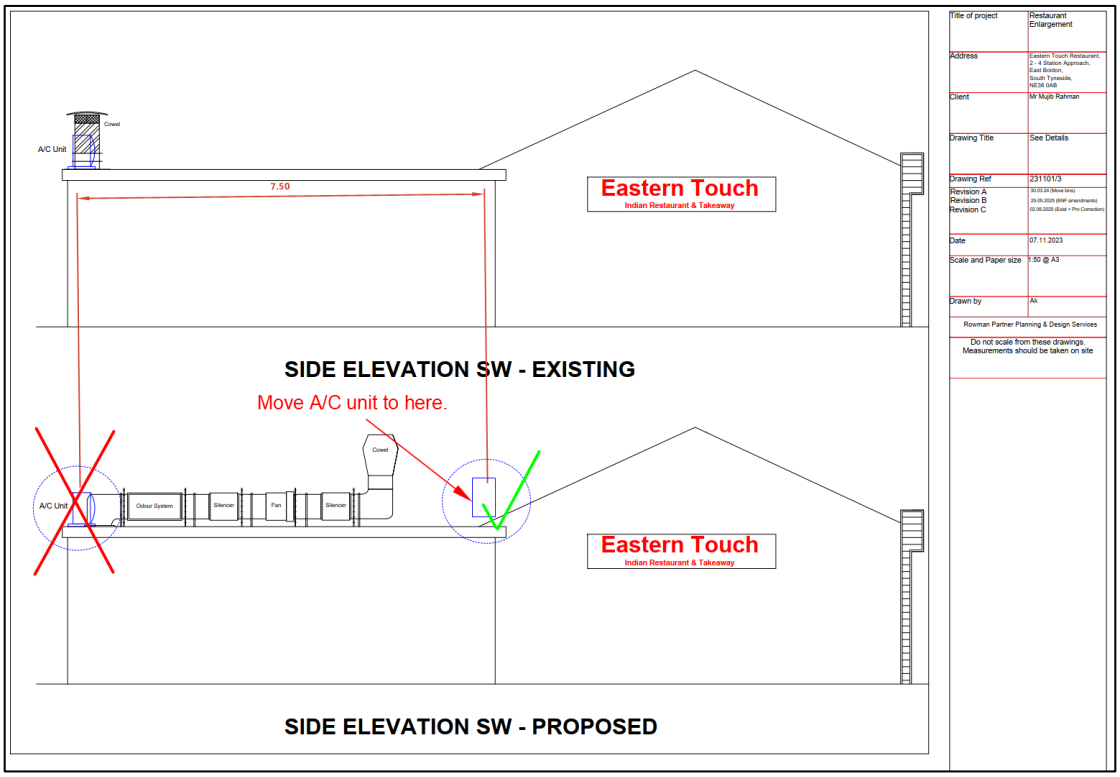


Figure 4: Relocated a/c unit (after Rowman Partner Planning & Design Services)

13 Rating level

13.1.1 The rating level is determined by adding certain penalties, where applicable, to the specific sound level. These penalties are added when the specific sound contains certain acoustic features such as:

- Intermittency; and/or
- Tonality; and/or
- Impulsivity.

13.1.2 The extract fan is not tonal, impulsive, or intermittent, therefore, penalties do not apply. However, the air conditioning unit is intermittent, therefore, a 3 dB penalty is applicable.

13.1.3 The rating levels are 31 dB $L_{Ar,Tr}$ for the extract fan, and 26.5 dB $L_{Ar,Tr}$ for the air conditioning unit.

13.1.4 The cumulative rating level is 32 dB $L_{Ar,Tr}$.

14 Excess of rating level over background

14.1.1 A simple subtraction of the background sound level (34 dB L_{A90}) from the rating level (32 dB $L_{Ar,Tr}$) returns a value of -2 dB.

15 Conclusions

15.1.1 BS4142:2014 suggests that an exceedance of 5 dB over the background sound level is indicative of marginal significance, and that the lower the exceedance the better.

15.1.2 The report concludes that noise emitted from the proposed equipment, when assessed in accordance with BS4142:2014, will be 2 dB below the background sound level when fitted with the attenuators specified in this report, and the A/C unit is relocated to the recommended location.

15.1.3 Such a level is unlikely to cause a nuisance or loss of amenity to local residents.

15.1.4 On that basis I see no reasons to object to the proposal on the grounds of noise.

Appendix A – Equipment data sheets

3

Woods
A FläktGroup Brand

SOUND DATA - MAXFAN COMPAC

Fan Description	Ps Sound data at	Pa Static		Sound Spectrum (Hz)								Overall	
				63	125	250	500	1k	2k	4k	8k	Lw*	LpA @ 3m**
31 MaXfan Compac	0.53 m3/s	252	Inlet*	81	79	80	82	80	76	71	66	88	63
31 MaXfan Compac	0.53 m3/s	252	Outlet*	83	80	81	82	80	77	72	67	89	64
31 MaXfan Compac	0.53 m3/s	252	Breakout*	73	68	64	66	61	53	51	47	75	45
35 MaXfan Compac	0.84 m3/s	302	Inlet*	82	80	84	83	80	77	73	69	89	65
35 MaXfan Compac	0.84 m3/s	302	Outlet*	83	80	85	84	81	78	74	69	90	65
35 MaXfan Compac	0.84 m3/s	302	Breakout*	74	68	68	67	60	54	53	51	76	47
40 MaXfan Compac	1.32 m3/s	200	Inlet*	75	76	82	79	78	77	74	70	86	63
40 MaXfan Compac	1.32 m3/s	200	Outlet*	77	77	85	80	79	77	75	71	88	64
40 MaXfan Compac	1.32 m3/s	200	Breakout*	67	62	65	59	53	48	50	48	70	40
45 MaXfan Compac	1.86 m3/s	300	Inlet*	78	81	88	82	80	80	78	75	91	66
45 MaXfan Compac	1.86 m3/s	300	Outlet*	79	81	88	82	81	80	79	77	91	67
45 MaXfan Compac	1.86 m3/s	300	Breakout*	69	63	66	59	56	52	57	53	72	43
50 SC MaXfan Compac	2 m3/s	400	Inlet*	81	82	89	85	87	87	83	79	95	72
50 SC MaXfan Compac	2 m3/s	400	Outlet*	81	82	91	86	87	87	85	81	96	73
50 SC MaXfan Compac	2 m3/s	400	Breakout*	71	64	69	63	62	59	63	57	75	49
50 MaXfan Compac	2.63 m3/s	400	Inlet*	83	79	87	88	86	85	81	78	94	71
50 MaXfan Compac	2.63 m3/s	400	Outlet*	85	79	90	89	86	86	81	79	95	72
50 MaXfan Compac	2.63 m3/s	400	Breakout*	75	61	68	66	61	58	59	55	77	48
56 MaXfan Compac	3.22 m3/s	400	Inlet*	86	93	88	90	88	85	79	77	97	72
56 MaXfan Compac	3.22 m3/s	400	Outlet*	87	95	89	90	88	85	80	79	98	72
56 MaXfan Compac	3.22 m3/s	400	Breakout*	77	74	63	65	63	58	61	55	79	48
63 MaXfan Compac	3.4 m3/s	400	Inlet*	85	95	93	91	87	84	83	81	99	72
63 MaXfan Compac	3.4 m3/s	400	Outlet*	86	98	94	91	87	85	84	83	100	73
63 MaXfan Compac	3.4 m3/s	400	Breakout*	76	77	68	66	62	58	65	59	80	50

*Lw dB re 10^{-12} W

**dBA re $2x10^{-5}$ Pa

CP03
C Series

CP03 - CA - 0450 Silencer

Available in two standard lengths C Series silencers have excellent attenuation properties, achieved with sound absorbing infill retained in the attenuator casing by a perforated liner. The central pod (code P) is an option to increase the insertion loss, however it will add resistance.



- Fits directly onto 450mm diameter fans
- Standard lengths 450mm (1D) & 900mm (2D)
- Use up to 70°C (standard construction)
- Systems up to 1000 Pascals
- Special lengths on request

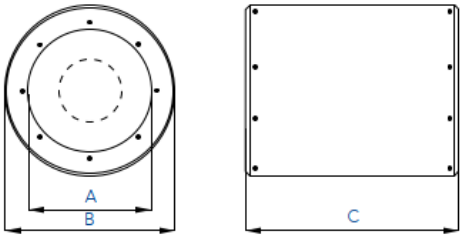
Insertion Loss (dB) - Centre Band Frequency

Product Code	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
CP03 - C* - 0450 - 1D	2	3	6	12	13	11	9	7
CP03 - C* - 0450 - 2D	3	4	8	17	18	15	11	10
CP03 - C*P - 0450 - 1D	2	6	8	16	23	23	21	16
CP03 - C*P - 0450 - 2D	3	7	12	22	29	29	25	20

Replace * in code with A or B for connection pattern. Insertion loss data is derived from continual testing to BS4718 and other standards in independent UKAS certified laboratories, which includes where appropriate, re-generated or self noise testing in both forward and reverse flow conditions. If you request system analysis from our technicians all predictions will be assessed using the relevant certified insertion loss data together with relevant dynamic corrections.

Dimensional Data

Product Code	A (mm)	B (mm)	C (mm)	Weight (kg)
CP03 - CA - 0450 - 1D	450	603	450	15
CP03 - CA - 0450 - 2D	450	603	900	27
CP03 - CAP - 0450 - 1D	450	603	450	18
CP03 - CAP - 0450 - 2D	450	603	900	32



Pattern A
8 x M10 - 500 PCD

Pattern B
12 - M8 - 487 PCD

T: 01206 852389 E: info@acoustica.co W: acoustica.co
2 Condor Way, Whitehall Industrial Estate, Colchester, Essex CO2 8JN



114X7109

Optyma™ Slim Pack, OP-MSBM012DPW05G

Segment usage: Medium Back Pressure, Refrigerants: R404A; R452A; R448A; R449A, Compressor power supply [V]: 230/1/50

PRODUCT DETAILS

Gross weight	51 Kilogram
Net weight	47 Kilogram
Volume	321.3 Liter
EAN	5702428561907
Type	Optyma™ Slim Pack W05
Product group	Condensing Units
Product Name Description	Package unit
Air flow @ 50Hz [m³/h]	2200 m³/h
Applications	MBP
China RoHS compliance	Out of scope
Compressor model	DPT12RA
Compressor power supply [V]	230/1/50
Condenser Coil Internal Volume [L]	0.39 L
Condenser type	A7
Connection type	Solder
Contains batteries	No
Description	OP-MSBM012DPW05G
Electrical code	G
EU RoHS compliance	Out of scope
Family	Optyma™ Slim Pack
Fan blade size [mm]	365 mm
Fan cowl/grill type	B1
Fan current @ 50Hz [A]	0.32 A
Fan diameter [mm]	365 mm
Fan power consumption @ 50Hz [W]	60 W
Fan power output @ 50Hz [W]	25 W
Fan power supply [V/Ph/Hz]	230/1/50
Fan voltage @ 50Hz (max) [V] [Max]	230 V
Fan voltage @ 50Hz (max) [V] [Min]	230 V
Frequency [Hz]	50 Hz
High value of nominal voltage at 60Hz [V]	240 V
HMBP Cooling capacity range [kW] (R513A)	Not available for this condition / refrigerant
In scope of WEEE	Yes
LBP Cooling capacity range [kW] (R452A)	Not available for this condition / refrigerant
Length [mm]	364 mm
Liquid line connection [in]	3/8 in

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ENGINEERING TOMORROW

PRODUCT DETAILS

Low value of voltage range at 60Hz [V]	220 V
MBP Cooling capacity [kW] (R449A)	1.24 kW
MBP Cooling capacity range [kW] (R449A)	0.8 to 1.5 kW
MCC	5.7 A
Min fuse rating [A]	8 A
Model number	OP-MSBM012DPW05G
No. of phases (compressor)	1
No. of phases (fan)	1
Number of fans	1
Phase	1
REACH Candidate List substances	No
Receiver approval	CE
Receiver volume [L]	1.3 L
Refrigerants	R404A R448A R449A R452A
Segment usage	Medium Back Pressure
Sound power @ 50Hz [db(A)]	63 dBA
Sound pressure level 50Hz (@1 m distance) [db(A)]	52 dBA
Sound pressure level 50Hz (@10 m distance) [db(A)]	32 dBA
Speed Platform	Fixed-speed
Suction connection size [in]	3/8 in
Technology	Reciprocating
Total height [mm]	530 mm
Version	W05
Voltage 50Hz [V]	220 V
Voltage 50Hz [V] [Max]	240 V
Width [mm]	910 mm

For Documents, Software, Visuals and more information, please use this link to visit the product page on Danfoss Product Store

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Appendix B - Glossary of acoustic terms

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 µPa to 200 Pa, a linear measurement of sound levels would involve many orders of magnitude. Consequently, the pressures are converted to a logarithmic scale and expressed in decibels (dB) as follows:

$L_p = 20 \log10(p/p_0)$

Where Lp = sound pressure level in dB; p = rms sound pressure in Pa; and p_0 = reference sound pressure (20 µPa).

A-weighting Network

A frequency filtering system, which approximates the frequency response of the human ear. The A-weighted sound pressure level, expressed in dB(A), has been shown to correlate well with subjective response to sound.

Equivalent continuous A-weighted sound pressure level, $L_{Aeq, T}$

The value of the A-weighted sound pressure level in decibels of continuous steady sound that within a specified time interval, T, has the same mean-square sound pressure as a sound that varies with time.

$L_{AN, T}$

The A-weighted sound pressure level in decibels exceeded for N% of the measurement period, T.

$L_{AF\ max}$

The maximum A-weighted sound level recorded during the measurement period. The subscript ‘F’ denotes fast time weighting, slow time weighting ‘S’ is also used.

Background sound level $L_{A90, T}$

The A-weighted sound pressure level of the residual sound in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background sound.

Specific sound level $L_{Aeq, Tr}$

The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific sound source over a given reference time interval.

Rating level $L_{Ar, Tr}$

The specific sound level plus any adjustment for the characteristic features of the sound.