

## **Project**

Co-op Live  
Plant Noise Assessment

## **Prepared for**

BAM Construction Ltd  
Metro, 2nd Floor  
33 Trafford Road  
Exchange Quay 2  
Salford  
M5 3NN

## **Published**

14 October 2022

| Quality Assurance              |                                                                              |
|--------------------------------|------------------------------------------------------------------------------|
| <b>Project Title:</b>          | Co-op Live                                                                   |
| <b>Report Title:</b>           | Plant Noise Assessment                                                       |
| <b>Report Number:</b>          | I5416-SRL-RP-YA-007-S2-P02                                                   |
| <b>Client:</b>                 | BAM Construction Ltd                                                         |
| <b>Client Address:</b>         | Metro, 2nd Floor<br>33 Trafford Road<br>Exchange Quay 2<br>Salford<br>M5 3NN |
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| <b>Additional information:</b> | -                                                                            |

## Version History

| Version | Date       | Comments                                                                        | Approved by                   |
|---------|------------|---------------------------------------------------------------------------------|-------------------------------|
| PI      | 07/04/2022 | -                                                                               | Chris Wright<br>BA(Hons) MIOA |
| P2      | 14/10/2022 | Smoke extract fans and SAF.0.C.01 added. Amendments made by Adam Dixon BA AMIOA | Chris Wright<br>BA(Hons) MIOA |

## Summary

SRL Technical Services Limited has been commissioned by BAM Construction to assess the impact of noise from building services plant proposed at Co-op Live in Manchester.

The planning permission dated 23 October 2020 contains Condition 22a which requires the rating level of plant noise to be 5 dB below the typical background level at the nearest noise sensitive location. Condition 22b requires post completion testing to confirm the noise criteria has been met.

We predict that the cumulative noise levels from proposed plant items will comply with the requirement of Condition 22a, as shown in the Table below:

| NSR | Location      | Period                  | Plant Noise Rating Level (L <sub>Ar,Tr</sub> , dB) | Background Noise Level (L <sub>A90</sub> , dB) | Level Difference |
|-----|---------------|-------------------------|----------------------------------------------------|------------------------------------------------|------------------|
| 1   | Stuart Street | Day                     | 41                                                 | 54                                             | -13              |
|     |               | Night                   | 36                                                 | 44                                             | -8               |
|     |               | Emergency plant testing | 47                                                 | 54                                             | -7               |
| 2   | Gibbon Street | Day                     | 39                                                 | 54                                             | -15              |
|     |               | Night                   | 35                                                 | 44                                             | -9               |
|     |               | Emergency plant testing | 46                                                 | 54                                             | -8               |
| 3   | Broxton Lane  | Day                     | 33                                                 | 54                                             | -21              |
|     |               | Night                   | 31                                                 | 44                                             | -13              |
|     |               | Emergency plant testing | 45                                                 | 54                                             | -9               |
| 4   | Briscoe Lane  | Day                     | 35                                                 | 54                                             | -19              |
|     |               | Night                   | 34                                                 | 44                                             | -10              |
|     |               | Emergency plant testing | 38                                                 | 54                                             | -16              |

When assessed in accordance with BS 4142:2014+2019, the results of our assessment indicate that noise from the plant will have a low impact.

Commissioning noise measurements of plant will be done once plant has been installed to satisfy the requirements of Condition 22b.

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## 1.0 Introduction

BAM Construction Limited is building the Co-op Live arena in Manchester and the planning permission requires that noise from all externally mounted plant is adequately controlled.

The nearest noise sensitive receptors (NSRs) identified in Buro Happold's 'Technical Design Note – Noise and Vibration 02' dated 2 July 2020 are shown in Figure 1 and detailed in Table 1.

**Figure 1 – Noise sensitive receptor locations (extract from Buro Happold report)**



**Table 1 – Noise sensitive receptor details**

| NSR | Receptor Location | Type        |
|-----|-------------------|-------------|
| A   | Stuart Street     | Residential |
| B   | Gibbon Street     |             |
| C   | Broxton Lane      |             |
| D   | Briscoe Lane      |             |

The proposed external plant consists of:

- AHUs serving the main bowl and associated condensers
- Ecology AHUs
- Extract fans
- Smoke extract fans
- Air source heat pumps
- Condensers (including air conditioning, catering and mobile network)
- Emergency generator

Noise from internally located MVHRs and fans which are ducted to the façade and plant noise breakout from the service yard have also been considered in our assessment.

## 2.0 Noise criteria

### 2.1 Condition 22a

The planning permission for application '126431/FO/2020' dated 23 October 2020 contains Condition 22a which states:

*"Prior to the first use of the development hereby approved, details of any externally mounted ancillary plant, equipment and servicing shall be submitted for approval. For the avoidance of doubt, externally mounted plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5 db (L<sub>aeq</sub>) below the typical background (L<sub>a90</sub>) level at the nearest noise sensitive location."*

Table 5 of Buro Happold's Noise and Vibration Technical Design Note summarises the typical day and night-time background noise levels and the plant noise rating limits at 1 metre from the NSR facades as shown in Figure 2 below.

**Figure 2 – Typical background noise levels and plant noise rating limits (extract from Buro Happold report)**

| NSR | Typical daytime background noise level<br>dBA (07:00-23:00) | Plant daytime rating limit at 1 metre from NSR Facades<br>L <sub>A<sub>r</sub>,Tr</sub> dBA (07:00-23:00) | Typical night-time background noise level<br>dBA (23:00-07:00) | Plant night-time rating limit at 1 metre from NSR Facades<br>L <sub>A<sub>r</sub>,Tr</sub> dBA (23:00-07:00) |
|-----|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| All | 54                                                          | 49                                                                                                        | 44                                                             | 39                                                                                                           |

## 2.2 Condition 22b

Condition 22b of the planning approval states:

*“The approved scheme shall be implemented and prior to the first use of the development, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved under part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ”.*

## 3.0 Plant noise assessment

We have created a noise propagation model to predict the cumulative noise levels of external plant items at local noise sensitive receptors. Our assessments for each period are summarised below. A full schedule of noise data for all proposed plant items and associated attenuators is provided in the Appendices.

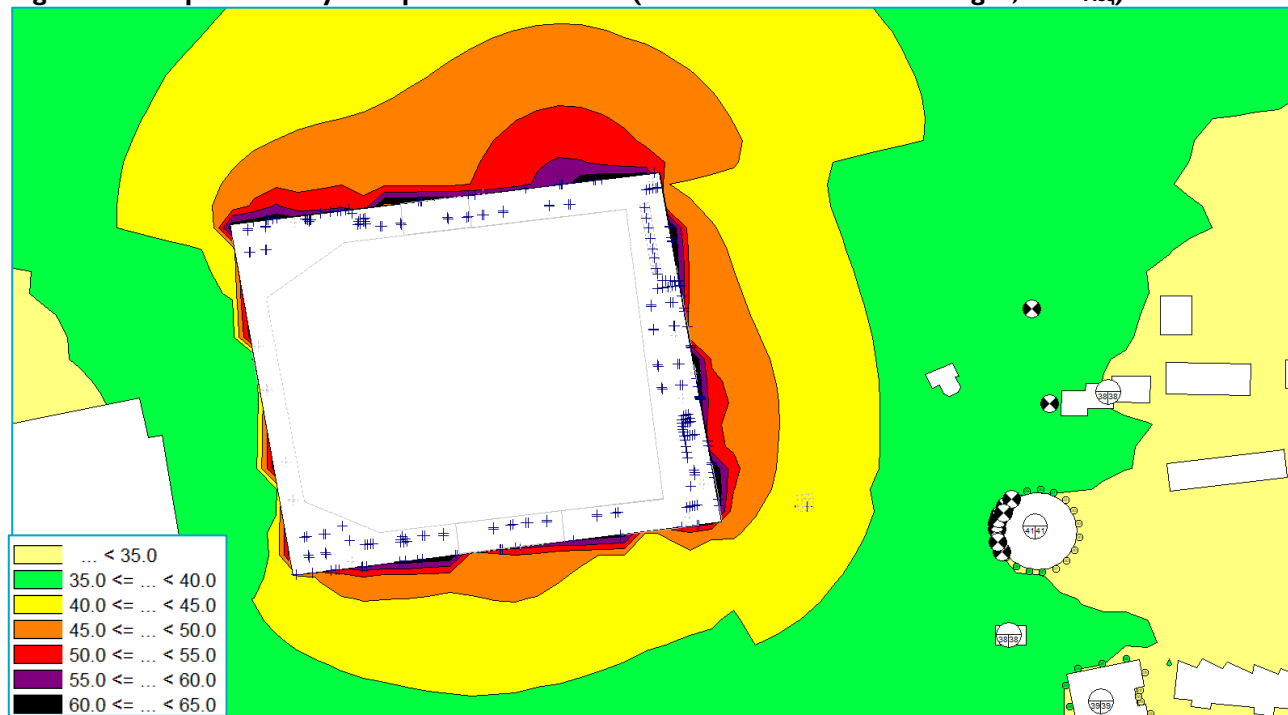
### 3.1 Daytime plant noise assessment

When assessing plant noise in the daytime period (07:00 to 23:00), we have assumed that all items of plant are operational except for the following items of emergency plant which are not operating:

- Smoke extract fans
- Emergency generator

Figure 3 shows a snapshot of our daytime plant noise model. Please note that the noise contours are at a height of 15m above ground level but we have assessed noise levels to the worst-case (noisiest) locations at 1m from the façade of each receptor.

**Figure 3 – Snapshot of daytime plant noise model (Noise contours at 15m height, dB L<sub>Aeq</sub>)**



The daytime plant noise assessment is summarised in Table 2 below. This shows that the plant noise limits can be met, satisfying planning condition 22a.

**Table 2 - Daytime plant noise assessment**

| NSR | Location      | Background noise level, dB L <sub>A90</sub> | Predicted noise rating level*, dB L <sub>Ar,Tr</sub> | Difference (rating vs background) |
|-----|---------------|---------------------------------------------|------------------------------------------------------|-----------------------------------|
| A   | Stuart Street | 54                                          | 41                                                   | -13                               |
| B   | Gibbon Street |                                             | 39                                                   | -15                               |
| C   | Broxton Lane  |                                             | 33                                                   | -21                               |
| D   | Briscoe Lane  |                                             | 35                                                   | -19                               |

\* As the plant noise levels are predicted to be significantly below the prevailing background noise level, it is unlikely that any plant will have any distinctive noise characteristics which are present at the receptor locations. No character penalties have therefore been applied to the specific noise levels.

When assessed in accordance with BS 4142:2014+2019, the results of our assessment indicate that noise from the plant will have a low impact during the daytime.

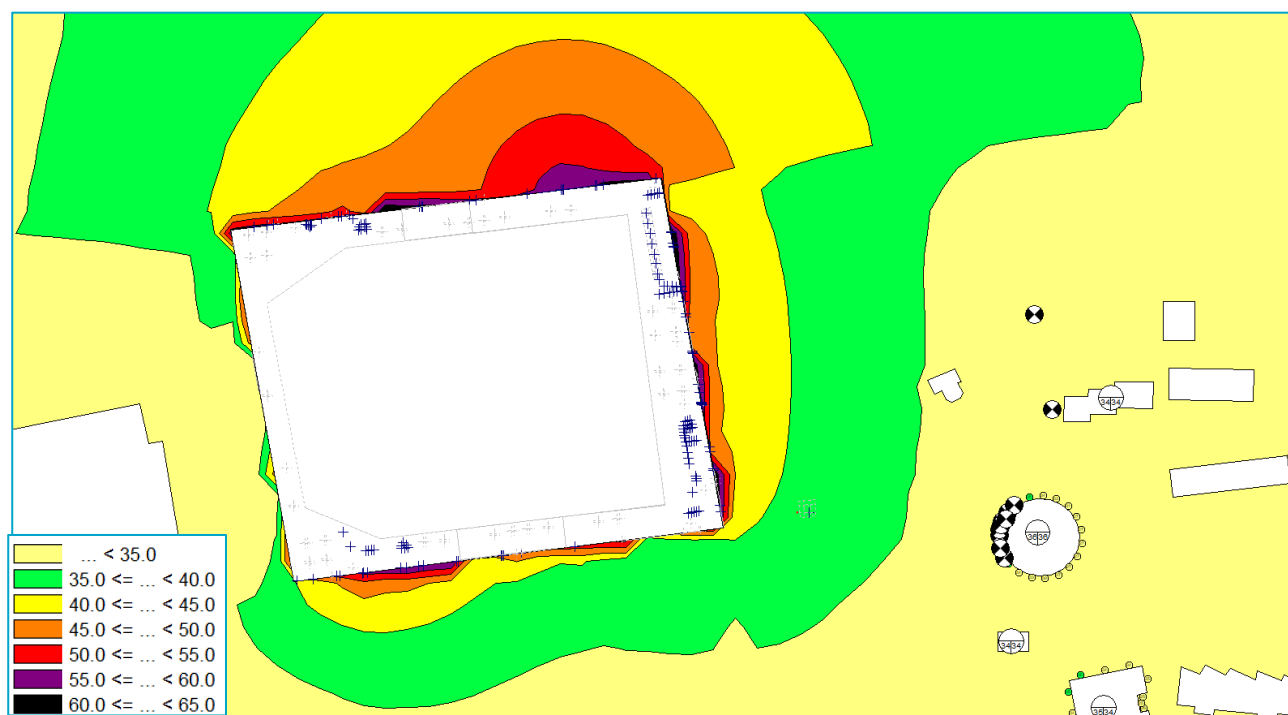
## 3.2 Night-time plant noise assessment

When assessing plant noise in the night-time period (23:00-07:00), we have assumed that the following items of standard and emergency plant are not operating based on information from the M&E consultant:

- Smoke extract fans
- Emergency generator
- AHUs serving the main bowl and associated condensers
- Ecology AHUs

Figure 4 shows a snapshot of our night-time plant noise model. Please note that the noise contours are at a height of 15m above ground level but we have assessed noise levels to the worst-case (noisiest) locations at 1m from the façade of each receptor.

**Figure 4 - Snapshot of night-time plant noise model (Noise contours at 15m height, dB L<sub>Aeq</sub>)**



The night-time plant noise assessment is summarised in Table 3 below. This shows that the plant noise limits can be met, satisfying planning condition 22a.

**Table 3 – Night-time plant noise assessment**

| NSR | Location      | Background noise level, dB L <sub>A90</sub> | Predicted noise rating level*, dB L <sub>Ar,Tr</sub> | Difference (rating vs background) |
|-----|---------------|---------------------------------------------|------------------------------------------------------|-----------------------------------|
| A   | Stuart Street | 44                                          | 36                                                   | -8                                |
| B   | Gibbon Street |                                             | 35                                                   | -9                                |
| C   | Broxton Lane  |                                             | 31                                                   | -13                               |
| D   | Briscoe Lane  |                                             | 34                                                   | -10                               |

\* As the plant noise levels are predicted to be significantly below the prevailing background noise level, it is unlikely that any plant will have any distinctive noise characteristics which are present at the receptor locations. No character penalties have therefore been applied to the specific noise levels.

When assessed in accordance with BS 4142:2014+2019, the results of our assessment indicate that noise from the plant will have a low impact during the night time.

### 3.3 Emergency plant

We have assessed the cumulative noise levels from the emergency plant during periodic maintenance (smoke extract fans and generator) operating at the same time as all other (non-emergency) plant.

We suggest that emergency plant maintenance is only scheduled during daytime hours (07:00 to 23:00) on a weekday.

Figure 5 shows the noise contours during periodic maintenance of emergency plant (with all other plant running). Please note that the noise contours are at a height of 15m above ground level but we have assessed noise levels to the worst-case (noisiest) locations at 1m from the façade of each receptor.

**Figure 5 - Snapshot of emergency plant noise model (Noise contours at 15m height, dB L<sub>Aeq</sub>)**

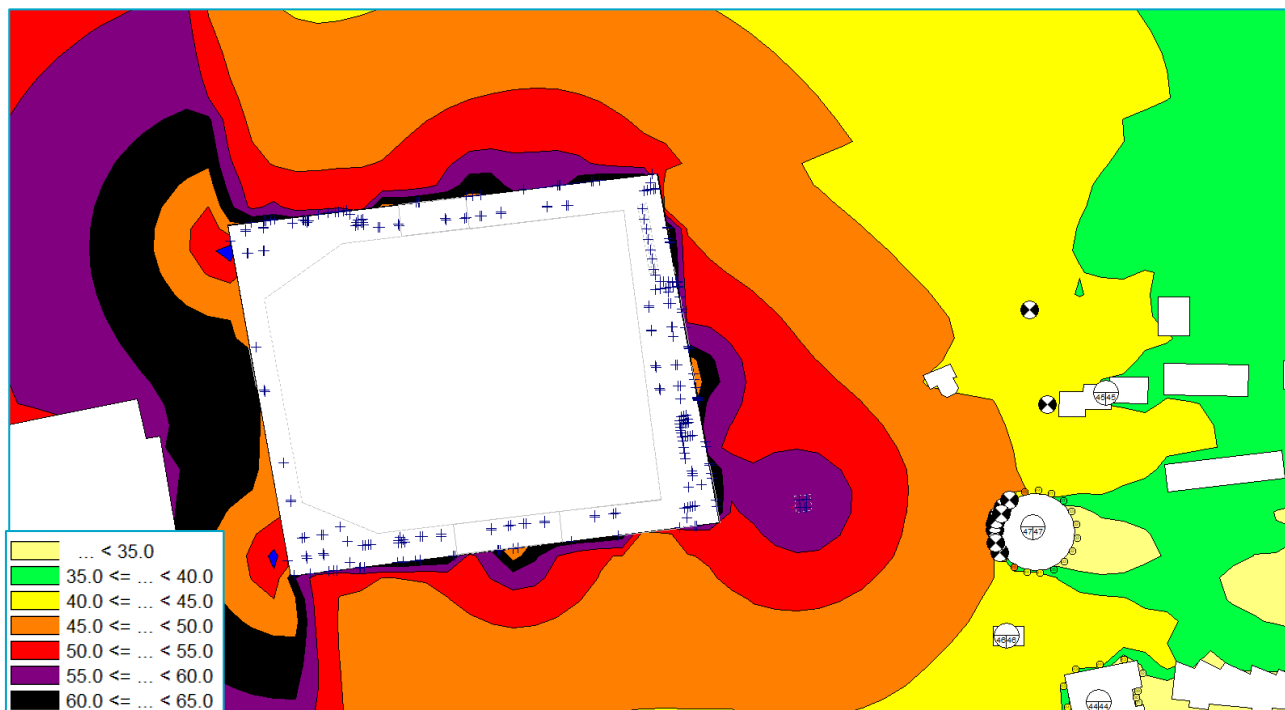


**Table 4 – Emergency plant noise assessment**

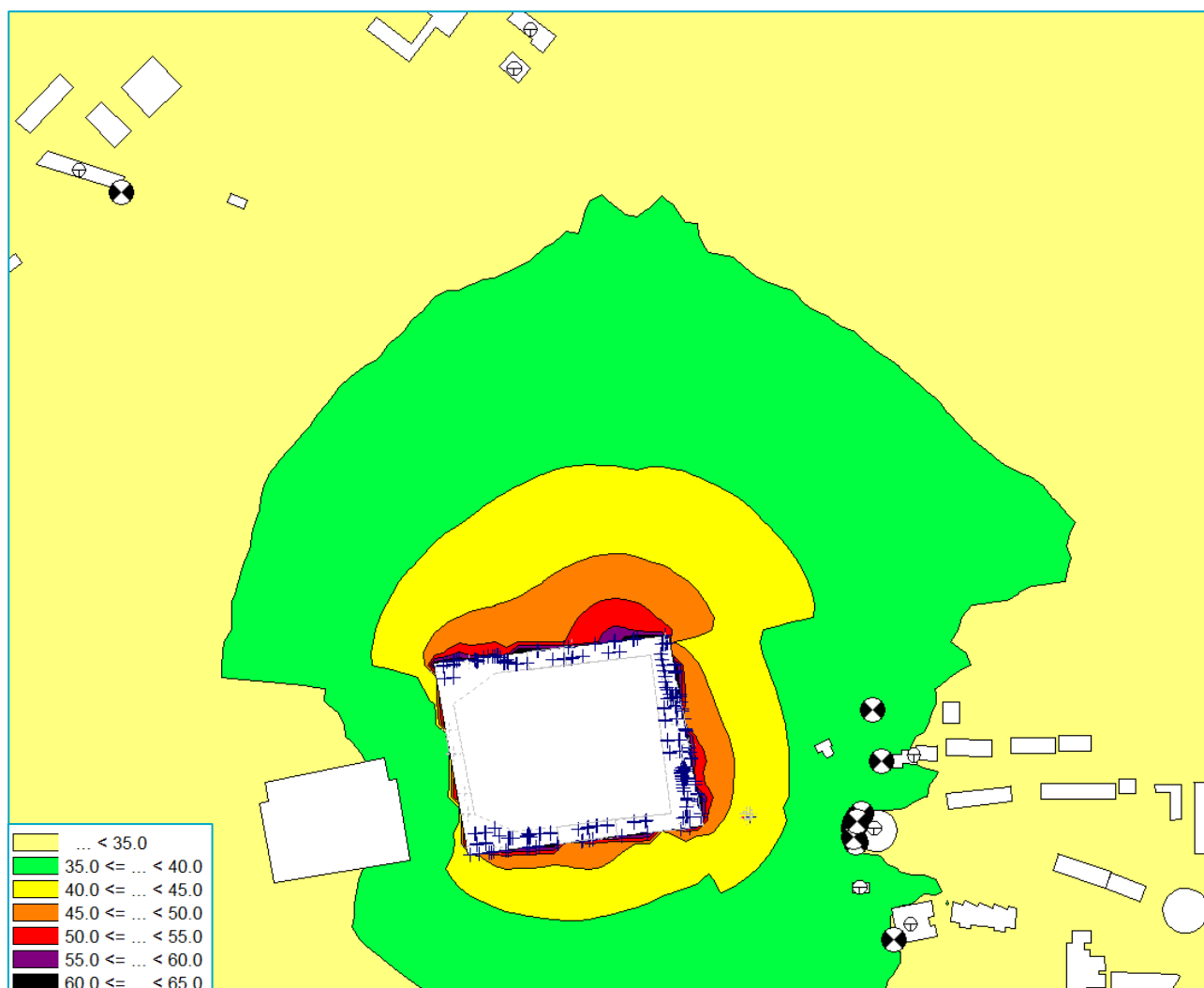
| NSR | Location      | Background noise level, dB L <sub>A90</sub> | Predicted noise rating level*, dB L <sub>Ar,Tr</sub> | Difference (rating vs background) |
|-----|---------------|---------------------------------------------|------------------------------------------------------|-----------------------------------|
| A   | Stuart Street | 54                                          | 47                                                   | -7                                |
| B   | Gibbon Street |                                             | 46                                                   | -8                                |
| C   | Broxton Lane  |                                             | 45                                                   | -9                                |
| D   | Briscoe Lane  |                                             | 38                                                   | -16                               |

\* As the plant noise levels are predicted to be significantly below the prevailing background noise level, it is unlikely that any plant will have any distinctive noise characteristics which are present at the receptor locations. No character penalties have therefore been applied to the specific noise levels.

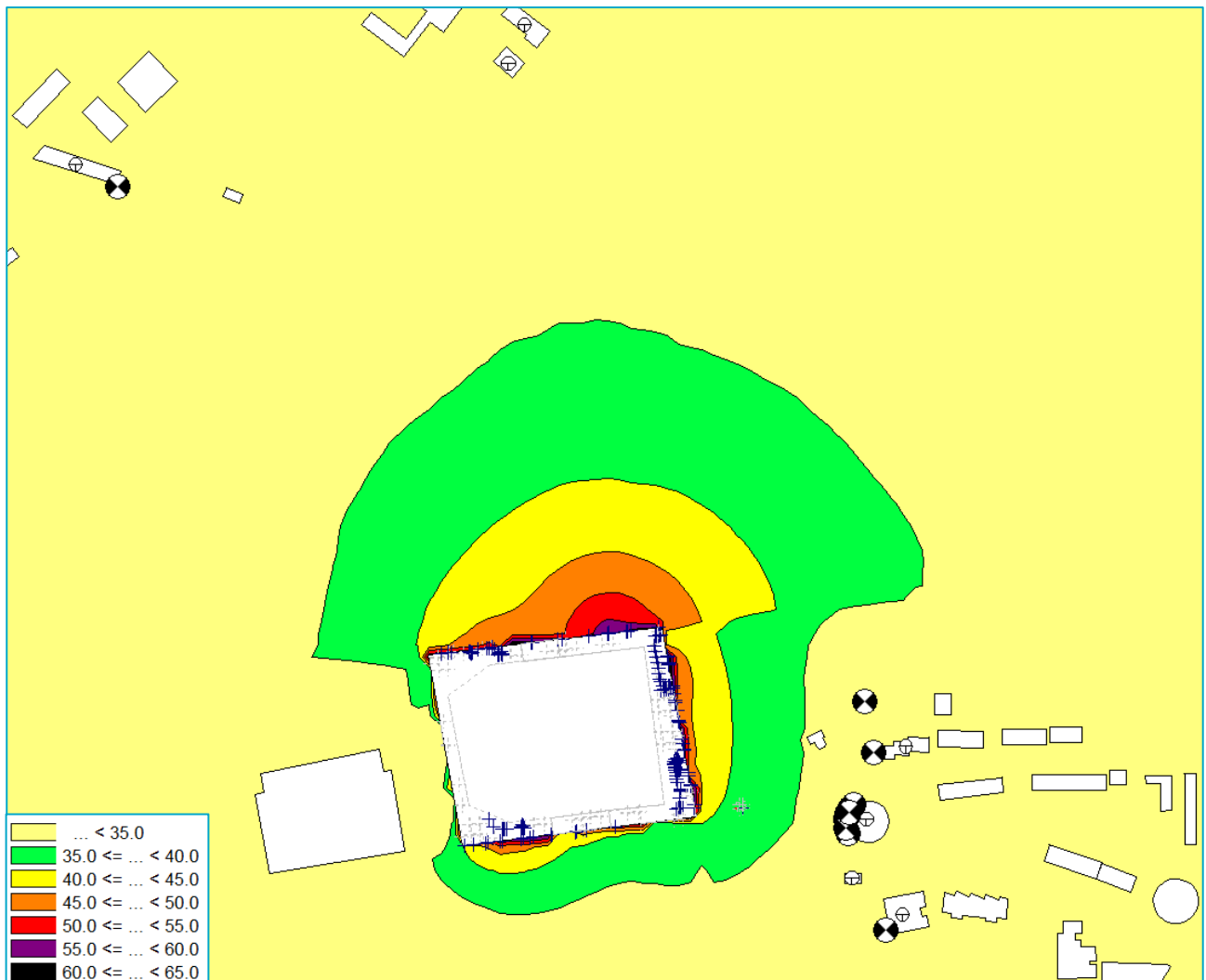
When assessed in accordance with BS 4142:2014+2019, the results of our assessment indicate that noise from the plant will have a low impact during the period testing of emergency plant.

## Appendix A – Full noise model snapshots

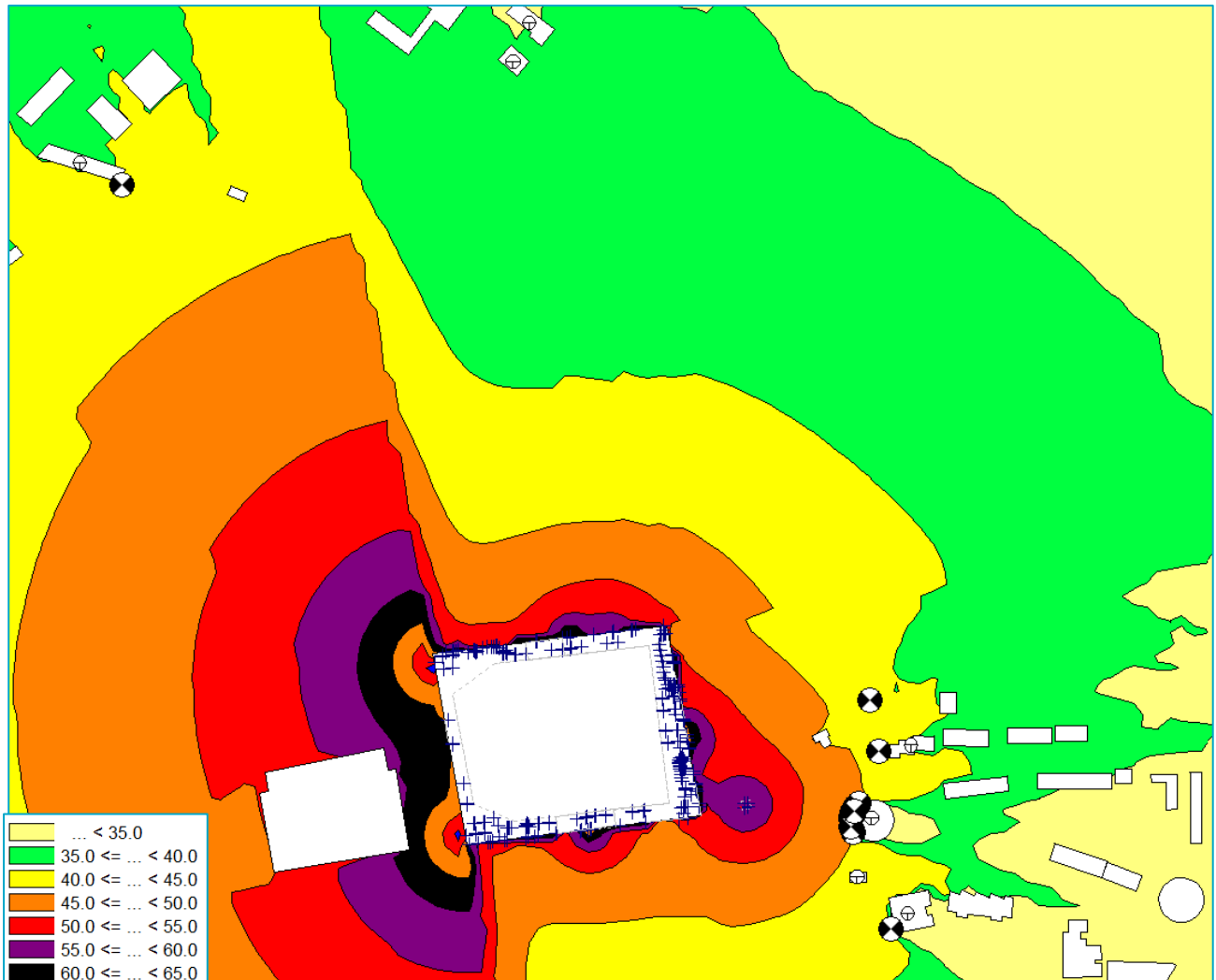
### A1. Daytime noise model (Noise contours at 15m height, dB L<sub>Aeq</sub>)



## A2. Night-time noise model (Noise contours at 15m height, dB L<sub>Aeq</sub>)



## A3. Emergency noise model (Noise contours at 15m height, dB $L_{Aeq}$ )



## Appendix B – Drawings used

- BRA-SES-ZA-GF-DR-X-55002
- BRA-SES-ZA-GF-DR-X-55003
- BRA-SES-ZA-GF-DR-X-55004
- BRA-SES-ZB-01-DR-X-55105
- BRA-SES-ZB-01-DR-X-55106
- BRA-SES-ZB-01-DR-X-55107
- BRA-SES-ZB-02-DR-X-55205
- BRA-SES-ZB-02-DR-X-55206
- BRA-SES-ZB-02-DR-X-55207
- BRA-SES-ZB-03-DR-X-55305
- BRA-SES-ZB-03-DR-X-55306
- BRA-SES-ZB-03-DR-X-55307
- BRA-SES-ZB-04-DR-X-55405
- BRA-SES-ZB-04-DR-X-55406
- BRA-SES-ZB-04-DR-X-55407
- BRA-SES-ZB-05-DR-X-55505
- BRA-SES-ZB-05-DR-X-55506
- BRA-SES-ZB-05-DR-X-55507
- BRA-SES-ZB-05-DR-X-55508
- BRA-SES-ZB-GF-DR-X-55005
- BRA-SES-ZB-GF-DR-X-55006
- BRA-SES-ZB-GF-DR-X-55007
- BRA-SES-ZB-GF-DR-X-55008
- BRA-SES-ZC-01-DR-X-55110
- BRA-SES-ZC-01-DR-X-55111
- BRA-SES-ZC-01-DR-X-55112
- BRA-SES-ZC-02-DR-X-55210
- BRA-SES-ZC-02-DR-X-55211
- BRA-SES-ZC-02-DR-X-55212
- BRA-SES-ZC-03-DR-X-55310
- BRA-SES-ZC-03-DR-X-55311
- BRA-SES-ZC-03-DR-X-55312
- BRA-SES-ZC-04-DR-X-55410
- BRA-SES-ZC-04-DR-X-55411
- BRA-SES-ZC-04-DR-X-55412
- BRA-SES-ZC-05-DR-X-55509

- BRA-SES-ZC-05-DR-X-55510
- BRA-SES-ZC-05-DR-X-55511
- BRA-SES-ZC-05-DR-X-55512
- BRA-SES-ZC-GF-DR-X-55009
- BRA-SES-ZC-GF-DR-X-55010
- BRA-SES-ZC-GF-DR-X-55011
- BRA-SES-ZC-GF-DR-X-55012
- BRA-SES-ZD-01-DR-X-55113
- BRA-SES-ZD-01-DR-X-55115
- BRA-SES-ZD-01-DR-X-55116
- BRA-SES-ZD-02-DR-X-55213
- BRA-SES-ZD-02-DR-X-55215
- BRA-SES-ZD-02-DR-X-55216
- BRA-SES-ZD-03-DR-X-55313
- BRA-SES-ZD-03-DR-X-55315
- BRA-SES-ZD-03-DR-X-55316
- BRA-SES-ZD-04-DR-X-55413
- BRA-SES-ZD-04-DR-X-55415
- BRA-SES-ZD-04-DR-X-55416
- BRA-SES-ZD-05-DR-X-55513
- BRA-SES-ZD-05-DR-X-55514
- BRA-SES-ZD-05-DR-X-55515
- BRA-SES-ZD-05-DR-X-55516
- BRA-SES-ZD-GF-DR-X-55013
- BRA-SES-ZD-GF-DR-X-55014
- BRA-SES-ZD-GF-DR-X-55015
- BRA-SES-ZD-GF-DR-X-55016

## Appendix C – Plant noise data

### Bowl AHUs 01 – 16

Technical submittal: 'COOP-SES-TS-M-02' dated 03/09/2021



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**ACOUSTICS**

| Un-attenuated fresh air connection - Sound Power LwA |     |     |     |    |    |    |    |     |
|------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
| 63                                                   | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
| 49                                                   | 74  | 72  | 71  | 70 | 66 | 59 | 53 | 79  |

| Un-attenuated supply air connection - Sound Power LwA |     |     |     |    |    |    |    |     |
|-------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
| 63                                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
| 57                                                    | 79  | 79  | 84  | 84 | 83 | 78 | 70 | 91  |

| Un-attenuated return air connection - Sound Power LwA |     |     |     |    |    |    |    |     |
|-------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
| 63                                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
| 49                                                    | 71  | 68  | 69  | 69 | 66 | 60 | 55 | 77  |

| Un-attenuated exhaust air connection - Sound Power LwA |     |     |     |    |    |    |    |     |
|--------------------------------------------------------|-----|-----|-----|----|----|----|----|-----|
| 63                                                     | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
| 54                                                     | 77  | 74  | 81  | 81 | 79 | 75 | 68 | 87  |

| Casing Radiated Sound Pressure LpA @ 10m (hemispherical) |     |     |     |    |    |     |     |     |
|----------------------------------------------------------|-----|-----|-----|----|----|-----|-----|-----|
| 63                                                       | 125 | 250 | 500 | 1k | 2k | 4k  | 8k  | dBA |
| 55                                                       | 68  | 57  | 54  | 54 | 43 | <30 | <30 | 58  |

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 Company Registration Number : 03033476



## Bowl AHU condensers

Technical submittal: 'COOP-SES-TS-M-02' dated 26/11/2021



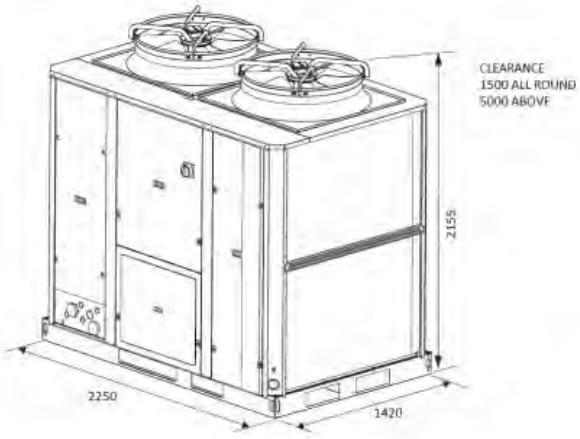
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**REMOTE CONDENSER DETAILS**

**COOLING ONLY OUTDOOR UNIT FOR SUPPLEMENTARY COOLING**

|                                                                                                                                                                                                                     |                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <p>COOLING CAPACITY 145kW</p> <p>EVAP TEMP 5°C</p> <p>EER 3.6</p> <p>SEER 4.1</p><br><p>2 X CIRCUITS</p> <p>24kg of R410a per circuit</p><br><p>400V/3PH/50Hz</p><br><p>LOW NOISE OPTION</p><br><p>WEIGHT 915KG</p> | <p>0-50-100 Speed Control</p><br><p>FLC 10A</p> <p>Starting Current 235A (soft starter incl)</p><br><p>Max Speed Lp 60.3dB(A) @ 10m</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|



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**HEAD OFFICE** : 316 Fulmar Industrial Estate | Sligo | County Donegal | DL4 1UR | T: +44 (0)1898 776 287 | F: +44 (0)1898 775 494  
 An Air Conditioning Systems Limited (incorporated in England & Wales on 5-5 Fulmar Woods Close, Sligo, County Donegal, DL4 1UR) | Company Registration Number: 08115276

Additional document: Lennox AIRCOOLAIR™ Application Guide 'AIRCOOLAIR- AGU-I407-E'

| STANDARD UNITS + LOW NOISE OPTION |            |                                  |      |      |      |      |      |                           |                                                          |
|-----------------------------------|------------|----------------------------------|------|------|------|------|------|---------------------------|----------------------------------------------------------|
| ASCIASH                           |            | Spectrum per octave band (dB(A)) |      |      |      |      |      | Sound power<br>Lw (dB(A)) | Sound pressure<br>(9 meters from the unit)<br>Lp (dB(A)) |
|                                   |            | 125 Hz                           | 250  | 500  | 1000 | 2000 | 4000 |                           |                                                          |
| <b>020S</b>                       |            | 67,6                             | 70,6 | 71,1 | 70,6 | 68,3 | 65,4 | 58,0                      | 47,2                                                     |
| <b>025S</b>                       |            | 73,8                             | 69,6 | 69,0 | 68,4 | 71,7 | 67,4 | 61,5                      | 47,9                                                     |
| <b>030S</b>                       |            | 72,7                             | 73,8 | 74,5 | 74,2 | 66,0 | 65,5 | 79,4                      | 51,4                                                     |
| <b>035S</b>                       |            | 72,7                             | 73,8 | 74,5 | 73,9 | 65,7 | 62,7 | 79,2                      | 51,2                                                     |
| <b>040S</b>                       |            | 72,7                             | 73,8 | 74,5 | 74,0 | 65,8 | 63,3 | 79,3                      | 51,3                                                     |
| <b>045D</b>                       |            | 76,8                             | 72,5 | 72,8 | 69,4 | 74,7 | 70,4 | 64,5                      | 50,9                                                     |
| <b>055D</b>                       |            | 83,3                             | 75,3 | 76,3 | 77,0 | 76,7 | 68,5 | 68,0                      | 51,9                                                     |
| <b>070D</b>                       |            | 83,3                             | 75,2 | 76,3 | 77,0 | 76,4 | 68,2 | 65,2                      | 51,7                                                     |
| <b>085D</b>                       |            | 83,3                             | 75,2 | 76,3 | 77,0 | 76,5 | 68,3 | 65,8                      | 51,8                                                     |
| <b>100D</b>                       | Low speed  | 73,3                             | 70,8 | 72,4 | 75,4 | 71,2 | 62,6 | 64,6                      | 50,3                                                     |
|                                   | High speed | 81,9                             | 78,4 | 78,2 | 81,9 | 80,9 | 74,2 | 67,0                      | 56,0                                                     |
| <b>120D</b>                       | Low speed  | 73,3                             | 70,8 | 72,3 | 75,4 | 72,0 | 61,0 | 66,1                      | 50,5                                                     |
|                                   | High speed | 81,8                             | 78,4 | 78,2 | 81,8 | 80,9 | 74,2 | 67,9                      | 56,0                                                     |
| <b>140D</b>                       | Low speed  | 75,0                             | 72,5 | 74,1 | 77,4 | 76,1 | 65,5 | 69,4                      | 51,2                                                     |
|                                   | High speed | 84,0                             | 80,8 | 80,0 | 83,9 | 83,5 | 77,1 | 71,0                      | 56,3                                                     |
| <b>200D</b>                       | Low speed  | 76,5                             | 71,2 | 72,9 | 76,5 | 76,8 | 64,5 | 66,7                      | 53,5                                                     |
|                                   | High speed | 79,3                             | 76,9 | 76,3 | 81,3 | 80,5 | 65,0 | 66,6                      | 57,3                                                     |
| <b>230D</b>                       | Low speed  | 76,0                             | 75,6 | 77,1 | 80,2 | 79,7 | 68,0 | 71,2                      | 56,0                                                     |
|                                   | High speed | 85,0                             | 81,5 | 81,0 | 84,9 | 84,7 | 78,1 | 72,6                      | 61,5                                                     |

## Ground floor AHU/0/C/01

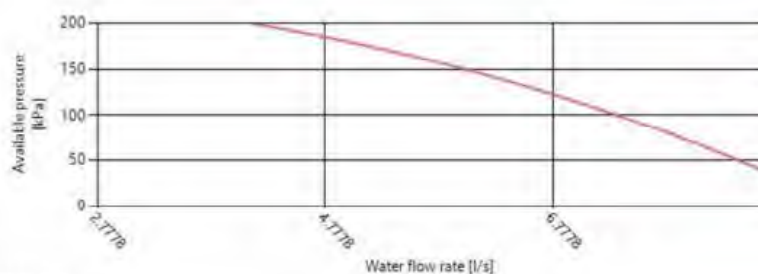
Technical submittal: 'COOP-SES-TS-M-55' dated 26/11/2021

| <br>innovation through heritage                                                                               |                  |                   |                  |                 |       |                   |          |       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|-----------------|-------|-------------------|----------|-------|--|
| SUPPLY FAN SECTION                                                                                                                                                                             |                  |                   |                  |                 |       |                   |          |       |  |
| Component: 004                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |          |       |  |
| DETAILS                                                                                                                                                                                        |                  |                   | FAN              |                 |       | MOTOR             |          |       |  |
| Air Volume                                                                                                                                                                                     | 5.700            | m <sup>3</sup> /s | Type             | Plenum-EC       |       | Efficiency        | 1.00     |       |  |
| Ext. Static Pressure                                                                                                                                                                           | 400              | Pa                | Impeller         | Backward Curved |       | Qty               | SINGLE   |       |  |
| Tot. Static Pressure                                                                                                                                                                           | 841              | Pa                | Qty              | Dual            |       | Power             | 6.00     | kW    |  |
| Starting Method                                                                                                                                                                                | Speed Controller |                   | Operation        | 50              | %     | Speed             | 1860     | RPM   |  |
| A. V. Type                                                                                                                                                                                     | N/A              |                   | Model            | GR56C-ZID.GQ.CR |       | Pole              | N/A      |       |  |
|                                                                                                                                                                                                |                  |                   | Speed            | 1604            | RPM   | Full Load Current | 8.40     | Amp   |  |
|                                                                                                                                                                                                |                  |                   | Max. Speed       | 1860            | RPM   | Electrical Supply | 380/3/50 |       |  |
|                                                                                                                                                                                                |                  |                   | Speed Set Value  | 86              | %     |                   |          |       |  |
|                                                                                                                                                                                                |                  |                   | Absorbed Power   | 3.78            | kW    |                   |          |       |  |
|                                                                                                                                                                                                |                  |                   | Total Efficiency | 72              | %     |                   |          |       |  |
| Sound Power Lw                                                                                                                                                                                 | 63 Hz            | 125 Hz            | 250 Hz           | 500 Hz          | 1 kHz | 2 kHz             | 4 kHz    | 8 kHz |  |
| Fan Inlet (dB)                                                                                                                                                                                 | 78               | 81                | 83               | 79              | 74    | 72                | 67       | 66    |  |
| Fan Outlet (dB)                                                                                                                                                                                | 84               | 86                | 88               | 86              | 83    | 78                | 74       | 71    |  |
| Note: Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment. |                  |                   |                  |                 |       |                   |          |       |  |
| INCLUDED OPTIONS / NOTES                                                                                                                                                                       |                  |                   |                  |                 |       |                   |          |       |  |
| Door Guard                                                                                                                                                                                     |                  |                   |                  |                 |       |                   |          |       |  |
| 0-10V Speed Control                                                                                                                                                                            |                  |                   |                  |                 |       |                   |          |       |  |
| Pre-wired Isolator (2x fans wired to single isolator)                                                                                                                                          |                  |                   |                  |                 |       |                   |          |       |  |
| OUTLET SECTION                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |          |       |  |
| Component: 005                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |          |       |  |
| Conn. Type                                                                                                                                                                                     | 30mm Galv Flange |                   | Damper           | No              |       | Face Velocity     | 2.120    | m/s   |  |
| Conn. Size                                                                                                                                                                                     | 2450 x 1100      | mm                | Location         | N/A             |       | Actuator          | N/A      |       |  |
|                                                                                                                                                                                                |                  |                   | Type             | N/A             |       |                   |          |       |  |
|                                                                                                                                                                                                |                  |                   | Size (WxH)       | N/A             | mm    |                   |          |       |  |
|                                                                                                                                                                                                |                  |                   | Material         | N/A             |       |                   |          |       |  |

| <br>innovation through heritage                                                                             |                  |                   |                  |                 |       |                   |            |       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|------------------|-----------------|-------|-------------------|------------|-------|--|
| EXTRACT PATH                                                                                                                                                                                   |                  |                   |                  |                 |       |                   |            |       |  |
| INLET SECTION                                                                                                                                                                                  |                  |                   |                  |                 |       |                   |            |       |  |
| Component: 006                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |            |       |  |
| Conn. Type                                                                                                                                                                                     | 30mm Galv Flange |                   | Damper           | No              |       | Face Velocity     | 1.680      | m/s   |  |
| Conn. Size                                                                                                                                                                                     | 2450 x 1100      | mm                | Location         | N/A             |       | Actuator          | N/A        |       |  |
|                                                                                                                                                                                                |                  |                   | Type             | N/A             |       |                   |            |       |  |
|                                                                                                                                                                                                |                  |                   | Size (WxH)       | N/A             | mm    |                   |            |       |  |
|                                                                                                                                                                                                |                  |                   | Material         | N/A             |       |                   |            |       |  |
| FILTER SECTION                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |            |       |  |
| Component: 007                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |            |       |  |
| AIR SIDE                                                                                                                                                                                       |                  |                   | SPECIFICATION    |                 |       | DETAILS           |            |       |  |
| Air Volume                                                                                                                                                                                     | 4.550            | m <sup>3</sup> /s | Type             | Panel           |       | Qty               | 8          |       |  |
| Face Velocity                                                                                                                                                                                  | 1.92             | m/s               | Grade            | M5              |       | Nom. Size (WxHxD) | 610x508x50 | mm    |  |
| Air Pd (Clean)                                                                                                                                                                                 | 51               | Pa                | Withdrawal       | Side            |       |                   |            |       |  |
| Air Pd (Average)                                                                                                                                                                               | 76               | Pa                |                  |                 |       |                   |            |       |  |
| Air Pd (Dirty)                                                                                                                                                                                 | 100              | Pa                |                  |                 |       |                   |            |       |  |
| INCLUDED OPTIONS / NOTES                                                                                                                                                                       |                  |                   |                  |                 |       |                   |            |       |  |
| Minihelic Gauge (0-250Pa)                                                                                                                                                                      |                  |                   |                  |                 |       |                   |            |       |  |
| EXHAUST FAN SECTION                                                                                                                                                                            |                  |                   |                  |                 |       |                   |            |       |  |
| Component: 008                                                                                                                                                                                 |                  |                   |                  |                 |       |                   |            |       |  |
| DETAILS                                                                                                                                                                                        |                  |                   | FAN              |                 |       | MOTOR             |            |       |  |
| Air Volume                                                                                                                                                                                     | 4.550            | m <sup>3</sup> /s | Type             | Plenum-EC       |       | Efficiency        | 1.00       |       |  |
| Ext. Static Pressure                                                                                                                                                                           | 350              | Pa                | Impeller         | Backward Curved |       | Qty               | SINGLE     |       |  |
| Tot. Static Pressure                                                                                                                                                                           | 601              | Pa                | Qty              | Dual            |       | Power             | 6.00       | kW    |  |
| Starting Method                                                                                                                                                                                | Speed Controller |                   | Operation        | 50              | %     | Speed             | 1860       | RPM   |  |
| A. V. Type                                                                                                                                                                                     | N/A              |                   | Model            | GR56C-ZID.GQ.CR |       | Pole              | N/A        |       |  |
|                                                                                                                                                                                                |                  |                   | Speed            | 1336            | RPM   | Full Load Current | 9.40       | Amp   |  |
|                                                                                                                                                                                                |                  |                   | Max. Speed       | 1860            | RPM   | Electrical Supply | 380/3/50   |       |  |
|                                                                                                                                                                                                |                  |                   | Speed Set Value  | 72              | %     |                   |            |       |  |
|                                                                                                                                                                                                |                  |                   | Absorbed Power   | 2.22            | kW    |                   |            |       |  |
|                                                                                                                                                                                                |                  |                   | Total Efficiency | 69              | %     |                   |            |       |  |
| Sound Power Lw                                                                                                                                                                                 | 63 Hz            | 125 Hz            | 250 Hz           | 500 Hz          | 1 kHz | 2 kHz             | 4 kHz      | 8 kHz |  |
| Fan Inlet (dB)                                                                                                                                                                                 | 74               | 82                | 77               | 73              | 69    | 66                | 62         | 59    |  |
| Fan Outlet (dB)                                                                                                                                                                                | 79               | 86                | 80               | 81              | 77    | 72                | 68         | 64    |  |
| Note: Fan manufacturer data used in accordance with DIN 463 Part 38 & 39, BS 848 Part 2 & ISO 5136. A correction of +6dB should be applied across all octave bands for unit casing adjustment. |                  |                   |                  |                 |       |                   |            |       |  |

## Air source heat pumps I - 7

Technical submittal: 'COOP-SES-TS-M-11' dated 18/10/2021



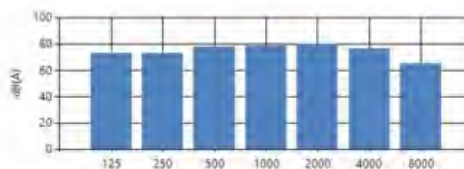
### Electric data

|                         |                                    |        |
|-------------------------|------------------------------------|--------|
| Full Load Amps (FLA)    | A                                  | 151.53 |
| Locked Rotor Amps (LRA) | A                                  | 292.53 |
| Power supply            | 400V/3N/50Hz with circuit breakers |        |

### Sound data (nominal cooling data)

|                        |       |      |
|------------------------|-------|------|
| Sound power - Lw       | dB(A) | 85.0 |
| Sound pressure at 10 m | dB(A) | 53.0 |

| Hz   | dB   | dB(A) |
|------|------|-------|
| 125  | 89   | 72.9  |
| 250  | 81.8 | 73.2  |
| 500  | 81.2 | 78    |
| 1000 | 78.3 | 78.3  |
| 2000 | 78.8 | 80    |
| 4000 | 75.6 | 76.6  |
| 8000 | 66.3 | 65.2  |



The sound levels are given at full load, without pumps (if available) and at nominal conditions (air temperature: 35.0 °C, water temperature (in/out): 12.0/7.0 °C).

### Dimensions and weights

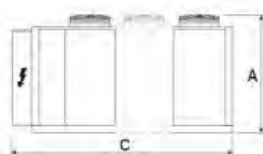
A[m]  
1.88

B[m]  
1.1

C[m]  
4.33

\* = Free field

The dimensions and weight refer to the unit without packaging. For these data, consult the installation manual.



## VRF Outdoor condenser units

Technical submittal: 'COOP-SES-TS-M-12' dated 27/10/2021

All condenser data has been provided in terms of broadband sound power (dBA L<sub>w</sub>). The following known condenser noise spectrum has been used for all units, corrected to the given sound power:

| 63Hz | 125Hz | 250Hz | 500Hz | 1kHz | 2kHz | 4kHz | 8kHz | dBA |
|------|-------|-------|-------|------|------|------|------|-----|
| 73   | 73    | 72    | 70    | 67   | 58   | 53   | 48   | 71  |

## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - RAV-GM Data Sheet

#### RAV-GM1101ATP-E Outdoor Unit



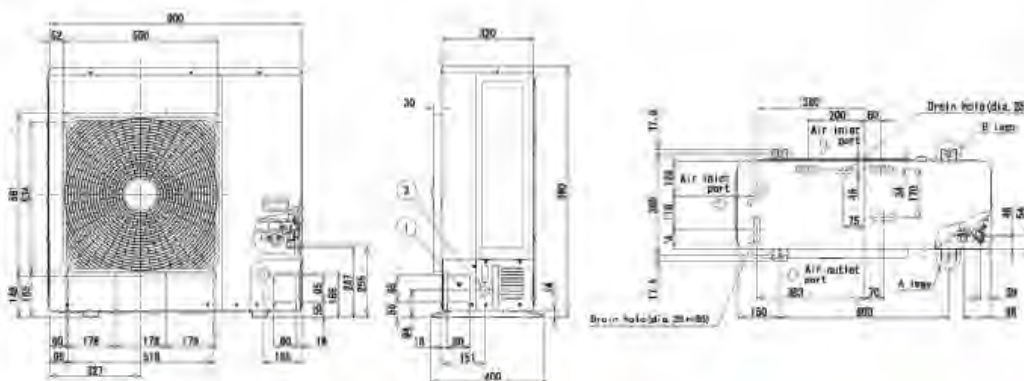
#### Features

- Redesigned for use with refrigerant R32
- Wide operating range (cooling mode -15°C to +46°C)
- Auto-diagnostic function
- Flexible, can be utilised for single, twin, triple indoor applications
- Compact size

#### Technical Data

| Model reference | RAV-GM1101ATP-E                  |           |                     |
|-----------------|----------------------------------|-----------|---------------------|
| Nominal         | Cooling Capacity                 | kW        | 9.5                 |
|                 | Heating Capacity                 | kW        | 11.2                |
| Operating Range | Cooling/Heating                  | °C        | +15 to 46/-15 to 15 |
| Air Flow        | High                             | m³/h ±1%  | 4080 ± 1133         |
| Sound           | Pressure High Cooling/Heating    | (dB(A))   | 54/57               |
|                 | Power High Cooling/Heating       | (dB(A))   | 70/74               |
| Unit            | Height x Width x Depth           | mm        | 890 x 900 x 320     |
|                 | Weight                           | kg        | 68                  |
| Pipe Connection | Flare Connections (gas + liquid) | inches    | 5/8 x 3/8           |
|                 | Min.-Max. Length                 | m         | 5-50                |
|                 | Maximum Height Difference        | m         | ±30                 |
|                 | Drain Port Connection            | mm        | 16                  |
| Refrigerant R32 | Base Charge/Chargeless Length    | kg/m      | 2.1/30              |
|                 | Additional Charge Liquid Side    | g/m       | 35                  |
| Nom Current     | Maximum                          | A         | 14.20               |
| Power Cable     | Outdoor to Indoor                |           | 3 core + earth      |
| Power Supply    | Suggested Fuse Size              | V/ph/Hz-A | 220-240/1/50-20     |

#### Dimensional Drawings



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All UK duties are based on Cooling Indoor air temperature 22°C DB/16°C WB Outdoor air temperature 26°C DB/15°C WB, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 20°C DB Outdoor air temperature -5°C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Published Data July 2015.



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

RAV-GM1601ATP-E  
Digital Inverter 6 HP 1 Phase



| Model Reference |                                     | RAV-GM1601ATP-E         |                     |
|-----------------|-------------------------------------|-------------------------|---------------------|
| Operating Range | Cooling/Heating                     | °C                      | -15 to 40/-15 to 15 |
| Air Flow        | High                                | m <sup>3</sup> /h - l/s | 6900 - 1917         |
| Sound           | Pressure High Cooling/Heating       | dB(A)                   | 53 - 55             |
|                 | Power High Cooling/Heating          | dB(A)                   | 70 - 72             |
| Unit            | Height x Width x Depth              | mm                      | 1340 x 900 x 320    |
|                 | Weight                              | kg                      | 95                  |
| Pipe Connection | Flare Connections (gas - liquid)    | inch                    | 5/8 - 3/8           |
|                 | Min.-Max. Length                    | m                       | 5 - 50              |
|                 | Maximum Height Difference           | m                       | ±30                 |
|                 | Drain Port Connection               | mm                      | 16                  |
| Refrigerant R32 | Gas - Base Charge/Chargeless Length | kg/m                    | R32 - 2.4/30        |
|                 | Additional Charge Liquid Side       | g/m                     | 35                  |
| Run Current     | Maximum                             | Amps                    | 21.71               |
| Power Cable     | Outdoor to Indoor                   |                         | 3 core + earth      |
| Power Supply    | Suggested Fuse Size                 | V/ph/Hz-A               | 220-240/1/50        |

\* Waiting for published data.

# TOSHIBA

- Redesigned for use with refrigerant R32
- Wide operating range (cooling mode -15°C to +52°C)
- Auto-diagnostic function
- Flexible, can be utilised for single, twin, triple indoor applications
- Compact size

[www.cdlweb.info](http://www.cdlweb.info)

UK capacities are based on the following conditions: Cooling: Indoor 23°C DB/16°C WB ~ Outdoor 29°C DB Heating: Indoor 20°C DB ~ Outdoor -5°C/100% RH. Nominal capacities are based on NEMA Cooling: Indoor 27°C DB/19°C WB ~ Outdoor 35°C DB Heating: Indoor 20°C DB ~ Outdoor 7°C/100% RH 7.5m Pipe Run and High Speed. Data from Toshiba Air Conditioning July 2019

## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - RAV-SM Data Sheet

#### RAV-SM2806AT8-E Outdoor Unit

##### Features

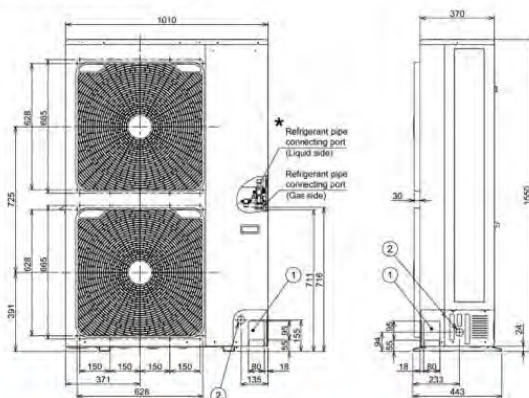
- R22 and R407C replacement technology
- Wide operating range (cooling mode -15°C to +52°C)
- Extended pipe runs up to 100 m (1104/1404)
- Flexible, can be utilised for single, twin, triple indoor applications
- Increased energy efficiency/cost saving



##### Technical Data

| Model reference                     |         | RAV-SM2806AT8-E   |
|-------------------------------------|---------|-------------------|
| Nominal cooling                     | kW      | 27.0              |
| Nominal heating                     | kW      | 27.0              |
| Maximum air flow                    | m³/h    | 10920             |
| Maximum air flow                    | l/s     | 3033              |
| Sound power (cool/heat)             | dB(A)   | 78/80             |
| Sound pressure (cool/heat)          | dB(A)   | 61/63             |
| Dimensions (H x W x D)              | mm      | 1550 x 1010 x 370 |
| Unit weight                         | kg      | 142               |
| Power supply                        | V-ph-Hz | 380/415-3-50      |
| Interconnecting cable               |         | 3 core + earth    |
| Suggested fuse size                 | A       | 20                |
| Maximum operating current (cooling) | A       | 15.06             |
| Operating range, cooling            | °C      | -15 to 52         |
| Operating range, heating            | °C      | -27 to 15         |
| Pipe sizes (liquid - suction)       | inch    | 1/2 - 1-1/8       |
| Minimum/maximum pipe length         | m       | 5/100             |
| Maximum height difference           | m       | 30                |
| Pre-charge pipe length              | m       | 30                |

##### Dimensional Drawings



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All UK duties are based on Cooling Indoor air temperature 22°C DB/16°C WB Outdoor air temperature 28°C DB 50% RH, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 20°C DB Outdoor air temperature -5°C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Published Data September 2014.

## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - VRF Data Sheet

#### MMY-MAP1406FT8P

#### Three-pipe SHRMe - Super Heat Recovery Condensing Unit

##### Features

- Dual setpoint for more precision
- ESEER increased to >8
- UK-SEER achievable to >10
- New 4 series flow box with 50 m run
- New 4- and 6-port multi-flow boxes

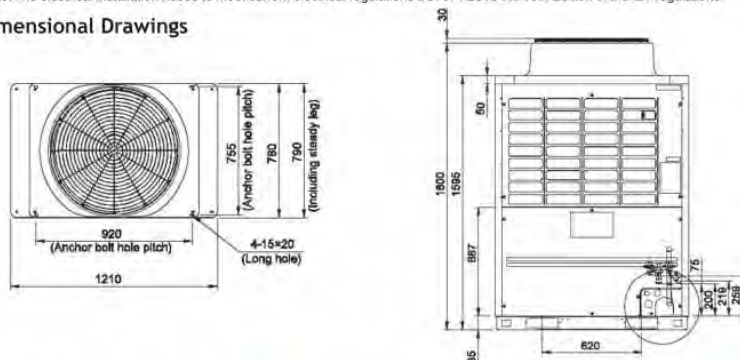


##### Technical Data

| Model reference                       |         | MMY-MAP1406FT8P        |
|---------------------------------------|---------|------------------------|
| Nominal cooling                       | kW      | 40.0                   |
| Nominal heating                       | kW      | 45.0                   |
| Capacity code                         |         | 14                     |
| Min./max. capacities connectable      | kW      | 32.0/54.0              |
| Power input (cool/heat)               | kW      | 12.7/10.5              |
| SEER/ESEER Value (Office Profile)     |         | 6.88/7.34              |
| SCOP/ESCAP Value (Office Profile)     |         | 4.82/5.02              |
| Starting current                      | A       | 1                      |
| Running current (cool/heat)           | A       | 19.92/16.47            |
| MCA (minimum circuit amps)            | A       | 35.8                   |
| MOCP (maximum overcurrent protection) | A       | 50.0                   |
| Power supply                          | V-ph-Hz | 380/415-3-50           |
| Interconnecting cable                 |         | 2-core screened 1.5 mm |
| Sound power (cool/heat)               | dB(A)   | 81/83                  |
| Sound pressure (cool/heat)            | dB(A)   | 62/64                  |
| Standard air flow                     | m³/h    | 12200                  |
| Standard air flow                     | l/s     | 3389                   |
| External static pressure              | Pa      | 40                     |
| Maximum indoor units connectable      |         | 31                     |
| Dimensions (H x W x D)                | mm      | 1830 x 1210 x 780      |
| Unit weight                           | kg      | 316                    |
| R410A refrigerant base charge         | kg      | 11                     |

Note: The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations.

##### Dimensional Drawings



Cool Designs Ltd

Raising the Standards in Air Conditioning Distribution

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All UK duties are based on Cooling Indoor air temperature 22 °C DB/16 °C WB Outdoor air temperature 28 °C DB 50% RH, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 21 °C DB Outdoor air temperature -4 °C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Web Data July 2019.

## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - VRF Data Sheet

#### MMY-MAP1806FT8P

#### Three-pipe SHRMe - Super Heat Recovery Condensing Unit

##### Features

- Dual setpoint for more precision
- ESEER increased to >8
- UK-SEER achievable to >10
- New 4 series flow box with 50 m run
- New 4- and 6-port multi-flow boxes

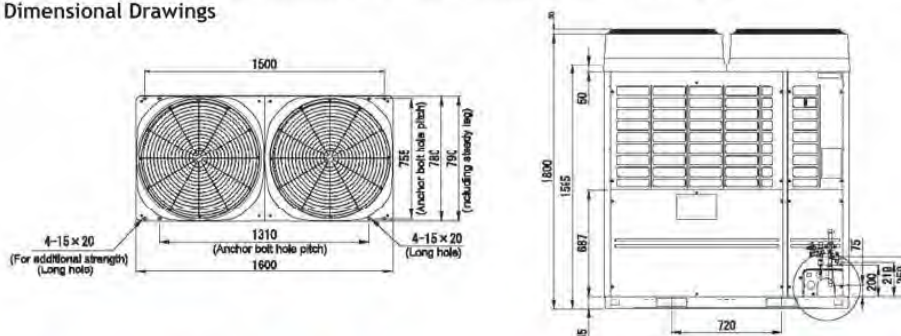


##### Technical Data

| Model reference                       |                   | MMY-MAP1806FT8P        |
|---------------------------------------|-------------------|------------------------|
| Nominal cooling                       | kW                | 50.4                   |
| Nominal heating                       | kW                | 56.5                   |
| Capacity code                         |                   | 18                     |
| Min./max. capacities connectable      | kW                | 40.32/68.04            |
| Power input (cool/heat)               | kW                | 16.0/13.7              |
| SEER/ESEER Value (Office Profile)     |                   | 7.36/7.86              |
| SCOP/ESCAP Value (Office Profile)     |                   | 4.62/4.82              |
| Starting current                      | A                 | 1                      |
| Running current (cool/heat)           | A                 | 25.10/21.49            |
| MCA (minimum circuit amps)            | A                 | 44.9                   |
| MOCP (maximum overcurrent protection) | A                 | 50.0                   |
| Power supply                          | V-ph-Hz           | 380/415-3-50           |
| Interconnecting cable                 |                   | 2-core screened 1.5 mm |
| Sound power (cool/heat)               | dB(A)             | 83/84                  |
| Sound pressure (cool/heat)            | dB(A)             | 61/62                  |
| Standard air flow                     | m <sup>3</sup> /h | 17300                  |
| Standard air flow                     | l/s               | 4806                   |
| External static pressure              | Pa                | 40                     |
| Maximum indoor units connectable      |                   | 40                     |
| Dimensions (H x W x D)                | mm                | 1830 x 1600 x 780      |
| Unit weight                           | kg                | 377                    |
| R410A refrigerant base charge         | kg                | 11                     |

Note: The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations.

##### Dimensional Drawings



Cool Designs Ltd

Raising the Standards in Air Conditioning Distribution

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All UK duties are based on Cooling Indoor air temperature 22 °C DB/16 °C WB Outdoor air temperature 28 °C DB 50% RH, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 21 °C DB Outdoor air temperature -4 °C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Web Data July 2019.



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP1801HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                           | MUP1801HT8P-E |                             |
|---------------------------------|-----------------------------------------------------------|---------------|-----------------------------|
| Capacity Range                  |                                                           | HP            | 18                          |
| Maximum Number of Indoor Units  |                                                           | QTY           | 40                          |
| Cooling Capacity                |                                                           | kW            | 50.4                        |
| Heating Capacity                |                                                           | kW            | 50.4                        |
| Operating Range Cooling/Heating |                                                           | °C            | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                         | kW            | 15.90                       |
|                                 | EER/SEER/Energy Efficiency Class (or ηsc %)               |               | 3.17/7.68/304.2             |
| Heating                         | Power Consumption                                         | kW            | 12.54                       |
|                                 | COP/SCOP/Energy Efficiency Class (or ηsc(A) %)            |               | 4.02/4.75/187.0             |
| Fan(s)                          | Standard Air Flow H                                       | l/s           | 4667                        |
|                                 | Standard Air Flow H                                       | m³/h          | 16800                       |
|                                 | External Static Pressure                                  | Pa            | 80                          |
| Sound                           | Pressure Level C/H                                        | dB(A)         | 61/67                       |
|                                 | Power Level C/H                                           | dB(A)         | 84/89                       |
| Unit(s)                         | Height x Width x Depth                                    | mm            | 1690 x 1290 x 780           |
|                                 | Weight                                                    | kg            | 312                         |
|                                 | Refrigerant Base Charge                                   | kg            | 9                           |
| Pipe Connections                | Suction Gas Pipe Brazing                                  | inch          | 1 1/8                       |
|                                 | Liquid Pipe Flare                                         | inch          | 5/8                         |
| Maximum                         | Equivalent Length                                         | m             | 210                         |
|                                 | Real Length                                               | m             | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)               | m             | 500                         |
|                                 | Length To First Branch                                    | m             | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe         | m             | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping              | m             | 30                          |
|                                 | Equivalent Length Between Branches                        | m             | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units        | m             | 70 (110°)                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units         | m             | 40 (110°)                   |
|                                 | Height Difference Between Indoor Units                    | m             | 40                          |
|                                 | Height Difference Between Outdoor Units                   | m             | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                             | V             | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating | A             | 24.40/19.30                 |
|                                 | Power Supply Wiring Starting Current                      | A             | Soft Start                  |
|                                 | Power Supply                                              | V/ph/Hz       | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                 | A             | 40                          |

The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations. Fuse sizes shown are for guidelines only and should be calculated using the MCA/MOCP details on the following page

# TOSHIBA

- Intelligent Defrost
- Due set point
- Piping design flexibility
- 250m furthest indoor
- 110m height indoor to outdoor
- NFC Commissioning and maintenance
- High efficiency
- Innovative technology Triple rotary compressor

[www.cdlweb.info](http://www.cdlweb.info)

UK capacities are based on the following conditions: Cooling: Indoor 23°C DB/16°C WB ~ Outdoor 29°C DB Heating: Indoor 20°C DB ~ Outdoor -5°C/100% RH Nominal capacities are based on NEMA Cooling: Indoor 27°C DB/19°C WB ~ Outdoor 35°C DB Heating: Indoor 20°C DB ~ Outdoor 7°C/100% RH 7.5m Pipe Run and High Speed. Data from Toshiba Air Conditioning July 2019



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP0801HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                           | MUP0801HT8P-E |                             |
|---------------------------------|-----------------------------------------------------------|---------------|-----------------------------|
| Capacity Range                  |                                                           | HP            | 8                           |
| Maximum Number of Indoor Units  |                                                           | QTY           | 18                          |
| Cooling Capacity                |                                                           | kW            | 22.4                        |
| Heating Capacity                |                                                           | kW            | 22.4                        |
| Operating Range Cooling/Heating |                                                           | °C            | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                         | kW            | 5.64                        |
|                                 | EER/SEER/Energy Efficiency Class (or ηsc %)               |               | 3.97/7.44/294.6             |
| Heating                         | Power Consumption                                         | kW            | 5.28                        |
|                                 | COP/SCOP/Energy Efficiency Class (or ηsc(A) %)            |               | 4.24/4.50/177.0             |
| Fan(s)                          | Standard Air Flow H                                       | l/s           | 2750                        |
|                                 | Standard Air Flow H                                       | m³/h          | 9900                        |
|                                 | External Static Pressure                                  | Pa            | 80                          |
| Sound                           | Pressure Level C/H                                        | dB(A)         | 53/56                       |
|                                 | Power Level C/H                                           | dB(A)         | 75/76                       |
| Unit(s)                         | Height x Width x Depth                                    | mm            | 1690 x 990 x 780            |
|                                 | Weight                                                    | kg            | 228                         |
|                                 | Refrigerant Base Charge                                   | kg            | 6                           |
| Pipe Connections                | Suction Gas Pipe Brazing                                  | inch          | 3/4                         |
|                                 | Liquid Pipe Flare                                         | inch          | 1/2                         |
|                                 | Equivalent Length                                         | m             | 210                         |
| Maximum                         | Real Length                                               | m             | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)               | m             | 500                         |
|                                 | Length To First Branch                                    | m             | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe         | m             | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping              | m             | 30                          |
|                                 | Equivalent Length Between Branches                        | m             | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units        | m             | 70 (110")                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units         | m             | 40 (110")                   |
|                                 | Height Difference Between Indoor Units                    | m             | 40                          |
|                                 | Height Difference Between Outdoor Units                   | m             | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                             | V             | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating | A             | 9.15/8.56                   |
|                                 | Power Supply Wiring Starting Current                      | A             | Soft Start                  |
|                                 | Power Supply                                              | V/ph/Hz       | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                 | A             | 20                          |

The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations. Fuse sizes shown are for guidelines only and should be calculated using the MCA/MOCP details on the following page

# TOSHIBA

- Intelligent Defrost
- Due: set point
- Piping design flexibility
- 250m furthest indoor
- 110m height indoor to outdoor
- NFC Commissioning and maintenance
- High efficiency
- Innovative technology Triple rotary compressor

[www.cdlweb.info](http://www.cdlweb.info)

UK capacities are based on the following conditions: Cooling: Indoor 23°C DB/16°C WB ~ Outdoor 29°C DB Heating: Indoor 20°C DB ~ Outdoor -5°C/100% RH Nominal capacities are based on NEMA Cooling: Indoor 27°C DB/19°C WB ~ Outdoor 35°C DB Heating: Indoor 20°C DB ~ Outdoor 7°C/100% RH 7.5m Pipe Run and High Speed. Data from Toshiba Air Conditioning July 2019



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP2001HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                           | MUP2001HT8P-E |                             |
|---------------------------------|-----------------------------------------------------------|---------------|-----------------------------|
| Capacity Range                  |                                                           | HP            | 20                          |
| Maximum Number of Indoor Units  |                                                           | QTY           | 45                          |
| Cooling Capacity                |                                                           | kW            | 56.0                        |
| Heating Capacity                |                                                           | kW            | 56.0                        |
| Operating Range Cooling/Heating |                                                           | °C            | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                         | kW            | 18.01                       |
|                                 | EER/SEER/Energy Efficiency Class (or ηsc %)               |               | 3.11/7.62/301.8             |
| Heating                         | Power Consumption                                         | kW            | 14.93                       |
|                                 | COP/SCOP/Energy Efficiency Class (or ηsc(A) %)            |               | 3.75/4.43/174.2             |
| Fan(s)                          | Standard Air Flow H                                       | l/s           | 4417                        |
|                                 | Standard Air Flow H                                       | m³/h          | 15900                       |
|                                 | External Static Pressure                                  | Pa            | 80                          |
| Sound                           | Pressure Level C/H                                        | dB(A)         | 63/67                       |
|                                 | Power Level C/H                                           | dB(A)         | 86/90                       |
| Unit(s)                         | Height x Width x Depth                                    | mm            | 1690 x 1290 x 780           |
|                                 | Weight                                                    | kg            | 334                         |
|                                 | Refrigerant Base Charge                                   | kg            | 9                           |
| Pipe Connections                | Suction Gas Pipe Brazing                                  | inch          | 1 1/8                       |
|                                 | Liquid Pipe Flare                                         | inch          | 5/8                         |
|                                 | Equivalent Length                                         | m             | 210                         |
| Maximum                         | Real Length                                               | m             | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)               | m             | 500                         |
|                                 | Length To First Branch                                    | m             | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe         | m             | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping              | m             | 30                          |
|                                 | Equivalent Length Between Branches                        | m             | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units        | m             | 70 (110")                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units         | m             | 40 (110")                   |
|                                 | Height Difference Between Indoor Units                    | m             | 40                          |
|                                 | Height Difference Between Outdoor Units                   | m             | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                             | V             | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating | A             | 27.70/22.90                 |
|                                 | Power Supply Wiring Starting Current                      | A             | Soft Start                  |
|                                 | Power Supply                                              | V/ph/Hz       | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                 | A             | 40                          |

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# TOSHIBA

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UK capacities are based on the following conditions: Cooling: Indoor 23°C DB/16°C WB ~ Outdoor 29°C DB Heating: Indoor 20°C DB ~ Outdoor -5°C/100% RH Nominal capacities are based on NEMA Cooling: Indoor 27°C DB/19°C WB ~ Outdoor 35°C DB Heating: Indoor 20°C DB ~ Outdoor 7°C/100% RH 7.5m Pipe Run and High Speed. Data from Toshiba Air Conditioning July 2019



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP1001HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                             | MUP1001HT8P-E     |                             |
|---------------------------------|-------------------------------------------------------------|-------------------|-----------------------------|
| Capacity Range                  |                                                             | HP                | 10                          |
| Maximum Number of Indoor Units  |                                                             | QTY               | 22                          |
| Cooling Capacity                |                                                             | kW                | 28.0                        |
| Heating Capacity                |                                                             | kW                | 28.0                        |
| Operating Range Cooling/Heating |                                                             | °C                | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                           | kW                | 8.36                        |
|                                 | EER/SEER/Energy Efficiency Class (or η <sub>sc</sub> %)     |                   | 3.35/7.73/306.2             |
| Heating                         | Power Consumption                                           | kW                | 7.20                        |
|                                 | COP/SCOP/Energy Efficiency Class (or η <sub>sc</sub> (A) %) |                   | 3.89/4.78/188.2             |
| Fan(s)                          | Standard Air Flow H                                         | l/s               | 2917                        |
|                                 | Standard Air Flow H                                         | m <sup>3</sup> /h | 10500                       |
|                                 | External Static Pressure                                    | Pa                | 80                          |
| Sound                           | Pressure Level C/H                                          | dB(A)             | 55/58                       |
|                                 | Power Level C/H                                             | dB(A)             | 77/77                       |
| Unit(s)                         | Height x Width x Depth                                      | mm                | 1690 x 990 x 780            |
|                                 | Weight                                                      | kg                | 228                         |
|                                 | Refrigerant Base Charge                                     | kg                | 6                           |
| Pipe Connections                | Suction Gas Pipe Brazing                                    | inch              | 7/8                         |
|                                 | Liquid Pipe Flare                                           | inch              | 1/2                         |
|                                 | Equivalent Length                                           | m                 | 210                         |
| Maximum                         | Real Length                                                 | m                 | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)                 | m                 | 500                         |
|                                 | Length To First Branch                                      | m                 | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe           | m                 | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping                | m                 | 30                          |
|                                 | Equivalent Length Between Branches                          | m                 | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units          | m                 | 70 (110°)                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units           | m                 | 40 (110°)                   |
|                                 | Height Difference Between Indoor Units                      | m                 | 40                          |
|                                 | Height Difference Between Outdoor Units                     | m                 | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                               | V                 | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating   | A                 | 13.40/11.50                 |
|                                 | Power Supply Wiring Starting Current                        | A                 | Soft Start                  |
|                                 | Power Supply                                                | V/ph/Hz           | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                   | A                 | 25                          |

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# TOSHIBA

- Intelligent Defrost
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UK capacities are based on the following conditions: Cooling: Indoor 23°C DB/16°C WB ~ Outdoor 29°C DB Heating: Indoor 20°C DB ~ Outdoor -5°C/100% RH Nominal capacities are based on NEMA Cooling: Indoor 27°C DB/19°C WB ~ Outdoor 35°C DB Heating: Indoor 20°C DB ~ Outdoor 7°C/100% RH 7.5m Pipe Run and High Speed. Data from Toshiba Air Conditioning July 2019



Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP2401HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                           | MUP2401HT8P-E |                             |
|---------------------------------|-----------------------------------------------------------|---------------|-----------------------------|
| Capacity Range                  |                                                           | HP            | 24                          |
| Maximum Number of Indoor Units  |                                                           | QTY           | 54                          |
| Cooling Capacity                |                                                           | kW            | 67.0                        |
| Heating Capacity                |                                                           | kW            | 67.0                        |
| Operating Range Cooling/Heating |                                                           | °C            | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                         | kW            | 24.19                       |
|                                 | EER/SEER/Energy Efficiency Class (or ηsc %)               |               | 2.77/6.87/271.8             |
| Heating                         | Power Consumption                                         | kW            | 18.98                       |
|                                 | COP/SCOP/Energy Efficiency Class (or ηsc(A) %)            |               | 3.53/4.17/163.8             |
| Fan(s)                          | Standard Air Flow H                                       | l/s           | 4583                        |
|                                 | Standard Air Flow H                                       | m³/h          | 16500                       |
|                                 | External Static Pressure                                  | Pa            | 80                          |
| Sound                           | Pressure Level C/H                                        | dB(A)         | 63/67                       |
|                                 | Power Level C/H                                           | dB(A)         | 86/90                       |
| Unit(s)                         | Height x Width x Depth                                    | mm            | 1690 x 1290 x 780           |
|                                 | Weight                                                    | kg            | 356                         |
|                                 | Refrigerant Base Charge                                   | kg            | 9                           |
| Pipe Connections                | Suction Gas Pipe Brazing                                  | inch          | 1.3/8                       |
|                                 | Liquid Pipe Flare                                         | inch          | 3/4                         |
| Maximum                         | Equivalent Length                                         | m             | 210                         |
|                                 | Real Length                                               | m             | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)               | m             | 500                         |
|                                 | Length To First Branch                                    | m             | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe         | m             | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping              | m             | 30                          |
|                                 | Equivalent Length Between Branches                        | m             | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units        | m             | 70 (110")                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units         | m             | 40 (110")                   |
|                                 | Height Difference Between Indoor Units                    | m             | 40                          |
|                                 | Height Difference Between Outdoor Units                   | m             | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                             | V             | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating | A             | 37.10/29.10                 |
|                                 | Power Supply Wiring Starting Current                      | A             | Soft Start                  |
|                                 | Power Supply                                              | V/ph/Hz       | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                 | A             | 63                          |

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Raising the standards in Air Conditioning Distribution

## Toshiba Air Conditioning Data Sheet

MUP1201HT8P-E  
SMMS-u Heat Pump VRF



| Model Reference                 |                                                           | MUP1201HT8P-E |                             |
|---------------------------------|-----------------------------------------------------------|---------------|-----------------------------|
| Capacity Range                  |                                                           | HP            | 12                          |
| Maximum Number of Indoor Units  |                                                           | QTY           | 27                          |
| Cooling Capacity                |                                                           | kW            | 33.5                        |
| Heating Capacity                |                                                           | kW            | 33.5                        |
| Operating Range Cooling/Heating |                                                           | °C            | -10.0 to 52.0/-25.0 to 15.5 |
| Cooling                         | Power Consumption                                         | kW            | 10.34                       |
|                                 | EER/SEER/Energy Efficiency Class (or ηsc %)               |               | 3.24/7.32/289.8             |
| Heating                         | Power Consumption                                         | kW            | 7.77                        |
|                                 | COP/SCOP/Energy Efficiency Class (or ηsc(A) %)            |               | 4.31/4.75/187.0             |
| Fan(s)                          | Standard Air Flow H                                       | l/s           | 3250                        |
|                                 | Standard Air Flow H                                       | m³/h          | 11700                       |
|                                 | External Static Pressure                                  | Pa            | 80                          |
| Sound                           | Pressure Level C/H                                        | dB(A)         | 58/62                       |
|                                 | Power Level C/H                                           | dB(A)         | 79/81                       |
| Unit(s)                         | Height x Width x Depth                                    | mm            | 1690 x 990 x 780            |
|                                 | Weight                                                    | kg            | 228                         |
|                                 | Refrigerant Base Charge                                   | kg            | 6                           |
|                                 | Suction Gas Pipe Brazing                                  | inch          | 1 1/8                       |
| Pipe Connections                | Liquid Pipe Flare                                         | inch          | 1/2                         |
|                                 | Equivalent Length                                         | m             | 210                         |
| Maximum                         | Real Length                                               | m             | 170                         |
|                                 | Total Pipe Length (Liquid Line Real Length)               | m             | 500                         |
|                                 | Length To First Branch                                    | m             | 100                         |
|                                 | Equivalent Length Of Outdoor Unit Connecting Pipe         | m             | 10                          |
|                                 | Real Length Of Indoor Unit Connecting Piping              | m             | 30                          |
|                                 | Equivalent Length Between Branches                        | m             | 50                          |
|                                 | Height Difference Outdoor Higher Than Indoor Units        | m             | 70 (110")                   |
|                                 | Height Difference Outdoor Lower Than Indoor Units         | m             | 40 (110")                   |
|                                 | Height Difference Between Indoor Units                    | m             | 40                          |
|                                 | Height Difference Between Outdoor Units                   | m             | 5                           |
| Electrical                      | Voltage Range Minimum/Maximum                             | V             | 342/456                     |
|                                 | Electrical Characteristic Running Current Cooling/Heating | A             | 16.00/12.10                 |
|                                 | Power Supply Wiring Starting Current                      | A             | Soft Start                  |
|                                 | Power Supply                                              | V/ph/Hz       | 380-415/3/50                |
|                                 | Suggested Fused Supply(s)                                 | A             | 32                          |

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# TOSHIBA

- Intelligent Defrost
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## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - VRF Data Sheet

MMY-MAP0806FT8P-UK

Three-pipe SHRMe - Super Heat Recovery Condensing Unit

#### Features

- Dual setpoint for more precision
- ESEER increased to >8
- UK-SEER achievable to >10
- New 4 series flow box with 50 m run
- New 4- and 6-port multi-flow boxes

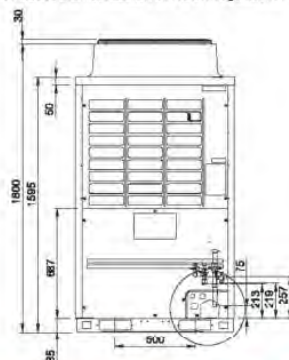
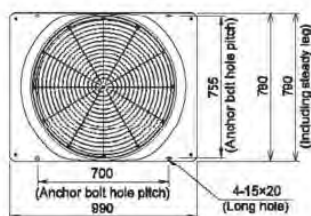


#### Technical Data

| Model reference                      |                   | MMY-MAP0806FT8P-UK     |
|--------------------------------------|-------------------|------------------------|
| Nominal cooling                      | kW                | 22.4                   |
| Nominal heating                      | kW                | 25.0                   |
| Capacity code                        |                   | 8                      |
| Min./max. capacities connectable     | kW                | 17.92/30.24            |
| Power input (cool/heat)              | kW                | 5.95/5.40              |
| SEER/ESEER Value (Office Profile)    |                   | 7.61/8.05              |
| SCOP/ESCAP Value (Office Profile)    |                   | 5.27/5.49              |
| Starting current                     | A                 | 1                      |
| Running current (cool/heat)          | A                 | 9.44/8.57              |
| MCA (minimum circuit amps)           | A                 | 21.5                   |
| MOC (maximum overcurrent protection) | A                 | 25.0                   |
| Power supply                         | V-ph-Hz           | 380/415-3-50           |
| Interconnecting cable                |                   | 2-core screened 1.5 mm |
| Sound power (cool/heat)              | dB(A)             | 80/82                  |
| Sound pressure (cool/heat)           | dB(A)             | 59/61                  |
| Standard air flow                    | m <sup>3</sup> /h | 9700                   |
| Standard air flow                    | l/s               | 2694                   |
| External static pressure             | Pa                | 60                     |
| Maximum indoor units connectable     |                   | 18                     |
| Dimensions (H x W x D)               | mm                | 1830 x 990 x 780       |
| Unit weight                          | kg                | 263                    |
| R410A refrigerant base charge        | kg                | 11                     |

Note: The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations.

#### Dimensional Drawings



Cool Designs Ltd

Raising the Standards in Air Conditioning Distribution

www.cdlweb.info



All UK duties are based on Cooling Indoor air temperature 22 °C DB/16 °C WB Outdoor air temperature 28 °C DB 50% RH, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 21 °C DB Outdoor air temperature -4 °C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Web Data July 2019.

## TOSHIBA Leading Innovation >>>

### Toshiba Air Conditioning - VRF Data Sheet

#### MMY-MAP1206FT8P

#### Three-pipe SHRMe - Super Heat Recovery Condensing Unit

##### Features

- Dual setpoint for more precision
- ESEER increased to >8
- UK-SEER achievable to >10
- New 4 series flow box with 50 m run
- New 4- and 6-port multi-flow boxes

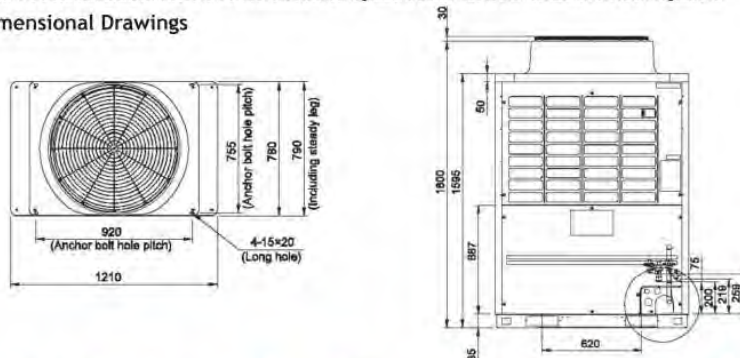


##### Technical Data

| Model reference                      |                   | MMY-MAP1206FT8P        |
|--------------------------------------|-------------------|------------------------|
| Nominal cooling                      | kW                | 33.5                   |
| Nominal heating                      | kW                | 37.5                   |
| Capacity code                        |                   | 12                     |
| Min./max. capacities connectable     | kW                | 26.8/45.2              |
| Power input (cool/heat)              | kW                | 9.75/8.70              |
| SEER/ESEER Value (Office Profile)    |                   | 7.50/8.01              |
| SCOP/ESCAP Value (Office Profile)    |                   | 5.04/5.28              |
| Starting current                     | A                 | 1                      |
| Running current (cool/heat)          | A                 | 15.46/13.80            |
| MCA (minimum circuit amps)           | A                 | 31.0                   |
| MOC (maximum overcurrent protection) | A                 | 40.0                   |
| Power supply                         | V-ph-Hz           | 380/415-3-50           |
| Interconnecting cable                |                   | 2-core screened 1.5 mm |
| Sound power (cool/heat)              | dB(A)             | 80/82                  |
| Sound pressure (cool/heat)           | dB(A)             | 60/62                  |
| Standard air flow                    | m <sup>3</sup> /h | 12200                  |
| Standard air flow                    | l/s               | 3389                   |
| External static pressure             | Pa                | 50                     |
| Maximum indoor units connectable     |                   | 27                     |
| Dimensions (H x W x D)               | mm                | 1830 x 1210 x 780      |
| Unit weight                          | kg                | 316                    |
| R410A refrigerant base charge        | kg                | 11                     |

Note: The electrical installation needs to meet current electrical regulations BS7671:2018 the 18th Edition of the IET regulations.

##### Dimensional Drawings



Cool Designs Ltd

Raising the Standards in Air Conditioning Distribution

www.cdlweb.info



All UK duties are based on Cooling Indoor air temperature 22 °C DB/16 °C WB Outdoor air temperature 28 °C DB 50% RH, high fan speed, 5 m pipe run.  
Heating Indoor air temperature 21 °C DB Outdoor air temperature -4 °C DB 100% RH, high fan speed, 5 m pipe run. Values are based on the maximum compressor output.  
Data obtained from Toshiba Air Conditioning Web Data July 2019.





## Catering condenser packs

Email from Phil Shea of Vision Commercial Kitchens dated 12/11/2021

**From:** Phil Shea  
**Sent:** 12 November 2021 17:56  
**To:** Watson, Tracy Parker, Chris  
**Cc:** Bianca Binder Paul Goodall  
**Subject:** DBA Noise levels for roof plant

**CAUTION** this email originated from outside of BAM so be careful when opening attachments or links. To report as spam, please forward to:

Tracy,

Following our recent meeting please see below the information received from Green Cooling earlier today.

Please see the below noise ratings for each of the pack systems we have proposed.

Zone A (NW) – Red Pack – 55dBA @ 10m  
 Zone B (NE) – Green Pack – 55dBA @ 10m  
 Zone C (SE) – Purple Pack – 55dBA @ 10m  
 Zone D (SW) – Blue Pack – 55dBA @ 10m

If you need any further information please do not hesitate to let me know.

Kind Regards,

Phil Shea | Projects Director

## MVHRs

Technical submittal: 'COOP-SES-TS-M-05' dated 10/11/2021



# air-HRU

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## TECHNICAL SPECIFICATION

**PROJECT DETAILS**

|                       |                                            |                  |            |
|-----------------------|--------------------------------------------|------------------|------------|
| <b>Project Name</b>   | Co-Op Arena                                | <b>Quote No.</b> | 20647      |
| <b>Unit Reference</b> | MVHR.0.A.01                                | <b>Revision</b>  | 14         |
| <b>Unit Model</b>     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | <b>Date</b>      | 10/11/2021 |

**PERFORMANCE DATA**

|                                                                                                 |                                                                                                  |                                                                                   |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| <b>SUPPLY</b><br>Air Volume      0.590    m <sup>3</sup> /s<br>Ext. Stat. Pressure    150    Pa | <b>EXTRACT</b><br>Air Volume      0.710    m <sup>3</sup> /s<br>Ext. Stat. Pressure    150    Pa | <b>SFP</b><br><br><span style="font-size: 1.5em; color: green;">1.30 W/l/s</span> |
|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

**UNIT DIMENSIONS**

|                                                                             |                                                                             |                                                                             |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>O/ALL</b><br>Width            1,575    mm<br>Height            690    mm | <b>O/ALL</b><br>Length           2,150    mm<br>Weight            350    kg | <b>CONNECTIONS</b><br>Spigot HxW      600x515    mm<br>Access            SL |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|

**COUNTERFLOW HEAT EXCHANGER**

|                                                                              |                                                                                 |                                                                          |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>INLET</b><br>Air On            -5.0    °C<br>Return Air        21.0    °C | <b>OUTLET</b><br>Air Off            18.9    °C<br>Efficiency (EN308)    92    % | <b>STANDARD OPTIONS</b><br>Bypass Damper    YES<br>Drain Tray        YES |
|------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------|

**ACOUSTICS**

| Sound Power Levels (Lw) | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 73     | 73     | 70     | 68    | 67    | 67    | 70    |
| Extract Fan Outlet (dB) | 80     | 80     | 78     | 78    | 77    | 72    | 70    |

**BREAKOUT NOISE**  
 Free Field SPL    43 dbA @3m

**ROOM SIDE ATTENUATORS**  
 Excluded

**AIR SIDE ATTENUATORS**  
 Excluded

**CONTROLS**

Controller      BACnet      Constant Volume/Constant Temp

**SELECTED OPTIONS**

F7 Supply Filter      ✓

**ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)**

|                   |          |        |      |   |                  |      |
|-------------------|----------|--------|------|---|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 4.40 | A | Protection Level | IP54 |
|-------------------|----------|--------|------|---|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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 Company Registration Number: 03523416





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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.0.A.03                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.800 m <sup>3</sup> /s | Air Volume 0.765 m <sup>3</sup> /s | 1.15 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access BL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053116



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.0.A.04                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.720 m <sup>3</sup> /s | Air Volume 0.720 m <sup>3</sup> /s | 1.15 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 135 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.9 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 88 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

|            |        |                               |
|------------|--------|-------------------------------|
| Controller | BACnet | Constant Volume/Constant Temp |
|------------|--------|-------------------------------|

#### SELECTED OPTIONS

|                  |   |                         |   |
|------------------|---|-------------------------|---|
| F7 Supply Filter | ✓ | Bespoke Low SFP Version | ✓ |
|------------------|---|-------------------------|---|

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |        |                  |      |
|-------------------|----------|--------|--------|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 4.80 A | Protection Level | IP54 |
|-------------------|----------|--------|--------|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.O.B.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 3 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.130 m <sup>3</sup> /s | Air Volume 0.130 m <sup>3</sup> /s | 0.80 W/l/s |
| Ext. Stat. Pressure 120 Pa         | Ext. Stat. Pressure 120 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,065 mm | Length 1,550 mm | Spigot WxH 400x253 mm |
| Height 353 mm  | Weight 145 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.1 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 89 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 56     | 58     | 57     | 56    | 51    | 47    | 40    |
| Supply Fan Outlet (dB)  | 61     | 63     | 62     | 61    | 56    | 52    | 45    |
| Extract Fan Inlet (dB)  | 53     | 55     | 53     | 52    | 48    | 42    | 35    |
| Extract Fan Outlet (dB) | 58     | 60     | 58     | 57    | 53    | 47    | 40    |

| BREAKOUT NOISE            | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|---------------------------|-----------------------|----------------------|
| Free Field SPL 24 dbA @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 4.60 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.O.B.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.50 W/l/s |
| Ext. Stat. Pressure 185 Pa         | Ext. Stat. Pressure 180 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.0.C.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.55 W/l/s |
| Ext. Stat. Pressure 200 Pa         | Ext. Stat. Pressure 180 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.O.C.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.50 W/l/s |
| Ext. Stat. Pressure 200 Pa         | Ext. Stat. Pressure 130 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053116



## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.A.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.808 m <sup>3</sup> /s | Air Volume 0.754 m <sup>3</sup> /s | 1.15 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                              |           |            |
|----------------|----------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                  | Quote No. | 20647      |
| Unit Reference | MVHR.1.A.02                                  | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BSL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.50 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,290 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 470 kg   | Access BSL           |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒ Side Intake Connection ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.B.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.45 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 185 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Continuing Registration Number: 02053176



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.B.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.790 m <sup>3</sup> /s | Air Volume 0.790 m <sup>3</sup> /s | 1.15 W/l/s |
| Ext. Stat. Pressure 120 Pa         | Ext. Stat. Pressure 130 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access BL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.9 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 88 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.B.04                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 0.710 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 160 Pa         | Ext. Stat. Pressure 130 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 15.8 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 80 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08523176



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.C.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.880 m <sup>3</sup> /s | Air Volume 0.880 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.C.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.50 W/l/s |
| Ext. Stat. Pressure 140 Pa         | Ext. Stat. Pressure 195 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 41 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR1.D.01                                  | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 1.100 m <sup>3</sup> /s | Air Volume 1.100 m <sup>3</sup> /s | 1.45 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 160 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE            | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|---------------------------|-----------------------|----------------------|
| Free Field SPL 41 dbA @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.1.D.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.810 m <sup>3</sup> /s | Air Volume 0.798 m <sup>3</sup> /s | 1.15 W/l/s |
| Ext. Stat. Pressure 120 Pa         | Ext. Stat. Pressure 165 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                              |           |            |
|----------------|----------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                  | Quote No. | 20647      |
| Unit Reference | MVHR.2.A.01                                  | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BSL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.876 m <sup>3</sup> /s | Air Volume 0.876 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 135 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,290 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 470 kg   | Access BSL           |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒ Side Return Connection ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.2.A.02                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.630 m <sup>3</sup> /s | Air Volume 0.630 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 90 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Extract Fan Outlet (dB) | 77     | 77     | 74     | 74    | 73    | 68    | 66    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 40 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.2.B.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 5 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.500 m <sup>3</sup> /s | Air Volume 0.500 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 135 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,505 mm | Length 1,950 mm | Spigot WxH 460x378 mm |
| Height 478 mm  | Weight 250 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.9 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 88 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 70     | 70     | 68     | 65    | 62    | 60    | 55    |
| Supply Fan Outlet (dB)  | 75     | 75     | 73     | 70    | 67    | 65    | 60    |
| Extract Fan Inlet (dB)  | 70     | 70     | 68     | 65    | 62    | 60    | 55    |
| Extract Fan Outlet (dB) | 75     | 75     | 73     | 70    | 67    | 65    | 60    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 5.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.2.B.02                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.560 m <sup>3</sup> /s | Air Volume 0.558 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.7 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 91 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Extract Fan Outlet (dB) | 77     | 77     | 74     | 74    | 73    | 68    | 66    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 40 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter V

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.2.B.03                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.680 m <sup>3</sup> /s | Air Volume 0.705 m <sup>3</sup> /s | 1.25 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.7 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 91 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 73     | 73     | 70     | 68    | 67    | 67    | 70    |
| Supply Fan Outlet (dB)  | 80     | 80     | 78     | 78    | 77    | 72    | 70    |
| Extract Fan Inlet (dB)  | 73     | 73     | 70     | 68    | 67    | 67    | 70    |
| Extract Fan Outlet (dB) | 80     | 80     | 78     | 78    | 77    | 72    | 70    |

| BREAKOUT NOISE            | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|---------------------------|-----------------------|----------------------|
| Free Field SPL 43 dbA @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.2.B.04                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.605 m <sup>3</sup> /s | Air Volume 0.600 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 135 Pa         | Ext. Stat. Pressure 125 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.7 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 91 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Extract Fan Outlet (dB) | 77     | 77     | 74     | 74    | 73    | 68    | 66    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 40 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.2.C.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.860 m <sup>3</sup> /s | Air Volume 0.859 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 180 Pa         | Ext. Stat. Pressure 200 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.2.D.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.732 m <sup>3</sup> /s | Air Volume 0.622 m <sup>3</sup> /s | 1.00 W/l/s |
| Ext. Stat. Pressure 135 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access BL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 15.8 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 80 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 36 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.2.D.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / BL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.886 m <sup>3</sup> /s | Air Volume 0.888 m <sup>3</sup> /s | 1.20 W/l/s |
| Ext. Stat. Pressure 120 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access BL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bottom Access Filters ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053116



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.3.B.02                                | Revision  | 14         |
| Unit Model     | AIR-HRU 5 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.355 m <sup>3</sup> /s | Air Volume 0.355 m <sup>3</sup> /s | 1.00 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,505 mm | Length 1,950 mm | Spigot WxH 460x378 mm |
| Height 478 mm  | Weight 250 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 90 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 65     | 64     | 62     | 59    | 56    | 53    | 47    |
| Supply Fan Outlet (dB)  | 70     | 69     | 67     | 64    | 61    | 58    | 52    |
| Extract Fan Inlet (dB)  | 65     | 64     | 62     | 59    | 56    | 53    | 47    |
| Extract Fan Outlet (dB) | 70     | 69     | 67     | 64    | 61    | 58    | 52    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 32 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 5.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.3.B.03                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.976 m <sup>3</sup> /s | Air Volume 0.975 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

|            |        |                               |
|------------|--------|-------------------------------|
| Controller | BACnet | Constant Volume/Constant Temp |
|------------|--------|-------------------------------|

#### SELECTED OPTIONS

|                  |   |                         |   |
|------------------|---|-------------------------|---|
| F7 Supply Filter | ✓ | Bespoke Low SFP Version | ✓ |
|------------------|---|-------------------------|---|

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |        |                  |      |
|-------------------|----------|--------|--------|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 4.80 A | Protection Level | IP54 |
|-------------------|----------|--------|--------|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.3.B.04                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.976 m <sup>3</sup> /s | Air Volume 0.976 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.3.C.01                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.976 m <sup>3</sup> /s | Air Volume 0.976 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053116



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.A.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 4 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.315 m <sup>3</sup> /s | Air Volume 0.315 m <sup>3</sup> /s | 1.40 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,195 mm | Length 1,950 mm | Spigot WxH 425x294 mm |
| Height 394 mm  | Weight 190 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 86 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 70     | 69     | 68     | 68    | 66    | 62    | 58    |
| Supply Fan Outlet (dB)  | 75     | 74     | 73     | 73    | 71    | 67    | 63    |
| Extract Fan Inlet (dB)  | 70     | 69     | 68     | 68    | 66    | 62    | 58    |
| Extract Fan Outlet (dB) | 75     | 74     | 73     | 73    | 71    | 67    | 63    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 39 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

|            |        |                               |
|------------|--------|-------------------------------|
| Controller | BACnet | Constant Volume/Constant Temp |
|------------|--------|-------------------------------|

#### SELECTED OPTIONS

|                  |   |
|------------------|---|
| F7 Supply Filter | v |
|------------------|---|

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |        |                  |      |
|-------------------|----------|--------|--------|------------------|------|
| Electrical Supply | 230V/1PH | F.L.C. | 5.40 A | Protection Level | IP54 |
|-------------------|----------|--------|--------|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.B.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 5 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.520 m <sup>3</sup> /s | Air Volume 0.515 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,505 mm | Length 1,950 mm | Spigot WxH 460x378 mm |
| Height 478 mm  | Weight 250 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.9 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 88 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 70     | 70     | 68     | 65    | 62    | 60    | 55    |
| Supply Fan Outlet (dB)  | 75     | 75     | 73     | 70    | 67    | 65    | 60    |
| Extract Fan Inlet (dB)  | 70     | 70     | 68     | 65    | 62    | 60    | 55    |
| Extract Fan Outlet (dB) | 75     | 75     | 73     | 70    | 67    | 65    | 60    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 5.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                             |           |            |
|----------------|---------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                 | Quote No. | 20647      |
| Unit Reference | MVHR.4.B.02                                 | Revision  | 14         |
| Unit Model     | AIR-HRU 7x / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.907 m <sup>3</sup> /s | Air Volume 0.907 m <sup>3</sup> /s | 1.25 W/l/s |
| Ext. Stat. Pressure 160 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS          |
|----------------|-----------------|----------------------|
| Width 2,155 mm | Length 2,150 mm | Spigot HxW 670x515mm |
| Height 690 mm  | Weight 445 kg   | Access SL            |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 17.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 87 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Supply Fan Outlet (dB)  | 76     | 76     | 76     | 79    | 79    | 81    | 77    |
| Extract Fan Inlet (dB)  | 76     | 76     | 74     | 74    | 73    | 77    | 73    |
| Extract Fan Outlet (dB) | 76     | 76     | 76     | 79    | 79    | 81    | 77    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 38 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter ☒ Bespoke Low SFP Version ☒

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.80 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.C.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.610 m <sup>3</sup> /s | Air Volume 0.690 m <sup>3</sup> /s | 1.35 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.7 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 91 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 73     | 73     | 70     | 68    | 67    | 67    | 70    |
| Extract Fan Outlet (dB) | 80     | 80     | 78     | 78    | 77    | 72    | 70    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 43 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 400V/3PH F.L.C. 4.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.C.02                                | Revision  | 14         |
| Unit Model     | AIR-HRU 4 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.298 m <sup>3</sup> /s | Air Volume 0.275 m <sup>3</sup> /s | 1.40 W/l/s |
| Ext. Stat. Pressure 145 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,195 mm | Length 1,950 mm | Spigot WxH 425x294 mm |
| Height 394 mm  | Weight 190 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 16.6 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 83 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 70     | 69     | 68     | 68    | 66    | 62    | 58    |
| Supply Fan Outlet (dB)  | 75     | 74     | 73     | 73    | 71    | 67    | 63    |
| Extract Fan Inlet (dB)  | 70     | 69     | 68     | 68    | 66    | 62    | 58    |
| Extract Fan Outlet (dB) | 75     | 74     | 73     | 73    | 71    | 67    | 63    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 39 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 5.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176



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## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.C.03                                | Revision  | 14         |
| Unit Model     | AIR-HRU 6 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.647 m <sup>3</sup> /s | Air Volume 0.593 m <sup>3</sup> /s | 1.25 W/l/s |
| Ext. Stat. Pressure 140 Pa         | Ext. Stat. Pressure 145 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,575 mm | Length 2,150 mm | Spigot HxW 600x515 mm |
| Height 690 mm  | Weight 350 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 16.8 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 84 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Supply Fan Outlet (dB)  | 77     | 77     | 74     | 74    | 73    | 68    | 66    |
| Extract Fan Inlet (dB)  | 69     | 69     | 67     | 65    | 63    | 64    | 62    |
| Extract Fan Outlet (dB) | 77     | 77     | 74     | 74    | 73    | 68    | 66    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 40 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

|            |        |                               |
|------------|--------|-------------------------------|
| Controller | BACnet | Constant Volume/Constant Temp |
|------------|--------|-------------------------------|

#### SELECTED OPTIONS

|                  |   |
|------------------|---|
| F7 Supply Filter | V |
|------------------|---|

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |      |   |                  |      |
|-------------------|----------|--------|------|---|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 4.40 | A | Protection Level | IP54 |
|-------------------|----------|--------|------|---|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02052116



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                            |           |            |
|----------------|--------------------------------------------|-----------|------------|
| Project Name   | Co-Op Arena                                | Quote No. | 20647      |
| Unit Reference | MVHR.4.D.01                                | Revision  | 14         |
| Unit Model     | AIR-HRU 5 / SL / IM / BAC / X / X / X / F7 | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 0.360 m <sup>3</sup> /s | Air Volume 0.360 m <sup>3</sup> /s | 1.00 W/l/s |
| Ext. Stat. Pressure 150 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS           |
|----------------|-----------------|-----------------------|
| Width 1,505 mm | Length 1,950 mm | Spigot WxH 460x378 mm |
| Height 478 mm  | Weight 250 kg   | Access SL             |

#### COUNTERFLOW HEAT EXCHANGER

| INLET              | OUTLET                  | STANDARD OPTIONS  |
|--------------------|-------------------------|-------------------|
| Air On -5.0 °C     | Air Off 18.4 °C         | Bypass Damper YES |
| Return Air 21.0 °C | Efficiency (EN308) 90 % | Drain Tray YES    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 65     | 64     | 62     | 59    | 56    | 53    | 47    |
| Supply Fan Outlet (dB)  | 70     | 69     | 67     | 64    | 61    | 58    | 52    |
| Extract Fan Inlet (dB)  | 65     | 64     | 62     | 59    | 56    | 53    | 47    |
| Extract Fan Outlet (dB) | 70     | 69     | 67     | 64    | 61    | 58    | 52    |

| BREAKOUT NOISE              | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|-----------------------------|-----------------------|----------------------|
| Free Field SPL 32 dB(A) @3m | Excluded              | Excluded             |

#### CONTROLS

Controller BACnet Constant Volume/Constant Temp

#### SELECTED OPTIONS

F7 Supply Filter v

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

Electrical Supply 230V/1PH F.L.C. 5.40 A Protection Level IP54

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 02053176

## air-HRU

### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                                |           |            |
|----------------|------------------------------------------------|-----------|------------|
| Project Name   | Co Op Arena                                    | Quote No. | 20647      |
| Unit Reference | MVHR.3.D.01                                    | Revision  | 0          |
| Unit Model     | AIR-HRU 36 / SL / IP / BAC / X / X / X / X / X | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY              |       |                   | EXTRACT             |       |                   | SFP        |
|---------------------|-------|-------------------|---------------------|-------|-------------------|------------|
| Air Volume          | 2.376 | m <sup>3</sup> /s | Air Volume          | 2.250 | m <sup>3</sup> /s | 1.35 W/l/s |
| Ext. Stat. Pressure | 250   | Pa                | Ext. Stat. Pressure | 250   | Pa                |            |

#### UNIT DIMENSIONS

| O/ALL  |      |    | O/ALL  |       |    | CONNECTIONS |              |
|--------|------|----|--------|-------|----|-------------|--------------|
| Width  | 1700 | mm | Length | 4200  | mm | Spigot      | 1500 x 800mm |
| Height | 2100 | mm | Weight | 1,950 | kg | Access      | SL           |

#### COUNTERFLOW PLATE HEAT EXCHANGER

| WINTER     |      |    | SUMMER     |      |    | PHX DATA             |          |
|------------|------|----|------------|------|----|----------------------|----------|
| Air On     | -5.0 | °C | Air On     | 28.0 | °C | Efficiency (EN308)   | 86 %     |
| Return Air | 21.0 | °C | Return Air | 24.0 | °C | Dry Efficiency (ErP) | 76 %     |
| Air Off    | 17.4 | °C | Air Off    | 25.0 | °C | Bypass Damper        | Included |

#### ACOUSTICS

| Sound Power Levels (Lw) | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Supply Fan Inlet (dB)   | 86     | 72     | 67     | 65    | 62    | 57    | 56    |
| Supply Fan Outlet (dB)  | 90     | 76     | 77     | 74    | 70    | 67    | 62    |
| Extract Fan Inlet (dB)  | 86     | 72     | 67     | 65    | 62    | 57    | 56    |
| Extract Fan Outlet (dB) | 90     | 76     | 77     | 74    | 70    | 67    | 62    |

| BREAKOUT NOISE |        |     | ROOM SIDE ATTENUATORS |  |  | AIR SIDE ATTENUATORS |  |  |
|----------------|--------|-----|-----------------------|--|--|----------------------|--|--|
| Free Field SPL | 40 dbA | @3m | Excluded              |  |  | Excluded             |  |  |

#### CONTROLS

|            |                |                               |
|------------|----------------|-------------------------------|
| Controller | BACnet Over IP | Constant Volume/Constant Temp |
|------------|----------------|-------------------------------|

#### SELECTED OPTIONS

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |       |   |                  |      |
|-------------------|----------|--------|-------|---|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 16.00 | A | Protection Level | IP54 |
|-------------------|----------|--------|-------|---|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                                |           |            |
|----------------|------------------------------------------------|-----------|------------|
| Project Name   | Co Op Arena                                    | Quote No. | 20647      |
| Unit Reference | MVHR.3.B.01                                    | Revision  | 0          |
| Unit Model     | AIR-HRU 36 / SL / IP / BAC / X / X / X / X / X | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY              |       |                   | EXTRACT             |       |                   | SFP        |
|---------------------|-------|-------------------|---------------------|-------|-------------------|------------|
| Air Volume          | 2.380 | m <sup>3</sup> /s | Air Volume          | 2.101 | m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure | 225   | Pa                | Ext. Stat. Pressure | 200   | Pa                |            |

#### UNIT DIMENSIONS

| O/ALL  |      |    | O/ALL  |       |    | CONNECTIONS |              |
|--------|------|----|--------|-------|----|-------------|--------------|
| Width  | 1700 | mm | Length | 4200  | mm | Spigot      | 1500 x 800mm |
| Height | 2100 | mm | Weight | 1,950 | kg | Access      | SL           |

#### COUNTERFLOW PLATE HEAT EXCHANGER

| WINTER     |      |    | SUMMER     |      |    | PHX DATA             |          |
|------------|------|----|------------|------|----|----------------------|----------|
| Air On     | -5.0 | °C | Air On     | 28.0 | °C | Efficiency (EN308)   | 85 %     |
| Return Air | 21.0 | °C | Return Air | 24.0 | °C | Dry Efficiency (ErP) | 75 %     |
| Air Off    | 17.1 | °C | Air Off    | 25.0 | °C | Bypass Damper        | Included |

#### ACOUSTICS

| Sound Power Levels (Lw) | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Supply Fan Inlet (dB)   | 86     | 72     | 67     | 65    | 62    | 57    | 56    |
| Supply Fan Outlet (dB)  | 90     | 76     | 77     | 74    | 70    | 67    | 62    |
| Extract Fan Inlet (dB)  | 86     | 72     | 67     | 65    | 62    | 57    | 56    |
| Extract Fan Outlet (dB) | 90     | 76     | 77     | 74    | 70    | 67    | 62    |

| BREAKOUT NOISE |        |     | ROOM SIDE ATTENUATORS |  | AIR SIDE ATTENUATORS |  |
|----------------|--------|-----|-----------------------|--|----------------------|--|
| Free Field SPL | 40 dbA | @3m | Excluded              |  | Excluded             |  |

#### CONTROLS

|            |                |                               |
|------------|----------------|-------------------------------|
| Controller | BACnet Over IP | Constant Volume/Constant Temp |
|------------|----------------|-------------------------------|

#### SELECTED OPTIONS

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |       |   |                  |      |
|-------------------|----------|--------|-------|---|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 16.00 | A | Protection Level | IP54 |
|-------------------|----------|--------|-------|---|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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Company Registration Number: 08838478



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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                                |           |            |
|----------------|------------------------------------------------|-----------|------------|
| Project Name   | Co Op Arena                                    | Quote No. | 20647      |
| Unit Reference | MVHR.4.A.02                                    | Revision  | 0          |
| Unit Model     | AIR-HRU 37 / SL / IP / BAC / X / X / X / X / X | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 2.660 m <sup>3</sup> /s | Air Volume 2.686 m <sup>3</sup> /s | 1.30 W/l/s |
| Ext. Stat. Pressure 250 Pa         | Ext. Stat. Pressure 250 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS         |
|----------------|-----------------|---------------------|
| Width 1850 mm  | Length 4500 mm  | Spigot 1650 x 850mm |
| Height 2200 mm | Weight 2,150 kg | Access SL           |

#### COUNTERFLOW PLATE HEAT EXCHANGER

| WINTER             | SUMMER             | PHX DATA                  |
|--------------------|--------------------|---------------------------|
| Air On -5.0 °C     | Air On 28.0 °C     | Efficiency (EN308) 85 %   |
| Return Air 21.0 °C | Return Air 24.0 °C | Dry Efficiency (ErP) 77 % |
| Air Off 17.1 °C    | Air Off 24.9 °C    | Bypass Damper Included    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 81     | 73     | 71     | 67    | 64    | 62    | 61    |
| Supply Fan Outlet (dB)  | 87     | 76     | 79     | 76    | 72    | 69    | 64    |
| Extract Fan Inlet (dB)  | 81     | 73     | 71     | 67    | 64    | 62    | 61    |
| Extract Fan Outlet (dB) | 87     | 76     | 79     | 76    | 72    | 69    | 64    |

| BREAKOUT NOISE            | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|---------------------------|-----------------------|----------------------|
| Free Field SPL 38 dbA @3m | Excluded              | Excluded             |

#### CONTROLS

|            |                |                               |
|------------|----------------|-------------------------------|
| Controller | BACnet Over IP | Constant Volume/Constant Temp |
|------------|----------------|-------------------------------|

#### SELECTED OPTIONS

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |         |                  |      |
|-------------------|----------|--------|---------|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 17.60 A | Protection Level | IP54 |
|-------------------|----------|--------|---------|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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### TECHNICAL SPECIFICATION

#### PROJECT DETAILS

|                |                                                |           |            |
|----------------|------------------------------------------------|-----------|------------|
| Project Name   | Co Op Arena                                    | Quote No. | 20647      |
| Unit Reference | MVHR.4.D.02                                    | Revision  | 0          |
| Unit Model     | AIR-HRU 37 / SL / IP / BAC / X / X / X / X / X | Date      | 10/11/2021 |

#### PERFORMANCE DATA

| SUPPLY                             | EXTRACT                            | SFP        |
|------------------------------------|------------------------------------|------------|
| Air Volume 2.660 m <sup>3</sup> /s | Air Volume 2.125 m <sup>3</sup> /s | 0.95 W/l/s |
| Ext. Stat. Pressure 180 Pa         | Ext. Stat. Pressure 150 Pa         |            |

#### UNIT DIMENSIONS

| O/ALL          | O/ALL           | CONNECTIONS         |
|----------------|-----------------|---------------------|
| Width 1850 mm  | Length 4500 mm  | Spigot 1650 x 850mm |
| Height 2200 mm | Weight 2,150 kg | Access SL           |

#### COUNTERFLOW PLATE HEAT EXCHANGER

| WINTER             | SUMMER             | PHX DATA                  |
|--------------------|--------------------|---------------------------|
| Air On -5.0 °C     | Air On 28.0 °C     | Efficiency (EN308) 83 %   |
| Return Air 21.0 °C | Return Air 24.0 °C | Dry Efficiency (ErP) 75 % |
| Air Off 16.6 °C    | Air Off 25.0 °C    | Bypass Damper Included    |

#### ACOUSTICS

|                         | 125 Hz | 250 Hz | 500 Hz | 1 kHz | 2 kHz | 4 kHz | 8 kHz |
|-------------------------|--------|--------|--------|-------|-------|-------|-------|
| Sound Power Levels (Lw) |        |        |        |       |       |       |       |
| Supply Fan Inlet (dB)   | 81     | 73     | 71     | 67    | 64    | 62    | 61    |
| Supply Fan Outlet (dB)  | 87     | 76     | 79     | 76    | 72    | 69    | 64    |
| Extract Fan Inlet (dB)  | 81     | 73     | 71     | 67    | 64    | 62    | 61    |
| Extract Fan Outlet (dB) | 87     | 76     | 79     | 76    | 72    | 69    | 64    |

| BREAKOUT NOISE            | ROOM SIDE ATTENUATORS | AIR SIDE ATTENUATORS |
|---------------------------|-----------------------|----------------------|
| Free Field SPL 38 dbA @3m | Excluded              | Excluded             |

#### CONTROLS

|            |                |                               |
|------------|----------------|-------------------------------|
| Controller | BACnet Over IP | Constant Volume/Constant Temp |
|------------|----------------|-------------------------------|

#### SELECTED OPTIONS

#### ELECTRICAL DETAILS (EXCLUDES SELECTED ANCILLARIES)

|                   |          |        |         |                  |      |
|-------------------|----------|--------|---------|------------------|------|
| Electrical Supply | 400V/3PH | F.L.C. | 17.60 A | Protection Level | IP54 |
|-------------------|----------|--------|---------|------------------|------|

PLEASE NOTE: All specific data points (noise levels, specific fan power, etc) are subject to design fluctuations and are to be used for indicative purposes only.

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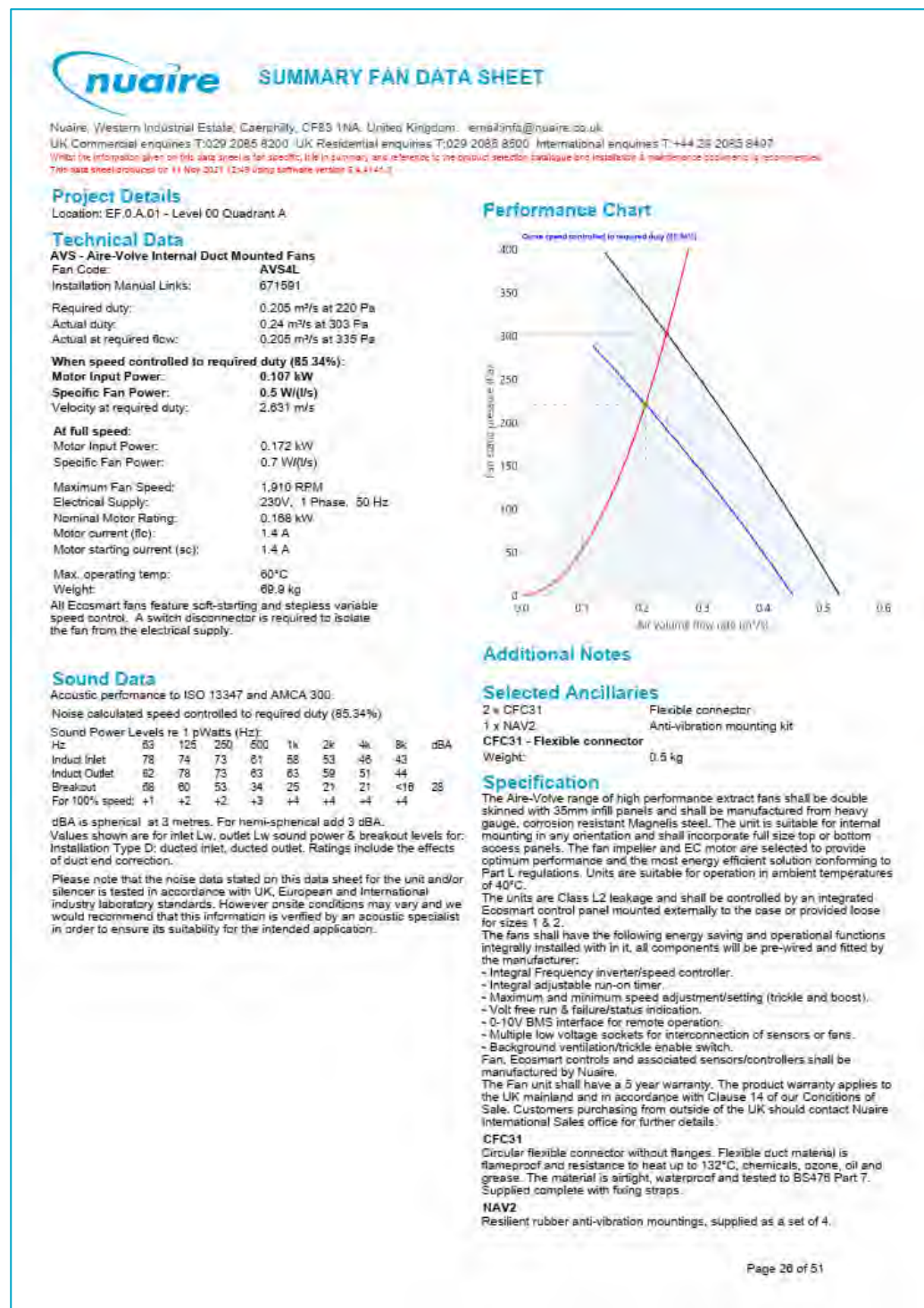
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## Extract Fans

Technical submittal: 'COOP-SES-TS-M-26' dated 19/11/2021





## SUMMARY FAN DATA SHEET

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While the information given on this data sheet is for specific, life in summary, and reference to the product selection catalogue and installation & maintenance documentation is recommended. This data sheet is produced on 11 Nov 2019 (2:49 using software version 5.9.4.1.0)

### Project Details

Location: EF.0.B.01 - Level 00 Quadrant B

### Technical Data

Long Case, Class F ambient, 0.75 kW 4P 400V 3ph 50Hz TEFC IP55, with a PTC, Aluminium impeller. Galvanised steel case. For inverter control only.

Fan Code: AX50D\*41A3+1G

Installation Manual Links: 671220

Required duty: 0.625 m³/s at 150 Pa

Actual duty: 0.678 m³/s at 176 Pa

Actual at required flow: 0.625 m³/s at 183 Pa

When speed controlled to required duty (92.17%):

Fan Input Power: 0.167 kW

Motor Input Power: 0.23 kW

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

Velocity at required duty: 3.183 m/s

Fan Total Efficiency: 58%

At full speed:

Absorbed power: 0.213 kW

Maximum Absorbed power: 0.217 kW

Motor Input Power: 0.291 kW

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

Fan Total Efficiency: 50%

Maximum Fan Speed: 4 pole, 1,430 RPM

Electrical Supply: 400V, 3 Phase, 50 Hz

Motor Rating: 0.75 kW

Motor current (flc): 1.8 A

Motor starting current (sc): 10.96 A

Overload setting: 1.98 A

Motor Efficiency: IE3 / Premium Efficiency

Starting currents are nominal.

Blade angle: 25 °

Max. Operating Temp: 80°C

### Sound Data

Noise calculated speed controlled to required duty (92.17%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|-----------------|----|-----|-----|-----|----|----|----|----|-----|
| Inlet Inlet     | 79 | 80  | 84  | 81  | 77 | 71 | 63 | 54 |     |
| Inlet Outlet    | 80 | 83  | 87  | 81  | 77 | 71 | 62 | 54 |     |
| Open Inlet      | 88 | 75  | 82  | 80  | 76 | 71 | 63 | 54 |     |
| Open Outlet     | 89 | 78  | 85  | 81  | 77 | 71 | 62 | 54 |     |
| Breakout        | 57 | 60  | 71  | 58  | 50 | 53 | 44 | 29 | 42  |
| For 100% speed: | +1 | +1  | +1  | +2  | +2 | +2 | +2 | +2 |     |

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

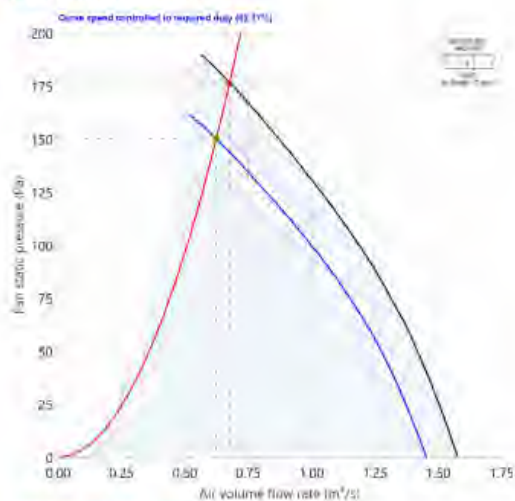
Values shown are for inlet Lw, outlet Lw sound power & breakout levels for Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

#### CA50S

At all volumes 0 -2 -3 -6 -8 -8 -6 -4

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

#### ErP Directive 2015 Compliant

The following information confirms compliance with EU 327/2011 as required by ErP Directive 2009/125/EC. Only applicable within EU states.

|                            |                                                        |
|----------------------------|--------------------------------------------------------|
| Efficiency grade:          | 66                                                     |
| Overall efficiency:        | 56.3 %                                                 |
| Measurement category:      | D                                                      |
| Efficiency category:       | Total                                                  |
| Variable speed drive:      | A variable speed drive must be installed with this fan |
| Input power at best point: | 0.296 kW                                               |
| Volume flow at best point: | 1.10 m³/s                                              |
| Pressure at best point:    | 134 Pa                                                 |
| Speed:                     | 1,430 RPM                                              |
| Specific ratio:            | 1.001325                                               |

### Selected Ancillaries

|                                                     |                                  |
|-----------------------------------------------------|----------------------------------|
| 1 x CMB50                                           | Mounting bracket (pair)          |
| 2 x CFC50                                           | Flexible connector               |
| 1 x NAV2                                            | Anti-vibration mounting kit      |
| 2 x CMF50                                           | Matching flange                  |
| 2 x CA50S                                           | Standard silencer                |
| 1 x ES-ISC2.4A                                      | Ecosmart Inverter Speed Control  |
| <b>CMB50 - Mounting bracket (pair)</b>              |                                  |
| Weight:                                             | 4.0 kg                           |
| <b>CFC50 - Flexible connector</b>                   |                                  |
| Weight:                                             | 1.0 kg                           |
| <b>CMF50 - Matching flange</b>                      |                                  |
| Weight:                                             | 2.5 kg                           |
| <b>CA50S - Standard silencer</b>                    |                                  |
| Size:                                               | 500 mm (L) 700 mm (W) 700 mm (H) |
| Spigot Size (mm):                                   | 500                              |
| Weight:                                             | 23.0 kg                          |
| <b>ES-ISC2.4A - Ecosmart Inverter Speed Control</b> |                                  |
| Weight:                                             | 8.0 kg                           |



## SUMMARY FAN DATA SHEET

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

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Whilst the information given on this data sheet is for specific, life in summary, and reference to the product selection catalogue and installation & maintenance (operating) recommendations. This data sheet is issued on 11 May 2017 (2019 using software version 5.9.141.0)

### Project Details

Location: EF.0.C.01 - Level 00 Quadrant C

### Technical Data

#### DE - DAVE Extract Fans

Fan Code: DE6-ES

Installation Manual Link: 611280

Required duty: 0.42 m³/s at 150 Pa  
Actual duty: 0.626 m³/s at 334 Pa  
Actual at required flow: 0.42 m³/s at 487 Pa

When speed controlled to required duty (67.07%):

Motor Input Power: 0.158 kW

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

Velocity at required duty: 3.342 m/s

At full speed:

Motor Input Power: 0.524 kW

Specific Fan Power: 0.8 W/(l/s)

Maximum Fan Speed: 1,710 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.45 kW

Motor current (flc): 2.9 A

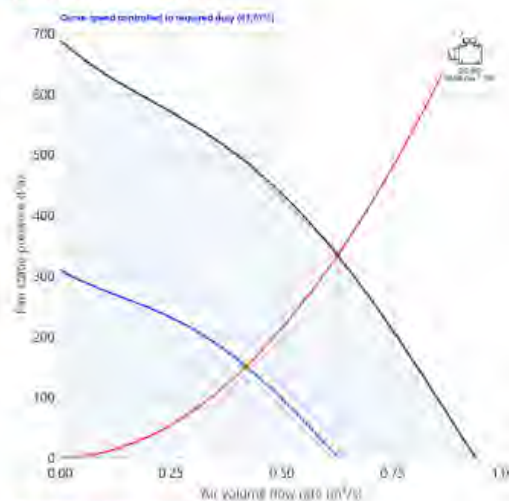
Motor starting current (sc): 2.9 A

Max. operating temp: 40°C

Weight: 69 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.

### Performance Chart



### Additional Notes

#### Selected Ancillaries

2 x CFC40 Flexible connector  
2 x D-SIL-400S Circular Attenuator 615mm

#### CFC40 - Flexible connector

Weight: 0.5 kg

#### D-SIL-400S - Circular Attenuator 615mm

Size: 615 mm (L) 505 mm (W) 505 mm (H)

Spigot Size (mm): 400

Weight: 18.0 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.

#### CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

### Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (67.07%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 83 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|-----------------|----|-----|-----|-----|----|----|----|----|-----|
| Inlet Inlet     | 88 | 85  | 71  | 62  | 58 | 54 | 52 | 45 |     |
| Inlet Outlet    | 88 | 85  | 71  | 62  | 58 | 53 | 49 | 42 |     |
| Breakout        | 72 | 65  | 62  | 47  | 45 | 34 | 29 | 23 | 35  |
| For 100% speed: | +3 | +3  | +5  | +6  | +9 | +9 | +9 | +9 |     |

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.

#### D-SIL-400S

At all volumes -1 -2 -4 -9 -15 -7 -7 -6

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.



## SUMMARY FAN DATA SHEET

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Whilst the information given on this data sheet is for specific, full in summary, and reference to the product selection catalogue and installation & maintenance documents is recommended. This data sheet is produced on 11 May 2021 (2x9 using software version 5.9.4141.0)

### Project Details

Location: EF.0.C.02 - Level 00 Quadrant C

### Technical Data

#### DE - DAVE Extract Fans

Fan Code: DE6-ES

Installation Manual Link: 611280

Required duty: 0.38 m³/s at 150 Pa

Actual duty: 0.592 m³/s at 364 Pa

Actual at required flow: 0.38 m³/s at 509 Pa

When speed controlled to required duty (64.22%):

Motor Input Power: 0.14 kW

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

Velocity at required duty: 3.024 m/s

At full speed:

Motor Input Power: 0.526 kW

Specific Fan Power: 0.9 W/(l/s)

Maximum Fan Speed: 1,710 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.45 kW

Motor current (flc): 2.9 A

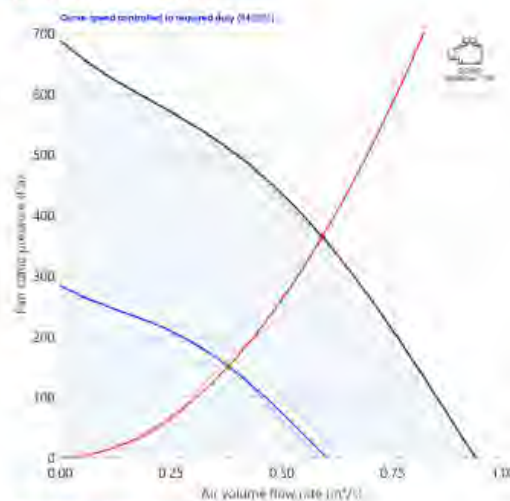
Motor starting current (sc): 2.9 A

Max. operating temp: 40°C

Weight: 69 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.

### Performance Chart



### Additional Notes

#### Selected Ancillaries

2 x CFC40 Flexible connector  
2 x D-SIL-400S Circular Attenuator 615mm

#### CFC40 - Flexible connector

Weight: 0.5 kg

#### D-SIL-400S - Circular Attenuator 615mm

Size: 615 mm (L) 505 mm (W) 505 mm (H)

Spigot Size (mm): 400

Weight: 18.0 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.

#### CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

### Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (64.22%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 83 | 125 | 250 | 500 | 1k  | 2k  | 4k  | 8k  | dBA |
|-----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Inlet Inlet     | 88 | 84  | 71  | 61  | 57  | 53  | 51  | 44  |     |
| Inlet Outlet    | 88 | 84  | 71  | 61  | 57  | 52  | 48  | 41  |     |
| Breakout        | 72 | 64  | 62  | 48  | 44  | 33  | 28  | 22  | 38  |
| For 100% speed: | +3 | +4  | +5  | +7  | +10 | +10 | +10 | +10 |     |

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.

#### D-SIL-400S

At all volumes -1 -2 -4 -9 -15 -7 -7 -8

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.



## 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 (0) 2085 8407

Whilst the information given on this data sheet is for specific, life in summary, and reference to the product selection, installation and maintenance recommendations.

7th-8th sheet introduced on 11 May 2017 (249 using software version 5.9.1.1.1)

### Project Details

Location: EF.0.C.02 - Level 00 Quadrant C

### Technical Data

#### DE - DAVE Extract Fans

Fan Code: DE6-ES

Installation Manual Link:

Required duty: 0.6 m³/s at 150 Pa

Actual duty: 0.736 m³/s at 225 Pa

Actual at required flow: 0.6 m³/s at 357 Pa

When speed controlled to required duty (81.59%):

Motor Input Power: 0.274 kW

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

Velocity at required duty: 4.775 m/s

At full speed:

Motor Input Power: 0.505 kW

Specific Fan Power: 0.7 W/(l/s)

Maximum Fan Speed: 1,710 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.45 kW

Motor current (flc): 2.9 A

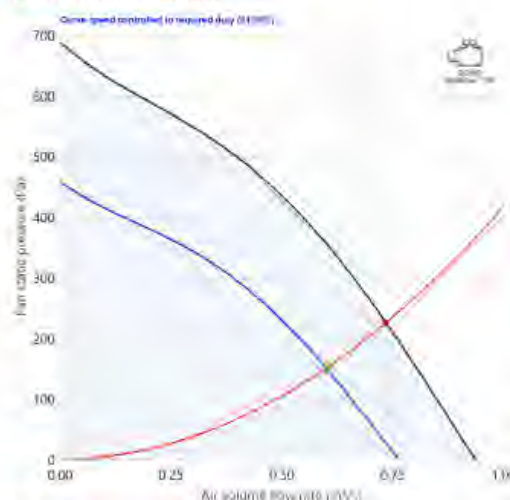
Motor starting current (sc): 2.9 A

Max. operating temp:

Weight: 69 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.

### Performance Chart



### Additional Notes

#### Selected Ancillaries

2 x CFC40 Flexible connector  
2 x D-SIL-400S Circular Attenuator 615mm

#### CFC40 - Flexible connector

Weight: 0.5 kg

#### D-SIL-400S - Circular Attenuator 615mm

Size: 615 mm (L) 505 mm (W) 505 mm (H)

Spigot Size (mm): 400

Weight: 18.0 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 Nuair International Sales office for further details.

#### CFC40

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

### Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (81.59%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 83 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|-----------------|----|-----|-----|-----|----|----|----|----|-----|
| Induct Inlet    | 89 | 86  | 73  | 66  | 62 | 53 | 56 | 48 |     |
| Induct Outlet   | 89 | 86  | 73  | 65  | 62 | 57 | 53 | 46 |     |
| Breakout        | 73 | 66  | 64  | 50  | 49 | 38 | 33 | 27 | 40  |
| For 100% speed: | +2 | +2  | +3  | +3  | +5 | +5 | +5 | +5 |     |

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.

#### D-SIL-400S

At all volumes -1 -2 -4 -9 -15 -7 -7 -6

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.



## SUMMARY FAN DATA SHEET

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Whilst the information given on this data sheet is for specific life in summary, and reference to the product selection catalogue and installation & maintenance booklets is recommended. This data sheet is produced on 11 Nov 2021 (2:49 using software version 5.9.4141.0)

### Project Details

Location: EF.4.C.01 - Level 04 Quadrant A

### Technical Data

ILMEC - In-line Mixed Flow with EC Motor

Fan Code: ILMEC-315

Required duty: 0.345 m³/s at 150 Pa

Actual duty: 0.384 m³/s at 186 Pa

Actual at required flow: 0.345 m³/s at 239 Pa

When speed controlled to required duty (89.92%):

Motor Input Power: 0.183 kW

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

At full speed:

Motor Input Power: 0.252 kW

Specific Fan Power: 0.7 W/(l/s)

Maximum Fan Speed: 2 pole, 2,508 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.306 kW

Motor current (flc): 2 A

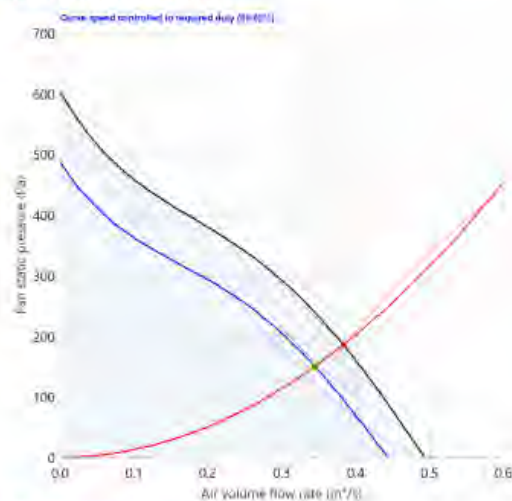
Motor starting current (sc): 2 A

Max. operating temp: 55°C

Weight: 11.95 kg

Starting currents are nominal. 4 kW and above are for Star Delta, all others are for D.O.L. starting.

### Performance Chart



### Sound Data

Noise calculated speed controlled to required duty (89.92%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|-----------------|----|-----|-----|-----|----|----|----|----|-----|
| Inlet Inlet     | 74 | 73  | 71  | 75  | 74 | 68 | 64 | 57 |     |
| Inlet Outlet    | 77 | 77  | 74  | 77  | 75 | 72 | 67 | 60 |     |
| Breakout        | 66 | 69  | 67  | 71  | 70 | 64 | 55 | 44 | 55  |
| For 100% speed: | +1 | +1  | +2  | +2  | +3 | +3 | +3 | +3 |     |

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.

SIL-315

At all volumes -5 -3 -4 -10 -22 -14 -10 -11

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

#### Selected Ancillaries

- 2 x CFC31 Flexible connector
- 2 x SIL-315 Rectangular silencer
- 1 x ILMEC-010 Speed control for ILMEC range

CFC31 - Flexible connector

Weight: 0.5 kg

SIL-315 - Rectangular silencer

Size: 600 mm (L) 400 mm (W) 348 mm (H)

Spigot Size (mm): 315

Weight: 12.2 kg

### Specification

Mixed flow inline fan with high efficiency EC motor. Polypropylene moulded casing. Removable central unit with a motor, impeller and terminal box is attached to the fittings by means of special mounting brackets with integral latches. Unit has flat mounting plate for secure wall mounting but unit can be installed in any angle. Suitable for 50Hz and 60Hz (1 phase) networks. A separate speed controller is available as ancillary.

CFC31

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

SIL-315

The in-line attenuator shall be constructed in galvanised steel and be fitted with duct work connection spigots. Acoustic media shall be a low density foam to prevent material migration into the air stream. Resistance to airflow is negligible.



## SUMMARY FAN DATA SHEET

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Whilst the information given on this data sheet is for specific, full in summary, and reference to the product selection catalogue and installation & maintenance documentation is recommended. This data sheet is produced on 11 Nov 2021 (2:49 using software version 5.9.4141.0)

### Project Details

Location: EF.4.C.02 - Level 04 Quadrant A

### Technical Data

ILMEC - In-line Mixed Flow with EC Motor

Fan Code: ILMEC-315

Required duty: 0.25 m³/s at 150 Pa  
Actual duty: 0.329 m³/s at 280 Pa  
Actual at required flow: 0.25 m³/s at 340 Pa

When speed controlled to required duty (76.05%):

Motor Input Power: 0.111 kW  
Specific Fan Power: 0.4 W/(l/s)

At full speed:

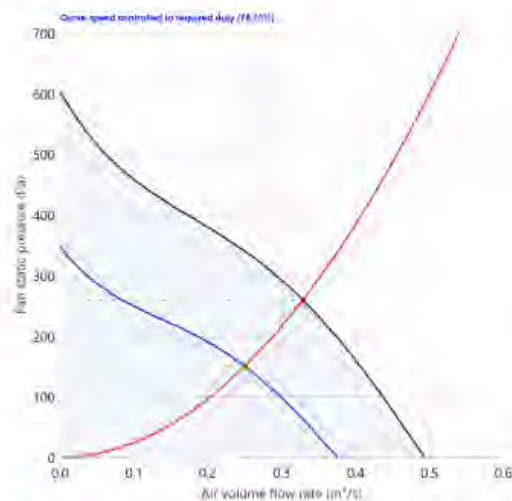
Motor Input Power: 0.253 kW  
Specific Fan Power: 0.8 W/(l/s)

Maximum Fan Speed: 2 pole, 2,508 RPM  
Electrical Supply: 230V, 1 Phase, 50 Hz  
Nominal Motor Rating: 0.306 kW  
Motor current (flc): 2 A  
Motor starting current (sc): 2 A

Max. operating temp: 55°C  
Weight: 11.95 kg

Starting currents are nominal. 4 kW and above are for Star Delta, all others are for D.O.L. starting.

### Performance Chart



### Sound Data

Noise calculated speed controlled to required duty (76.05%)

Sound Power Levels re 1 pWatts (Hz):

| Hz              | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|-----------------|----|-----|-----|-----|----|----|----|----|-----|
| Inlet Inlet     | 73 | 72  | 70  | 73  | 71 | 65 | 61 | 54 |     |
| Inlet Outlet    | 76 | 76  | 73  | 75  | 72 | 69 | 64 | 57 |     |
| Breakout        | 65 | 68  | 66  | 69  | 67 | 61 | 52 | 41 | 53  |
| For 100% speed: | +2 | +2  | +3  | +4  | +8 | +8 | +6 | +6 |     |

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.

SIL-315

At all volumes -5 -3 -4 -10 -22 -14 -10 -11

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

#### Selected Ancillaries

2 x CFC31 Flexible connector  
2 x SIL-315 Rectangular silencer  
1 x ILMEC-010 Speed control for ILMEC range

CFC31 - Flexible connector

Weight: 0.5 kg

SIL-315 - Rectangular silencer

Size: 600 mm (L) 400 mm (W) 348 mm (H)

Spigot Size (mm): 315

Weight: 12.2 kg

### Specification

Mixed flow inline fan with high efficiency EC motor. Polypropylene moulded casing. Removable central unit with a motor, impeller and terminal box is attached to the fittings by means of special mounting brackets with integral latches. Unit has flat mounting plate for secure wall mounting but unit can be installed in any angle. Suitable for 50Hz and 60Hz (1 phase) networks. A separate speed controller is available as ancillary.

CFC31

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 132°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.

SIL-315

The in-line attenuator shall be constructed in galvanised steel and be fitted with duct work connection spigots. Acoustic media shall be a low density foam to prevent material migration into the air stream. Resistance to airflow is negligible.



## SUMMARY FAN DATA SHEET

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Whilst the information given on this data sheet is for specific, life in summary, and reference to the product selection catalogue and installation & maintenance documentation is recommended. This data sheet is issued on 11 May 2017 (2017 using software version 5.9.2.14.1)

### Project Details

Location: TEF.0.D.01 - Level 0 - Quadrant D

### Technical Data

#### AM - Airmover

Fan Code: **AM46ES**  
Installation Manual Link: **671174**  
Required duty: 3.475 m³/s at 260 Pa  
Actual duty: 7.382 m³/s at 1177 Pa  
Actual at required flow: 3.475 m³/s at 1681 Pa

#### When speed controlled to required duty (47.01%):

Fan Input Power: **1.65 kW**  
Motor Input Power: **1.907 kW**  
Specific Fan Power: **0.5 W/(l/s)**  
Velocity at required duty: 3.548 m/s  
Fan Total Efficiency: **56%**

#### At full speed:

Fan Input Power: 15.876 kW  
Maximum Fan Input Power: 15.882 kW  
Motor Input Power: 17.631 kW  
Specific Fan Power: 2.4 W/(l/s)  
Fan Total Efficiency: 12%  
Maximum Fan Speed: 4 pole, 1,460 RPM  
Electrical Supply: 400V, 3 Phase, 50 Hz  
Nominal Motor Rating: 18.5 kW  
Motor current (flc): 33.53 A  
Motor starting current (Is): 33.53 A  
Motor Efficiency: IE3 / Premium Efficiency

Max. operating temp: 50°C  
Weight: 305 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 (47.01%)

Sound Power Levels re 1 pWatts (Hz)

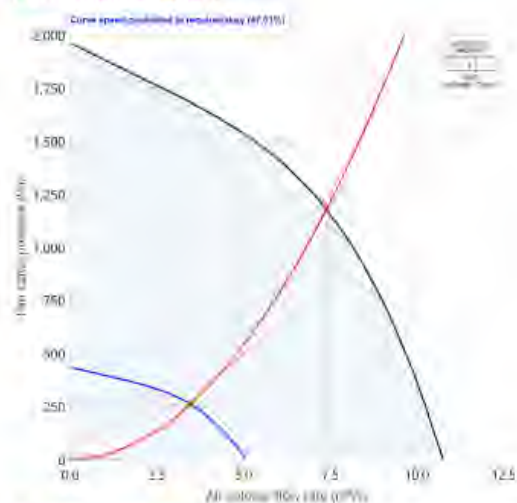
| Hz              | 83 | 125 | 250 | 500 | 1k  | 2k  | 4k  | 8k  | dBA |
|-----------------|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Inlet Inlet     | 84 | 95  | 87  | 77  | 73  | 71  | 69  | 69  |     |
| Inlet Outlet    | 86 | 88  | 84  | 67  | 77  | 73  | 70  | 66  |     |
| Open Inlet      | 80 | 93  | 86  | 78  | 73  | 71  | 69  | 69  |     |
| Open Outlet     | 82 | 87  | 83  | 81  | 77  | 73  | 70  | 66  |     |
| Breakout        | 78 | 78  | 74  | 57  | 45  | 42  | 48  | 42  | 46  |
| For 100% speed: | +5 | +6  | +9  | +11 | +17 | +17 | +17 | +17 |     |

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

Please note external static resistance has been reduced to achieve an SFP of 0.5W/(l/s).

Please see the unit data sheets for the full technical, dimensional and sound information on the unit offered.

### Selected Ancillaries

- 2 x AMDF6 Quickfit double flanged flexible connector
- 1 x NAVB Anti-vibration mounting kit
- 1 x ES-LCD Ecosmart LCD Touch Screen User Control (White)

### Specification

The unit casing shall consist of high rigidity Pentapost framework with double skinned infill panels. Panels shall contain inert high density infill. Panel material shall be heavy gauge Magnelis corrosion resistant steel. Fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with high efficiency IE3 motors to IEC60034-30:2008 where applicable (e.g. single speed motors, rated at 0.75kW and above). The efficiency rating of other motors will vary by size and type.

If an inverter is supplied with the fan, it needs to be mounted internally within the building unless a weatherproof enclosure is ordered. Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following: energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer; integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10V and volt free failure indication.

#### AMDF6

Square double flanged flexible connectors with a pair of quickfit flanges. The flexible duct material is a sound barrier mat with wear resistant skin, designed to improve sound installation. The material is self extinguishing and suitable for operating temperatures between -30°C to +85°C.

#### NAVB

Resilient rubber anti-vibration mountings, supplied as a set of 4.

#### ES-LCD

LCD touch screen ventilation user control panel in white compatible with Ecosmart system. Control has built in time clock. Supplied with pre-plugged 10m length of communication cable.



## SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. [enquiries@nuaire.co.uk](mailto:enquiries@nuaire.co.uk)

UK Commercial enquiries T:029 2085 8200, UK Residential enquiries T:029 2038 8500, International enquiries T: +44 (0) 2085 8407

Where the information given on this data sheet is for specific, life in summary, and reference to the product selection catalogue and installation & maintenance documentation is recommended. This data sheet is issued on 11 Nov 2017 (2x5) (also ENEC version 2.9.21.47.3)

### Project Details

Location: SAF.0.C.01 - GF Quad C

### Technical Data

#### AM - Airmover

Fan Code: **AM46ES**

Installation Manual Link:

Required duty: 4.3 m³/s at 200 Pa

Actual duty: 8.758 m³/s at 829 Pa

Actual at required flow: 4.3 m³/s at 1607 Pa

When speed controlled to required duty (49.11%):

Fan Input Power: **1.844 kW**

Motor Input Power: **2.125 kW**

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

Velocity at required duty: 4.387 m/s

Fan Total Efficiency: 49%

At full speed:

Fan Input Power: 15.57 kW

Maximum Fan Input Power: 15.882 kW

Motor Input Power: 17.464 kW

Specific Fan Power: 2.0 W/(l/s)

Fan Total Efficiency: 12%

Maximum Fan Speed: 4 pole, 1,460 RPM

Electrical Supply: 400V, 3 Phase, 50 Hz

Nominal Motor Rating: 18.5 kW

Motor current (flc): 33.53 A

Motor starting current (isc): 33.53 A

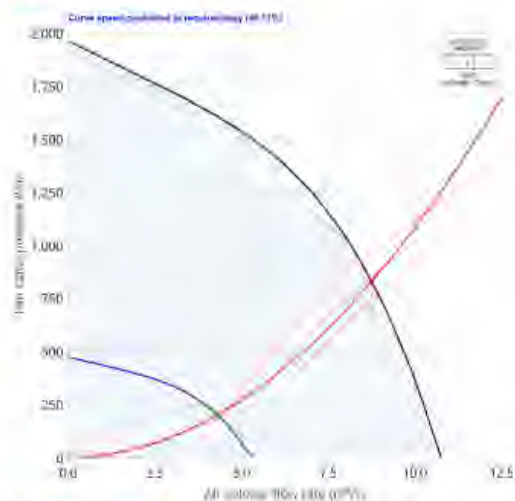
Motor Efficiency: IE3 / Premium Efficiency

Max. operating temp: 50°C

Weight: 305 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.

### Performance Chart



### Additional Notes

Please note all filters to be supplied by others. Please advise if additional resistance needs to be accounted for.

Please see the unit data sheets for the full technical, dimensional and sound information on the unit offered.

### Selected Ancillaries

- 2 x AMDF6 Quickfit double flanged flexible connector
- 1 x NAVB Anti-vibration mounting kit
- 1 x ES-LCD Ecosmart LCD Touch Screen User Control (White)

### Specification

The unit casing shall consist of high rigidity Pentapost framework with double skinned infill panels. Panels shall contain inert high density infill. Panel material shall be heavy gauge Magnelis corrosion resistant steel. Fans shall be of high efficiency backward curved centrifugal design, manufactured in galvanised steel. Fans shall be direct drive with high efficiency IE3 motors to IEC60034-30:2008 where applicable (e.g. single speed motors, rated at 0.75kW and above). The efficiency rating of other motors will vary by size and type.

If an inverter is supplied with the fan, it needs to be mounted internally within the building unless a weatherproof enclosure is ordered. Unit fitted with full Ecosmart controls, BMS interfaces and commissioning controls. Ecosmart fans incorporate (in a convenient separate enclosure) a control package providing full Ecosmart functionality. The fan shall have the following: energy saving functions integrally mounted within the fan unit on a purpose made PCB, all components pre-wired by the manufacturer; integral maximum and minimum speed adjustment/setting; integral adjustable run on timer; integral BMS interfaces, 0-10V and volt free failure indication.

#### AMDF6

Square double flanged flexible connectors with a pair of quickfit flanges. The flexible duct material is a sound barrier mat with wear resistant skin, designed to improve sound installation. The material is self extinguishing and suitable for operating temperatures between -30°C to +85°C.

#### NAVB

Resilient rubber anti-vibration mountings, supplied as a set of 4.

#### ES-LCD

LCD touch screen ventilation user control panel in white compatible with Ecosmart system. Control has built in time clock. Supplied with pre-plugged 10m length of communication cable.

### Sound Data

Acoustic performance to ISO 13347 and AMCA 300

Noise calculated speed controlled to required duty (49.11%)

Sound Power Levels re 1 pWatts (Hz)

| Hz           | 83 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | dBA |
|--------------|----|-----|-----|-----|----|----|----|----|-----|
| Inlet Inlet  | 85 | 95  | 89  | 78  | 75 | 74 | 73 | 75 |     |
| Inlet Outlet | 87 | 88  | 88  | 82  | 79 | 76 | 74 | 72 |     |
| Open Inlet   | 81 | 93  | 88  | 77  | 75 | 74 | 73 | 75 |     |
| Open Outlet  | 83 | 87  | 85  | 82  | 79 | 76 | 74 | 72 |     |
| Breakout     | 79 | 79  | 76  | 58  | 48 | 45 | 52 | 48 | 48  |

For 100% speed: +4 +5 +8 +11 +16 +16 +16 +16

dBA is spherical at 3 metres. For hemi-spherical add 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 industry 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.

## Extract Fans

Technical submittal: 'COOP-SES-TS-M-26' dated 19/11/2021

|                          |  |                          |  |
|--------------------------|--|--------------------------|--|
| DRAWING CONTENT          |  | DRAWING CONTENT          |  |
| POLLUSTOP - EXTRACT AHU  |  | AEROLYS - SUPPLY AHU     |  |
| MODEL: PEU 07            |  | MODEL: AEU 07            |  |
| LOCATION: INTERNAL       |  | LOCATION: INTERNAL       |  |
| ACCESS: LEFT HAND ACCESS |  | ACCESS: LEFT HAND ACCESS |  |
| ITEM No: EAHU.0.C.01 A   |  | ITEM No: EAHU.0.C.01 B   |  |

| FAN SECTION                                                                                                   | ER80C-4DN.K7.1R<br>130549/0Z01                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA                                                                                                          | METRIC                                                                                                                                                                                                                                                                                                                                   |
| AIR FLOW VOLUME                                                                                               | 5.79 m³/s                                                                                                                                                                                                                                                                                                                                |
| EXTERNAL STATIC PRESSURE                                                                                      | 500 Pa                                                                                                                                                                                                                                                                                                                                   |
| UNIT STATIC PRESSURE*                                                                                         | 890 Pa                                                                                                                                                                                                                                                                                                                                   |
| TOTAL STATIC PRESSURE                                                                                         | 1390 Pa                                                                                                                                                                                                                                                                                                                                  |
| FAN/MOTOR SPEED                                                                                               | 1336RPM @46Hz                                                                                                                                                                                                                                                                                                                            |
| ABS POWER                                                                                                     | 12.63kW                                                                                                                                                                                                                                                                                                                                  |
| MOTOR POWER                                                                                                   | 15kW                                                                                                                                                                                                                                                                                                                                     |
| FLC                                                                                                           | 28.55A                                                                                                                                                                                                                                                                                                                                   |
| VOLTAGE/Ph/Hz                                                                                                 | 380/3/50                                                                                                                                                                                                                                                                                                                                 |
| NOISE RATING (db)                                                                                             | <div> <div>63Hz-</div> <div>125Hz-</div> <div>250Hz-</div> <div>500Hz-</div> <div>1000Hz-</div> <div>2000Hz-</div> <div>4000Hz-</div> <div>8000Hz-</div> </div> <div> <div>dB</div> <div>102/104 dB</div> <div>89/95 dB</div> <div>84/94 dB</div> <div>84/90 dB</div> <div>82/87 dB</div> <div>78/82 dB</div> <div>76/78 dB</div> </div> |
| UNWEIGHTED<br>OCTAVE SOUND POWER LEVEL<br>ACC. TO DISCHARGE / INTAKE<br>LwOKT 4/7 AT OCTAVE<br>BAND FREQUENCY |                                                                                                                                                                                                                                                                                                                                          |
| SFP                                                                                                           | 2.77 kW/m³/s                                                                                                                                                                                                                                                                                                                             |
| <small>*NOTE:</small><br>UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA AND CARBON (MEAN)                 |                                                                                                                                                                                                                                                                                                                                          |

| FAN SECTION                                                                                                   | ER71C-4DN.I7.1R<br>130557/0Z01                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA                                                                                                          | METRIC                                                                                                                                                                                                                                                                                                                                   |
| AIR FLOW VOLUME                                                                                               | 5.79 m³/s                                                                                                                                                                                                                                                                                                                                |
| EXTERNAL STATIC PRESSURE                                                                                      | 500 Pa                                                                                                                                                                                                                                                                                                                                   |
| UNIT STATIC PRESSURE*                                                                                         | 542 Pa                                                                                                                                                                                                                                                                                                                                   |
| TOTAL STATIC PRESSURE                                                                                         | 1042 Pa                                                                                                                                                                                                                                                                                                                                  |
| FAN/MOTOR SPEED                                                                                               | 1453RPM @50Hz                                                                                                                                                                                                                                                                                                                            |
| ABS POWER                                                                                                     | 9.34kW                                                                                                                                                                                                                                                                                                                                   |
| MOTOR POWER                                                                                                   | 11kW                                                                                                                                                                                                                                                                                                                                     |
| FLC                                                                                                           | 21.35A                                                                                                                                                                                                                                                                                                                                   |
| VOLTAGE/Ph/Hz                                                                                                 | 380/3/50                                                                                                                                                                                                                                                                                                                                 |
| NOISE RATING (db)                                                                                             | <div> <div>63Hz-</div> <div>125Hz-</div> <div>250Hz-</div> <div>500Hz-</div> <div>1000Hz-</div> <div>2000Hz-</div> <div>4000Hz-</div> <div>8000Hz-</div> </div> <div> <div>dB</div> <div>103/105 dB</div> <div>91/96 dB</div> <div>85/95 dB</div> <div>83/89 dB</div> <div>82/87 dB</div> <div>77/83 dB</div> <div>76/79 dB</div> </div> |
| UNWEIGHTED<br>OCTAVE SOUND POWER LEVEL<br>ACC. TO DISCHARGE / INTAKE<br>LwOKT 4/7 AT OCTAVE<br>BAND FREQUENCY |                                                                                                                                                                                                                                                                                                                                          |
| SFP                                                                                                           | 1.61 kW/m³/s                                                                                                                                                                                                                                                                                                                             |
| <small>*NOTE:</small><br>UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA AND CARBON (MEAN)                 |                                                                                                                                                                                                                                                                                                                                          |

## DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 03  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.0.C.03

## DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 01  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.0.C.04

| FAN SECTION      |                          | ER63C-4DN.G7.CR<br>130564/2Z01                                                                                                                  |
|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA             |                          | METRIC                                                                                                                                          |
| SUPPLY           | AIR FLOW VOLUME          | 2.5 m³/s                                                                                                                                        |
|                  | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                          |
|                  | UNIT STATIC PRESSURE*    | 452 Pa                                                                                                                                          |
|                  | TOTAL STATIC PRESSURE    | 952 Pa                                                                                                                                          |
|                  | FAN/MOTOR SPEED          | 1361RPM @47Hz                                                                                                                                   |
|                  | ABS POWER                | 4.08kW                                                                                                                                          |
|                  | MOTOR POWER              | 5.5kW                                                                                                                                           |
|                  | FLC                      | 11.17A                                                                                                                                          |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                        |
|                  | NOISE RATING (db)        | 63Hz- 88/101 dB<br>125Hz- 87/91 dB<br>250Hz- 79/88 dB<br>500Hz- 78/85 dB<br>1000Hz- 73/78 dB<br>2000Hz- 68/72 dB<br>4000Hz- 65/68 dB<br>8000Hz- |
| FAN SECTION      |                          | ER45C-2DN.G7.CR<br>130588/2Z01                                                                                                                  |
| DATA             |                          | METRIC                                                                                                                                          |
| EXTRACT          | AIR FLOW VOLUME          | 2.50 m³/s                                                                                                                                       |
|                  | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                          |
|                  | UNIT STATIC PRESSURE*    | 984 Pa                                                                                                                                          |
|                  | TOTAL STATIC PRESSURE    | 1484 Pa                                                                                                                                         |
|                  | FAN/MOTOR SPEED          | 2623RPM @45Hz                                                                                                                                   |
|                  | ABS POWER                | 5.64kW                                                                                                                                          |
|                  | MOTOR POWER              | 7.5kW                                                                                                                                           |
|                  | FLC                      | 14.05A                                                                                                                                          |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                        |
|                  | NOISE RATING (db)        | 63Hz- 87/94 dB<br>125Hz- 85/100 dB<br>250Hz- 82/95 dB<br>500Hz- 77/90 dB<br>1000Hz- 76/84 dB<br>2000Hz- 73/80 dB<br>4000Hz- 71/79 dB<br>8000Hz- |
| *NOTE:           |                          | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                       |
| COMBINED AHU SFP |                          | 4.96 kW/m³/s                                                                                                                                    |

| FAN SECTION      |                          | ER28C-2DN.C7.CR<br>130606/2Z01                                                                                                                  |
|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA             |                          | METRIC                                                                                                                                          |
| SUPPLY           | AIR FLOW VOLUME          | 0.77 m³/s                                                                                                                                       |
|                  | EXTERNAL STATIC PRESSURE | 400 Pa                                                                                                                                          |
|                  | UNIT STATIC PRESSURE*    | 509 Pa                                                                                                                                          |
|                  | TOTAL STATIC PRESSURE    | 909 Pa                                                                                                                                          |
|                  | FAN/MOTOR SPEED          | 3347RPM @58Hz                                                                                                                                   |
|                  | ABS POWER                | 1.2kW                                                                                                                                           |
|                  | MOTOR POWER              | 1.5kW                                                                                                                                           |
|                  | FLC                      | 3.19A                                                                                                                                           |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                        |
|                  | NOISE RATING (db)        | 63Hz- 83/87 dB<br>125Hz- 79/84 dB<br>250Hz- 79/83 dB<br>500Hz- 71/82 dB<br>1000Hz- 68/78 dB<br>2000Hz- 66/73 dB<br>4000Hz- 65/70 dB<br>8000Hz-  |
| FAN SECTION      |                          | ER35C-2DN.D7.CR<br>130596/2Z01                                                                                                                  |
| DATA             |                          | METRIC                                                                                                                                          |
| EXTRACT          | AIR FLOW VOLUME          | 0.77 m³/s                                                                                                                                       |
|                  | EXTERNAL STATIC PRESSURE | 400 Pa                                                                                                                                          |
|                  | UNIT STATIC PRESSURE*    | 945 Pa                                                                                                                                          |
|                  | TOTAL STATIC PRESSURE    | 1345 Pa                                                                                                                                         |
|                  | FAN/MOTOR SPEED          | 2793RPM @48Hz                                                                                                                                   |
|                  | ABS POWER                | 2.01kW                                                                                                                                          |
|                  | MOTOR POWER              | 2.2kW                                                                                                                                           |
|                  | FLC                      | 4.53A                                                                                                                                           |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                        |
|                  | NOISE RATING (db)        | 63Hz- 84/100 dB<br>125Hz- 82/96 dB<br>250Hz- 82/88 dB<br>500Hz- 73/84 dB<br>1000Hz- 71/80 dB<br>2000Hz- 70/76 dB<br>4000Hz- 67/73 dB<br>8000Hz- |
| *NOTE:           |                          | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                       |
| COMBINED AHU SFP |                          | 4.81 kW/m³/s                                                                                                                                    |

# DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 02  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.0.D.01

# DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 03  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.0.D.02

| SUPPLY   | FAN SECTION                                                                                       |  | ER35C-2DN.D7.CR<br>130596/2Z01                                                                                                                          |
|----------|---------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | DATA                                                                                              |  | METRIC                                                                                                                                                  |
|          | AIR FLOW VOLUME                                                                                   |  | 1.21 m³/s                                                                                                                                               |
|          | EXTERNAL STATIC PRESSURE                                                                          |  | 400 Pa                                                                                                                                                  |
|          | UNIT STATIC PRESSURE*                                                                             |  | 407 Pa                                                                                                                                                  |
|          | TOTAL STATIC PRESSURE                                                                             |  | 807 Pa                                                                                                                                                  |
|          | FAN/MOTOR SPEED                                                                                   |  | 2501RPM @43Hz                                                                                                                                           |
|          | ABS POWER                                                                                         |  | 1.62kW                                                                                                                                                  |
|          | MOTOR POWER                                                                                       |  | 2.2kW                                                                                                                                                   |
|          | FLC                                                                                               |  | 4.53A                                                                                                                                                   |
| EXTRACT  | VOLTAGE/Ph/Hz                                                                                     |  | 400/3/50                                                                                                                                                |
|          | NOISE RATING (db)                                                                                 |  | 63Hz- 81/86 dB<br>125Hz- 84/88 dB<br>250Hz- 75/80 dB<br>500Hz- 69/81 dB<br>1000Hz- 66/75 dB<br>2000Hz- 64/71 dB<br>4000Hz- 65/70 dB<br>8000Hz- 65/70 dB |
|          | UNWEIGHTED OCTAVE SOUND POWER LEVEL ACC. TO DISCHARGE / INTAKE LwOKT 4/7 AT OCTAVE BAND FREQUENCY |  |                                                                                                                                                         |
|          | FAN SECTION                                                                                       |  | ER35C-2DN.E7.CR<br>130597/2Z01                                                                                                                          |
|          | DATA                                                                                              |  | METRIC                                                                                                                                                  |
|          | AIR FLOW VOLUME                                                                                   |  | 1.21 m³/s                                                                                                                                               |
|          | EXTERNAL STATIC PRESSURE                                                                          |  | 400 Pa                                                                                                                                                  |
|          | UNIT STATIC PRESSURE*                                                                             |  | 843 Pa                                                                                                                                                  |
|          | TOTAL STATIC PRESSURE                                                                             |  | 1243 Pa                                                                                                                                                 |
|          | FAN/MOTOR SPEED                                                                                   |  | 2886RPM @50Hz                                                                                                                                           |
| COMBINED | ABS POWER                                                                                         |  | 2.47kW                                                                                                                                                  |
|          | MOTOR POWER                                                                                       |  | 3kW                                                                                                                                                     |
|          | FLC                                                                                               |  | 6A                                                                                                                                                      |
|          | VOLTAGE/Ph/Hz                                                                                     |  | 400/3/50                                                                                                                                                |
|          | NOISE RATING (db)                                                                                 |  | 63Hz- 62/80 dB<br>125Hz- 88/92 dB<br>250Hz- 79/85 dB<br>500Hz- 72/84 dB<br>1000Hz- 71/79 dB<br>2000Hz- 69/76 dB<br>4000Hz- 67/73 dB<br>8000Hz- 67/73 dB |
|          | UNWEIGHTED OCTAVE SOUND POWER LEVEL ACC. TO DISCHARGE / INTAKE LwOKT 4/7 AT OCTAVE BAND FREQUENCY |  |                                                                                                                                                         |
|          | NOTE:                                                                                             |  | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                               |
|          | COMBINED AHU SFP                                                                                  |  | 4.19 kW/m³/s                                                                                                                                            |

| SUPPLY   | FAN SECTION                                                                                       |  | ER63C-4DN.G7.CR<br>130564/2Z01                                                                                                                            |
|----------|---------------------------------------------------------------------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | DATA                                                                                              |  | METRIC                                                                                                                                                    |
|          | AIR FLOW VOLUME                                                                                   |  | 2.42 m³/s                                                                                                                                                 |
|          | EXTERNAL STATIC PRESSURE                                                                          |  | 600 Pa                                                                                                                                                    |
|          | UNIT STATIC PRESSURE*                                                                             |  | 434 Pa                                                                                                                                                    |
|          | TOTAL STATIC PRESSURE                                                                             |  | 1034 Pa                                                                                                                                                   |
|          | FAN/MOTOR SPEED                                                                                   |  | 1407RPM @48Hz                                                                                                                                             |
|          | ABS POWER                                                                                         |  | 4.37kW                                                                                                                                                    |
|          | MOTOR POWER                                                                                       |  | 5.5kW                                                                                                                                                     |
|          | FLC                                                                                               |  | 11.17A                                                                                                                                                    |
| EXTRACT  | VOLTAGE/Ph/Hz                                                                                     |  | 400/3/50                                                                                                                                                  |
|          | NOISE RATING (db)                                                                                 |  | 63Hz- 101/103 dB<br>125Hz- 89/93 dB<br>250Hz- 80/89 dB<br>500Hz- 79/86 dB<br>1000Hz- 75/79 dB<br>2000Hz- 69/74 dB<br>4000Hz- 67/68 dB<br>8000Hz- 67/68 dB |
|          | UNWEIGHTED OCTAVE SOUND POWER LEVEL ACC. TO DISCHARGE / INTAKE LwOKT 4/7 AT OCTAVE BAND FREQUENCY |  |                                                                                                                                                           |
|          | FAN SECTION                                                                                       |  | ER45C-2DN.G7.CR<br>130588/2Z01                                                                                                                            |
|          | DATA                                                                                              |  | METRIC                                                                                                                                                    |
|          | AIR FLOW VOLUME                                                                                   |  | 2.42 m³/s                                                                                                                                                 |
|          | EXTERNAL STATIC PRESSURE                                                                          |  | 600 Pa                                                                                                                                                    |
|          | UNIT STATIC PRESSURE*                                                                             |  | 943 Pa                                                                                                                                                    |
|          | TOTAL STATIC PRESSURE                                                                             |  | 1543 Pa                                                                                                                                                   |
|          | FAN/MOTOR SPEED                                                                                   |  | 2631RPM @45Hz                                                                                                                                             |
| COMBINED | ABS POWER                                                                                         |  | 5.7kW                                                                                                                                                     |
|          | MOTOR POWER                                                                                       |  | 7.5kW                                                                                                                                                     |
|          | FLC                                                                                               |  | 14.05A                                                                                                                                                    |
|          | VOLTAGE/Ph/Hz                                                                                     |  | 400/3/50                                                                                                                                                  |
|          | NOISE RATING (db)                                                                                 |  | 63Hz- 87/94 dB<br>125Hz- 85/100 dB<br>250Hz- 82/82 dB<br>500Hz- 77/80 dB<br>1000Hz- 76/84 dB<br>2000Hz- 73/81 dB<br>4000Hz- 73/79 dB<br>8000Hz- 73/79 dB  |
|          | UNWEIGHTED OCTAVE SOUND POWER LEVEL ACC. TO DISCHARGE / INTAKE LwOKT 4/7 AT OCTAVE BAND FREQUENCY |  |                                                                                                                                                           |
|          | NOTE:                                                                                             |  | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                                 |
|          | COMBINED AHU SFP                                                                                  |  | 5.23 kW/m³/s                                                                                                                                              |

# DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 01  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.3.A.01

# DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 02  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.3.C.01

| FAN SECTION      |                          | ER40C-4DN.D7.CR<br>130590/2201                                                                                                                                                                                                                                                                                                                                                 |
|------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA             |                          | METRIC                                                                                                                                                                                                                                                                                                                                                                         |
| SUPPLY           | AIR FLOW VOLUME          | 0.67 m³/s                                                                                                                                                                                                                                                                                                                                                                      |
|                  | EXTERNAL STATIC PRESSURE | 400 Pa                                                                                                                                                                                                                                                                                                                                                                         |
|                  | UNIT STATIC PRESSURE*    | 446 Pa                                                                                                                                                                                                                                                                                                                                                                         |
|                  | TOTAL STATIC PRESSURE    | 846 Pa                                                                                                                                                                                                                                                                                                                                                                         |
|                  | FAN/MOTOR SPEED          | 1989RPM @69Hz                                                                                                                                                                                                                                                                                                                                                                  |
|                  | ABS POWER                | 1.2kW                                                                                                                                                                                                                                                                                                                                                                          |
|                  | MOTOR POWER              | 1.5kW                                                                                                                                                                                                                                                                                                                                                                          |
|                  | FLC                      | 3.35A                                                                                                                                                                                                                                                                                                                                                                          |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                                                                                                                                                                                                                                       |
|                  | NOISE RATING (db)        | <div>63Hz- dB</div> <div>125Hz- 97/100 dB</div> <div>250Hz- 87/93 dB</div> <div>500Hz- 78/82 dB</div> <div>1000Hz- 68/68 dB</div> <div>2000Hz- 67/74 dB</div> <div>4000Hz- 65/70 dB</div> <div>8000Hz- 60/64 dB</div> <div>UNWEIGHTED</div> <div>OCTAVE SOUND POWER LEVEL</div> <div>ACC. TO DISCHARGE / INTAKE</div> <div>LwOKT 4/7 AT OCTAVE</div> <div>BAND FREQUENCY</div> |
| FAN SECTION      |                          | ER35C-2DN.D7.CR<br>130596/2201                                                                                                                                                                                                                                                                                                                                                 |
| DATA             |                          | METRIC                                                                                                                                                                                                                                                                                                                                                                         |
| EXTRACT          | AIR FLOW VOLUME          | 0.67 m³/s                                                                                                                                                                                                                                                                                                                                                                      |
|                  | EXTERNAL STATIC PRESSURE | 400 Pa                                                                                                                                                                                                                                                                                                                                                                         |
|                  | UNIT STATIC PRESSURE*    | 913 Pa                                                                                                                                                                                                                                                                                                                                                                         |
|                  | TOTAL STATIC PRESSURE    | 1313 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | FAN/MOTOR SPEED          | 2743RPM @48Hz                                                                                                                                                                                                                                                                                                                                                                  |
|                  | ABS POWER                | 1.82kW                                                                                                                                                                                                                                                                                                                                                                         |
|                  | MOTOR POWER              | 2.2kW                                                                                                                                                                                                                                                                                                                                                                          |
|                  | FLC                      | 4.53A                                                                                                                                                                                                                                                                                                                                                                          |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                                                                                                                                                                                                                                       |
|                  | NOISE RATING (db)        | <div>63Hz- dB</div> <div>125Hz- 97/103 dB</div> <div>250Hz- 83/88 dB</div> <div>500Hz- 83/88 dB</div> <div>1000Hz- 73/65 dB</div> <div>2000Hz- 72/80 dB</div> <div>4000Hz- 70/76 dB</div> <div>8000Hz- 67/72 dB</div> <div>UNWEIGHTED</div> <div>OCTAVE SOUND POWER LEVEL</div> <div>ACC. TO DISCHARGE / INTAKE</div> <div>LwOKT 4/7 AT OCTAVE</div> <div>BAND FREQUENCY</div> |
| NOTE:            |                          | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                                                                                                                                                                                                                                                      |
| COMBINED AHU SFP |                          | 4.98 kW/m³/s                                                                                                                                                                                                                                                                                                                                                                   |

| FAN SECTION      |                          | ER35C-2DN.D7.CR<br>130596/2201                                                                                                                                                                                                                                                                                                                                                |
|------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA             |                          | METRIC                                                                                                                                                                                                                                                                                                                                                                        |
| SUPPLY           | AIR FLOW VOLUME          | 1.34 m³/s                                                                                                                                                                                                                                                                                                                                                                     |
|                  | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | UNIT STATIC PRESSURE*    | 435 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | TOTAL STATIC PRESSURE    | 935 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | FAN/MOTOR SPEED          | 2717RPM @47Hz                                                                                                                                                                                                                                                                                                                                                                 |
|                  | ABS POWER                | 2.04kW                                                                                                                                                                                                                                                                                                                                                                        |
|                  | MOTOR POWER              | 2.2kW                                                                                                                                                                                                                                                                                                                                                                         |
|                  | FLC                      | 4.53A                                                                                                                                                                                                                                                                                                                                                                         |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                                                                                                                                                                                                                                      |
|                  | NOISE RATING (db)        | <div>63Hz- dB</div> <div>125Hz- 82/88 dB</div> <div>250Hz- 86/90 dB</div> <div>500Hz- 77/83 dB</div> <div>1000Hz- 71/63 dB</div> <div>2000Hz- 69/77 dB</div> <div>4000Hz- 67/74 dB</div> <div>8000Hz- 67/72 dB</div> <div>UNWEIGHTED</div> <div>OCTAVE SOUND POWER LEVEL</div> <div>ACC. TO DISCHARGE / INTAKE</div> <div>LwOKT 4/7 AT OCTAVE</div> <div>BAND FREQUENCY</div> |
| FAN SECTION      |                          | ER40C-2DN.F7.CR<br>130593/2201                                                                                                                                                                                                                                                                                                                                                |
| DATA             |                          | METRIC                                                                                                                                                                                                                                                                                                                                                                        |
| EXTRACT          | AIR FLOW VOLUME          | 1.34 m³/s                                                                                                                                                                                                                                                                                                                                                                     |
|                  | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | UNIT STATIC PRESSURE*    | 863 Pa                                                                                                                                                                                                                                                                                                                                                                        |
|                  | TOTAL STATIC PRESSURE    | 1363 Pa                                                                                                                                                                                                                                                                                                                                                                       |
|                  | FAN/MOTOR SPEED          | 2606RPM @45Hz                                                                                                                                                                                                                                                                                                                                                                 |
|                  | ABS POWER                | 3.06kW                                                                                                                                                                                                                                                                                                                                                                        |
|                  | MOTOR POWER              | 4kW                                                                                                                                                                                                                                                                                                                                                                           |
|                  | FLC                      | 7.83A                                                                                                                                                                                                                                                                                                                                                                         |
|                  | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                                                                                                                                                                                                                                      |
|                  | NOISE RATING (db)        | <div>63Hz- dB</div> <div>125Hz- 86/94 dB</div> <div>250Hz- 90/95 dB</div> <div>500Hz- 80/85 dB</div> <div>1000Hz- 75/87 dB</div> <div>2000Hz- 73/80 dB</div> <div>4000Hz- 71/76 dB</div> <div>8000Hz- 69/73 dB</div> <div>UNWEIGHTED</div> <div>OCTAVE SOUND POWER LEVEL</div> <div>ACC. TO DISCHARGE / INTAKE</div> <div>LwOKT 4/7 AT OCTAVE</div> <div>BAND FREQUENCY</div> |
| NOTE:            |                          | UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN)                                                                                                                                                                                                                                                                                                                     |
| COMBINED AHU SFP |                          | 4.85 kW/m³/s                                                                                                                                                                                                                                                                                                                                                                  |

DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 03  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.3.C.02

DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
MODEL: XEU 02  
LOCATION: INTERNAL  
ACCESS: LEFT HAND ACCESS  
ITEM No: EAHU.3.C.03

| FAN SECTION                                                         |                          | ER63C-4DN.G7.CR<br>130564/2Z01                                                                                                                           |
|---------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA                                                                |                          | METRIC                                                                                                                                                   |
| SUPPLY                                                              | AIR FLOW VOLUME          | 2.49 m <sup>3</sup> /s                                                                                                                                   |
|                                                                     | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                                   |
|                                                                     | UNIT STATIC PRESSURE*    | 452 Pa                                                                                                                                                   |
|                                                                     | TOTAL STATIC PRESSURE    | 952 Pa                                                                                                                                                   |
|                                                                     | FAN/MOTOR SPEED          | 1361RPM @47Hz                                                                                                                                            |
|                                                                     | ABS POWER                | 4.08kW                                                                                                                                                   |
|                                                                     | MOTOR POWER              | 5.5kW                                                                                                                                                    |
|                                                                     | FLC                      | 11.17A                                                                                                                                                   |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                 |
|                                                                     | NOISE RATING (db)        | 63Hz- 88/101 dB<br>125Hz- 87/91 dB<br>250Hz- 79/88 dB<br>500Hz- 78/85 dB<br>1000Hz- 73/78 dB<br>2000Hz- 68/72 dB<br>4000Hz- 66/68 dB<br>8000Hz- 66/68 dB |
| FAN SECTION                                                         |                          | ER45C-2DN.G7.CR<br>130588/2Z01                                                                                                                           |
| DATA                                                                |                          | METRIC                                                                                                                                                   |
| EXTRACT                                                             | AIR FLOW VOLUME          | 2.49 m <sup>3</sup> /s                                                                                                                                   |
|                                                                     | EXTERNAL STATIC PRESSURE | 500 Pa                                                                                                                                                   |
|                                                                     | UNIT STATIC PRESSURE*    | 984 Pa                                                                                                                                                   |
|                                                                     | TOTAL STATIC PRESSURE    | 1484 Pa                                                                                                                                                  |
|                                                                     | FAN/MOTOR SPEED          | 2622RPM @45Hz                                                                                                                                            |
|                                                                     | ABS POWER                | 5.64kW                                                                                                                                                   |
|                                                                     | MOTOR POWER              | 7.5kW                                                                                                                                                    |
|                                                                     | FLC                      | 14.05A                                                                                                                                                   |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                 |
|                                                                     | NOISE RATING (db)        | 63Hz- 87/94 dB<br>125Hz- 85/100 dB<br>250Hz- 82/92 dB<br>500Hz- 77/80 dB<br>1000Hz- 76/84 dB<br>2000Hz- 73/80 dB<br>4000Hz- 73/79 dB<br>8000Hz- 73/79 dB |
| *NOTE:<br>UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN) |                          |                                                                                                                                                          |
| COMBINED AHU SFP                                                    |                          | 4.97 kW/m <sup>3</sup> /s                                                                                                                                |

| FAN SECTION                                                         |                          | ER35C-2DN.E7.CR<br>130597/2Z01                                                                                                                          |
|---------------------------------------------------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| DATA                                                                |                          | METRIC                                                                                                                                                  |
| SUPPLY                                                              | AIR FLOW VOLUME          | 1.52 m <sup>3</sup> /s                                                                                                                                  |
|                                                                     | EXTERNAL STATIC PRESSURE | 600 Pa                                                                                                                                                  |
|                                                                     | UNIT STATIC PRESSURE*    | 499 Pa                                                                                                                                                  |
|                                                                     | TOTAL STATIC PRESSURE    | 1099 Pa                                                                                                                                                 |
|                                                                     | FAN/MOTOR SPEED          | 3002RPM @52Hz                                                                                                                                           |
|                                                                     | ABS POWER                | 2.67kW                                                                                                                                                  |
|                                                                     | MOTOR POWER              | 3kW                                                                                                                                                     |
|                                                                     | FLC                      | 6A                                                                                                                                                      |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                |
|                                                                     | NOISE RATING (db)        | 63Hz- 85/92 dB<br>125Hz- 80/93 dB<br>250Hz- 82/87 dB<br>500Hz- 74/86 dB<br>1000Hz- 71/80 dB<br>2000Hz- 68/77 dB<br>4000Hz- 68/75 dB<br>8000Hz- 68/75 dB |
| FAN SECTION                                                         |                          | ER40C-2DN.F7.CR<br>130593/2Z01                                                                                                                          |
| DATA                                                                |                          | METRIC                                                                                                                                                  |
| EXTRACT                                                             | AIR FLOW VOLUME          | 1.52 m <sup>3</sup> /s                                                                                                                                  |
|                                                                     | EXTERNAL STATIC PRESSURE | 600 Pa                                                                                                                                                  |
|                                                                     | UNIT STATIC PRESSURE*    | 920 Pa                                                                                                                                                  |
|                                                                     | TOTAL STATIC PRESSURE    | 1520 Pa                                                                                                                                                 |
|                                                                     | FAN/MOTOR SPEED          | 2781RPM @48Hz                                                                                                                                           |
|                                                                     | ABS POWER                | 3.76kW                                                                                                                                                  |
|                                                                     | MOTOR POWER              | 4kW                                                                                                                                                     |
|                                                                     | FLC                      | 7.83A                                                                                                                                                   |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                                                                                                                                                |
|                                                                     | NOISE RATING (db)        | 63Hz- 88/94 dB<br>125Hz- 81/96 dB<br>250Hz- 82/88 dB<br>500Hz- 75/87 dB<br>1000Hz- 74/82 dB<br>2000Hz- 72/78 dB<br>4000Hz- 71/75 dB<br>8000Hz- 71/75 dB |
| *NOTE:<br>UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN) |                          |                                                                                                                                                         |
| COMBINED AHU SFP                                                    |                          | 5.04 kW/m <sup>3</sup> /s                                                                                                                               |

DRAWING CONTENT

EXTENSO - EXTRACT AND SUPPLY AHU  
 MODEL: XEU 03  
 LOCATION: INTERNAL  
 ACCESS: LEFT HAND ACCESS  
 ITEM No: EAHU.4.A.01

|                                                                     |                          |                                |    |
|---------------------------------------------------------------------|--------------------------|--------------------------------|----|
| FAN SECTION                                                         |                          | ER63C-4DN.G7.CR<br>130564/2Z01 |    |
|                                                                     | DATA                     | METRIC                         |    |
| SUPPLY                                                              | AIR FLOW VOLUME          | 2.85 m³/s                      |    |
|                                                                     | EXTERNAL STATIC PRESSURE | 500 Pa                         |    |
|                                                                     | UNIT STATIC PRESSURE*    | 420 Pa                         |    |
|                                                                     | TOTAL STATIC PRESSURE    | 920 Pa                         |    |
|                                                                     | FAN/MOTOR SPEED          | 1366RPM @47Hz                  |    |
|                                                                     | ABS POWER                | 4.26kW                         |    |
|                                                                     | MOTOR POWER              | 5.5kW                          |    |
|                                                                     | FLC                      | 11.17A                         |    |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                       |    |
|                                                                     | NOISE RATING (db)        | 63Hz-                          | dB |
|                                                                     | 125Hz-                   | 95/97                          | dB |
|                                                                     | 250Hz-                   | 84/89                          | dB |
|                                                                     | 500Hz-                   | 77/86                          | dB |
|                                                                     | 1000Hz-                  | 76/83                          | dB |
|                                                                     | 2000Hz-                  | 71/76                          | dB |
|                                                                     | 4000Hz-                  | 66/70                          | dB |
|                                                                     | 8000Hz-                  | 65/66                          | dB |
| FAN SECTION                                                         |                          | ER71C-4DN.I7.1R<br>130557/0Z01 |    |
|                                                                     | DATA                     | METRIC                         |    |
| EXTRACT                                                             | AIR FLOW VOLUME          | 2.85 m³/s                      |    |
|                                                                     | EXTERNAL STATIC PRESSURE | 500 Pa                         |    |
|                                                                     | UNIT STATIC PRESSURE*    | 857 Pa                         |    |
|                                                                     | TOTAL STATIC PRESSURE    | 1357 Pa                        |    |
|                                                                     | FAN/MOTOR SPEED          | 1397RPM @48Hz                  |    |
|                                                                     | ABS POWER                | 7.26kW                         |    |
|                                                                     | MOTOR POWER              | 11kW                           |    |
|                                                                     | FLC                      | 21.35A                         |    |
|                                                                     | VOLTAGE/Ph/Hz            | 400/3/50                       |    |
|                                                                     | NOISE RATING (db)        | 63Hz-                          | dB |
|                                                                     | 125Hz-                   | 107/111                        | dB |
|                                                                     | 250Hz-                   | 95/100                         | dB |
|                                                                     | 500Hz-                   | 84/94                          | dB |
|                                                                     | 1000Hz-                  | 82/88                          | dB |
|                                                                     | 2000Hz-                  | 78/83                          | dB |
|                                                                     | 4000Hz-                  | 75/78                          | dB |
|                                                                     | 8000Hz-                  | 73/74                          | dB |
| *NOTE:<br>UNIT STATIC CALCULATED ON PRE AND BAG (DIRTY) HEPA (MEAN) |                          |                                |    |
| COMBINED AHU SFP                                                    |                          | 4.97 kW/m³/s                   |    |

## LV Generator

Technical submittal: 'COOP-SES-TS-E-040' dated 28/10/2021

Co-Op Live - 68B202

COOP-SES-TS-E-040



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**3. 75dBA@1m Acoustic Enclosure**

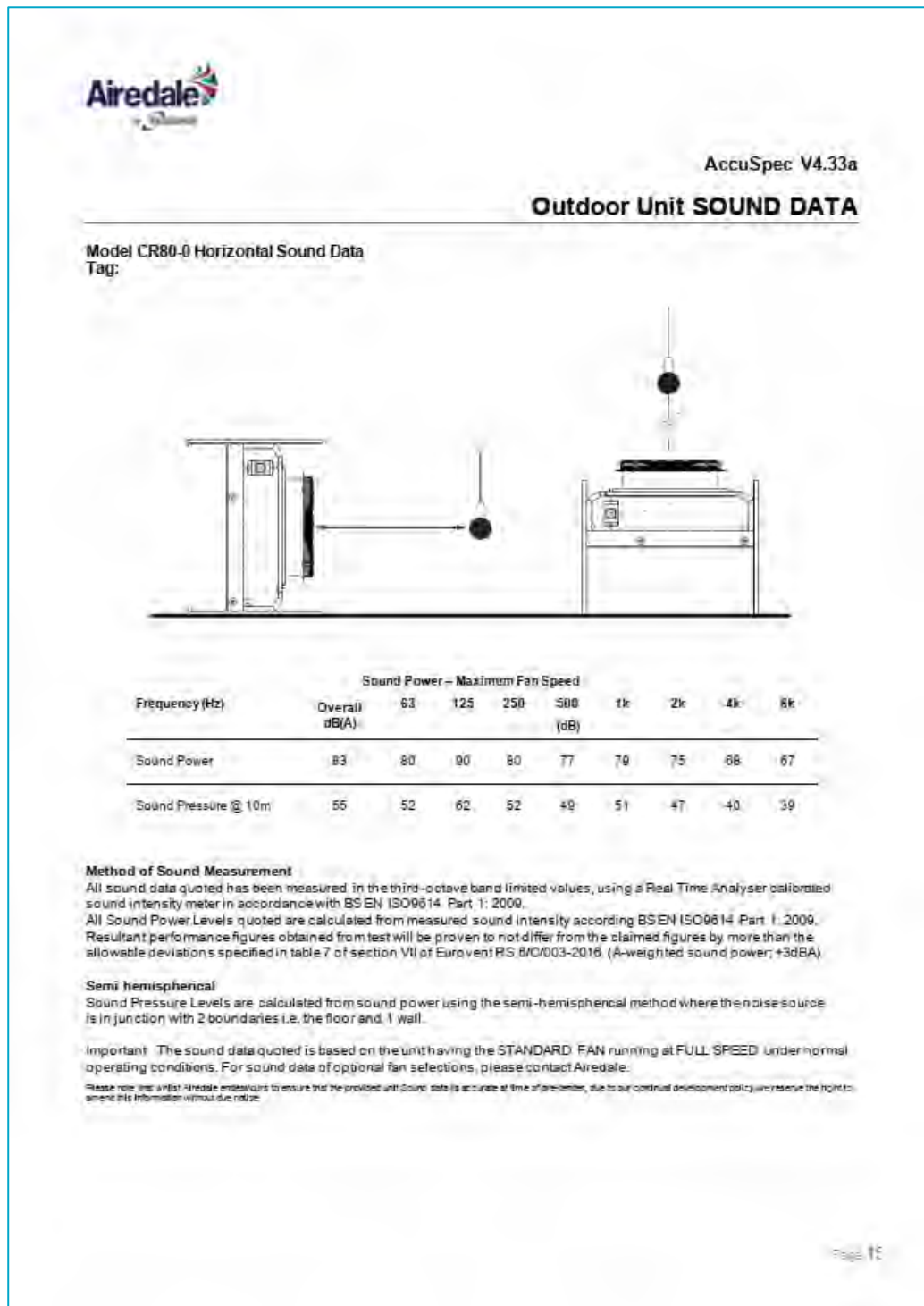
ACOUSTIC CANOPY SPECIFICATION

- Corrugated steel sides
- Mono pitched water shedding roof.
- Acoustic lining on walls and ceiling with perforated sheet steel inner skin.
- 4-point top/base lifting facility depending on application.
- 1 x Cable entry via sidewall, supplied with a 5mm thick aluminium gland plate.
- 2 x Single leaf access doors supplied with lockable slam type door furniture; internal push button panic release & restraining door stays.
- Internal space allowance of 1500mm between alternator and end wall of enclosure.

CANOPY DIMS (in mm) - 6750L x 3250W x 3050H Approx. Weight – 5,400kg.

## Freshwave mobile network cooling equipment (3no. condensers)

Technical submittal: 'Airedale - QT333295' dated 12/07/2021



## Appendix D – Attenuator data

Technical submittal: 'COOP-SES-TS-M-06' dated 18/11/2021



PROJECT NAME: COOP AND MACHINERY  
DATE: 19/11/2021  
PROJECT NO.: J355  
SCHEDULE NO.: 140/359023

| Item | System Name     | Code | Supply | DNIG | L1<br>mm | L2/D1<br>mm | W<br>mm | H/Dm<br>mm | Vol<br>m³/s | PI | WT<br>kg | fto<br>cm | Performance, dB |     |     |     |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
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|      |                 |      |        |      |          |             |         |            |             |    |          |           | B3              | L25 | 250 | 500 | 1K | 2K | 4K | 8K |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |    |
| 1    | MVR ATTENUATORS |      |        |      |          |             |         |            |             |    |          |           |                 |     |     |     |    |    |    |    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | </ |

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| Item | System Reference                       | Code | Symbol | DMG  | LC/ID | W   | W/ID | Wd   | PL | WT | Wv | Performance, dB |   |    |    |    |    |    |    |    |  |  |  |
|------|----------------------------------------|------|--------|------|-------|-----|------|------|----|----|----|-----------------|---|----|----|----|----|----|----|----|--|--|--|
| 37   | АТТ ММНН.1.А.02.01 - ММНН.02 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 38   | АТТ ММНН.1.А.02.02 - ММНН.02 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 39   | АТТ ММНН.1.А.02.03 - ММНН.02 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 40   | АТТ ММНН.1.А.02.04 - ММНН.02 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 41   | АТТ ММНН.1.В.02.01 - ММНН.01 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 42   | АТТ ММНН.1.В.02.02 - ММНН.01 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 43   | АТТ ММНН.1.В.02.03 - ММНН.01 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 44   | АТТ ММНН.1.В.02.04 - ММНН.01 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 45   | АТТ ММНН.1.В.02.01 - ММНН.02 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 0.83 | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 46   | АТТ ММНН.1.В.02.02 - ММНН.02 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 0.83 | 20 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 47   | АТТ ММНН.1.В.02.03 - ММНН.02 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 0.83 | 20 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 48   | АТТ ММНН.1.В.02.04 - ММНН.02 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 0.83 | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 49   | АТТ ММНН.1.В.02.01 - ММНН.02 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 50   | АТТ ММНН.1.В.02.02 - ММНН.02 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 51   | АТТ ММНН.1.В.02.03 - ММНН.02 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 0.71 | 20 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 52   | АТТ ММНН.1.В.02.04 - ММНН.02 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 0.71 | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 53   | АТТ ММНН.1.С.02.01 - ММНН.01 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 0.9  | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 54   | АТТ ММНН.1.С.02.02 - ММНН.01 - СИПНУ   | SP   | G      | A02G | 1100  | 750 | 680  | 0.9  | 20 | 77 | 1  | 1L              | 8 | 16 | 25 | 40 | 54 | 48 | 43 | 11 |  |  |  |
| 55   | АТТ ММНН.1.С.02.03 - ММНН.01 - ЕХТАСТ  | SP   | G      | A02G | 1200  | 750 | 680  | 0.94 | 20 | 77 | 1  | 1L              | 8 | 16 | 25 | 40 | 54 | 48 | 45 | 11 |  |  |  |
| 56   | АТТ ММНН.1.С.02.04 - ММНН.01 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 0.99 | 20 | 47 | 1  | 1L              | 5 | 9  | 18 | 32 | 34 | 30 | 25 | 17 |  |  |  |
| 57   | АТТ ММНН.1.С.02.01 - ММНН.02 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 58   | АТТ ММНН.1.С.02.02 - ММНН.02 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 59   | АТТ ММНН.1.С.02.03 - ММНН.02 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 60   | АТТ ММНН.1.С.02.04 - ММНН.02 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 61   | АТТ ММНН.1.Д.02.01 - ММНН.01 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 62   | АТТ ММНН.1.Д.02.02 - ММНН.01 - СИПНУ   | SP   | G      | A02G | 1100  | 750 | 680  | 1.1  | 30 | 77 | 1  | 1L              | 6 | 12 | 21 | 36 | 50 | 40 | 36 | 21 |  |  |  |
| 63   | АТТ ММНН.1.Д.02.03 - ММНН.01 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 1.1  | 30 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 64   | АТТ ММНН.1.Д.02.04 - ММНН.01 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 1.1  | 30 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 65   | АТТ ММНН.1.Д.02.01 - ММНН.02 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 0.83 | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 66   | АТТ ММНН.1.Д.02.02 - ММНН.02 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 0.83 | 20 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 67   | АТТ ММНН.1.Д.02.03 - ММНН.02 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 0.83 | 20 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 68   | АТТ ММНН.1.Д.02.04 - ММНН.02 - ЕХНАИСТ | SP   | G      | A02G | 600   | 750 | 680  | 0.83 | 20 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 69   | LEVEL 2                                |      |        |      |       |     |      |      |    |    |    |                 |   |    |    |    |    |    |    |    |  |  |  |
| 70   | АТТ ММНН.2.А.02.01 - ММНН.01 - FAL     | SP   | G      | A02G | 600   | 750 | 680  | 0.89 | 25 | 47 | 1  | 1L              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |  |  |  |
| 71   | АТТ ММНН.2.А.02.02 - ММНН.01 - СИПНУ   | SP   | G      | A02G | 900   | 750 | 680  | 0.89 | 25 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |
| 72   | АТТ ММНН.2.А.02.03 - ММНН.01 - ЕХТАСТ  | SP   | G      | A02G | 900   | 750 | 680  | 0.89 | 25 | 63 | 1  | 1L              | 5 | 9  | 17 | 27 | 40 | 33 | 28 | 17 |  |  |  |

| Item    | System Reference                          | Code | Suffix | DWG  | L1   | L2/10 | W   | H/Dia | Vel   | FD | WT  | Nu | Performance, dB |   |    |    |    |    |    |    |    |  |  |  |
|---------|-------------------------------------------|------|--------|------|------|-------|-----|-------|-------|----|-----|----|-----------------|---|----|----|----|----|----|----|----|--|--|--|
| 74      | ATT-MVNH-2-A-01-04 - MVNH-2A-01 - EXHAUST | SP   | G      | A02G | 600  |       | 750 | 680   | 0.089 | 25 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 75      | ATT-MVNH-2-A-02-01 - MVNH-2A-02 - FAN     | SP   | G      | A02G | 600  |       | 620 | 540   | 0.054 | 20 | 38  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 76      | ATT-MVNH-2-A-02-02 - MVNH-2A-02 - SUPPLY  | SP   | G      | A02G | 1200 |       | 600 | 590   | 0.063 | 20 | 64  | 1  | IL              | 8 | 16 | 25 | 40 | 54 | 48 | 45 | 11 |  |  |  |
| 77      | ATT-MVNH-2-A-02-03 - MVNH-2A-02 - EXTRACT | SP   | G      | A02G | 900  |       | 600 | 540   | 0.054 | 20 | 51  | 1  | IL              | 5 | 9  | 16 | 26 | 37 | 30 | 26 | 16 |  |  |  |
| 78      | ATT-MVNH-2-A-02-04 - MVNH-2A-02 - EXHAUST | SP   | G      | A02G | 600  |       | 600 | 540   | 0.054 | 20 | 38  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 79      | ATT-MVNH-2-B-01-01 - MVNH-2B-01 - FAN     | SP   | G      | A02G | 600  |       | 600 | 540   | 0.054 | 20 | 38  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 80      | ATT-MVNH-2-B-01-02 - MVNH-2B-01 - SUPPLY  | SP   | G      | A02G | 1200 |       | 600 | 590   | 0.064 | 20 | 75  | 1  | IL              | 9 | 19 | 30 | 46 | 55 | 51 | 50 | 36 |  |  |  |
| 81      | ATT-MVNH-2-B-01-03 - MVNH-2B-01 - EXTRACT | SP   | G      | A02G | 900  |       | 600 | 590   | 0.064 | 20 | 64  | 1  | IL              | 8 | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 82      | ATT-MVNH-2-B-01-04 - MVNH-2B-01 - EXHAUST | SP   | G      | A02G | 600  |       | 600 | 540   | 0.054 | 20 | 51  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 83      | ATT-MVNH-2-B-02-01 - MVNH-2B-02 - FAN     | SP   | G      | A02G | 600  |       | 600 | 540   | 0.056 | 20 | 38  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 84      | ATT-MVNH-2-B-02-02 - MVNH-2B-02 - SUPPLY  | SP   | G      | A02G | 900  |       | 600 | 590   | 0.056 | 20 | 51  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 85      | ATT-MVNH-2-B-02-03 - MVNH-2B-02 - EXTRACT | SP   | G      | A02G | 600  |       | 600 | 540   | 0.056 | 20 | 51  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 86      | ATT-MVNH-2-B-02-04 - MVNH-2B-02 - EXHAUST | SP   | G      | A02G | 900  |       | 600 | 540   | 0.056 | 20 | 51  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 87      | ATT-MVNH-2-B-03-01 - MVNH-2B-03 - FAN     | SP   | G      | A02G | 600  |       | 750 | 680   | 0.071 | 20 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 88      | ATT-MVNH-2-B-03-02 - MVNH-2B-03 - SUPPLY  | SP   | G      | A02G | 900  |       | 750 | 680   | 0.071 | 20 | 68  | 1  | IL              | 7 | 13 | 19 | 31 | 48 | 41 | 35 | 25 |  |  |  |
| 89      | ATT-MVNH-2-B-03-03 - MVNH-2B-03 - EXTRACT | SP   | G      | A02G | 600  |       | 750 | 680   | 0.071 | 20 | 63  | 1  | IL              | 7 | 13 | 19 | 31 | 48 | 41 | 35 | 25 |  |  |  |
| 90      | ATT-MVNH-2-B-03-04 - MVNH-2B-03 - EXHAUST | SP   | G      | A02G | 900  |       | 750 | 680   | 0.071 | 20 | 63  | 1  | IL              | 7 | 13 | 19 | 31 | 48 | 41 | 35 | 25 |  |  |  |
| 91      | ATT-MVNH-2-B-04-01 - MVNH-2B-04 - FAN     | SP   | G      | A02G | 600  |       | 600 | 540   | 0.06  | 20 | 38  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 92      | ATT-MVNH-2-B-04-02 - MVNH-2B-04 - SUPPLY  | SP   | G      | A02G | 1500 |       | 600 | 540   | 0.06  | 20 | 75  | 1  | IL              | 9 | 19 | 30 | 46 | 55 | 51 | 50 | 36 |  |  |  |
| 93      | ATT-MVNH-2-B-04-03 - MVNH-2B-04 - EXTRACT | SP   | G      | A02G | 900  |       | 600 | 540   | 0.06  | 20 | 51  | 1  | IL              | 3 | 7  | 12 | 18 | 26 | 21 | 18 | 11 |  |  |  |
| 94      | ATT-MVNH-2-B-04-04 - MVNH-2B-04 - EXHAUST | SP   | G      | A02G | 1200 |       | 600 | 540   | 0.06  | 20 | 64  | 1  | IL              | 8 | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 95      | ATT-MVNH-2-C-01-01 - MVNH-2C-01 - FAN     | SP   | G      | A02G | 600  |       | 750 | 680   | 0.088 | 25 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 96      | ATT-MVNH-2-C-01-02 - MVNH-2C-01 - SUPPLY  | SP   | G      | A02G | 1500 |       | 750 | 680   | 0.088 | 25 | 92  | 1  | IL              | 9 | 19 | 30 | 46 | 55 | 51 | 50 | 36 |  |  |  |
| 97      | ATT-MVNH-2-C-01-03 - MVNH-2C-01 - EXTRACT | SP   | G      | A02G | 1200 |       | 750 | 680   | 0.088 | 25 | 77  | 1  | IL              | 8 | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 98      | ATT-MVNH-2-C-01-04 - MVNH-2C-01 - EXHAUST | SP   | G      | A02G | 600  |       | 750 | 680   | 0.088 | 25 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 99      | ATT-MVNH-2-D-01-01 - MVNH-2D-01 - FAN     | SP   | G      | A02G | 600  |       | 750 | 680   | 0.073 | 20 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 100     | ATT-MVNH-2-D-01-02 - MVNH-2D-01 - EXTRACT | SP   | G      | A02G | 900  |       | 750 | 680   | 0.073 | 20 | 63  | 1  | IL              | 5 | 9  | 16 | 27 | 40 | 33 | 26 | 17 |  |  |  |
| 101     | ATT-MVNH-2-D-01-03 - MVNH-2D-01 - SUPPLY  | SP   | G      | A02G | 900  |       | 750 | 680   | 0.073 | 20 | 63  | 1  | IL              | 5 | 9  | 16 | 27 | 40 | 33 | 26 | 17 |  |  |  |
| 102     | ATT-MVNH-2-D-01-04 - MVNH-2D-01 - EXHAUST | SP   | G      | A02G | 600  |       | 750 | 680   | 0.073 | 20 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 103     | ATT-MVNH-2-D-02-01 - MVNH-2D-02 - FAN     | SP   | G      | A02G | 600  |       | 750 | 680   | 0.069 | 25 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 104     | ATT-MVNH-2-D-02-02 - MVNH-2D-02 - SUPPLY  | SP   | G      | A02G | 900  |       | 750 | 680   | 0.069 | 25 | 63  | 1  | IL              | 5 | 9  | 16 | 27 | 40 | 33 | 26 | 17 |  |  |  |
| 105     | ATT-MVNH-2-D-02-03 - MVNH-2D-02 - EXTRACT | SP   | G      | A02G | 900  |       | 750 | 680   | 0.069 | 25 | 63  | 1  | IL              | 5 | 9  | 16 | 27 | 40 | 33 | 26 | 17 |  |  |  |
| 106     | ATT-MVNH-2-D-02-04 - MVNH-2D-02 - EXHAUST | SP   | G      | A02G | 600  |       | 750 | 680   | 0.069 | 25 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 14 |  |  |  |
| 107     |                                           |      |        |      |      |       |     |       |       |    |     |    |                 |   |    |    |    |    |    |    |    |  |  |  |
| LEVEL 3 |                                           |      |        |      |      |       |     |       |       |    |     |    |                 |   |    |    |    |    |    |    |    |  |  |  |
| 108     | ATT-MVNH-3-B-01-01 - MVNH-3B-01 - FAN     | SP   | G      | A02G | 900  |       | 900 | 700   | 2.1   | 30 | 40  | 1  | IL              | 5 | 8  | 16 | 25 | 35 | 28 | 24 | 14 |  |  |  |
| 110     | ATT-MVNH-3-B-01-02 - MVNH-3B-01 - SUPPLY  | SP   | G      | A02G | 1500 |       | 900 | 700   | 2.1   | 40 | 122 | 1  | IL              | 7 | 13 | 24 | 37 | 50 | 41 | 36 | 21 |  |  |  |

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| Item | System Reference                              | Code | Suffix | DWG  | L1   | L2/10 | W    | H/Dia | Vol   | RI | WT  | Nu | Performance, dB |   |    |    |    |    |    |    |    |    |    |  |
|------|-----------------------------------------------|------|--------|------|------|-------|------|-------|-------|----|-----|----|-----------------|---|----|----|----|----|----|----|----|----|----|--|
| 111  | ATT MWNH.3.B.01.03 - MWNH.3.B.01.03 - EXTRACT | SP   | G      | A02G | 1200 |       | 900  | 700   | 3.4   | 30 | 30  | 1  | IL              | 5 | 8  | 15 | 25 | 35 | 45 | 34 | 30 | 24 | 18 |  |
| 112  | ATT MWNH.3.B.01.04 - MWNH.3.B.01.04 - EXHAUST | SP   | G      | A02G | 900  |       | 900  | 700   | 3.4   | 30 | 30  | 1  | IL              | 5 | 8  | 15 | 25 | 35 | 45 | 34 | 30 | 24 | 14 |  |
| 113  | ATT MWNH.3.B.02.01 - MWNH.3.B.02.01 - FAI     | SL   | G      | A02G | 900  |       | 500  | 400   | 0.155 | 20 | 28  | 1  | IL              | 4 | 8  | 12 | 18 | 26 | 32 | 22 | 16 | 11 |    |  |
| 114  | ATT MWNH.3.B.02.02 - MWNH.3.B.02.02 - SUPPLY  | SL   | G      | A02G | 1200 |       | 500  | 400   | 0.155 | 20 | 28  | 1  | IL              | 5 | 8  | 14 | 25 | 34 | 41 | 36 | 31 | 20 |    |  |
| 115  | ATT MWNH.3.B.02.03 - MWNH.3.B.02.03 - EXTRACT | SL   | G      | A02G | 900  |       | 500  | 400   | 0.155 | 20 | 28  | 1  | IL              | 5 | 8  | 12 | 18 | 26 | 35 | 30 | 25 | 16 |    |  |
| 116  | ATT MWNH.3.B.02.04 - MWNH.3.B.02.04 - EXHAUST | SL   | G      | A02G | 900  |       | 500  | 400   | 0.155 | 20 | 28  | 1  | IL              | 4 | 8  | 15 | 19 | 26 | 32 | 18 | 11 |    |    |  |
| 117  | ATT MWNH.3.B.03.01 - MWNH.3.B.03.01 - FAI     | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 118  | ATT MWNH.3.B.03.02 - MWNH.3.B.03.02 - SUPPLY  | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 119  | ATT MWNH.3.B.03.03 - MWNH.3.B.03.03 - EXTRACT | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 120  | ATT MWNH.3.B.03.04 - MWNH.3.B.03.04 - EXHAUST | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 121  | ATT MWNH.3.B.04.01 - MWNH.3.B.04.01 - FAI     | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 31 | 46 | 41 | 35 | 25 |    |  |
| 122  | ATT MWNH.3.B.04.02 - MWNH.3.B.04.02 - SUPPLY  | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 123  | ATT MWNH.3.B.04.03 - MWNH.3.B.04.03 - EXTRACT | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 124  | ATT MWNH.3.B.04.04 - MWNH.3.B.04.04 - EXHAUST | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 125  | ATT MWNH.3.C.01.01 - MWNH.3.C.01.01 - FAI     | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 126  | ATT MWNH.3.C.01.02 - MWNH.3.C.01.02 - SUPPLY  | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 127  | ATT MWNH.3.C.01.03 - MWNH.3.C.01.03 - EXTRACT | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 128  | ATT MWNH.3.C.01.04 - MWNH.3.C.01.04 - EXHAUST | SP   | G      | A02G | 900  |       | 750  | 600   | 0.975 | 30 | 47  | 1  | IL              | 3 | 7  | 12 | 19 | 26 | 23 | 20 | 12 |    |    |  |
| 129  | ATT MWNH.3.D.01.01 - MWNH.3.D.01.01 - FAI     | SP   | G      | A02G | 900  |       | 900  | 700   | 3.4   | 30 | 30  | 1  | IL              | 5 | 8  | 15 | 25 | 35 | 45 | 34 | 30 | 24 | 14 |  |
| 130  | ATT MWNH.3.D.01.02 - MWNH.3.D.01.02 - SUPPLY  | SP   | G      | A02G | 1500 |       | 900  | 700   | 3.4   | 30 | 30  | 1  | IL              | 7 | 13 | 24 | 37 | 50 | 61 | 41 | 35 | 21 |    |  |
| 131  | ATT MWNH.3.D.01.03 - MWNH.3.D.01.03 - EXTRACT | SP   | G      | A02G | 1500 |       | 900  | 700   | 3.4   | 35 | 102 | 1  | IL              | 6 | 11 | 20 | 30 | 43 | 54 | 34 | 30 | 18 |    |  |
| 132  | ATT MWNH.3.D.01.04 - MWNH.3.D.01.04 - EXHAUST | SP   | G      | A02G | 900  |       | 900  | 700   | 3.4   | 30 | 30  | 1  | IL              | 5 | 8  | 15 | 25 | 35 | 45 | 34 | 30 | 24 | 14 |  |
| 133  |                                               |      |        |      |      |       |      |       |       |    |     |    |                 |   |    |    |    |    |    |    |    |    |    |  |
| 134  | LEVEL 4                                       |      |        |      |      |       |      |       |       |    |     |    |                 |   |    |    |    |    |    |    |    |    |    |  |
| 135  | ATT MWNH.4.A.01.01 - MWNH.4.A.01.01 - FAI     | SL   | G      | A02G | 600  |       | 400  | 320   | 0.155 | 20 | 21  | 1  | IL              | 4 | 8  | 12 | 17 | 23 | 28 | 19 | 14 | 10 |    |  |
| 136  | ATT MWNH.4.A.01.02 - MWNH.4.A.01.02 - SUPPLY  | SL   | G      | A02G | 1200 |       | 400  | 320   | 0.155 | 20 | 21  | 1  | IL              | 7 | 13 | 27 | 37 | 48 | 42 | 37 | 24 |    |    |  |
| 137  | ATT MWNH.4.A.01.03 - MWNH.4.A.01.03 - EXTRACT | SL   | G      | A02G | 1200 |       | 400  | 320   | 0.155 | 20 | 21  | 1  | IL              | 7 | 13 | 27 | 37 | 48 | 42 | 37 | 24 |    |    |  |
| 138  | ATT MWNH.4.A.01.04 - MWNH.4.A.01.04 - EXHAUST | SL   | G      | A02G | 600  |       | 400  | 320   | 0.155 | 20 | 21  | 1  | IL              | 4 | 8  | 12 | 17 | 23 | 28 | 19 | 14 | 10 |    |  |
| 139  | ATT MWNH.4.A.02.01 - MWNH.4.A.02.01 - FAI     | SP   | G      | A02G | 900  |       | 1800 | 1000  | 3.7   | 20 | 124 | 1  | IL              | 5 | 8  | 14 | 22 | 34 | 40 | 25 | 17 |    |    |  |
| 140  | ATT MWNH.4.A.02.02 - MWNH.4.A.02.02 - SUPPLY  | SP   | G      | A02G | 900  |       | 1800 | 1000  | 3.7   | 20 | 182 | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 141  | ATT MWNH.4.A.02.03 - MWNH.4.A.02.03 - EXTRACT | SP   | G      | A02G | 900  |       | 1800 | 1000  | 3.7   | 20 | 182 | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 142  | ATT MWNH.4.A.02.04 - MWNH.4.A.02.04 - EXHAUST | SP   | G      | A02G | 900  |       | 1800 | 1000  | 3.7   | 20 | 133 | 1  | IL              | 5 | 9  | 14 | 22 | 34 | 40 | 25 | 17 |    |    |  |
| 143  | ATT MWNH.4.B.01.01 - MWNH.4.B.01.01 - FAI     | SP   | G      | A02G | 900  |       | 600  | 540   | 0.97  | 20 | 64  | 1  | IL              | 4 | 8  | 12 | 18 | 24 | 21 | 18 | 11 |    |    |  |
| 144  | ATT MWNH.4.B.01.02 - MWNH.4.B.01.02 - SUPPLY  | SP   | G      | A02G | 1200 |       | 600  | 540   | 0.97  | 20 | 64  | 1  | IL              | 4 | 8  | 16 | 25 | 30 | 24 | 18 | 11 |    |    |  |
| 145  | ATT MWNH.4.B.01.03 - MWNH.4.B.01.03 - EXTRACT | SP   | G      | A02G | 900  |       | 600  | 540   | 0.97  | 20 | 51  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |
| 146  | ATT MWNH.4.B.01.04 - MWNH.4.B.01.04 - EXHAUST | SP   | G      | A02G | 900  |       | 600  | 540   | 0.97  | 20 | 38  | 1  | IL              | 5 | 8  | 13 | 22 | 31 | 30 | 25 | 15 |    |    |  |
| 147  | ATT MWNH.4.B.02.01 - MWNH.4.B.02.01 - FAI     | SP   | G      | A02G | 900  |       | 750  | 600   | 0.94  | 30 | 63  | 1  | IL              | 7 | 13 | 19 | 31 | 46 | 41 | 35 | 25 |    |    |  |

| Item | System Reference                         | Code | Suffix | DWG   | L1   | L2/10 | W    | H/Dm | Vel   | PCI | WT   | Nr | Performance, dBA |    |    |    |    |    |    |    |    |  |  |  |
|------|------------------------------------------|------|--------|-------|------|-------|------|------|-------|-----|------|----|------------------|----|----|----|----|----|----|----|----|--|--|--|
| 146  | ATT MVMH.A.B.02.02 - MVMH.B.02 - SUPPLY  | SP   | G      | A026  | 1200 |       | 750  | 680  | 0.92  | 30  | 77   | 1  | IL               | 8  | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 149  | ATT MVMH.A.B.02.03 - MVMH.B.02 - EXTRACT | SP   | G      | A026  | 1200 |       | 750  | 680  | 0.92  | 30  | 77   | 1  | IL               | 8  | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 150  | ATT MVMH.A.B.02.04 - MVMH.B.02 - EXHAUST | SP   | G      | A026  | 900  |       | 750  | 680  | 0.92  | 30  | 63   | 1  | IL               | 7  | 13 | 19 | 24 | 48 | 41 | 35 | 25 |  |  |  |
| 151  | ATT MVMH.A.C.01.01 - MVMH.C.01 - FAN     | SP   | G      | A026  | 900  |       | 750  | 680  | 0.71  | 20  | 63   | 1  | IL               | 7  | 13 | 19 | 31 | 46 | 41 | 35 | 25 |  |  |  |
| 152  | ATT MVMH.A.C.01.02 - MVMH.C.01 - SUPPLY  | SP   | G      | A026  | 1200 |       | 750  | 680  | 0.71  | 20  | 77   | 1  | IL               | 8  | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 153  | ATT MVMH.A.C.01.03 - MVMH.C.01 - EXTRACT | SP   | G      | A026  | 1200 |       | 750  | 680  | 0.71  | 20  | 77   | 1  | IL               | 8  | 16 | 25 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 154  | ATT MVMH.A.C.01.04 - MVMH.C.01 - EXHAUST | SP   | G      | A026  | 900  |       | 750  | 680  | 0.71  | 20  | 63   | 1  | IL               | 7  | 13 | 19 | 31 | 46 | 41 | 35 | 25 |  |  |  |
| 155  | ATT MVMH.A.C.02.01 - MVMH.C.02 - FAN     | SP   | G      | A026  | 600  |       | 500  | 400  | 0.335 | 20  | 28   | 1  | IL               | 4  | 8  | 13 | 19 | 26 | 22 | 16 | 11 |  |  |  |
| 156  | ATT MVMH.A.C.02.02 - MVMH.C.02 - SUPPLY  | SP   | G      | A026  | 1200 |       | 500  | 400  | 0.335 | 20  | 43   | 1  | IL               | 8  | 16 | 32 | 34 | 41 | 36 | 31 | 20 |  |  |  |
| 157  | ATT MVMH.A.C.02.03 - MVMH.C.02 - EXTRACT | SP   | G      | A026  | 900  |       | 500  | 400  | 0.335 | 20  | 36   | 1  | IL               | 6  | 11 | 18 | 26 | 35 | 30 | 25 | 10 |  |  |  |
| 158  | ATT MVMH.A.C.02.04 - MVMH.C.02 - EXHAUST | SP   | G      | A026  | 600  |       | 500  | 400  | 0.335 | 20  | 28   | 1  | IL               | 4  | 8  | 13 | 19 | 26 | 22 | 16 | 11 |  |  |  |
| 159  | ATT MVMH.A.C.03.01 - MVMH.C.03 - FAN     | SP   | G      | A026  | 600  |       | 600  | 540  | 0.585 | 20  | 38   | 1  | IL               | 7  | 14 | 22 | 34 | 48 | 41 | 35 | 25 |  |  |  |
| 160  | ATT MVMH.A.C.03.02 - MVMH.C.03 - SUPPLY  | SP   | G      | A026  | 1200 |       | 600  | 540  | 0.585 | 20  | 64   | 1  | IL               | 8  | 16 | 32 | 40 | 54 | 48 | 45 | 31 |  |  |  |
| 161  | ATT MVMH.A.C.03.03 - MVMH.C.03 - EXTRACT | SP   | G      | A026  | 900  |       | 600  | 540  | 0.585 | 20  | 51   | 1  | IL               | 7  | 13 | 19 | 31 | 48 | 41 | 35 | 25 |  |  |  |
| 162  | ATT MVMH.A.C.03.04 - MVMH.C.03 - EXHAUST | SP   | G      | A026  | 600  |       | 600  | 540  | 0.585 | 20  | 38   | 1  | IL               | 7  | 13 | 19 | 31 | 48 | 41 | 35 | 25 |  |  |  |
| 163  | ATT MVMH.A.D.01.01 - MVMH.D.01 - FAN     | SP   | G      | A026  | 600  |       | 500  | 400  | 0.37  | 20  | 28   | 1  | IL               | 4  | 8  | 13 | 19 | 26 | 22 | 16 | 11 |  |  |  |
| 164  | ATT MVMH.A.D.01.02 - MVMH.D.01 - SUPPLY  | SP   | G      | A026  | 1200 |       | 500  | 400  | 0.37  | 20  | 43   | 1  | IL               | 8  | 16 | 32 | 34 | 41 | 36 | 31 | 20 |  |  |  |
| 165  | ATT MVMH.A.D.01.03 - MVMH.D.01 - EXTRACT | SP   | G      | A026  | 900  |       | 500  | 400  | 0.37  | 20  | 36   | 1  | IL               | 6  | 11 | 18 | 26 | 35 | 30 | 25 | 10 |  |  |  |
| 166  | ATT MVMH.A.D.01.04 - MVMH.D.01 - EXHAUST | SP   | G      | A026  | 600  |       | 500  | 400  | 0.37  | 20  | 28   | 1  | IL               | 4  | 8  | 13 | 19 | 26 | 22 | 16 | 11 |  |  |  |
| 167  |                                          |      |        |       |      |       |      |      |       |     |      |    |                  |    |    |    |    |    |    |    |    |  |  |  |
| 168  | ATT ANH5.A.D.01.04.01 INTAKE             | SP   |        | G2121 | 1500 |       | 3000 | 1500 | 12    | 28  | 660  | 16 | IL               | 13 | 21 | 32 | 43 | 49 | 44 | 36 | 25 |  |  |  |
| 169  | ATT ANH5.A.D.01.04.02 EXHAUST            | SP   |        | G2121 | 1500 |       | 3000 | 1500 | 12    | 28  | 660  | 16 | IL               | 13 | 21 | 32 | 43 | 49 | 44 | 36 | 25 |  |  |  |
| 170  | ATT ANH5.A.D.01.04.03 SUPPLY             | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 171  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 172  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 173  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 174  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 175  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 176  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 177  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 178  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 179  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 180  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 181  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 182  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 183  | ATT ANH5.A.D.01.04.03 EXTRACT            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |
| 184  | ATT ANH5.A.D.01.04.03 EXHAUST            | SP   |        | G2121 | 2700 |       | 3150 | 1500 | 12    | 42  | 1302 | 16 | IL               | 20 | 31 | 45 | 53 | 54 | 52 | 50 | 34 |  |  |  |

| Item                                   | System Reference                       | Code | Suffix | DWG  | L1   | L2/U | W    | H/Dim | Vel   | FD | WT  | No | Performance, dB |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
|----------------------------------------|----------------------------------------|------|--------|------|------|------|------|-------|-------|----|-----|----|-----------------|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| 185                                    | ATT EF A.C02.02 EF A.C02 EXHAUST       | SL   | GE     | A185 | 900  | 355  | 505  | 410   | 0.25  | 20 | 40  | 1  | IL              | 7  | 10 | 17 | 22 | 27 | 32 | 37 | 42 | 47  | 50  | 53  | 56  | 59  | 62  | 65  | 68  |
| ASSUMED SUPPLIED BY PLANT MANUFACTURER |                                        |      |        |      |      |      |      |       |       |    |     |    |                 |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
| 186                                    | ATT EF B.D.01.01 EF B.D.01 EXTRACT     | SP   | G      | A036 | 1500 |      | 1200 | 900   | 3.475 | 40 | 163 | 1  | IL              | 8  | 16 | 27 | 42 | 55 | 69 | 84 | 99 | 114 | 129 | 144 | 159 | 174 | 189 | 204 | 219 |
| 187                                    | ATT EF B.D.01.01 EF B.D.01 EXTRACT     | SP   | G      | A036 | 1500 |      | 1200 | 900   | 3.475 | 40 | 120 | 1  | IL              | 6  | 10 | 18 | 24 | 30 | 36 | 42 | 49 | 55  | 61  | 68  | 74  | 81  | 88  | 94  | 101 |
| 188                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1200 | 900   | 3.475 | 40 | 32  | 1  | IL              | 10 | 15 | 23 | 32 | 38 | 45 | 51 | 58 | 64  | 71  | 78  | 84  | 91  | 98  | 105 | 112 |
| 189                                    | ATT ATT B.D.01.01 ATT B.D.01 INTAKE    | SL   | GE     | A186 | 900  | 350  | 400  | 305   | 0.1   | 20 | 32  | 1  | IL              | 10 | 15 | 23 | 32 | 36 | 40 | 44 | 48 | 52  | 56  | 60  | 64  | 68  | 72  | 76  | 80  |
| 191                                    | ATT ATT B.D.01.02 ATT B.D.01 DISCHARGE | SL   | GE     | A186 | 900  | 350  | 400  | 305   | 0.1   | 20 | 32  | 1  | IL              | 10 | 15 | 23 | 32 | 36 | 40 | 44 | 48 | 52  | 56  | 60  | 64  | 68  | 72  | 76  | 80  |
| 192                                    | ATT ATT B.D.02.01 ATT B.D.02 INTAKE    | SL   | GE     | A186 | 900  | 250  | 400  | 305   | 0.1   | 20 | 32  | 1  | IL              | 10 | 15 | 23 | 32 | 36 | 40 | 44 | 48 | 52  | 56  | 60  | 64  | 68  | 72  | 76  | 80  |
| 193                                    | ATT ATT B.D.02.02 ATT B.D.02 DISCHARGE | SL   | GE     | A186 | 900  | 250  | 400  | 305   | 0.1   | 20 | 32  | 1  | IL              | 10 | 15 | 23 | 32 | 36 | 40 | 44 | 48 | 52  | 56  | 60  | 64  | 68  | 72  | 76  | 80  |
| 194                                    | ATT ATT B.C01.01 ATT B.C01 INTAKE      | SL   | GE     | A186 | 1200 | 355  | 505  | 410   | 0.2   | 20 | 48  | 1  | IL              | 8  | 10 | 21 | 29 | 33 | 37 | 41 | 45 | 49  | 53  | 57  | 61  | 65  | 69  | 73  | 77  |
| 195                                    | ATT ATT B.C01.02 ATT B.C02 DISCHARGE   | SL   | GE     | A186 | 1200 | 355  | 505  | 410   | 0.2   | 20 | 48  | 1  | IL              | 8  | 14 | 21 | 29 | 32 | 37 | 42 | 47 | 52  | 57  | 62  | 67  | 72  | 77  | 82  | 87  |
| 196                                    | ATT ATT B.C02.01 ATT B.C02 INTAKE      | SL   | GE     | A186 | 1200 | 355  | 505  | 410   | 0.2   | 20 | 48  | 1  | IL              | 8  | 14 | 21 | 29 | 33 | 37 | 42 | 47 | 52  | 57  | 62  | 67  | 72  | 77  | 82  | 87  |
| 197                                    | ATT ATT B.C02.02 ATT B.C02 DISCHARGE   | SL   | GE     | A186 | 1200 | 355  | 505  | 410   | 0.2   | 20 | 48  | 1  | IL              | 8  | 14 | 21 | 29 | 33 | 37 | 42 | 47 | 52  | 57  | 62  | 67  | 72  | 77  | 82  | 87  |
| 198                                    | ATT EF B.D.01.01 EF B.D.01 EXTRACT     | SP   | G      | A036 | 1400 |      | 1800 | 1600  | 5.76  | 90 | 692 | 1  | IL              | 21 | 39 | 42 | 45 | 48 | 51 | 54 | 57 | 60  | 63  | 66  | 69  | 72  | 75  | 78  | 81  |
| 199                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 1200 |      | 1500 | 1250  | 5.76  | 90 | 329 | 1  | IL              | 11 | 20 | 23 | 31 | 35 | 38 | 41 | 44 | 47  | 50  | 53  | 56  | 59  | 62  | 65  | 68  |
| 200                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1500 | 1250  | 5.76  | 90 | 182 | 1  | IL              | 27 | 33 | 19 | 31 | 48 | 41 | 35 | 28 | 21  | 16  | 11  | 6   | 1   | 1   | 1   | 1   |
| 201                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1800 | 1600  | 5.76  | 50 | 618 | 1  | IL              | 20 | 37 | 49 | 54 | 55 | 55 | 53 | 45 | 37  | 29  | 21  | 14  | 7   | 1   | 1   | 1   |
| 202                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  | 1230 | 950  | 400   | 2.497 | 50 | 124 | 1  | IL              | 8  | 13 | 20 | 27 | 35 | 38 | 42 | 45 | 48  | 51  | 54  | 57  | 60  | 63  | 66  | 69  |
| 203                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  | 1230 | 950  | 400   | 2.497 | 50 | 405 | 1  | IL              | 21 | 39 | 51 | 55 | 55 | 52 | 43 | 35 | 27  | 20  | 14  | 7   | 1   | 1   | 1   | 1   |
| 204                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  | 1230 | 950  | 400   | 2.497 | 50 | 405 | 1  | IL              | 17 | 34 | 39 | 45 | 45 | 45 | 45 | 39 | 33  | 27  | 21  | 16  | 11  | 6   | 1   | 1   |
| 205                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 1200 |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 206                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 207                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 208                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 209                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 210                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 211                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 212                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 213                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 214                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 215                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 216                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 217                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 218                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 219                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 220                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |
| 221                                    | ATT EF B.D.01.02 EF B.D.01 EXHAUST     | SP   | G      | A036 | 900  |      | 1230 | 950   | 2.497 | 50 | 157 | 1  | IL              | 12 | 22 | 25 | 32 | 37 | 39 | 42 | 44 | 46  | 48  | 50  | 52  | 54  | 56  | 58  | 60  |

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| Item | System Reference                     | Code | Suffix | DWG  | L2/10 | W   | H/Dm | Vol  | RT    | WT | Nr  | Performance, dB |    |    |    |    |    |    |    |    |    |  |  |
|------|--------------------------------------|------|--------|------|-------|-----|------|------|-------|----|-----|-----------------|----|----|----|----|----|----|----|----|----|--|--|
| 222  | ATT EAHU3.A.01.04 EAHU3.A.01 EXHAUST | SP   | GM     | A026 | 1500  |     | 630  | 750  | 0.667 | 40 | 95  | 1               | IL | 9  | 17 | 23 | 28 | 44 | 37 | 31 | 24 |  |  |
| 223  | ATT EAHU3.C.01.01 EAHU3.C.01 INTAKE  | SP   | G      | A026 | 1900  |     | 1230 | 650  | 1.305 | 40 | 98  | 1               | IL | 8  | 13 | 20 | 27 | 35 | 28 | 22 | 15 |  |  |
| 224  | ATT EAHU3.C.01.02 EAHU3.C.01 SUPPLY  | SP   | GM211  | A026 | 2100  |     | 1230 | 650  | 1.305 | 40 | 272 | 1               | IL | 18 | 31 | 44 | 53 | 55 | 50 | 38 | 34 |  |  |
| 225  | ATT EAHU3.C.01.03 EAHU3.C.01 EXTRACT | SP   | GM211  | A026 | 2400  |     | 1230 | 650  | 1.305 | 40 | 284 | 1               | IL | 13 | 31 | 39 | 45 | 45 | 45 | 45 | 45 |  |  |
| 226  | ATT EAHU3.C.01.04 EAHU3.C.01 EXHAUST | SP   | GM     | A026 | 1200  |     | 1230 | 650  | 1.305 | 40 | 124 | 1               | IL | 9  | 19 | 22 | 37 | 43 | 38 | 31 | 24 |  |  |
| 227  | ATT EAHU3.C.02.01 EAHU3.C.02 INTAKE  | SP   | G      | A026 | 1900  |     | 1230 | 950  | 2.494 | 50 | 124 | 1               | IL | 8  | 13 | 20 | 27 | 35 | 28 | 22 | 15 |  |  |
| 228  | ATT EAHU3.C.02.02 EAHU3.C.02 SUPPLY  | SP   | GM211  | A026 | 3000  |     | 1230 | 950  | 2.494 | 50 | 405 | 1               | IL | 22 | 39 | 51 | 55 | 55 | 55 | 55 | 44 |  |  |
| 229  | ATT EAHU3.C.02.03 EAHU3.C.02 EXTRACT | SP   | GM211  | A026 | 3000  |     | 1230 | 950  | 2.494 | 50 | 408 | 1               | IL | 17 | 34 | 39 | 45 | 45 | 45 | 45 | 39 |  |  |
| 230  | ATT EAHU3.C.02.04 EAHU3.C.02 EXHAUST | SP   | GM     | A026 | 1200  |     | 1230 | 950  | 2.494 | 50 | 157 | 1               | IL | 12 | 22 | 25 | 33 | 37 | 29 | 24 | 18 |  |  |
| 231  | ATT EAHU3.C.03.01 EAHU3.C.03 INTAKE  | SP   | G      | A026 | 1900  |     | 1230 | 160  | 1.517 | 50 | 98  | 1               | IL | 8  | 13 | 20 | 27 | 35 | 28 | 22 | 15 |  |  |
| 232  | ATT EAHU3.C.03.02 EAHU3.C.03 SUPPLY  | SP   | GM211  | A026 | 2400  |     | 1230 | 160  | 1.517 | 50 | 294 | 1               | IL | 15 | 32 | 49 | 55 | 55 | 55 | 55 | 54 |  |  |
| 233  | ATT EAHU3.C.03.03 EAHU3.C.03 EXTRACT | SP   | GM211  | A026 | 2400  |     | 1230 | 160  | 1.517 | 50 | 284 | 1               | IL | 13 | 31 | 39 | 45 | 45 | 45 | 45 | 39 |  |  |
| 234  | ATT EAHU3.C.03.04 EAHU3.C.03 EXHAUST | SP   | GM     | A026 | 1200  |     | 1230 | 160  | 1.517 | 50 | 124 | 1               | IL | 12 | 22 | 25 | 33 | 37 | 29 | 24 | 18 |  |  |
| 235  | ATT EAHU4.A.01.01 EAHU4.A.01 INTAKE  | SP   | G      | A026 | 1900  |     | 1230 | 1250 | 2.848 | 40 | 153 | 1               | IL | 15 | 36 | 39 | 51 | 52 | 39 | 33 | 22 |  |  |
| 236  | ATT EAHU4.A.01.02 EAHU4.A.01 SUPPLY  | SP   | GM211  | A026 | 1800  |     | 1230 | 1250 | 2.848 | 40 | 304 | 1               | IL | 15 | 36 | 39 | 42 | 47 | 43 | 40 | 40 |  |  |
| 237  | ATT EAHU4.A.01.03 EAHU4.A.01 EXTRACT | SP   | GM211  | A026 | 2700  |     | 1230 | 1250 | 2.848 | 40 | 456 | 1               | IL | 21 | 39 | 42 | 47 | 43 | 40 | 40 | 31 |  |  |
| 238  | ATT EAHU4.A.01.04 EAHU4.A.01 EXHAUST | SP   | GM     | A026 | 1200  |     | 1230 | 1250 | 2.848 | 40 | 191 | 1               | IL | 12 | 22 | 25 | 33 | 37 | 29 | 24 | 18 |  |  |
| 239  | ATT EAHU4.D.01.01 EAHU4.D.01 INTAKE  | SP   | G      | A026 | 1900  |     | 1230 | 950  | 2.429 | 50 | 124 | 1               | IL | 8  | 13 | 20 | 27 | 35 | 28 | 22 | 15 |  |  |
| 240  | ATT EAHU4.D.01.02 EAHU4.D.01 SUPPLY  | SP   | GM211  | A026 | 1800  |     | 1230 | 950  | 2.429 | 50 | 348 | 1               | IL | 17 | 31 | 40 | 51 | 54 | 53 | 47 | 36 |  |  |
| 241  | ATT EAHU4.D.01.03 EAHU4.D.01 EXTRACT | SP   | GM211  | A026 | 3000  |     | 1230 | 950  | 2.429 | 50 | 405 | 1               | IL | 23 | 40 | 44 | 45 | 46 | 44 | 42 | 38 |  |  |
| 242  | ATT EAHU4.D.01.04 EAHU4.D.01 EXHAUST | SP   | GM     | A026 | 1200  |     | 1230 | 950  | 2.429 | 50 | 157 | 1               | IL | 12 | 22 | 25 | 33 | 37 | 29 | 24 | 18 |  |  |
| 243  | ATT EAHU5.C.01.01 EAHU5.C.01 INTAKE  | SP   | G      | A026 | 1900  |     | 1050 | 900  | 5.675 | 40 | 90  | 1               | IL | 3  | 7  | 12 | 24 | 34 | 28 | 23 | 14 |  |  |
| 245  | ATT EAHU5.C.01.02 EAHU5.C.01 SUPPLY  | SP   | G      | A026 | 1200  |     | 1000 | 900  | 5.48  | 40 | 112 | 1               | IL | 4  | 9  | 18 | 34 | 49 | 39 | 34 | 21 |  |  |
| 246  | ATT EAHU5.C.01.03 EAHU5.C.01 EXTRACT | SP   | G      | A026 | 1200  |     | 1000 | 900  | 5.48  | 40 | 112 | 1               | IL | 5  | 11 | 20 | 36 | 54 | 51 | 45 | 27 |  |  |
| 247  | ATT EAHU5.C.01.04 EAHU5.C.01 EXHAUST | SP   | G      | A026 | 1200  |     | 1000 | 900  | 5.48  | 40 | 112 | 1               | IL | 6  | 11 | 20 | 32 | 43 | 34 | 30 | 18 |  |  |
| 248  | ATT EAHU5.C.02.01 EAHU5.C.02 INTAKE  | SP   | G      | A026 | 1900  |     | 700  | 500  | 4.12  | 40 | 51  | 1               | IL | 6  | 12 | 19 | 30 | 37 | 33 | 29 | 17 |  |  |
| 249  | ATT EAHU5.C.02.02 EAHU5.C.02 SUPPLY  | SP   | G      | A026 | 900   |     | 1000 | 900  | 4.55  | 40 | 89  | 1               | IL | 3  | 7  | 12 | 26 | 37 | 30 | 26 | 15 |  |  |
| 250  | ATT EAHU5.C.02.03 EAHU5.C.02 EXTRACT | SP   | G      | A026 | 900   |     | 1000 | 900  | 4.55  | 40 | 89  | 1               | IL | 3  | 7  | 12 | 26 | 37 | 30 | 26 | 15 |  |  |
| 251  | ATT EAHU5.C.02.04 EAHU5.C.02 EXHAUST | SP   | G      | A026 | 900   |     | 1000 | 900  | 4.55  | 40 | 89  | 1               | IL | 3  | 7  | 12 | 26 | 37 | 30 | 26 | 15 |  |  |
| 252  | CTA00.A.02 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 253  | CTA00.A.03 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 254  | CTA00.A.04 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 255  | CTA00.A.05 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 256  | CTA00.A.06 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 257  | CTA00.A.07 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |
| 258  | CTA00.A.08 VP W/C                    | PL   | G      | A136 | 1500  | 150 |      |      | 0.025 | 5  | 6   | 1               | IL | 1  | 2  | 6  | 16 | 23 | 19 | 17 | 12 |  |  |



PROJECT NAME: OX-OPALIVE SAF D.C.D.3 SF Q.U.L.D.C.  
DATE: 07/10/2022

PROJECT NO.: 13259  
SCHEDULE NO.: 15073259027

| Item | System Reference                     | Code | Slit/tx | DWG   | L1   | L2/D | W    | H/D# | Vol              | PD | WT  | No. | Performance dB |    |    |    |    |    |    |    |    |    |    |  |
|------|--------------------------------------|------|---------|-------|------|------|------|------|------------------|----|-----|-----|----------------|----|----|----|----|----|----|----|----|----|----|--|
|      |                                      |      |         |       | mm   | mm   | mm   | mm   | m <sup>3</sup> s | Pa | kg  | Off | IL             | IL | IL | IL | IL | IL | IL | IL | IL | IL | IL |  |
| 1    | ATT SAF D.C. D103 SAF D.C. D1 INTAKE | SP   | UG      | 10036 | 1500 |      | 1200 | 800  | 4                | 40 | 168 | 1   | 11             | 11 | 18 | 27 | 36 | 46 | 35 | 30 | 19 |    |    |  |
| 2    | ATT SAF D.C. D103 SAF D.C. D1 SUPPLY | SP   | UG      | 10036 | 1500 |      | 1200 | 800  | 4                | 40 | 168 | 1   | 11             | 11 | 19 | 27 | 36 | 46 | 35 | 30 | 23 |    |    |  |

# NOTES

LABEL WITH ITEM NO. & SYSTEM REF

IL = INSERTION LOSS (dB)

G = SELF FINISH PRE-GALVANIZED STEEL CONSTRUCTION

ALLWAY ACOUSTICS, Unit 10/11 Quorum Road, Hawthorn South VIC 3122

Page 1 of 1

**NOTE:**

- Fan control panels be Form 2 construction. The fan control panels will be suitable for internal location.
- Commissioning of Fans, Fan Control Panels and A1S Panels by SFS must be coordinated with correct damper control being provided by others.
- The smoke and heat detection system within the basement south areas will be supplied by the client's fire alarm specialist. The SFS system will require 1st volt free contact fire alarm signal per fan control panel to activate the smoke ventilation system as defined above. Wiring and termination of all signals will be by others.
- Any required BMS controls, interfaces and associated wiring will be supplied by the clients BMS specialist.

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### Ein Referenzobjekt

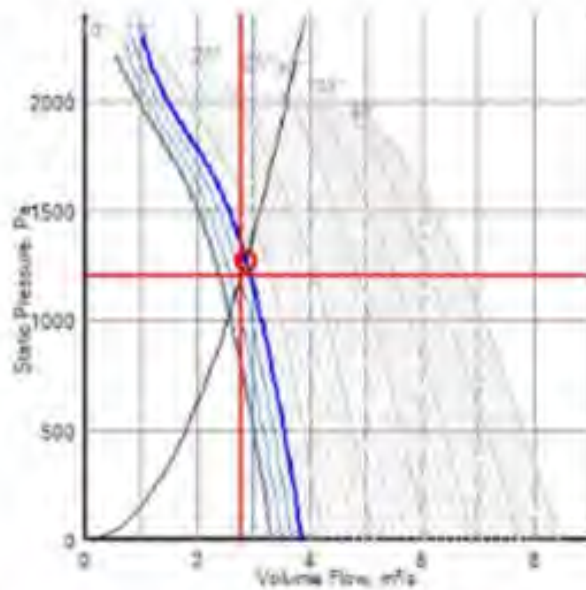
5EF 0.0 03-02 (Duty) & 5EF 0.0 03-04 (Standby) - R & S in parallel

100%



Product Co-Op LMR  
Smoke & Fire Speaker (SFS) Technical Specifications

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 97  | 99  | 102 | 103 | 103 | 95  | 92  | 85  | 109  | 85         |
| Outlet (dB)   | 98  | 100 | 101 | 103 | 104 | 95  | 92  | 85  | 109  | 86         |
| Breakout (dB) | xxx | xxx | xxx | Xxx | Xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

Industrial Fan Division  
Product & Engineering Group Technical Information

## Attenuator Insertion Loss Schedule

| Reference  | Fan Reference | System Reference | Location             | Qty | Model Code | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|------------------|----------------------|-----|------------|---------------|--------------------|
| #ATT0.C.01 | S8F0.C.03-01  | BASEMENT SOUTH   | Exhaust - Atmosphere | 1   | EG03H-01.S | 2.7           | 25                 |
| #ATT0.C.02 | S8F0.C.03-02  | BASEMENT SOUTH   | Exhaust - Roomside   | 1   | EG03V-01.S | 2.7           | 25                 |
| #ATT0.C.03 | S8F0.C.03-03  | BASEMENT SOUTH   | Exhaust - Atmosphere | 1   | EG03V-01.S | 2.7           | 25                 |
| #ATT0.C.04 | S8F0.C.03-04  | BASEMENT SOUTH   | Exhaust - Roomside   | 1   | EG03V-02.S | 2.7           | 25                 |

| Reference  | Primary Dimensions |     |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) @ Design Sound Control (Hz) |     |     |     |    |    |    |    |
|------------|--------------------|-----|------|---------------|-----|------------------|-------------|-------------------------------------------------|-----|-----|-----|----|----|----|----|
|            | W1                 | H1  | L1   | LD1           | HDL |                  |             | 63                                              | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| #ATT0.C.01 | 1850               | 925 | 900  | 980           | 1   | TG SMT DUCT      | 73          | 9                                               | 14  | 25  | 30  | 30 | 27 | 20 | 16 |
| #ATT0.C.02 | 1850               | 925 | 1200 | 1200          | 1   | TG SMT DUCT      | 95          | 10                                              | 11  | 23  | 28  | 27 | 27 | 22 | 16 |
| #ATT0.C.03 | 1850               | 925 | 900  | 980           | 1   | TG SMT DUCT      | 73          | 9                                               | 14  | 25  | 30  | 29 | 23 | 20 | 16 |
| #ATT0.C.04 | 1850               | 925 | 1200 | 1200          | 1   | TG SMT DUCT      | 95          | 10                                              | 11  | 23  | 28  | 27 | 27 | 22 | 16 |

## Flow Generated Sound Power Level Schedule

| Reference  | Fan Reference | System Reference | Location             | Qty | Model Code | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|------------------|----------------------|-----|------------|---------------|--------------------|
| #ATT0.C.01 | S8F0.C.03-01  | BASEMENT SOUTH   | Exhaust - Atmosphere | 1   | EG03H-01.S | 2.7           | 25                 |
| #ATT0.C.02 | S8F0.C.03-02  | BASEMENT SOUTH   | Exhaust - Roomside   | 1   | EG03V-01.S | 2.7           | 25                 |
| #ATT0.C.03 | S8F0.C.03-03  | BASEMENT SOUTH   | Exhaust - Atmosphere | 1   | EG03V-01.S | 2.7           | 25                 |
| #ATT0.C.04 | S8F0.C.03-04  | BASEMENT SOUTH   | Exhaust - Roomside   | 1   | EG03V-02.S | 2.7           | 25                 |

| Reference  | Primary Dimensions |     |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |    |    |    |    |
|------------|--------------------|-----|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|----|----|----|----|
|            | W1                 | H1  | L1   | LD1           | HDL |                  |             | 63                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| #ATT0.C.01 | 1850               | 925 | 900  | 980           | 1   | TG SMT DUCT      | 73          | 53                                    | 43  | 36  | 31  | 42 | 40 | 33 | 27 |
| #ATT0.C.02 | 1850               | 925 | 1200 | 1200          | 1   | TG SMT DUCT      | 95          | 53                                    | 47  | 40  | 45  | 40 | 42 | 33 | 27 |
| #ATT0.C.03 | 1850               | 925 | 900  | 980           | 1   | TG SMT DUCT      | 73          | 53                                    | 43  | 36  | 31  | 42 | 40 | 33 | 27 |
| #ATT0.C.04 | 1850               | 925 | 1200 | 1200          | 1   | TG SMT DUCT      | 95          | 53                                    | 47  | 40  | 45  | 40 | 42 | 33 | 27 |

Document Control Link:  
[Download Product Literature \(PDF\) \(Technical Substitution\)](#)

## Product Data Sheets

### Duty / Standby Main Extract Fans Sets

Fan Reference(s):

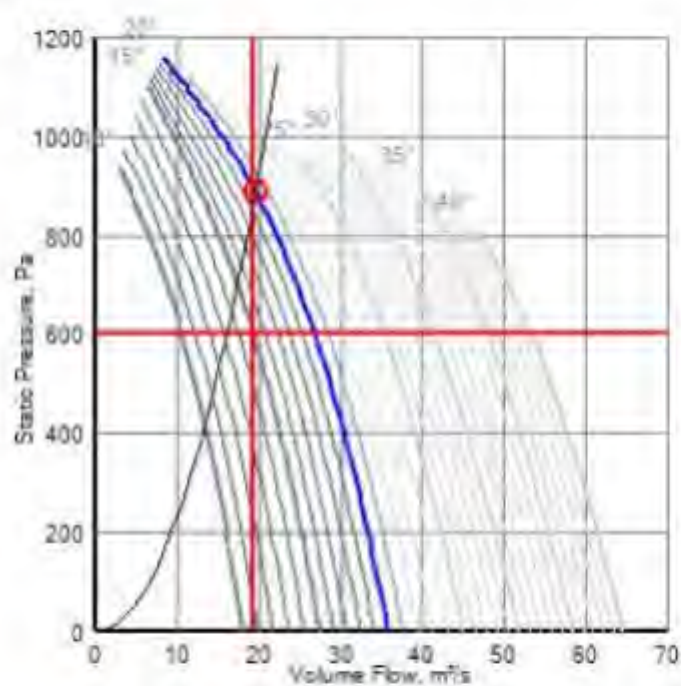
SEF.1.C.01-02 (EXTRACT 01), SEF.1.C.03-04 (EXTRACT 02), SEF.1.C.05-06 (EXTRACT 03)

Smoke Extract fans are designed and tested to EN12101-3:2015 (0086-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

|                           |                                                |
|---------------------------|------------------------------------------------|
| Air Flow                  | 18,50m³/s                                      |
| Static Pressure           | 600Pa                                          |
| Fan Diameter              | 1400                                           |
| Number of Blades          | 12                                             |
| Blade / Impeller Material | Aluminium                                      |
| Blade Pitch Angle         | 30°                                            |
| Speed                     | 1170 (rpm) @ 50Hz                              |
| Motor Frame               | 200L                                           |
| Motor Power               | 36,00 kW                                       |
| Electrical Supply         | 400V, 3ph, 50Hz                                |
| Casing Type               | LCS - 2x Long-Cased Smokevent                  |
| Full Load Current         | 67,80A                                         |
| Start Current             | 487,11A (DOL)                                  |
| Motor Type                | F300 (IE3)                                     |
| Motor                     | Class II                                       |
| Finish Coating            | MIL 51661 Hot-Dip Galvanised                   |
| Fan Weight                | 471,8 kg Each / 943,6 kg Total (RCS in series) |

Project Co-Op Live  
Smoke & Fire System (SFS) Technical Submission

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 111 | 110 | 111 | 110 | 109 | 107 | 105 | 99  | 118  | 94         |
| Outlet (dB)   | 110 | 111 | 109 | 108 | 106 | 105 | 102 | 99  | 117  | 91         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

Product Line-CEFL Line

Product Family-Attenuators & Flow Generators

## Attenuator Insertion Loss Schedule

| Reference  | Fan Reference | Exhaust Reference | Location                  | Qty | Model Code | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|------------|---------------|-------------------|---------------------------|-----|------------|----------------------------|--------------------|
| ATT-1.C.01 | SEF-1.C.01-02 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| ATT-1.C.02 | SEF-1.C.01-02 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |
| ATT-1.C.03 | SEF-1.C.01-04 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| ATT-1.C.04 | SEF-1.C.01-04 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |
| ATT-1.C.05 | SEF-1.C.05-06 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| ATT-1.C.06 | SEF-1.C.05-06 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |

| Reference  | Primary Dimensions |      |      | Delivery Date |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) at Specified Band Centres (Hz) |     |     |     |    |    |    |    |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|----------------------------------------------------|-----|-----|-----|----|----|----|----|
|            | Wt                 | Ht   | LT   | LDL           | NDL |                  |             | 63                                                 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| ATT-1.C.01 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |
| ATT-1.C.02 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |
| ATT-1.C.03 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |
| ATT-1.C.04 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |
| ATT-1.C.05 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |
| ATT-1.C.06 | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 3                                                  | 15  | 35  | 45  | 50 | 30 | 21 | 20 |

## Flow Generated Sound Power Level Schedule

| Reference | Fan Reference | Exhaust Reference | Location                  | Qty | Model Code | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|-----------|---------------|-------------------|---------------------------|-----|------------|----------------------------|--------------------|
| SEF-AT2   | SEF-1.C.01-02 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| SEF-AT3   | SEF-1.C.01-02 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |
| SEF-AT4   | SEF-1.C.01-04 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| SEF-AT5   | SEF-1.C.01-04 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |
| SEF-AT6   | SEF-1.C.05-06 | LOADING BAY       | Exhaust - Atmosphere side | 1   | ES02W-7L/S | 19.5                       | 65                 |
| SEF-AT7   | SEF-1.C.05-06 | LOADING BAY       | Extract - Room side       | 1   | ES02W-7L/S | 19.5                       | 65                 |

| Reference | Primary Dimensions |      |      | Delivery Date |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |    |    |    |    |
|-----------|--------------------|------|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|----|----|----|----|
|           | Wt                 | Ht   | LT   | LDL           | NDL |                  |             | 63                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| SEF-AT2   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |
| SEF-AT3   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |
| SEF-AT4   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |
| SEF-AT5   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |
| SEF-AT6   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |
| SEF-AT7   | 1800               | 1800 | 1800 | 750           | 0   | NO SUTURECT      | 574         | 30                                    | 75  | 35  | 35  | 35 | 35 | 35 | 35 |

## Product Data Sheets

### Duty / Standby Main Extract Fans Sets

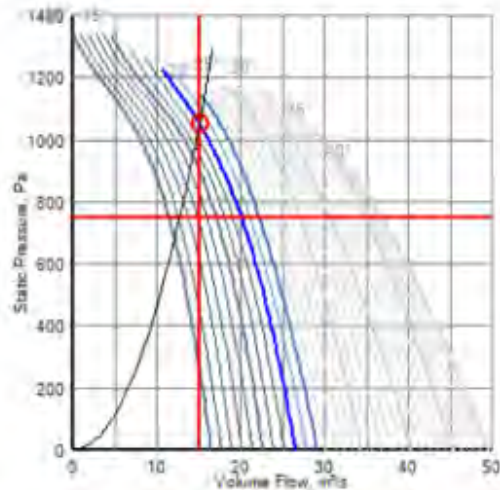
Fan Reference(s):

SEF.3.B.01+02 (North Concourse), SEF.3.C.01+02 (South Concourse).

Smoke Extract fans are designed and tested to EN12101-5:2015 (0016-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

|                            |                                              |
|----------------------------|----------------------------------------------|
| Air Flow:                  | 15,00m³/s                                    |
| Static Pressure:           | 150Pa                                        |
| Fan Diameter:              | 1250                                         |
| Number of Blades:          | 9                                            |
| Blade / Impeller Material: | Aluminium                                    |
| Blade Pitch Angle:         | 18°                                          |
| Speed:                     | 1470 r/min (850Hz)                           |
| Motor Frame:               | 200L                                         |
| Motor Power:               | 35.00kW                                      |
| Electrical Supply:         | 400V, 3ph, 50Hz                              |
| Casing Type:               | LGS – 2x Long-Grass Smokevents               |
| Full Load Current:         | 67.88A                                       |
| Start Current:             | 42 / 14A (DOL)                               |
| Motor Type:                | F300 (IE3)                                   |
| Motor:                     | Class H                                      |
| Motor Casing:              | Mild Steel Hot-Dip Galvanised                |
| Fan Weight:                | 467.2 kg Each (934.4 kg Total R&S inclusive) |

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 101 | 102 | 107 | 111 | 109 | 104 | 98  | 91  | 115  | 92         |
| Outlet (dB)   | 102 | 103 | 107 | 110 | 108 | 104 | 98  | 91  | 114  | 92         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

Fan Reference(s):

SEF.3.B.03-04 (East Concourse)

Smoke Extract fans are designed and tested to EN12101-3:2015 (0086-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

|                           |                  |
|---------------------------|------------------|
| Air Flow                  | 15.00m³/s        |
| Static Pressure           | 650Pa            |
| Fan Diameter              | 1250             |
| Number of Blades          | 12               |
| Blade / Impeller Material | Aluminium        |
| Blade Pitch Angle         | 21°              |
| Speed                     | 1475 r/min @50Hz |
| Motor Frame               | 180L             |
| Motor Power               | 27.00 kW         |
| Electrical Supply         | 400V, 3ph, 50Hz  |

Ref: BRA-SES-ZZ-XX-RP-X-66013  
22<sup>nd</sup> March 2022

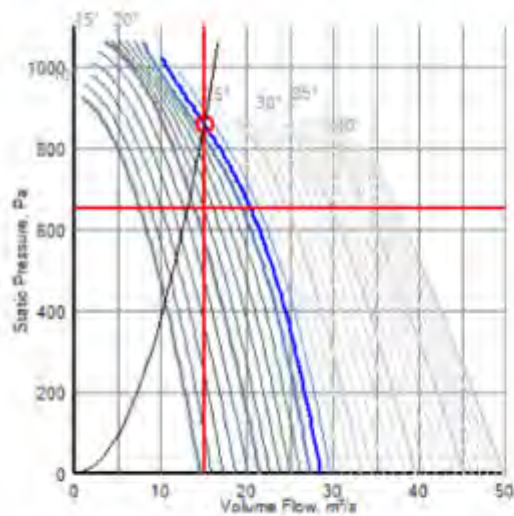


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Project: Co-Op Live  
Smoke & Fire System (SFS) Technical Submission

|                          |                                             |
|--------------------------|---------------------------------------------|
| <b>Casing Type</b>       | LCS – 2x Long-Cased Smokevent               |
| <b>Full Load Current</b> | 50.44A                                      |
| <b>Start Current</b>     | 302.50A (DOL)                               |
| <b>Motor Type</b>        | F300 (IE3)                                  |
| <b>Motor</b>             | Class H                                     |
| <b>Motor Casing</b>      | Mild Steel Hot-Dip Galvanised               |
| <b>Fan Weight</b>        | 361.7 kg Each (723.4kg Total R&S in series) |

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 105 | 97  | 106 | 109 | 107 | 106 | 101 | 96  | 114  | 92         |
| Outlet (dB)   | 107 | 101 | 104 | 107 | 106 | 106 | 102 | 96  | 114  | 91         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

## Attenuator Insertion Loss Schedule

| Reference     | Fan Reference | System Reference | Location                  | Qty | Model Code    | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|---------------|---------------|------------------|---------------------------|-----|---------------|----------------------------|--------------------|
| ATT 3.B.01-02 | SEP 3.B.01-02 | CONCOURSE NORTH  | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.01-02 | SEP 3.B.01-02 | CONCOURSE NORTH  | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.03-04 | SEP 3.B.03-04 | CONCOURSE EAST   | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.03-04 | SEP 3.B.03-04 | CONCOURSE EAST   | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.C.01-02 | SEP 3.C.01-02 | CONCOURSE SOUTH  | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.C.01-02 | SEP 3.C.01-02 | CONCOURSE SOUTH  | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |

| Reference     | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) at Octave Band Centre (Hz) |     |     |     |    |    |    |    |
|---------------|--------------------|------|------|---------------|-----|------------------|-------------|------------------------------------------------|-----|-----|-----|----|----|----|----|
|               | W1                 | H1   | L1   | LD1           | MDL |                  |             | 63                                             | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| ATT 3.B.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |
| ATT 3.B.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |
| ATT 3.B.03-04 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |
| ATT 3.B.03-04 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |
| ATT 3.C.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |
| ATT 3.C.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 8                                              | 11  | 13  | 36  | 43 | 26 | 22 | 18 |

## Flow Generated Sound Power Level Schedule

| Reference     | Fan Reference | System Reference | Location                  | Qty | Model Code    | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|---------------|---------------|------------------|---------------------------|-----|---------------|----------------------------|--------------------|
| ATT 3.B.01-02 | SEP 3.B.01-02 | CONCOURSE NORTH  | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.01-02 | SEP 3.B.01-02 | CONCOURSE NORTH  | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.03-04 | SEP 3.B.03-04 | CONCOURSE EAST   | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.B.03-04 | SEP 3.B.03-04 | CONCOURSE EAST   | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.C.01-02 | SEP 3.C.01-02 | CONCOURSE SOUTH  | Exhaust - Atmosphere side | 1   | EG02H/-/-/L/S | 15                         | 58                 |
| ATT 3.C.01-02 | SEP 3.C.01-02 | CONCOURSE SOUTH  | Extract - Room side       | 1   | EG02H/-/-/L/S | 15                         | 58                 |

| Reference     | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |    |    |    |    |
|---------------|--------------------|------|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|----|----|----|----|
|               | W1                 | H1   | L1   | LD1           | MDL |                  |             | 63                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| ATT 3.B.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |
| ATT 3.B.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |
| ATT 3.B.03-04 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |
| ATT 3.B.03-04 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |
| ATT 3.C.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |
| ATT 3.C.01-02 | 1800               | 1200 | 1800 | 900           | 2   | TO SUIT DUCT     | 238         | 71                                    | 69  | 63  | 63  | 61 | 56 | 47 | 37 |

## Product Data Sheets

### Duty / Standby Main Extract Fans Sets

Fan Reference(s):

SEF.4.A.01-02 (North West Concourse), SEF.4.D.01-02 (South West Concourse).

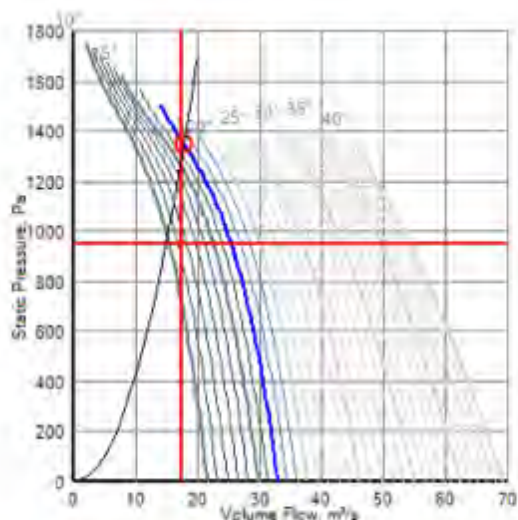
Smoke Extract fans are designed and tested to EN12101-3:2015 (0066-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

|                            |                                               |
|----------------------------|-----------------------------------------------|
| Air Flow:                  | 17.50m <sup>3</sup> /s                        |
| Static Pressure:           | 950Pa                                         |
| Fan Diameter:              | 1400                                          |
| Number of Blades:          | 12                                            |
| Blade / Impeller Material: | Aluminium                                     |
| Blade Pitch Angle:         | 15°                                           |
| Speed:                     | 1475 r/min (0.50Hz)                           |
| Motor Frame:               | 250S/M                                        |
| Motor Power:               | 66.03kW                                       |
| Extract Supply:            | 400V, 3ph, 50Hz                               |
| Casing Type:               | LCS – 2x Long-Cased Smokevent                 |
| Full Load Current:         | 119.04A                                       |
| Start Current:             | 736.05A (DOL)                                 |
| Motor Type:                | F300 (IE2)                                    |
| Motor:                     | Class B                                       |
| Motor Casing:              | Mild Steel Hot-Dip Galvanneal                 |
| Fan Weight:                | 841.9 kg Each (1683.8 kg Total R&S inclusive) |

### Fan Curve

SEF.4.A.01-02 & SEF.4.D.01-02  
0.270m/s²





## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 104 | 101 | 108 | 112 | 111 | 109 | 103 | 96  | 117  | 95         |
| Outlet (dB)   | 106 | 102 | 107 | 111 | 111 | 109 | 103 | 95  | 117  | 95         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

Fan Reference(s):

SEF.5.A.05-06 (Atrium), SEF.5.A.07-08 (Atrium), SEF.5.D.05-06 (Atrium).

Smoke Extract fans are designed and tested to EN12101-3:2015 (0086-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

|                           |                               |
|---------------------------|-------------------------------|
| Air Flow                  | 15.00m³/s                     |
| Static Pressure           | 850Pa                         |
| Fan Diameter              | 1250                          |
| Number of Blades          | 12                            |
| Blade / Impeller Material | Aluminium                     |
| Blade Pitch Angle         | 18°                           |
| Speed                     | 1475 r/min @50Hz              |
| Motor Frame               | 225S/M                        |
| Motor Power               | 44.40 kW                      |
| Electrical Supply         | 400V, 3ph, 50Hz               |
| Casing Type               | LCS - 2x Long-Cased Smokevent |

Ref: BRÁ-SES-ZZ-XX-III-X-(0901)  
22<sup>nd</sup> March 2022

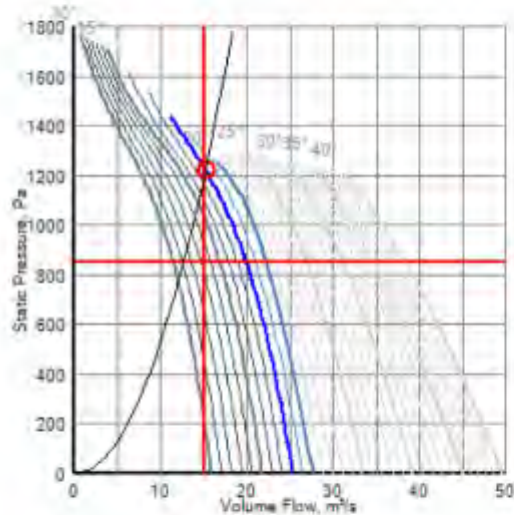


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Project Co-Op Live:  
Smoke & Fire System (BFS) Technical Submission

|                   |                                               |
|-------------------|-----------------------------------------------|
| Full Load Current | 80.40A                                        |
| Start Current     | 514.56A (DOL)                                 |
| Motor Type        | F300 (IE3)                                    |
| Motor             | Class H                                       |
| Motor Casing      | Mild Steel Hot-Dip Galvanised                 |
| Fan Weight        | 661.3 kg Each (1322.6 kg Total R&S in series) |

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 101 | 100 | 106 | 109 | 108 | 104 | 99  | 91  | 114  | 91         |
| Outlet (dB)   | 103 | 101 | 105 | 108 | 108 | 105 | 99  | 91  | 114  | 91         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

## Attenuator Insertion Loss Schedule

| Reference  | Fan Reference | System Reference           | Location                  | Qty | Model Code  | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|----------------------------|---------------------------|-----|-------------|---------------|--------------------|
| ATT 4 A 01 | SEF 4 A 01-02 | ATRIUM CONCOURSE SW LVL 03 | Exhaust - Atmosphere side | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 A 02 | SEF 4 A 01-02 | ATRIUM CONCOURSE NW LVL 03 | Extract - Room side       | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 D 01 | SEF 4 D 01-02 | ATRIUM CONCOURSE SW LVL 03 | Exhaust - Atmosphere side | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 D 02 | SEF 4 D 01-02 | ATRIUM CONCOURSE SW LVL 03 | Extract - Room side       | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 5 A 01 | SEF 5 A 01-06 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 06 | SEF 5 A 01-06 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 07 | SEF 5 A 07-08 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 08 | SEF 5 A 07-08 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 D 01 | SEF 5 D 01-06 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 D 06 | SEF 5 D 01-06 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) at various flow rates (m³/s) |     |     |     |      |      |      |      |      |  |  |  |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|--------------------------------------------------|-----|-----|-----|------|------|------|------|------|--|--|--|
|            | W1                 | H1   | L1   | LD1           | NOL |                  |             | 40                                               | 125 | 250 | 500 | 1000 | 1500 | 2000 | 2500 | 3000 |  |  |  |
| ATT 4 A 01 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 4 A 02 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 4 D 01 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 4 D 02 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 A 01 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 A 06 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 A 07 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 A 08 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 D 01 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 D 06 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |
| ATT 5 D 08 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 6                                                | 7   | 7   | 13  | 13   | 14   | 14   | 14   | 14   |  |  |  |

## Flow Generated Sound Power Level Schedule

| Reference  | Fan Reference | System Reference           | Location                  | Qty | Model Code  | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|----------------------------|---------------------------|-----|-------------|---------------|--------------------|
| ATT 4 A 01 | SEF 4 A 01-02 | ATRIUM CONCOURSE SW LVL 03 | Exhaust - Atmosphere side | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 A 02 | SEF 4 A 01-02 | ATRIUM CONCOURSE NW LVL 03 | Extract - Room side       | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 D 01 | SEF 4 D 01-02 | ATRIUM CONCOURSE SW LVL 03 | Exhaust - Atmosphere side | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 4 D 02 | SEF 4 D 01-02 | ATRIUM CONCOURSE SW LVL 03 | Extract - Room side       | 1   | EG02V/-/L/S | 17.5          | 68                 |
| ATT 5 A 01 | SEF 5 A 01-06 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 06 | SEF 5 A 01-06 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 07 | SEF 5 A 07-08 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 A 08 | SEF 5 A 07-08 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 D 01 | SEF 5 D 01-06 | ATRIUM LVL 02              | Exhaust - Atmosphere side | 1   | EG01W/-/L/S | 15            | 68                 |
| ATT 5 D 06 | SEF 5 D 01-06 | ATRIUM LVL 02              | Extract - Room side       | 1   | EG01W/-/L/S | 15            | 68                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |    |    |    |    |    |    |  |  |  |  |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|----|----|----|----|----|----|--|--|--|--|
|            | W1                 | H1   | L1   | LD1           | NOL |                  |             | 40                                    | 125 | 250 | 500 | 1k | 2k | 4k | 8k |    |    |  |  |  |  |
| ATT 4 A 01 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 70                                    | 86  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 4 A 02 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 70                                    | 86  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 4 D 01 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 70                                    | 86  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 4 D 02 | 1300               | 1300 | 1300 | 800           | 0   | FD SUIT DUCT     | 123         | 70                                    | 86  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 A 01 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 A 06 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 A 07 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 A 08 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 D 01 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |
| ATT 5 D 06 | 1300               | 1300 | 1300 | 1300          | 0   | FD SUIT DUCT     | 123         | 69                                    | 87  | 81  | 81  | 81 | 82 | 82 | 82 | 82 | 82 |  |  |  |  |

## Product Data Sheets

### Duty / Standby Main Extract Fans Sets

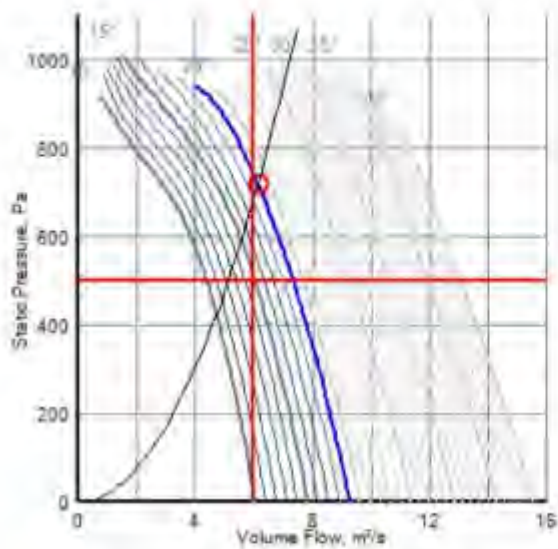
Fan Reference(s):

SEF.S.A.09-10 (Stair Core A), SEF.S.B.05-06 (Stair Core B), SEF.S.C.03-04 (Stair Core C), SEF.S.D.07-08 (Stair Core D)

Smoke Extract fans are designed and tested to EN12101-3:2015 (0086-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to EHP requirements)

|                            |                                          |
|----------------------------|------------------------------------------|
| Air Flow:                  | 6,00m³/s                                 |
| Static Pressure:           | 500Pa                                    |
| Fan Diameter:              | 730                                      |
| Number of Blades:          | 6                                        |
| Blade / Impeller Material: | Aluminium                                |
| Blade Pitch Angle:         | 19°                                      |
| Speed:                     | 2910/77min (50Hz)                        |
| Blade Frame:               | 1825                                     |
| Motor Power:               | 9,00 kW                                  |
| Motorial Supply:           | 400V, 3ph, 50Hz                          |
| Casing Type:               | LPS - 1/2 (100g) - 1/2 (100g) Steelwork  |
| Full Load Current:         | 16.68A                                   |
| Start Current:             | 119.06A (DOL)                            |
| Blade Type:                | F 300 (R3)                               |
| Motor:                     | Class F                                  |
| Motor Casing:              | Mild Steel Hot-Dip Galvanised            |
| Fan Weight:                | 115.2kg Each (230.4 kg Total R&S in use) |

**Fan Curve**



**Sound Data**

| Spectrum [Hz] | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @3m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 96  | 99  | 102 | 106 | 105 | 103 | 98  | 93  | 111  | 89         |
| Outlet (dB)   | 97  | 100 | 101 | 105 | 104 | 102 | 98  | 92  | 110  | 88         |
| Breakout (dB) | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx | xxx  | xxx        |

Sound levels are quoted as in-duct values, dB(A) values are average spherical free-field for comparative use only.

## Attenuator Insertion Loss Schedule

| Reference  | Fan Reference | System Reference | Location                  | Qty | Model Code   | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|------------------|---------------------------|-----|--------------|---------------|--------------------|
| ATT.S.A.09 | SEF.S.A.09-10 | F/F STAIR CORE A | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 5             | 45                 |
| ATT.S.A.10 | SEF.S.A.09-10 | F/F STAIR CORE A | Extract - Room side       | 1   | EG01V/--/L/S | 5             | 48                 |
| ATT.S.B.05 | SEF.S.B.05-06 | F/F STAIR CORE B | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 6             | 45                 |
| ATT.S.B.06 | SEF.S.B.05-06 | F/F STAIR CORE B | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |
| ATT.S.C.03 | SEF.S.C.03-04 | F/F STAIR CORE C | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 6             | 45                 |
| ATT.S.C.04 | SEF.S.C.03-04 | F/F STAIR CORE C | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |
| ATT.S.D.07 | SEF.S.D.07-08 | F/F STAIR CORE D | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 5             | 45                 |
| ATT.S.D.08 | SEF.S.D.07-08 | F/F STAIR CORE D | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) at Octave Band Centres (Hz) |     |     |     |    |    |    |    |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|-------------------------------------------------|-----|-----|-----|----|----|----|----|
|            | W/L                | H1   | L1   | QDA           | MDL |                  |             | 63                                              | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| ATT.S.A.09 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 8                                               | 13  | 23  | 34  | 34 | 36 | 35 | 34 |
| ATT.S.A.10 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 8                                               | 13  | 23  | 42  | 45 | 46 | 40 | 36 |
| ATT.S.B.05 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 8                                               | 13  | 23  | 34  | 34 | 36 | 35 | 34 |
| ATT.S.B.06 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 8                                               | 13  | 23  | 42  | 45 | 46 | 40 | 36 |
| ATT.S.C.03 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 8                                               | 13  | 23  | 34  | 34 | 36 | 35 | 34 |
| ATT.S.C.04 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 8                                               | 13  | 23  | 42  | 45 | 46 | 40 | 36 |
| ATT.S.D.07 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 8                                               | 13  | 23  | 34  | 34 | 36 | 35 | 34 |
| ATT.S.D.08 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 8                                               | 13  | 23  | 42  | 45 | 46 | 40 | 36 |

## Flow Generated Sound Power Level Schedule

| Reference  | Fan Reference | System Reference | Location                  | Qty | Model Code   | Volume (m³/s) | Pressure Loss (Pa) |
|------------|---------------|------------------|---------------------------|-----|--------------|---------------|--------------------|
| ATT.S.A.09 | SEF.S.A.09-10 | F/F STAIR CORE A | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 5             | 45                 |
| ATT.S.A.10 | SEF.S.A.09-10 | F/F STAIR CORE A | Extract - Room side       | 1   | EG01V/--/L/S | 5             | 48                 |
| ATT.S.B.05 | SEF.S.B.05-06 | F/F STAIR CORE B | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 6             | 45                 |
| ATT.S.B.06 | SEF.S.B.05-06 | F/F STAIR CORE B | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |
| ATT.S.C.03 | SEF.S.C.03-04 | F/F STAIR CORE C | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 6             | 45                 |
| ATT.S.C.04 | SEF.S.C.03-04 | F/F STAIR CORE C | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |
| ATT.S.D.07 | SEF.S.D.07-08 | F/F STAIR CORE D | Exhaust - Atmosphere side | 1   | EG01V/--/L/S | 5             | 45                 |
| ATT.S.D.08 | SEF.S.D.07-08 | F/F STAIR CORE D | Extract - Room side       | 1   | EG01V/--/L/S | 6             | 48                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |    |    |    |    |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|----|----|----|----|
|            | W/L                | H1   | L1   | QDA           | MDL |                  |             | 63                                    | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| ATT.S.A.09 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.A.10 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.B.05 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.B.06 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.C.03 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.C.04 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.D.07 | 1400               | 1400 | 900  | 300           | 1   | TO SUIT DUCT     | 121         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |
| ATT.S.D.08 | 1400               | 1400 | 1200 | 1200          | 1   | TO SUIT DUCT     | 153         | 64                                    | 62  | 56  | 56  | 54 | 45 | 40 | 30 |

## Product Data Sheets

### Duty / Standby Main Extract Fans Sets

Fan Reference(s):

SEF.S.A.01-02 (West), SEF.S.A.03-04 (West), SEF.S.B.01-02 (East), SEF.S.B.03-04 (East), SEF.S.C.01-02 (East), SEF.S.D.01-02 (West), SEF.S.D.03-04 (West).

Smoke Extract fans are designed and tested to EN12101-3:2015 (D086-CPR-493001), suitable for once only use at 300°C for 2 hours as well as continuous use at ambient (subject to ErP requirements).

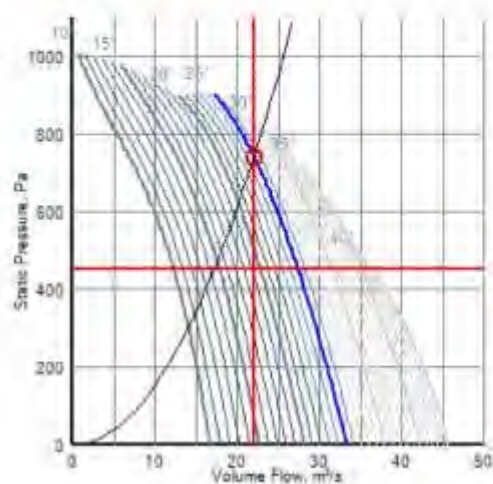
Ref: 88A-88B-88C-88D-88E-88F-88G-88H-88I-88J-88K-88L-88M-88N-88O-88P-88Q-88R-88S-88T-88U-88V-88W-88X-88Y-88Z-88AA-88AB-88AC-88AD-88AE-88AF-88AG-88AH-88AI-88AJ-88AK-88AL-88AM-88AN-88AO-88AP-88AQ-88AR-88AS-88AT-88AU-88AV-88AW-88AX-88AY-88AZ-88BA-88BB-88BC-88BD-88BE-88BF-88BG-88BH-88BI-88BJ-88BK-88BL-88BM-88BN-88BO-88BP-88BQ-88BR-88BS-88BT-88BU-88BV-88BW-88BX-88BY-88BZ-88CA-88CB-88CC-88CD-88CE-88CF-88CG-88CH-88CI-88CJ-88CK-88CL-88CM-88CN-88CO-88CP-88CQ-88CR-88CS-88CT-88CU-88CV-88CW-88CX-88CY-88CZ-88DA-88DB-88DC-88DD-88DE-88DF-88DG-88DH-88DI-88DJ-88DK-88DL-88DM-88DN-88DO-88DP-88DQ-88DR-88DS-88DT-88DU-88DV-88DW-88DX-88DY-88DZ-88EA-88EB-88EC-88ED-88EE-88EF-88EG-88EH-88EI-88EJ-88EK-88EL-88EM-88EN-88EO-88EP-88EQ-88ER-88ES-88ET-88EU-88EV-88EW-88EX-88EY-88EZ-88FA-88FB-88FC-88FD-88FE-88FF-88FG-88FH-88FI-88FJ-88FK-88FL-88FM-88FN-88FO-88FP-88FQ-88FR-88FS-88FT-88FU-88FV-88FW-88FX-88FY-88FZ-88GA-88GB-88GC-88GD-88GE-88GF-88GG-88GH-88GI-88GJ-88GK-88GL-88GM-88GN-88GO-88GP-88GQ-88GR-88GS-88GT-88GU-88GV-88GW-88GX-88GY-88GZ-88HA-88HB-88HC-88HD-88HE-88HF-88HG-88HH-88HI-88HJ-88HK-88HL-88HM-88HN-88HO-88HP-88HQ-88HR-88HS-88HT-88HU-88HV-88HW-88HX-88HY-88HZ-88IA-88IB-88IC-88ID-88IE-88IF-88IG-88IH-88II-88IJ-88IK-88IL-88IM-88IN-88IO-88IP-88IQ-88IR-88IS-88IT-88IU-88IV-88IW-88IX-88IY-88IZ-88JA-88JB-88JC-88JD-88JE-88JF-88JG-88JH-88JI-88JJ-88JK-88JL-88JM-88JN-88JO-88JP-88JQ-88JR-88JS-88JT-88JU-88JV-88JW-88JX-88JY-88JZ-88KA-88KB-88KC-88KD-88KE-88KF-88KG-88KH-88KI-88KJ-88KK-88KL-88KM-88KN-88KO-88KP-88KQ-88KR-88KS-88KT-88KU-88KV-88KW-88KX-88KY-88KZ-88LA-88LB-88LC-88LD-88LE-88LF-88LG-88LH-88LI-88LJ-88LK-88LL-88LM-88LN-88LO-88LP-88LQ-88LR-88LS-88LT-88LU-88LV-88LW-88LX-88LY-88LZ-88MA-88MB-88MC-88MD-88ME-88MF-88MG-88MH-88MI-88MJ-88MK-88ML-88MM-88MN-88MO-88MP-88MQ-88MR-88MS-88MT-88MU-88MV-88MW-88MX-88MY-88MZ-88NA-88NB-88NC-88ND-88NE-88NF-88NG-88NH-88NI-88NJ-88NK-88NL-88NM-88NN-88NO-88NP-88NQ-88NR-88NS-88NT-88NU-88NV-88NW-88NX-88NY-88NZ-88OA-88OB-88OC-88OD-88OE-88OF-88OG-88OH-88OI-88OJ-88OK-88OL-88OM-88ON-88OO-88OP-88OQ-88OR-88OS-88OT-88OU-88OV-88OW-88OX-88OY-88OZ-88PA-88PB-88PC-88PD-88PE-88PF-88PG-88PH-88PI-88PJ-88PK-88PL-88PM-88PN-88PO-88PP-88PQ-88PR-88PS-88PT-88PU-88PV-88PW-88PX-88PY-88PZ-88QA-88QB-88QC-88QD-88QE-88QF-88QG-88QH-88QI-88QJ-88QK-88QL-88QM-88QN-88QO-88QP-88QQ-88QR-88QS-88QT-88QU-88QV-88QW-88QX-88QY-88QZ-88RA-88RB-88RC-88RD-88RE-88RF-88RG-88RH-88RI-88RJ-88RK-88RL-88RM-88RN-88RO-88RP-88RQ-88RR-88RS-88RT-88RU-88RV-88RW-88RX-88RY-88RZ-88SA-88SB-88SC-88SD-88SE-88SF-88SG-88SH-88SI-88SJ-88SK-88SL-88SM-88SN-88SO-88SP-88SQ-88SR-88SS-88ST-88SU-88SV-88SW-88SX-88SY-88SZ-88TA-88TB-88TC-88TD-88TE-88TF-88TG-88TH-88TI-88TJ-88TK-88TL-88TM-88TN-88TO-88TP-88TQ-88TR-88TS-88TT-88TU-88TV-88TW-88TX-88TY-88TZ-88UA-88UB-88UC-88UD-88UE-88UF-88UG-88UH-88UI-88UJ-88UK-88UL-88UM-88UN-88UO-88UP-88UQ-88UR-88US-88UT-88UU-88UV-88UW-88UX-88UY-88UZ-88VA-88VB-88VC-88VD-88VE-88VF-88VG-88VH-88VI-88VJ-88VK-88VL-88VM-88VN-88VO-88VP-88VQ-88VR-88VS-88VT-88VU-88VV-88VW-88VX-88VY-88VZ-88WA-88WB-88WC-88WD-88WE-88WF-88WG-88WH-88WI-88WJ-88WK-88WL-88WM-88WN-88WO-88WP-88WQ-88WR-88WS-88WT-88WU-88WV-88WW-88WX-88WY-88WZ-88XA-88XB-88XC-88XD-88XE-88XF-88XG-88XH-88XI-88XJ-88XK-88XL-88XM-88XN-88XO-88XP-88XQ-88XR-88XS-88XT-88XU-88XV-88XW-88XX-88XY-88XZ-88YA-88YB-88YC-88YD-88YE-88YF-88YG-88YH-88YI-88YJ-88YK-88YL-88YM-88YN-88YO-88YP-88YQ-88YR-88YS-88YT-88YU-88YV-88YW-88YX-88YY-88YZ-88ZA-88ZB-88ZC-88ZD-88ZE-88ZF-88ZG-88ZH-88ZI-88ZJ-88ZK-88ZL-88ZM-88ZN-88ZO-88ZP-88ZQ-88ZR-88ZS-88ZT-88ZU-88ZV-88ZW-88ZX-88ZY-88ZZ



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|                                  |                                              |
|----------------------------------|----------------------------------------------|
| <b>Air Flow</b>                  | 22,00m <sup>3</sup> /s                       |
| <b>Static Pressure</b>           | 450Pa                                        |
| <b>Fan Diameter</b>              | 1250                                         |
| <b>Number of Blades</b>          | 6                                            |
| <b>Blade / Impeller Material</b> | Aluminium                                    |
| <b>Blade Pitch Angle</b>         | 25°                                          |
| <b>Speed</b>                     | 1465 r/min @50Hz                             |
| <b>Motor Frame</b>               | 200L                                         |
| <b>Motor Power</b>               | 36.00 kW                                     |
| <b>Electrical Supply</b>         | 400V, 3ph, 50Hz                              |
| <b>Casing Type</b>               | LCS – 2x Long-Cased Smokevent                |
| <b>Full Load Current</b>         | 67.80A                                       |
| <b>Start Current</b>             | 427,14A (DOL)                                |
| <b>Motor Type</b>                | F300 (IE3)                                   |
| <b>Motor</b>                     | Class H                                      |
| <b>Motor Casing</b>              | Mild Steel Hot-Dip Galvanised                |
| <b>Fan Weight</b>                | 458,3 kg Each (916,6 kg Total R&S in series) |

## Fan Curve



## Sound Data

| Spectrum (Hz) | 63  | 125 | 250 | 500 | 1K  | 2K  | 4K  | 8K  | dB W | dB (A) @5m |
|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------------|
| Inlet (dB)    | 109 | 105 | 105 | 103 | 103 | 99  | 96  | 91  | 113  | 87         |
| Outlet (dB)   | 109 | 104 | 105 | 102 | 103 | 98  | 96  | 92  | 113  | 86         |
| Breakout (dB) | XXX | XXX | XXX | XXX | XXX | XXX | XXX | XXX | XXX  | XXX        |

Sound levels are quoted as in-duct values. dB(A) values are average spherical free-field for comparative use only.

## Attenuator Insertion Loss Schedule

| Reference  | Fun Reference | System Reference | Location                  | Qty | Model Code   | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|------------|---------------|------------------|---------------------------|-----|--------------|----------------------------|--------------------|
| ATT 5.A.01 | SEF 5.A.01-02 | BOWL WEST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.A.02 | SEF 5.A.01-02 | BOWL WEST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.A.03 | SEF 5.A.03-04 | BOWL WEST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.A.04 | SEF 5.A.03-04 | BOWL WEST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.B.01 | SEF 5.B.01-02 | BOWL EAST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.B.02 | SEF 5.B.01-02 | BOWL EAST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.B.03 | SEF 5.B.03-04 | BOWL EAST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.B.04 | SEF 5.B.03-04 | BOWL EAST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.C.01 | SEF 5.C.01-02 | BOWL EAST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.C.02 | SEF 5.C.01-02 | BOWL EAST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.D.01 | SEF 5.D.01-02 | BOWL WEST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.D.02 | SEF 5.D.01-02 | BOWL WEST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |
| ATT 5.D.03 | SEF 5.D.03-04 | BOWL WEST        | Exhaust - Atmosphere side | 1   | EG03V/--/L/E | 22                         | 84                 |
| ATT 5.D.04 | SEF 5.D.03-04 | BOWL WEST        | Extract - Room side       | 1   | EG03V/--/L/E | 22                         | 85                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Insertion Loss (dB) at Octave Band Centres (Hz) |     |     |     |    |    |    |    |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|-------------------------------------------------|-----|-----|-----|----|----|----|----|
|            | W1                 | H1   | L1   | MDL           | MDL |                  |             | 63                                              | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| ATT 5.A.01 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.A.02 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.A.03 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.A.04 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.B.01 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.B.02 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.B.03 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.B.04 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.C.01 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.C.02 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.D.01 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.D.02 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |
| ATT 5.D.03 | 2000               | 2000 | 3000 | 1600          | 3   | TO SUIT DUCT     | 608         | 18                                              | 38  | 51  | 35  | 43 | 26 | 17 | 16 |
| ATT 5.D.04 | 2000               | 2000 | 2700 | 900           | 3   | TO SUIT DUCT     | 538         | 17                                              | 35  | 45  | 30  | 38 | 23 | 15 | 14 |

## Flow Generated Sound Power Level Schedule

| Reference  | Size Reference | System Reference | Location                  | Qty | Model Code  | Volume (m <sup>3</sup> /s) | Pressure Loss (Pa) |
|------------|----------------|------------------|---------------------------|-----|-------------|----------------------------|--------------------|
| ATT 5.A.01 | SEF 5.A.01-02  | BOWL WEST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 63                 |
| ATT 5.A.02 | SEF 5.A.01-02  | BOWL WEST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 65                 |
| ATT 5.A.03 | SEF 5.A.03-04  | BOWL WEST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 64                 |
| ATT 5.A.04 | SEF 5.A.03-04  | BOWL WEST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 66                 |
| ATT 5.B.01 | SEF 5.B.01-02  | BOWL EAST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 64                 |
| ATT 5.B.02 | SEF 5.B.01-02  | BOWL EAST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 66                 |
| ATT 5.B.03 | SEF 5.B.03-04  | BOWL EAST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 64                 |
| ATT 5.B.04 | SEF 5.B.03-04  | BOWL EAST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 66                 |
| ATT 5.C.01 | SEF 5.C.01-02  | BOWL EAST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 63                 |
| ATT 5.C.02 | SEF 5.C.01-02  | BOWL EAST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 65                 |
| ATT 5.D.01 | SEF 5.D.01-02  | BOWL WEST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 63                 |
| ATT 5.D.02 | SEF 5.D.01-02  | BOWL WEST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 65                 |
| ATT 5.D.03 | SEF 5.D.03-04  | BOWL WEST        | Exhaust - Atmosphere side | 3   | EG03V/-/L/S | 22                         | 63                 |
| ATT 5.D.04 | SEF 5.D.03-04  | BOWL WEST        | Extract - Room side       | 3   | EG03V/-/L/S | 22                         | 65                 |

| Reference  | Primary Dimensions |      |      | Delivery Data |     | Flange Size (mm) | Weight (kg) | Flow Generated Sound Power Level (dB) |     |     |     |      |      |      |      |
|------------|--------------------|------|------|---------------|-----|------------------|-------------|---------------------------------------|-----|-----|-----|------|------|------|------|
|            | W3                 | H1   | L1   | LD1           | HDL |                  |             | 63                                    | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
| ATT 5.A.01 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.A.02 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.A.03 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.A.04 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.B.01 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.B.02 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.B.03 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.B.04 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.C.01 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.C.02 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.D.01 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.D.02 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.D.03 | 2000               | 2000 | 3000 | 2000          | 8   | TO SUIT DUCT     | 608         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |
| ATT 5.D.04 | 2000               | 2000 | 2700 | 2000          | 8   | TO SUIT DUCT     | 558         | 71                                    | 69  | 62  | 63  | 61   | 58   | 47   | 37   |

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