

Ref: VA4746.251104.L1.2

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Dear Catherine

### **VA4746 7-9 FISH ROW, SALISBURY**

#### **Glazing Requirement Overlooking New Plant**

Following the completion of our previous noise impact assessment ref. VA4746.230718.NIA1.2, it is understood that the neighbouring restaurant Chick-O-Land, has replaced their kitchen extract system.

A desktop noise assessment has been undertaken of this new system to outside the first and second floor bedroom windows overlooking the lightwell, and in turn the glazing and ventilation requirements have been reviewed.

The new system is understood to be a Systemair MUB 042 500EV Multibox (technical specifications attached). A photo of the installation is shown in Figure 1.



**Figure 1 – new installation**

Predictions of the noise level outside the first and second floor bedroom windows have been calculated based upon the manufacturer provided sound level data, with the noise level outside the window being 60dB(A), around 7dB quieter than the previous system.

The same process has been used as in the original noise impact assessment, with the sound insulation performance of the building glazing to the first and second floor bedrooms being specified to control the Rating Level (including BS4142 penalties) to below the recommended values in BS8233. Due to the equipment not showing any tonal characteristics at the receiver, the BS4142 penalties applied would be 3dB for intermittency and 3dB for other character.

On this basis, the glazing and ventilators will need to provide the minimum performance requirement shown in Table 1.

| Glazing Location                                                   | Required Glazing SRI, dB | Ventilator Performance, dB |
|--------------------------------------------------------------------|--------------------------|----------------------------|
| 1 <sup>st</sup> & 2 <sup>nd</sup> floor bedrooms overlooking plant | R <sub>w</sub> 39        | D <sub>n,e,w</sub> 39      |

**Table 1 – Required minimum sound reduction indices for glazing and ventilators**

The figures stated are for a single vent per room. If multiple vents are required, then the performance requirement shown in Table 1 will increase by a value equal to  $+10\log(N)$ , with N being the total number of vents serving the room.

It is important that the performance shown in Table 1 are achieved by the entire windowset including frames, ventilators, seals, etc. Glass performance alone would not be likely to show compliance with the specification as the other elements typically provide the weakest noise transmission path.

The ventilator performances provided would need to be achieved with the vents open. Should this performance not be achievable, a mechanical ventilation solution may be required.

The ventilation scheme for the dwellings should ensure that the appropriate air changes can be achieved, in line with Part F of the building regulations and with consideration of summer overheating.

With the above recommendations implemented, the noise levels from the plant, along with acoustic penalties, within the first and second floor bedrooms would be expected to be in line with recommendations given in the WHO 1999 and BS8233:2014 guidance. Internal noise levels can therefore be considered to be between the NOEL the LOAEL levels.

Yours sincerely  
on behalf of Venta Acoustics

**Jamie Duncan**

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## MUB Insulated duct fans

### Efficient fans for supply or exhaust ventilation systems

- Acoustic and thermal insulation 30 mm
- Flexible airflow direction due to removable panels
- Indoor and outdoor installation
- Modular system of accessories
- Available with AC and EC motors for 50 and 60Hz

[Find more details in our online catalogue](#)

#### Flexibility

The MUB fans are intended to use for **supply** or **extract** air, designed to be installed in **any position**.

The MUB fans are designed for straight through airflow but can easily be rebuilt due to **removable panels** for 90° air discharge. The construction of the casing and thermal insulation permits **outdoor** and **indoor** use.

#### Modularity

Thanks to variety types of **accessories** as flexible connections, dampers, roof, base frame, etc. it is easy to design any ventilation system according to your demand.

By using special **modular systems**, where some accessories as **heaters, coolers, silencers, filters** or **carbon filters** are built-in in **the same type of casing**, you can even design a simple supply or exhaust **air handling unit**.

#### Performance

**High performance** impeller together with **high efficient** motors are designed to ensure high-level performance to **minimize power consumption** and **maximize efficiency**.

#### Noise

The **casing** of **MUB** fans have a perfect **acoustic** and **thermal** insulation capacity.

### Certifications



Ecodesign (ErP) compliant

## Features

### Construction

The **casing** consists of a corrosion-resistant **aluminium frame** with **fibreglass reinforced plastic corners of PA6**; highly shock-resistant. **Panels** made of **double skin galvanized** sheet steel with **30 mm acoustic** and **thermal rockwool insulation**.

The MUB fans are designed for straight through airflow but can easily be rebuilt due to **removable panels** for 90° air discharge.

### Impeller

The MUB fans use **radial** impellers with **backward curved blades**. These are made out of high-performance composite material or aluminum, dynamically **balanced** and paired with corresponding **AC** or **EC external rotor motors**.

### Motor

Depending on the type, MUB fans are equipped with **AC** or **EC** external rotor motor. Motors are suitable for **50Hz** and **60Hz**.

### Motor protection

Depending on the type, **AC** motors have an **integrated** thermal protection with manual (electrical) reset, prewired integral **thermocontact TK** or **thermistor PTC** with leads to a **motor protection device**.

Fans with **EC** motors have an **integrated** electronic **thermal protection** including **locked-rotor protection** and **soft-start**.

### Control

**EC motors** with **built-in potentiometer** to adjust working point can be also controlled by external **signal 0-10V**.

**EC motors, depending on the type** are also equipped with **ModBus** communication **or alarm signal**.

**AC motors** can be controlled by **5-step, stepless** speed regulator, **D/Y** switch or **frequency converter**.

### Installation

The MUB fans can be installed in any position **indoor** and together **with weather protection roof** also **outdoor**. With mounted **base frame** the MUB fans can stand **on floor**. For **preventing vibration** to the duct it is recommended to use **flexible connections**.

## Technical parameters

### Nominal data

|                                                           |           |      |
|-----------------------------------------------------------|-----------|------|
| Voltage (nominal)                                         | 230       | V    |
| Frequency                                                 | 50        | Hz   |
| Phases                                                    | 1~        |      |
| Input power                                               | 1,137     | W    |
| Input power kW                                            | 1.137     | kW   |
| Input current                                             | 5.32      | A    |
| Impeller speed                                            | 1,386     | rpm  |
| Air flow                                                  | max 7,488 | m³/h |
| Capacitance of capacitor                                  | 30        | µF   |
| Temperature of transported air                            | max 60    | °C   |
| Max temperature of transported air, when speed controlled | 60        | °C   |

### Protection/Classification

|                        |      |
|------------------------|------|
| Enclosure class, motor | IP54 |
| Insulation class       | F    |

### Data according to ErP

|           |          |
|-----------|----------|
| ErP ready | ErP 2018 |
|-----------|----------|

### Dimensions and weights

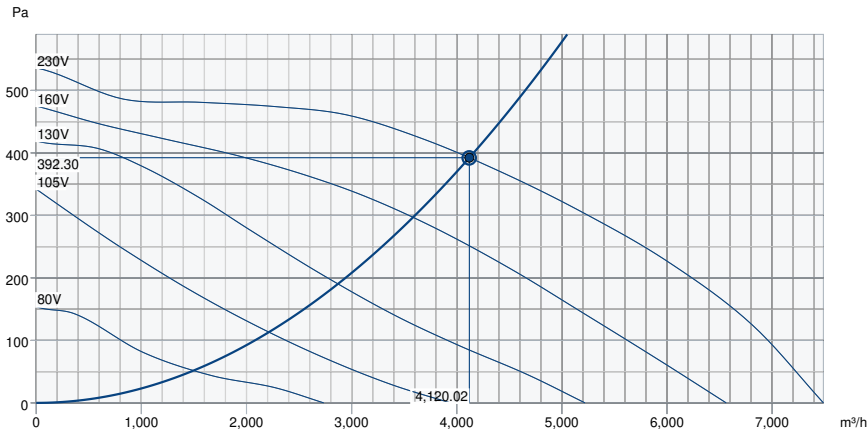
|        |    |    |
|--------|----|----|
| Weight | 61 | kg |
|--------|----|----|

### Others

|            |    |
|------------|----|
| Motor type | AC |
|------------|----|

## Performance

### Performance curve



#### Hydraulic data

|                          |               |
|--------------------------|---------------|
| Required air flow        | 4,118 m³/h    |
| Required static pressure | 392 Pa        |
| Working air flow         | 4,120 m³/h    |
| Working static pressure  | 392 Pa        |
| Air density              | 1.204 kg/m³   |
| Power                    | 1,052.5 W     |
| Fan control - RPM        | 1,401 rpm     |
| Current                  | 4.98 A        |
| SFP                      | 0.920 kW/m³/s |
| Control voltage          | 230.0 V       |
| Supply voltage           | 230 V         |

| Sound power level                        |       | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k | Total |
|------------------------------------------|-------|----|-----|-----|-----|----|----|----|----|-------|
| Inlet                                    | dB(A) | 46 | 65  | 68  | 73  | 78 | 76 | 73 | 64 | 82    |
| Outlet                                   | dB(A) | 48 | 67  | 69  | 75  | 79 | 78 | 74 | 66 | 83    |
| Surrounding                              | dB(A) | 26 | 47  | 44  | 43  | 48 | 50 | 41 | 29 | 54    |
| Sound pressure level at 3m (20m² Sabine) | dB(A) | -  | -   | -   | -   | -  | -  | -  | -  | 47    |
| Sound pressure level at 3m free field    | dB(A) | -  | -   | -   | -   | -  | -  | -  | -  | 33    |

#### AMCA Certified Rating statements

- Catalogue Version:

## Ecodesign

| Product                 |                     |       |  |
|-------------------------|---------------------|-------|--|
| Trade name              | Systemair           |       |  |
| Product name            | MUB 042 500E4       |       |  |
|                         |                     |       |  |
| Ecodesign               |                     |       |  |
| ErP compliance          | 2018                |       |  |
| Unit category           | NRVU                |       |  |
| Drive                   | External MSD or VSD |       |  |
| Unit type               | UVU                 |       |  |
| Heat recovery type      | None                |       |  |
| Temperature ratio (UVU) | Not applicable      |       |  |
| qv nom                  | 1.1444              | m³/s  |  |
| P nom                   | 1.053               | kW    |  |
| Ps nom                  | 392                 | Pa    |  |
| Fan efficiency          | 42.6                | %     |  |
| External Leakage        | 5                   | %     |  |
| Sound power (LWA)       | 54                  | dB(A) |  |

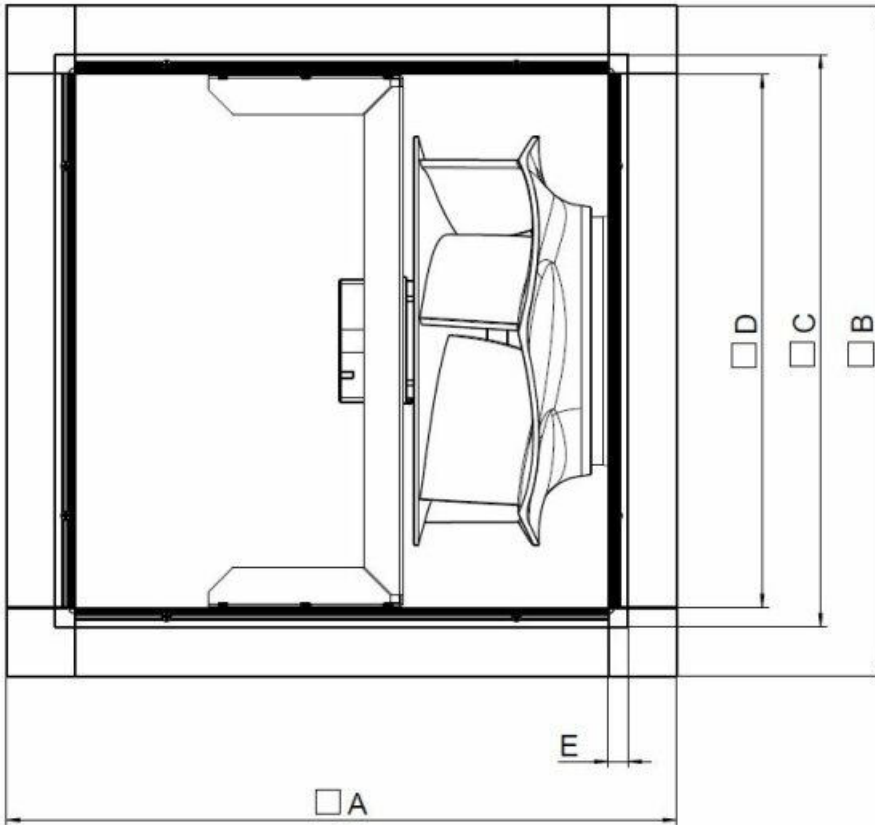
## Acoustic

The Level of Casing-Breakout-Noise depends on the quality of shielding the acoustic inlet and outlet noises.

The shown Level of Casing-Breakout-Noise will be reached only in case of 100 % shielding the acoustic inlet and outlet noise and a correspondingly low environment noise.

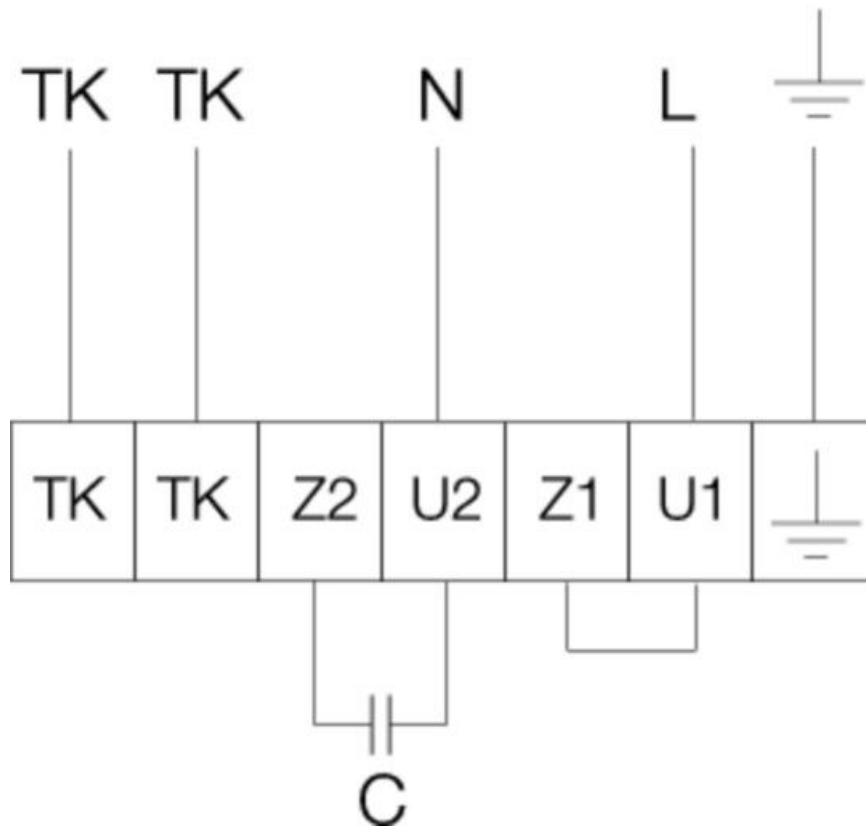
## Dimension

| MUB 042     | □A  | □B  | □C  | □D  | E  |
|-------------|-----|-----|-----|-----|----|
| 400/450/500 | 690 | 690 | 590 | 548 | 21 |



## Wiring

230V 1~



## Accessories

- FGV 042/586-586 flex. conn. (4605)
- Motor protect. switch S-ET 10 (161199)
- REV-5POL/05-7,5kW R/Y (33979)
- SD-MUB Vibration pad set (37324)
- WSD 042 (730x730x70) complete (31481)
- Frequency converter FRQSE-6A (37419)
- CCM inlet MUB042 d500 (311781)
- CCM outlet MUB042 d500 (311683)
- CCMI outlet 042 d500 KIT 30mm (239094)
- KKC-DX-L 042 cooling section (277261)
- KKC-W-L 042 cooling section (277269)
- KKD 042-damper-section (333317)
- KKH-HW 042 heater-section (93339)
- SDM Service Door MUB 042 30mm (273934)
- Frequency converter FRQ5SE-6A (37421)
- REU 7 Speed control (5007)
- RTRE 7 Speed control (5011)
- UGS 042/500 adapter flex. (4357)
- WSG 042 MUB complete (31485)
- CCM inlet MUB042 d400 (311780)
- CCM outlet MUB042 d400 (311682)
- CCMI outlet 042 d400 KIT 30mm (239093)
- GRU 042-690/100 (276661)
- KKC-DX-R 042 cooling section (277265)
- KKC-W-R 042 cooling section (277273)
- KKF 30 042-filter-section (93311)
- KKS 042 silencer-section (276851)

## Documents

- Installation, Operation and Maintenance instruction\_001
- EU DECLARATION OF CONFORMITY\_MUB\_EN\_003.PDF
- COMMISSIONING REPORT\_FANS\_160628\_EN\_001.PDF

## VA4746 - 7-9 Fish Row, Salisbury

### Noise Impact Assessment - 2nd Floor

| Duct Outlet - Fan Noise      |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|------------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Outlet       | Lw    | 48        | 67        | 69        | 75        | 79        | 78        | 74        | 66        | <b>83</b> |
| Distance Loss                | To 4m | -12       | -12       | -12       | -12       | -12       | -12       | -12       | -12       |           |
| Radiation correction         |       | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Directivity (Hor:0,Vert:140) |       | -1        | -2        | -3        | -7        | -9        | -8        | -8        | -8        |           |
| Reverberant build-up         |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver            |       | <b>30</b> | <b>48</b> | <b>49</b> | <b>51</b> | <b>53</b> | <b>53</b> | <b>49</b> | <b>41</b> | <b>58</b> |

| Accelerator Cowl - Regenerated Noise |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|--------------------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Regenerated Noise from Cowl          | Lw    | 79        | 74        | 61        | 58        | 56        | 54        | 52        | 49        | <b>64</b> |
| Distance Loss                        | To 4m | -12       | -12       | -12       | -12       | -12       | -12       | -12       | -12       |           |
| Radiation correction                 |       | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Reverberant build-up                 |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver                    |       | <b>62</b> | <b>57</b> | <b>44</b> | <b>41</b> | <b>39</b> | <b>37</b> | <b>35</b> | <b>32</b> | <b>47</b> |

|                             |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|-----------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Surrounding | Lw    | 26        | 47        | 44        | 43        | 48        | 50        | 41        | 29        | <b>54</b> |
| Distance Loss               | To 3m | -10       | -10       | -10       | -10       | -10       | -10       | -10       | -10       |           |
| Radiation correction        |       | -5        | -5        | -5        | -5        | -5        | -5        | -5        | -5        |           |
| Reverberant build-up        |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver           |       | <b>14</b> | <b>35</b> | <b>32</b> | <b>31</b> | <b>36</b> | <b>38</b> | <b>29</b> | <b>17</b> | <b>42</b> |

|                       |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|-----------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Inlet | Lw    | 46        | 65        | 68        | 73        | 78        | 76        | 73        | 64        | <b>82</b> |
| Duct wall loss        |       | -23       | -16       | -11       | -10       | -16       | -20       | -25       | -28       |           |
| Distance Loss         | To 3m | -10       | -10       | -10       | -10       | -10       | -10       | -10       | -10       |           |
| Radiation correction  |       | -5        | -5        | -5        | -5        | -5        | -5        | -5        | -5        |           |
| Reverberant build-up  |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver     |       | <b>11</b> | <b>37</b> | <b>45</b> | <b>51</b> | <b>50</b> | <b>44</b> | <b>36</b> | <b>24</b> | <b>54</b> |

Cumulative sound level at receiver                      62      58      51      55      55      54      49      42      60 dB(A)

## VA4746 - 7-9 Fish Row, Salisbury

### Noise Impact Assessment - 1st Floor

| Duct Outlet - Fan Noise      |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|------------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Outlet       | Lw    | 48        | 67        | 69        | 75        | 79        | 78        | 74        | 66        | <b>83</b> |
| Distance Loss                | To 6m | -16       | -16       | -16       | -16       | -16       | -16       | -16       | -16       |           |
| Radiation correction         |       | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Directivity (Hor:0,Vert:140) |       | -1        | -2        | -3        | -7        | -9        | -8        | -8        | -8        |           |
| Reverberant build-up         |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver            |       | <b>26</b> | <b>45</b> | <b>45</b> | <b>47</b> | <b>50</b> | <b>49</b> | <b>45</b> | <b>37</b> | <b>55</b> |

| Accelerator Cowl - Regenerated Noise |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|--------------------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Regenerated Noise from Cowl          | Lw    | 79        | 74        | 61        | 58        | 56        | 54        | 52        | 49        | <b>64</b> |
| Distance Loss                        | To 6m | -16       | -16       | -16       | -16       | -16       | -16       | -16       | -16       |           |
| Radiation correction                 |       | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Reverberant build-up                 |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver                    |       | <b>58</b> | <b>54</b> | <b>40</b> | <b>38</b> | <b>36</b> | <b>33</b> | <b>31</b> | <b>29</b> | <b>43</b> |

|                             |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|-----------------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Surrounding | Lw    | 26        | 47        | 44        | 43        | 48        | 50        | 41        | 29        | <b>54</b> |
| Distance Loss               | To 3m | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Radiation correction        |       | -5        | -5        | -5        | -5        | -5        | -5        | -5        | -5        |           |
| Reverberant build-up        |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver           |       | <b>16</b> | <b>37</b> | <b>34</b> | <b>33</b> | <b>38</b> | <b>40</b> | <b>31</b> | <b>19</b> | <b>43</b> |

|                       |       | 63 Hz     | 125 Hz    | 250 Hz    | 500 Hz    | 1 kHz     | 2 kHz     | 4 kHz     | 8 kHz     | dB(A)     |
|-----------------------|-------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| MUB 042 500EV - Inlet | Lw    | 46        | 65        | 68        | 73        | 78        | 76        | 73        | 64        | <b>82</b> |
| Duct wall loss        |       | -23       | -16       | -11       | -10       | -16       | -20       | -25       | -28       |           |
| Distance Loss         | To 3m | -8        | -8        | -8        | -8        | -8        | -8        | -8        | -8        |           |
| Radiation correction  |       | -5        | -5        | -5        | -5        | -5        | -5        | -5        | -5        |           |
| Reverberant build-up  |       | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |           |
| Level at receiver     |       | <b>13</b> | <b>39</b> | <b>47</b> | <b>53</b> | <b>52</b> | <b>46</b> | <b>38</b> | <b>26</b> | <b>55</b> |

Cumulative sound level at receiver                      58      54      50      54      54      51      46      38      58 dB(A)