LOUVERS.
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</tr>
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</table>
SAND TRAP LOUVERS
STL - 100

Sand Trap Louvers are generally used as prefilter for fresh air intake of Air Handling Units (AHU), Package Air Conditioning Units (PACU), Roof Top Fresh Air Units (RTFAU) for Air Conditioning Systems and for Fresh Air Intake in manufacturing plants. These louvers are able to separate sand and large dust particles even in case of high dust concentrations. The vertically arranged blade sections and holes for sand drainage ensure that the sand trap louver is self-cleaning and maintenance-free. It is designed to separate large particles of sand and dust from airstream at low velocities, thus avoiding excessive dust loading of conventional filters. It is not intended as a substitute for conventional filters.

Construction Standards

Frame:
Gauge 16 (1.5mm thk.) from formed galvanized steel sheet.

Blades:
Gauge 18 (1.2mm thick) formed galvanized steel sheet.

Screen:
Galvanized steel bird screen 12 x 12 x 1mm fixed behind the blades. Please note that Pressure Drop Data is obtained from AMCA Test without bird screen. Pressure drop of bird screen is additive and to be calculated separately.

Minimum Size:
150 x 150mm (6in x 6in) - Neck Size.

Maximum Size:
2500 x 1200mm as single section (Neck Size).
2500 x 2500mm will be single module with 2 sections vertical blades and with sand chute between.

Consult SAFID for multiple section assembly details.

STL - 110

General construction as type STL - 100 but frame and blades are built from mill finish aluminum sheet.

STL - 120

General construction as type STL - 100 but frame and blades are built from extruded aluminum profiles.

STL - 130

General construction as type STL - 100 but frame and blades are built from stainless steel sheet Grade 304.

Optional: Frame and blades from stainless steel Grade 316 or 316L.

Additional Options

*Code Z: Painted to RAL (epoxy coated).
*Code I: Insect screen in galvanized steel 1 x 1 x 0.4mm.
*Code T: Bird screen in stainless steel 5 x 5 x 0.7mm.

Catalog ID: STL - 100 April 28, 2018

SAFID certifies that the Sand Trap Louver shown herein is licensed to bear the AMCA Seal for Model STL - 100. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Performance Ratings and Wind Driven Sand Rejection.

Tested for Air Performance Figure 5.5 and Sand Rejection Figure 5.12 in accordance with ANSI / AMCA Standard 500-L-12.

Free Area Velocity (FPM x 100)

Pressure Drop (in. W.G.)

Intake Air Performance

Catalog ID: STL - 100 April 28, 2018

SAFID certifies that the Sand Trap Louver shown herein is licensed to bear the AMCA Seal for Model STL - 100. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to Air Performance Ratings and Wind Driven Sand Rejection.

Tested for Air Performance Figure 5.5 and Sand Rejection Figure 5.12 in accordance with ANSI / AMCA Standard 500-L-12.
**STL SERIES [STL - 100, STL - 110, STL - 120, STL - 130]**

**Free Area Chart (Sq. Ft.)**

<table>
<thead>
<tr>
<th>Outer Frame Size (W1 Inches)</th>
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**Sand Filtration Performance Data**

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<tr>
<th>Penetration Class</th>
<th>76 - 699</th>
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<tr>
<td>microns (μm)</td>
<td>Penetration Class</td>
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<tr>
<td>1000</td>
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<tr>
<td>2500</td>
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<td>7000</td>
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</table>

**Test Information**

- Tested for Sand Rejection Effectiveness as per ANSI/AMCA Standard 500-L.
- Simulated wind velocity in accordance with ANSI/AMCA Standard 500-L.
- Tested for Sand Rejection Effectiveness as per ANSI/AMCA Standard 500-L.
- AMCA Test Figure 5.12

**NOTE**

See Table 1 on page 15 for the equivalent neck size (W x H).
Wind Driven Sand at 11 m/s.
Simulated wind velocity in accordance with ANSI/AMCA Standard 500-L.
Tested for Sand Rejection Effectiveness as per ANSI/AMCA Standard 500-L.

**AMCA Test Figure 5.12**

<table>
<thead>
<tr>
<th>Sand Particles Grade in Microns (μm)</th>
<th>Free Area Velocity (m/s)</th>
<th>Sand Rejection Louver Effectiveness (%)</th>
<th>Penetration Class</th>
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Sand Rejection Effectiveness of Louver

SAND TRAP LOUVER

**STL SERIES [STL - 100, STL - 110, STL - 120, STL - 130]**

**Sand Filtration Performance Data**

<table>
<thead>
<tr>
<th>Sand Particles Grade in Microns (μm)</th>
<th>Free Area Velocity (m/s)</th>
<th>Sand Rejection Louver Effectiveness (%)</th>
<th>Penetration Class</th>
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<td>4.000</td>
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<tr>
<td></td>
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<td>86.96</td>
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Effectiveness (%)

Free Area Velocity (m/s)

SAND TRAP LOUVER

**STL SERIES [STL - 100, STL - 110, STL - 120, STL - 130]**

**Sand Filtration Performance Data**

<table>
<thead>
<tr>
<th>Sand Particles Grade in Microns (μm)</th>
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<tr>
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<td>57.10</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>1.000</td>
<td>86.96</td>
<td>B</td>
</tr>
</tbody>
</table>

Effectiveness (%)

Free Area Velocity (m/s)

SAND TRAP LOUVER

**STL SERIES [STL - 100, STL - 110, STL - 120, STL - 130]**

**Sand Filtration Performance Data**

<table>
<thead>
<tr>
<th>Sand Particles Grade in Microns (μm)</th>
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<th>Sand Rejection Louver Effectiveness (%)</th>
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</tr>
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</tr>
<tr>
<td></td>
<td>1.000</td>
<td>86.96</td>
<td>B</td>
</tr>
</tbody>
</table>

Effectiveness (%)

Free Area Velocity (m/s)
STL SERIES [STL - 100, STL - 110, STL - 120, STL - 130]

Construction - Dimension and Details

1. Casing
2. Blade
3. Bird Screen (optional)
4. Drain Hole

Vertical Section

Horizontal Section

Single Module with Sand Chute

Multiple Module with Sand Chute

Single Module with 3 sections on vertical blade with Sand Chute from height (H1) of 1300 mm up to 2500 mm.

Consult SAFID for Multiple Module assembly details.

Table 1

<table>
<thead>
<tr>
<th>Outer Frame Size (in.)</th>
<th>Neck Size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 x H1</td>
<td>W x H</td>
</tr>
<tr>
<td>16 x 16</td>
<td>300 x 300</td>
</tr>
<tr>
<td>20 x 20</td>
<td>400 x 400</td>
</tr>
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<td>24 x 24</td>
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<td>2400 x 2400</td>
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<tr>
<td>104 x 104</td>
<td>2500 x 2500</td>
</tr>
</tbody>
</table>

Selection Example

For normal operation condition the sand trap louvers should be selected for a maximum free area velocity of 600 feet per minute (FPM).

Example:

Given:
Airflow: 2658 CFM
Assumed free area velocity: 600 FPM

Calculate for free area, neck size and pressure drop.
1. Free Area = 2658 CFM / 600 FPM = 4.43 ft².
2. From Free Area Chart the outer frame size is 48in x 48in (W1 x H1).
3. From Table 1 neck size is 1100mm x 1100mm (W x H).
4. Pressure drop = 0.151 in. W.G. (38Pa).

Note:
For optional screens the pressure drop is additive and to be calculated separately.

Order Example

Product Code: STL-100
STL-110
STL-120
STL-130

With Optional Extras:
Z = Painted to RAL (epoxy coated)
I = Insect Screen in galvanized
T = Bird Screen in stainless steel

Sizes

Make: SAFID
Type: STL-100 - 500 x 500
Qt.: 1

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STATIONARY LOUVERS
**SSL - 100**

Stationary Louver is a weather louver designed to provide air intake and air exhaust openings in building exterior walls to protect against direct ingress of rain. The blades are positioned on 98mm minimum centers up to 120mm maximum centers at 45 degree slope and has a high free area to provide minimum resistance to airflow.

**Construction Standards**

- **Frame:** Gauge 16 (1.5mm thick) formed galvanized steel sheet.
- **Blades:** Gauge 18 (1.2mm thick) formed galvanized steel sheet.
- **Screen:** Galvanized steel bird screen 12 x 12 x 1mm fixed behind the blades. Please note that Pressure Drop Data is obtained from AMCA Test without bird screen. Pressure drop of bird screen is additive and to be calculated separately.

**Optional:** Frame and blades from stainless steel Grade 316 or 316L.

**Additional Options**

- **Code Z:** Painted to RAL (epoxy coated).
- **Code I:** Insect screen in galvanized steel 1 x 1 x 0.4mm.
- **Code T:** Bird screen in stainless steel 5 x 5 x 0.7mm.

**Minimum Size:**

200mm x 200mm (8in x 8in) - Neck Size.

**Maximum Size:**

1250W x 2500H as single section (Neck Size).
2500W x 2500H will be single module with 2 sections on horizontal blades.
Consult SAFID for multiple section assembly details.

---

**SSL - 110**

General construction as type SSL - 100 but frame and blades are built from mill finish aluminum sheet.

**SSL - 120**

General construction as type SSL - 100 but frame and blades are built from stainless steel Grade 304.

---

**SSL SERIES**

**SSL SERIES [SSL - 100, SSL - 110, SSL - 120]**

**Air Performance**

**Pressure Drop**

**Exhaust Air Performance**

Data are corrected to standard air density.
Test size: 48in. x 48 in.
STATIONARY LOUVERS

SSL SERIES [SSL - 100, SSL - 110, SSL - 120]

Air Performance

Pressure Drop

Exhaust Air Performance

Pressure Drop (in. W.G)

Free Area Chart (Square Feet)

Free Area Velocity (FPM x 100)

Data are corrected to standard air density. Test size: 48in. x 48 in.

NOTE

See Table 1 on page 22 for the equivalent neck size (W x H).
SSL SERIES [SSL - 100, SSL - 110, SSL - 120]

**Construction - Dimension and Details**

1 - Casing  
2 - Blade  
3 - Bird Screen (optional)

SSL - 100, SSL - 110, SSL - 12 (Single Section)

---

**Single Module with Mullion**

- Single module with 2 sections on horizontal blades and with mullion from sizes above 1200mm wide (W) and up to 2500mm height (H). The maximum Single Module is 2600 W x 2600 H.

---

**Multiple Module (Segmented)**

- Segmented for sizes above 2000 W and 2000 H.

---

**Vertical Joint Detail**

- Blade  
- Nut-Tack Weld To Frame  
- M8 Bolt & Nut (By Others)

---

**Horizontal Joint Detail**

- Frame  
- Joint  
- Bird Screen

---

The maximum size for single section is up to 1200mm wide (W) and up to 2500mm height (H).
Table 1

<table>
<thead>
<tr>
<th>Outer Frame Size (in.)</th>
<th>Neck Size (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 x H1</td>
<td>W x H</td>
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<tr>
<td>12 x 12</td>
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<td>16 x 16</td>
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<td>32 x 32</td>
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</tr>
<tr>
<td>36 x 36</td>
<td>800 x 800</td>
</tr>
<tr>
<td>40 x 40</td>
<td>900 x 900</td>
</tr>
<tr>
<td>44 x 44</td>
<td>1000 x 1000</td>
</tr>
<tr>
<td>48 x 48</td>
<td>1100 x 1100</td>
</tr>
<tr>
<td>52 x 52</td>
<td>1200 x 1200</td>
</tr>
<tr>
<td>56 x 56</td>
<td>1300 x 1300</td>
</tr>
<tr>
<td>60 x 60</td>
<td>1400 x 1400</td>
</tr>
<tr>
<td>64 x 64</td>
<td>1500 x 1500</td>
</tr>
<tr>
<td>68 x 68</td>
<td>1600 x 1600</td>
</tr>
<tr>
<td>72 x 72</td>
<td>1700 x 1700</td>
</tr>
<tr>
<td>76 x 76</td>
<td>1800 x 1800</td>
</tr>
<tr>
<td>80 x 80</td>
<td>1900 x 1900</td>
</tr>
<tr>
<td>84 x 84</td>
<td>2000 x 2000</td>
</tr>
<tr>
<td>88 x 88</td>
<td>2100 x 2100</td>
</tr>
<tr>
<td>92 x 92</td>
<td>2200 x 2200</td>
</tr>
<tr>
<td>96 x 96</td>
<td>2300 x 2300</td>
</tr>
<tr>
<td>100 x 100</td>
<td>2400 x 2400</td>
</tr>
<tr>
<td>104 x 104</td>
<td>2500 x 2500</td>
</tr>
</tbody>
</table>

Calculate for free area, neck size and pressure drop.
1. Free Area = 4000 CFM / 800 FPM = 5 square feet (ft²).
2. From Free Area Chart the outer frame size can be 48in. x 44in., or 64in. x 56in. (W1xH1).
3. From Table 1 neck size is 1100mm x 1000mm, or 1500mm x 800mm (W x H).
4. The pressure drop for Exhaust Air Louver from Exhaust Air Performance Graph at 800 feet per minute (FPM) is 0.12 in. W.G. (30Pa).
5. The pressure drop for Fresh Air Intake Louver from Intake Air Performance Graph at 800 feet per minute (FPM) is 0.105 in. W.G. (26Pa).

Order Example

Product Code: SSL-100
SSL-100 - a - a x a x a

With Optional Extras:
SSL-100 - Z
SSL-100 - I
SSL-100 - T

Sizes

Standard
Make: SAFID
Type: SSL - 100 - 500 x 500

With Optional Extras
Make: SAFID
Type: SSL - 100 - Z - 500 x 500

Selection Example
Selection Procedure of Stationary Louver

Example: With Given Air Volume:
Select Exhaust Air Louver or Fresh Air Intake Louver with a given air volume of 4000 cubic feet per minute (CFM) and 800 feet per minute (FPM) free area velocity.

Catalog ID: SSL - 100 January 26, 2014

Description
SAFID Extruded Aluminum Stationary Louvers is designed to provide air intake and air exhaust openings in building exterior walls to protect against the direct ingress of rain. The blades are positioned on 104mm minimum centers up to 118mm maximum centers at 45 degree and has a high free area to provide minimum resistance to airflow.

Construction Standards
Frame:
Extruded aluminum profile 2mm thick.

Blades:
Extruded aluminum profile 1.8mm thick.

Standard Finish:
M8 aluminum finish.

Screen:
Expanded aluminum birdscreen.

Minimum Size:
300 x 300 mm

Maximum Size:
1200Wx2000H
Larger sizes will be in multiple sections.
For details of multiple sections consult SAFID.

Additional Options
*Code A: Anodized aluminum in silver.
*Code P: Polyester powder coated.
*Code Z: Painted to RAL (epoxy coated).
*Code I: Expanded aluminum insect screen.
*Code T: Bird screen in stainless steel, 5 x 5 x 0.7mm.

SSL - 210
General construction as type SSL - 200 but with drainable frame and blades. Drain gutter in each blades and downspouts in vertical frames allows water to drain from louver to minimize water cascade from blade to blade.
### Drainable Blades

**SSL SERIES [SSL - 200, SSL - 210]**

**SSL - 200 (Single Section)**

1. Frame  
2. Blades  
3. Bird Screen

**SSL - 210 (Single Section)**

Legend:  
1. Drainable Frame  
2. Drainable Blades  
3. Bird Screen

### Bird Screen

- **Bird Screen**

#### Technical Data SSL - 200

**Louver Selection and Application:**

Application of stationary louver involves selecting velocity through free area that gives an acceptable pressure drop for intake and exhaust application.

**Louver Free Area Chart:**

<table>
<thead>
<tr>
<th>Width (meters)</th>
<th>Height (meters)</th>
<th>Free Area (m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
<td>1.4</td>
<td>0.039</td>
</tr>
<tr>
<td>0.6</td>
<td>2.1</td>
<td>0.156</td>
</tr>
<tr>
<td>1</td>
<td>2.8</td>
<td>0.292</td>
</tr>
<tr>
<td>1.5</td>
<td>3.5</td>
<td>0.429</td>
</tr>
<tr>
<td>2</td>
<td>4.2</td>
<td>0.567</td>
</tr>
<tr>
<td>3</td>
<td>5.9</td>
<td>0.705</td>
</tr>
<tr>
<td>4</td>
<td>7.6</td>
<td>0.843</td>
</tr>
<tr>
<td>5</td>
<td>9.3</td>
<td>0.981</td>
</tr>
<tr>
<td>6</td>
<td>11</td>
<td>1.119</td>
</tr>
<tr>
<td>7</td>
<td>12.7</td>
<td>1.257</td>
</tr>
</tbody>
</table>

**Selection Procedure of Stationary Louver**

**Example:**

With given air volume:

Select Fresh Air Intake Louver with a given air volume of 1.0 m³/s and 3.5 m/s free area velocity.

A - **Determine Louver Free Area:**

Dividing the given air volume (1.0 m³/s) by free area velocity (3.5 m/s, do not exceed to 4.2 m/s for fresh air intake application), the free area will be:

\[
\text{Louver Free Area} = \frac{\text{Air Volume}}{\text{Free Area Velocity}} = \frac{1.0}{3.5} = 0.2857 \text{ m}^2
\]

### Drainage Details

- **Drainable Blades**

**SSL SERIES [SSL - 200, SSL - 210]**

- **Frame**
- **Blades**
- **Bird Screen**

### Diagrams

- **Front Elevation**
- **Vertical Section**
- **Horizontal Section**
Technical Data SSL - 200

Airflow Resistance

Water Penetration

Free Area Velocity in m/s

Pressure Drop in Pa

Ounce of Water per m²

Free Area Velocity in meters per minute

Standard air 0.075 lb/ft³
The pressure drop across the selected size of louver is 34 Pa.

C - Check the pressure drop of the selected louver on the Pressure Drop Chart:

- 1.5m Wide x 0.8m High
- 1.3m Wide x 0.9m High
- 1.1m Wide x 1.0m High

The following suitable louvers from Free Area Chart are:

1. Select Fresh Air Intake Louver with a given air volume of 1.5m³/s and 3.5m/s free area velocity.

   Selection Procedure of Stationary Louver

   Example: With given air volume:
   Select Fresh Air Intake Louver with a given air volume of 1.5m³/s and 3.5m/s free area velocity.

   A - Determine Louver Free Area:
   Dividing the given air volume (1.5m³/s) by free area velocity (3.5m/s, do not exceed to 4.2m/s for fresh air intake application), the free area will be:
   \[
   \text{Louver Free Area} = \frac{1.5 \text{m}^3/\text{s}}{3.5 \text{m/s}} = 0.429 \text{m}^2
   \]

   B - Select a suitable louver from Free Area Chart
   The following suitable louvers from Free Area Chart are:
   - 1.1m Wide x 1.0m High
   - 1.3m Wide x 0.9m High
   - 1.5m Wide x 0.8m High

   C - Check the pressure drop of the selected louver on the Pressure Drop Chart:
   The pressure drop across the selected size of louver is 34 Pa.
SSL SERIES [SSL - 200, SSL - 210]

Technical Data SSL - 210

Water Penetration

Free Area Velocity in meters per minute

Standard air 0.075 lb/ft³
ACOUSTIC LOUVERS
Introduction

There are many applications in the industry where large quantities of air must be drawn from the atmosphere. The equipment handling the air is frequently noisy and it is necessary to provide some attenuation between the air-moving device and the exterior. We have already seen that this can be done with cylindrical or rectangular sound attenuators. However, in certain conditions it is more appropriate to use an acoustic louver which is a combination of a normal louver, as associated with air inlets to buildings, and attenuator.

They are frequently installed in the facades of buildings where they are architecturally acceptable and yet provide an adequate amount of attenuation to prevent creating unacceptably high noise levels outside. Effectively, an acoustic louver is a very short attenuator with a very large cross-sectional area, so it is appropriate where length is restricted but face area is not.

Description

Acoustic louvers provide a positive solution where acoustic performance is required from a weather louver. The acoustic performance for an acoustic louver is usually measured in terms of transmission loss. This enables a direct comparison to be made between the performance of the louver and a solid wall which it probably replaces. Acoustic louvers as well as attenuators are frequently used in mechanical equipment rooms where a requirement for ventilation exists.

They are available in either steel or aluminum construction with standard and high acoustic performance options. A non-acoustic version having a complementary appearance is available and a variety of colored finishes may be specified.
**Description**

Type SALS acoustic louvers provide a positive solution where acoustic performance is required from a weather louver. They are available in either steel or aluminum construction with 'single' or 'double bank' acoustic performance options. A non-acoustic version having a complementary appearance is available. A variety of coloured finishes may be specified.

**Construction**

**Steel Construction**

Casings are manufactured from galvanized sheet metal channels Ga.16 minimum. Galvanized louver blades are of aerodynamic section and are set at approx. 40° on 150mm pitches. Bird screens from 12x12x1mm galvanized wire mesh are fitted as standard to all types, except Type SALN when fitted with blanking plate.

Acoustic louver blades contain infill which complies with Class O Building Regulations. The infill has a glass cloth facing and is contained behind perforated metal; this dual protection prevents damage and fibre erosion up to 30 m/s airway velocity.

**Aluminum Construction**

Construction is generally as for steel types described above except that the casing and louver blades are made from mill finish aluminum alloy, type 1050-H14.

**Alternative Construction**

**SALD**

Type SALD; double bank acoustic louver comprising of two SALS type mounted back to back.

**SALN**

Type SALN; non-acoustic version with complementary appearance. Can be supplied with rear blanking plate to prevent air passage.

### Dimensions

<table>
<thead>
<tr>
<th>Dimensions in mm</th>
<th>Standard Sizes</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>300 to 1800 (in increments of 150)</td>
</tr>
<tr>
<td>H</td>
<td>450 to 2400 (in increments of 150)</td>
</tr>
</tbody>
</table>
Sectionalized Construction

Acoustic louvers are normally supplied in sections when either of the following dimensions is exceeded:

B = 1800 mm  H = 2400 mm

Where louvers are in sections in both width and height, a 50x50x3 galvanized vertical box section frame is supplied to couple together adjacent sections. The weight of the upper section is borne by the coupling frame and not by the lower louver. Coupling frames are concealed behind a cover plate of material and finish to complement the louver.

The combinations illustrated on this page are available in louver Types SALS, SALD and SALN.

1. Split on width only.
2. Split on width and height.
3. Split on height only.

The assembly of sectionalised louvers is on site, by others. SAFID will provide full details of louver configuration and assembly.

Optional Features

Louvers can be supplied with matching sheet metal architrave or rolled metal angle picture frame. These would be supplied loose and undrilled for site fixing by others.
Louver Selection

The acoustic performance needed to meet a particular design noise requirement can be calculated from other technical sources. Table 1 indicates the acoustic performance available from standard and high performance acoustic louvers.

From Table 2, select a louver size at a face velocity that gives an acceptable pressure loss. Check that louver self-noise will not infringe upon the design noise criterion by reference to the SNI. The SNI gives an approximation of regenerated noise from the louver due to air velocity. This is expressed as an NC value at 1 meter, 3 meters and 10 meters from the louver face. The louver selected should have an SNI at least 5 NC below the design noise criterion.

Nomenclature

L in mm: Length (in direction of airflow)

W in mm: Width

H in mm: Height

V in l/s: Volume Flow Rate

Vt in m/s: Face Velocity based on V ÷ (W x H x 1000)

\( \Delta p \) in Pa: Pressure Loss

\( f_m \) in Hz: Octave Center Frequency

SRI in dB: Sound Reduction Index

SNI: Self Noise Index (equivalent to NC sound pressure level curve at free field distance shown)

Example

a) SRI Required \( f_m \),

<table>
<thead>
<tr>
<th>Octave Center Frequency (Hz)</th>
<th>63</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>1k</th>
<th>2k</th>
<th>4k</th>
<th>8k</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>7</td>
<td>11</td>
<td>14</td>
<td>16</td>
<td>18</td>
<td>10</td>
<td>8</td>
</tr>
</tbody>
</table>

b) Design Noise Criteria: \( \text{NC50} \) at 3 meters from opening.

c) Volume Flow Rate: \( V = 12000 \) l/s.

d) Maximum Required Pressure Loss: \( \Delta p = 50 \) Pa.

e) Maximum required height, \( H = 1200 \) mm. Maximum Required Height:

f) From Table 1, a standard performance Type SALS louver would meet the required acoustic performance.

2) From Table 2, the maximum permissible face velocity, for \( \Delta p = 50 \) Pa, is 2.8 m/s.

3) From Table 2, the maximum permissible face velocity, \( V_t \) for an SNI of 50 minus 5 at 3m, is 4.9 m/s.

Required louver area (m²) = \( \frac{V}{V_t} \times 1000 \)

\( V_t = \frac{4.290 \times H}{12000 - (2.8 \times 1000)} \)

\( \Delta p = \frac{4.290}{H} \times \frac{H}{3.575} \)

\( W \) in m: Width (required)

Louver Selection:

Type SALS, \( W \times H = 1200 \) (Specify materials and finish)

Acoustic Performance

Acoustic louver performance has been derived from tests based on BS 2750. The test work was carried out using a reverberant room technique. Measurements with and without the test piece were compared to produce the ‘Sound Reduction Index’ (also known as ‘Transmission Loss’) of both the ‘single bank’ performance SALS acoustic louver and the ‘double bank’ performance version SALD.

The term ‘Noise Reduction’ is sometimes encountered. This refers to free field measurements taken in close proximity to the louver face rather than in the reverberant receiving room described in BS 2750. This method tends to improve upon the Sound Reduction Index figures by 6 dB.

However, for most applications the ‘Sound Reduction Index’ data is the more appropriate, since for all practical purposes it may be used in the same way as the static insertion loss of a duct attenuator.

The aerodynamic profile of the acoustic louver blade ensures low pressure loss similar to conventional non-acoustic weather louvers of higher free area. The percentage free area varies with louver height, with the smaller louvers most affected by the restriction of the top and bottom dummy sections.

Table 1: Sound Reduction Index (SRI in dB)

<table>
<thead>
<tr>
<th>Octave Center Frequency (Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>63</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>SALS</td>
</tr>
<tr>
<td>SALD</td>
</tr>
</tbody>
</table>
ACOUSTIC LOUVERS PERFORMANCE

Pressure Loss and Regenerated Noise

Table 2:
Type SALS (ducted from atmosphere)

Order Details

Specifications
Type SALS acoustic louver constructed from either galvanized sheet steel or natural mill aluminum with finish as specified. 1.5 mm thick channel casing incorporates aerodynamic acoustic blades containing erosion protected Class O infill covered by perforated sheet metal. Casing sides are pre-slotted for fixing into a prepared opening.

Ordering

<table>
<thead>
<tr>
<th>Product Code:</th>
<th>Type</th>
<th>Type Suffix:</th>
<th>Material:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SALS D A 4000</td>
<td>SAL</td>
<td>S - Single Bank</td>
<td>S - Galvanized Steel</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>D - Double Bank</td>
<td>A - Natural Aluminum</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>N - Non Acoustic</td>
<td></td>
</tr>
</tbody>
</table>

W (width, mm)
H (height, mm)