

LINEAR BAR GRILLES AND REGISTERS



CHAPTER 4



تكنو فاب
TECHNO FAB
الهندسية ENGINEERING

LINEAR BAR GRILLES AND REGISTERS

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➔ The fixed Bar Grilles I Registers are used satisfactorily in locations where flow direction is not critical or can be predetermined. The Linear Grilles I Registers with fixed horizontal bars satisfy

the architectural requirements of large areas where continuous input along the walls is requested for wall mounted installations, windowsill and covering furniture for fan coils.



➔ Models Available

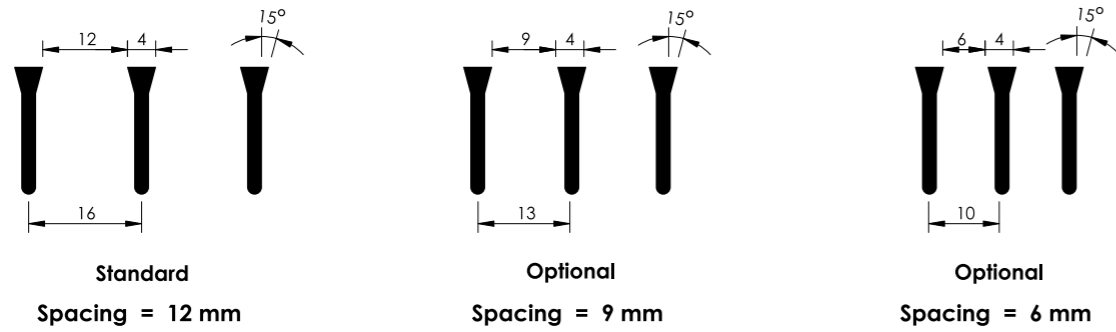
- Construction: Frame & Face bars are made of high
- Frame Flange width: 30 mm.
- Face Bars (core style): available in two different bar deflection and the optional one is the 15 degree - 1 way deflection (see table No. LG- 02).
- Bar Spacing: Spacing of the adjacent fixed bar blades are set at 12 mm as standard. Also available in 9 and 6 mm spacing as an option (see table No. LG - 02).
- Available with vertical Aluminium aerofoil rear blades fixed to the frame by means of nylon bushes. These blades can be adjusted manually and individually in the vertical plane to achieve the optimum throw deflection and air distribution.
- The frame is assembled by punching its four corners by means of G. I. Angles which together create a very robust construction.
- For Continuous runs, units are supplied in sections and can be designed to incorporate additional features such as active I dummy sections and mitered corners (see table No. LG- 03, 04, 05 & 06).
- To maintain perfect and unbroken appearance for continuous runs, alignment joining strips are provided in proper lengths and quantities with no extra cost.
- Available in wide variety of standard heights ranging from 50 mm neck size up to 300 mm in 50 mm increments (other none standard sizes are available on request).
- Linear Bar Grilles combined with Opposed Blade Damper are called Linear Bar Registers.
- Mullion Pipes across the fixed bar blades provide additional strength and rigid construction. These Pipes are placed at a distance of 300 mm maximum from each other.
- Accessories : see page No. LG - 07.
- Available Fixing Mounting : see page No. LG - 08.
- Surface Finishes : see page No. LG - 13.

➔ Features & Characteristics:

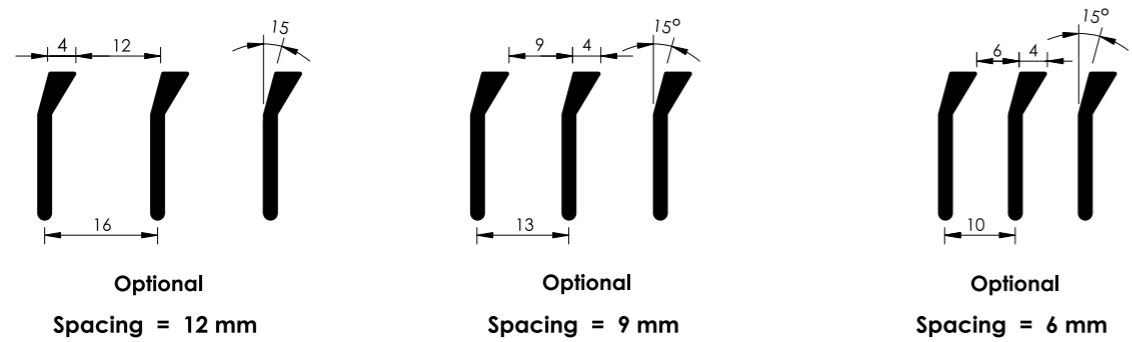
| Linear Bar Grilles / Registers Model | Fixed Bar Blades w/o Vertical Rear Blades | Fixed Bar Blades with Vertical Rear Blades | Opposed Blade Damper |
|--------------------------------------|---|--|----------------------|
| SLR | | ● | ● |
| SLG | | ● | |
| RLR | ● | | ● |
| RLG | ● | | |

Core Styles (Deflection and Spacing)

15° - Two Way Deflection



15° - One Way Deflection



• All Dimensions are in mm and subject to ± 0.5 mm tolerance.

OPERATING RANGE & QUICK SELECTION TABLE FOR LINEAR BAR GRILLES / REGISTERS

| WITH VERTICAL REAR BLADES | | | W/O REAR BLADES | | | | | | |
|---------------------------|--------|-----------|------------------|------|--------|-----------|------|------|------|
| Standard Heights | Length | CFM Range | Standard Heights | | Length | CFM Range | | | |
| | | | Inch | mm | | | | | |
| 4" | 100 | 1000 | 350 | 800 | 1000 | 500 | 1100 | | |
| 6" | 150 | | 550 | 1250 | | 6" | 150 | 725 | 1650 |
| 8" | 200 | | 725 | 1700 | | 8" | 200 | 950 | 2100 |
| 10" | 250 | 1500 | 850 | 2000 | 10" | 250 | 1250 | 2500 | |
| 12" | 300 | | 1080 | 2300 | 12" | 300 | 1450 | 3400 | |
| 4" | 100 | | 550 | 1250 | 4" | 100 | 700 | 1600 | |
| 6" | 150 | 2000 | 800 | 1850 | 6" | 150 | 1075 | 2350 | |
| 8" | 200 | | 1080 | 2300 | 8" | 200 | 1425 | 3150 | |
| 10" | 250 | | 1300 | 2600 | 10" | 250 | 1875 | 3750 | |
| 12" | 300 | 2000 | 1600 | 3700 | 12" | 300 | 2175 | 5100 | |
| 4" | 100 | | 750 | 1600 | 4" | 100 | 1000 | 2200 | |
| 6" | 150 | | 1100 | 2500 | 6" | 150 | 1450 | 3300 | |
| 8" | 200 | 2000 | 1450 | 3400 | 8" | 200 | 1900 | 4200 | |
| 10" | 250 | | 1700 | 4000 | 10" | 250 | 2500 | 5000 | |
| 12" | 300 | | 2160 | 4600 | 12" | 300 | 2900 | 6800 | |

• CFM Values are based on Noise Level ranging from 15- 35 (dB).

NO. OF SECTIONS PER RUNNING UNIT

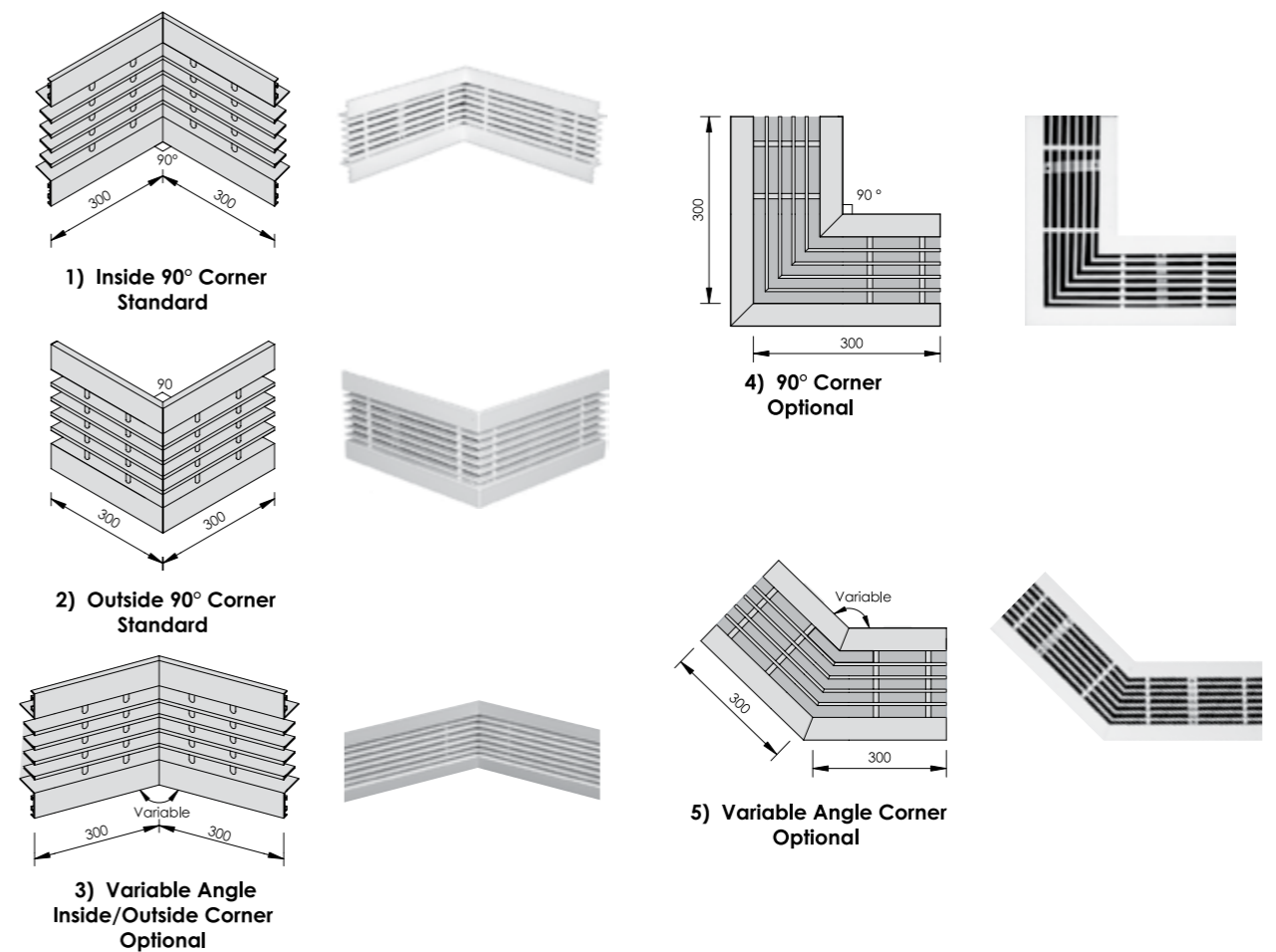
| LINEAR BAR GRILLE / REGISTER HEIGHT | | ONE SECTION | TWO SECTIONS | MULTI SECTIONS |
|-------------------------------------|------|-------------|--------------|----------------|
| mm | Inch | | | |
| 50 | 2" | ≤ 4.0 | > 4.0 | > 6.0 |
| 100 | 4" | ≤ 4.0 | > 4.0 | > 6.0 |
| 150 | 6" | ≤ 4.0 | > 4.0 | > 6.0 |
| 200 | 8" | ≤ 4.0 | > 4.0 | > 6.0 |
| 250 | 10" | ≤ 3.5 | > 3.5 | > 6.0 |
| 300 | 12" | ≤ 3.5 | > 3.5 | > 6.0 |

• Above arrangements are approximate and subject to change according to order I site conditions.

MITERED CORNERS

Wall Mounted Corners

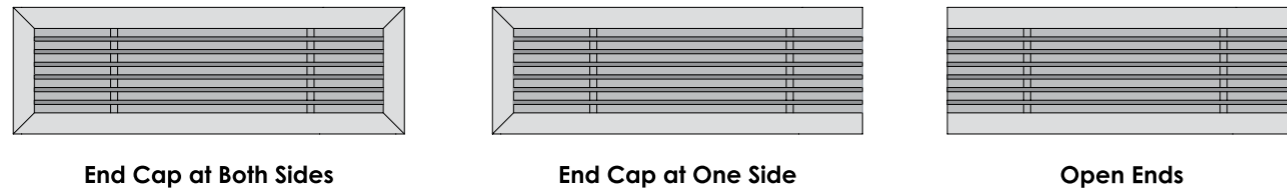
Ceiling Mounted Corners



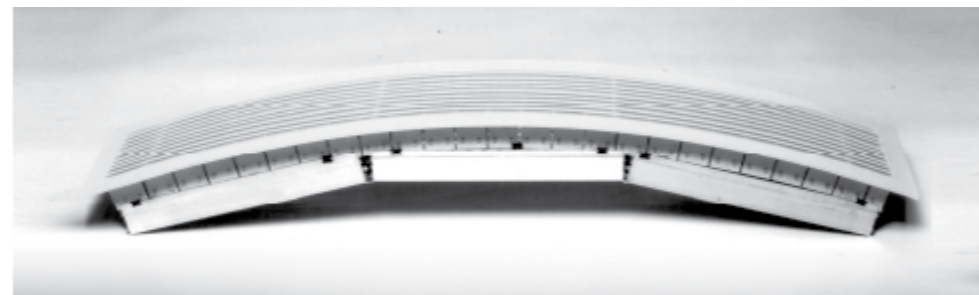
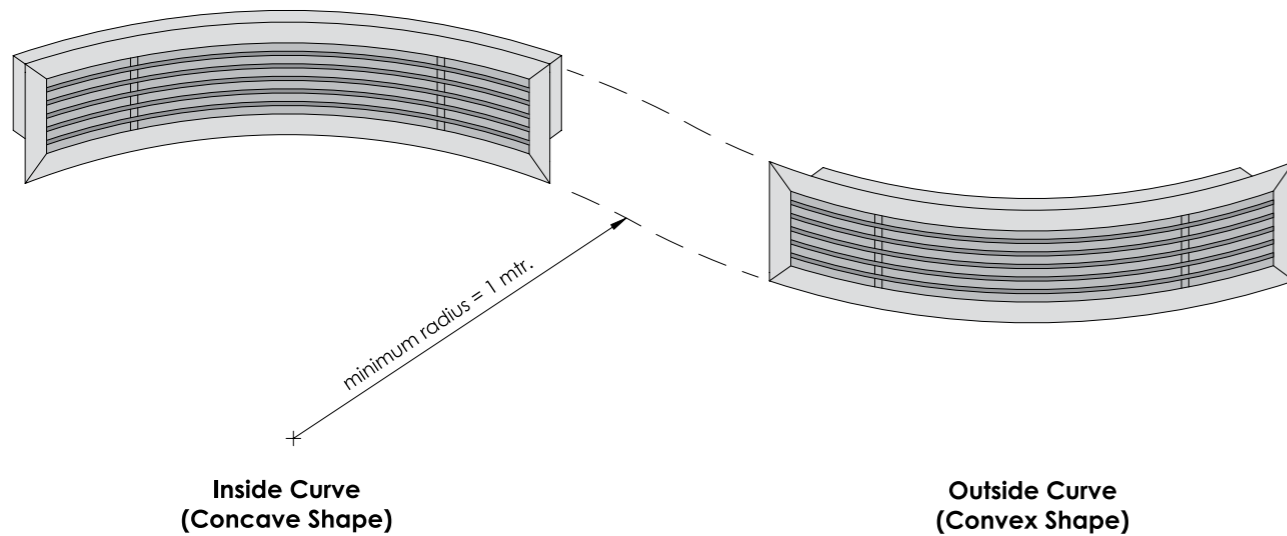
• Above arrangements are approximate and subject to change according to order I site conditions.

Linear Bar Registers with Vertical Rear Blades Construction and Dimensional Details

End Cap / Flange Arrangements

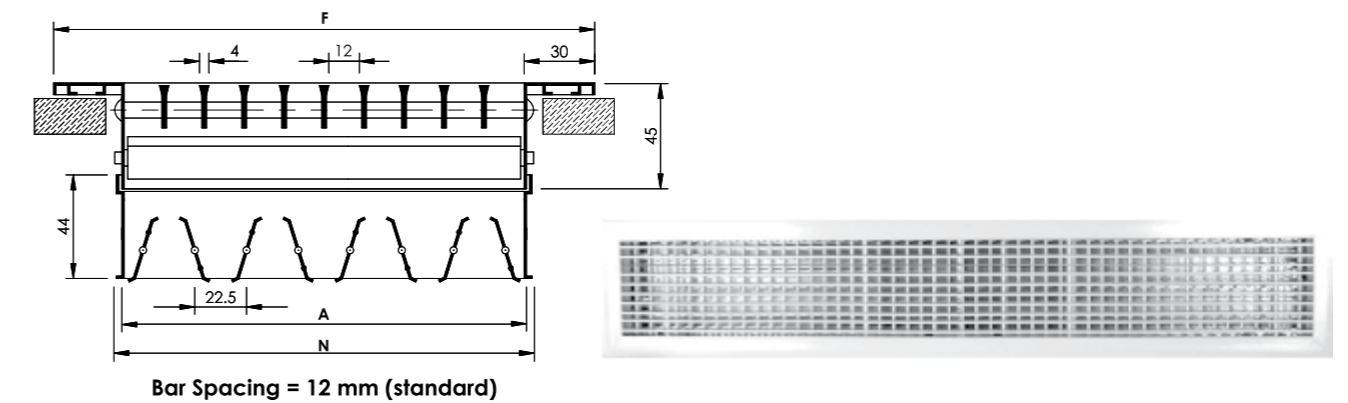


Linear Bar Grilles / Registers in Curved Shape



- Curved can be fabricated in minimum curvature radius = 1 mtr
- Curve applications can be fabricated also for linears with rear blades
- Curve applications are not possible for ceiling installments

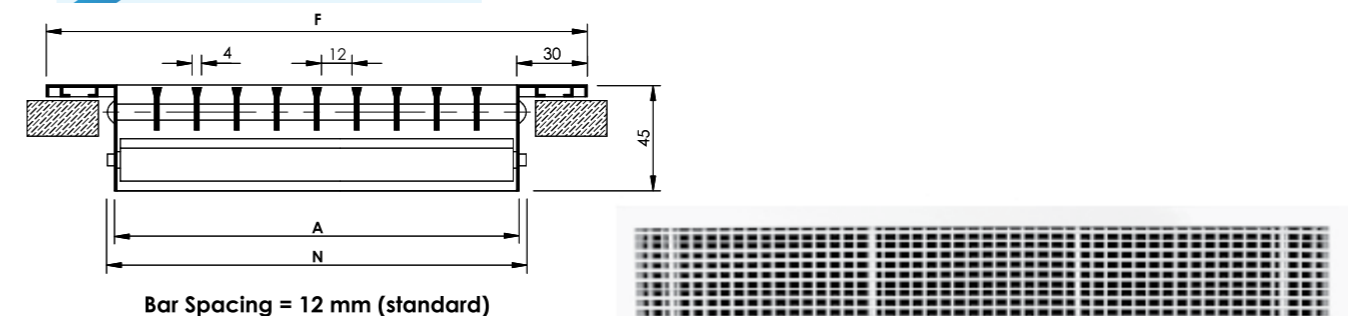
Model SLR DD



- **SLR**: is Supply Air Linear Bar Register, fixed horizontal front bar blades, adjustable vertical rear blades, c/w
- Opposed Blade Damper.
- Registers called Supply Air Linear Bar Register and

- coded as SLR are always equipped with Opposed Blade Damper (provided as standard).

Model SLG DD



- **SLG**: SLG is Supply Air Linear Bar Grille, fixed horizontal front bar blades, adjustable vertical rear blades w/o
- Opposed Blade Damper.
- Grilles called Supply Air Linear Bar Grille and coded as SLG are usually supplied w/o Opposed Blade

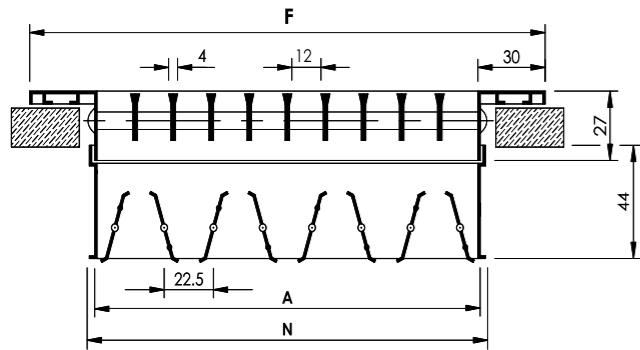
- Damper.

N : Nominal/Listed Size = length (L) x Height (H)
A : Actual Size = (L-10) x (H-10)
F : Face Size = (L+50) x (H+50)

- Linear Bar Grilles | Registers furnished approximately 10 mm less than the Nominal/Listed Size.
- All dimensions are in mm and subject to ±1 mm tolerance.

Linear Bar Registers Without Rear Blades Construction and Dimensional Details

Model RLR SO



Bar Spacing = 12 mm (standard)

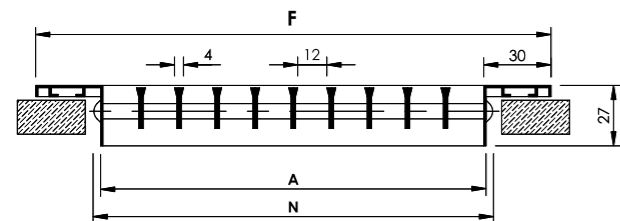


- **RLR** : is Return Air Linear Bar Register, fixed horizontal front bar blades, w/o rear blades. and c/w Opposed Blade Damper.

- Registers called Return Air Linear Bar Register and coded as RLR are always equipped with
- with Opposed Blade Damper (provided as standard).

Linear Bar Grilles without Rear Blades Construction and Dimensional Details

Model RLG SD



Bar Spacing = 12 mm (standard)



- **RLG** : is Return Air Linear Bar Grille. fixed horizontal front bar blades, w/o rear blades and Opposed Blade Damper.

- Grilles called Return Air Linear Bar Grille and coded as RLG are usually supplied w/o
- Opposed Blade Damper.

N : Nominal/Listed Size=length (L)x Height (H)
A : Actual Size = (L-10) X (H-10)
F : Face Size = (L+50) X (H+50)

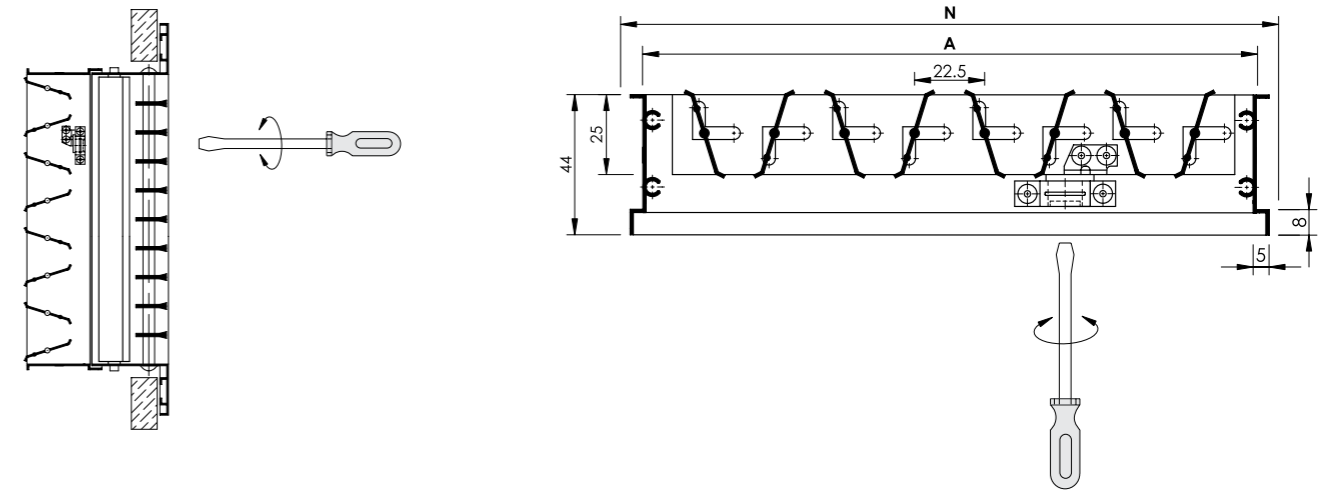
- linear Bar Grilles I Registers furnished approximately 10 mm less than the Nominal/listed Size.
- All dimensions are in mm and subject to ± 1 mm tolerance.

Linear Bar Grilles and Registers Accessories

A. Opposed Blade Damper

- Frame and Blades are of high quality Extruded Aluminium Profiles construction.
- Blades are designed to rotate opposite to each other.
- The specially designed blades have an overlapping lip which assures a tight closure.
- Generally, the opposed blade damper is attached to the linear bar grille and fixed to it by means of «S» clips.
- Blades are separated from its frame by nylon bushes. This method of assembly provides maximum
- rattle - free performance and eliminates corrosion.

- Usually Damper standard surface finish is Aluminium in Mill Finish. Matt black powder coating color is also available on request (as an option).
- Screw type operation.

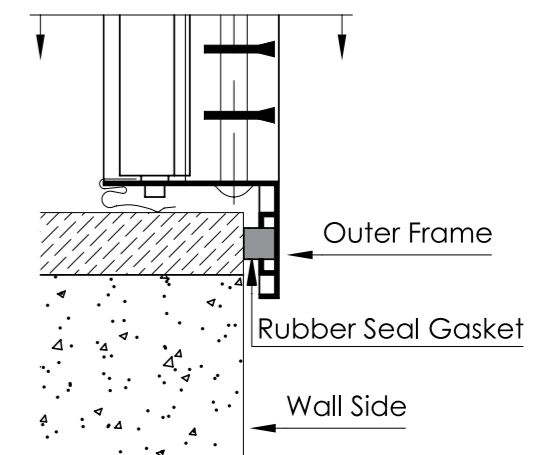


- The range from full open to full closed position of Damper blades can be easily adjusted by a screw driver accessible from the face of the linear bar register as shown in the figure.

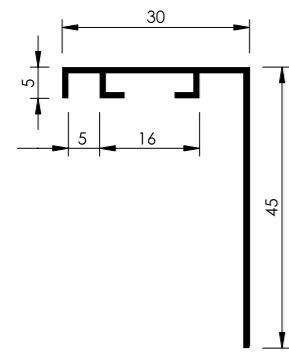
- All dimensions are in mm and subject to ± 1 mm tolerance.

B. Foam Type Rubber Gasket (Optional)

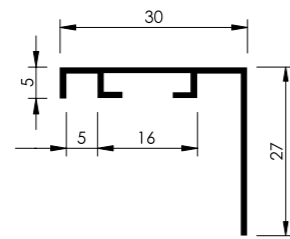
- Gasket type: Single Sided Self - Adhesive Foam.
- Gasket Function: Sealing.
- Gasket Benefits :
 - Stops Linear Bar Grille I Register rattling.
 - Minimize air infiltration.
 - Stops leaks and pressure losses.
 - Takes up unevenness of ceiling.
 - Easy to apply on site or in factory.
- To be applied around the perimeter of the back side of the Linear Bar Grille/Register to act as a Rubber Seal Gasket Wall Side air seal to prevent pressurised air from escaping from the sides of the outer frame when fixed to the wall.



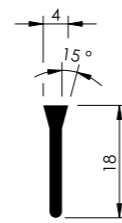
Cross Sectional Drawings for Profiles used in Linear Bar Grilles | Registers



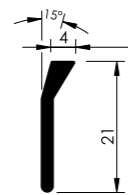
Frame Profile Section
For Linear Bar Grilles and Registers with
Rear Blades



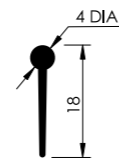
Frame Profile Section
For Linear Bar Grilles and Registers w/o Rear
Blades



15° 2-Way Deflection Bar Blade Section
Linear Bar Grilles and Registers



15° 1-Way Deflection Bar Blade Section
Linear Bar Grilles and Registers



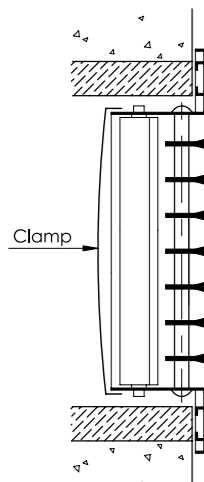
Aerofoil Vertical Rear Blade Section
Linear Bar Grilles and Registers

• All dimensions are in mm and subject to ± 0.2 mm tolerance.

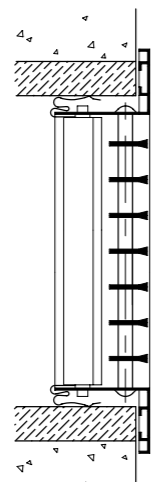
EFFECTIVE AREA VALUES FOR LINEAR BAR GRILLES / REGISTERS WITH VERTICAL REAR BLADES MODEL SLR DD and SLG DD

| Height | | Bar Spacing | | |
|--------|-----|-------------|--------|--------|
| Inch | mm | @ 12 mm | @ 9 mm | @ 6 mm |
| 2" | 50 | 0.023 | 0.023 | 0.019 |
| 3" | 75 | 0.038 | 0.034 | 0.030 |
| 4" | 100 | 0.049 | 0.045 | 0.038 |
| 6" | 150 | 0.076 | 0.068 | 0.057 |
| 8" | 200 | 0.102 | 0.094 | 0.079 |
| 10" | 250 | 0.128 | 0.117 | 0.098 |
| 12" | 300 | 0.155 | 0.140 | 0.117 |
| 14" | 350 | 0.185 | 0.170 | 0.143 |
| 16" | 400 | 0.215 | 0.200 | 0.170 |
| 18" | 450 | 0.246 | 0.230 | 0.196 |
| 20" | 500 | 0.276 | 0.261 | 0.223 |
| 22" | 550 | 0.306 | 0.291 | 0.249 |
| 24" | 600 | 0.337 | 0.321 | 0.276 |

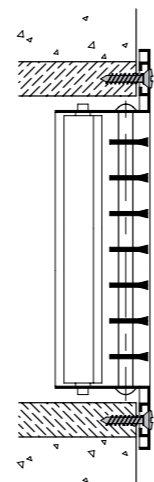
Available Fixing Mounting Linear Bar Grilles | Registers



A. Concealed Fixing
(Clamp Mounting)



B. Concealed Fixing
(Spring Clip Mounting)



C. Face Screw Fixing

- The Linear bar Grille/Register is fixed by means of aluminium clamp to the wall or ceiling where no screws are visible. Usually used when the Grille | Register is more than one meter in length.
- The Linear bar Grille | Register is

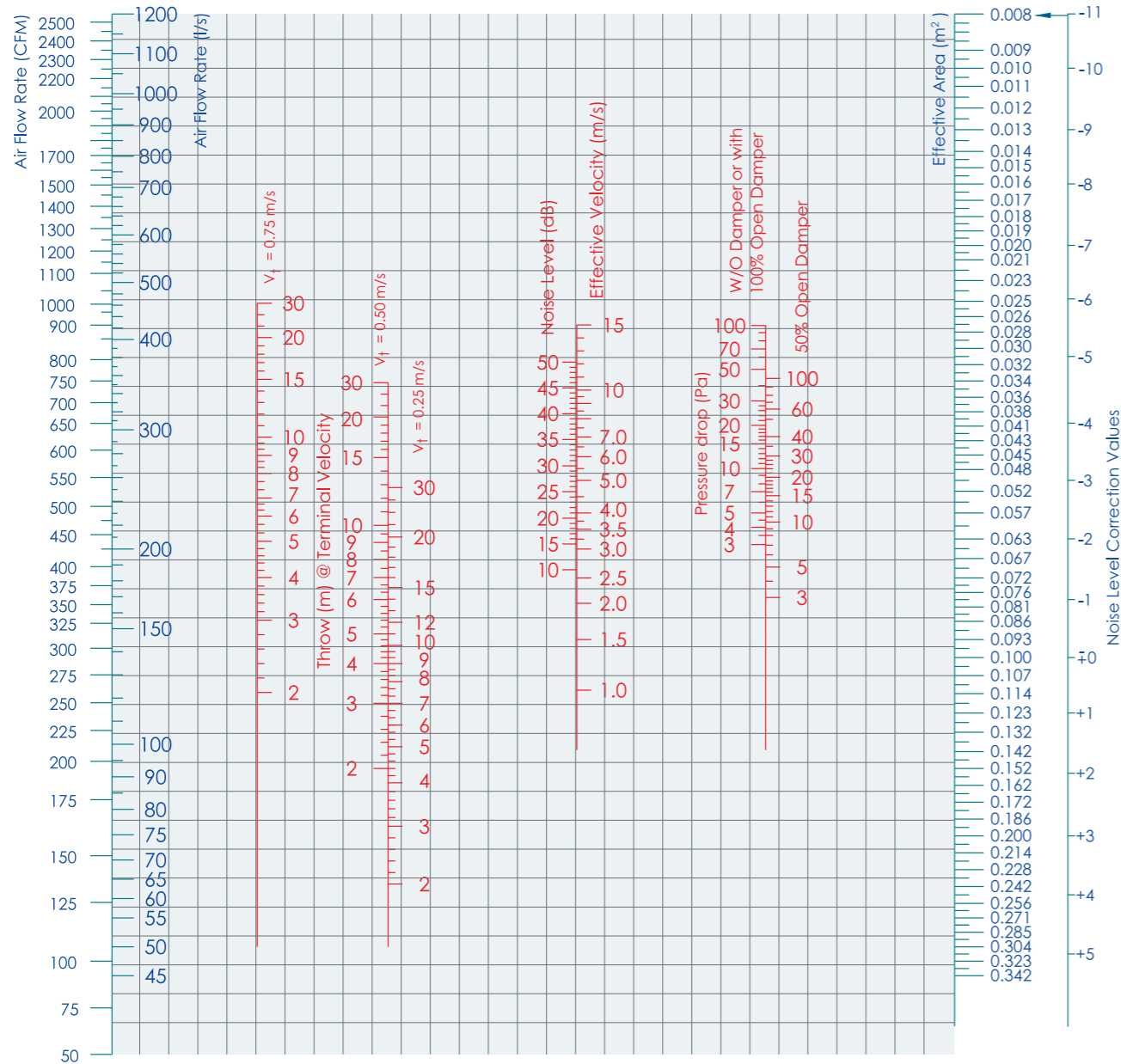
- fixed by means of spring clips to the wall where no screws are visible. Usually used when the Grille | Register is one meter or less in length.
- The Linear bar Grille | Register is fixed to the wooden frame by

means of visible screws. Can be used for any Grille | Register length.

EFFECTIVE AREA VALUES FOR LINEAR BAR GRILLES / REGISTERS W/O REAR BLADES MODEL RLR SD and RLG SD

| Height | | Bar Spacing | | |
|--------|-----|-------------|--------|--------|
| Inch | mm | @ 12 mm | @ 9 mm | @ 6 mm |
| 2" | 50 | 0.031 | 0.031 | 0.027 |
| 3" | 75 | 0.051 | 0.047 | 0.043 |
| 4" | 100 | 0.067 | 0.063 | 0.055 |
| 6" | 150 | 0.103 | 0.095 | 0.084 |
| 8" | 200 | 0.139 | 0.132 | 0.116 |
| 10" | 250 | 0.176 | 0.164 | 0.145 |
| 12" | 300 | 0.212 | 0.197 | 0.174 |
| 14" | 350 | 0.252 | 0.237 | 0.210 |
| 16" | 400 | 0.292 | 0.277 | 0.246 |
| 18" | 450 | 0.332 | 0.317 | 0.282 |
| 20" | 500 | 0.372 | 0.357 | 0.319 |
| 22" | 550 | 0.412 | 0.397 | 0.355 |
| 24" | 600 | 0.452 | 0.437 | 0.391 |

Engineering and Performance Data General Selection Diagram



- Always draw a straight horizontal line from Effective Area point in direction to Noise Level correction line on right side to obtain its correction value.

| | | |
|-------------------|----------|--------|
| Blades Deflection | 22 1/2 ° | 45 ° |
| Velocity | x 1.20 | x 1.40 |
| Pressure Drop | x 1.30 | x 1.60 |
| Throw | x 0.80 | x 0.60 |
| Noise Level | + 2.0 | + 3.0 |

HOW TO USE THIS DIAGRAM?

Case I: Size and Air Flow Rate are given

Illustrative example :

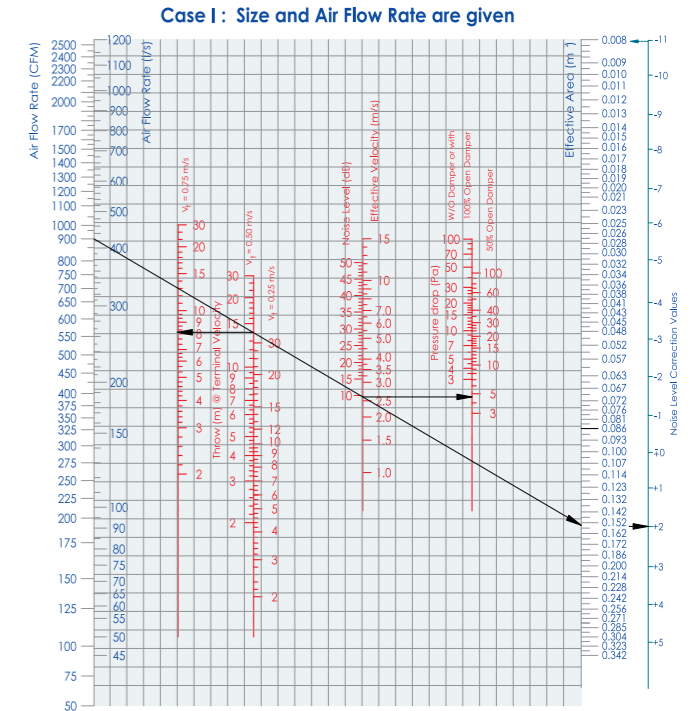
Given Data: Required Model : SLR DD
Bar Spacing : 12mm
Nominal Size : 1500 x 200 mm
Air Flow Rate : 750 CFM

Assume Damper at full open position.

See Page No. LG-10 Table No. LG-09, Effective Area= 0.155m²

Apply the CFM and effective area values to the diagram and draw a straight line connecting both of them, easily from the intersection you can read all the related data as below:

- V eff. = 2.3 m/s (intersection point of draw line with V eff. Vertical line)
- Noise Level <15 dB (The value where the drawn line intersecting the Noise Level vertical line after checking Noise Level correction values)
- Pressure Drop <3 Pa (from the same Veff. Point draw a horizontal line intersecting the opposite Pressure Drop vertical line and read this value)
- Throw @Vt=0.25m/s >30m (Intersection point of drawn line with Throw vertical line @ Vt=0.25m/s).
@Vt =0.50m/s =14.0m (Intersection point of drawn line with Throw vertical line @ Vt=0.50m/s).
@ Vt= 0.75m/s=8.0m (where the drawn line intersecting the Throw vertical line @ Vt =0.25 and 0.50 m/s draw a horizontal straight line toward the opposite Throw vertical line @ Vt = 0.75m/s and read this value)



Case II: Air Flow Rate and Noise Level are Given

Illustrative Example:

Given Data: Required Model : RLG SD
Bar Spacing : 6mm
Air Flow Rate : 600 CFM
Noise Level : not to exceed 30 dB

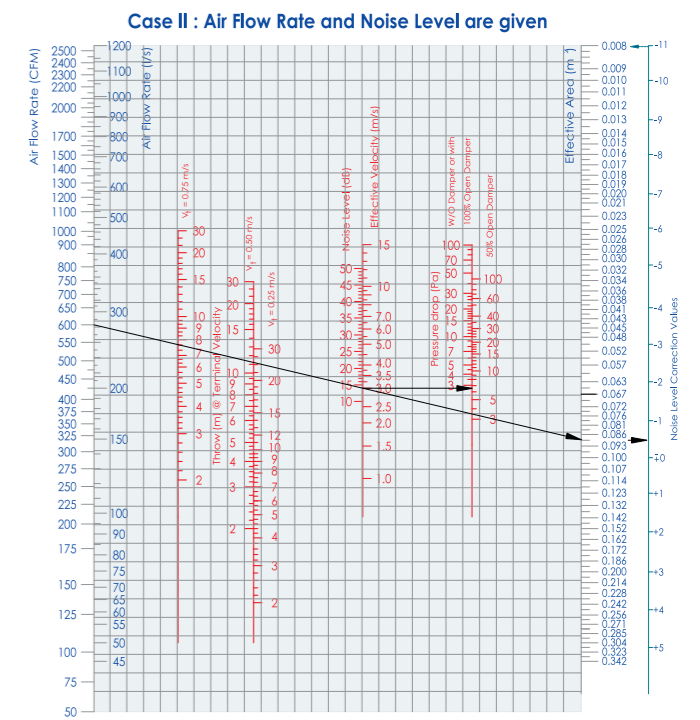
Assume V eff. = 3.0 m/s to find that Noise Level = (30-0) = 30 dB (Not exceeding 30dB), then other related data can be read as below:-

Effective area = 0.09m².

See page No. LG - 09 table No. LG - 08, (@ Bar Spacing = 6mm) if you choose 4" grille height, the Effective Area for the same = 0.055 m² per one meter length, so the required grille length will be 0.09/0.055 = 1.64m.

Grilles Normal Size = 1640 x 100 mm.

Pressure Drop = 3.0 Pa



HOW TO USE THIS DIAGRAM?

Case I: Size and Air Flow Rate are given

Illustrative example :

Given Data: Required Model : SLR DD
 Bar Spacing : 12mm
 Nominal Size : 1500 x 200 mm
 Air Flow Rate : 750 CFM

Assume Damper at full open position.

See Page No. LG-10 Table No. LG-09, Effective Area= 0.155m²

Apply the CFM and effective area values to the diagram and draw a straight line connecting both of them, easily from the intersection you can read all the related data as below:

V eff. = 2.3 m/s (intersection point of draw line with V eff. Vertical line)

Noise Level <15 dB (The value where the drawn line intersecting the Noise Level Vertical line after checking Noise Level correction values)

Pressure Drop <3 Pa (from the same Veff. Point draw a horizontal line intersecting the opposite Pressure Drop vertical line and read this value)

Throw @Vt=0.25m/s >30m (Intersection point of drawn line with Throw vertical line @ Vt=0.25m/s).

@Vt =0.50m/s =14.0m (Intersection point of drawn line with Throw vertical line @ Vt=0.50m/s).

@ Vt= 0.75m/s=8.0m (where the drawn line intersecting the Throw vertical line @ Vt =0.25 and 0.50 m/s draw a horizontal straight line toward the opposite Throw vertical line @ Vt = 0.75m/s and read this value)

Case II: Air Flow Rate and Noise Level are Given

Illustrative Example:

Given Data: Required Model : RLG SD
 Bar Spacing : 6mm
 Air Flow Rate : 600 CFM
 Noise Level : not to exceed 30 dB

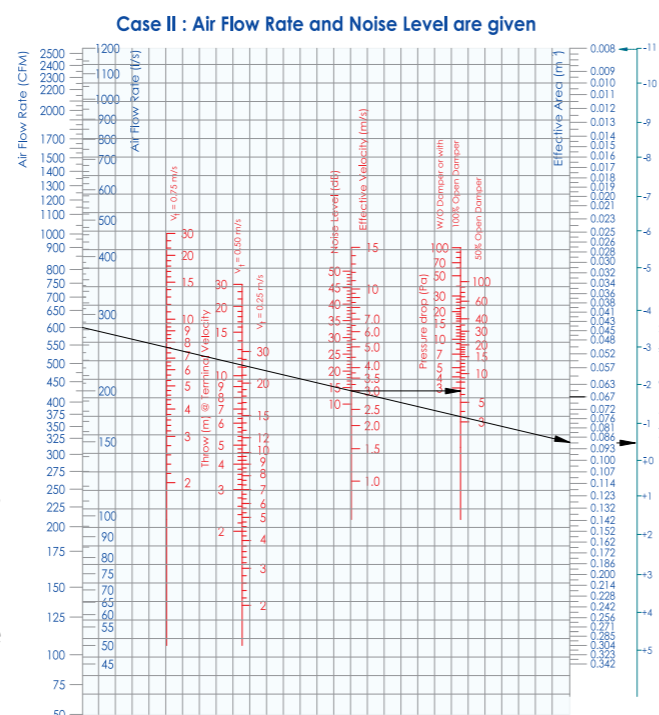
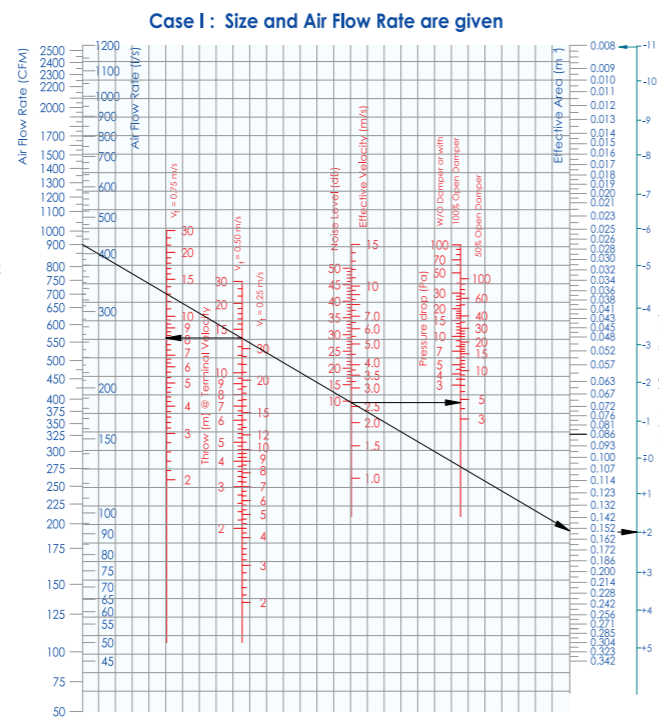
Assume V eff. = 3.0 m/s to find that Noise Level = (14-0) = 14 (Not exceeding 30dB), then other related data can be read as below:-

Effective area = 0.09m².

See page No. LG - 09 table No. LG - 08, (@ Bar Spacing = 6mm) if you choose 4" grille height, the Effective Area for the same = 0.055 m² per one meter length, so the required grille length will be 0.09/0.055 = 1.64m.

Grilles Normal Size = 1640 x 100 mm.

Pressure Drop = 3.0 Pa



ORDERING DATA

Available Surface Finishes For Linear Bar Grilles and Registers:

- Natural I Matt Silver Anodized .
- Powder Coating (Standard Colors are white RAL 9010/ 9016, other optional colors if required to be provided in RAL- No.
- only and charged extra). - Aluminium in Mill Finish.
- Other Special finishes (on request if available).

Available Surface Finishes For Opposed Blade Dampers:

- Aluminium in Mill Finish (standard).
- Matt Black Powder Coating (optional).

Ordering Specifications:

Specify:

- Linear Bar Grille I Register Description (Supply. Return. Extract. Dummy..... etc).
- Fixed Front Bar blades with or w/o vertical rear blades.
- Opposed Blade Damper Surface Finish (only mention if required in black color).
- Linear Bar Grille I Register Height.
- Linear Bar Grille I Register Length.
- Quantity.
- Linear Bar Grille I Register Surface Finish.
- RAL- No.(only mention if powder coating surface finish is required).
- Type of Fixing (see page No.LG - 08).
- Optional Accessories (Gasket,or others).
- Fabrication Notes: only mention if any the following is required:
 - 15° - one way deflection.
 - Non-standard spacing, 6 or 9 mm.
 - Curved shaped.

Example 1:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----|----|----|------------------|---------|----|----------------|------|-------|----|----|
| SLR | DD | BD | H = 6" or 150 mm | 1200 mm | 62 | Powder Coating | 9016 | Clamp | - | - |

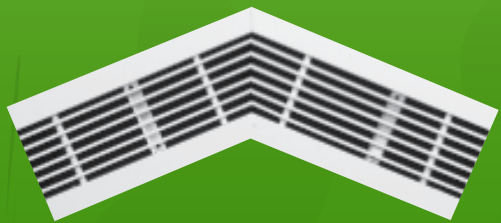
Example 2:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----|----|---|------------------|-----|-----|-----------------|---|-------------|--------------------|-------------|
| SLG | DD | - | H = 8" or 200 mm | 60" | 120 | Silver Anodized | - | Spring Clip | With Rubber Gasket | 15° one way |

Example 3:

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|-----|----|---|-------------------|---------|---|----------------|-----------------|-------|----|-------|
| RLG | SD | - | H = 12" or 300 mm | 2130 mm | 3 | Powder Coating | 1013 (Optional) | Screw | - | Curve |

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