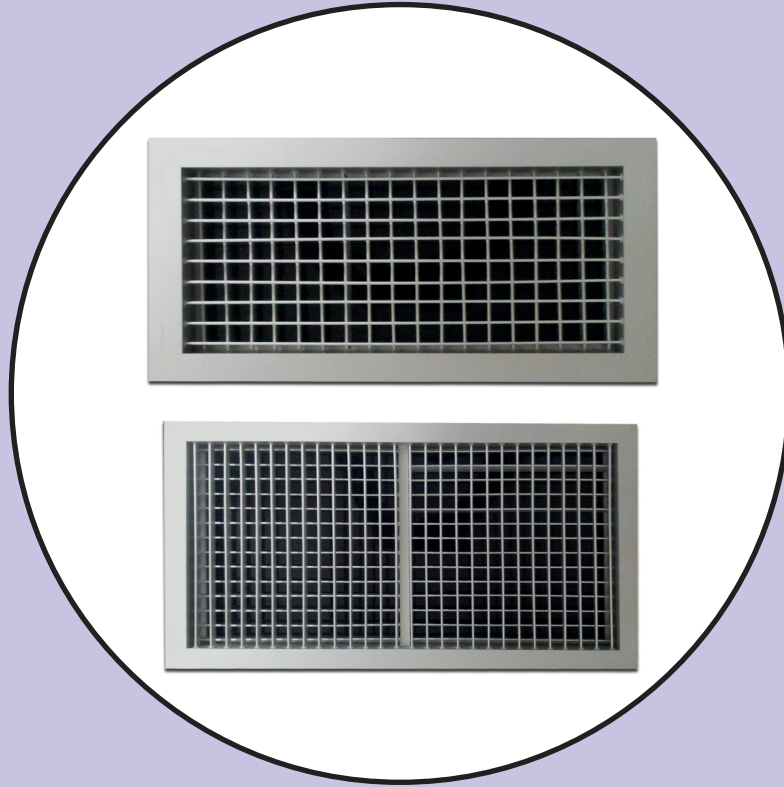


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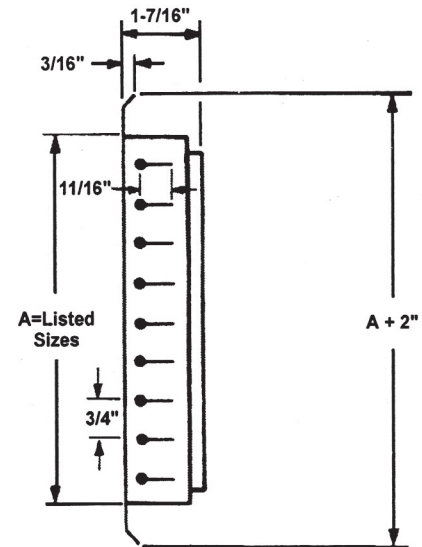
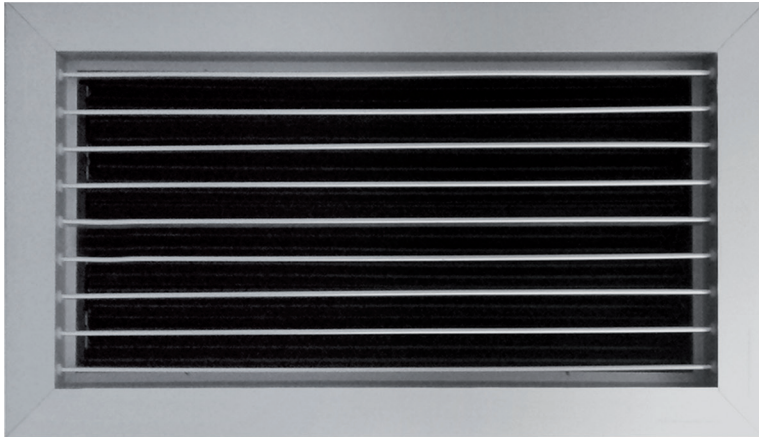
G G C

شركة الخليج لفتحات التكييف المركزي

GULF GRILLES CO.



SUPPLY GRILLES  
& REGISTERS



### PRODUCT DESCRIPTION

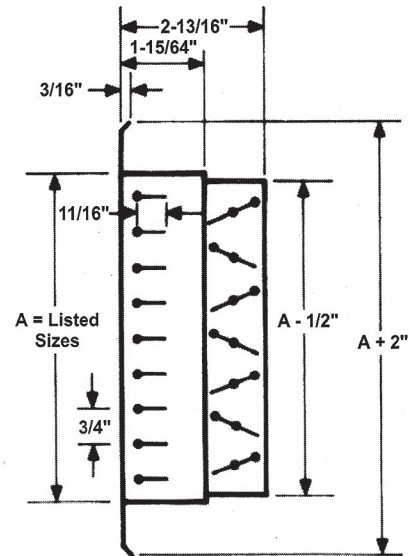
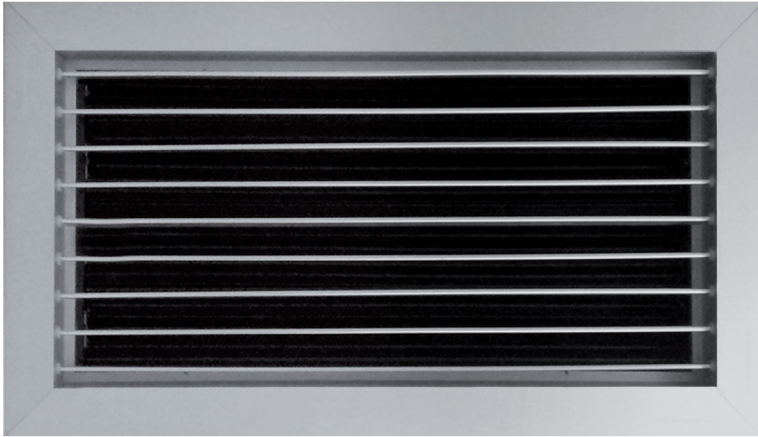
- A single deflection grille providing air deflection in the vertical plane.
- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
- The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
- The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
- All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
- Deflection of blades are easily set without use of special tools.
- The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
- Standard finish is white, painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
- Suitable for high sidewall, soffit or duct mounting, for heating, ventilating and cooling applications.

### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24x16         | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |

SEE PAGE 1-12 - 1-17 FOR SELECTION DATA  
SEE PAGE 1-18 FOR BALANCING DATA



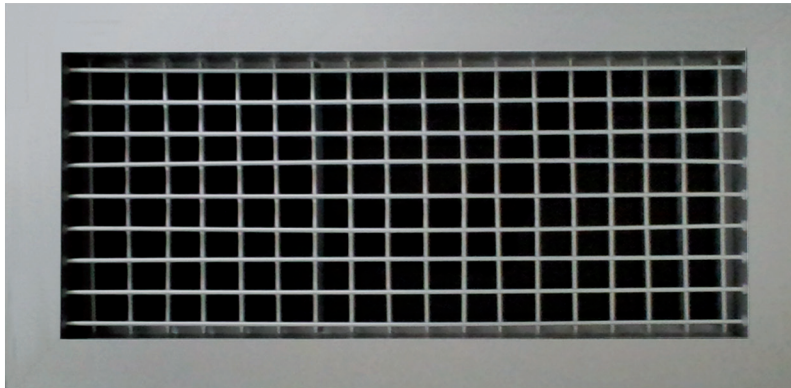
### PRODUCT DESCRIPTION

- A single deflection grille with an opposed blade damper, providing air deflection in the vertical plane.
- The frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
  - Frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
  - The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
  - All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
  - Deflection of blades are easily set without use of special tools.
  - Opposed blade damper (OBD) operator is easily adjusted through face with a screw driver.
  - The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
  - Standard finish white color for frame and blades. Damper in black color. Painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
  - Suitable for high sidewall, soffit or duct mounting, for heating, ventilating and cooling applications.

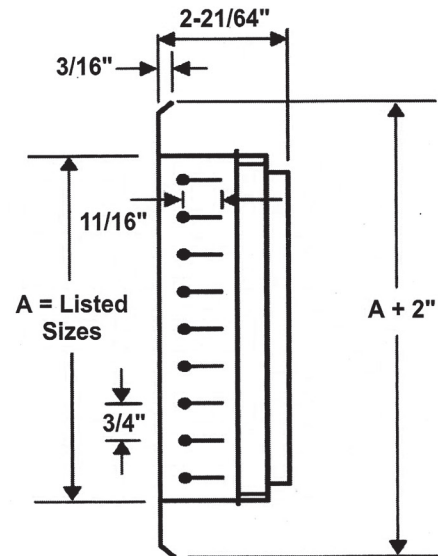
### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24 x 16       | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |



### PRODUCT DESCRIPTION



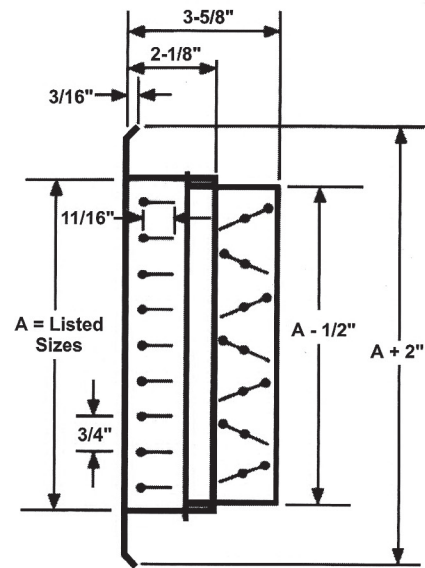
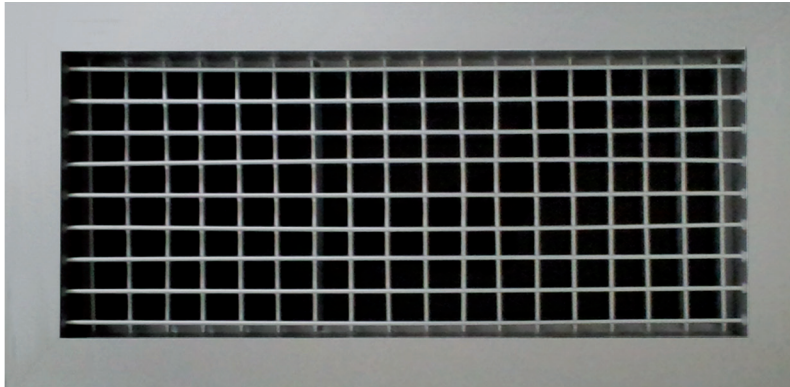
A double deflection grille providing air deflection in both horizontal and vertical planes.

- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
- The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
- The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
- All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
- Deflection of blades are easily set without use of special tools.
- The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
- Standard finish is white, painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
- Suitable for high sidewall, soffit or duct mounting, for heating, ventilating and cooling applications.

### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24 x 16       | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 24x16         | 800-1400    |



### PRODUCT DESCRIPTION

A double deflection grille with an opposed blade damper, providing air deflection in both horizontal and vertical planes.

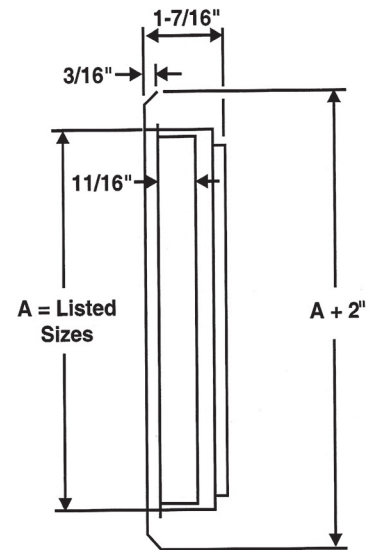
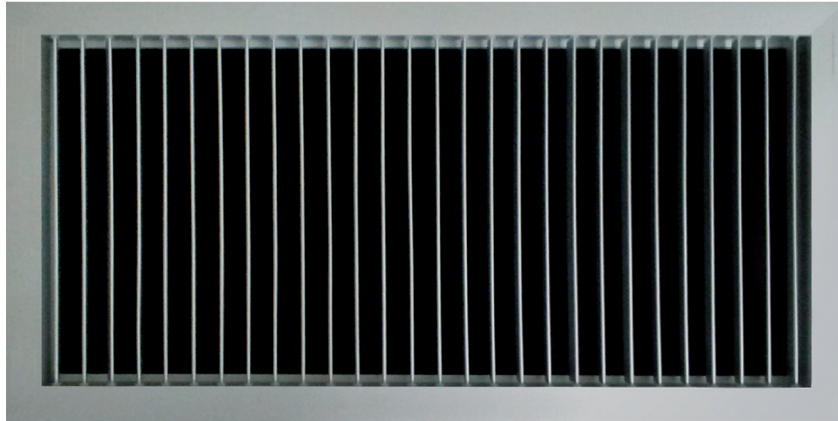
- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
- The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
- The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
- All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
- Deflection of blades are easily set without use of special tools.

- Opposed blade damper (OBD) operator is easily adjusted through face with a screw driver.
- The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
- Standard finish white color for frame and blades. Damper in black color. Painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
- Suitable for high sidewall, soffit or duct mounting, for heating, ventilating and cooling applications.

### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24 x 16       | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |



### PRODUCT DESCRIPTION

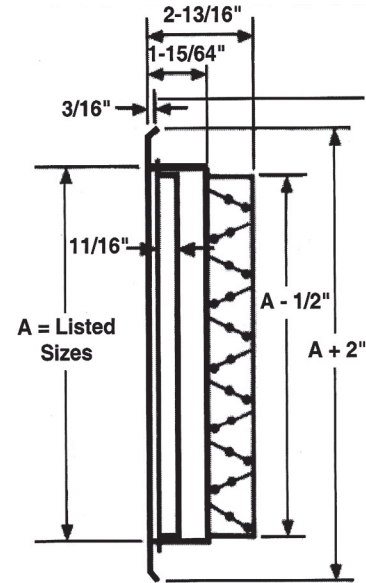
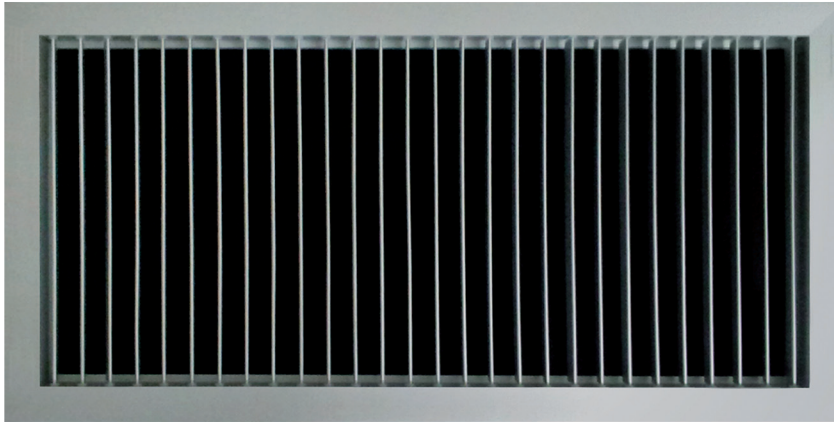
A single deflection grille providing air deflection in the horizontal plane.

- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
- The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
- The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
- All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
- Deflection of blades are easily set without use of special tools.
- The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
- Standard finish is white, painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
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### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24 x 16       | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |



### PRODUCT DESCRIPTION

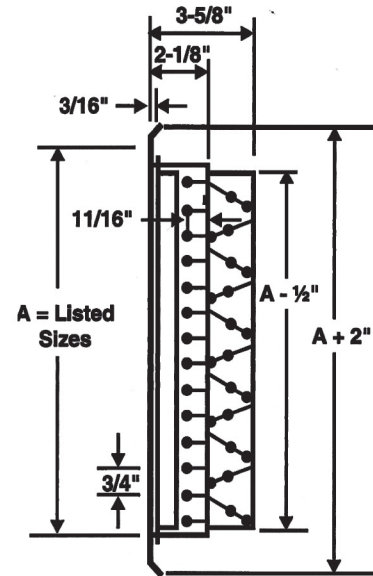
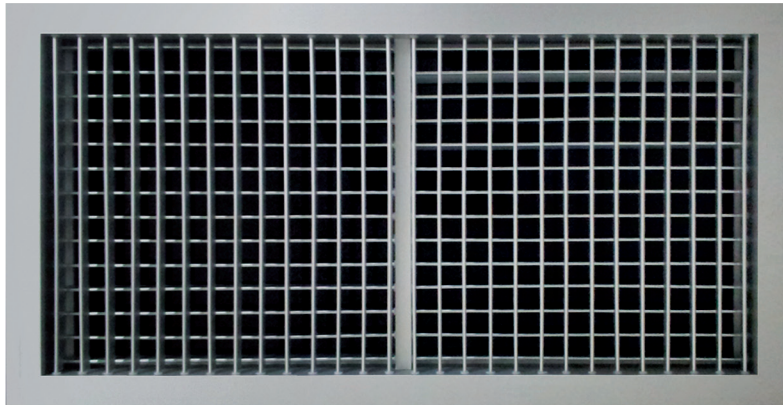
A single deflection grille with an opposed blade damper, providing air deflection in the horizontal plane.

- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
- The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
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|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24x16         | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |



### PRODUCT DESCRIPTION

A double deflection grille with an opposed blade damper, providing air deflection in both horizontal and vertical planes.

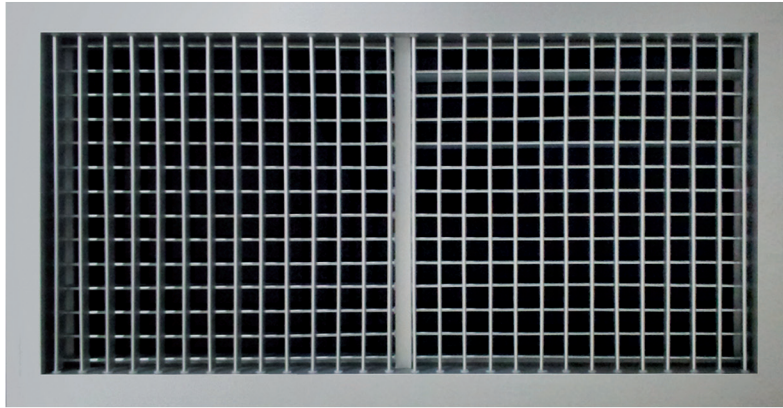
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### Listed Sizes

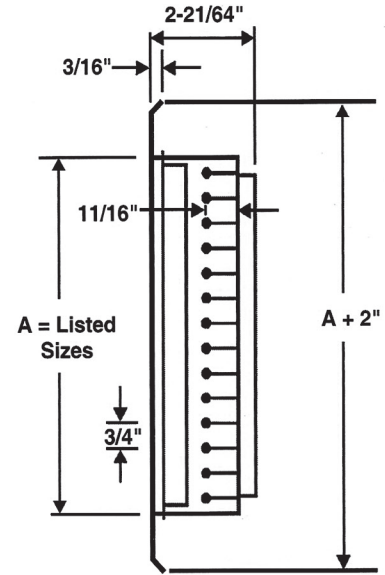
| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24x16         | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |





### PRODUCT DESCRIPTION



- A double deflection grille providing air deflection in both horizontal and vertical planes.
- Frame and blades are extruded aluminium alloy and are polyester powder coated with a white finish.
  - The frame has a typical wall thickness of 1/16" and is separated from the blades with PVC bushings. This method of assembly eliminates corrosion and vibration.
  - The frame mounting holes are dimpled, allowing for a counter-sunk fastener head appearance.
  - All blades are airfoil in design, individually adjustable and spaced 3/4" on center.
  - Deflection of blades are easily set without use of special tools.
  - The unit achieves an effective area of 80% with the blades set at 0° pattern thus eliminating high velocity and pressure drop at the grille face. Wider deflection with reduced throw may be achieved at the 22½° and 45° blade settings with only slightly increased noise levels.
  - Standard finish is white, painted under electrostatic polyester powder coated system. Other colors available on request. The polyester powder of highest quality are used to enhance the appearance of the units.
  - Suitable for high sidewall, soffit or duct mounting, for heating, ventilating and cooling applications.

### Listed Sizes

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 8 x 4         | 50-150      | 10 x 6        | 100-200     | 30 x 6        | 300-800     | 20 x 8        | 200-500     |
| 10 x 4        | 50-200      | 12 x 6        | 100-250     | 32 x 6        | 300-800     | 24 x 8        | 300-800     |
| 14 x 4        | 100-200     | 16 x 6        | 100-250     | 36 x 6        | 400-800     | 28 x 8        | 400-800     |
| 18 x 4        | 100-250     | 18 x 6        | 100-250     | 10 x 8        | 100-250     | 30 x 8        | 500-800     |
| 20 x 4        | 100-250     | 20 x 6        | 100-300     | 12 x 8        | 100-250     | 32 x 8        | 500-800     |
| 24 x 4        | 100-250     | 24 x 6        | 150-400     | 16 x 8        | 150-300     | 36 x 8        | 500-1000    |
| 8 x 6         | 50-200      | 28 x 6        | 200-500     | 18 x 8        | 150-400     | 12 x 10       | 100-300     |

| Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) | Size (inches) | CFM (range) |
|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|
| 14 x 10       | 150-400     | 32 x 10       | 500-1200    | 24 x 12       | 500-1000    | 18 x 14       | 500-800     |
| 16 x 10       | 200-500     | 36 x 10       | 500-1300    | 28 x 12       | 500-1200    | 24 x 14       | 500-1200    |
| 18 x 10       | 300-800     | 12 x 12       | 150-400     | 30 x 12       | 500-1300    | 30 x 14       | 800-1400    |
| 20 x 10       | 300-800     | 14 x 12       | 200-500     | 32 x 12       | 500-1300    | 16 x 16       | 500-800     |
| 24 x 10       | 500-800     | 16 x 12       | 300-800     | 36 x 12       | 800-1400    | 20 x 16       | 500-1200    |
| 28 x 10       | 500-1000    | 18 x 12       | 400-800     | 14 x 14       | 300-800     | 24 x 16       | 500-1300    |
| 30 x 10       | 500-1000    | 20 x 12       | 500-800     | 16 x 14       | 400-800     | 30x16         | 800-1400    |

## SUPPLY GRILLE AND REGISTER ENGINEERING DATA

The most important thing in any air conditioning system is that the selection of a Suitable Register or a Grille to ensure satisfactory performance. For this the following charts were given to help you in predicting performance. In making selections, sound Engineering judgement is essential as the permissible drops and noise levels can change greatly with the usage of space, location of obstacles and available clear mounting heights. So, before selection give close attention to the following considerations.

In general, the occupant should not be subjected to velocities above 50 FPM for an extended period of time as the air velocities below 15 FPM leave a feeling of stagnation and velocities above 65 FPM create drafts so these charts are based on a terminal velocity of 50 FPM in determining throw. It is assured that longer throws will be required larger drops are probably satisfactory. In more exacting applications outlets should be sized with shorter throws, smaller drops and lower noise levels.

Upto 800 FPM velometer velocity, the noise caused by the grill itself is negligible. The engineer should consider acoustical insulation, vibration etc, because the vibration through ductwork or fan noise may be transmitted to the zone of occupancy.

Considerable caution must be exercised in selecting and positioning the grille to determine that the air will not drop into the occupied zone. However, it should be also kept in mind that the other extreme of overthrow can cause objectionable down drafts of air along any wall or surface.

Generally, prescribed rule is to select a grille that will have a throw of approximately  $3/4$  of the distance to the opposite wall with its termination at approximately six feet above the floor level as shown in the Fig. 1, below.

For sizes which are not listed, it is suggested that full particulars to be send our Engineering Department at Riyadh for recommendations.

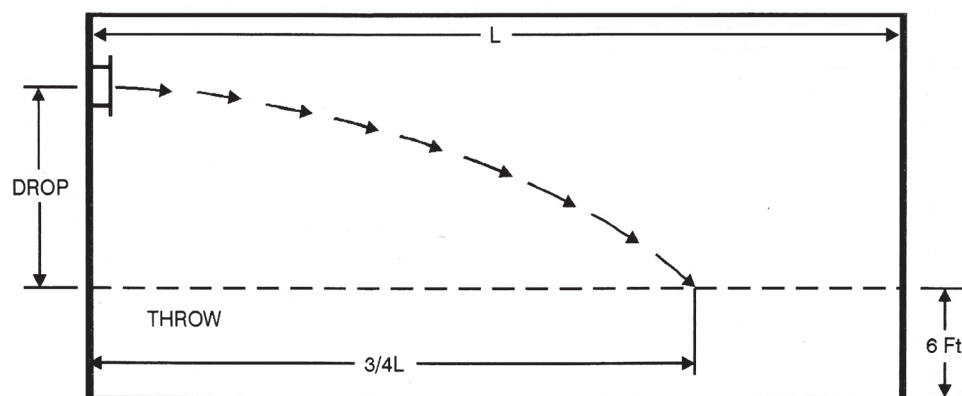


Fig. 1

## SUPPLY GRILLE AND REGISTER ENGINEERING DATA

### Blade Deflections

The blade deflections upon which the performance data is based are obtained by the individual adjustment in our supply grilles and registers. Altering the blade settings, drop, noise and total pressure. See Fig.2.

### Guidance for Reading Tables on Following Pages:

Variable deflection settings to satisfy all air distribution requirements are obtained by individual adjustment of airfoil blades in our supply grilles and registers.

To obtain long throw and narrow air patterns use 0° and 22½° deflection.

For shorter throw and wide air patterns use upto 45° deflection, or more. Performance data shown in the selection charts on the following pages is based on double deflection grilles with vertical airfoil blades at 0°, 22½° and 45° as illustrated below.

### Throw Requirement:

The basis performance data will show two throws values. The maximum throw is the distance of air travel to a point having air velocity of 50 FPM and the minimum throw is the distance of air travel to a point having air velocity of 100 FPM.

Generally, the throw distance requirement is determined from the supply air terminal to the opposite wall or to the intersection of its air stream with air being delivered from another supply air terminal.

### Drop:

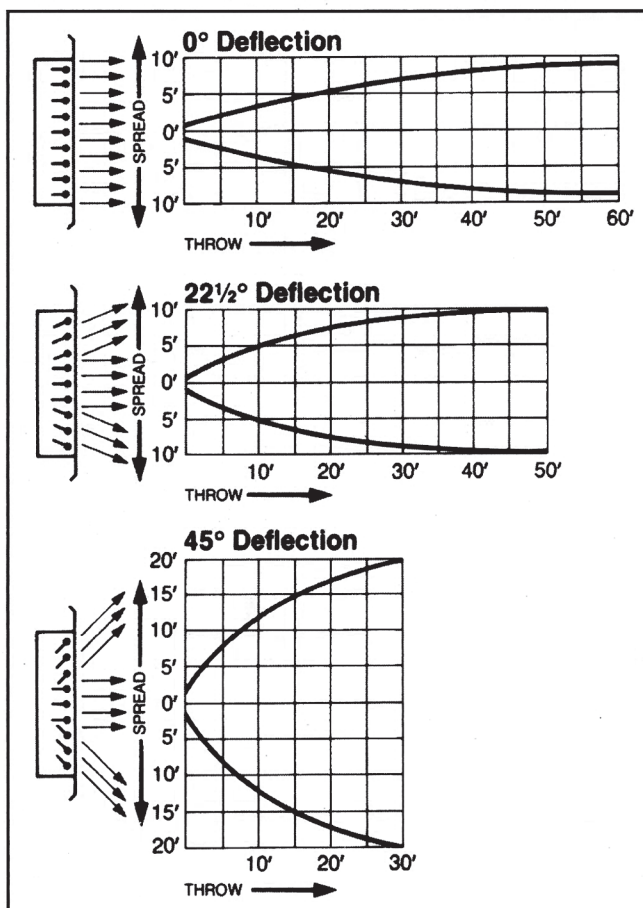
Drop is a vertical distance between the lowest horizontal plane having 50 FPM of air down stream and the centre of the core.

### Velocity:

The average face velocity on the grille's surface as measured with an ANLOR Velometer with tip no. 2220A minimum of four readings should be taken at random over the face of the grille and averaged. See Fig. 3.

### Total Pressure:

Total pressure is measured in inches of water gauge (w.g.). If static pressure drop is required calculate the CORE AREA = (Nominal Length - ¼) x (Nominal Width - ¼) and divide the CFM by this area to determine the CORE VELOCITY. Using this velocity, enter table 1 to find the velocity pressure subtracting velocity pressure from total pressure gives static pressure drop across the grille.



| CORE VELOCITY<br>( FPM ) | VELOCITY PRESSURE<br>( inches w.g. ) |
|--------------------------|--------------------------------------|
| 250                      | 0.004                                |
| 300                      | 0.006                                |
| 350                      | 0.008                                |
| 400                      | 0.010                                |
| 450                      | 0.013                                |
| 500                      | 0.016                                |
| 550                      | 0.019                                |
| 600                      | 0.022                                |
| 650                      | 0.026                                |
| 700                      | 0.031                                |
| 750                      | 0.035                                |
| 800                      | 0.040                                |

**TABLE 1 - Velocity Pressure  
Conversion Chart.**

# SUPPLY GRILLE AND REGISTER

## ENGINEERING DATA

Maximum Noise Criteria (NC) Recommendations for our supply grilles and registers.

**SOUND:-** The sound level of a supply grille or register is in direct ratio to the velocity of the air passing through it.

Air passing through a properly selected outlet will not add any appreciable noise to the sound level of the existing system.

### APPLICATIONS:-

| TYPE OF AREA                      | AVERAGE |
|-----------------------------------|---------|
| Private home (rural and suburban) | 25      |
| Private home (urban)              | 30      |
| Apartment house                   | 35      |
| Individual rooms                  | 35      |
| Halls, corridors, lobbies         | 40      |
| Garages                           | 45      |
| Kitchens, laundries               | 45      |
| Private rooms                     | 30      |
| Operating rooms                   | 35      |
| Wards, corridors                  | 35      |
| Laboratories                      | 35      |
| Lobbies, waiting rooms            | 40      |
| Washrooms, toilets                | 45      |
| Board rooms                       | 25      |
| Conference rooms                  | 30      |
| Executive offices                 | 35      |
| General offices                   | 35      |
| Reception rooms                   | 35      |
| General open offices              | 40      |
| Drafting rooms                    | 40      |
| Tabulation and computation areas  | 45      |
| Concert opera halls               | 20      |
| Sound record studios              | 20      |
| Legitimate theaters               | 30      |
| Multi-purpose halls               | 35      |
| Ticket sales office               | 35      |
| Lounges, waiting rooms            | 40      |

| TYPE OF AREA                     | AVERAGE |
|----------------------------------|---------|
| Movie theaters                   | 35      |
| TV audience studios              | 35      |
| Lecture halls                    | 35      |
| Planetariums                     | 35      |
| Lobbies                          | 40      |
| Mosques                          | 25      |
| Libraries                        | 35      |
| Schools and class rooms          | 35      |
| Laboratories                     | 40      |
| Recreation halls                 | 40      |
| Corridors and halls              | 40      |
| Libraries, museums               | 35      |
| Court rooms                      | 35      |
| Post offices, lobbies            | 40      |
| General banking areas            | 40      |
| Washrooms, toilets               | 45      |
| Restaurants                      | 40      |
| Cafeterias                       | 45      |
| Clothing stores                  | 40      |
| Department stores (Upper floors) | 40      |
| Department stores (Main floors)  | 45      |
| Small retail stores              | 45      |
| Supermarkets                     | 45      |
| Coliseums                        | 40      |
| Bowling alleys                   | 40      |
| Gymnasiums                       | 40      |
| Swimming pools                   | 45      |

The NC values shown in the performance data are based upon a room absorption of 10dB, and a sound power level re 10<sup>-12</sup> Watts.

**ILLUSTRATIVE PROBLEM:** A 20 ft. long room has ceiling height of 12 ft. with an outlet mounted 1½ ft. below the ceiling. The outlet capacity desired is 300 CFM and the noise level is not to exceed NC 20. Select the proper register and performance data.

### SOLUTION:

- The distance from the outlet to the opposite wall is 20 Ft. Assume the throw is being selected to equal 3/4 of the distance or approximately 15 ft.
- The drop should not be excessive as it enters the occupied zone; therefore, the drop should not exceed 10½' - 6 = 4½'. If a double deflection (SH6-IID) register is used the horizontal and vertical deflection of the air can be controlled.
- Now using the performance data chart locate 300 CFM on the vertical column marked CFM. Next moving horizontally using a throw of approximately 15', A 20" x 8" outlet with a 22½° deflection pattern is selected. This selection will give a throw of 15 ft, and total pressure of 0.011 from the performance data chart is noted that the NC sound level would not exceed NC 20.
- If static pressure is required, it is calculated as follows :

$$\text{Core Area} = \frac{(\text{Nominal Length} - \frac{1}{4}) (\text{Nominal Width} - \frac{1}{4})}{144}$$

$$= \frac{(20 - \frac{1}{4}) (8 - \frac{1}{4})}{144} = 1.06 \text{ Sq. ft.}$$

$$\text{Core Velocity} = \frac{\text{CFM}}{\text{Core Area}} = \frac{300 \text{ CFM}}{1.06 \text{ Sq. ft.}} = 283 \text{ FPM}$$

$$\text{From Table 1, Velocity Pressure @ 283 FPM} = 0.006$$

$$\text{Static Pressure Drop} = \text{Total Pressure} - \text{Velocity Pressure}$$

$$= 0.011 - 0.006$$

$$= 0.005" \text{ w.g.}$$

- Selected register is our SH6-IID size 20" x 8"
  - Airflow Rate = 300 CFM
  - Static Pressure Drop = 0.005" w.g.
  - Throw = 15 ft.
  - NC = Less than 20
  - Drop = Adjustable due to selection of double deflection register.

# SUPPLY GRILLE AND REGISTER PERFORMANCE DATA

LISTED SIZES

| CFM | SIZES(IN.)<br>(WIDE x HIGH) | 5 x 6 |       |      | 8 x 5  |       |        | 14 x 4 |        |        | 14 x 5 |        |        | 14 x 6 |        |        | 24 x 4 |        |        |
|-----|-----------------------------|-------|-------|------|--------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|     |                             | 8 x 4 | 6 x 6 |      | 10 x 4 | 8 x 6 | 12 x 4 | 10 x 5 | 10 x 6 | 12 x 5 | 16 x 4 | 18 x 4 | 12 x 6 | 20 x 4 | 16 x 5 | 10 x 8 | 16 x 6 | 12 x 8 | 20 x 5 |
|     | Deflection                  | 0     | 22½   | 45   | 0      | 22½   | 45     | 0      | 22½    | 45     | 0      | 22½    | 45     | 0      | 22½    | 45     | 0      | 22½    | 45     |
|     | Ak                          | .16   | .14   | .13  | .20    | .18   | .19    | .27    | .25    | .23    | .32    | .30    | .28    | .36    | .34    | .31    | .41    | .40    | .37    |
| 50  | Velocity                    | 315   | 355   | 385  | 250    | 280   | 295    |        |        |        |        |        |        |        |        |        |        |        |        |
|     | Total Pressure              | .008  | .012  | .013 | .005   | .006  | .007   |        |        |        |        |        |        |        |        |        |        |        |        |
|     | Throw                       | 7-10  | 4-6   | 3-6  | 7-10   | 3-6   | 3-5    |        |        |        |        |        |        |        |        |        |        |        |        |
|     | NC                          | <20   | <20   | <20  | <20    | <20   | <20    |        |        |        |        |        |        |        |        |        |        |        |        |
| 75  | Velocity                    | 470   | 535   | 575  | 375    | 415   | 440    |        |        |        |        |        |        |        |        |        |        |        |        |
|     | Total Pressure              | .018  | .027  | .029 | .011   | .014  | .015   |        |        |        |        |        |        |        |        |        |        |        |        |
|     | Throw                       | 9-12  | 5-8   | 5-7  | 9-12   | 4-8   | 4-7    |        |        |        |        |        |        |        |        |        |        |        |        |
|     | NC                          | <20   | <20   | <20  | <20    | <20   | <20    |        |        |        |        |        |        |        |        |        |        |        |        |
| 100 | Velocity                    | 625   | 715   | 770  | 500    | 555   | 590    | 370    | 400    | 435    | 315    | 330    | 355    | 280    | 295    | 325    | 245    | 250    | 270    |
|     | Total Pressure              | .033  | .048  | .052 | .020   | .025  | .027   | .009   | .013   | .014   | .006   | .008   | .008   | .005   | .006   | .007   | .004   | .004   | .004   |
|     | Throw                       | 10-14 | 6-9   | 6-8  | 10-14  | 6-9   | 6-8    | 10-14  | 5-9    | 5-8    | 10-14  | 5-9    | 4-8    | 10-14  | 5-9    | 4-8    | 9-15   | 5-8    | 4-7    |
|     | NC                          | <20   | <20   | <20  | <20    | <20   | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 125 | Velocity                    | 780   | 892   | 960  | 625    | 695   | 735    | 463    | 500    | 545    | 390    | 415    | 445    | 345    | 370    | 405    | 305    | 315    | 340    |
|     | Total Pressure              | .051  | .075  | .087 | .031   | .039  | .042   | .014   | .020   | .022   | .009   | .012   | .013   | .008   | .009   | .011   | .006   | .006   | .006   |
|     | Throw                       | 11-16 | 7-11  | 7-9  | 11-16  | 7-10  | 7-9    | 11-16  | 6-9    | 6-8    | 11-16  | 6-9    | 5-8    | 11-16  | 6-9    | 5-8    | 11-16  | 6-10   | 5-8    |
|     | NC                          | <20   | <20   | <20  | <20    | <20   | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 150 | Velocity                    | 940   | 1070  | 1155 | 750    | 835   | 882    | 555    | 600    | 650    | 480    | 500    | 535    | 415    | 440    | 485    | 365    | 375    | 405    |
|     | Total Pressure              | .074  | .109  | .118 | .045   | .057  | .061   | .021   | .028   | .031   | .014   | .018   | .019   | .011   | .013   | .015   | .008   | .009   | .010   |
|     | Throw                       | 12-17 | 8-11  | 7-10 | 12-17  | 8-11  | 7-10   | 12-17  | 8-11   | 7-10   | 12-18  | 7-11   | 7-10   | 12-18  | 7-11   | 7-10   | 12-17  | 6-11   | 6-10   |
|     | NC                          | <20   | <20   | <20  | <20    | <20   | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 175 | Velocity                    |       |       |      | 875    | 972   | 1029   | 650    | 700    | 760    | 545    | 585    | 625    | 490    | 515    | 565    | 425    | 435    | 470    |
|     | Total Pressure              |       |       |      | .066   | .077  | .083   | .028   | .038   | .047   | .020   | .025   | .026   | .015   | .018   | .020   | .011   | .012   | .014   |
|     | Throw                       |       |       |      | 13-18  | 9-12  | 8-11   | 13-18  | 9-12   | 8-11   | 13-19  | 8-12   | 8-11   | 13-19  | 8-12   | 8-12   | 13-19  | 7-12   | 7-11   |
|     | NC                          |       |       |      | <20    | <20   | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 200 | Velocity                    |       |       |      | 1000   | 1100  | 1175   | 740    | 800    | 870    | 635    | 660    | 715    | 555    | 590    | 645    | 490    | 500    | 540    |
|     | Total Pressure              |       |       |      | .081   | .100  | .109   | .037   | .052   | .055   | .025   | .032   | .034   | .019   | .023   | .027   | .014   | .016   | .017   |
|     | Throw                       |       |       |      | 14-20  | 9-13  | 8-11   | 14-20  | 9-13   | 8-11   | 14-20  | 9-12   | 8-11   | 14-20  | 9-12   | 8-12   | 14-20  | 8-12   | 7-12   |
|     | NC                          |       |       |      | <20    | <20   | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 225 | Velocity                    |       |       |      |        |       |        |        |        |        | 705    | 750    | 805    | 625    | 660    | 725    | 550    | 565    | 610    |
|     | Total Pressure              |       |       |      |        |       |        |        |        |        | .031   | .041   | .043   | .024   | .029   | .034   | .018   | .020   | .021   |
|     | Throw                       |       |       |      |        |       |        |        |        |        | 15-22  | 10-14  | 9-12   | 15-22  | 10-13  | 9-12   | 15-22  | 9-13   | 8-12   |
|     | NC                          |       |       |      |        |       |        |        |        |        | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |
| 250 | Velocity                    |       |       |      |        |       |        |        |        |        | 780    | 835    | 895    | 695    | 735    | 805    | 615    | 625    | 675    |
|     | Total Pressure              |       |       |      |        |       |        |        |        |        | .039   | .050   | .053   | .030   | .036   | .042   | .022   | .025   | .027   |
|     | Throw                       |       |       |      |        |       |        |        |        |        | 16-23  | 11-14  | 10-12  | 16-23  | 11-14  | 10-12  | 16-23  | 10-14  | 9-12   |
|     | NC                          |       |       |      |        |       |        |        |        |        | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    | <20    |

SUPPLY GRILLE AND REGISTER PERFORMANCE DATA

LISTED SIZES

| CFM | SIZES (IN.)<br>(WIDE x HIGH) | 18 x 6 |        |        | 20 x 6 |         |        | 16 x 8 |       |       | 24 x 6 |        |        | 36 x 4  |        |         | 20 x 8 |        |         | 22 x 8 |        |         | 24 x 8 |     |    |
|-----|------------------------------|--------|--------|--------|--------|---------|--------|--------|-------|-------|--------|--------|--------|---------|--------|---------|--------|--------|---------|--------|--------|---------|--------|-----|----|
|     |                              | 26 x 4 | 22 x 5 | 28 x 4 | 14 x 8 | 12 x 10 | 30 x 4 | 24 x 5 |       |       |        | 18 x 8 | 30 x 5 | 16 x 10 | 28 x 6 | 14 x 12 | 36 x 5 | 30 x 6 | 18 x 10 | 48 x 4 | 32 x 6 | 16 x 12 |        |     |    |
|     | Deflection                   | 0      | 22½    | 45     | 0      | 22½     | 45     | 0      | 22½   | 45    | 0      | 22½    | 45     | 0       | 22½    | 45      | 0      | 22½    | 45      | 0      | 22½    | 45      | 0      | 22½ | 45 |
|     | Ak                           | .48    | .44    | .40    | .52    | .49     | .44    | .56    | .52   | .48   | .66    | .59    | .52    | .69     | .65    | .59     | .85    | .72    | .63     |        |        |         |        |     |    |
| 100 | Velocity                     | 220    | 225    | 250    | 190    | 205     | 225    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .002   | .003   | .004   | .002   | .002    | .003   |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 9-15   | 4-8    | 4-7    | 8-14   | 3-8     | 3-7    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
| 125 | Velocity                     | 260    | 265    | 315    | 240    | 255     | 285    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .004   | .005   | .006   | .003   | .003    | .005   |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 11-16  | 5-10   | 6-9    | 10-16  | 4-9     | 4-9    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    |        |       |       |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |
| 150 | Velocity                     | 315    | 340    | 375    | 290    | 305     | 340    | 270    | 290   | 315   | 240    | 260    | 285    |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .005   | .007   | .008   | .004   | .006    | .006   | .004   | .005  | .005  | .003   | .004   | .004   |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 12-17  | 6-11   | 6-10   | 12-17  | 6-11    | 5-10   | 12-17  | 6-11  | 5-9   | 12-17  | 5-11   | 5-9    |         |        |         |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    |         |        |         |        |        |         |        |        |         |        |     |    |
| 175 | Velocity                     | 365    | 400    | 440    | 335    | 360     | 400    | 315    | 335   | 365   | 265    | 295    | 335    |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .007   | .010   | .011   | .005   | .008    | .008   | .005   | .007  | .007  | .004   | .006   | .005   |         |        |         |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 13-19  | 7-12   | 7-11   | 13-19  | 7-12    | 6-11   | 13-19  | 7-12  | 6-10  | 13-19  | 6-12   | 6-10   |         |        |         |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    |         |        |         |        |        |         |        |        |         |        |     |    |
| 200 | Velocity                     | 415    | 455    | 540    | 385    | 410     | 455    | 355    | 385   | 415   | 315    | 345    | 375    | 290     | 310    | 340     |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .010   | .013   | .014   | .008   | .010    | .011   | .007   | .008  | .009  | .006   | .006   | .007   | .004    | .005   | .006    |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 14-20  | 8-12   | 7-11   | 14-20  | 8-13    | 7-11   | 14-20  | 8-12  | 7-11  | 4-20   | 7-12   | 6-11   | 13-20   | 7-13   | 6-11    |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    | <20     | <20    | <20     |        |        |         |        |        |         |        |     |    |
| 225 | Velocity                     | 470    | 510    | 560    | 432    | 460     | 510    | 400    | 430   | 470   | 340    | 380    | 430    | 325     | 345    | 380     |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .013   | .016   | .018   | .010   | .013    | .014   | .009   | .010  | .011  | .007   | .007   | .009   | .005    | .006   | .008    |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 15-22  | 9-13   | 8-12   | 15-22  | 9-13    | 8-12   | 16-22  | 9-13  | 8-12  | 15-21  | 8-13   | 7-12   | 14-22   | 8-14   | 7-12    |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    | <20     | <20    | <20     |        |        |         |        |        |         |        |     |    |
| 250 | Velocity                     | 520    | 570    | 625    | 480    | 550     | 570    | 445    | 480   | 520   | 395    | 430    | 470    | 360     | 385    | 430     |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               | .015   | .020   | .022   | .012   | .015    | .018   | .010   | .013  | .014  | .009   | .010   | .012   | .006    | .007   | .009    |        |        |         |        |        |         |        |     |    |
|     | Throw                        | 16-23  | 10-14  | 9-12   | 16-23  | 10-14   | 9-12   | 16-23  | 10-14 | 9-12  | 16-22  | 9-14   | 8-12   | 16-23   | 8-14   | 8-13    |        |        |         |        |        |         |        |     |    |
|     | NC                           | <20    | <20    | <20    | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    | <20     | <20    | <20     |        |        |         |        |        |         |        |     |    |
| 275 | Velocity                     |        |        |        | 530    | 560     | 625    | 490    | 530   | 575   | 415    | 465    | 530    | 400     | 425    | 465     |        |        |         |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        | .017   | .017    | .022   | .012   | .015  | .017  | .010   | .012   | .016   | .007    | .008   | .011    |        |        |         |        |        |         |        |     |    |
|     | Throw                        |        |        |        | 17-25  | 10-14   | 9-13   | 17-25  | 11-15 | 10-13 | 17-23  | 10-15  | 9-13   | 17-25   | 9-15   | 8-14    |        |        |         |        |        |         |        |     |    |
|     | NC                           |        |        |        | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    | <20     | <20    | <20     |        |        |         |        |        |         |        |     |    |
| 300 | Velocity                     |        |        |        | 575    | 610     | 680    | 535    | 575   | 625   | 475    | 530    | 575    | 435     | 460    | 500     | 350    | 415    | 475     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        | .017   | .022    | .025   | .015   | .019  | .020  | .012   | .014   | .017   | .009    | .011   | .013    | .007   | .009   | .010    |        |        |         |        |     |    |
|     | Throw                        |        |        |        | 17-25  | 11-15   | 10-13  | 17-25  | 11-15 | 10-13 | 17-25  | 11-16  | 10-14  | 17-26   | 10-15  | 9-14    | 17-24  | 9-16   | 9-14    |        |        |         |        |     |    |
|     | NC                           |        |        |        | <20    | <20     | <20    | <20    | <20   | <20   | <20    | <20    | <20    | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 325 | Velocity                     |        |        |        |        |         |        |        |       |       | 490    | 550    | 625    | 470     | 500    | 550     | 380    | 450    | 515     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       | .013   | .019   | .020   | .011    | .013   | .014    | .008   | .011   | .012    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       | 18-26  | 11-17  | 10-15  | 18-27   | 11-16  | 10-14   | 18-26  | 10-17  | 10-15   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       | <20    | <20    | <20    | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 350 | Velocity                     |        |        |        |        |         |        |        |       |       | 555    | 615    | 675    | 505     | 540    | 605     | 410    | 485    | 555     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       | .017   | .020   | .023   | .012    | .015   | .018    | .010   | .012   | .013    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       | 19-27  | 12-17  | 10-15  | 19-27   | 11-17  | 10-15   | 19-27  | 11-17  | 10-15   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       | <20    | <20    | <20    | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 375 | Velocity                     |        |        |        |        |         |        |        |       |       | 570    | 635    | 720    | 545     | 575    | 635     | 440    | 520    | 595     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       | .019   | .022   | .026   | .014    | .017   | .020    | .011   | .014   | .015    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       | 19-28  | 12-17  | 11-16  | 20-29   | 12-18  | 10-16   | 20-29  | 12-18  | 11-16   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       | <20    | <20    | <20    | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 400 | Velocity                     |        |        |        |        |         |        |        |       |       | 635    | 700    | 770    | 580     | 615    | 685     | 470    | 555    | 635     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       | .022   | .026   | .030   | .016    | .019   | .023    | .013   | .016   | .019    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       | 20-29  | 13-18  | 11-16  | 20-29   | 13-18  | 11-16   | 20-29  | 13-18  | 11-16   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       | <20    | <20    | <20    | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 425 | Velocity                     |        |        |        |        |         |        |        |       |       |        |        |        | 615     | 655    | 720     | 500    | 590    | 675     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       |        |        |        | .018    | .021   | .026    | .015   | .018   | .021    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       |        |        |        | 21-30   | 14-19  | 12-17   | 21-30  | 14-19  | 12-17   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       |        |        |        | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 450 | Velocity                     |        |        |        |        |         |        |        |       |       |        |        |        | 650     | 690    | 770     | 530    | 625    | 715     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       |        |        |        | .020    | .025   | .030    | .016   | .020   | .023    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       |        |        |        | 21-31   | 15-20  | 12-18   | 21-30  | 14-19  | 12-17   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       |        |        |        | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 475 | Velocity                     |        |        |        |        |         |        |        |       |       |        |        |        | 690     | 730    | 805     | 560    | 660    | 755     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       |        |        |        | .022    | .028   | .033    | .018   | .022   | .026    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       |        |        |        | 22-33   | 16-21  | 12-19   | 22-32  | 14-20  | 12-18   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       |        |        |        | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 500 | Velocity                     |        |        |        |        |         |        |        |       |       |        |        |        | 725     | 770    | 845     | 590    | 695    | 795     |        |        |         |        |     |    |
|     | Total Pressure               |        |        |        |        |         |        |        |       |       |        |        |        | .025    | .030   | .037    | .020   | .025   | .027    |        |        |         |        |     |    |
|     | Throw                        |        |        |        |        |         |        |        |       |       |        |        |        | 22-33   | 16-21  | 13-19   | 23-32  | 14-20  | 12-18   |        |        |         |        |     |    |
|     | NC                           |        |        |        |        |         |        |        |       |       |        |        |        | <20     | <20    | <20     | <20    | <20    | <20     |        |        |         |        |     |    |
| 550 | Velocity                     |        |        |        |        |         |        |        |       | </    |        |        |        |         |        |         |        |        |         |        |        |         |        |     |    |



## SUPPLY GRILLE AND REGISTER PERFORMANCE DATA

LISTED SIZES

| CFM | SIZES (IN.)<br>(WIDE x HIGH) | 14 x 14<br>20 x 10<br>34 x 6 |       |       | 36 x 6<br>18 x 12<br>22 x 10<br>28 x 8<br>16 x 14 |       |       | 30 x 8<br>24 x 10<br>18 x 14<br>48 x 5<br>20 x 12<br>32 x 8 |       |       | 16 x 16<br>28 x 10<br>20 x 14<br>48 x 6<br>36 x 8<br>24 x 12<br>30 x 10 |       |       | 32 x 10<br>20 x 16<br>40 x 8<br>18 x 18<br>28 x 12<br>24 x 14 |       |       | 36 x 10<br>30 x 12<br>20 x 18<br>48 x 8<br>32 x 12<br>24 x 16 |       |       |
|-----|------------------------------|------------------------------|-------|-------|---|-------|-------|---|-------|-------|---|-------|-------|---|-------|-------|---|-------|-------|
|     |                              | 0                            | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    |
|     | Deflection                   | 0                            | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    | 0   | 22½   | 45    |
|     | Ak                           | .82                          | .76   | .69   | .94   | .88   | .79   | 1.06  | .98   | .90   | 1.22  | 1.14  | 1.03  | 1.38  | 1.29  | 1.16  | 1.51  | 1.42  | 1.28  |
| 300 | Velocity                     | 365                          | 395   | 435   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .005                         | .007  | .008  |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 17-24                        | 9-16  | 9-14  |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
| 325 | Velocity                     | 395                          | 430   | 470   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .006                         | .008  | .009  |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 18-26                        | 10-17 | 10-15 |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
| 350 | Velocity                     | 425                          | 460   | 505   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .007                         | .010  | .012  |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 19-27                        | 11-17 | 10-15 |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
| 375 | Velocity                     | 455                          | 495   | 540   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .008                         | .011  | .012  |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 20-28                        | 12-18 | 11-16 |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
| 400 | Velocity                     | 490                          | 525   | 580   | 425   | 455   | 505   |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .009                         | .013  | .015  | .008  | .009  | .011  |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 20-29                        | 12-18 | 11-16 | 20-29   | 12-18 | 11-16 |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |
| 425 | Velocity                     | 520                          | 560   | 615   | 452   | 485   | 540   |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .010                         | .015  | .017  | .009  | .010  | .012  |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 21-30                        | 13-19 | 12-16 | 21-30   | 13-19 | 12-17 |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |
| 450 | Velocity                     | 550                          | 590   | 650   | 480   | 510   | 570   |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .011                         | .016  | .019  | .010  | .012  | .014  |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 21-30                        | 13-19 | 12-16 | 21-30   | 13-19 | 12-17 |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |
| 475 | Velocity                     | 580                          | 625   | 688   | 505   | 540   | 600   |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Total Pressure               | .012                         | .018  | .021  | .011  | .013  | .016  |   |       |       |   |       |       |   |       |       |   |       |       |
|     | Throw                        | 22-31                        | 14-20 | 12-17 | 22-31   | 14-20 | 12-17 |   |       |       |   |       |       |   |       |       |   |       |       |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   |   |       |       |   |       |       |   |       |       |   |       |       |
| 500 | Velocity                     | 610                          | 680   | 725   | 530   | 570   | 635   | 470   | 510   | 555   | 400   | 430   | 490   | 360   | 390   | 430   | 330   | 350   | 380   |
|     | Total Pressure               | .013                         | .019  | .023  | .012  | .014  | .017  | .010  | .011  | .014  | .006  | .007  | .009  | .005  | .006  | .007  | .004  | .005  | .006  |
|     | Throw                        | 23-32                        | 14-20 | 12-17 | 23-32   | 14-20 | 12-18 | 23-32   | 14-20 | 12-18 | 22-32   | 12-20 | 12-18 | 22-32   | 12-20 | 11-18 | 22-31   | 12-20 | 11-18 |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   |
| 550 | Velocity                     | 670                          | 725   | 795   | 585   | 625   | 695   | 520   | 560   | 610   | 430   | 460   | 515   | 400   | 425   | 475   | 365   | 385   | 430   |
|     | Total Pressure               | .016                         | .024  | .029  | .015  | .017  | .021  | .012  | .014  | .017  | .007  | .008  | .010  | .006  | .007  | .008  | .005  | .006  | .007  |
|     | Throw                        | 24-34                        | 15-21 | 13-18 | 24-34   | 15-21 | 13-18 | 23-34   | 15-21 | 13-18 | 23-33   | 13-20 | 13-18 | 23-33   | 13-20 | 12-18 | 23-33   | 13-20 | 12-18 |
|     | NC                           | <20                          | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   | <20   |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |
|     |                              |                              |       |       |   |       |       |   |       |       |   |       |       |   |       |       |   |       |       |

## SUPPLY GRILLE AND REGISTER PERFORMANCE DATA

LISTED SIZES

| CFM  | SIZES (IN.)<br>(WIDE x HIGH) | 22 x 8 |         |       | 24 x 8  |       |       | 14 x 14 |         |        | 36 x 6  |         |         | 30 x 8 |         |        | 16 x 16 |        |        | 28 x 10 |         |         | 32 x 10 |         |         |         |     |    |
|------|------------------------------|--------|---------|-------|---------|-------|-------|---------|---------|--------|---------|---------|---------|--------|---------|--------|---------|--------|--------|---------|---------|---------|---------|---------|---------|---------|-----|----|
|      |                              | 36 x 5 | 16 x 12 |       | 20 x 10 |       |       | 18 x 12 | 22 x 10 | 28 x 8 | 16 x 14 | 24 x 10 | 18 x 14 | 48 x 5 | 20 x 12 | 32 x 8 | 20 x 14 | 48 x 6 | 36 x 8 | 24 x 12 | 30 x 10 | 20 x 16 | 40 x 8  | 18 x 18 | 28 x 12 | 24 x 14 |     |    |
|      | Deflection                   | 0      | 22½     | 45    | 0       | 22½   | 45    | 0       | 22½     | 45     | 0       | 22½     | 45      | 0      | 22½     | 45     | 0       | 22½    | 45     | 0       | 22½     | 45      | 0       | 22½     | 45      | 0       | 22½ | 45 |
|      | Ak                           | .82    | .72     | .63   | .85     | .76   | .69   | .94     | .88     | .79    | 1.06    | .98     | .90     | 1.22   | 1.14    | 1.03   | 1.38    | 1.29   | 1.16   |         |         |         |         |         |         |         |     |    |
| 600  | Velocity                     | 720    | 835     | 950   | 705     | 790   | 870   | 640     | 680     | 760    | 565     | 610     | 665     | 460    | 515     | 590    | 435     | 465    | 515    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               | .028   | .036    | .042  | .019    | .028  | .034  | .018    | .021    | .025   | .014    | .016    | .021    | .009   | .010    | .012   | .007    | .008   | .010   |         |         |         |         |         |         |         |     |    |
|      | Throw                        | 25-35  | 15-22   | 14-19 | 25-35   | 16-22 | 14-19 | 25-35   | 15-22   | 14-19  | 24-35   | 15-22   | 14-19   | 24-34  | 15-22   | 14-19  | 24-34   | 15-22  | 14-19  |         |         |         |         |         |         |         |     |    |
|      | NC                           | 22     | 23      | 23    | 21      | 22    | 22    | 20      | 20      | 20     | <20     | <20     | <20     | <20    | <20     | <20    | <20     | <20    | <20    |         |         |         |         |         |         |         |     |    |
| 650  | Velocity                     | 785    | 900     | 1030  | 765     | 855   | 940   | 690     | 740     | 825    | 615     | 665     | 720     | 510    | 585     | 650    | 470     | 505    | 560    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               | .031   | .042    | .051  | .022    | .033  | .039  | .021    | .025    | .029   | .016    | .019    | .025    | .010   | .011    | .015   | .008    | .009   | .012   |         |         |         |         |         |         |         |     |    |
|      | Throw                        | 25-36  | 16-23   | 15-21 | 26-37   | 17-24 | 15-20 | 26-37   | 16-23   | 15-20  | 26-37   | 16-23   | 15-20   | 25-35  | 16-23   | 14-20  | 25-35   | 16-23  | 14-20  |         |         |         |         |         |         |         |     |    |
|      | NC                           | 24     | 26      | 27    | 24      | 25    | 25    | 23      | 23      | 23     | 22      | 23      | 23      | <20    | <20     | 21     | <20     | <20    | <20    |         |         |         |         |         |         |         |     |    |
| 700  | Velocity                     | 845    | 970     | 1110  | 825     | 920   | 1015  | 745     | 795     | 885    | 660     | 715     | 780     | 595    | 635     | 690    | 505     | 545    | 605    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               | .039   | .049    | .053  | .026    | .037  | .045  | .024    | .028    | .034   | .019    | .021    | .028    | .012   | .013    | .017   | .009    | .011   | .014   |         |         |         |         |         |         |         |     |    |
|      | Throw                        | 26-38  | 17-24   | 15-21 | 27-38   | 17-24 | 15-21 | 27-38   | 17-24   | 15-21  | 26-38   | 17-23   | 15-20   | 27-39  | 17-24   | 15-21  | 27-39   | 17-24  | 15-21  |         |         |         |         |         |         |         |     |    |
|      | NC                           | 26     | 27      | 29    | 26      | 27    | 27    | 25      | 25      | 26     | 24      | 24      | 24      | 23     | 23      | 23     | 20      | 20     | 20     |         |         |         |         |         |         |         |     |    |
| 750  | Velocity                     | 905    | 1040    | 1190  | 880     | 985   | 1090  | 800     | 855     | 950    | 710     | 765     | 830     | 615    | 660     | 730    | 545     | 580    | 645    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               | .045   | .060    | .061  | .029    | .042  | .052  | .027    | .032    | .039   | .022    | .024    | .032    | .013   | .014    | .019   | .010    | .012   | .016   |         |         |         |         |         |         |         |     |    |
|      | Throw                        | 28-40  | 18-25   | 16-22 | 28-40   | 18-26 | 16-22 | 28-40   | 18-25   | 16-22  | 28-40   | 18-24   | 16-21   | 28-40  | 18-25   | 16-22  | 29-40   | 18-25  | 16-22  |         |         |         |         |         |         |         |     |    |
|      | NC                           | 29     | 30      | 32    | 29      | 29    | 31    | 28      | 28      | 29     | 27      | 27      | 28      | 25     | 25      | 26     | 23      | 22     | 22     |         |         |         |         |         |         |         |     |    |
| 800  | Velocity                     | 965    | 1110    | 1230  | 940     | 1055  | 1160  | 850     | 910     | 1015   | 755     | 815     | 890     | 690    | 720     | 780    | 580     | 620    | 690    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               | .051   | .064    | .069  | .034    | .048  | .058  | .032    | .036    | .044   | .025    | .028    | .037    | .016   | .017    | .022   | .012    | .014   | .018   |         |         |         |         |         |         |         |     |    |
|      | Throw                        | 29-43  | 18-25   | 16-22 | 29-43   | 18-25 | 16-22 | 28-42   | 18-25   | 16-22  | 28-40   | 18-24   | 16-21   | 29-41  | 18-26   | 16-22  | 29-41   | 18-28  | 16-22  |         |         |         |         |         |         |         |     |    |
|      | NC                           | 31     | 32      | 33    | 31      | 31    | 32    | 29      | 30      | 30     | 28      | 28      | 28      | 27     | 27      | 27     | 24      | 25     | 25     |         |         |         |         |         |         |         |     |    |
| 900  | Velocity                     |        |         |       |         |       |       |         |         |        |         |         |         | 740    | 795     | 865    | 650     | 700    | 775    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               |        |         |       |         |       |       |         |         |        |         |         |         | .020   | .022    | .028   | .015    | .017   | .022   |         |         |         |         |         |         |         |     |    |
|      | Throw                        |        |         |       |         |       |       |         |         |        |         |         |         | 30-43  | 19-27   | 17-23  | 30-43   | 19-28  | 17-23  |         |         |         |         |         |         |         |     |    |
|      | NC                           |        |         |       |         |       |       |         |         |        |         |         |         | 30     | 30      | 30     | 26      | 29     | 29     |         |         |         |         |         |         |         |     |    |
| 1000 | Velocity                     |        |         |       |         |       |       |         |         |        |         |         |         | 830    | 880     | 965    | 725     | 775    | 860    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               |        |         |       |         |       |       |         |         |        |         |         |         | .025   | .027    | .034   | .018    | .021   | .028   |         |         |         |         |         |         |         |     |    |
|      | Throw                        |        |         |       |         |       |       |         |         |        |         |         |         | 32-46  | 20-28   | 17-25  | 32-46   | 20-28  | 18-25  |         |         |         |         |         |         |         |     |    |
|      | NC                           |        |         |       |         |       |       |         |         |        |         |         |         | 34     | 34      | 34     | 32      | 32     | 32     |         |         |         |         |         |         |         |     |    |
| 1100 | Velocity                     |        |         |       |         |       |       |         |         |        |         |         |         |        |         |        | 795     | 855    | 950    |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               |        |         |       |         |       |       |         |         |        |         |         |         | .022   | .026    | .033   | .022    | .026   | .033   |         |         |         |         |         |         |         |     |    |
|      | Throw                        |        |         |       |         |       |       |         |         |        |         |         |         | 33-47  | 21-30   | 18-26  | 33-47   | 21-30  | 18-26  |         |         |         |         |         |         |         |     |    |
|      | NC                           |        |         |       |         |       |       |         |         |        |         |         |         | 35     | 35      | 36     | 35      | 35     | 36     |         |         |         |         |         |         |         |     |    |
| 1200 | Velocity                     |        |         |       |         |       |       |         |         |        |         |         |         |        |         |        | 870     | 930    | 1035   |         |         |         |         |         |         |         |     |    |
|      | Total Pressure               |        |         |       |         |       |       |         |         |        |         |         |         | .026   | .030    | .040   | .026    | .030   | .040   |         |         |         |         |         |         |         |     |    |
|      | Throw                        |        |         |       |         |       |       |         |         |        |         |         |         | 35-49  | 22-31   | 19-27  | 35-49   | 22-31  | 19-27  |         |         |         |         |         |         |         |     |    |
|      | NC                           |        |         |       |         |       |       |         |         |        |         |         |         | 38     | 38      | 38     | 38      | 38     | 38     |         |         |         |         |         |         |         |     |    |



**SUPPLY GRILLE AND REGISTER  
PERFORMANCE DATA**

LISTED SIZES

| CFM  | SIZES (IN.)<br>(WIDE x HIGH) | 36 x 10 |         |        | 28 x 14 |         |         | 30 x 14 |         |         | 30 x 16 |        |         | 50 x 10 |         |         | 24 x 24 |         |        |
|------|------------------------------|---------|---------|--------|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|--------|
|      |                              | 30 x 12 | 20 x 18 | 48 x 8 | 22 x 18 | 20 x 20 | 40 x 10 | 24 x 18 | 36 x 12 | 40 x 12 | 48 x 10 | 60 x 8 | 42 x 12 | 36 x 14 | 28 x 18 | 32 x 16 | 36 x 16 | 48 x 12 | 72 x 8 |
|      | Deflection                   | 0       | 22½     | 45     | 0       | 22½     | 45      | 0       | 22½     | 45      | 0       | 22½    | 45      | 0       | 22½     | 45      | 0       | 22½     | 45     |
|      | Ak                           | 1.51    | 1.42    | 1.28   | 1.75    | 1.64    | 1.47    | 1.81    | 1.70    | 1.52    | 2.00    | 1.88   | 1.69    | 2.12    | 2.00    | 1.79    | 2.48    | 2.34    | 2.10   |
| 600  | Velocity                     | 395     | 425     | 470    |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Total Pressure               | .006    | .007    | .008   |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Throw                        | 25-34   | 13-22   | 13-19  |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | NC                           | <20     | <20     | <20    |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
| 650  | Velocity                     | 430     | 460     | 510    |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Total Pressure               | .007    | .008    | .009   |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Throw                        | 26-38   | 15-22   | 14-20  |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
|      | NC                           | <20     | <20     | <20    |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |
| 700  | Velocity                     | 465     | 495     | 545    | 400     | 425     | 475     |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Total Pressure               | .008    | .009    | .011   | .006    | .007    | .008    |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Throw                        | 26-40   | 16-24   | 15-21  | 26-38   | 17-24   | 14-21   |         |         |         |         |        |         |         |         |         |         |         |        |
|      | NC                           | <20     | <20     | <20    | <20     | <20     | <20     |         |         |         |         |        |         |         |         |         |         |         |        |
| 750  | Velocity                     | 495     | 530     | 585    | 430     | 455     | 510     |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Total Pressure               | .009    | .010    | .013   | .007    | .008    | .009    |         |         |         |         |        |         |         |         |         |         |         |        |
|      | Throw                        | 28-41   | 17-25   | 16-21  | 26-39   | 17-25   | 14-21   |         |         |         |         |        |         |         |         |         |         |         |        |
|      | NC                           | 21      | 21      | 22     | 20      | 20      | 21      |         |         |         |         |        |         |         |         |         |         |         |        |
| 800  | Velocity                     | 530     | 565     | 625    | 460     | 485     | 545     | 440     | 470     | 525     | 400     | 425    | 475     |         |         |         |         |         |        |
|      | Total Pressure               | .010    | .012    | .014   | .008    | .009    | .010    | .006    | .007    | .009    | .005    | .006   | .007    |         |         |         |         |         |        |
|      | Throw                        | 29-41   | 18-25   | 16-22  | 28-40   | 18-26   | 15-22   | 29-41   | 17-25   | 15-22   | 28-40   | 16-25  | 15-22   |         |         |         |         |         |        |
|      | NC                           | 23      | 24      | 24     | 22      | 23      | 23      | 21      | 22      | 22      | 20      | 20     | 20      |         |         |         |         |         |        |
| 900  | Velocity                     | 595     | 635     | 705    | 515     | 550     | 610     | 495     | 530     | 590     | 450     | 480    | 535     | 425     | 450     | 500     |         |         |        |
|      | Total Pressure               | .012    | .015    | .018   | .010    | .011    | .013    | .008    | .009    | .012    | .006    | .007   | .009    | .005    | .006    | .008    |         |         |        |
|      | Throw                        | 30-43   | 19-27   | 17-23  | 30-43   | 19-27   | 16-24   | 30-43   | 18-27   | 17-23   | 30-42   | 18-27  | 17-23   | 30-42   | 18-27   | 16-23   |         |         |        |
|      | NC                           | 27      | 28      | 28     | 26      | 27      | 27      | 25      | 25      | 25      | 24      | 24     | 24      | 23      | 23      | 23      |         |         |        |
| 1000 | Velocity                     | 660     | 705     | 780    | 570     | 610     | 680     | 550     | 590     | 670     | 500     | 530    | 590     | 470     | 500     | 560     |         |         |        |
|      | Total Pressure               | .015    | .018    | .022   | .012    | .013    | .016    | .010    | .011    | .014    | .008    | .009   | .011    | .006    | .007    | .010    |         |         |        |
|      | Throw                        | 32-45   | 20-28   | 18-25  | 32-45   | 20-29   | 18-25   | 32-45   | 20-28   | 18-25   | 32-45   | 19-28  | 18-26   | 32-45   | 20-29   | 18-25   |         |         |        |
|      | NC                           | 31      | 31      | 31     | 30      | 30      | 30      | 28      | 29      | 29      | 27      | 27     | 27      | 25      | 25      | 25      |         |         |        |
| 1100 | Velocity                     | 730     | 775     | 860    | 630     | 670     | 750     | 610     | 645     | 725     | 550     | 585    | 650     | 520     | 550     | 615     | 445     | 470     | 525    |
|      | Total Pressure               | .019    | .022    | .027   | .015    | .016    | .019    | .012    | .014    | .017    | .010    | .011   | .013    | .007    | .008    | .012    | .005    | .006    | .009   |
|      | Throw                        | 33-48   | 21-29   | 19-26  | 33-47   | 21-30   | 18-26   | 34-48   | 21-29   | 19-26   | 33-47   | 20-29  | 19-27   | 33-47   | 21-30   | 18-26   | 33-47   | 21-30   | 18-26  |
|      | NC                           | 34      | 34      | 34     | 33      | 33      | 33      | 32      | 32      | 32      | 30      | 31     | 31      | 28      | 29      | 29      | 24      | 25      | 25     |

## SUPPLY GRILLE AND REGISTER PERFORMANCE DATA

LISTED SIZES

| CFM  | SIZES (IN.)<br>(WIDE x HIGH) | 36 x 10 |         |   | 28 x 14 |         |         | 30 x 14 |         |         | 30 x 16 |        |         | 50 x 10 |         |         | 24 x 24 |         |        |         |         |    |
|------|------------------------------|---------|---------|---|---------|---------|---------|---------|---------|---------|---------|--------|---------|---------|---------|---------|---------|---------|--------|---------|---------|----|
|      |                              | 30 x 12 | 20 x 18 | 48 x 8  | 22 x 18 | 20 x 20 | 40 x 10 | 24 x 18 | 36 x 12 | 40 x 12 | 48 x 10 | 60 x 8 | 42 x 12 | 36 x 14 | 28 x 18 | 32 x 16 | 36 x 16 | 48 x 12 | 72 x 8 | 58 x 10 | 60 x 10 |    |
|      | Deflection                   | 0       | 22½     | 45  | 0       | 22½     | 45      | 0       | 22½     | 45      | 0       | 22½    | 45      | 0       | 22½     | 45      | 0       | 22½     | 45     | 0       | 22½     | 45 |
|      | Ak                           | 1.5     | 1.42    | 1.28  | 1.75    | 1.64    | 1.47    | 1.81    | 1.70    | 1.52    | 2.00    | 1.88   | 1.69    | 2.12    | 2.00    | 1.79    | 2.48    | 2.34    | 2.10   |         |         |    |
| 1200 | Velocity                     | 795     | 845     | 940   | 685     | 730     | 815     | 665     | 705     | 790     | 600     | 640    | 710     | 565     | 600     | 670     | 485     | 510     | 570    |         |         |    |
|      | Total Pressure               | .022    | .026    | .032  | .018    | .019    | .022    | .014    | .016    | .020    | .011    | .013   | .016    | .008    | .009    | .014    | .006    | .007    | .011   |         |         |    |
|      | Throw                        | 36-50   | 22-31   | 19-27   | 35-49   | 22-31   | 19-27   | 35-50   | 22-31   | 19-27   | 35-49   | 22-31  | 19-28   | 35-49   | 22-31   | 19-27   | 35-49   | 22-31   | 19-27  |         |         |    |
|      | NC                           | 37      | 37      | 37  | 36      | 36      | 36      | 35      | 35      | 35      | 34      | 34     | 34      | 31      | 32      | 32      | 26      | 27      | 27     |         |         |    |
| 1300 | Velocity                     | 860     | 915     | 1015  | 740     | 790     | 885     | 720     | 765     | 855     | 650     | 690    | 770     | 615     | 650     | 725     | 525     | 555     | 620    |         |         |    |
|      | Total Pressure               | .026    | .031    | .038  | .021    | .022    | .026    | .017    | .019    | .024    | .013    | .015   | .019    | .009    | .011    | .016    | .007    | .008    | .013   |         |         |    |
|      | Throw                        | 37-51   | 23-32   | 20-28   | 36-51   | 23-32   | 20-28   | 36-51   | 23-32   | 20-28   | 36-51   | 23-32  | 20-29   | 36-51   | 23-33   | 20-28   | 36-51   | 23-33   | 20-28  |         |         |    |
|      | NC                           | 39      | 39      | 40  | 38      | 38      | 38      | 37      | 37      | 37      | 36      | 36     | 36      | 34      | 34      | 34      | 28      | 29      | 29     |         |         |    |
| 1400 | Velocity                     |         |         |   |         |         |         | 775     | 825     | 920     | 700     | 745    | 830     | 660     | 700     | 780     | 565     | 600     | 665    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         | .019    | .022    | .027    | .016    | .018   | .022    | .010    | .013    | .018    | .008    | .009    | .015   |         |         |    |
|      | Throw                        |         |         |   |         |         |         | 38-53   | 24-33   | 21-29   | 37-53   | 24-33  | 21-30   | 38-53   | 24-33   | 20-30   | 37-53   | 24-33   | 20-29  |         |         |    |
|      | NC                           |         |         |   |         |         |         | 40      | 40      | 40      | 39      | 38     | 38      | 36      | 37      | 37      | 30      | 31      | 31     |         |         |    |
| 1500 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         | 705     | 750     | 835     | 605     | 640     | 715    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .011    | .015    | .021    | .009    | .010    | .017   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 39-55   | 25-35   | 21-30   | 39-55   | 25-35   | 21-30  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 38      | 40      | 40      | 32      | 33      | 33     |         |         |    |
| 1600 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         | 755     | 800     | 895     | 645     | 685     | 760    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .013    | .017    | .024    | .010    | .011    | .019   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 40-57   | 26-36   | 22-31   | 40-57   | 26-36   | 22-31  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 41      | 43      | 43      | 34      | 35      | 35     |         |         |    |
| 1700 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         | 800     | 850     | 950     | 685     | 725     | 810    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .015    | .019    | .027    | .011    | .012    | .021   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 41-58   | 27-38   | 23-32   | 41-58   | 26-37   | 22-32  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 44      | 46      | 46      | 36      | 37      | 37     |         |         |    |
| 1800 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         | 850     | 900     | 1005    | 725     | 770     | 855    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .017    | .021    | .030    | .012    | .013    | .023   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 42-60   | 27-38   | 23-33   | 42-60   | 27-38   | 23-33  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 47      | 49      | 49      | 38      | 39      | 39     |         |         |    |
| 1900 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         | 765     | 810     | 905    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .013    | .014    | .026    | .010    | .011    | .020   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 44-62   | 28-40   | 24-34   | 44-62   | 28-40   | 24-34  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 40      | 41      | 41      | 34      | 35      | 35     |         |         |    |
| 2000 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         | 805     | 855     | 950    |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .014    | .015    | .029    | .011    | .012    | .021   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 45-63   | 29-40   | 25-35   | 45-63   | 29-40   | 25-35  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 42      | 43      | 43      | 34      | 35      | 35     |         |         |    |
| 2400 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         | 965     | 1025    | 1140   |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .020    | .022    | .042    | .015    | .016    | .029   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 49-69   | 31-44   | 27-38   | 49-69   | 31-44   | 27-38  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | 50      | >50     | >50     | 40      | 41      | 41     |         |         |    |
| 2800 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         | 1130    | 1195    | 1335   |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .027    | .030    | .057    | .020    | .021    | .039   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 53-75   | 34-48   | 29-41   | 53-75   | 34-48   | 29-41  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | >50     | >50     | >50     | 40      | 41      | 41     |         |         |    |
| 3200 | Velocity                     |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         | 1290    | 1365    | 1525   |         |         |    |
|      | Total Pressure               |         |         |   |         |         |         |         |         |         |         |        |         | .035    | .039    | .074    | .025    | .026    | .045   |         |         |    |
|      | Throw                        |         |         |   |         |         |         |         |         |         |         |        |         | 67-80   | 36-51   | 31-44   | 67-80   | 36-51   | 31-44  |         |         |    |
|      | NC                           |         |         |   |         |         |         |         |         |         |         |        |         | >50     | >50     | >50     | 40      | 41      | 41     |         |         |    |
|      |                              |         |         | Ak is Area Factor<br>Throw Data based upon isothermal<br>air at 100 and 50 FPM Terminal Velocity                          |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |         |         |    |
|      |                              |         |         | TOTAL PRESSURE ARE IN INCHES OF WATER<br>N.C. VALUE ARE BASED ON A ROOM ABSORPTION<br>OF 10dB, re 10 <sup>-12</sup> WATTS |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |         |         |    |
|      |                              |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |         |         |    |
|      |                              |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |         |         |    |
|      |                              |         |         |   |         |         |         |         |         |         |         |        |         |         |         |         |         |         |        |         |         |    |

## BALANCING DATA

Step 1 : To determine CFM of the Supply Grille or Register, an Alnor Velometer with Tip No. 2220A is used.

Step 2 : Locate velometer jet in the air stream as shown in the figure below. Take a minimum of four velocity readings at random across the grille face and average them to determine the velocity.

Step 3 : From the performance table select proper Ak factor for the size of supply grille or register tested. Using the following formula, calculate the air flow rate:

$$\text{CFM} = \text{Ak} \times \text{Average Velocity.}$$

**EXAMPLE:**

Determine the CFM through a 12" x 12" SV6-II. The blades are set for a 45° deflection pattern. The instrument to be used is an Alnor Velometer with a 2220A Tip.

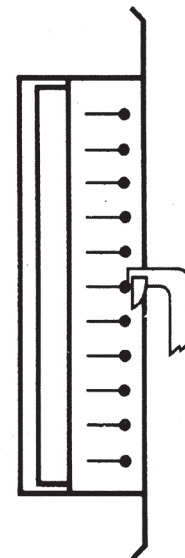
**SOLUTION:**

1. Position the Alnor Velometer with a 2220A tip as shown in the fig. and find velocity at a minimum of 4 points at random. ( Suppose the average velocity is found to be 300 FPM )

2. From the performance table select Ak factor for the given size 45° deflection blade setting.

$$\text{Ak} = 0.52 \text{ Sq. ft.}$$

3. CFM = Ak x Ave. measured velocity.  
 = 0.52 sq. ft. x 300 fpm  
 = 155 cfm.

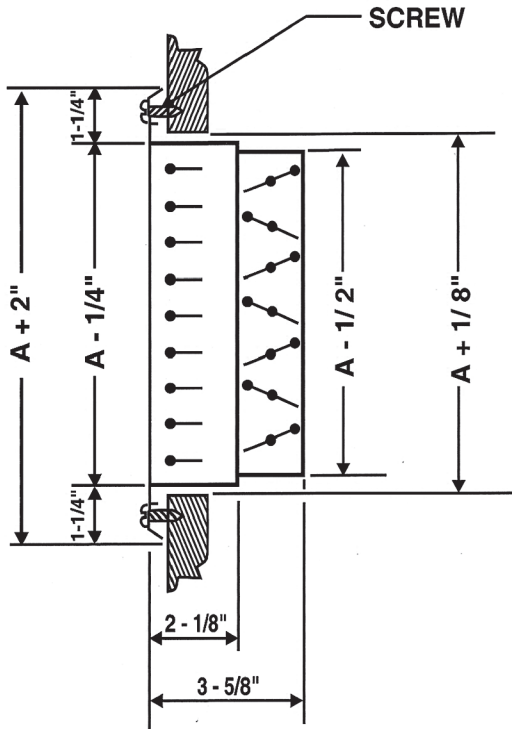


To determine velocity using ALNOR with Tip No. 2220A

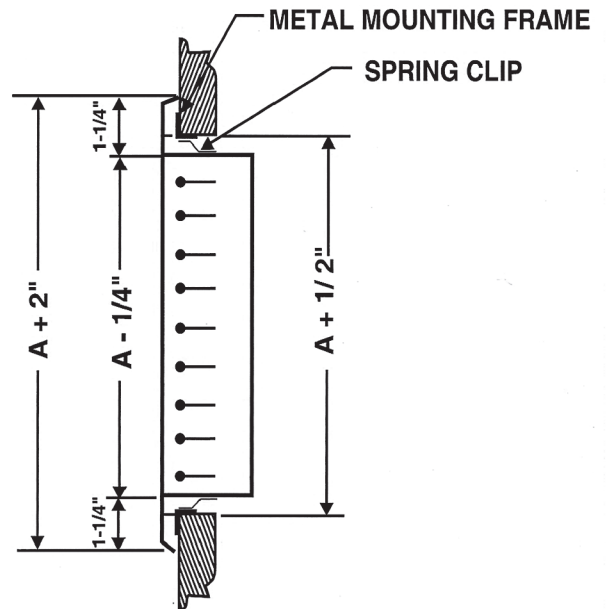
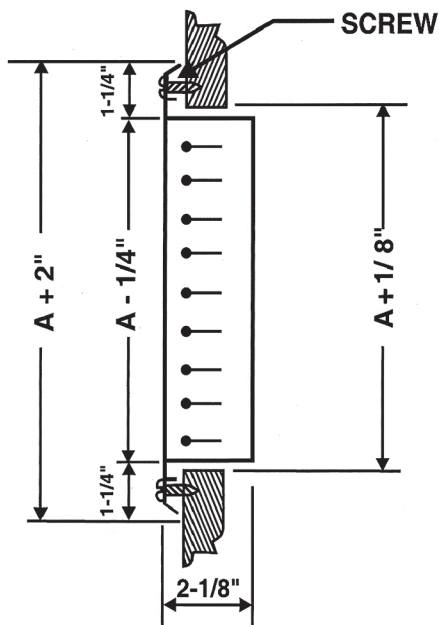
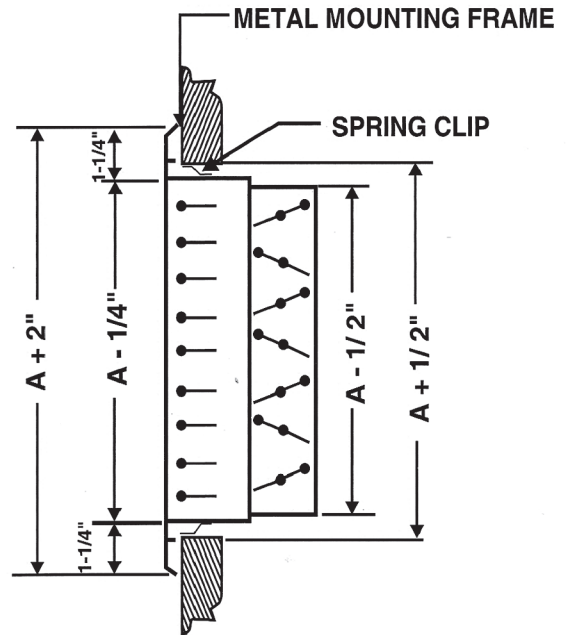
**Fig. 3**

# INSTALLATION DETAILS

**FACE SCREW MOUNTING**  
(Wall & Ceiling Mounting)



**SPRING CLIP MOUNTING**  
(Wall Mounting)



A - LISTED SIZES (W x H)