



SHOEMAKER

MANUFACTURING

RESIDENTIAL  
CATALOG

QUALITY  
REGISTERS  
GRILLES &  
DIFFUSERS  
SINCE  
1947

July 2011



Shoemaker Manufacturing Company has been manufacturing the highest quality registers, grilles and diffusers for more than 60 years since 1947. While most GRD manufacturers have been bought out and consolidated over time, Shoemaker is proud to be one of the last major, privately owned companies of its kind. The proprietors actively participate in the business, leading a management team who assume a personal responsibility for the design and distribution of the Shoemaker product line throughout the United States.



The Shoemaker name is well respected and highly recognized in both the residential and commercial HVAC marketplace for the high quality products and outstanding customer service levels the company provides.



Thank you for your business. We look forward to serving you.



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# PRODUCTS AT A GLANCE

100



100  
4-Way Fixed  
Core Step  
Down Ceiling  
Diffuser

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150



150  
4-Way  
Stamped Face  
Ceiling Diffuser

Page 5

SDD



SDD  
Square Ceiling  
Directional  
Diffuser with  
Fixed Core

Page 6

90



90  
Round Step  
Down Ceiling  
Diffuser

Page 6

200



200  
Stamped  
Curved Blade  
Ceiling Diffuser

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SCB



SCB  
Steel Adjustable  
Curved Blade  
Diffuser

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400  
4-Way Ceiling  
Box Swamp  
Cooler Diffuser

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400



425  
Step Down  
4-Way Swamp  
Cooler Ceiling  
Diffuser  
with Slide-in  
Damper

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425



450  
High-Velocity  
Multi-Louver  
Flush Diffuser

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452  
Two Way Curved  
Blade Diffuser with  
Slide-in Damper

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L932-O  
Single Deflection  
Aluminum  
Diffuser

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L932-O



845  
3-Way Stamped  
Face Ceiling/  
Sidewall Diffuser

Page 10

845



# PRODUCTS AT A GLANCE

850



850  
2-Way Stamped  
Face Ceiling/  
Sidewall Diffuser

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945



945  
Multi-Directional  
Diffuser with  
Multi-Shutter or  
Opposed Blade  
Damper

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951



951  
Single Deflection  
Diffuser with  
Multi-Shutter or  
Opposed Blade  
Damper

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1050/75



1050 & 1075  
Stamped  
Ceiling/Sidewall  
Return Air Grille

Page 12

FG



FG  
Stamped Face  
Ceiling/Sidewall  
Filter Grille

Page 13

920FG



920FG  
Bar Style  
Filter Grille

Page 13

FG/AD  
Filter Grille  
Access Door

Page 21

FG/AD



855  
Stamped Face  
Baseboard Register  
with Multi-Shutter  
Damper

Page 14

855



955  
Adjustable Blade  
Baseboard Register  
with Multi-Shutter  
Damper

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955



875  
Triangular  
Baseboard Diffuser

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875



1150  
Stamped Baseboard  
Return Air Grille

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1150



1100  
Airfoil Fixed Blade  
Baseboard Return  
Air Grille

Page 15

1100



1165  
Triangular  
Baseboard  
Return Air Grille

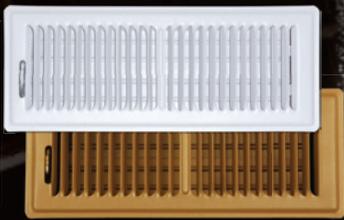
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1165



# PRODUCTS AT A GLANCE

325



325  
Stamped Face  
Perimeter Floor  
Diffuser

Page 16

350



350  
Stamped Face  
Deluxe Floor  
Diffuser

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375



375  
Resistance Welded  
Premium Floor  
Diffuser

Page 16

AFP



AFP  
Extruded  
Aluminum  
Perimeter  
Floor Diffuser

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TS



TS  
Toe Space Grille

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Linear



LINEAR SERIES  
Sidewall, Sill or  
Floor Diffuser  
1/3" or 1/2" Spacing  
0° or 20° Deflection

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1550  
Honeycomb  
Construction  
Fabricated Floor  
Register

Page 20

1550



1600  
Honeycomb  
Construction  
Fabricated Floor  
Return Air Grille

Page 20

1600



Designer  
Series

DESIGNER  
SERIES  
Registers, Grilles  
& Diffusers in  
Designer Colors,  
Plated Metals &  
Ornamental  
Options

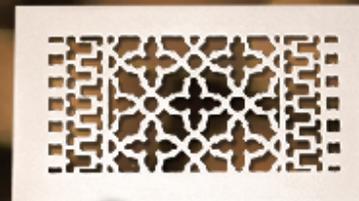
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Colors



Plated Metal



Ornamental



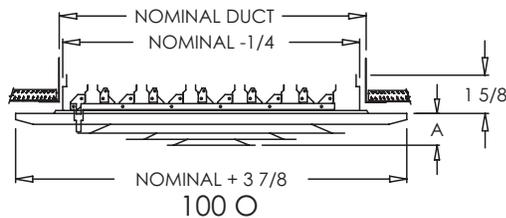
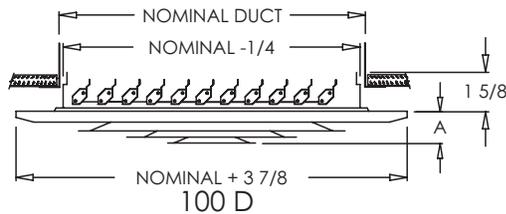
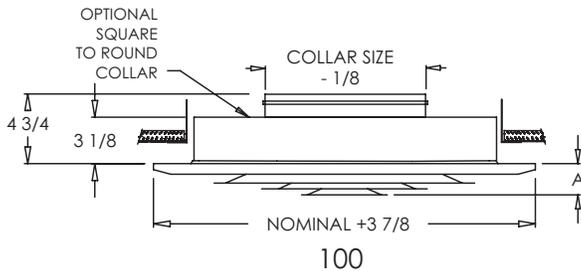
## 100 Series Step Down Ceiling Diffuser

### Standard Features:

- Step-down core design allowing for uniform air distribution
- Four-way air diffusion
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White

### Options:

- **100** - Diffuser only (no damper)
- **100 D** - Diffuser with steel multi-shutter damper
- **100 O** - Diffuser with steel lever operated opposed blade damper
- No Labor Collar
- Standard Color or Designer Color Finish available (pages 22-23)



Size	Dim (A)	Size	Dim (A)
6"	1 1/8"	16"	2 3/4"
8"	1 1/4"	18"	3"
10"	1 5/8"	20"	3"
12"	2"	24"	3 1/2"
14"	2 3/4"		

For Engineering information see page 24



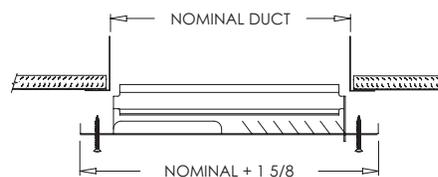
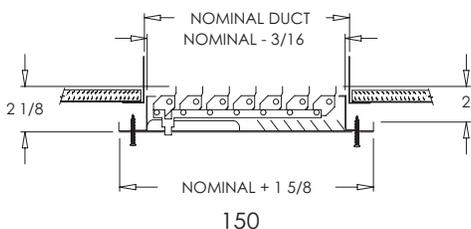
## 150 Series 4-Way Ceiling Diffuser

### Standard Features:

- Stamped 4-way louvered diffuser
- Multi-shutter damper
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- Soft White

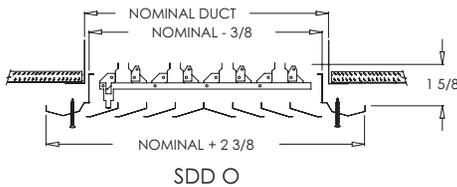
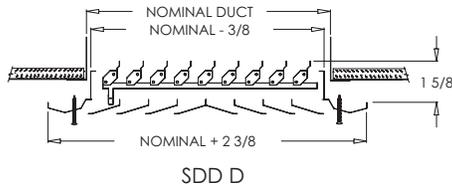
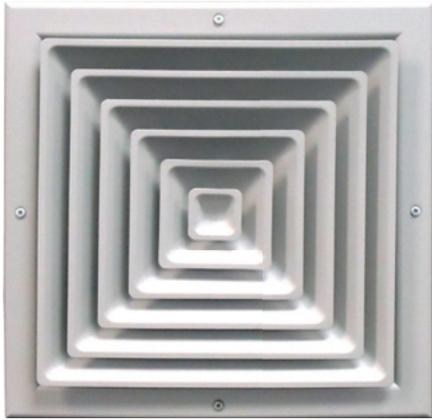
### Options:

- **150 O** - Steel lever operated opposed blade damper
- **151 Series** - Grille only
- No Labor Collar
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)



For Engineering information see page 24

150



For Engineering information see pages 25-26

## SDD Series Square Ceiling Directional Diffuser

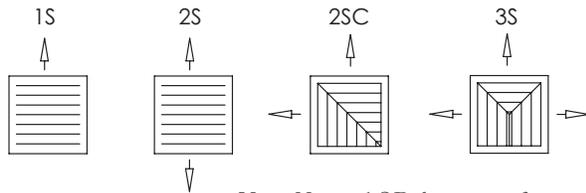
### Standard Features:

- Fixed steel cores
- Steel frame
- Five different air patterns
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White

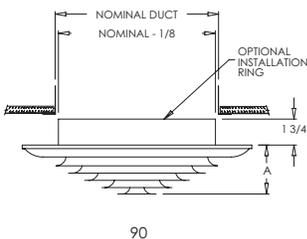
### Options:

- SDD - Diffuser only (no damper)
- SDD D - Diffuser with steel multi-shutter damper
- SDD O - Diffuser with steel opposed blade damper
- No Labor Collar
- Tamper Proof Screws
- Standard Color or Designer Color Finish available (pages 22-23)

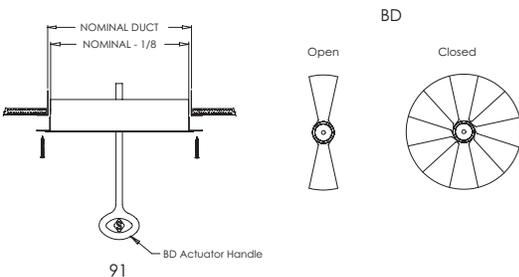
### Flow Patterns



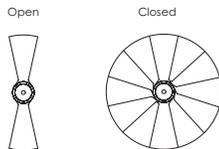
Note: Nominal OD dimensions for optional flow patterns and rectangular diffusers will vary.



Size	Dim (A)
6	1 1/4"
8	1 3/4"
10	2"
12	2 1/2"
14	2 3/4"



BD



For Engineering information see page 26

## 90 Series—Step-Down Round Diffuser

### Standard Features:

- Ideal for residential and light commercial application
- Steel construction
- Attractive concentric ring deflects air stream 360°
- Soft White

### Options:

- 91 Series - Round Bowtie Damper
- 92 Series - Round Ring
- Standard Color or Designer Color Finish available (pages 22-23)

## 91 Series—Round Bowtie Damper

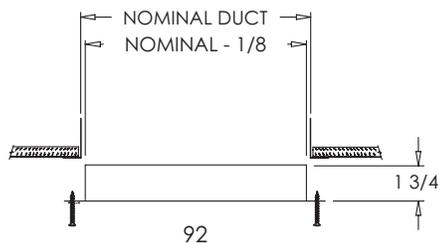
### Standard Features:

- Field installable bowtie damper with round ring
- Available 6, 8, 10, 12 & 14"
- Mill finish

## 92 Series—Round Ring

### Standard Features:

- Use in applications for installing round without damper
- Steel construction





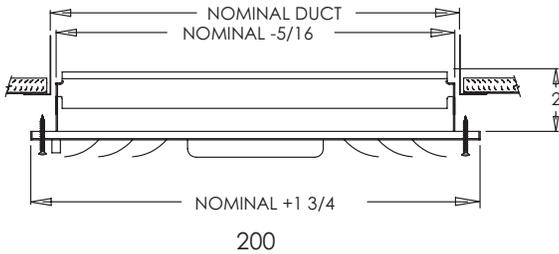
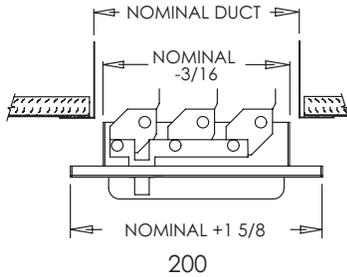
## 200 Series Ceiling Curved Blade Diffuser

### Standard Features:

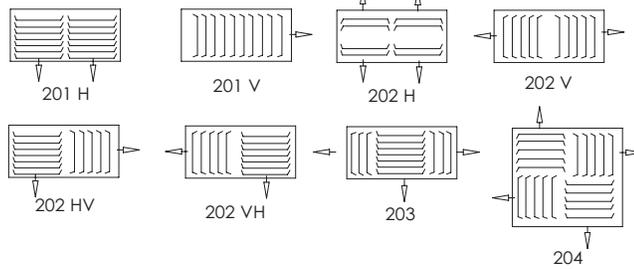
- Stamped curved blades
- Field adjustable damper for positive throws and control of face velocities
- Provides uniform air distribution across ceiling or sidewall
- Eight air patterns
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Steel multi-shutter damper
- Soft White

### Options:

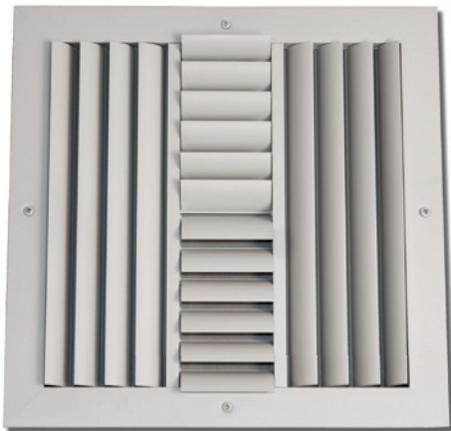
- **200 O** - Steel lever operated opposed blade damper
- Tamper Proof Screws
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)



### Air Patterns:



For Engineering information see page 27



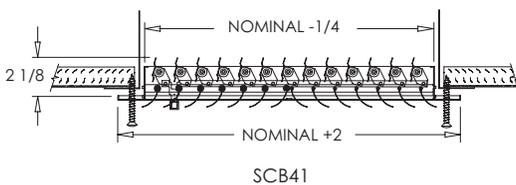
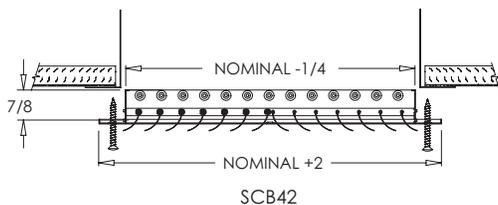
## SCB Series Adjustable Curved Blade Diffuser

### Standard Features:

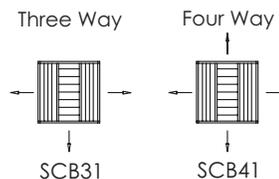
- Individually adjustable steel curved blades
- Lever operated steel multi-shutter damper
- Pivoted steel blades for easy firm positioning
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- Soft White

### Options:

- **SCB41** - 4-way air pattern
- **SCB31** - 3-way air pattern
- **SCB41 O or SCB31 O** - Steel opposed blade damper
- **SCB42 or SCB32** - No damper
- Tamper Proof Screws



### Air Patterns



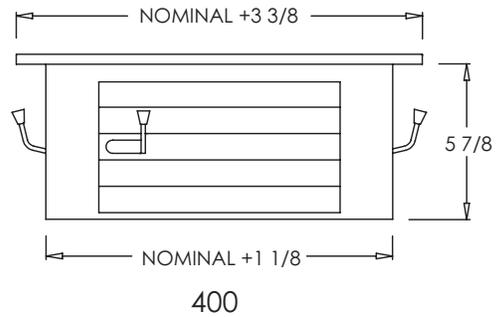
For Engineering information see page 28



### 400 Series 4-Way Ceiling Diffuser Box

**Standard Features:**

- Steel galvaneal construction
- Designed for large volume air delivery
- For evaporative coolers or central blower systems
- Adjustable directional dampers with shut-off
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White



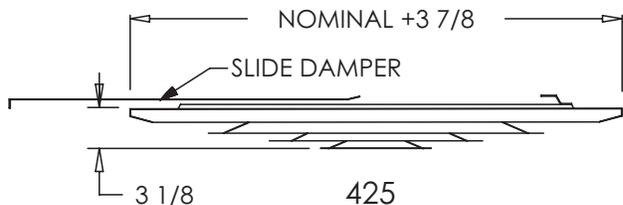
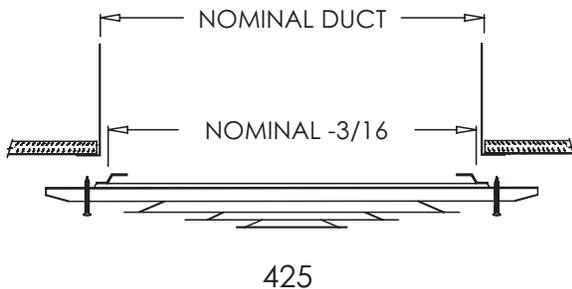
For Engineering information see page 29



### 425 Series Step-Down Diffuser with Slide-in Damper

**Standard Features:**

- Steel galvaneal construction
- For evaporative coolers or central blower systems
- Modern step-down design
- 4-way air diffusion
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- One-piece removable slide damper for off season closure
- Soft White



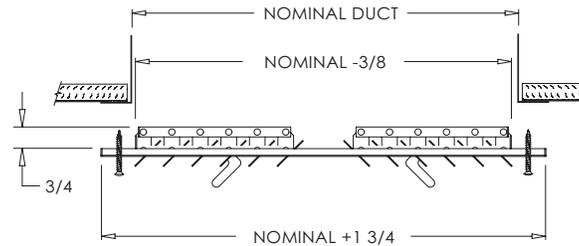
For Engineering information see page 29



### 450 Series High-Velocity Multi-Louver Flush Diffuser

**Standard Features:**

- For evaporative cooling or high velocity exhaust applications with divided 2-way multi-louver and combination shut-off
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White



450

For Engineering information see page 29

### 452 Series 2-Way Curved Blade Diffuser with Slide-in Damper

**Standard Features:**

- All steel galvaneal construction
- Provides uniform air distribution across ceiling
- For evaporative cooling or high velocity exhaust applications
- Ideal for corridor and hallway application
- One piece removable slide-in damper for off season closure
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- Soft White



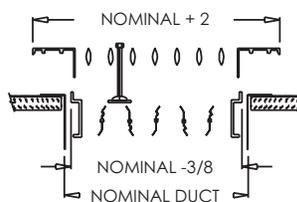
For Engineering information see page 30



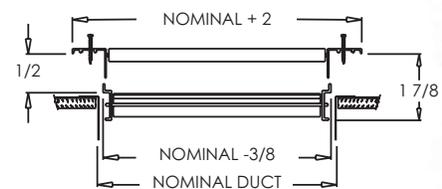
### L932-O Series Single Deflection Aluminum Diffuser

**Standard Features:**

- For evaporative cooling or high velocity exhaust applications
- Adjustable airfoil blades
- Lever operated opposed blade damper
- Soft White

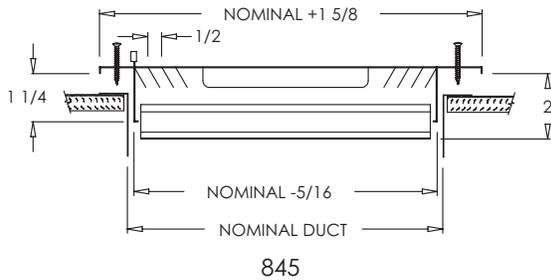


L932-O



L932-O

For Engineering information see page 30



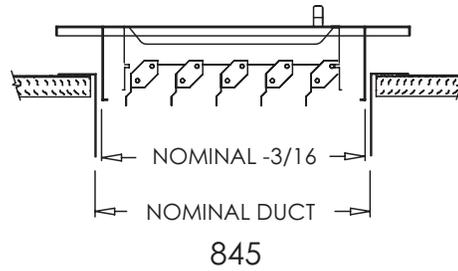
### 845 Series Stamped 3-Way Diffuser

**Standard Features:**

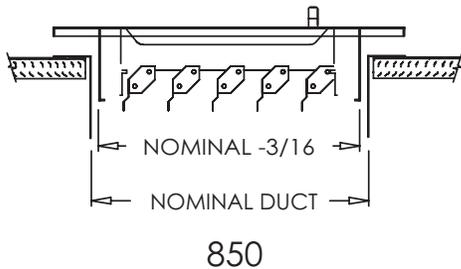
- Stamped 3-way fan shaped louvers for draft-free heat or air conditioning
- For ceiling or sidewall applications
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Steel multi-shutter damper
- Soft White

**Options:**

- **845 O** - Steel lever operated opposed blade damper
- Tamper Proof Screws
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)



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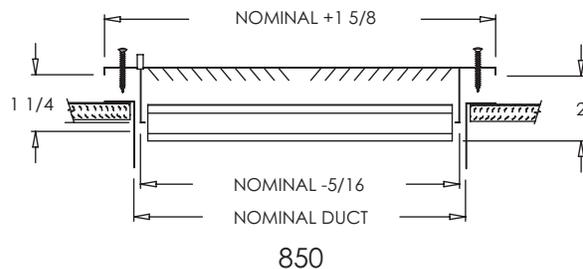
### 850 Series Stamped 2-Way Diffuser

**Standard Features:**

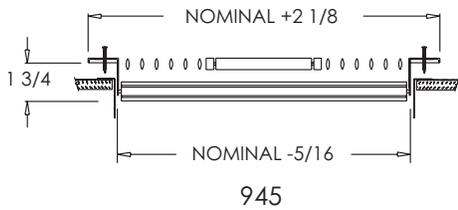
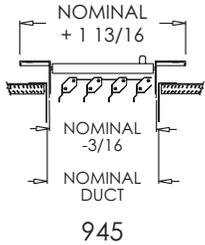
- Stamped 1/2" fan-shaped louvers for heating or cooling
- For ceiling or sidewall applications
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Steel multi-shutter damper
- Soft White

**Options:**

- **850 O** - Steel lever operated opposed blade damper
- **833** - 1/3" spaced louvers
- Tamper Proof Screws
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)



For Engineering information see page 31



## 945 Series 3 or 4-Way Adjustable Diffuser

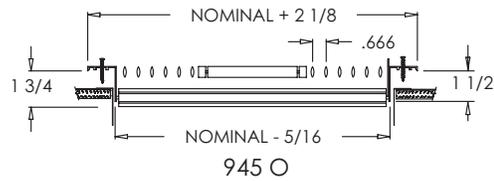
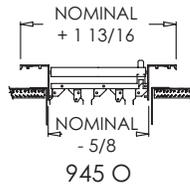
### Standard Features:

- Adjustable steel blades with steel multi-shutter damper
- For ceiling or sidewall applications
- Blades fully adjustable for 3 or 4-way air flow pattern
- Vertical & horizontal air deflectors with nylon bushings for easy adjustment and quiet settings
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White

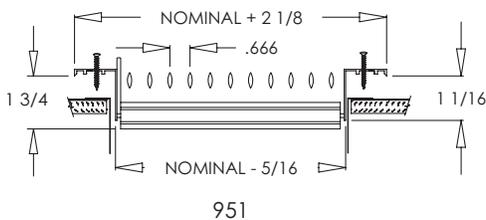
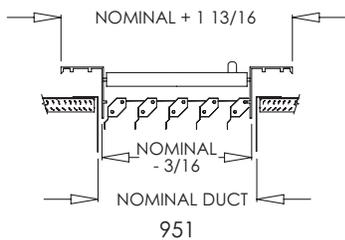
### Options:

- 945 O - Steel lever operated opposed blade damper
- Tamper Proof Screws
- Standard Color or Designer Color Finish available (pages 22-23)

Dimensions may vary on non-standard sizes. See website for more details.



For Engineering information see page 32



## 951 Series Adjustable Diffuser

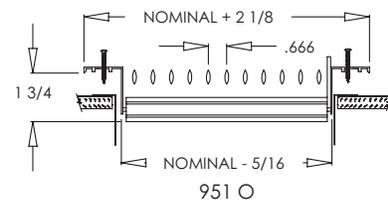
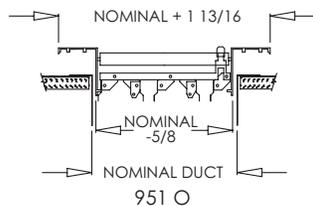
### Standard Features:

- Adjustable steel blades with steel multi-shutter damper
- For ceiling or sidewall applications
- Vertical air deflectors with nylon bushings for easy adjustment and quiet settings
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- Soft White

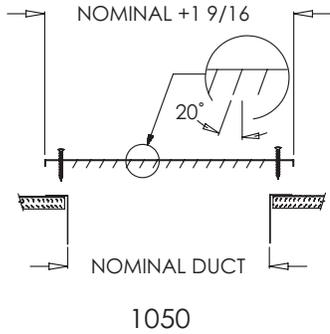
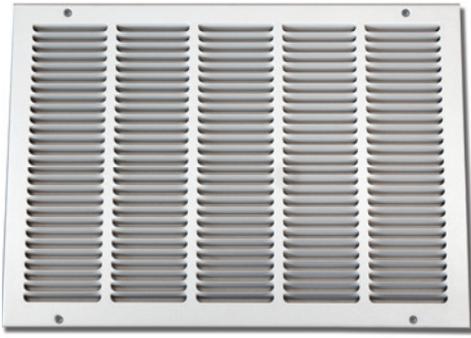
### Options:

- 951 O - Steel lever operated opposed blade damper
- 950 - Aluminum airfoil blades
- Tamper Proof Screws
- Standard Color or Designer Color Finish available (950 only) (pages 22-23)

Dimensions may vary on non-standard sizes. See website for more details.



For Engineering information see page 33



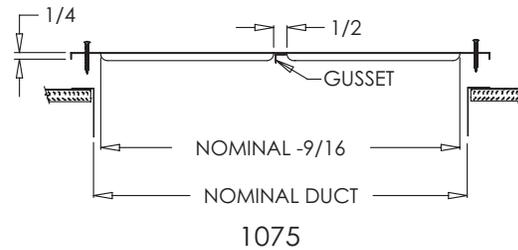
## 1050 Series Return Air Grille

### Standard Features:

- 1/2" spacing dual angular louvers
- 22 & 20 gauge cold roll steel
- Install with louvers in up or down position for vision-proof effect
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Soft White

### Options:

- 1033 - 1/3" spacing available in limited sizes
- 1075 - Mullions are reinforced with stiffeners for greater strength
- A-1050 - .032 Aluminum construction
- Tamper Proof Screws
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23) \*Plated Metal available on 1050 only



For Engineering information see page 34-35

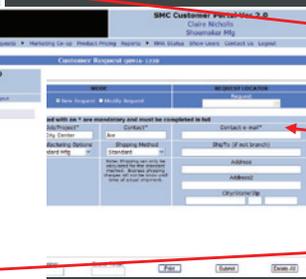
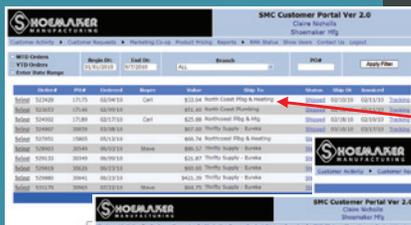


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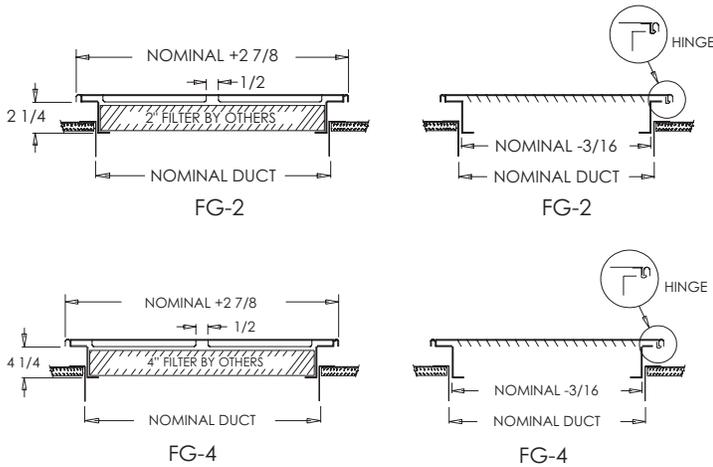
## FG Series Stamped Face Filter Grille

### Standard Features:

- Three FG Options:
  - FG-1 (holds up to 1" standard filter)
  - FG-2 (holds up to 2" standard filter)
  - FG-4 (holds up to 4" standard filter)
- 1/2" spacing dual angular louvers
- 22 & 20 gauge cold roll steel
- Hand operated lever for easy filter access
- Removable face for easy cleaning and maintenance
- Filter door hinges parallel to longest side
- 4-way reversible door on square sizes
- 2-way reversible door on rectangular sizes
- Filter retention tabs
- Concealed mounting holes
- Soft White

### Options:

- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)



For Engineering information see page 36

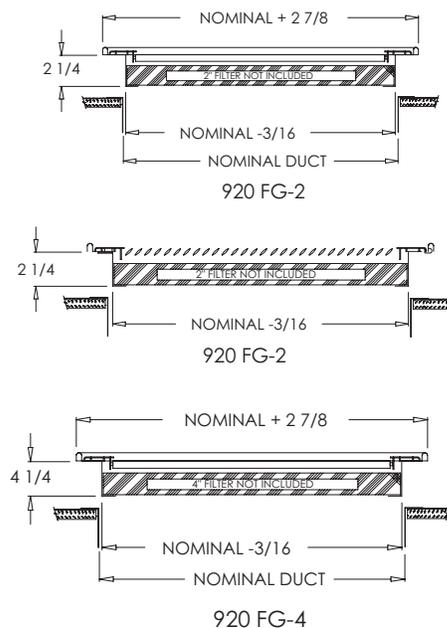
## 920 FG Series Fixed Bar Blade Filter Grille

### Standard Features:

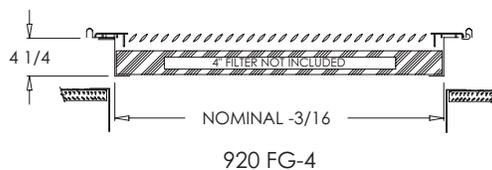
- Three 920FG Options:
  - 920FG-1 (holds up to 1" standard filter)
  - 920FG-2 (holds up to 2" standard filter)
  - 920FG-4 (holds up to 4" standard filter)
- 45° fixed blades parallel to first dimension
- Hand operated lever for easy filter access
- Removable face for easy cleaning and maintenance
- Filter door hinges parallel to longest side
- 4-way reversible door on square sizes
- 2-way reversible door on rectangular sizes
- Filter retention tabs
- Concealed mounting holes
- Soft White

### Options:

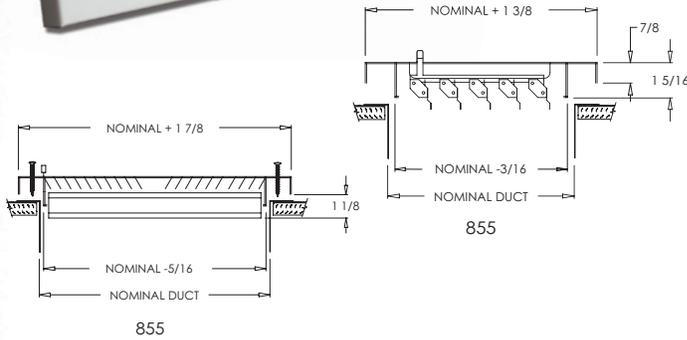
- Hinge and Latch Options Available
- Standard Color or Designer Color Finish available (pages 22-23)



For Engineering information see page 36



**NOTE:** Filter grilles are manufactured 3/16" undersized nominal duct outside dimension for ease of installation. Air filter should be 1/4" to 1/2" undersize. Verify with air filter manufacturer for air filter specification. Shoemaker filter grilles allow for installation of larger thickness filters which can reduce pressure drop on the overall system, improving air flow through the heat exchanger and allowing more time between filter changes.



### 855 Series Stamped Face Baseboard Register

**Standard Features:**

- Steel construction
- Fan shaped 1/2" spaced louvers
- Steel multi-shutter damper
- 7/8" margin turnback
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Soft White

**Options:**

- Tamper proof screws
- Standard Color or Designer Color available (pages 22-23)

For Engineering information see page 36

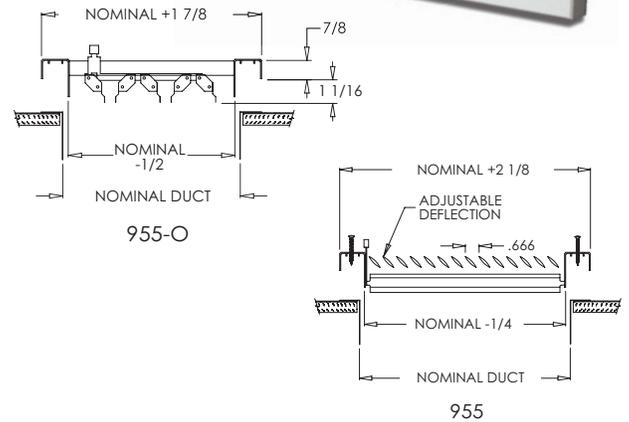
### 955 Series Adjustable Blade Baseboard Register

**Standard Features:**

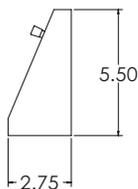
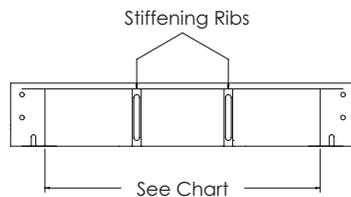
- Extruded aluminum frame with steel roll formed blades and steel multi-shutter damper
- Margin edges are 7/8" projection for baseboard installation
- Nylon bushings for easy adjustment and quiet setting of blades running parallel to shortest dimension
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- All component parts, rivets, linkage and handle enclosed in valve to assure trouble-free operation
- Soft White

**Options:**

- 955 O - Steel opposed blade damper
- Tamper proof screws
- Standard Color or Designer Color Finish available (pages 22-23)



For Engineering information see page 37



Size	Opening
15"	12"
18"	14"
24"	20"

### 875 Series Triangular Baseboard Diffuser

**Standard Features:**

- Steel construction
- 5.5" height consistent with modern day moulding standards
- Lever operated single-blade damper
- Removable face and damper
- Tension wings to stabilize damper and ensure quiet operation
- Available in 15", 18" or 24" lengths
- Soft White

**Options:**

- Standard Color or Designer Color Finish available (pages 22-23)

For Engineering information see page 37



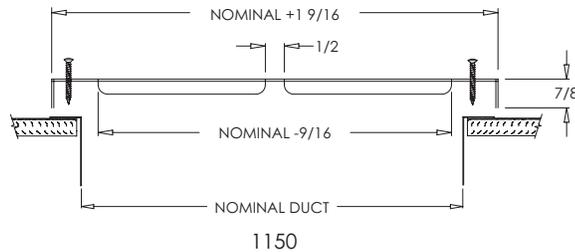
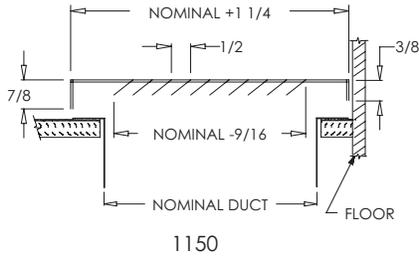
## 1150 Series Stamped Face Baseboard Return Air Grille

### Standard Features:

- 1/2" spaced vision-proof dual angular louvers for strength and maximum free area
- Margin edges are 7/8" projection for baseboard installation
- Soft White with color matching screws

### Options:

- 1133 - 1/3" spaced dual angular louvers
- 1175 - Added mullion stiffeners for greater strength
- Standard Color or Designer Color Finish available (pages 22-23)



For Engineering information see page 37

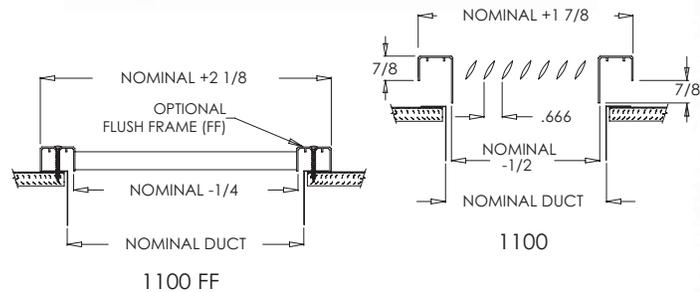
## 1100 Series Fixed Blade Baseboard Return Air Grille

### Standard Features:

- Extruded aluminum construction
- 45° fixed blades parallel to longest dimension
- Margin edges are 7/8" projection for baseboard installation
- Countersunk mounting holes for flush appearance, with color matching Phillips posi-drive screws
- Soft White

### Options:

- 1100FF - Flush frame
- Fractional and odd dimension sizes
- Standard Color, Designer Color or Anodized Finish available (pages 22-23)



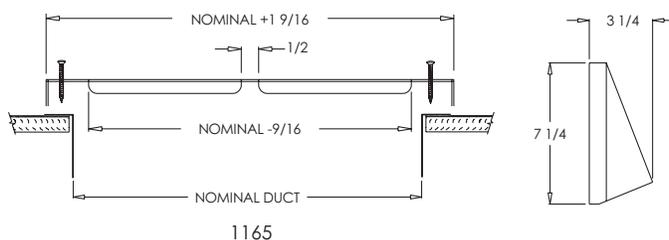
For Engineering information see page 38

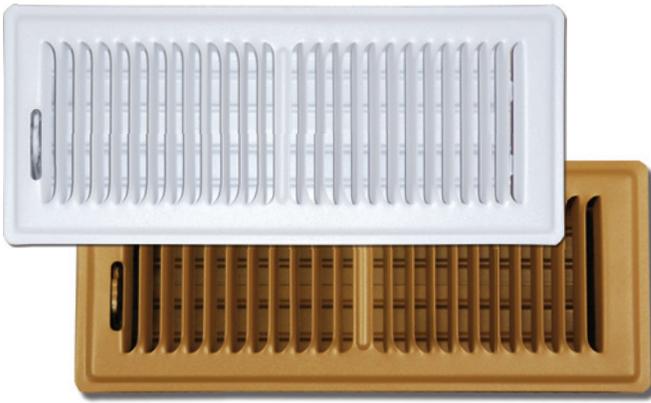


## 1165 Series Triangular Baseboard Return Air Grille

### Standard Features:

- 1/2" spaced vision-proof dual angular louvers for strength and maximum free area
- Margin edges are 7/8" projection for baseboard installation
- Soft White with color matching 4" long screws





### 325 Series Stamped Perimeter Floor Diffuser

**Standard Features:**

- Cold-rolled steel construction
- Opposed Blade Damper standard
- All component parts, rivets, linkage, and handle are enclosed in the valve to assure trouble-free operation
- Locking screw provision concealed beneath the floor for tamper proof settings
- Sold in carton quantity only
- Driftwood Tan or Soft White

For Engineering information see page 38

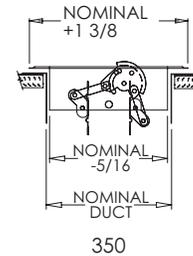
### 350 Series Stamped Deluxe Floor Diffuser

**Standard Features:**

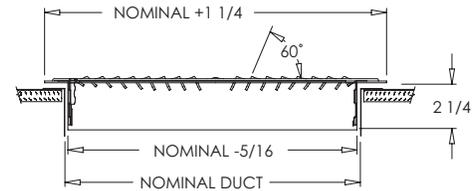
- Heavy gauge cold-rolled steel
- Louvers designed with rolled rib for maximum strength and rigidity
- Unique fan-shaped air pattern lends to both heating and air conditioning applications
- Opposed Blade Damper standard on 4" widths
- Parallel blade damper on 6" widths and larger
- Locking screw provision concealed beneath the floor for tamper proof settings
- All component parts, rivets, linkage, and handle enclosed in valve to assure trouble-free operation
- Driftwood Tan

**Options:**

- Standard Color, Designer Color, or Plated Metal Finish



350



350

For Engineering information see page 38



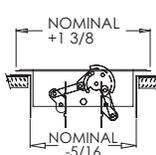
### 375 Series Premium Floor Diffuser

**Standard Features:**

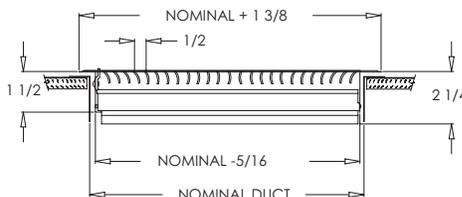
- Steel construction
- Heavy gauge individually welded diffusion bars
- All component parts, rivets, linkage, and handle are enclosed in the valve to assure trouble-free operation
- Locking screw provision concealed beneath the floor for tamper proof settings
- Opposed Blade Damper standard on 4" width diffusers
- Driftwood Tan

**Options:**

- Standard Color or Designer Color Finish available (pages 22-23)

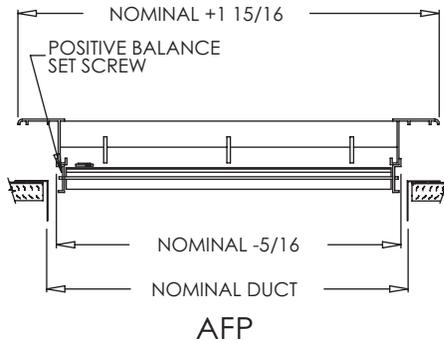


375



375

For Engineering information see page 39



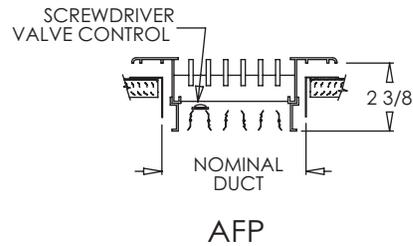
## AFP Series Aluminum Floor Perimeter Diffuser

### Standard Features:

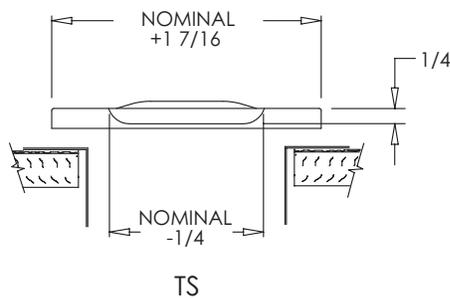
- All extruded aluminum construction
- Reinforced with pressure lock honeycomb construction to withstand heavy foot traffic
- 1/8" bars spaced on 1/2" centers
- Recessed screwdriver operated opposed blade damper to control air volume for positive balance
- Positive volume set screw
- OBD blades run parallel to longest dimension
- Satin anodized

### Options:

- **AFP GG** - Gym Grade
- **AFG** - Grille only
- 20° deflection
- 1/8" bars on 1/3" centers (see Linear Series, page 18)
- Blades parallel to shortest dimension
- Standard Color or Designer Color Finish available (page 22-23)



For Engineering information see page 39



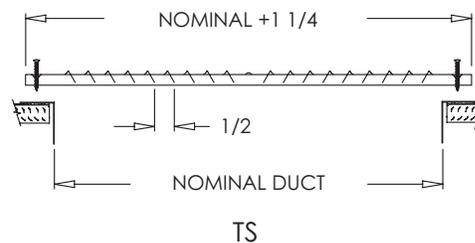
## TS Series Toe Space Grille

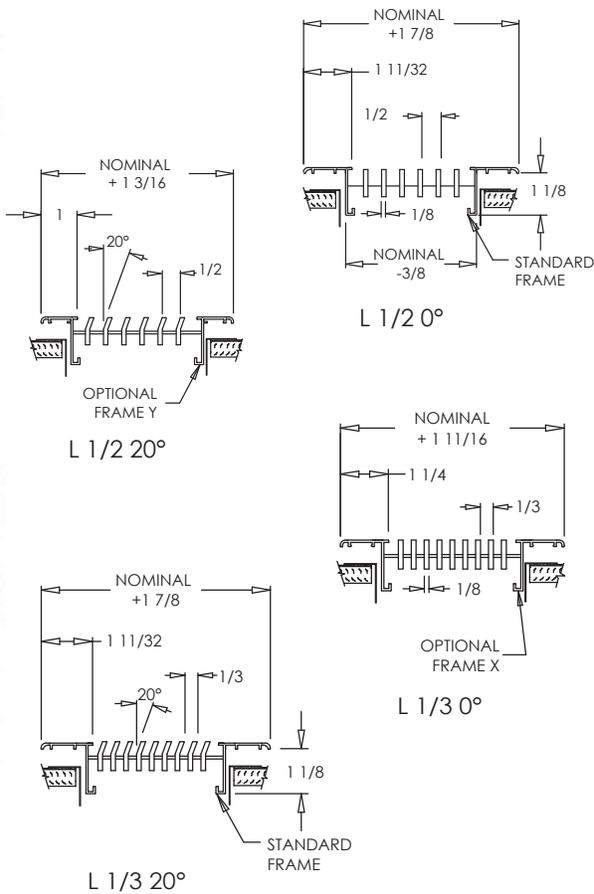
### Standard Features:

- Formed cold rolled steel (same as 350 series)
- Ideal for return air in the toe space areas between kitchen cabinets, stair risers, built-in vanities, etc.
- Countersunk mounting holes for flush appearance with color matching Phillips posi-drive screws
- Driftwood Tan

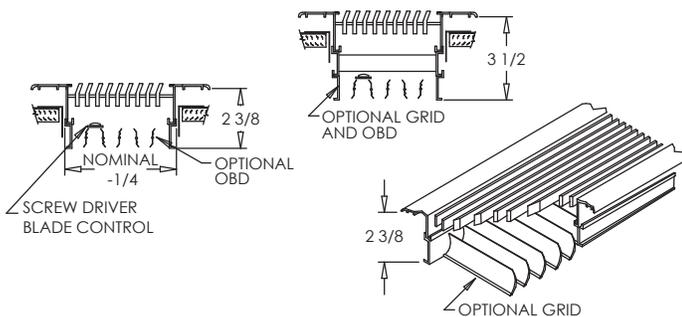
### Options:

- **TD Series** - with damper, screw holes and color matching panhead screws
- Standard Color, Designer Color or Plated Metal Finish available (pages 22-23)





**OBD & GRID OPTIONS**



**Linear Series**  
**L 1/3 0°, L 1/3 20°, L 1/2 0°, L 1/2 20°**  
**Diffusers and Grilles**

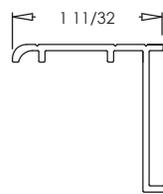
**Standard Features:**

- All extruded aluminum construction
- **LF** - Floor application
- **LS** - Sill application
- **LSW** - Sidewall application with countersunk screw holes for flush appearance
- Reinforced with pressure lock honeycomb construction to withstand heavy foot traffic
- Available in 1/3" (pencil-proof) and 1/2" spacing
- 0° or 20° deflection on both spacing options
- Available in lengths of 144" in one piece
- Core blades run parallel to longest dimension
- Satin Anodized Finish

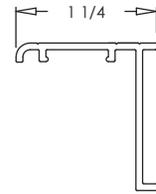
**Options:**

- **LF 1/2 20° O** - Recessed hand or screwdriver operated Opposed Blade Damper to control air volume for positive balance of system
- **LF 1/2 20° G** - All extruded aluminum air deflection grid for individually adjustable curved blade deflection
- **LF-GYM** - Gym grade (welded blades, frame & extra blade supports)
- Tamper Proof Screws
- Mitered Corners, Radius and Special Shapes
- Butt joints for continuous look
- Core only with 1/2" or 1/3" spacing
- Frame Widths (example: LFX 1/2 20° O):
 

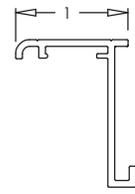
Standard	1 11/32	}	see drawings for details
Option X	1 1/4"		
Option Y	1"		
- Surface mounting holes available
- Standard Color, Designer Color or Bronze Finish available (pages 22-23)



Standard Frame

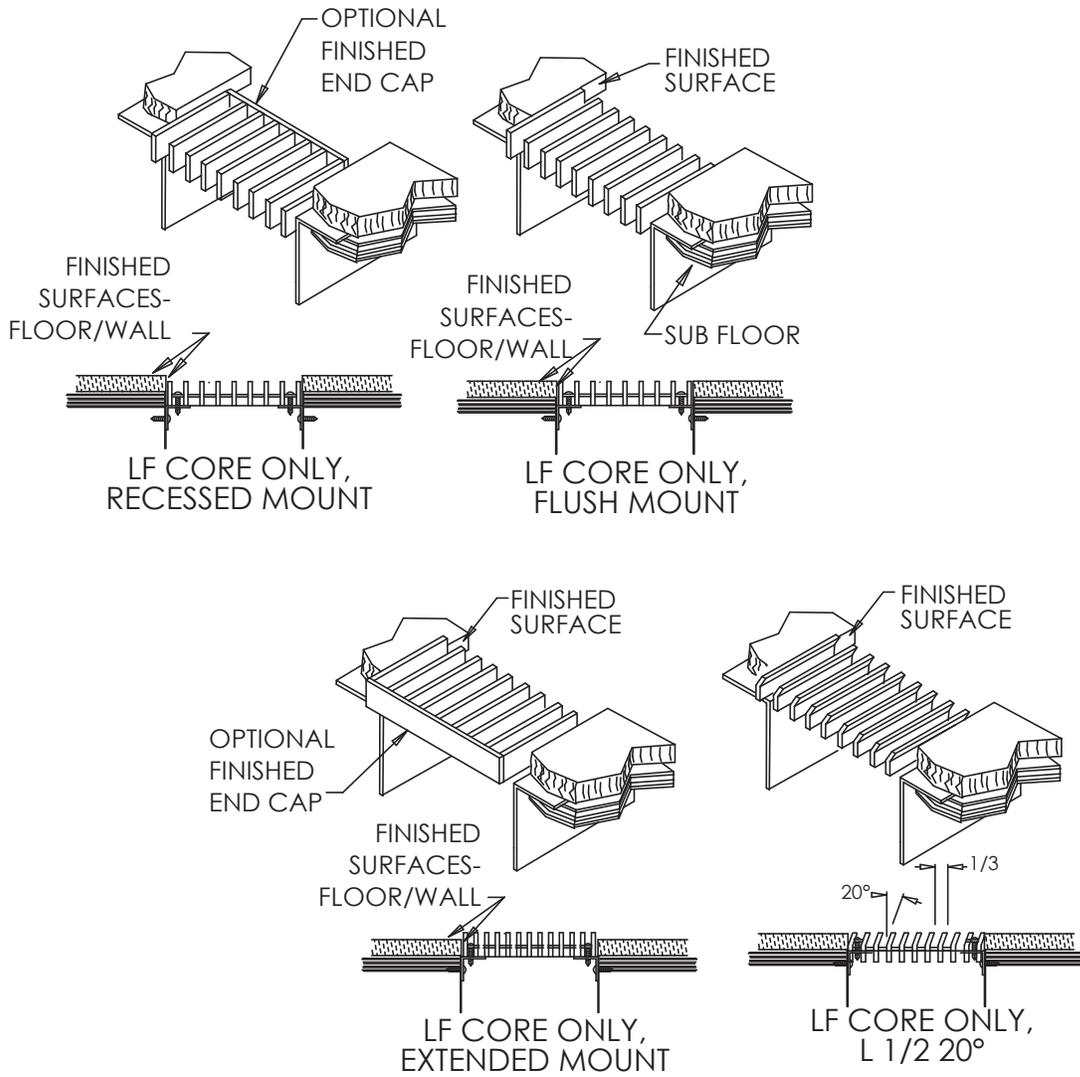


Frame Option X

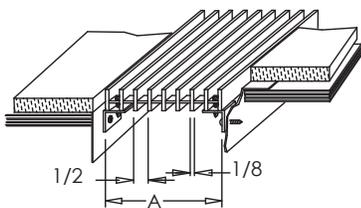


Frame Option Y

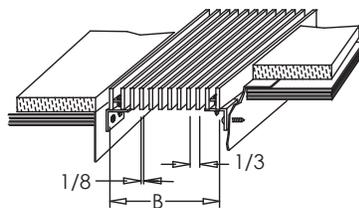
# CORE ONLY - MOUNTING OPTIONS



# CORE ONLY - ORDER AND MOUNTING INFORMATION



DIMENSION "A"  
MADE IN 1" INCREMENTS  
1/8" & 5/8" OVER THE  
FULL INCH.  
EXAMPLE:  
4 1/8", 6 5/8", ETC.



DIMENSION "B"  
MADE IN 1" INCREMENTS @ 1/8,  
7/16" & 13/16" OVER THE FULL  
INCH.  
EXAMPLE: 4 1/8", 8 7/16", 6  
13/16", ETC.



**Note:**  
Mounting location/Support  
strength brackets supplied by  
others. Recommended for floor  
applications: 16 ga. min. Use  
heavier gauge brackets more  
frequently in high traffic areas.

For our complete Linear Series offering including special shapes please visit our website at [www.shoemakermfg.com](http://www.shoemakermfg.com)



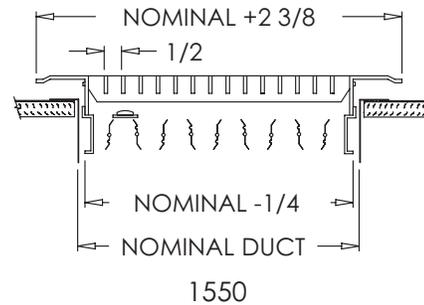
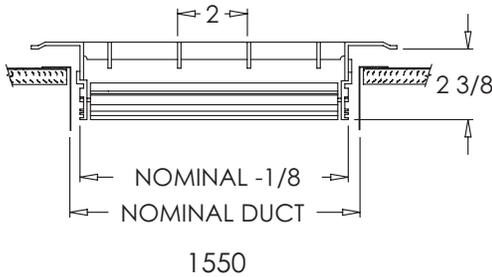
### 1550 Series Floor Register

**Standard Features:**

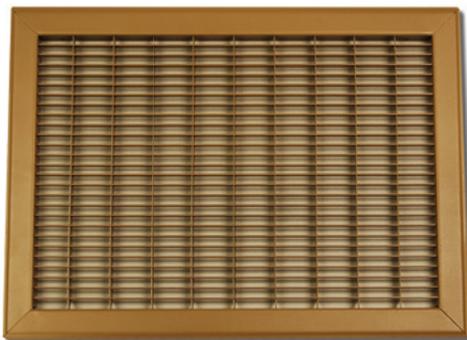
- Steel honeycomb construction
- Flush core and frame provides smooth surface
- Free area equals more than 75% of nominal size
- Recessed screwdriver operated opposed blade damper to control air volume for positive balance of system
- Positive volume set screw
- Driftwood Tan

**Options:**

- **1550R** - Reinforced welded core and extra support for heavy duty application
- Mounting holes for sidewall and ceiling application
- Standard Color or Designer Color Finish available (pages 22-23)



For Engineering information see page 42



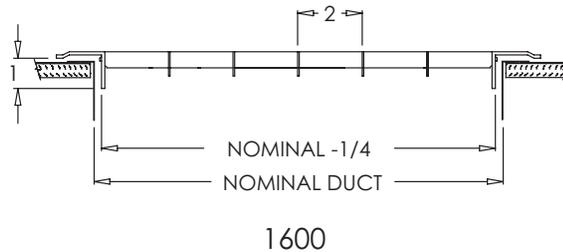
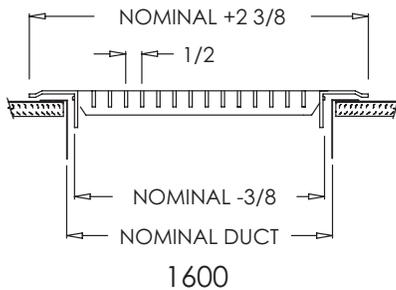
### 1600 Series Floor Grille

**Standard Features:**

- Steel honeycomb construction
- Flush core and frame provides smooth surface
- Free area equals more than 75% of nominal size
- Driftwood Tan

**Options:**

- Mounting holes for sidewall and ceiling application
- **1600R** - Reinforced welded core and extra supports for heavy duty application
- Standard Color, Designer Color, or Plated Metal



For Engineering information see page 43



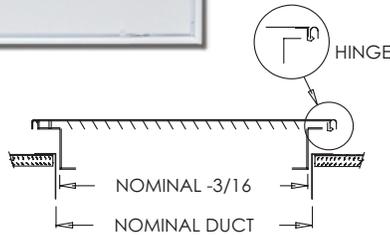
## FG/AD Series Filter Grille Access Door

### Standard Features:

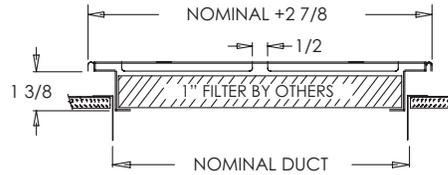
- Dual angular louvers for strength and maximum free area
- Hand operated lever for easy filter access
- Soft White

### Options:

- **AD Series** - Access Door Only



FG/AD



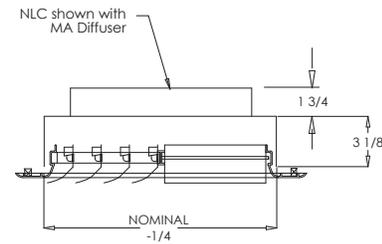
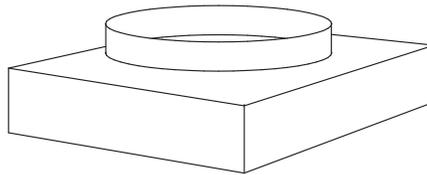
FG/AD

For Engineering information see page 36

## No Labor Collar

### Standard Features:

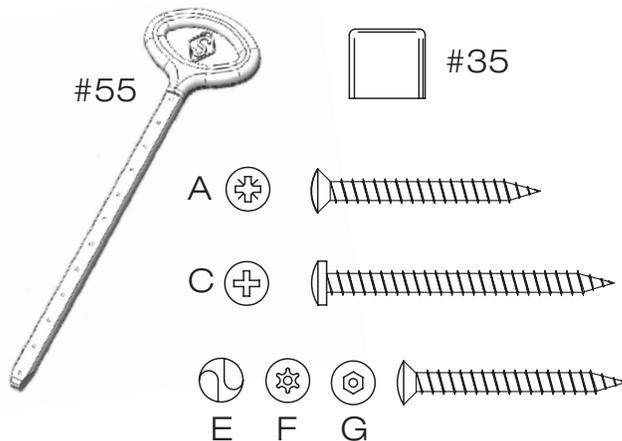
- For flex installation
- Square to round transition
- Mill finish



NLC  
Typical Application

## Miscellaneous Accessories

Item	Description	Item	Description
#35	Handle for registers & diffusers	G	Tamper proof screw - 1/8 hex H.P. Stainless steel ( <b>G-SS</b> )
#55	Bow-tie plastic handle	H	1-way tamper proof screw removal tool
A	8 x 1 1/2" S.M.S. Phillips posi-drive ovalhead	I	Torx T-15 H.P. Bit
C	8 x 2" Phillips panhead screw (baseboard)	J	1/8 hex H.P. Bit
E	Tamper proof screw - 1 way S.M.S. (Stainless steel <b>E-SS</b> )	#45	Driftwood Tan spray paint, 4.5 oz.
F	Tamper proof screw - T-15Torx H.P. (Stainless steel <b>F-SS</b> )	#46	Soft White spray paint, 4.5 oz.

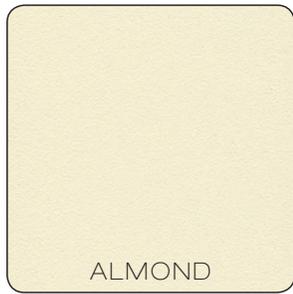


#45

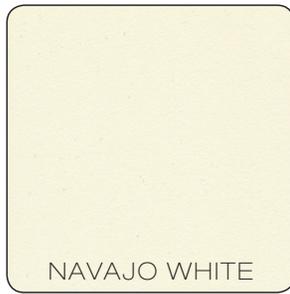


#46

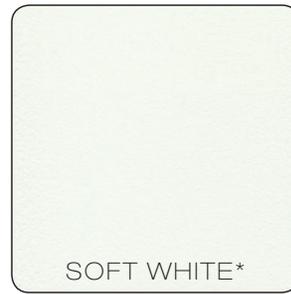
# Designer Color Finishes



ALMOND



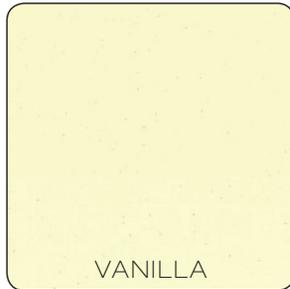
NAVAJO WHITE



SOFT WHITE\*



DRIFTWOOD TAN\*



VANILLA



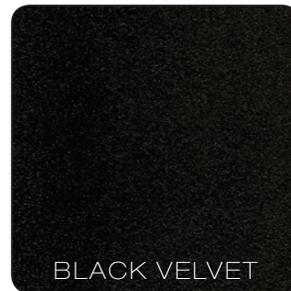
COFFEE TAN



CAMARO SILVER



BRONZE



BLACK VELVET

\*Denotes Standard Color - No extra charge

# Plated Metal Finishes



ANTIQUE BRASS



SATIN NICKEL



OIL RUB BRONZE



POLISHED CHROME



PEWTER



BLACK NICKEL



POLISHED BRASS

# Ornamental



## Standard Features:

- Solid Cast Iron stocked in the following sizes:
  - 2 ¼ x 10, 12, 14
  - 4 x 10, 12, 14
  - 6 x 10, 12, 14
- Soft White or Driftwood Tan
- Solid edge of grille approximately 3/16" thick

## Options:

- **Solid Cast Brass** –Laquered finish to prevent tarnishing. Smooth finish and uniform surface for clean look.
- Dampers NOT available on this product
- Designer Colors available (page 22)
- Visit [www.shoemakerfmg.com](http://www.shoemakerfmg.com) for detailed offering and ordering information

For a complete list of Designer Series options and ordering instructions, visit our website at [www.shoemakerfmg.com](http://www.shoemakerfmg.com).

# ENGINEERING DATA

100 Series		See Footnotes A & C, page 44																			
SIZE	Velocity Duct Pt	300 0.007	400 0.011	500 0.017	600 0.024	700 0.034	800 0.044	900 0.055	1000 0.068	1200 0.1											
6x6	Eff. Area	CFM	54	68	86	105	123	137	161	173	185										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		3   6   4   4.4	4.5   5   5.5	5.5   6   6.5	6   7   8	7   8   9.5	8   9.5   11	9   11   13	9.5   12   14.5	10.5   13   15.5										
8x8	Eff. Area	CFM	89	118	147	182	205	241	268	294	330										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		4.5   5   6	5.5   6   6.5	7   7.5   8.5	7.5   9   10.5	9.5   11   12.5	10   12   14	10.5   14   16	12   15   18	13   16   19										
10x10	Eff. Area	CFM	134	179	221	263	316	352	407	441	485										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		5   5.5   6	6.5   7   7.5	7.5   8.5   9.5	8.5   10   11.5	10   12   14	12   14   16	13   16   19	13.5   17   20	15   19   23										
12x12	Eff. Area	CFM	189	257	321	380	444	499	572	625	675										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		5.5   6   6.5	8   9   10	9.5   10.5   11.5	10   12   14	12   14   16	13.5   16   18	14.5   18   22	16   20   24	17   21   25										
14x14	Eff. Area	CFM	257	353	431	515	604	701	792	861	925										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		6.5   7   7.5	8.5   9.5   10.5	11   12   13	12.5   14.5   17	14.5   17   20	16   19   22	17   21   25	19   24   29	21   26   31										
16x16	Eff. Area	CFM	326	439	541	663	756	866	971	1102	1220										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		7   8   9	9.5   10.5   11.5	11.5   13   14.5	13.5   16   18.5	16   19   22	18   21   24	18   23   28	22   27   32	24   30   36	26   33   40									
18x18	Eff. Area	CFM	428	557	712	840	977	1118	1284	1423	1525										
	NC		20	25	30	30	35	35	35	40	40										
	Throw		8   9   10	10.5   11.5   12.5	13.5   15   17	15.5   18   21	18   21   24	20   24   28	22   27   32	24   30   36	26   33   40	28   34   41									
20x20	Eff. Area	CFM	504	685	856	1027	1176	1344	1512	1712	2000										
	NC		20	25	30	30	35	35	35	40	40										
	Throw		9   10   11	11.5   13   14.5	15.5   17   19	16   19   22	20   24   27	23   27   31	24   30   35	26   33   40	29   36   43										
24x24	Eff. Area	CFM	725	984	1208	1477	1723	1932	2174	2415	2800										
	NC		20	25	30	30	35	35	35	40	40										
	Throw		10.5   11.5   12.5	13.5   15   17	18   20   22	20   24   27	24   24   28	27   32   37	28   35   42	30   38   46	32   40   48										

100D Series		See Footnotes A & C, page 44																			
SIZE	Velocity Duct Pt	300 0.007	400 0.011	500 0.017	600 0.024	700 0.034	800 0.044	900 0.055	1000 0.068	1200 0.1											
6x6	Eff. Area	CFM	47	60	81	93	106	124	140	152	168										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		2.5   3   3.5	4   4.5   5	4.5   5   5.5	5   6   2007	6.5   7.5   8.5	7   8.5   10	7.5   8.5   10	8   10   2012	9.5   12   14.5										
8x8	Eff. Area	CFM	81	102	129	162	181	207	238	258	285										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		4   4.5   5	4.5   5   5.5	6   6.5   7	7   8   2009	7.5   9   10.5	8.5   10   11.5	9   11.5   14	10.5   13   15.5	11.5   14.5   17										
10x10	Eff. Area	CFM	116	158	193	230	280	312	350	386	425										
	NC		<20	20	25	30	30	30	35	35	40										
	Throw		4   4.5   5.5	5.5   6   6.5	7   7.5   8.5	7.5   9   10.5	9.5   11   12.5	10   12   2014	11   14   2017	12   15   2018	13.5   17   20										
12x12	Eff. Area	CFM	166	223	285	327	394	437	492	553	620										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		5   5.5   6	7   7.5   8.5	8   9   2010	9.5   11   12.5	10   12   2014	12.5   14.5   17	13.5   17   20	14.5   18   22	17   21   25										
14x14	Eff. Area	CFM	233	304	377	456	546	609	681	754	840										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		6   6.5   7	7.5   8.5   9.5	10   11   2012	10.5   12.5   14.5	13   15   17	14   17   19	15   19   22	17   21   25	19   24   29										
16x16	Eff. Area	CFM	295	390	479	589	670	767	851	948	1060										
	NC		<20	25	30	30	30	30	35	35	40										
	Throw		6.5   7   7.5	8.5   9.5   10.5	10.5   11.5   12.5	12.5   14.5   17	14.5   17   20	16   19   22	16   21   25	19   24   29	22   28   34										
18x18	Eff. Area	CFM	372	493	612	760	856	980	1116	1264	1450										
	NC		<20	25	30	30	35	35	35	35	40										
	Throw		7   8   2009	9   10   2011	11.5   13   14.5	13.4   16   18	15.5   19   21	18   21   24	20   25   30	21   26   31	23   29   35										
20x20	Eff. Area	CFM	446	589	744	883	1042	1216	1339	1488	1670										
	NC		<20	25	30	30	35	35	35	40	40										
	Throw		8   9   2010	10   11   2012	13.5   15   17	14   17   19	17   21   24	20   24   28	21   26   31	23   29   34	24   30   36										
24x24	Eff. Area	CFM	642	856	1058	1288	1530	1748	1904	2116	2400										
	NC		<20	25	30	30	35	35	35	40	40										
	Throw		9.5   10.5   11.5	11.5   13   14.5	15.5   17   19	17   20   23	20   24   28	24   29   33	25   32   39	26   33   40	28   35   42										

150 Series		See Footnotes A & C, page 44																			
SIZE	Velocity Duct Pt	400 .011	500 .017	600 .024	700 .034	800 .044	900 .055	1000 .068	1200 .100												
6x6	Eff. Area	CFM	45	65	85	95	100	105	110	125											
	NC		25	25	25	30	30	30	35	35	40										
	Throw		2.5   2.5   3	2.5   3   3.5	2.5   3   3.5	3   3.5   4	3.5   4   4.5	3.5   4.5   5.5	4   5   6	4   5.5   6	4.5   5.5   6.5										
8x8	Eff. Area	CFM	80	100	120	140	160	180	200	240											
	NC		25	25	25	30	30	35	35	40											
	Throw		2   2   2.5	2.5   3   3.5	2.5   3   3.5	3   3.5   4	3.5   4   4.5	4   5   6	4   5.5   6	5   6.5   7.5											
10x10	Eff. Area	CFM	124	155	186	205	248	280	310	374											
	NC		25	25	25	30	30	35	40	40											
	Throw		3.5   3   3	3   3.5   4	3.5   4.5   5	4.5   5   6	5   6   6.5	5   6   7	6   7   8.5	7   8.5   10.5											
12x12	Eff. Area	CFM	180	225	270	330	360	405	450	540											
	NC		25	25	30	30	35	35	40	40											
	Throw		3   3.5   4	4   4.5   5	4.5   5   6	5   6   7	6   7   8	6   7.5   9	7   8.5   10.5	8.5   10.5   12.5											
14x14	Eff. Area	CFM	280	340	420	490	560	630	700	840											
	NC		25	25	30	30	35	35	40	40											
	Throw		4   4.5   5	4.5   5   5.5	5.5   6.5   7.5	6.5   7.5   8.5	7.5   8.5   10	7.5   9.5   11.5	8.5   11   13	10.5   13   15.5											
16x16	Eff. Area	CFM	507	616	761	887	1015	1120	1270	1471											
	NC		25	25	30	30	35	35	40	40											
	Throw		14   15.5   17	17   19   21	20   23   27	21   25   29	25   29   33	24   30   36	25   31   37	27   34   41											
18x18	Eff. Area	CFM	624	796	936	1127	1247	1390	1610	1873											
	NC		25	25	30	35	35	40	40	40											
	Throw		15.5   17   19	18   20   22	20   23   27	22   26   30	26   30   35	25   31   37	26   33   39	28   35   42											
20x20	Eff. Area	CFM	780	992	1158	1389	1542	1750	1987	2316											
	NC		25	25	30	35	35	40	40	40											
	Throw		15.5   17   19	20   22   24	20   24   28	23   27   31	25   30   34	25   31   37	26   32   38	29   36   43											

## SDD-1 One Way Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200	
	Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068	0.1	
6x6	Eff.Area .13 ft <sup>2</sup>	CFM	46	56	66	74	90	105	119	130	150	
		NC	<20	<20	<20	<20	<20	<20	20-25	20-25	25-30	25-30
		Throw	3.5 4 4.5	4.5 5 5.5	5.5 6 6.5	6 7 7.5	7 8 9	8 9 10	10 11 12	11 12 13	12 13 14	13 14 15
8x8	Eff.Area .20 ft <sup>2</sup>	CFM	60	75	90	104	119	135	150	165	195	
		NC	<20	<20	<20	<20	<20	20-25	20-25	25-30	25-30	
		Throw	4.5 5 5.5	5.5 6 6.5	6.5 7 7.5	7 8 9	8.5 10 11.5	9.5 11 12.5	9.5 12 14.5	10.5 13 15.5	13 16 19	
10x10	Eff.Area .29 ft <sup>2</sup>	CFM	93	114	135	153	177	205	233	262	318	
		NC	<20	<20	<20	<20	<20	20-25	20-25	25-30	25-30	
		Throw	5.5 6 6.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 13.5	12 14 16	12 15 18	13.5 17 20	16 20 24	
12x12	Eff.Area .42 ft <sup>2</sup>	CFM	136	172	208	258	300	338	376	423	517	
		NC	<20	<20	<20	<20	20-25	20-25	25-30	30	35	
		Throw	6.5 7 7.5	7 8 9	9 10 11	10 12 14	13 15 17	14.5 17 20	15 19 23	18 22 26	20 25 30	
14x14	Eff.Area .59 ft <sup>2</sup>	CFM	198	253	308	356	414	457	500	555	665	
		NC	<20	<20	<20	<20	20-25	20-25	25-30	30	35	
		Throw	9 10 11	10 11 12	11.5 13 14.5	13 15 17	15.5 18 21	18 21 24	19 24 30	22 27 32	26 32 38	
16x16	Eff.Area .79 ft <sup>2</sup>	CFM	255	307	397	460	530	588	650	720	850	
		NC	<20	<20	20-25	25	25-30	30-35	35	35-40	>40	
		Throw	11.5 13 14.5	12.5 14 15.5	14.5 16 18	15.5 18 21	18 21 24	20 24 28	22 27 32	25 31 37	30 38 46	

## SDD-2 Two Way Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200
	Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068	0.1
6x6	Eff.Area .13 ft <sup>2</sup>	CFM	47	56	65	76	89	105	121	131	149
		NC	<20	<20	<20	<20	<20	<20	<20	25	30
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	8 9 10	9 10 11
8x8	Eff.Area .20 ft <sup>2</sup>	CFM	57	74	91	106	120	135	149	165	195
		NC	<20	<20	<20	<20	<20	<20	<20	25	30
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	8 9 10	9 10 11	10 11 12
10x10	Eff.Area .29 ft <sup>2</sup>	CFM	98	116	134	153	177	205	233	262	318
		NC	<20	<20	<20	<20	<20	25	25	30	35
		Throw	3.5 4 4.5	4.5 5 5.5	5.5 6 6.5	6 7 8	7 8 9	8 9 10	9 10 11	10 11 12	11 12 13
12x12	Eff.Area .42 ft <sup>2</sup>	CFM	124	168	212	255	297	337	376	423	517
		NC	<20	<20	<20	<20	<20	25	25	30	35
		Throw	4.5 5 5.5	5.5 6 6.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 11.5 13	10.5 13 15.5	12 15 18	14.5 18 22
14x14	Eff.Area .59 ft <sup>2</sup>	CFM	204	253	302	356	406	458	510	560	660
		NC	<20	<20	<20	<20	<20	25	25	30	35
		Throw	4.5 5 5.5	6.5 7 7.5	8 9 10	9.5 11 12.5	11 13 15	12 14.5 16.5	13 16 19	14.5 18 22	16 20 24
16x16	Eff.Area .79 ft <sup>2</sup>	CFM	255	307	397	460	530	588	650	720	850
		NC	<20	<20	20-25	25	25-30	30-35	35	35-40	>40
		Throw	11.5 13 14.5	12.5 14 15.5	14.5 16 18	15.5 18 21	18 21 24	20 24 28	22 27 32	25 31 37	30 38 46

## SDD-2C Two Corner Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200
	Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068	0.1
6x6	Eff.Area .13 ft <sup>2</sup>	CFM	46	56	66	74	90	105	119	130	150
		NC	<20	<20	<20	<20	<20	<20	<20	25	30
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	8 9 10	9 10 11
8x8	Eff.Area .20 ft <sup>2</sup>	CFM	60	75	90	104	119	135	150	165	195
		NC	<20	<20	<20	<20	<20	<20	<20	25	30
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	8 9 10	9 10 11	10 11 12
10x10	Eff.Area .29 ft <sup>2</sup>	CFM	93	114	135	153	177	205	233	262	318
		NC	<20	<20	<20	<20	<20	25	25	30	35
		Throw	3.5 4 4.5	4.5 5 5.5	5.5 6 6.5	6 7 8	7 8 9	8 9 10	9 10 11	10 11 12	11 12 13
12x12	Eff.Area .42 ft <sup>2</sup>	CFM	136	172	208	258	300	338	376	423	517
		NC	<20	<20	<20	<20	<20	<20	25	30	35
		Throw	4.5 5 5.5	5.5 6 6.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 11.5 13	10.5 13 15.5	12 15 18	14.5 18 22
14x14	Eff.Area .59 ft <sup>2</sup>	CFM	198	253	308	356	414	457	500	555	665
		NC	<20	<20	<20	<20	<20	25	25	30	35
		Throw	4.5 5 5.5	6.5 7 7.5	8 9 10	9.5 11 12.5	11 13 15	12 14.5 16.5	13 16 19	14.5 18 22	16 20 24
16x16	Eff.Area .79 ft <sup>2</sup>	CFM	255	307	397	460	530	588	650	720	850
		NC	<20	<20	20-25	25	25-30	30-35	35	35-40	>40
		Throw	11.5 13 14.5	12.5 14 15.5	14.5 16 18	15.5 18 21	18 21 24	20 24 28	22 27 32	25 31 37	30 38 46

SIZE		Velocity		300	400	500	600	700	800	900	1000	1200																	
		Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068	0.1																	
6x6	Eff.Area .13 ft <sup>2</sup>	CFM	56		46		66		74		91		105		119		130		150										
		NC	<20		<20		<20		<20		<20		<20		25		30												
		Throw A	2.5	3	3.5	3	3.5	4	3.5	4	4.5	4.5	5	6	4.5	5.5	6.5	5	6	7	5.5	7	8.5	6.5	8	9.5	8	10	12
		Throw B	2.5	3	3.5	2.5	3	3.5	3	3.5	4	3	3.5	4	3.5	4	4.5	5	6	4.5	5	6	7	5.5	6	7.5	6	7	8
8x8	Eff.Area .20 ft <sup>2</sup>	CFM	63		76		89		104		119		136		152		166		195										
		NC	<20		<20		<20		<20		<20		<20		25		30												
		Throw A	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6	7	8	6.5	7.5	8.5	6.5	8	9.5	9	9	11	9	11	13
		Throw B	2	2.5	3	3	3.5	4	3	3.5	4	4	4.5	5	5	6	7.5	5	6	7	8	6.5	7	8.5	7	8.5	7	8	10
10x10	Eff.Area .29 ft <sup>2</sup>	CFM	92		114		136		157		173		203		233		262		318										
		NC	<20		<20		<20		<20		<20		<20		25		30												
		Throw A	2.5	3	3.5	4.5	5	5.5	6.5	7	7.5	7	8	9	8.5	10	11.5	9.5	11	12.5	9.5	12	14.5	10.5	13	15.5	13	16	19
		Throw B	2.5	3	3.5	3.5	4	5	4	5	6	5	6	7	6	7.5	8	6.5	8	9	7	9	11	8	10	12	10	12	14
12x12	Eff.Area .42 ft <sup>2</sup>	CFM	136		172		208		258		297		339		380		425		517										
		NC	<20		<20		<20		<20		<20		25		30		35												
		Throw A	5.5	6	6.5	6.5	7	7.5	7.5	8.5	9.5	8.5	10	11.5	9.5	11	12.5	11.5	13.5	15.5	12	15	18	13	17	20	16	20	24
		Throw B	4	5	6	4.5	6	7	5	6.5	8	6	8	9.5	7	9	11	8	10.5	12	9	11	13	10.5	12	14	11	13	15
14x14	Eff.Area .59 ft <sup>2</sup>	CFM	204		253		302		356		406		453		500		555		665										
		NC	<20		<20		<20		<20		<20		25		30		35												
		Throw A	5.5	6	6.5	7	8	9	9	10	11	10	11.5	13	11	13	15	12	14	16	12.5	15.5	19	14.4	18	22	18	22	26
		Throw B	4	5	6	5	6.5	7	6	7	8.5	7	8.5	9.5	8	9.5	11	8	11.5	13	10	12	14	11	13.5	15	13	15	19
16x16	Eff.Area .79 ft <sup>2</sup>	CFM	255		307		397		460		530		588		650		720		850										
		NC	<20		<20		20-25		25		25-30		30-35		35		35-40		>40										
		Throw A	12	13	14.5	12.5	14	15.5	14.5	16	18	15.5	18	21	18	21	24	20	24	28	22	27	32	25	31	37	30	38	46
		Throw B	8	9.5	11	9	10	12	10	12	15	12	14	16	13	15	18	15	18	20	18	20	23	20	22	25	24	27	31

SIZE		Velocity		300	400	500	600	700	800	900	1000	1200															
		Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068	0.1															
6x6	Eff.Area .13 ft <sup>2</sup>	CFM	44		54		64		76		91		106		121		131		149								
		NC	<20		<20		<20		<20		<20		25		25		30										
		Throw	1	1	1	2	2	2	2	3	3.5	3.5	4	4.5	4.5	5	6	4.5	5.5	6.5	5	6	07	5.5	7	8.5	7
8x8	Eff.Area .20 ft <sup>2</sup>	CFM	57		74		91		106		119		134		149		165		195								
		NC	<20		<20		<20		<20		<20		25		25		30										
		Throw	2	2	2	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6	7	8	6.5	8	9.5	8	10	12	9.5
10x10	Eff.Area .29 ft <sup>2</sup>	CFM	94		114		134		153		173		205		237		264		316								
		NC	<20		<20		<20		<20		<20		25		25		30										
		Throw	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6	7	8	7	8	9	7	9	11	9.5	12	14.5	10.5
12x12	Eff.Area .42 ft <sup>2</sup>	CFM	128		168		208		252		287		336		384		427		513								
		NC	<20		<20		<20		<20		<20		25		25		30										
		Throw	3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	7	8	7	8	9	7.5	9	10.5	8	10	12	9	11	13	10.5
14x14	Eff.Area .59 ft <sup>2</sup>	CFM	198		253		308		364		406		453		500		555		665								
		NC	<20		<20		<20		<20		25		25		30		35										
		Throw	5.5	6	6.5	6.5	7	7.5	8	9	10	9.5	11	12.5	11	13	15	12.5	14.5	17	13	16	19	13.5	17	20	12
16x16	Eff.Area .79 ft <sup>2</sup>	CFM	255		307		397		460		530		588		650		720		850								
		NC	<20		<20		20-25		25		25-30		30-35		35		35-40		>40								
		Throw	11.5	13	14.5	12.5	14	15.5	14.4	16	17.5	15.5	18	21	18	21	24	20	24	28	22	27	32	25	31	37	30

SIZE		Velocity		300	400	500	600	700	800	900	1000													
		Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068													
6"	Eff.Area .141 ft <sup>2</sup>	CFM	45		56		67		82		98		107		124		138							
		NC	<20		20		25		25		30		30		30		35							
		Throw	2	2	2	2.5	2.5	3	2.5	3	3.5	3	3.5	4	3.5	4	4.5	4	4.5	5	4	5	6	5
8"	Eff.Area .222 ft <sup>2</sup>	CFM	71		92		118		134		165		184		204		232							
		NC	<20		20		25		25		30		30		30		35							
		Throw	2	2	2	2.5	3	3.5	3	3.5	4	4.5	5	6	4.5	5.5	6.5	5	6	7	5.5	7	8.5	6
10"	Eff.Area .348 ft <sup>2</sup>	CFM	107		143		179		214		245		281		316		352							
		NC	<20		20		25		30		30		30		35		35							
		Throw	2.5	2.5	3	3	3.5	4	4	4.5	5	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7
12"	Eff.Area .508 ft <sup>2</sup>	CFM	153		204		250		306		357		408		459		510							
		NC	<20		20		25		30		30		35		35		35							
		Throw	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6.5	7.5	8.5	7.5	8.5	9.5	7	9	11	9
14"	Eff.Area .628 ft <sup>2</sup>	CFM	194		255		321		383		449		510		576		638							
		NC	<20		20		25		30		30		35		35		40							
		Throw	3	3.5	4	4	4.5	5	5	5.5	6	5.5	6.5	7.5	7	8	9	7.5	9	10.5	8	10	12	9

## 200 Series

See Footnotes A & C, page 44

SIZE		Velocity		300			400			500			600			700			800			900			1000					
		Duct Pt		0.006			0.01			0.015			0.021			0.029			0.038			0.048			0.065					
6x6	Eff.Area .084 ft <sup>2</sup>	CFM		24			35			44			53			60			68			79			88					
		NC		<20			<20			20			20			25			30			30			35					
		Throw 201		4.5	5	5.5	5.5	6	6.5	7	8	9	7.5	9	10.5	8.5	10	11.5	9.5	11	12.5	10.5	13	15.5	11	14	17			
		Throw 202		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6.5	7	8	7	8	9	7.5	9	10.5	8	10	12	9	11	13			
		Throw 203		2	2.5	3	2.5	3	3.5	3.5	4	4.5	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7	9	11			
Throw 204		2	2.5	3	2.5	3	3.5	3.5	4	4.5	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7	9	11					
8x4	Eff.Area .074 ft <sup>2</sup>	CFM		24			30			38			42			54			58			66			76					
		NC		<20			20			20			25			30			30			35			35					
		Throw 201		3.5	4	4.5	5.5	6	6.5	6.5	7	7.5	7	7.5	8	7.5	8	9	7.5	9	10.5	9.5	11	12.5	9.5	12	14.5	11	14	17
		Throw 202		2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	5.5	6	5	6	7	6	7	8	7	8	9	7	9	11	8	10	12
		Throw 203		2	2	2	2.5	3	3.5	3.5	4	4.5	4.5	5	6	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7	9	11
8x6	Eff.Area .112 ft <sup>2</sup>	CFM		33			44			56			67			82			91			100			116					
		NC		<20			20			20			25			30			30			35			40					
		Throw 201		4.5	5	5.5	6.5	7	7.5	7	8	9	8.5	10	11.5	10	12	14	12	14	16	12	15	18	13.5	17	20			
		Throw 202		2.5	3	3.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	6	7	8	7.5	9	10.5	8.5	10	11.5	9	11	13	9.5	12	14.5
		Throw 203		2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	5.5	6	5	6	7	6	7	8	7	8	9	7	9	11	8	10	12
8x8	Eff.Area .151 ft <sup>2</sup>	CFM		42			62			76			90			105			118			133			155					
		NC		<20			20			25			25			30			35			35			40					
		Throw 201		5.5	6	6.5	7	8	9	8	9	10	9.5	11	12.5	12	14	16	13.5	16	18	14.4	18	22	16	20	24			
		Throw 202		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	7	8	9	8.5	10	11.5	9.5	11	12.5	9.5	12	14.5	11.2	14	17
		Throw 203		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	6	7	8	7	8	9	7.5	9	10.5	8	10	12	9	11	13
Throw 204		2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	5.5	6	5	6	7	6	7	8	7	8	9	7	9	11	8	10	12		
10x4	Eff.Area .093 ft <sup>2</sup>	CFM		29			38			47			57			67			76			86			95					
		NC		<20			20			25			25			30			35			35			40					
		Throw 201		4.5	5	5.5	5.5	6	6.5	7	8	9	7.5	9	10.5	9.5	11	12.5	11	13	15	12	15	18	13	16	19			
		Throw 202		2.5	3	3.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	6	7	8	7	8	9	8.5	10	11.5	9	11	13	9.5	12	14.5
		Throw 203		2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	5.5	6	5.5	6	6.5	6	7	8	7	8	9	6.5	8	9.5	7	9	11
10x6	Eff.Area .143 ft <sup>2</sup>	CFM		43			58			72			81			100			114			129			144					
		NC		<20			20			25			25			30			35			40			40					
		Throw 201		4.5	5	5.5	6	7	8	8	9	10	9.5	11	12.5	11	13	15	13	15	17	13.5	17	20	15	19	23			
		Throw 202		3.5	4	4.5	4.5	5	5.5	6	7	8	7	8	9	7.5	9	10.5	8.5	10	11.5	9.5	12	14.5	10.5	13	15.5			
		Throw 203		2.5	3	3.5	3.5	4	4.5	3.5	4	4.5	4.5	5	6	4.5	5	6	6	7	8	6	7	8	7	9	11	2011	7	9
10x10	Eff.Area .241 ft <sup>2</sup>	CFM		72			96			119			143			167			194			215			240					
		NC		<20			20			25			25			30			35			40			40					
		Throw 201		6.5	7	7.5	8	9	10	11	12	13	13	15	17	14.5	17	20	17	20	23	18	23	28	20	25	30			
		Throw 202		4.5	5	5.5	6.6	6	6.5	7	8	9	10	12	14	10	12	14	11	13	15	12	15	18	13.5	17	20			
		Throw 203		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	6	7	8	7	8	9	8.5	10	11.5	9	11	13	10.5	13	15.5
Throw 204		3.5	4	4.5	3.5	4	4.5	4.5	5	5.5	5	5.5	6	5	6	7	6	7	8	7.5	9	10.5	8	10	12	9	11	13		
12x4	Eff.Area .113 ft <sup>2</sup>	CFM		34			43			58			68			81			91			100			114					
		NC		<20			20			25			25			30			35			40			45					
		Throw 201		4.5	5	5.5	6.5	7	7.5	8	9	10	8.5	10	11.5	10	12	14	12	14	16	12	15	18	14.5	18	22			
		Throw 202		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	6.5	7	6	7	8	7.5	9	10.5	8.5	10	11.5	9	11	13	10.5	13	15.5
		Throw 203		2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	4.5	5	6	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7	9	11
12x6	Eff.Area .170 ft <sup>2</sup>	CFM		54			68			87			101			119			140			154			172					
		NC		<20			20			25			30			30			35			40			45					
		Throw 201		5.5	6	6.5	7	8	9	10	11	12	10	12	14	12	14	16	14.5	17	20	14.5	18	22	17	21	25			
		Throw 202		4.5	5	5.5	5.5	6	6.5	7	8	9	7	8	9	8.5	10	11.5	10	12	14	10.5	13	15.5	12	15	18			
		Throw 203		3.5	4	4.5	4.5	5	5.5	6.5	7	7.5	6	7	8	7	8	9	7.5	9	10.5	8	10	12	9.5	12	14.5			
12x12	Eff.Area .349 ft <sup>2</sup>	CFM		106			139			177			212			250			276			316			357					
		NC		<20			20			25			30			35			40			40			45					
		Throw 201		8	9	10	10	11	12	13.5	15	17	15.5	18	21	18	21	24	21	24	28	22	27	32	24	30	36			
		Throw 202		5.5	6	6.5	6.5	7	7.5	9	10	11	10	12	14	12	14	16	13.5	16	18	14.5	18	22	16	20	24			
		Throw 203		4.5	5	5.5	5.5	6	6.5	7	8	9	8.5	10	11.5	9.5	11	12.5	11.5	13	15	11	14	17	13	16	19			
Throw 204		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	7	8	9	7.5	9	10.5	8.5	10	11.5	8	11	13	10.5	13	15.5					
14x4	Eff.Area .133 ft <sup>2</sup>	CFM		38			54			67			81			96			106			116			134					
		NC		<20			20			25			30			35			40			40			45					
		Throw 201		4.5	5	5.5	6.5	7	7.5	9	10	11	9.5	11	12.5	11	13	15	13	15	17	13	16	19	15	19	23			
		Throw 202		3.5	4	4.5	4.5	5	5.5	6.5	7	7.5	7	8	9	8.5	10	11.5	9.5	11	12.5	9.5	12	14.5	11	14	17			
		Throw 203		2.5	3	3.5	3.5	4	4.5	5.5	6	6.5	5	6	7	6	7	8	6.5	8	9	6.5	8	9.5	8	9.5	11	10	12	14
14x6	Eff.Area .200 ft <sup>2</sup>	CFM		62			82			101			119			139			163			182			200					
		NC		<20			20			25			30			35			40			45			45					
		Throw 201		6.5	7	7.5	8	9	10	9	10	11	11	13	15	13.5	16	18.5	15	18	21	16	20	24	18	22	26			
		Throw 202		4.5	5	5.5	5.5	6	6.5	6.5	7	7.5	7.5	9	10.5	9.5	11	12.5	10	12	14	11	14	17	13	16	19			
		Throw 203		3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	7	8	7	8	9	7.5	9	10.5	8	10	12	9.5	12	14.5			
14x8	Eff.Area .265 ft <sup>2</sup>	CFM		82			106			135			157			188			216			242			270					
		NC		<20			20			25			30			35			40			45			<4					

## SCB41 (4-Way) Series

See Footnote E, page 44

SIZE	Velocity		400		500		600		700		800		1000							
	Duct Pt		.038		.108		.155		.220		.285		.438							
6x6	Eff. Area .09 ft <sup>2</sup>	Total CFM	77		99		121		143		154		286							
		NC	<20		<20		<20		<20		20		20							
		CFM x/y	13	26	19	29	24	36	28	42	30	46	39	59						
		Throw x	2.5	3	3.5	2.5	3	3.5	3	4	5	3	4	5	5	6	7			
		Throw y	3	4	5	5	6	7	5	6	7	6.5	8	9.5	6.5	8	9.5	8.5	11	13
8x8	Eff. Area .17 ft <sup>2</sup>	Total CFM	143		176		209		242		286		352							
		NC	<20		<20		<20		<20		20		25							
		CFM x/y	28	42	35	52	41	62	48	72	57	85	70	105						
		Throw x	3	4	5	3	4	5	5	6	7	5	6	7	6.5	8	9.5	8.5	11	13
		Throw y	3	4	5	3	4	5	5	6	7	5	6	7	6.5	8	9.5	8.5	11	13
10x10	Eff. Area .26 ft <sup>2</sup>	Total CFM	247		312		377		442		494		624							
		NC	<20		<20		20		20-25		25		25-30							
		CFM x/y	49	74	62	93	75	113	88	132	98	148	124	187						
		Throw x	3	4	5	5	6	7	6.5	8	9.5	6.5	8	9.5	9.5	12	14.5			
		Throw y	3	4	5	5	6	7	6.5	8	9.5	8.5	11	13	10.5	13	15.5	12	15	18
12x12	Eff. Area .38 ft <sup>2</sup>	Total CFM	377		442		546		637		728		910							
		NC	<20		<20		20		20-25		25		25-30							
		CFM x/y	75	113	88	132	109	163	127	191	145	218	182	273						
		Throw x	3	4	5	5	6	7	6.5	8	9.5	6.5	8	9.5	8.5	11	13	12	15	18
		Throw y	6.5	8	9.5	6.5	8	9.5	10.5	13	15.5	10.5	13	15.5	13.5	17	20.5	20.5	26	31
14x14	Eff. Area .52 ft <sup>2</sup>	Total CFM	494		624		754		871		1001		1248							
		NC	<20		<20		20		25		25-30		30							
		CFM x/y	98	148	124	187	150	226	174	261	200	300	249	374						
		Throw x	3	4	5	5	6	7	6.5	8	9.5	6.5	8	9.5	8.5	11	13	12	15	18
		Throw y	6.5	8	9.5	9.5	12	14.5	12	15	18	13.5	17	20.5	15	19	23	20.5	26	31

## SCB31 (3-Way) Series

See Footnote E, page 44

SIZE	Velocity		400		500		600		700		800		1000							
	Duct Pt		.038		.108		.155		.220		.285		.438							
6x6	Eff. Area .09 ft <sup>2</sup>	Total CFM	77		99		121		143		154		286							
		NC	<20		<20		<20		<20		20		20							
		CFM x/y	19	28	24	37	33	44	24	52	39	57	52	72						
		Throw x	4	4	4	4	4	4	3	4	5	5	6	7	6	8	10	6	8	10
		Throw y	4	4	4	5	6	7	5	6	7	5	6	7	6	8	10	9	11	13
8x8	Eff. Area .17 ft <sup>2</sup>	Total CFM	143		176		209		242		286		352							
		NC	<20		<20		<20		<20		20		25							
		CFM x/y	24	52	52	61	63	72	66	88	74	105	105	123						
		Throw x	5	6	7	5	6	7	5	6	7	5	6	7	6	8	10	9	11	13
		Throw y	4	4	4	4	4	4	5	6	7	5	6	7	6	8	10	9	11	13
10x10	Eff. Area .26 ft <sup>2</sup>	Total CFM	247		312		377		442		494		624							
		NC	<20		<20		20		20-25		25		25-30							
		CFM x/y	75	85	93	109	111	132	130	156	150	171	187	218						
		Throw x	4	4	4	5	6	7	5	6	7	7	8	9	9	11	13	10	13	16
		Throw y	5	6	7	7	8	9	9	11	13	11	13	15	10	13	16	12	15	18
12x12	Eff. Area .38 ft <sup>2</sup>	Total CFM	377		422		546		637		754		910							
		NC	<20		<20		20		20-25		25		25-30							
		CFM x/y	111	132	130	156	166	189	195	221	223	265	286	312						
		Throw x	4	4	4	5	6	7	5	6	7	7	8	9	9	11	13	10	13	16
		Throw y	7	8	9	7	8	9	11	13	15	13	15	17	14	17	20	15	19	23
14x14	Eff. Area .52 ft <sup>2</sup>	Total CFM	494		624		754		871		1001		1248							
		NC	<20		<20		20		25		25-30		30							
		CFM x/y	150	171	187	218	223	265	257	306	299	351	364	442						
		Throw x	5	6	7	5	6	7	7	8	9	7	8	9	9	11	13	12	15	18
		Throw y	7	8	9	10	13	16	13	15	17	15	17	20	15	19	23	21	26	31

400 Series		See Footnotes A & C, page 44																								
SIZE	Free Area	Velocity	500			700			800			900			1000			1200			1500			2000		
Inches	Sq. Inch	Duct Pt	.017			.034			.044			.055			.068			.100			.135			.220		
6x6	74	CFM	70			100			120			130			155			184			230			310		
		Throw	3.5	4	4.5	4	4.5	5	4.5	5	6	5	5.5	6.5	5.5	6.5	7.5	6	7.5	9	7.5	9.5	11.5	10	12.5	15
8x8	111	CFM	85			130			145			168			184			226			285			385		
		Throw	3.5	4	4.5	4.5	5	5.5	4.5	5.5	6	5	6	7	6	7	8.5	6.5	8	9.5	8	10	12	11	13.5	16
10x10	148	CFM	135			210			250			275			305			342			452			610		
		Throw	5	5.5	6	6	6.5	7.5	6	7.5	8.5	7	8	9.5	8	9.5	11	8.5	10.5	11.5	10.5	13.5	16	14	17	21
12x12	185	CFM	210			335			385			425			460			590			715			940		
		Throw	5.5	6	7	8	9	10	9.5	11	12.5	10	12	13.5	11.5	13.5	15.5	12	14.5	16	14	18	21	19	24	29
14x14	222	CFM	340			480			555			615			695			840			1040			1375		
		Throw	7	7.5	8.5	9.5	10.5	11.5	10	12	13.5	11.5	13.5	15.5	13	15	17	14	18	21	19	24	29	22	27	32
16x16	229	CFM	465			650			758			840			990			1200			1420			1910		
		Throw	8	8.5	9.5	11	12	13	11.5	13.5	15.5	13	15	17	15	18	20	17	22	26	21	26	31	26	33	40
18x18	296	CFM	625			875			1010			1125			1275			1525			1850			2510		
		Throw	10	11	12	13.5	15	17	14	16	19	16	19	22	18	21	25	21	26	31	30	38	45	34	43	51
20x20	333	CFM	810			1125			1305			1409			1650			2085			2475			3250		
		Throw	10.5	11.5	13	14.5	16	18	15.5	18	21	18	21	25	20	23	27	23	28	34	27	34	41	36	45	54
24x24	407	CFM	1200			1690			1905			2265			3000			3585			4710			5325		
		Throw	12.5	14	15.5	17	19	21	18	21	25	21	25	28	29	34	39	33	41	50	45	56	67	46	58	69
26x26	418	CFM	1440			2024			2293			2671			3330			3985			5153			6154		
		Throw	14	16	18	19	21	23	20	23	26	22	26	30	32	37	42	36	44	52	50	60	70	54	65	76
28x28	440	CFM	1920			2691			3069			3483			3990			4785			6038			7812		
		Throw	16	18	20	22	24	25	24	26	29	27	31	35	36	40	46	39	47	56	55	65	75	64	76	88
30x30	451	CFM	2160			3024			3456			3888			4320			5184			6480			8640		
		Throw	18	20	22	25	27	30	28	30	32	31	35	39	38	43	49	46	55	64	60	70	80	72	84	96
32x32	470	CFM	2246			3145			3594			4044			4493			5391			6739			8986		
		Throw	20	22	24	28	30	33	30	33	36	35	40	44	40	45	51	49	58	67	66	76	87	80	93	106

425 Series		See Footnotes A & C, page 44																											
SIZE	Velocity	300			400			500			600			700			800			900			1000			1200			
	Duct Pt	.007			.011			.017			.024			.034			.044			.055			.068			.100			
14x14	Eff. Area .800 ft <sup>2</sup>	CFM	257			353			431			515			604			701			792			861			920		
		NC	<20			25			30			30			30			30			35			35			40		
		Throw	6.5	7	7.5	8.5	9.5	10.5	11	12	13	12.5	14.5	17	14.5	17	20	16	19	22	17	21	25	19	24	30	21	26	31
16x16	Eff. Area 1.0 ft <sup>2</sup>	CFM	326			439			541			663			756			866			971			1102			1220		
		NC	<20			22			30			30			30			30			35			35			40		
		Throw	7	8	9	9.5	10.5	11.5	11.5	13	14.5	13.5	16	18	16	19	22	18	21	24	18	23	28	22	27	32	24	30	36
18x18	Eff. Area 1.3 ft <sup>2</sup>	CFM	428			557			712			840			977			1118			1284			1423			1525		
		NC	20			25			30			30			35			35			35			35			40		
		Throw	8	9	10	10.5	11.5	12.5	13.5	15	17	15.5	18	21	18	21	24	20	24	28	22	27	32	24	30	36	26	33	40
20x20	Eff. Area 1.55 ft <sup>2</sup>	CFM	504			685			856			1027			1176			1344			1512			1712			2000		
		NC	20			25			30			30			35			35			35			40			40		
		Throw	9	10	11	12	13	14.5	15.5	17	19	16	19	22	20	24	27	23	27	31	24	30	35	26	33	40	29	36	43
24x24	Eff. Area 2.2 ft <sup>2</sup>	CFM	725			984			1208			1477			1723			1932			2174			2415			2800		
		NC	20			25			30			30			35			35			35			40			40		
		Throw	10.5	11.5	12.5	13.5	15	17	18	20	22	20	23.5	27	24	28	32	27	32	37	28	35	42	30	38	46	32	40	48

450 Series		See Footnotes A & C, page 44																											
SIZE	Velocity	400			500			600			700			800			900			1000			1200			1400			
	Duct Pt.	.011			.017			.024			.034			.044			.055			.068			.100			.122			
16x16	Eff. Area .585 ft <sup>2</sup>	CFM	225			279			338			396			450			510			567			675			783		
		NC	25			30			30			30			35			35			40			40			45		
		Throw	8	9	10	10	11	12	11	13	15	13	15	17	15.5	18	21	16	20	24	18	22	27	22	27	32	25	31	37
18x18	Eff. Area .711 ft <sup>2</sup>	CFM	288			365			446			513			576			650			720			864			1098		
		NC	25			30			30			35			35			40			40			45			<45		
		Throw	9	10	11	11.5	13	14.5	13	15	17	15.5	18	21	17	20	23	18	22	26	20	25	30	24	30	36	28	35	42
20x20	Eff. Area .860 ft <sup>2</sup>	CFM	342			441			522			612			702			785			873			1053			1229		
		NC	25			30			35			35			40			40			45			<45			<45		
		Throw	11	12	13	13.5	15	17	15.5	18	21	17	21	24	20	24	28	21	26	32	24	30	36	29	36	43	33	41	49
24x24	Eff. Area 1.25 ft <sup>2</sup>	CFM	504			630			756			882			1008			1140			1260			1512			1755		
		NC	25			30			35			40			40			45			45			<45			<45		
		Throw	11.5	13	14.5	14.5	16	18	17	20	23	20	23	27	22	26	30	22	28	34	26	32	38	30	38	46	34	42	50

# ENGINEERING DATA

## 452 Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200
	Duct Pt		.007	.011	.017	.024	.034	.044	.055	.068	.100
14x14	Eff. Area .800 ft <sup>2</sup>	CFM	257	353	431	515	604	701	792	861	920
		NC	<20	25	30	30	30	30	35	35	40
		Throw	6.5 7 7.5	8.5 9.5 10.5	11 12 13	12.5 14.5 17	14.5 17 20	16 19 22	17 21 25	19 24 30	21 26 31
16x16	Eff. Area 1.0 ft <sup>2</sup>	CFM	326	439	541	663	756	866	971	1102	1220
		NC	<20	22	30	30	30	35	35	40	
		Throw	7 8 9	9.5 10.5 11.5	11.5 13 14.5	13.5 16 18	16 19 22	18 21 24	18 23 28	22 27 32	24 30 36
18x18	Eff. Area 1.3 ft <sup>2</sup>	CFM	428	557	712	840	977	1118	1284	1423	1525
		NC	20	25	30	30	35	35	35	40	
		Throw	8 9 10	10.5 11.5 12.5	13.5 15 17	15.5 18 21	18 21 24	20 24 28	22 27 32	24 30 36	26 33 40
20x20	Eff. Area 1.55 ft <sup>2</sup>	CFM	504	685	856	1027	1176	1344	1512	1712	2000
		NC	20	25	30	30	35	35	35	40	
		Throw	9 10 11	12 13 14.5	15.5 17 19	16 19 22	20 24 27	23 27 31	24 30 35	26 33 40	29 36 43
24x24	Eff. Area 2.2 ft <sup>2</sup>	CFM	725	984	1208	1477	1723	1932	2174	2415	2800
		NC	20	25	30	30	35	35	35	40	
		Throw	10.5 11.5 12.5	13.5 15 17	18 20 22	20 23.5 27	24 28 32	27 32 37	28 35 42	30 38 46	32 40 48

## L-932-O Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	1000	1200	1400
	Duct Pt		0.004	0.008	0.013	0.018	0.025	0.033	0.051	0.074	0.1
10x10	Eff. Area 0.560 ft <sup>2</sup>	CFM	170	225	280	335	390	450	560	670	785
		NC	<20	<20	<20	20	25	30	35	40	45-50
		Throw(ft.)	8 9 10	10 11 12	12.5 14 15.5	14.5 17 20	17 20 23	20 23 27	22 28 34	27 34 41	31 39 47
12x12	Eff. Area 0.806 ft <sup>2</sup>	CFM	240	320	405	485	565	645	805	965	1130
		NC	<20	<20	<20	20	25	30	35-40	40-50	50>
		Throw(ft.)	9 10 11	11.5 13 14.5	15.5 17 19	17 20 23	20 23 27	22 26 30	26 33 40	32 40 48	37 46 55
14x14	Eff. Area 1.12 ft <sup>2</sup>	CFM	335	450	560	670	785	895	1120	1345	1570
		NC	<20	<20	20	25	30	30-35	35-40	40-45	50>
		Throw(ft.)	11.5 13 14.5	16 18 20	20 22 24	22 26 30	26 31 36	30 35 40	35 44 53	42 52 62	49 61 73
16x16	Eff. Area 1.41 ft <sup>2</sup>	CFM	510	680	850	1020	1195	1360	1700	2040	2380
		NC	<20	<20	20	25	30	30-35	35-40	40-45	50>
		Throw(ft.)	13 14 16.5	18 20 22	22 24 27	25 30 34	29 34 40	33 39 46	39 50 60	48 58 70	56 69 82
18x18	Eff. Area 1.89 ft <sup>2</sup>	CFM	565	755	945	1135	1325	1510	1890	2270	2645
		NC	<20	<20	20	25	30	30-35	35-40	40-45	50>
		Throw(ft.)	14.5 16 18	20 22 24	24 27 30	28 33 38	32 38 44	37 44 51	44 55 66	53 66 79	62 77 92
20x20	Eff. Area 2.33 ft <sup>2</sup>	CFM	620	830	1040	1250	1460	1660	2080	2500	2910
		NC	<20	<20	20	25	30	35-40	35-40	50>	
		Throw(ft.)	16 18 20	22 24 26	26 30 33	31 36 42	35 42 48	4 48 55	49 60 71	58 72 88	68 85 100

## 845 Series

See Footnotes A & C, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200
	Duct Pt		.007	.011	.017	.024	.034	.044	.055	.068	.100
8x4	Eff. Area .083 ft <sup>2</sup>	CFM	23	30	38	45	53	60	68	75	90
		NC	<20	20	25	25	30	30	35	35	40
		Throw C	3 3.5 4	4.5 5 5.5	6 6.5 7	7 8 9	7.5 9 10.5	9 10.5 12	9.5 12 14.5	10.5 13 15.5	13 16 19
10x4	Eff. Area .104 ft <sup>2</sup>	CFM	28	38	48	57	66	75	85	94	113
		NC	<20	20	25	25	30	30	35	35	40
		Throw C	3 3.5 4	4.5 5 5.5	6 6.5 7	7 8 9	8 9.5 11	9.5 11 12.5	9.5 12 14.5	10.5 13 15.5	13 16 19
12x4	Eff. Area .133 ft <sup>2</sup>	CFM	36	48	60	72	85	97	109	121	145
		NC	<20	20	25	25	30	35	35	40	
		Throw C	4 4.5 5	5.5 6 6.5	7 7.5 8.5	7.5 9 10.5	9 10.5 12	10 12 14	11 13.5 16	12 15 18	14.5 18 22
14x4	Eff. Area .157 ft <sup>2</sup>	CFM	42	57	72	86	100	114	129	143	171
		NC	<20	20	25	25	30	35	35	40	
		Throw C	4 4.5 5	5.5 6 6.5	7 7.5 8.5	7.5 9 10.5	9 10.5 12	10 12 14	11 13.5 16	12 15 18	14.5 18 22
10x6	Eff. Area .173 ft <sup>2</sup>	CFM	51	69	87	104	121	138	156	173	207
		NC	<20	20	25	25	30	35	35	40	
		Throw C	4.5 5 5.5	6.5 7 7.5	8 9 10	9 10.5 12	10 12 14	12 14 16	13 16 19	14 18 21	17 21 25
12x6	Eff. Area .202 ft <sup>2</sup>	CFM	61	81	101	121	142	162	182	202	243
		NC	<20	20	25	30	35	35	35	40	
		Throw C	5 5.5 6	6.5 7 7.5	7.5 8.5 9.5	8.5 10 11.5	10 12 14	12 14 16	12.5 15.5 19	13.5 17 20	16 20 24
14x6	Eff. Area .255 ft <sup>2</sup>	CFM	71	101	127	152	177	202	228	253	304
		NC	<20	20	25	30	35	35	35	40	
		Throw C	5.5 6 6.5	7 8 9	9 10 11	10 12 14	12 14 16	14 16 18	14.5 18 22	16 20 24	19 24 29
12x8	Eff. Area .305 ft <sup>2</sup>	CFM	90	120	150	179	209	239	269	299	359
		NC	<20	20	25	30	35	35	35	40	
		Throw C	5.5 6 6.5	7 8 9	9 10 11	10 12 14	12 14 16	14 17 19	15 19 22	16 21 25	20 25 30
14x8	Eff. Area .369 ft <sup>2</sup>	CFM	110	147	184	221	258	294	331	368	442
		NC	<20	20	25	30	35	40	40	40	
		Throw C	6.5 7 7.5	8.5 9.5 10.5	11.5 13 14.5	12 14 16	14 17 19	16 19 22	17 22 26	19 24 29	22 28 34

# ENGINEERING DATA

850 Series		See Footnotes A & C, page 44																			
SIZE	Velocity Duct Pt	300	400	500	600	700	800	900	1000	1200											
		0.006	0.01	0.016	0.023	0.031	0.04	0.051	0.063	0.09											
6x4	Eff. Area .08 ft <sup>2</sup>	CFM	24	32	40	48	56	64	72	80	96										
		NC	<20	20	25	25	30	30	35	35	40										
		Spread	3.5	5	8	6	8	10	11	12	15										
		Throw	2 2 2	2 2.5 3	2.5 3 3.5	3 3.5 4	3.5 4 4.5	4 4.5 5	4.5 5 6	5 6 7	5 6.5 8	6 7 9	6 7 9	6 7.5 9	6 7.5 9						
8x4	Eff. Area .112 ft <sup>2</sup>	CFM	34	45	56	67	78	90	101	112	134										
		NC	<20	20	25	25	30	30	35	35	40										
		Spread	4	6	7	9	10	12	13	15	18										
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4 4.5 5	4.5 5 6	5 6 7	5 6 7	5 6.5 8	6 7.5 9	6 7.5 9	7 9 11	7 9 11							
10x4	Eff. Area .144 ft <sup>2</sup>	CFM	43	58	72	86	101	115	130	144	173										
		NC	<20	20	25	25	30	30	35	35	40										
		Spread	5	7	8.5	10	12	14	15	17	20										
		Throw	2 2.5 3	2.5 3 3.5	3.5 4 4.5	4.5 5 6	5 6 7	6 7 8	6 7 8	6 7.5 9	6.5 8 9.5	6.5 8 9.5	8 10 12	8 10 12							
12x4	Eff. Area .176 ft <sup>2</sup>	CFM	53	70	88	106	123	141	158	176	211										
		NC	<20	20	25	25	30	35	35	40	40										
		Spread	5.5	7	9	11	13	15	17	19	22										
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	6 7 8	6 7 8	6.5 8 9.5	7 9 11	7 9 11	9 11 13	9 11 13							
14x4	Eff. Area .208 ft <sup>2</sup>	CFM	62	83	104	125	146	166	187	208	250										
		NC	<20	20	25	25	30	35	35	40	40										
		Spread	6	8	10	12	14	16	18	20	24										
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	7 8 9	7 9 11	8 10 12	8 10 12	9.5 12 14.5	9.5 12 14.5							
8x6	Eff. Area .182 ft <sup>2</sup>	CFM	54	72	91	109	127	145	163	182	218										
		NC	<20	20	25	25	30	35	35	40	40										
		Spread	5.5	7	9	11	13	15	17	19	22										
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	6 7 8	6 7 8	6.5 8 9.5	7 9 11	7 9 11	9 11 13	9 11 13							
10x6	Eff. Area .234 ft <sup>2</sup>	CFM	70	92	117	140	163	187	210	234	280										
		NC	<20	20	25	25	30	35	35	40	40										
		Spread	6	9	11	13	15	17	19	22	26										
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	6 7 8	7 8 9	7 8 9	7 9 11	8 10 12	9 11 13	10.5 13 15.5	10.5 13 15.5								
12x6	Eff. Area .286 ft <sup>2</sup>	CFM	85	114	143	171	200	228	257	286	343										
		NC	<20	20	25	30	35	35	40	40	40										
		Spread	5	7	9	14	16	19	21	23	26										
		Throw	2 2 2	3.5 4 4.5	4.5 5 5.5	6 7 8	7 8 9	7 8 9	7.5 9 10.5	8.5 10.5 12.5	9.5 12 14.5	11 14 17	11 14 17								
14x6	Eff. Area .338 ft <sup>2</sup>	CFM	101	135	169	202	236	270	304	338	405										
		NC	<20	20	25	30	35	35	40	40	40										
		Spread	7	10	12	14.5	17	19	22	24	29										
		Throw	3 3.5 4	4.5 5 5.5	5.5 6 6.5	6 7 8	7 8 9	8.5 10 11.5	10 11.5 13	10.5 13 15.5	11 14 17	11.5 14.5 17	11.5 14.5 17								
16x6	Eff. Area .390 ft <sup>2</sup>	CFM	117	156	195	235	273	312	351	390	250										
		NC	<20	20	25	30	35	35	40	40	45										
		Spread	9	12	16	18	21	24	26	30	36										
		Throw	4 4.5 5	5.5 6 6.5	6.5 7.5 8	7 8 9.5	8.5 10 11.5	10 11.5 13	10.5 13 15.5	11 14 17	14 17 20	14 17 20									
18x6	Eff. Area .442 ft <sup>2</sup>	CFM	132	176	221	265	309	353	397	442	530										
		NC	<20	20	25	25	30	35	40	40	40										
		Spread	10	13	16	20	23	26	30	33	39										
		Throw	4.5 5 5.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 14	11 13 15	12 15 18	13 16 19	16 20 24	16 20 24									
20x6	Eff. Area .494 ft <sup>2</sup>	CFM	148	197	247	269	345	395	444	494	592										
		NC	<20	20	25	30	35	40	40	40	45										
		Spread	10	13	16	20	23	26	30	33	39										
		Throw	4.5 5 5.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 14	11 13 15	12 15 18	13 16 19	16 20 24	16 20 24									
24x6	Eff. Area .611 ft <sup>2</sup>	CFM	183	244	305	366	427	488	549	611	733										
		NC	<20	20	25	30	35-40	40	40-45	40-45	>45										
		Spread	10	13	16	20	23	26	30	33	39										
		Throw	4.5 5 5.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 14	11 13 15	12 15 18	13 16 19	16 20 24	16 20 24									
8x8	Eff. Area .238 ft <sup>2</sup>	CFM	71	95	119	142	166	190	214	238	285										
		NC	<20	20	25	25	30	30	35	40	40										
		Spread	7	9.5	12	14	16	19	21	24	28										
		Throw	3 3.5 4	4.5 5 5.5	5.5 6 6.5	6 7 8	7 8 9	7.5 9 10.5	9 11 13	9.5 12 14.5	11 14 17	11 14 17									
10x8	Eff. Area .306 ft <sup>2</sup>	CFM	91	122	153	183	214	244	275	306	367										
		NC	<20	20	25	30	35	35	40	40	45										
		Spread	8	11	14	17	20	22	24	28	33										
		Throw	3.5 4 4.5	5 5.5 6	6.45 7 7.5	7 8 9	8.5 10 11.5	9.5 11 12.5	9.5 12 14.5	11 14 17	13.5 17 20	13.5 17 20									
12x8	Eff. Area .374 ft <sup>2</sup>	CFM	112	149	187	224	261	299	336	374	448										
		NC	<20	20	25	30	35	35	40	40	45										
		Spread	9	12	16	18	21	24	26	30	36										
		Throw	4 4.5 5	5.5 6 6.5	7 7.5 8.5	7.5 9 10.5	8.5 10 11.5	10 12 14	11 14 18	12 15 18	14.5 18 22	14.5 18 22									
16x8	Eff. Area .510 ft <sup>2</sup>	CFM	153	204	255	306	357	408	459	510	612										
		NC	<20	20	25	30	35	40	40	40	45										
		Spread	10	13	16	20	23	26	30	33	39										
		Throw	4.5 5 5.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 14	11 13 15	12 15 18	13 16 19	16 20 24	16 20 24									
18x8	Eff. Area .578 ft <sup>2</sup>	CFM	173	231	289	346	404	462	520	578	693										
		NC	<20	20	25	30	35-40	40	40-45	40-45	>45										
		Spread	10	13	16	20	23	26	30	33	39										
		Throw	4.5 5 5.5	6.5 7 7.5	7 8 9	8.5 10 11.5	10 12 14	11 13 15	12 15 18	13 16 19	16 20 24	16 20 24									

# ENGINEERING DATA

833 Series		See Footnotes A & C, page 44									
SIZE	Velocity Duct Pt	300	400	500	600	700	800	900	1000	1200	
		0.006	0.01	0.016	0.023	0.031	0.04	0.051	0.063	0.09	
8x4	Eff.Area 0.12 ft <sup>2</sup>	CFM	36	48	60	72	84	96	108	120	144
		NC	<20	20	25	25	30	30	35	35	40
		Spread	4	7	8	10	11	13	14	17	20
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	6 7 8	6 7.5 9	6.5 8 9.5
10x4	Eff.Area 0.156 ft <sup>2</sup>	CFM	47	62	78	94	109	125	140	156	187
		NC	<20	20	25	25	30	35	35	40	40
		Spread	5.5	8	9	11	13	15	17	19	22
		Throw	2 2.5 3	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	6 7 8	6 7 8	6.5 8 9.5	7 9 11
12x4	Eff.Area 0.192 ft <sup>2</sup>	CFM	58	77	96	115	134	154	173	192	230
		NC	<20	20	25	25	30	35	35	40	40
		Spread	6	8	10	12	14	16	18	20	24
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	7 8 9	7 9 11	8 10 12
14x4	Eff.Area 0.228 ft <sup>2</sup>	CFM	68	91	114	137	160	182	205	228	274
		NC	<20	20	25	25	30	35	35	40	40
		Spread	7	9	11	13	15	17	19	22	26
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	6 7 8	7 8 9	7 9 11	8 10 12	9 11 13	10.5 13 15.5
10x6	Eff.Area 0.258 ft <sup>2</sup>	CFM	300	400	500	600	700	800	900	1000	1200
		NC	<20	20	25	25	30	35	35	40	40
		Spread	4	7	8	10	11	13	14	17	20
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4.5 5 6	5 6 7	6 7 8	6 7 8	6 7.5 9	6.5 8 9.5
12x6	Eff.Area 0.318 ft <sup>2</sup>	CFM	300	400	500	600	700	800	900	1000	1200
		NC	<20	20	25	30	35	35	35	40	40
		Spread	5.5	8	9	11	13	15	17	19	22
		Throw	2 2.5 3	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	6 7 8	6 7 8	6.5 8 9.5	7 9 11
14x6	Eff.Area 0.378 ft <sup>2</sup>	CFM	300	400	500	600	700	800	900	1000	1200
		NC	<20	20	25	30	35	35	35	40	40
		Spread	6	8	10	12	14	16	18	20	24
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	5 6 7	6 7 8	7 8 9	7 9 11	8 10 12	9.5 12 14.5
12x8	Eff.Area 0.436 ft <sup>2</sup>	CFM	300	400	500	600	700	800	900	1000	1200
		NC	<20	20	25	30	35	35	40	40	45
		Spread	7	9	11	13	15	17	19	22	26
		Throw	2.5 3 3.5	3.5 4 4.5	4.5 5 5.5	6 7 8	7 8 9	7 9 11	8 10 12	9 11 13	10.5 13 15.5
14x8	Eff.Area 0.518 ft <sup>2</sup>	CFM	300	400	500	600	700	800	900	1000	1200
		NC	<20	20	25	30	35	40	40	40	45
		Spread	4	7	8	10	11	13	14	17	20
		Throw	2 2 2	2.5 3 3.5	3.5 4 4.5	4.5 5 6	5 6 7	6 7 8	6 7 8	6 7.5 9	6.5 8 9.5

945 Series		See Footnotes A & C, page 44									
SIZE	Velocity Duct Pt	300	400	500	600	700	800	900	1000	1200	
		.007	.011	.017	.024	.034	.044	.055	.068	.100	
8x4	Eff.Area .145 ft <sup>2</sup>	CFM	40	53	67	79	93	105	119	131	158
		NC	<20	20	25	25	30	30	35	35	40
		Throw C	4.5 5 6	6.5 7.5 8	9 10 10.5	10.5 12 13.5	11 13 16	13.5 16 18	14 18 22	16 20 23	20 24 28
		Throw S	4 4.5 5	4 4.5 5	4 4.5 5	4 4.5 5	4 4.5 5	5 6 7	5 6 7	6 8 9	7.5 10 12
10x4	Eff.Area .190 ft <sup>2</sup>	CFM	49	67	84	100	116	131	149	165	198
		NC	<20	20	25	25	30	30	35	35	40
		Throw C	4.5 5 6	6.5 7.5 8	9 10 10 5	10.5 12 13.5	12 14 17	14 17 19	14 18 22	16 20 23	20 24 28
		Throw S	3 3 3	4 4.5 5	5 5 6	7 6.5 7.5	9 9 10.5	10 7.5 9	10.5 8	10.5 13	10 12 14
12x4	Eff.Area .230 ft <sup>2</sup>	CFM	63	84	105	126	149	170	191	212	254
		NC	<20	20	25	25	30	35	35	40	40
		Throw C	6 7 7.5	8 9 10	10.5 11 13	11 13.5 16	13.5 16 18	15 18 21	17 20 24	18 23 27	22 27 33
		Throw S	4 4.5 5	4.5 5 5	5 6 7	7 6.5 7.5	9 7.5 9	10.5 9	10.5 12	10 12 14	10.5 13.5 17
14x4	Eff.Area .265 ft <sup>2</sup>	CFM	74	100	126	151	175	20	226	250	299
		NC	<20	20	25	25	30	35	35	40	40
		Throw C	6 7 7.5	8 9 10	10.5 11 13	11 13.5 16	13.5 16 18	15 18 21	17 20 24	18 23 27	22 27 33
		Throw S	4 4.5 5	5 6 7	7 7.5 8	7.5 9 10.5	9 10.5 12	10.5 12	10.5 12	10.5 13.5	12 15 18
10x6	Eff.Area .295 ft <sup>2</sup>	CFM	89	121	152	182	212	242	273	303	362
		NC	<20	20	25	25	30	35	35	40	40
		Throw C	7 7.5 8	10 10.5 11	12 13.5 15	13.5 16 18	15 18 21	18 21 24	20 24 29	21 27 32	26 32 38
		Throw S	4 4.5 5	5 6 7	7 7.5 8	7.5 9 10.5	9 10.5 12	10.5 12	10.5 12	13.5 11	14 17
12x6	Eff.Area .360 ft <sup>2</sup>	CFM	107	142	177	212	249	284	319	354	425
		NC	<20	20	25	30	35	35	35	40	40
		Throw C	7.5 8 9	10 10.5 11	11 13.1 4	13 15 17	15 18 21	18 21 24	19 23 29	20 26 30	24 30 36
		Throw S	4.5 5 6	7 7.5 8	9 10 10.5	1.5 12 13.5	11 13.5 16	13 15 17	13.5 17	17 23	16 20 23
14x6	Eff.Area .420 ft <sup>2</sup>	CFM	124	177	222	266	310	354	399	443	532
		NC	<20	20	25	30	35	35	35	40	40
		Throw C	8 9 10	10.5 12 13.5	13.5 15 17	15 18 21	18 21 24	20 24 27	22 27 33	24 30 36	29 36 44
		Throw S	7 7.5 8	8 9 10	10 1.5 11	10.5 12 13.5	12 14 17	14 17	14 17	19 15	19 23
12x8	Eff.Area .480 ft <sup>2</sup>	CFM	158	210	263	313	366	418	471	523	628
		NC	<20	20	25	30	35	35	40	40	45
		Throw C	8 9 10	10.5 12 13.5	13.5 15 17	15 18 21	18 21 24	21 26 29	23 29 33	24 32 38	30 38 45
		Throw S	7.5 8 9	8 9 10	10.5 12 13.5	12 14 17	14 17 18	16 19	22 17	21 26	18 23 27
14x8	Eff.Area .560 ft <sup>2</sup>	CFM	193	257	322	387	452	515	579	644	774
		NC	<20	20	25	30	35	40	40	40	45
		Throw C	10 10.5 11	13 14 16	17 20 22	18 21 24	21 26 29	24 29 33	26 33 39	29 36 44	33 42 51
		Throw S	7.5 8 9	10 10.5 11	11 13 14	13 15 17	15 18 21	17 20 23	18 23 27	20 26 30	24 30 36

Throw C = Center Throw S = Sides

## 950 and 951 Series

See Footnotes A & C, page 44

SIZE	Velocity		400	500	600	700	800	1000	1200	1400														
	Duct Pt		.011	.017	.024	.034	.044	.055	.068	.100														
8x4	Eff.Area .155 ft <sup>2</sup>	CFM	67		90		106		123		140		168		207		246							
		NC	20		25		30		30		30		35		35		40							
		Throw	5.5	6	6.5	7	8	9	8.5	10	11.5	10	12	14	11	13	15	13.5	17	20	16	20	24	19
10x4	Eff.Area .198 ft <sup>2</sup>	CFM	90		112		134		157		179		224		269		314							
		NC	20		25		30		30		30		35		35		40							
		Throw	7	8	9	9	10	11	10	12	14	11	13	15	13.5	16	18	15	19	23	19	24	29	22
12x4	Eff.Area .241 ft <sup>2</sup>	CFM	106		134		162		190		213		269		325		375							
		NC	20		25		30		30		30		35		35		40							
		Throw	7	8	9	9	10	11	10	12	14	13	15	17	14.5	17	20	14.5	18	22	18	22	26	23
14x4	Eff.Area .280 ft <sup>2</sup>	CFM	129		157		190		218		252		314		381		443							
		NC	20		25		30		30		30		35		35		40							
		Throw	8	9	10	10	11	12	11	13	15	13.5	16	18	15.5	18	21	15	19	23	19	24	29	25
10x6	Eff.Area .313 ft <sup>2</sup>	CFM	140		174		213		246		280		353		420		493							
		NC	20		25		30		30		30		35		35		40							
		Throw	8	9	10	11	12	13	13	15	17	14.5	17	20	17	20	23	20	25	30	24	30	36	28
12x6	Eff.Area .380 ft <sup>2</sup>	CFM	168		213		213		297		342		426		510		594							
		NC	20		25		30		30		30		35		35		40							
		Throw	9	10	11	11.5	13	14.5	13.5	16	18	15.5	18	21	17	21	24	22	27	32	26	32	38	30
14x6	Eff.Area .446 ft <sup>2</sup>	CFM	202		252		302		347		398		498		599		700							
		NC	20		25		30		30		30		35		35		40							
		Throw	10	11	12	13.5	15	17	15.5	18	21	17	20	23	20	24	28	24	30	36	28	35	42	34
16x6	Eff.Area .510 ft <sup>2</sup>	CFM	230		286		342		403		459		571		689		801							
		NC	20		25		30		35		35		35		35		40							
		Throw	10	11	12	13.5	15	17	15.5	18	21	17	21	24	20	24	28	24	30	36	30	37	44	34
20x6	Eff.Area .645 ft <sup>2</sup>	CFM	291		364		431		504		577		722		868		1014							
		NC	20		25		30		35		35		35		35		40							
		Throw	11.5	13	14.5	16	18	20	18	21	24	20	24	28	24	28	32	26	32	38	32	40	48	36
14x8	Eff.Area .590 ft <sup>2</sup>	CFM	269		330		398		465		526		661		795		924							
		NC	20		25		30		35		35		40		40		40							
		Throw	11	12	13	14.5	16	18	16	19	22	19	22	25	22	26	30	25	31	37	30	38	46	35
16x8	Eff.Area .660 ft <sup>2</sup>	CFM	297		370		448		515		588		739		885		1036							
		NC	20		25		30		35		35		40		40		45							
		Throw	13.5	15	17	17	19	21	19	22	25	22	26	30	25	30	35	30	37	45	34	43	52	38
20x8	Eff.Area .880 ft <sup>2</sup>	CFM	398		493		594		689		790		986		1187		1383							
		NC	20		25		30		35		35		40		40		45							
		Throw	15.5	17	19	18	20	22	20	24	28	23	28	32	27	32	37	32	40	48	37	46	55	42
20x12	Eff.Area 1.620 ft <sup>2</sup>	CFM	517		644		770		902		1028		1288		1546		1805							
		NC	20		25		30		35		35-40		40		40-45		45-50							
		Throw	18	20	23	23	25	27	25	30	34	30	36	41	34	40	46	40	50	60	48	60	71	56

1050 and 1075 Series											
SIZE	Effective Area	Free Area	Velocity	300	400	600	800	1000	1200	1400	1600
			Duct Ps	0.007	0.01	0.023	0.04	0.064	0.09	0.123	0.16
10x4	0.14 ft <sup>2</sup>	28	CFM	38	56	84	112	140	168	196	224
10x6	.220 ft <sup>2</sup>	44	CFM	59	88	132	176	220	264	308	352
10x8	.300 ft <sup>2</sup>	59	CFM	80	120	180	240	300	360	420	480
10x10	0.38 ft <sup>2</sup>	75	CFM	102	152	228	304	380	456	532	608
10x12	0.46 ft <sup>2</sup>	91	CFM	123	184	276	368	460	552	644	736
10x14	0.54 ft <sup>2</sup>	107	CFM	145	216	324	432	540	648	756	864
10x16	0.62 ft <sup>2</sup>	123	CFM	166	248	372	496	620	744	868	992
10x20	0.78 ft <sup>2</sup>	155	CFM	209	312	468	624	780	936	1092	1248
12x4	0.182 ft <sup>2</sup>	34	CFM	49	72.8	109.2	145.6	182	218.4	254.8	291.2
12x6	0.286 ft <sup>2</sup>	54	CFM	77	114.4	171.6	228.8	286	343.2	400.4	457.6
12x8	0.39 ft <sup>2</sup>	74	CFM	105	156	234	312	390	468	546	624
12x10	0.494 ft <sup>2</sup>	93	CFM	132	197.6	296.4	395.2	494	592.8	691.6	790.4
12x12	0.598 ft <sup>2</sup>	113	CFM	160	239.2	358.8	478.4	598	717.6	837.2	956.8
12x14	0.702 ft <sup>2</sup>	133	CFM	188	280.8	421.2	561.6	702	842.4	982.8	1123.2
12x16	0.806 ft <sup>2</sup>	152	CFM	216	322.4	483.6	644.8	806	967.2	1128.4	1289.6
12x18	0.91 ft <sup>2</sup>	172	CFM	244	364	546	728	910	1092	1274	1456
12x20	1.014 ft <sup>2</sup>	192	CFM	272	405.6	608.4	811.2	1014	1216.8	1419.6	1622.4
14x4	0.21 ft <sup>2</sup>	40	CFM	56	84	126	168	210	252	294	336
14x6	0.33 ft <sup>2</sup>	63	CFM	88	132	198	264	330	396	462	528
14x8	0.45 ft <sup>2</sup>	86	CFM	121	180	270	360	450	540	630	720
14x10	0.57 ft <sup>2</sup>	106	CFM	153	228	342	456	570	684	798	912
14x12	0.69 ft <sup>2</sup>	131	CFM	185	276	414	552	690	828	966	1104
14x14	0.81 ft <sup>2</sup>	154	CFM	217	324	486	648	810	972	1134	1296
14x16	0.93 ft <sup>2</sup>	177	CFM	249	372	558	744	930	1116	1302	1488
14x18	1.05 ft <sup>2</sup>	200	CFM	281	420	630	840	1050	1260	1470	1680
14x20	1.17 ft <sup>2</sup>	223	CFM	314	468	702	936	1170	1404	1638	1872
16x6	0.352 ft <sup>2</sup>	69	CFM	94	140.8	211.2	281.6	352	422.4	492.8	563.2
16x8	0.48 ft <sup>2</sup>	94	CFM	129	192	288	384	480	576	672	768
16x10	0.608 ft <sup>2</sup>	119	CFM	163	243.2	364.8	486.4	608	729.6	851.2	972.8
16x12	0.736 ft <sup>2</sup>	144	CFM	197	294.4	441.6	588.8	736	883.2	1030.4	1177.6
16x14	0.864 ft <sup>2</sup>	169	CFM	232	345.6	518.4	691.2	864	1036.8	1209.6	1382.4
16x16	0.992 ft <sup>2</sup>	194	CFM	266	396.8	595.2	793.6	992	1190.4	1388.8	1587.2
16x20	1.248 ft <sup>2</sup>	244	CFM	334	499.2	748.8	998.4	1248	1497.6	1747.2	1996.8
18x6	0.429 ft <sup>2</sup>	81	CFM	115	171.6	257.4	343.2	429	514.8	600.6	686.4
18x8	0.585 ft <sup>2</sup>	111	CFM	157	234	351	468	585	702	819	936
18x10	0.741 ft <sup>2</sup>	140	CFM	199	296.4	444.6	592.8	741	889.2	1037.4	1185.6
18x12	0.897 ft <sup>2</sup>	170	CFM	240	358.8	538.2	717.6	897	1076.4	1255.8	1435.2
18x14	1.053 ft <sup>2</sup>	199	CFM	282	421.2	631.8	842.4	1053	1263.6	1474.2	1684.8
18x16	1.209 ft <sup>2</sup>	229	CFM	324	483.6	725.4	967.2	1209	1450.8	1692.6	1934.4
18x18	1.365 ft <sup>2</sup>	258	CFM	366	546	819	1092	1365	1638	1911	2184
18x20	1.521 ft <sup>2</sup>	288	CFM	408	608.4	912.6	1216.8	1521	1825.2	2129.4	2433.6

## 1050 and 1075 Series

See Footnote B page 44

SIZE	Effective Area	Free Area	Velocity	300	400	600	800	1000	1200	1400	1600
			Duct Ps	0.007	0.01	0.023	0.04	0.064	0.09	0.123	0.16
20x6	0.44 ft <sup>2</sup>	95	CFM	118	176	264	352	440	528	616	704
20x8	0.6 ft <sup>2</sup>	130	CFM	161	240	360	480	600	720	840	960
20x10	0.76 ft <sup>2</sup>	164	CFM	204	304	456	608	760	912	1064	1216
20x12	0.92 ft <sup>2</sup>	199	CFM	247	368	552	736	920	1104	1288	1472
20x14	1.08 ft <sup>2</sup>	233	CFM	289	432	648	864	1080	1296	1512	1728
20x16	1.24 ft <sup>2</sup>	268	CFM	332	496	744	992	1240	1488	1736	1984
20x18	1.4 ft <sup>2</sup>	302	CFM	375	560	840	1120	1400	1680	1960	2240
20x20	1.56 ft <sup>2</sup>	337	CFM	418	624	936	1248	1560	1872	2184	2496
20x24	1.88 ft <sup>2</sup>	406	CFM	504	752	1128	1504	1880	2256	2632	3008
20x30	2.36 ft <sup>2</sup>	510	CFM	632	944	1416	1888	2360	2832	3304	3776
24x6	0.572 ft <sup>2</sup>	120	CFM	153	228.8	343.2	457.6	572	686.4	800.8	915.2
24x8	0.78 ft <sup>2</sup>	164	CFM	209	312	468	624	780	936	1092	1248
24x10	0.988 ft <sup>2</sup>	207	CFM	265	395.2	592.8	790.4	988	1185.6	1383.2	1580.8
24x12	1.196 ft <sup>2</sup>	251	CFM	321	478.4	717.6	956.8	1196	1435.2	1674.4	1913.6
24x14	1.404 ft <sup>2</sup>	294	CFM	376	561.6	842.4	1123.2	1404	1684.8	1965.6	2246.4
24x16	1.612 ft <sup>2</sup>	338	CFM	432	644.8	967.2	1289.6	1612	1934.4	2256.8	2579.2
24x18	1.82 ft <sup>2</sup>	382	CFM	488	728	1092	1456	1820	2184	2548	2912
24x20	2.028 ft <sup>2</sup>	425	CFM	544	811.2	1216.8	1622.4	2028	2433.6	2839.2	3244.8
24x24	2.44 ft <sup>2</sup>	513	CFM	655	977.6	1466.4	1955.2	2444	2932.8	3421.6	3910.4
24x30	3.068 ft <sup>2</sup>	641	CFM	822	1227.2	1840.8	2454.4	3068	3681.6	4295.2	4908.8
30x6	0.715 ft <sup>2</sup>	150	CFM	192	286	429	572	715	858	1001	1144
30x8	0.975 ft <sup>2</sup>	206	CFM	261	390	585	780	975	1170	1365	1560
30x10	1.235 ft <sup>2</sup>	259	CFM	331	494	741	988	1235	1482	1729	1976
30x12	1.495 ft <sup>2</sup>	314	CFM	401	598	897	1196	1495	1794	2093	2392
30x14	1.755 ft <sup>2</sup>	368	CFM	470	702	1053	1404	1755	2106	2457	2808
30x16	2.015 ft <sup>2</sup>	423	CFM	540	806	1209	1612	2015	2418	2821	3224
30x18	2.275 ft <sup>2</sup>	477	CFM	610	910	1365	1820	2275	2730	3185	3640
30x20	2.535 ft <sup>2</sup>	532	CFM	679	1014	1521	2028	2535	3042	3549	4056
30x24	3.055 ft <sup>2</sup>	641	CFM	819	1222	1833	2444	3055	3666	4277	4888
30x30	3.835 ft <sup>2</sup>	804	CFM	1028	1534	2301	3068	3835	4602	5369	6136
36x6	0.858 ft <sup>2</sup>	804	CFM	230	343.2	514.8	686.4	858	1029.6	1201.2	1372.8
36x8	1.17 ft <sup>2</sup>	245	CFM	314	468	702	936	1170	1404	1638	1872
36x10	1.482 ft <sup>2</sup>	311	CFM	397	592.8	889.2	1185.6	1482	1778.4	2074.8	2371.2
36x12	1.794 ft <sup>2</sup>	376	CFM	481	717.6	1076.4	1435.2	1794	2152.8	2511.6	2870.4
36x14	2.106 ft <sup>2</sup>	442	CFM	564	842.4	1263.6	1684.8	2106	2527.2	2948.4	3369.6
36x16	2.418 ft <sup>2</sup>	507	CFM	648	967.2	1450.8	1934.4	2418	2901.6	3385.2	3868.8
36x18	2.73 ft <sup>2</sup>	572	CFM	732	1092	1638	2184	2730	3276	3822	4368
36x20	3.042 ft <sup>2</sup>	638	CFM	815	1216.8	1825.2	2433.6	3042	3650.4	4258.8	4867.2
36x24	3.666 ft <sup>2</sup>	769	CFM	982	1466.4	2199.6	2932.8	3666	4399.2	5132.4	5865.6
36x30	4.602 ft <sup>2</sup>	965	CFM	1233	1840.8	2761.2	3681.6	4602	5522.4	6442.8	7363.2
36x36	5.538 ft <sup>2</sup>	1161	CFM	1484	2215.2	3322.8	4430.4	5538	6645.6	7753.2	8860.8

# ENGINEERING DATA

## FG Series

See Footnote D, page 44

SIZE	Eff. Area	Free Area	Velocity Duct Pt	300	400	600	800	1000	1200	1400	1600
				0.007	0.01	0.023	0.04	0.064	0.09	0.123	0.16
10x10	0.38 ft <sup>2</sup>	.75 ft <sup>2</sup>	CFM	101	152	228	304	380	456	532	608
12x12	0.598 ft <sup>2</sup>	1.13 ft <sup>2</sup>	CFM	160	239.2	358.8	478.4	598	717.6	837.2	956.8
14x14	0.81 ft <sup>2</sup>	1.54 ft <sup>2</sup>	CFM	216	324	486	648	810	972	1134	1296
16x16	0.992 ft <sup>2</sup>	1.94 ft <sup>2</sup>	CFM	265	396.8	595.2	793.6	992	1190.4	1388.8	1587.2
18x18	1.365 ft <sup>2</sup>	2.58 ft <sup>2</sup>	CFM	364	546	819	1092	1365	1638	1911	2184
20x12	0.92 ft <sup>2</sup>	1.99 ft <sup>2</sup>	CFM	245	368	552	736	920	1104	1288	1472
20x14	1.08 ft <sup>2</sup>	2.33 ft <sup>2</sup>	CFM	288	432	648	864	1080	1296	1512	1728
20x16	1.24 ft <sup>2</sup>	2.68 ft <sup>2</sup>	CFM	331	496	744	992	1240	1488	1736	1984
20x20	1.56 ft <sup>2</sup>	3.37 ft <sup>2</sup>	CFM	416	624	936	1248	1560	1872	2184	2496
24x12	1.196 ft <sup>2</sup>	2.51 ft <sup>2</sup>	CFM	319	478.4	717.6	956.8	1196	1435.2	1674.4	1913.6
24x14	1.404 ft <sup>2</sup>	2.94 ft <sup>2</sup>	CFM	375	561.6	842.4	1123.2	1404	1684.8	1965.6	2246.4
24x16	1.612 ft <sup>2</sup>	3.38 ft <sup>2</sup>	CFM	430	644.8	967.2	1289.6	1612	1934.4	2256.8	2579.2
24x20	2.028 ft <sup>2</sup>	4.25 ft <sup>2</sup>	CFM	541	811.2	1216.8	1622.4	2028	2433.6	2839.2	3244.8
25X12	1.29 ft <sup>2</sup>	2.60 ft <sup>2</sup>	CFM	329	492.8	739.1	985.5	1231.9	1478.3	1724.6	1971.0
25X14	1.53 ft <sup>2</sup>	3.06 ft <sup>2</sup>	CFM	386	578.4	867.7	1156.9	1446.1	1735.3	2024.6	2313.8
25X16	1.80 ft <sup>2</sup>	3.51 ft <sup>2</sup>	CFM	443	664.1	996.2	1328.3	1660.4	1992.4	2324.5	2656.6
25X20	2.14 ft <sup>2</sup>	4.40 ft <sup>2</sup>	CFM	557	835.5	1253.3	1671.1	2088.8	2506.6	2924.4	3342.1
30x12	1.495 ft <sup>2</sup>	3.14 ft <sup>2</sup>	CFM	399	598	897	1196	1495	1794	2093	2392
30x14	1.755 ft <sup>2</sup>	3.68 ft <sup>2</sup>	CFM	468	702	1053	1404	1755	2106	2457	2808
30x16	2.015 ft <sup>2</sup>	4.23 ft <sup>2</sup>	CFM	538	806	1209	1612	2015	2418	2821	3224
30x20	2.535 ft <sup>2</sup>	5.32 ft <sup>2</sup>	CFM	676	1014	1521	2028	2535	3042	3549	4056
36x20	3.042 ft <sup>2</sup>	6.38 ft <sup>2</sup>	CFM	812	1216.8	1825.2	2433.6	3042	3650.4	4258.8	4867.2
40X20	3.51 ft <sup>2</sup>	7.10 ft <sup>2</sup>	CFM	874	1310.4	1965.6	2620.8	3276	3931.2	4586.4	5241.6

## 920 FG Series

See Footnote D, page 44

SIZE	Eff. Area	Velocity Duct Pt	300	400	500	600	700	800	900
			0.007	0.01	0.023	0.04	0.064	0.09	0.123
10x10	0.784 ft <sup>2</sup>	CFM	272	309	366	453	515	608	690
12x12	0.986 ft <sup>2</sup>	CFM	331	381	484	577	670	762	865
14x14	1.27 ft <sup>2</sup>	CFM	415	494	618	742	865	989	1112
16x16	1.57 ft <sup>2</sup>	CFM	486	608	762	917	1071	1215	1370
18x18	2.07 ft <sup>2</sup>	CFM	642	803	1009	1205	1411	1607	1803
20x12	1.85 ft <sup>2</sup>	CFM	482	602	757	904	1058	1205	1352
20x14	2.16 ft <sup>2</sup>	CFM	566	707	888	1060	1242	1414	1587
20x16	2.07 ft <sup>2</sup>	CFM	642	803	1009	1205	1411	1607	1803
20x20	3.02 ft <sup>2</sup>	CFM	791	989	1246	1494	1741	1998	2224
24x12	2.22 ft <sup>2</sup>	CFM	570	712	897	1076	1254	1439	1601
24x14	2.59 ft <sup>2</sup>	CFM	665	831	1047	1255	1462	1678	1868
24x16	2.96 ft <sup>2</sup>	CFM	759	949	1196	1434	1671	1918	2135
24x20	3.7 ft <sup>2</sup>	CFM	919	1149	1442	1724	2016	2298	2591
25X12	2.21 ft <sup>2</sup>	CFM	594	742	935	1121	1306	1499	1668
25X14	2.42 ft <sup>2</sup>	CFM	692	865	1090	1307	1523	1748	1946
25X16	2.57 ft <sup>2</sup>	CFM	791	989	1246	1494	1741	1998	2224
25X20	2.99 ft <sup>2</sup>	CFM	958	1197	1502	1796	2100	2394	2699
30x12	2.52 ft <sup>2</sup>	CFM	705	881	1105	1321	1545	1761	1985
30x14	2.75 ft <sup>2</sup>	CFM	822	1027	1289	1541	1803	2055	2316
30x16	3.02 ft <sup>2</sup>	CFM	939	1174	1473	1761	2060	2348	2647
30x20	3.70 ft <sup>2</sup>	CFM	1168	1460	1830	2190	2560	2920	3290
36x20	5.04 ft <sup>2</sup>	CFM	1402	1752	2196	2628	3072	3504	3948
40X20	5.6 ft <sup>2</sup>	CFM	1577	1971	2471	2957	3456	3942	4442

## 855 Series

See Footnotes A & C, page 44

SIZE	Velocity Duct Pt	300	400	500	600	700	800	900	1000	1200
		.007	.011	.017	.024	.034	.044	.055	.068	.100
10x6 Eff.Area .186 ft <sup>2</sup>	CFM	59	79	98	118	138	157	175	197	236
	NC	<20	20	25	25	30	35	35	40	40
	Spread	6	9	11	13	15	17	19	22	26
	Throw	2.5   3   3.5	3.5   4   4.5	4.5   5   5.5	6   7   8	7   8   9	7.5   9   10.5	8   10   12	9   11   13	10.5   13   15.5
12x6 Eff.Area .224 ft <sup>2</sup>	CFM	69	92	115	138	161	184	205	230	276
	NC	<20	20	25	30	35	35	35	40	40
	Spread	5	7	9	14	16	19	21	23	28
	Throw	2   2   2	3.5   4   4.5	4.5   5   5.5	6   7   8	7   8   9	7.5   9   10.5	9   11   13	9.5   12   14.5	11   14   17
14x6 Eff.Area .289 ft <sup>2</sup>	CFM	73	97	121	146	170	194	225	243	291
	NC	<20	20	25	30	35	35	35	40	40
	Spread	7	10	12	14.5	17	19	22	24	29
	Throw	3   3.5   4	4.5   5   5.5	5.5   6   6.5	6   7   8	7   8   9	8.5   10   11.5	9   11   13	9.5   12   14.5	11.5   14.5   17

<b>955 Series</b>		See Footnotes A & C, page 44																								
<b>SIZE</b>	<b>Velocity</b>	<b>400</b>	<b>500</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>																	
	<b>Duct Pt</b>	<b>.011</b>	<b>.017</b>	<b>.024</b>	<b>.034</b>	<b>.044</b>	<b>.055</b>	<b>.068</b>	<b>.100</b>																	
<b>8x6</b>	Eff.Area .241 ft <sup>2</sup>	CFM	106			134			162			190			213			269			325			375		
		NC	20			25			30			30			30			35			35			40		
		Throw	7	8	9	9	10	11	10	12	14	13	15	17	15	17	20	14	18	22	18	22	26	23	29	35
<b>10x6</b>	Eff.Area .313 ft <sup>2</sup>	CFM	140			174			213			246			280			353			420			493		
		NC	20			25			30			30			30			35			35			40		
		Throw	8	9	10	11	12	13	13	15	17	15	17	20	17	20	23	20	25	30	24	30	36	28	35	42
<b>12x6</b>	Eff.Area .380 ft <sup>2</sup>	CFM	168			213			213			297			342			426			510			594		
		NC	20			25			30			30			30			35			35			40		
		Throw	9	10	11	12	13	14	14	16	18	15	18	21	17	21	24	22	27	32	26	32	38	30	38	46
<b>14x6</b>	Eff.Area .446 ft <sup>2</sup>	CFM	202			252			302			347			398			498			599			700		
		NC	20			25			30			30			30			35			35			40		
		Throw	10	11	12	14	15	17	15	18	21	17	20	23	20	24	28	24	30	36	28	35	42	34	43	52
<b>12x8</b>	Eff.Area .510 ft <sup>2</sup>	CFM	230			286			342			403			459			571			689			801		
		NC	20			25			30			35			35			35			35			40		
		Throw	10	11	12	14	15	17	15	18	21	17	21	24	20	24	28	24	30	36	30	37	44	34	43	52
<b>14x8</b>	Eff.Area .590 ft <sup>2</sup>	CFM	269			330			398			465			526			661			795			924		
		NC	20			25			30			35			35			40			40			40		
		Throw	11	12	13	14	16	18	16	19	22	19	22	25	22	26	30	25	31	37	30	38	46	35	44	53
<b>14x10</b>	Eff.Area .770 ft <sup>2</sup>	CFM	347			430			521			602			689			862			1036			1229		
		NC	20			25			30			35			35			40			40			45		
		Throw	15	16	18	18	20	22	20	23	27	23	27	31	26	31	36	31	39	46	36	45	54	40	50	59

<b>875 Series</b>		See Footnote C, page 44														
<b>SIZE</b>	<b>Velocity</b>	<b>400</b>	<b>600</b>	<b>800</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	<b>1600</b>								
	<b>Duct Pt</b>	<b>0.01</b>	<b>0.023</b>	<b>0.04</b>	<b>0.064</b>	<b>0.09</b>	<b>0.123</b>	<b>0.16</b>								
<b>15</b>	Eff. Area 0.164	CFM	65.6		98.4		131.2		164.0		196.8		229.6		262.4	
		Spread	3.5		4		4.5		5.5		6		6.5		7.5	
		Throw	4		4.5		5		6		6.5		7		8	
<b>18</b>	Eff. Area 0.192	CFM	76.8		115.2		153.6		192.0		230.4		268.8		307.2	
		Spread	4.5		5.5		6.5		7.5		8.5		9.5		10.5	
		Throw	5		6		7		8		9		10		11	
<b>24</b>	Eff. Area 0.275	CFM	110.0		165.0		220.0		275.0		330.0		385.0		440.0	
		Spread	5.5		6.75		7.75		8.75		10		11		12	
		Throw	6		7.5		8.5		9.5		11		12		13	

<b>1150 Series</b>		See Footnote B, page 44										
<b>SIZE</b>	<b>Velocity</b>	<b>300</b>	<b>400</b>	<b>500</b>	<b>600</b>	<b>700</b>	<b>800</b>	<b>900</b>	<b>1000</b>	<b>1200</b>	<b>1400</b>	
	<b>Duct Ps</b>	<b>.007</b>	<b>.011</b>	<b>.017</b>	<b>.023</b>	<b>.031</b>	<b>.040</b>	<b>.051</b>	<b>.062</b>	<b>.089</b>	<b>.122</b>	
<b>14x6</b>	Eff.Area .334 ft <sup>2</sup>	CFM	103	134	165	196	230	263	299	336	408	479
<b>14x8</b>	Eff.Area .458 ft <sup>2</sup>	CFM	140	183	226	268	315	360	409	458	556	652
<b>20x6</b>	Eff.Area .466 ft <sup>2</sup>	CFM	142	186	230	273	320	367	416	466	565	711
<b>20x8</b>	Eff.Area .636 ft <sup>2</sup>	CFM	195	254	314	373	437	501	569	636	773	909
<b>24x6</b>	Eff.Area .570 ft <sup>2</sup>											

# ENGINEERING DATA

## 1100 Series

See Footnote B, page 44

SIZE	Velocity		400	500	600	700	800	900	1000
	Duct Ps		.032	.048	.070	.092	.120	.140	.160
14x6	Eff.Area .74 ft <sup>2</sup>	CFM	225	280	340	450	390	505	560
14x8	Eff.Area .78 ft <sup>2</sup>	CFM	292	365	440	510	585	655	730
14x10	Eff.Area .85 ft <sup>2</sup>	CFM	380	475	570	665	760	855	950
20x6	Eff.Area .88 ft <sup>2</sup>	CFM	350	438	525	613	700	788	875
20x8	Eff.Area 1.14 ft <sup>2</sup>	CFM	455	569	735	797	910	1024	1138
20x10	Eff.Area 1.29 ft <sup>2</sup>	CFM	510	640	770	895	1025	1150	1280
20x12	Eff.Area 1.44 ft <sup>2</sup>	CFM	570	713	855	998	1140	1328	1425
24x6	Eff.Area .85 ft <sup>2</sup>	CFM	380	475	570	665	760	855	950
24x8	Eff.Area 1.29 ft <sup>2</sup>	CFM	510	640	770	895	1025	1150	1280
24x10	Eff.Area 1.44 ft <sup>2</sup>	CFM	570	713	855	998	1140	1328	1425
24x12	Eff.Area 1.72 ft <sup>2</sup>	CFM	680	850	1020	1190	1360	1530	1700
30x6	Eff.Area 1.09 ft <sup>2</sup>	CFM	430	538	645	753	860	968	1075
30x8	Eff.Area 1.44 ft <sup>2</sup>	CFM	570	713	855	998	1140	1328	1425
30x10	Eff.Area 2.02 ft <sup>2</sup>	CFM	800	1000	1200	1400	1600	1800	2000
30x12	Eff.Area 2.12 ft <sup>2</sup>	CFM	840	1050	1260	1470	1680	1890	2100

## 1133 Series

See Footnote B, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000	1200	1400
	Duct Ps		.004	.011	.014	.023	.031	.040	.051	.062	.089	.122
14x6	Eff.Area .304 ft <sup>2</sup>	CFM	94	122	150	178	209	239	272	305	371	435
14x8	Eff.Area .416 ft <sup>2</sup>	CFM	127	166	205	244	286	327	372	416	505	593
20x6	Eff.Area .424 ft <sup>2</sup>	CFM	129	169	209	248	291	334	379	424	514	646
20x8	Eff.Area .578 ft <sup>2</sup>	CFM	177	231	285	339	397	455	517	578	703	826
24x6	Eff.Area .518 ft <sup>2</sup>	CFM	158	207	256	304	356	407	463	518	628	738
24x8	Eff.Area .706 ft <sup>2</sup>	CFM	216	282	348	414	485	555	631	706	857	1006
30x6	Eff.Area .646 ft <sup>2</sup>	CFM	198	259	320	380	444	508	578	647	784	922
30x8	Eff.Area .882 ft <sup>2</sup>	CFM	270	353	436	518	606	693	788	882	1071	1258

## 350 Series

See Footnote E, page 44

SIZE	Velocity		300	400	500	600	700	800	900	1000
	Duct Pt		0.007	0.011	0.017	0.024	0.034	0.044	0.055	0.068
2x10	Eff. Area .089 ft <sup>2</sup>	CFM	26.9	35.8	44.8	53.8	62.7	71.7	80.6	89.6
		NC	<20	20	25	25	30	30	35	35
		Spread	2.5	3	4	5	5.5	6	7	8
		Throw	1.5   2   3	2   2.5   3.8	3   3.5   5	3   4   5.5	3.5   5   6.5	4   5.5   7.5	4.5   6   8.5	5   7   9.5
2x12	Eff. Area .102 ft <sup>2</sup>	CFM	30.9	41.2	51.5	61.8	72.1	82.4	92.7	103
		NC	<20	20	25	25	30	30	35	35
		Spread	3	3.5	4.5	5.5	6	7	8	9
		Throw	2   2.5   3.5	2.5   3   4.5	3   4   5.5	3.5   5   7	4   5.5   7.5	4.5   6.5   9	5   7   10.5	5.5   8   11.5
2x14	Eff. Area .117 ft <sup>2</sup>	CFM	35.5	47.4	59.4	71.1	82.9	94.8	106.6	118.5
		NC	<20	20	25	25	30	30	35	35
		Spread	3	4	5	5.5	6.5	7.5	8	9
		Throw	2   2.5   4	2.5   3.5   5	3   4.5   6.5	4   5.5   7.5	4.5   6.5   9	5   7   10	6   8   11.5	6.5   9   12.5
*4x10	Eff. Area .171 ft <sup>2</sup>	CFM	48.9	64.5	81.1	96.7	113.4	129.0	145.6	160.2
		NC	<20	20	25	25	30	35	35	40
		Spread	3	4	5	6	7	8	10	11
		Throw	3.5   4   4.5	5   5.5   6	6.5   7.5   8.5	7   8.5   9.5	8.5   10.5   12	9.5   11.5   13	10   12.5   15	11   14   17.5
*4x12	Eff. Area .199 ft <sup>2</sup>	CFM	60.3	80.1	100.9	119.6	137.3	158.1	177.8	198.6
		NC	<20	20	25	25	30	35	35	40
		Spread	3.5	5	6	7	8	9	10	12
		Throw	4.5   5   5.5	5.5   6.5   7	7   8.5   9.5	7.5   9   10.5	9.5   11   12.5	11   13.5   15.5	11.5   14.5   17.5	12.5   15.5   19
4x14	Eff. Area .226 ft <sup>2</sup>	CFM	65.5	87.4	110.2	132.1	152.9	175.8	197.6	218.4
		NC	<20	20	25	25	30	35	35	40
		Spread	4	5	6	7	8	9	10	12
		Throw	4.5   5.5   6.5	6   7   8	7   8   9	8.5   10.5   12	10   11.5   13.5	11.5   13.5   16	12.5   15   18	13.5   16.5   20
6x8	Eff. Area .174 ft <sup>2</sup>	CFM	52	69	87	104	121	138	155	174
		NC	<20	20	25	30	35	35	40	40
		Spread	4.5	6	7	9	10	12	13	15
		Throw	3.5   4   4.5	5.5   6   6.5	6.5   7   7.5	7.5   9   10.5	8.5   10   11.5	10   12   14	11.5   14.5   17	12   15   18
6x10	Eff. Area .238 ft <sup>2</sup>	CFM	71	95	118	141	166	190	212	237
		NC	<20	20	25	30	35	40	40	40
		Spread	5	7	9	10.5	12	14	15	17
		Throw	4.5   5   5.5	6.5   7   7.5	7.5   8.5   9.5	8.5   10   11.5	10   12   14	11.5   13.5   15.5	12   15   18	13.5   17   20
6x12	Eff. Area .275 ft <sup>2</sup>	CFM	85	113	140	169	197	225	255	282
		NC	<20	20	25	30	35	40	40	45
		Spread	6	8	9	11	13	15	17	19
		Throw	5.5   6   6.5	6.5   7   7.5	8   9   10	9.5   11   12.5	11   13   15	13   15   17	13   17   20	15   19   22
6x14	Eff. Area .358 ft <sup>2</sup>	CFM	105	140	175	210	245	281	315	351
		NC	<20	20	25	30	35	40	40	45
		Spread	6	8	11	13	15	17	18	21
		Throw	5.5   6   6.5	7   8   9	9   10   11	10   12   14	12.5   14.5   17	14.5   17   20	15   19   22	17   21   25

## 375 Series

See Footnote E, page 44

SIZE		Velocity		300		400		500		600		700		800		900		1000						
		Duct Pt		.007		.011		.017		.024		.034		.044		.055		.068						
2 1/4 x10	Eff.Area .091ft <sup>2</sup>	CFM	29		39		48		57		66		75		84		94							
		NC	<20		<20		20		25		25		30		30		35							
		Spread	3		4		5		7		8		9		10		11							
		Throw	2	2	2	2.5	3	3.5	2.5	3	3.5	3.5	4	4.5	4.5	5	6	4.5	5	6	5	6	7	5.5
2 1/4 x12	Eff.Area .111 ft <sup>2</sup>	CFM	36		46		56		66		77		87		97		108							
		NC	<20		5		6		7		9		10		11		12							
		Spread	3		5		6		7		9		10		11		12							
		Throw	2	2	2	2.5	3	3.5	3.5	4	4.5	3.5	4	4.5	4.5	5	6	5	6	7	5.5	7	8.4	5.5
2 1/4 x14	Eff.Area .125 ft <sup>2</sup>	CFM	41		53		65		77		90		103		115		128							
		NC	<20		<20		20		25		25		30		30		35							
		Spread	4		5		7		8		10		11		12		13							
		Throw	2.5	3	3.5	2.5	3	3.5	3.5	4	4.5	4.5	5	6	5	6	7	6	7	8	5.5	7	8.5	6.5
4x10	Eff.Area .180 ft <sup>2</sup>	CFM	52		68		85		100		118		135		150		166							
		NC	<20		<20		20		25		25		30		30		35							
		Spread	4		6		8		9		11		12		14		16							
		Throw	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6	7	8	6	7	8	6.5	8	9.5	7
4x12	Eff.Area .212 ft <sup>2</sup>	CFM	66		86		107		127		143		164		184		210							
		NC	<20		<20		20		25		25		30		30		35							
		Spread	4		7		9		10		12		14		16		17.5							
		Throw	2.5	3	3.5	3.5	4	4.5	4.5	5	5.5	5	6	7	6	7	8	7	8	9	7	9	11	8
4x14	Eff.Area .251 ft <sup>2</sup>	CFM	74		95		119		141		163		190		220		245							
		NC	<20		<20		20		25		25		30		30		35							
		Spread	6		8		10		11		13.5		15.5		17.5		19							
		Throw	3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	7	8	7	8	9	7.5	7	10.5	8	10	12	9
6x10	Eff.Area .265 ft <sup>2</sup>	CFM	82		112		138		163		194		219		250		275							
		NC	<20		<20		20		25		30		30		35		35							
		Spread	6		8		10		12		14		16		18		20							
		Throw	3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	6	7	8	7	8	9	7.5	9	10.5	9	11	13	9.5
6x12	Eff.Area .325 ft <sup>2</sup>	CFM	102		133		168		204		235		270		301		337							
		NC	<20		<20		20		25		30		30		35		35							
		Spread	7		9		11		13		15.5		17.5		20		22							
		Throw	3.5	4	4.5	4.5	5	5.5	6.5	7	7.5	7	8	9	7.5	9	10.5	8.5	10	11.5	9.5	12	14.5	10.5
6x14	Eff.Area .391 ft <sup>2</sup>	CFM	117		158		199		240		281		316		357		398							
		NC	<20		<20		20		25		30		30		35		35							
		Spread	8		10		12		14.5		17.5		19.5		22		24							
		Throw	4.5	5	5.5	5.5	6	6.5	6.5	7	7.5	7.5	9	10.5	8.5	10	11.5	9.5	11	12.5	10.5	13	15.5	11.5

## AFP Series

See Footnote E, page 44

SIZE		Velocity		300		400		500		600		700		800		900		1000							
		Duct Pt		.007		.011		.017		.024		.034		.044		.055		.068							
2 1/4 x10	Eff.Area .084 ft <sup>2</sup>	CFM	28		34		39		45		50		62		67		73								
		NC	<20		25		25		30		30		30		35		35								
		Throw	2	2	2	2.5	3	2.5	3	3.5	4.5	5	6	5	6	7	6	7	8	6.5	8	9.5	7	8.5	10
2 1/4 x12	Eff.Area .102 ft <sup>2</sup>	CFM	34		45		50		62		67		78		84		95								
		NC	<20		25		25		30		30		30		35		35								
		Throw	3.5	4	4.5	4	4.5	5	4.5	5	5.5	5	6	7	5	6	7	7	8	9	6.5	8	9.5	7	9
2 1/4 x14	Eff.Area .121 ft <sup>2</sup>	CFM	39		50		56		67		73		84		95		101								
		NC	<20		25		25		30		30		30		35		35								
		Throw	4	4.5	5	4.5	5	5.5	5	5.5	6	5	6	7	6	7	8	7	8	9	7.5	9.5	11.5	8	10
4x10	Eff.Area .158 ft <sup>2</sup>	CFM	50		62		78		95		112		129		146		162								
		NC	<20		25		25		30		30		30		35		40								
		Throw	3.5	4	4.5	4.5	5	5.5	5.5	6	6.5	7	8	9	7.5	9	10.5	8	9.5	11	9	11	13	9.5	12
4x12	Eff.Area .195 ft <sup>2</sup>	CFM	67		84		101		123		140		168		185		207								
		NC	<20		25		25		30		30		35		35		40								
		Throw	4	4.5	5	5.5	6	6.5	6.5	7	7.5	7	8.5	10	8	9.5	11	9.5	11	12.5	9.5	12	14.5	11.5	14.5
4x14	Eff.Area .232 ft <sup>2</sup>	CFM	73		90		118		140		162		185		207		235								
		NC	<20		25		30		30		30		35		35		40								
		Throw	4	4.5	5	5.5	6	6.5	7	8	9	8	9.5	11	9.5	11	12.5	10	12	14	10.5	13	15.5	11.5	14.5
6x10	Eff.Area .245 ft <sup>2</sup>	CFM	78		106		140		168		196		218		246		274								
		NC	<20		25		30		30		30		35		40		40								
		Throw	5.5	6	6.5	5.5	6	6.5	7	8	9	8	9.5	11	9.5	11	12.5	12	14	11.3	14.5	17	13	16	19
6x12	Eff.Area .300 ft <sup>2</sup>	CFM	101		134		168		202		235		269		302		336								
		NC	<20		25		30		30		35		35		40		40								
		Throw	5.5	6	6.5	6.5	7	7.5	8	9	10	8.5	10	11.5	10	12	14	12.5	14.5	17	13	16	19	14.5	18
6x14	Eff.Area .353 ft <sup>2</sup>	CFM	118		162		202		241		280		319		358		403								
		NC	<20		30		30		30		35		35		40		40								
		Throw	5.5	6	6.5	7	8	9	8.5	9.5	10	5	9.5	11	12.5	11.5	13.5	15.5	13.5	16	18	14.5	18	22	16
8x14	Eff.Area .353 ft <sup>2</sup>	CFM	159		219		273		325		378		431		483		544								
		NC	<20		30		30		30		35		35		40		40								
		Throw	5.5	7	8.5	7.5	9.5	11.5	9	11.5	14	10.5	13	15.5	13	16	19	15	19	23	17	22	26	19	24

## Linear 1/3" Return Air Grilles Series

See Footnote E, page 44

SIZE Width In.	Velocity		300	400	500	600	700	800	900	1000
	Duct Ps		.006	.032	.048	.070	.092	.120	.130	.140
1 1/2	Eff. Area .121 ft <sup>2</sup>	CFM/ft	36	48	61	73	85	97	108	120
2	Eff. Area .153 ft <sup>2</sup>	CFM/ft	46	61	77	92	107	122	138	153
2 1/2	Eff. Area .189 ft <sup>2</sup>	CFM/ft	57	76	95	113	132	151	170	189
3	Eff. Area .225 ft <sup>2</sup>	CFM/ft	68	90	112	135	158	180	203	225
3 1/2	Eff. Area .252 ft <sup>2</sup>	CFM/ft	76	100	126	151	176	202	227	252
4	Eff. Area .279 ft <sup>2</sup>	CFM/ft	84	112	140	166	195	222	250	279
5	Eff. Area .342 ft <sup>2</sup>	CFM/ft	103	137	171	205	240	275	305	342
6	Eff. Area .396 ft <sup>2</sup>	CFM/ft	119	158	198	240	275	315	355	396
8	Eff. Area .486 ft <sup>2</sup>	CFM/ft	146	195	245	290	340	388	440	486
10	Eff. Area .585 ft <sup>2</sup>	CFM/ft	175	235	290	350	410	470	525	585
12	Eff. Area .666 ft <sup>2</sup>	CFM/ft	200	265	330	440	465	530	600	666
14	Eff. Area .741 ft <sup>2</sup>	CFM/ft	220	300	370	445	520	590	665	741

All values in above table are per linear foot.

## Linear 1/3" Supply Diffuser Series

See Footnote E, page 44

SIZE Width	Velocity		300	400	500	600	700	800	900	1000
	Duct Pt		.006	.010	.015	.021	.029	.038	.048	.065
1 1/2	Eff. Area .047 ft <sup>2</sup>	CFM/ft	14	19	24	28	33	38	42	47
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	2 2.5 3 3 3.5 4 4.5 5 5.5 4.5 5.5 6.5 6 7 8 7 8 9 7.5 9.5 11.5 9 11 13							
2	Eff. Area .079 ft <sup>2</sup>	CFM/ft	24	32	40	47	55	63	71	79
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	4.4 5 5 4.5 5 5.5 7 7.5 8.5 7 8 9 8 9.5 11 10 11.5 13 9.5 12 14.5 11 14 17							
2 1/2	Eff. Area .100 ft <sup>2</sup>	CFM/ft	30	40	50	60	70	80	90	100
		NC	<20	<20	20	20	25	25-30	30-35	35
		Throw	4.5 5 5.5 5.5 6 6.5 7 8 9 8 9.5 11 9.5 11 12.5 10 12 14 11 14 17 12.5 15.5 19							
3	Eff. Area .131 ft <sup>2</sup>	CFM/ft	39	52	66	79	92	105	118	131
		NC	<20	<20	20	20	25	25-30	30-35	35
		Throw	5 5.5 6 6.3 7 7.5 8.5 9.5 10.5 9.4 11 12.5 10 12 14 12 14 16 12.5 15.5 19 14.5 18 22							
3 1/2	Eff. Area .158 ft <sup>2</sup>	CFM/ft	47	63	79	95	111	126	142	158
		NC	<20	<20	20	20	25	30	35	35-40
		Throw	5 5.6 6 7 8 9 8.5 9.5 10.5 9.5 11 12.5 10 12 14 12 14 16 12.5 15.5 19 14.5 18 22							
4	Eff. Area .289 ft <sup>2</sup>	CFM/ft	57	76	95	113	132	151	170	189
		NC	<20	<20	20	25	25	30	35	40
		Throw	5.5 6 6.5 7 8 9 10 11 12 11.5 13.5 16 13 15.5 18 15.5 18 21 17 20 23 18 23 27 20 26 31							
5	Eff. Area .247 ft <sup>2</sup>	CFM/ft	74	99	124	148	173	198	222	247
		NC	<20	<20	20	20	25	30	30-35	40
		Throw	7 7.5 8.5 8 9 10 11 12 13 13 15 17 14 17 19 16 19 21 17 21 25 18 23 28							
6	Eff. Area .300 ft <sup>2</sup>	CFM/ft	90	120	150	180	210	240	270	300
		NC	<20	<20	20	25	25-30	30	35-40	40
		Throw	7 8 9 10 11 12 12.5 14 15.5 13 16 18 15.5 18 21 17 20 23 18 23 27 20 26 31							
8	Eff. Area .410 ft <sup>2</sup>	CFM/ft	123	164	205	246	287	328	369	410
		NC	<20	<20	20	25	30	30-35	35-40	40
		Throw	8 9 10 11 12.5 14 14 15.5 17 15 18 21 17 20 23 19 23 26 20 26 31 24 30 36							
10	Eff. Area .525 ft <sup>2</sup>	CFM/ft	158	210	315	368	420	473	525	577
		NC	<20	20	25	25-30	30	30-35	40	40
		Throw	11 12 13 12 13.5 15 16 18 20 17 20 23 19 23 26 22 26 29 24 30 36 29 36 43							
12	Eff. Area .630 ft <sup>2</sup>	CFM/ft	189	252	315	378	441	504	567	630
		NC	<20	20	25	30	35	40	40	45
		Throw	11.5 12.5 14 12.5 14 15.5 18 20 22 20 23 27 23 27 31 27 32 36 29 36 43 31 39 47							
14	Eff. Area .745 ft <sup>2</sup>	CFM/ft	224	298	373	447	522	596	670	745
		NC	<20	20	25	30	35-40	40	45	45
		Throw	12 13.5 15 13.5 15 17 19 22 24 22 26 29 27 32 36 29 35 40 30 38 45 34 42 50							

All values in above table are per linear foot.

## Linear 1/2" Return Air Grilles Series See Footnote E, page 44

SIZE Width In.	Velocity		300	400	500	600	700	800	900	1000
	Duct Ps		.006	.032	.048	.070	.092	.120	.130	.140
1 1/2	Eff. Area .140 ft <sup>2</sup>	CFM/ft	42	56	70	84	98	112	126	140
2	Eff. Area .162 ft <sup>2</sup>	CFM/ft	48	65	80	95	112	130	145	162
2 1/2	Eff. Area .207 ft <sup>2</sup>	CFM/ft	60	85	105	125	145	165	185	207
3	Eff. Area .243 ft <sup>2</sup>	CFM/ft	75	100	120	145	170	195	220	243
3 1/2	Eff. Area .270 ft <sup>2</sup>	CFM/ft	80	105	135	160	190	215	245	270
4	Eff. Area .297 ft <sup>2</sup>	CFM/ft	90	120	150	180	210	240	270	297
5	Eff. Area .360 ft <sup>2</sup>	CFM/ft	110	145	180	215	250	290	325	360
6	Eff. Area .414 ft <sup>2</sup>	CFM/ft	125	165	210	250	290	330	370	414
8	Eff. Area .513 ft <sup>2</sup>	CFM/ft	155	205	255	310	360	410	460	513
10	Eff. Area .612 ft <sup>2</sup>	CFM/ft	185	245	305	370	430	490	550	612
12	Eff. Area .702 ft <sup>2</sup>	CFM/ft	210	280	350	420	490	560	630	702
14	Eff. Area .787 ft <sup>2</sup>	CFM/ft	235	310	395	470	550	625	705	787

All values in above table are per linear foot.

## Linear 1/2" Supply Diffuser Series See Footnote E, page 44

SIZE Width In.	Velocity		300	400	500	600	700	800	900	1000
	Duct Pt		.006	.010	.015	.021	.029	.038	.048	.065
1 1/2	Eff. Area .053 ft <sup>2</sup>	CFM/ft	16	21	27	32	37	42	48	53
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	3   3.5   4   4.5   5   5.5	5   5.5   6   6.5   7   7.5	8   9   10   10.5   11.5   12.5	13   14   15   16   17   18	19   20   21   22   23   24   25	26   27   28   29   30   31   32   33   34   35		
2	Eff. Area .095 ft <sup>2</sup>	CFM/ft	29	38	48	57	67	76	86	95
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	4   4.5   5   5.5   6   6.5	7   7.5   8   8.5   9   9.5   10   10.5   11.5   12.5	13   14   15   16   17   18   19   20   21   22   23   24   25	26   27   28   29   30   31   32   33   34   35				
2 1/2	Eff. Area .116 ft <sup>2</sup>	CFM/ft	35	46	58	70	81	93	104	116
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	5   5.5   6   6.5   7   7.5	8   9   10   10.5   11.5   12.5	13   14   15   16   17   18   19   20   21   22   23   24   25	26   27   28   29   30   31   32   33   34   35				
3	Eff. Area .158 ft <sup>2</sup>	CFM/ft	48	63	79	95	111	126	142	158
		NC	<20	<20	<20	20	25	25-30	30-35	35
		Throw	5.5   6   6.5   7   8   9	9.5   10.5   11.5   12.5   13.5   14.5	15   16   17   18   19   20   21   22   23   24   25	26   27   28   29   30   31   32   33   34   35				
3 1/2	Eff. Area .185 ft <sup>2</sup>	CFM/ft	55	74	92	110	142	147	166	184
		NC	<20	<20	20	20	25	30	35	40
		Throw	6.5   7   7.5   8   9   10	10.5   11.5   12.5   13.5   14.5   15.5	16   17   18   19   20   21   22   23   24   25   26   27   28   29   30	31   32   33   34   35				
4	Eff. Area .221 ft <sup>2</sup>	CFM/ft	66	88	111	133	155	177	199	221
		NC	<20	<20	20	25	25	30	35	40
		Throw	7   7.5   8.5   9.5   10.5   11.5	11.5   12.5   14   13   16   18	15   18   21   18   21   24	17   22   26   19   24   29	20   25   30   23   29   34			
5	Eff. Area .289 ft <sup>2</sup>	CFM/ft	87	116	145	173	202	231	260	289
		NC	<20	<20	20	25	30	30-35	35-40	40
		Throw	8   9   10   10.5   11.5   12.5	13.5   15   17   14   17   19	17   20   22   19   23   26	20   26   31   23   29   34	20   26   31   23   29   34			
6	Eff. Area .352 ft <sup>2</sup>	CFM/ft	106	141	176	211	246	282	317	352
		NC	<20	<20	20	25	25-30	30	35-40	40
		Throw	8.5   9.5   10.5   11.5   12.5   14	14   15.5   17   17   20   22	18   21   24   19   23   26	20   26   31   23   29   34	20   26   31   23   29   34			
8	Eff. Area .483 ft <sup>2</sup>	CFM/ft	145	193	242	290	338	386	435	483
		NC	<20	<20	20	25	30	30-35	35-40	40
		Throw	10.5   11.5   12.5   13.5   15   17	15   17   18   18   21   24	22   26   29   24   29   33	26   33   40   30   38   45	26   33   40   30   38   45			
10	Eff. Area .609 ft <sup>2</sup>	CFM/ft	183	244	305	365	426	487	548	609
		NC	<20	20	25	25-30	30-35	30-35	40	45
		Throw	11.5   12.5   14   15   17   18	19   21   23   20   24   28	24   29   33   28   33   38	30   38   45   32   41   49	30   38   45   32   41   49			
12	Eff. Area .746 ft <sup>2</sup>	CFM/ft	224	298	373	448	522	597	671	746
		NC	<20	20	25	30	35	35-40	40	45
		Throw	13.5   15   17   16   18   20	22   24   26   24   29   33	27   32   36   31   36   41	31   39   47   37   47   56	31   39   47   37   47   56			
14	Eff. Area .888 ft <sup>2</sup>	CFM/ft	266	355	444	533	622	710	799	888
		NC	<20	20	25	30	35-40	40	45	45
		Throw	16   18   20   20   23   25	24   27   30   26   30   35	29   35   40   32   38   43	36   45   54   42   53   63	36   45   54   42   53   63			

All values in above table are per linear foot.

# ENGINEERING DATA

## 1550 Series

See Footnote A, page 44

SIZE	Velocity		400		500			600			700			800			1000		
	Duct Pt		.011		.017			.024			.034			.044			.068		
4x10	Eff.Area .25 ft <sup>2</sup>	CFM	76		95			114			133			152			190		
		NC	20		25			30			30			35			35		
		Throw	9	10	11	11	12	13	13	15	17	15.5	18	21	17	21	25	20	25
4x12	Eff.Area .29 ft <sup>2</sup>	CFM	95		119			143			166			190			238		
		NC	20		25			30			30			35			35		
		Throw	10	11	12	12.5	14	15.5	14.5	17	20	17	20	23	19	24	29	24	30
4x14	Eff.Area .34 ft <sup>2</sup>	CFM	105		133			162			185			214			266		
		NC	20		25			30			30			35			35		
		Throw	9	10	11	12.5	14	15.5	15.5	18	21	18	21	24	19	24	29	24	30
6x8	Eff.Area .29 ft <sup>2</sup>	CFM	95		119			143			166			190			238		
		NC	20		25			30			30			35			35		
		Throw	10	11	12	12.5	14	15.5	14.5	17	20	17	20	23	19	24	29	24	30
6x10	Eff.Area .38 ft <sup>2</sup>	CFM	124		152			181			214			242			337		
		NC	20		25			30			30			35			35		
		Throw	11.5	13	14.5	14.5	16	18	17	20	23	20	23	27	21	26	31	26	32
6x12	Eff.Area .44 ft <sup>2</sup>	CFM	143		180			219			252			290			361		
		NC	20		25			30			30			35			35		
		Throw	12.5	14	15.5	16	18	20	19	22	25	21	25	29	22	28	34	29	36
6x14	Eff.Area .51 ft <sup>2</sup>	CFM	166		209			252			295			333			418		
		NC	20		25			30			30			35			35		
		Throw	13.5	15	17	17	19	21	21	23	27	23	27	31	22	27	32	31	42
6x16	Eff.Area .59 ft <sup>2</sup>	CFM	185		233			280			328			371			466		
		NC	20		25			30			30-35			35-40			40		
		Throw	13.5	15	17	18	20	22	20	24	28	25	29	33	26	33	40	34	42
8x8	Eff.Area .40 ft <sup>2</sup>	CFM	124		152			181			214			242			337		
		NC	20		25			30			30-35			35			35-40		
		Throw	12	13	14.5	14.5	16	18	17	20	23	20	23	27	21	26	31	26	32
8x10	Eff.Area .50 ft <sup>2</sup>	CFM	201		200			238			280			318			399		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	13	14	15.5	15.5	17	19	20	23	27	23	27	31	24	30	36	31	39
8x12	Eff.Area .58 ft <sup>2</sup>	CFM	200		252			304			352			404			504		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	14.5	16	18	18	20	22	21	25	29	26	30	35	28	35	42	37	46
8x14	Eff.Area .69 ft <sup>2</sup>	CFM	228		285			342			399			456			570		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	17	19	21	21	23	25	24	28	32	27	32	37	30	37	44	39	48
8x16	Eff.Area .80 ft <sup>2</sup>	CFM	261		328			394			461			523			656		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	18	20	22	23	26	29	26	30	35	30	35	40	32	40	48	40	50
10x10	Eff.Area .63 ft <sup>2</sup>	CFM	200		252			304			352			404			504		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	14.5	16	18	18	20	22	21	25	29	26	30	35	28	35	42	37	46
10x12	Eff.Area .75 ft <sup>2</sup>	CFM	247		309			371			432			494			618		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	15	17	19	21	23	25	25	29	33	28	33	38	31	39	47	38	48
10x14	Eff.Area .87 ft <sup>2</sup>	CFM	295		371			447			518			594			741		
		NC	20		25			30-35			30-35			35-40			40		
		Throw	18	20	22	24	27	30	27	32	37	32	38	44	35	44	53	42	53
10x16	Eff.Area .99 ft <sup>2</sup>	CFM	333		418			504			584			670			836		
		NC	20		25			30-35			35			40			45		
		Throw	20	22	24	26	29	32	27	32	37	33	39	45	37	46	55	46	57
12x12	Eff.Area .85 ft <sup>2</sup>	CFM	295		371			447			518			594			741		
		NC	20		25			30-35			30-35			35-40			40-45		
		Throw	18	20	22	24	27	30	27	32	37	32	38	44	35	44	53	42	53
12x14	Eff.Area 1.1 ft <sup>2</sup>	CFM	352		442			532			618			708			884		
		NC	20		25			30-35			35			40			45		
		Throw	21	23	25	26	29	32	30	35	40	35	41	47	38	48	58	47	59
12x16	Eff.Area 1.2 ft <sup>2</sup>	CFM	409		508			608			713			812			1017		
		NC	20		25			30-35			35			40			45		
		Throw	23	25	28	27	30	33	32	37	43	37	44	51	40	50	60	49	61
12x18	Eff.Area 1.4 ft <sup>2</sup>	CFM	466		580			694			812			926			1159		
		NC	20		25			30-35			35			40			45		
		Throw	24	27	30	29	32	35	34	40	46	40	47	54	42	53	64	52	65
12x24	Eff.Area 1.8 ft <sup>2</sup>	CFM	603		755			907			1059			1207			1511		
		NC	20		25			35			35			40			45		
		Throw	26	29	32	33	37	41	37	44	51	42	49	56	45	56	67	54	67
14x14	Eff.Area 1.2 ft <sup>2</sup>	CFM	409		508			608			713			812			1017		
		NC	20		25			35			35			40			45		
		Throw	23	25	28	27	30	33	32	37	43	37	44	51	40	50	60	49	61
14x16	Eff.Area 1.4 ft <sup>2</sup>	CFM	466		580			694			812			926			1159		
		NC	20		25			35			35			40			45		
		Throw	24	27	30	29	32	35	34	40	46	40	47	54	42	53	64	52	65
14x18	Eff.Area 1.6 ft <sup>2</sup>	CFM	541		675			808			945			1078			1349		
		NC	20		25			35			35			40			45		
		Throw	26	29	32	32	35	39	37	43	50	42	49	56	44	55	66	52	65
14x20	Eff.Area 1.8 ft <sup>2</sup>	CFM	603		755			907			1059			1207			1511		
		NC	20		25			35			35			40			45		
		Throw	26	29	32	33	37	41	37	44	51	42	49	56	45	56	67	54	67
16x16	Eff.Area 1.6 ft <sup>2</sup>	CFM	544		675			808			945			1078			1349		
		NC	20		25			35			35			40			45		
		Throw	26	29	32	32	35	39	37	43	50	42	49	56	44	55	66	52	65

## 1600 Series

See Footnote B, page 44

SIZE	Effective Area	Velocity	400	500	600	700	800	1000	1200	1400
		Duct Ps	.011	.017	.023	.031	.040	.062	.089	.12
4x10	.25	CFM	121	155	184	213	259	311	380	454
4x12	.290	CFM	138	173	201	230	276	334	403	483
4x14	.340	CFM	155	196	230	270	340	385	454	529
6x10	.375	CFM	173	213	253	299	339	426	512	592
6x12	.440	CFM	207	259	305	357	408	512	610	713
6x14	.51	CFM	230	288	345	403	460	575	690	805
8x12	.58	CFM	270	339	403	477	541	673	794	920
8x14	.685	CFM	311	403	472	546	633	782	932	1081
12x12	.85	CFM	391	489	587	684	782	978	1173	1369
6x24	.85	CFM	391	489	587	684	782	978	1173	1369
6x30	1.05	CFM	472	592	713	828	949	1185	1420	1656
8x24	1.10	CFM	512	638	765	891	1024	1277	1530	1783
8x30	1.35	CFM	621	782	943	1093	1254	1553	1857	2128
14x14	1.15	CFM	529	661	805	920	1064	1323	1581	1834
14x20	1.55	CFM	725	909	1093	1271	1455	1823	2191	2473
10x30	1.66	CFM	771	966	1167	1380	1553	1926	2300	2674
18x18	1.80	CFM	828	1035	1242	1466	1656	2070	2484	2904
14x24	1.88	CFM	863	1064	1294	1512	1725	2156	2588	3019
14x30	2.35	CFM	1081	1351	1622	1892	2162	2703	3243	3784
24x24	3.1	CFM	1426	1783	2156	2501	2852	3565	4278	4991

**Footnote A:**

*Size:* Nominal size or the duct opening.

*Effective Area:* The space between the vanes actually utilized by the air.

*Velocity:* The actual velocity of the air through the vanes measured with a velometer or similar device.

*Duct Pt:* The total pressure behind the register in the duct forcing that air through the register.

*Throw:* The throws noted in the tables are the distance from the register to where the air stream velocity has dropped to not under 100/75/50 F.P.M.

**Footnote B:**

*Size:* Nominal size or the duct opening.

*Effective Area:* The space between the vanes actually utilized by the air.

*Velocity:* The actual velocity of the air through the vanes measured with a velometer or similar device.

*Duct Ps:* The static pressure in the duct behind the grille. The static load on the fan chargeable against that grille. Velometer readings are taken between grille vanes giving actual velocity.

**Footnote C:**

*Noise Criteria:* NC "A" scale. (1) Below NC25 extremely quiet. (2) Below NC30 Quiet Office.

(3) Below NC35 Conference Rooms; normal voice 10-30 ft. (4) Below NC40 Conference Rooms; 6-12 ft. normal voice.

(5) NC45 Conference Rooms; 3-6 ft. normal voice.

**Footnote D:**

1) Tested without filters. Typical disposable 1" capacity is 2 cfm per square inch of gross filter area. Recommended velocity is 300-400 fpm. Velocities higher than 500 fpm will decrease filter performance. Increase flow resistance, and possibly blow off agglomerates of collected dirt. Velocity measured 1" from face.

2) Generally the more surface area of media you have in an air filter the lower pressure drop you will have across the filter.

3) Lower face velocities (the air speed at the face of the filter) will also produce less pressure drop across the filter while higher return air velocities cause higher pressure drop and can cause the filter to blow off agglomerates. Ashrae calls out for 300 FPM face velocity across the filter face. This is the ideal return air velocity. Actual face velocities will vary depending on the system design."

*Example:* 20x25 filter = 3.47 SF x 300 FPM face velocity = 1041 CFM

20x25 filter = 3.47 SF x 500 FPM face velocity = 1736 CFM

**Footnote E:**

*Size:* Nominal size or the duct opening.

*Effective Area:* The space between the vanes actually utilized by the air.

*Velocity:* The actual velocity of the air through the vanes measured with a velometer or similar device.

*Duct Pt:* The total pressure behind the register in the duct forcing that air through the register.

*Throw:* The throws noted in the tables are the distance from the register to where the air stream velocity has dropped to not under 100/75/50 F.P.M.

*Noise Criteria:* NC "A" scale. (1) Below NC25 extremely quiet. (2) Below NC30 Quiet Office. (3) Below NC35

Conference Rooms; normal voice 10-30 ft. (4) Below NC40 Conference Rooms; 6-12 ft. normal voice. (5) NC45

Conference Rooms; 3-6 ft. normal voice.

**Register Type Selection:** The register, since it is an inexpensive part of an air conditioning or heating system may get a minimum of consideration. Yet this is the device which brings the conditioned air into the presence of the occupants of the room and their judgment of the whole system may depend on how they consider the supply device works. The return grille has little effect on the conditions within a room as it is a device primarily for covering an opening and the design is important only from an appearance standpoint. The supply register can also be considered a device for covering an opening, in which case it would have thin vanes set to give a minimum resistance to air flow; this gives the maximum effective area for a given register's size. If the vanes of a register are set to fan the air it causes the supply air to mix quickly with the room air and the portion of the room where high air motion exists is considerably cut down. Setting the vanes to fan the air reduces the effective area. Considering only the effective area of a register can give a distorted view of its effect on the whole system. An 18% increase in the effective area by changing the register from a fan type to a straighter flow type only increased the flow to the register by 3.3%. That is, the register loss is such a small percentage of the the total branch line loss it is not a controlling factor in the flow to that branch.

**Register Location:** The measure of how well a given register location or design is performing can be determined by how much stratification (temperature difference between floor and ceiling) exists and how uniform the temperature is on any given level in the room.

**Throw And Spread:** These terms can be misleading for someone who has not witnessed a smoke test on an air supply device. We tend to liken these terms to what happens when water or ink is spilled on a table. The distance it goes out and the amount it spreads to either side can be definitely measured. Air is a gas and cannot normally be seen, but when smoke is added its motion can be observed. Within limits when smoke is blown into a room from a supply, in a matter of seconds the room will be so filled with smoke one cannot find any spot to get a breath of clean smokeless air. *THROW* is the distance from the supply to where the air speed has dropped sufficiently so that the air motion becomes unobjectionable. Air near the end of the throw moves in pulses, the velocity varying from 25, 50, to 100 FPM. At 100 FPM the air motion is beginning to be objectionable to most people. The throw is the distance to the point where the pulses do not go over 75 FPM. It should not, however, be assumed that if the length of the room happens to be more than the noted throw the air will reach the end of the room. When heating or cooling the problem is getting the air into the room without noticeable air motion and not getting the air dispersed into the room.

Air from a supply grille, register, or any opening maintains the same velocity for a reasonable distance (several inches) from the opening; and measuring the velocity is not too critical as to where the velocity measuring instrument is located. The same situation does not hold for the return grille. A return is basically what the aerodynamicist would call a *SINK*, or a point where air is being sucked in from all directions. Consequently the location of the velocity measuring instrument with respect to the distance away from the grille face can affect the velocity reading more than the actual air flow itself. From a point an inch or so in front of the grille to a point between the vanes the reading can vary over 100%. The effect of moving the instrument a given distance away from the grille face will also vary with the size and shape of the opening. The effective area will then vary with how far the velocity measuring device is located from the grille face. To eliminate this problem the effective area values for the returns in these tables have been selected so that the velocity measuring device was located between the grille vanes. This gives the true velocity reading and will depend only on the cution pressure behind the grille. The effective area values then appear low because of the high velocity reading. The effective area of a return depends primarily on the grille face area and the deflection angle on the vanes. With the vanes at right angle to the face the greatest flow area is obtained, but the grille is less effective in concealing the duct work.

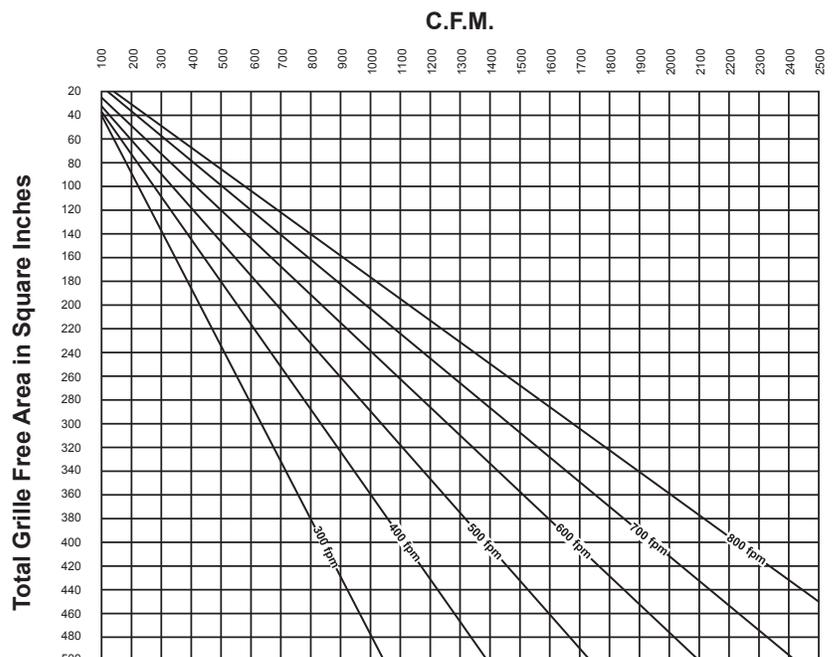
**Return Air Sizing Chart:** Air brought back to the return air plenum of the furnace must equal the total volume of supply air delivered by the furnace. Careful sizing of return air grilles will assure an adequate air supply to the furnace and prevent air noise at the grille.

Knowing the total CFM delivered by a furnace, you can determine the total free area needed to service the system from the graph below.

Example: The furnace in a small home delivers (and requires) 1000 CFM. Trace the 1000 CFM line in the graph below to the point where it intersects the velocity lines. Now pick off the free areas required to handle 1000 CFM at these velocities from the vertical column on the left.

- 1000 CFM at 300 fpm requires 480 sq. in.
- 1000 CFM at 400 fpm requires 360 sq. in.
- 1000 CFM at 500 fpm requires 288 sq. in.
- 1000 CFM at 600 fpm requires 240 sq. in.
- 1000 CFM at 700 fpm requires 206 sq. in.
- 1000 CFM at 800 fpm requires 180 sq. in.

When a practical velocity value has been established select a grille or grilles with free area equal to or exceeding the free area required for that velocity.

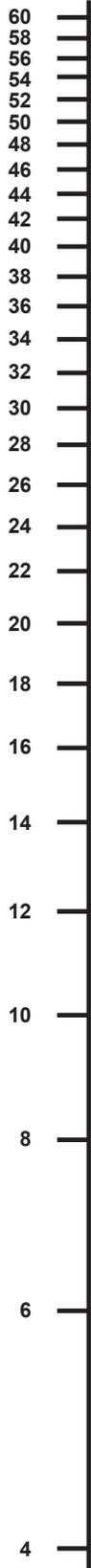


## ALTERNATE SIZE CHART

**Grille Width  
(Inches)**

**Turning Line**

**Grille Height  
(Inches)**



**To Determine Alternate Sizes:** Place a straight edge across the width and height scales on dimensions as selected. Place a pointer at the crossing point on the turning line, and rotate the straight edge around this point until it crosses the width and height scale at a desired alternate size. Sizes determined from this chart are nominal duct dimensions.

**Selection Of Sizes:**

1. Throw should reach approximately 3/4 of distance from outlet to opposite wall.
2. Velocities of air in the air conditioned space are a major factor in the comfort of the occupants in that space. In general these velocities should not exceed 75 FPM in the occupied level in the room.
3. Due to difference of temperature between the entry air and the room air the entry air stream will drop below the level of introduction in the room. Extreme caution and good judgement are required in the selection and location of the supply of air conditioned air so that the air stream will not enter the occupied zone at the critical velocity and cause discomfort due to excessive drafts. If the entry air stream is overthrown and strikes the wall opposite of the grille location downdrafts will occur which will be objectionable to the occupants.

**Outlet Selection By Noise Criteria:**

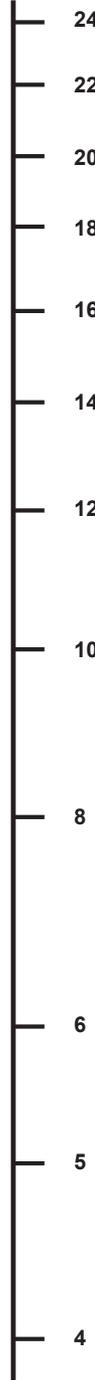
The following outlet selection takes into account the room absorption, ceiling height, number of outlets, etc., to match the tabulated outlet NC level with the space NC criteria. A direct comparison of the tabulated outlet NC level (assuming a 10 db room absorption and about a 5 ft. direct field from the single source) to the space NC criteria is used most frequently as a simple selection procedure. The actual

outlet NC level obtained in a space depends on the sound power level from the outlet, the number of outlets, the distance from the outlet and the attenuation characteristics of the room. A complete treatment of this is found in the ASHRAE Handbook. However an approximate method follows.

**Recommended Delivery Velocities For Various Applications:**

The sound caused by an air outlet in operation varies in direct proportion to the velocity of the air passing through it. The air velocity can be controlled by selecting outlets of proper sizes. The following recommended outlet velocities are within safe sound limits for most applications:

APPLICATION RECOMMENDED		
Face Velocities	FPM	NC-Criteria
Broadcasting studios	500	25
Residences	500 to 750	25-30
Apartments	500 to 750	25-30
Churches	500 to 750	25-30
Hotel bedrooms	500 to 750	25-30
Legitimate theatres	500 to 1000	20-35
Private offices, acoustically treated	500 to 1000	20-35
Motion picture theatres	1000 to 1250	35-40
Private offices, not treated	1000 to 1250	35-40
General offices	1250 to 1500	40-45
Stores, upper floors	1500	45
Stores, main floors	1500	45
Industrial buildings	1500 to 2000	>45



## PRODUCTION

**Lead Times:** Orders are entered immediately upon receipt and will ship in a timely manner. Lead times vary according to quantity and product mix.

**Back Orders\*:** Shoemaker is committed to completely satisfying all orders and for the customer to receive all line items in an order. Exceptions to this include certain plated and wood products which are out of our manufacturing control.

*\*Certain products and quantities do not apply. Please contact customer service for details.*

## EXPEDITED SHIPPING PROGRAM

Most products can be manufactured and shipped from the same day up to five working days after receipt of an order. Certain products and quantities do not apply. Expedited Shipping orders are processed immediately and cannot be cancelled.

- **Gold Express** – Same to next day service. Add 75% to net cost (\$25 minimum charge.)
- **Red Tag** – Two to three day service. Add 30% to net cost (\$10 minimum charge.)
- **Yellow Tag** – Four to six day service. Add 20% to net cost (\$10 minimum charge.)

## SHIPPING

Shoemaker shipping services include USPS, UPS Collect, Fed Ex Ground, Next Day, 2nd Day and 3rd Day Select and LTL Motor Freight. Some products must be shipped LTL Motor Freight because of construction.

- **Shoemaker Standard Rate Shipping Program:** Shoemaker now offers a standard rate for all Ground and LTL shipments! Shipping charges are calculated based on product destination. Please visit [www.shoemakermfg.com](http://www.shoemakermfg.com) for more information and to view our rate map.
- **Palletizing:** Shoemaker products are palletized and shrink wrapped whenever possible. Product grouping is not limited. There is no extra fee for this service.

## FINISH

All Shoemaker products have baked-on textured polyester powder paint. Shoemaker standard finishes are Soft White and Driftwood Tan. This finish will resist peeling, cracking, chipping and fading after application and through shipping, handling and installation. The quality and durability of this finish is long-lasting, an advantage over other finishes that require touch-up.

**The following finishes are available on specified products at an additional cost:**

- **Designer Colors:** Almond, Black Velvet, Bronze, Camaro Silver, Coffee Tan, Navajo White, Vanilla
- **Custom Metal Plating:** Polished Brass, Antique Brass, Polished Chrome, Pewter, Satin Nickel, Black Nickel, Oil Rub Bronze

## RESPONSIBILITY

Shoemaker's responsibility ceases when the carrier signs for the shipment in good order. In case of loss, visible or concealed damage, the customer as consignee must report such loss or damage at once with the carrier.

## GUARANTEE

All Shoemaker products come with an unconditional guarantee to be free from defective material and workmanship under normal service and use for which they were designed. Shoemaker will repair or replace (free of charge) any defective product or part(s).

However, Shoemaker is not responsible for any peripheral costs including, but not limited to, cost of removal and replacement, liabilities, lost profit, loss of goodwill, or any other general, special, incidental or consequential damages incurred in connection with the purchase of Shoemaker products.

The warranty on the finish surface of the Shoemaker Designer Series of custom plated finish and/or custom painted registers, grilles and diff users is for a period of 90 days and includes defects in material and workmanship (under normal service.)

## DISCLAIMER

We reserve the right to make changes to prices, product, product specifications, and packaging without notice.

## CANCELLATIONS & RETURNS

24 hours after receipt of an order, cancellations or changes may not be approved pending status of work in process. Most products are made-to-order and not returnable. All special order products are not returnable. Returns must be approved by the factory.

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## GLOSSARY OF TERMS

### REGISTER

A grille in combination with a device for controlling the quantity of air flow.

### GRILLE

A device for covering an opening.

### DIFFUSER

An air flow device which spreads the air in a circular or partially circular path in a thin stream along a wall, floor or ceiling.

### THROW

The distance measured in feet that an air stream travels from the outlet to point of terminal velocity. Throw is measured horizontally from a register and vertically from perimeter diffusers.

### SPREAD

The maximum total width in feet of the air pattern at the point of terminal velocity.

### NOMINAL

Size given to opening or actual duct dimension in inches.

### DROP

The vertical distance the lower edge of a horizontally projected air stream drops between the outlet and the end of its throw.

### CORE AREA

The area of the finned or louvered portion of the grille.

### FREE AREA

The measured area through the vanes which the air sees.

### EFFECTIVE AREA

The area determined by the manufacturer which shows the area that is used by the air passing through the diffuser or register. This value will always be less than the free area, because the air never fully utilizes the whole free area.

### STATIC PRESSURE

The pressure in air or a gas due to the fact it has been compressed above the outside pressure. In a duct system it is the pressure which builds up before a restriction to give the energy to speed the air up past the obstruction and is measured in inches of water.

### C.F.M.

A measure of the volume of air in cubic feet per minute.

### NOISE CRITERIA (NC)

A sound rating in pressure level given in decibels. Based on established criteria and specific room acoustic absorption values. Catalog NC ratings are based on 10db room attenuation, 10-12 watts with a 8db attenuation in all octave bands.

### VELOCITY PRESSURE

The pressure developed when air or a gas that is moving has been brought to rest. It is measured in inches of water.

### TOTAL PRESSURE

The sum of the static and velocity pressures. A tube facing upstream in a duct will indicate the pressure due to the fact the air is moving and also due to its being compressed in the duct, or it reads the total pressure in inches of water.

### LATENT HEAT

Latent heat is the cooling load needed to remove the moisture from the air. The heat removed in taking the moisture from the air does not lower the temperature of the air.

### SENSIBLE HEAT

Sensible heat is the heat required to change the temperature of the air. It is the cooling or heating effect that we actually feel or sense, hence the name sensible heat.

### VELOCITY

The average velocity of air emerging from the outlet measured in the plane of the opening.

### F.P.M.

A measure of the air velocity in feet per minute.

### DAMPER OR VALVE

A device used to control the volume of air passing through a duct by varying the cross-sectional area.

### JET VELOCITY

The average measured velocity of air passing between the louvers.

# DOING BUSINESS BETTER

Since 1947, Shoemaker's philosophy has been simple: create value for the customer by providing products and services that are designed to expedite the process of ordering, manufacturing and shipping our goods through the distributor to the contractor.

Our products are usually the "finishing touch" to a HVAC installation, and there can be great consternation by all involved if the contractor is waiting on the registers and grilles to arrive to complete a project. One of the advantages of partnering with Shoemaker is our no-nonsense approach to doing business. Over the past 60 years, we've stuck to a few simple policies that make doing business with us easier.

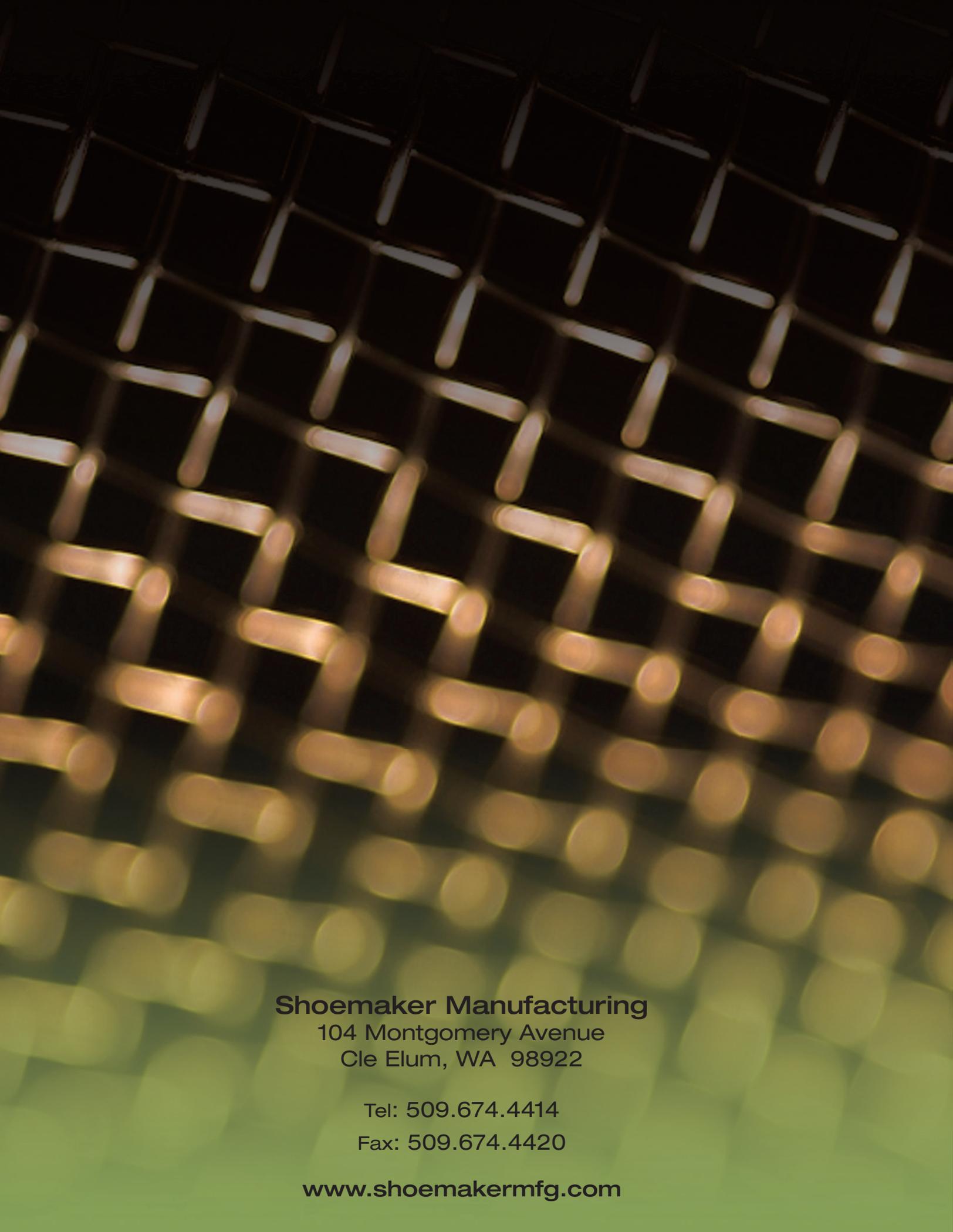
- NO backorders
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